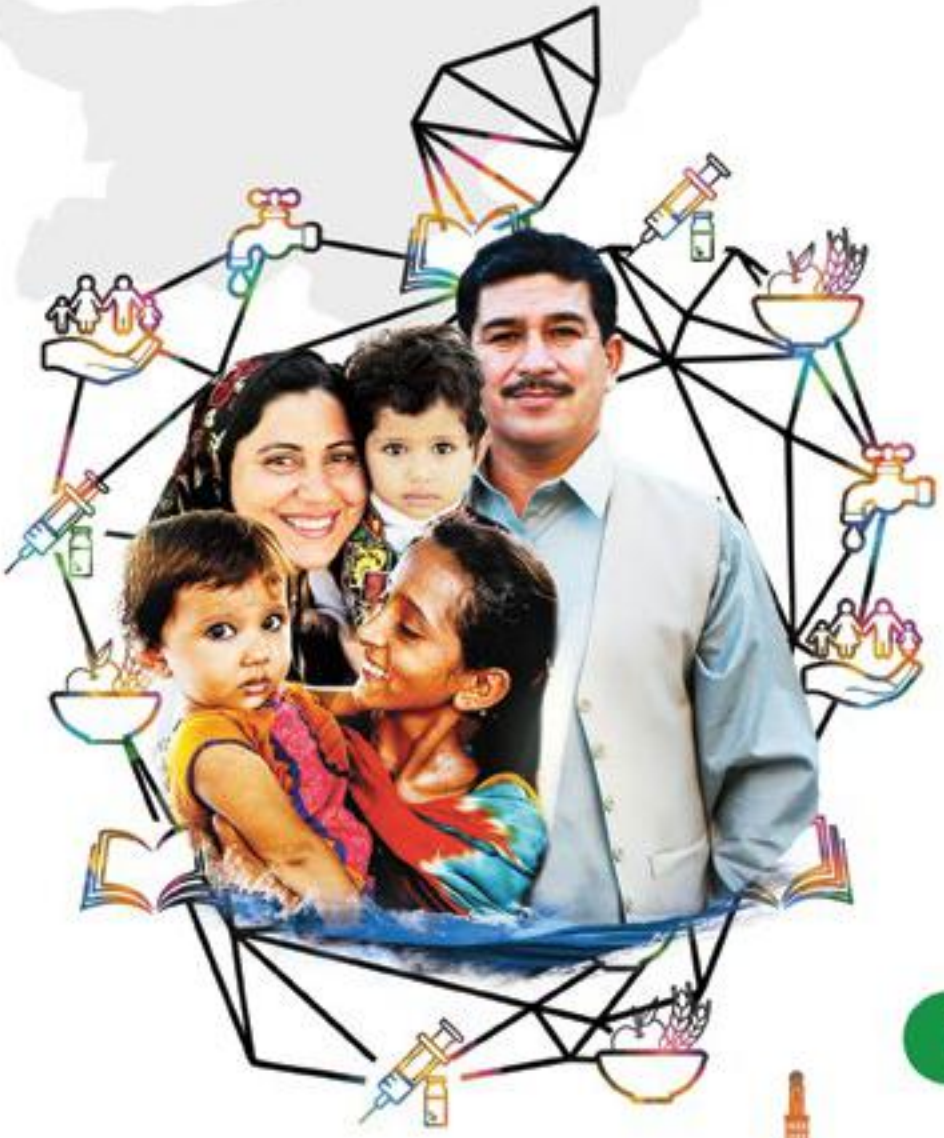
GOVERNMENT OF PAKISTAN
Ministry of National Health Services,
Regulations and Coordination
Nutrition Wing

National Nutrition Survey 2018



Volume - I

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Foreword

Pakistan has adopted the Sustainable Development Goals (SDG) and indeed was the first country to adopt the 2030 Agenda as a national agenda. Hence, it is essential for the country to take measures to ensure that its SDG targets are achieved in line with the agenda. To do so, evaluation of nutritional status within the country is essential. Such an assessment can also ascertain the progress achieved through nutrition interventions implemented in Pakistan. To this end, the National Nutrition Survey 2018 (NNS 2018) was conducted with the objective of developing a clear representation of nutritional status in the country, with particular emphasis on children, women of reproductive age and adolescent girls and boys.

NNS 2018 has several distinctive features. It is the largest survey ever held in the country, with a sample size of 115,600 households and 5,780 primary sampling units. By contrast, the previous edition of the survey, in 2011, collected data from 30,000 households. NNS 2018 not only gives province-specific information, it also includes data collected at district level, biochemical analysis of blood and urine samples, and a water quality assessment performed in collaboration with the Pakistan Council of Research in Water Resources (PCRWR).

The process of conducting NNS 2018 began with an inception report in 2016, followed by data collection in 2018 and final completion in 2019. The entire process was closely monitored and endorsed by the National Steering Committee and Technical Committee.

The survey findings clearly show that we need to rethink and amplify our efforts to curb malnutrition, and to embrace regional specificity when formulating nutrition strategies. I am hopeful that by providing district- and region-specific data, this survey will help policymakers and strategists make the right choices to improve nutritional status in Pakistan. We expect that policymakers will make fully use of the findings of the survey and engage all actors to formulate informed decisions in order to ameliorate malnutrition. NNS 2018 will also serve as a rich source of information for researchers, academicians and health professionals.

The role and contribution of all partners, stakeholders, provincial and regional departments of health, especially provincial and regional nutrition managers, is highly appreciated. Their unflagging support was instrumental in the successful completion of data collection. Our special thanks goes to the United Kingdom Department for International Development (DFID) and the United Nations Children's Fund (UNICEF) for facilitating the survey. The Ministry of National Health Services, Regulation & Coordination (MoNHSR&C) also appreciates the rigorous efforts of Aga Khan University in conducting the survey.

I congratulate Dr Baseer Khan Achakzai and his team who have worked diligently on this survey to make it a resounding success.

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Acknowledgements

NNS 2018 was carried out to gather valuable nutritional information about Pakistan's population. It collected information about feeding practices, food intake, food knowledge, behaviour and attitudes, anthropometric measurements and biochemical assessment of blood and urine samples from pregnant and lactating women and children. This holds the distinction of being the largest survey in Pakistan, with district-level representative data collected. Another feature of the survey is that it probed nutrition-sensitive indicators related to water and sanitation, food security, and micronutrients such as zinc, which have never previously been collected as part of a nutrition survey.

The Nutrition Wing of MoNHSR&C acknowledges the strong support of all provincial stakeholders and regional technical committees, especially the provincial and regional nutrition managers for Punjab, Sindh, Balochistan, Khyber Pakhtunkhwa, Azad Jammu and Kashmir and Gilgit-Baltistan. I also extend my sincere gratitude to the NNS 2018 Steering Committee, under the leadership of Captain Zahid Saeed, Secretary, MoNHSR&C , for endorsing and approving all deliverables, and to the Technical Committee, led by Dr Assad Hafeez, for its continuous technical support throughout the process of the survey. The Nutrition Wing also values the collaboration of the Planning Commission, Pakistan Bureau of Statistics, PCRWR and the World Health Organization (WHO).

I would like to thank DFID for their financial support and UNICEF for their technical support without which it would not have been possible to complete this survey. In particular I would like to acknowledge the indispensable leadership of the UNICEF Representative in Pakistan, Aida Girma, and her team including Melanie Galvin, Eric Alain Ategbo, Dr Wisal Khan, Dr Naureen Arshad and Dr Saba Shuja, Syed Saeed Qadir and Khawar Atta. The Nutrition Wing also appreciates the efforts of Aga Khan University including the work of Dr Sajid Soofi, Dr Atif Habib, Shujaat Zaidi, Imran Ahmed and their field teams under the leadership of Dr Zulfiqar Bhutta.

I would like to laud the hard work put in by members of the Nutrition Wing especially Dr Sher Baz Khan, National Coordinator, National Nutrition Survey, and Dr Khawaja Masuood Ahmed, National Coordinator, Nutrition and National Fortification Alliance. I would also like to appreciate the efforts and hard work of Mussadiq Ali, Sarah Khalid, Arif Bashir and Bushra Bibi for their diligent assistance in innumerable tasks. It is their devotion to this task that has enabled this survey to be completed.

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Comments by Principal Investigator

It is difficult to imagine that we are at the end of a journey that started well over 5 years ago. The fact that Pakistan faces massive challenges in maternal and child nutrition is no longer news. We have known this for a long time, for well over two decades now. The floods of 2010 and the National Nutrition Survey 2011 underscored the important issue of persistent burdens of childhood stunting, wasting and widespread micronutrient deficiencies. Yet concerted action on many of these issues has been lacking. The devolution of health services and programs to the provinces in 2011 also led to a period of review and recalibration, followed by the movement to develop multi-sectoral plans and initiatives to address undernutrition and its determinants. A progress assessment was needed to recalibrate our response.

The Aga Khan University was greatly privileged to undertake this survey under the guidance of the Federal Ministry of Health (Nutrition Program), UNICEF and the multi-stakeholder steering committee established for this purpose. Sufficeth to say that the National Nutrition Survey 2018 was one of the most ambitious studies undertaken in Pakistan with over 115,000 households across all districts of Pakistan, extensive clinical and programmatic information, blood biomarkers for nutrient deficiencies and an associated household level water safety studies spearheaded by the Pakistan Council for Research into Water Resources (PCRWR) who analyzed over 43,000 water samples for bacterial and chemical contamination

This survey would not have been possible but for the hard work and dedication of hundreds of field staff and collaborators who made it possible for us to achieve the required samples and data from every district of Pakistan, including insecure areas. As team lead I am deeply grateful to the support provided by several partners and their leads; CONTECH International (Dr Naeem-ud-din Mian), Khyber Medical University (Prof Zia ul Haq), Health & Nutrition Development Society (HANDS; Dr Sheikh Tanveer Ahmad), Medical Emergency Resilience Foundation (MERF; Dr Syed Shah Miran), Direct Focus Community Aid (Mr Shamsul Hadi) and Social Humanitarian Agency for Development & Empowerment (Ms Hameeda Noor).

From my own team, Prof Sajid Soofi led the work with great aplomb and dedication, ably supported by Dr Atif Habib, Shujaat Zaidi, Imtiaz Hussein and an extraordinary core group of laboratory technicians led by Dr Junaid Iqbal. I am deeply grateful to the leadership and support of the Aga Khan University who not only took great interest in this national task but supported it to the hilt from the University.

Finally, no report is worth more than the paper its published on. For myself, having been part of three consecutive national nutrition surveys over the last two decades, I hope that this is the last survey where we look back at how things could have been improved, and that future analysis will look upon this extensive work as a game changer in moving things to policy and effective action.

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"A prosperous and healthy Pakistan is a priority of the UK Government. This cannot be achieved without reducing Pakistan's rates of malnutrition. DFID is proud to be associated with the 2018 National Nutrition Survey, which accurately estimates the burden of malnutrition. This will help the UK, other donors, and the Pakistan Government to more accurately target its future nutrition programmes."

Joanna Reid, Head of DFID Pakistan

"As enshrined in the United Nations Convention on the Rights of the Child, all children in Pakistan have the right to a good start, be healthy, protected from harm, live with dignity and reach their full potential. UNICEF feels privileged to have contributed to the National Nutrition Survey 2018, led by the Government of Pakistan. The Survey is a great leap forward in the process of authentic evidence generation and multisectoral information. It portrays that Pakistan confronts a triple burden of malnutrition affecting young children, adolescents, pregnant and lactating women. District specific information generated through this Survey will pave future direction to eradicate all forms of malnutrition in the country. The Survey emphasizes adaption of Universal Health Coverage with nutrition inclusiveness. Concerted and continuous efforts are imperative to improve the nutritional status of the population, as prioritized by the present Government."

Aida Girma, Representative, UNICEF Pakistan

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Acronyms

AGP	Alpha 1 acid glycoprotein
AJK	Azad Jammu and Kashmir
AKU	Aga Khan University
ANC	Antenatal care
ARI	Acute respiratory infections
BISP	Benazir Income Support programme
BMI	Body mass index
CBN	Cost of basic needs
CRP	C-reactive protein
DFID	Department of International Development
DHS	Demographic and Health Survey
E. coli	Escherichia coli
FGDs	Focus group discussion
FIES	Food Insecurity Experience Scale
GB	Gilgit-Baltistan
GoP	Government of Pakistan
ICA	Integrated context analysis
ICT	Islamabad Capital Territory
IDA	Iron deficiency anaemia
IDD	Iodine deficiency disorders
IDI	In-depth interviews
IYCF	Infant and young child feeding
KII	Key Informant Interviews
KP	Khyber Pakhtunkhwa
KP-NMD	Khyber Pakhtunkhwa Newly Merged Districts
LBW	Low birth weight
MAD	Minimum acceptable diet
MDD	Minimum dietary diversity
MDD-W	Minimum dietary diversity for women
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MMF	Minimum meal frequency
MNP	Micronutrient package
MoNHSR&C	Ministry of National Health Services, Regulation and Coordination
MSNS	Multi-sectoral Nutrition Strategy

MUAC	Mid-upper arm circumference
NCFA	National Complementary Feeding Assessment
NDMA	National Disaster Management Authority
NGO	Non-governmental organization
NNS	National Nutrition Survey
NRL	Nutrition research laboratory of AKU
NSC	Nutrition Stabilization Centres
ORS	Oral rehydration solution
OTP	Outpatient Therapeutic Programme
PBS	Pakistan Bureau of Statistics
PCRWR	Pakistan Council of Research in Water Resources
PDHS	Pakistan Demographic and Health Survey
PINS	Pakistan Integrated Nutrition Strategy
PoU	Prevalence of undernourishment
PSU	Primary sampling units
P&DD	Planning & Development Department
RUSF	Ready to use supplementary food
RUTF	Ready to use therapeutic food
SC	Steering committee
SDGs	Sustainable Development Goals
SGA	Small for gestational age
SoP	Standard Operating Procedures
SSU	Secondary sampling units
SUN	Scaling up nutrition
TAG	Technical advisory group
TBD	To be decided
TEM	Technical error of measurement
TFU	Therapeutic Feeding Unit
ToT	Training of trainers
TSFP	Targeted Supplementary Feeding Programme
UNICEF	United Nations Children's Fund
VAD	Vitamin A deficiency
WASH	Water, sanitation and hygiene
WFP	World Food Programme
WHO	World Health Organization
WRA	Women of reproductive age
WHZ	Weight for height Z-score

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Executive summary

The Ministry of National Health Services, Regulations and Coordination (MoNHSR&C), Pakistan, with the technical support of United Nations Children's Fund (UNICEF) Pakistan and funding from DFID, conducted the National Nutrition Survey (NNS) 2018 with Center of Excellence in Women and Child Health, the Aga Khan University to ascertain the nutritional statuses of children and women across Pakistan. Survey field activities were implemented by AKU and its collaborating partners across different provinces and subnational regions in Pakistan. MoNHSR&C and UNICEF were closely involved in oversight from inception until the end of survey activities, through a national steering committee and provincial partners. The survey was initiated in April 2018 and field activities formally ended in January 2019.

The main objective of the survey was to assess the current nutrition status of children and adolescents (girls and boys) and women of reproductive age, to establish trends compared to previous surveys conducted in 2001 and 2011, and to provide a benchmark for the national, provincial, district and regional nutrition landscape in the context of Sustainable Development Goal (SDG) 2. Hitherto, up-to-date nutrition data that reflected the situation post-devolution had not been available in Pakistan. Also included in the survey was an evaluation of major contextual factors contributing to undernutrition, such as infant and young child feeding (IYCF) practices, food security, water, sanitation and hygiene (WASH) and health-seeking behaviours. For the first time in Pakistan, the survey was designed with a district representative sample to produce district-level estimates. The survey findings will thus help evaluate progress in nutrition interventions and guide granular, evidence-based decision-making to prioritize nutrition interventions and their implementation in Pakistan.

NNS 2018 was a national cross-sectional survey at household level and a two-stage stratified sample design methodology was applied. The overall sampling frame and the list of enumeration blocks were provided by the Pakistan Bureau of Statistics (PBS) based on the Population and Housing Census 2017. A total of 100,304 households (5,507 PSUs) were successfully interviewed with an overall response rate of 94.9%.

The quantitative survey collected data on the overall nutritional status of target groups based on interviews, anthropometric indices, and blood and urine assessment for micronutrient status. The population groups surveyed were children aged 0–59 months, children aged 6–12 years, adolescents aged 10–19 years and women of reproductive age aged 15-49 years. A total of 68,493 mothers/caretakers of children aged 0–59 months were interviewed and their anthropometric measurements obtained, and an additional 24,209 children aged 0–23 months were assessed for Infant and Young Child Feeding (IYCF) practices. A total of 123,092 women were assessed for their nutrition status and dietary diversity. Also, the body mass index (BMI) of 48,750 adolescent boys and girls was obtained and of these, 14,418 girls also had spot haemoglobin tests done to derive anaemia estimates. Height, weight and mid-upper arm circumference (MUAC) measurements along with clinical examination for anaemia, goitre and oedema were undertaken to determine nutrition status of different target age groups. Blood and urine samples were collected from the target age groups for micronutrient assays. Standard methods and procedures were adopted for collection and transportation of the specimens. Haemoglobin levels were tested in the field using HemoCue machines, whereas other biochemical assessments including ferritin, vitamin A, vitamin D, vitamin B12, folic acid, zinc, urinary iodine, C-reactive protein (CRP), alpha glycoprotein (AGP) etc. were analysed at the Nutritional Research Laboratory of the Aga Khan University in Karachi. Drinking water samples were also collected from targeted households to determine water quality by microbiological and chemical testing.

Over half of the households (63.1%) were found to be food secure, more so in urban (68.2%) areas than rural (60.0%). Households experiencing a severe grade of food insecurity were 18.3%. The national prevalence of stunting was 40.2%, and of severe stunting 19.6%, with slightly higher prevalence in boys (40.9% and 20.2% respectively) compared to girls (39.4% and 19.1%). Stunting was highest (46.6%) among children aged 18–23 months and lowest among younger infants aged 0–5 months (28.6%).

About 17.7% children nationally suffered from wasting, with a higher percentage in rural (18.6%) compared to urban (16.2%) strata. Boys (18.4%) were more likely to suffer from wasting than girls (17.0%), and younger infants aged 0–5 months more so than older children aged 48–59 months (26.6% and 14.7% respectively). Wasting rates have increased from the previous two editions of NNS in 2001 (13.1%) and 2011 (15.1%). NNS 2018 also presents data for the first time on the concurrence of stunting and wasting (5.9%), which is largely clustered in the south of the country, and is indicative of a close relation between these two forms of malnutrition.

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The nutritional status of adolescent girls and boys (aged 10–19 years) was assessed for the first time in NNS 2018. The survey suggests that that boys have worse nutrition indicators than girls in almost all cases: underweight (boys: 21.1%; girls: 11.8%), overweight (boys: 17.8%; girls: 16.8%), obesity (7.6% and 5.5%) and short stature (boys: 31.7%; girls: 28.5%). Under half (46.4%) of women of reproductive age (aged 15–49 years), had normal BMI; 14.5% were underweight, 24.2% were overweight and 13.9% were obese.

NNS 2018 confirms that micronutrient deficiencies are widespread in Pakistan. Anaemia was common in non-pregnant women of reproductive age (43.0%) and among children 6-59 months of age (overall 53.7%; 54.2% in boys and 53.1% in girls). Over all 49.1% children were iron deficient. Iron deficiency anaemia affected 18.0% of non-pregnant women of reproductive age, compared to 21.2% in pregnant women.

Vitamin A deficiency (< 0.70 µmol/l) was notable among women of reproductive age (27%) as well as among children aged 6–59 months (overall: 51.5%; boys: 51.6%; girls: 51.3%). Zinc deficiency was also observed in both women and children, with a prevalence of 22.1% and 18.6% respectively, showing some improvement since 2001 and 2011. Iodine deficiency was present among both women of reproductive age and children aged 6–12 years as the median urinary iodine concentration was found to be 108.3 and 122.9 respectively (8.6%). Some 79.6% households were found to possess adequately iodized salt i.e. with 15 ppm or more of iodine.

The majority of women of reproductive age (79.7%) and children aged 6–59 months (62.7%) were found to be deficient in vitamin D (<20.0 ng/mL) while a large proportion of women reproductive age (25.7%) also had evidence of severe vitamin D deficiency (<8.0 ng/mL).

Information related to IYCF practices was collected from mothers of children under 24 months of age. Most infants aged 0–23 months (overall: 88.7%; boys: 88.4%; girls: 89.0%) had been ever breastfed after birth. However, only 45.8% were reported to have been breastfed within one hour of birth. Almost half of children who were breastfed within an hour of birth (39.9%) had also received pre-lacteal feed. Almost half (overall: 48.4%; boys: 47.8%; girls: 48.9%) of infants under six months of age were exclusively breastfed and 63.3% infants in same age group were predominantly breastfed. Only 38.2% infants aged 6–8 months were currently being breastfed and provided solid, semi-solid or soft foods. Overall, 40.1% infants aged 0–23 months were appropriately breastfed.

While only 3.6% of children aged 6–23 months received a minimum acceptable diet, the proportion rose with mother's level of education and wealth index. Minimum dietary diversity and minimum meal frequency stood at 14.2% and 18.2% respectively, with higher rates for boys in terms of dietary diversity but slightly lower in terms of minimum meal frequency.

We also assessed delivery platforms for nutrition interventions at the primary care level. Nationally, 63.4%% women sought antenatal care (ANC) during their last pregnancy, but only 31.7% reported to have had four or more antenatal care visits during their last pregnancy and 10.7% had the WHO-recommended eight or more. Among women who accessed ANC, around 39.9% made their first ANC visit during the first trimester of pregnancy, 8.6% visited for the first time during the 4–5th months, and 3.6% during the 6–7th months. Services received by pregnant women during ANC visits included weight (41.4%) and blood pressure (51.4%) measurements, urine (39.4%) and blood sampling (37.4%). Less than a third (29.3%) received all recommended ANC services, while 52.9% received ultrasound examinations. During ANC visits, 15.1% women received information and counselling about eating more nutritious food, 7.4% received counselling on breastfeeding and 4.5%.

In addition to poverty and poor living conditions (as assessed by housing quality and assets), and notwithstanding high rates of access to improved water (92.6%), water samples tested showed widespread use of unsafe water. Microbiological contamination of drinking water was high with coliform contamination in 82.7% of households and E.coli in 31.3% of households.

In summary, NNS 2018 indicates that malnutrition is rampant among women, children and adolescents in Pakistan. In addition to high levels of stunting, wasting and micronutrient malnutrition, Pakistan has begun to see a substantial burden of overweight and obesity, thus creating a triple burden of malnutrition. This is caused by a combination of dietary deficiencies, poor maternal and child health, high burden of morbidity, and low micronutrient content in the soil, especially iodine and zinc.

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Stunting, wasting and micronutrients deficiencies have profound effects on immunity, growth, and mental development of children. Furthermore, the high rates of malnutrition and micronutrient deficiencies among women of reproductive age point to a vicious cycle of malnutrition which may underlie the high burden of morbidity and mortality among women and children (both boys and girls) in Pakistan and could also contribute to high risk of noncommunicable diseases in the future.

As the qualitative component of NNS 2018 suggests, increasing acute malnutrition and chronic malnutrition may be primarily due to poverty, low levels of maternal education, gender inequalities, lack of awareness, poor access to improved water and sanitation facilities and food insecurity. Inadequate infant feeding practices and lack of access to age-appropriate foods are also major contributors. Although the nutrition situation in Pakistan is alarming and much effort will be needed to achieve SDG2 targets, there is much scope for evidence-based interventions. The frameworks and delivery platforms exist, and urgent action is needed for the development and strategic implementation of a comprehensive nutrition strategy in Pakistan which addresses malnutrition in all its forms.

Key results

Nutritional status (children 0–59 months)			
	Male	Female	All
Underweight prevalence	29.3%	28.4%	28.9%
Stunting prevalence	40.9%	39.4%	40.2%
Wasting prevalence	18.4%	17.0%	17.7%
Overweight prevalence	9.7%	9.2%	9.5%
Nutritional status (adolescents 10–19 years)			
	Male	Female	All
Underweight prevalence	21.1%	11.8%	-
Short stature prevalence	31.7%	28.5%	-
Overweight prevalence	17.8%	16.8%	-
Obesity prevalence	7.6%	5.5%	-
Anaemia among adolescent girls	54.7%		
Nutritional status (women of reproductive age 15–49 years)			
Underweight prevalence	14.5%		
Overweight prevalence	24.2%		
Obesity prevalence	13.9%		
Micronutrient deficiencies (children 6–59 months)			
	Male	Female	Overall
Anaemia	54.2%	53.1%	53.7%
Iron deficiency	50.0%	48.2%	49.1%
Iron deficiency anaemia	29.1%	28.1%	28.6%
Vitamin A deficiency	51.6%	51.3%	51.5%
Vitamin D deficiency	62.3%	63.0%	62.7%
Zinc deficiency	18.8%	18.4%	18.6%
Folic Acid deficiency	34.3%	35.5%	34.9%
Vitamin B12 defici	26.0%	24.1%	25.1%

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Median urinary iodine concentration in school-age children (6–12 years)	126.7	121.3	122.9
Calcium	32%	32.4%	32.2%
Micronutrient deficiencies (women of reproductive age 15–49 years)			
	Non-Pregnant	**Pregnant**	**Overall**
Anaemia	43.0%	35.5%	42.6%
Iron deficiency	33.6%	46.9%	34.3%
Iron deficiency anaemia	18.0%	21.2%	18.2%
Vitamin A deficiency	30%	27%	27%
Vitamin D deficiency	79.6%	81.2%	79.7%
Zinc deficiency	21.1%	37.5%	22.1%
Median urinary iodine concentration	108.4	108	108.3
Calcium deficiency	16.2%	32.6%	26.5%
Folic Acid deficiency	45.29%	44.5	44.5%
Vitamin B12 deficiency	19.51%	32.3	20.3%
Infant and young child feeding			
	Male	**Female**	**Overall**
Percentage who were ever breastfed	88.4%	89.0%	88.7%
Percentage who were breastfed in first hour of birth	44.2%	47.5%	45.8%
Percentage who received a pre-lacteal feed	41.3%	38.5%	39.9%
Exclusive breastfeeding (0–5 months)	47.8%	48.9%	48.4%
Percentage predominantly breastfeed (0–5 months)	61.2%	65.4%	63.3%
Appropriately breastfed (0–23 months)	40.2%	40.0%	40.1%
Initiation of solid, semi-solid and soft foods (all infants aged 6–8 months)	34.6%	37.3%	35.9%
Initiation of solid, semi-solid and soft foods at 6–8 months with concurrent breastfeed	35.4%	41.0%	38.2%
Minimum meal frequency (6–23 months)	18.3%	18.2%	18.2%
Minimum dietary diversity	14.3%	14.2%	14.2%
Minimum acceptable diet	3.6%	3.6%	3.6%

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Water and sanitation	
Use of improved drinking water sources	92.6%
Water treatment	11.6%
Use of improved sanitation facilities	84.7%
Maternal and newborn health	
At least one antenatal care visit by skilled personnel	63.4%
At least eight antenatal care visits by skilled personnel	10.7%
Recommended content of antenatal care (blood pressure measured, urine and blood samples taken)	29.3%
Skilled attendant at delivery	68.5%
Postnatal health checks	32.2%
Received iron folic acid during pregnancy of last live birth	33.4%
Household iodized salt utilization	
Salt with adequate iodine content (rapid test kit)	79.6%
Household food security	
Food Insecurity Experience Scale	36.9%

National Nutrition Survey 2018

Introduction

Pakistan has amongst the highest levels of malnutrition in the world, particularly affecting women and children. NNS 2018 was conducted to generate district-specific nutrition information related to malnutrition (both undernutrition and overnutrition) and micronutrient deficiencies among women, children and adolescents, providing insights into Pakistan's malnutrition burden, including in vulnerable groups.

1. Introduction

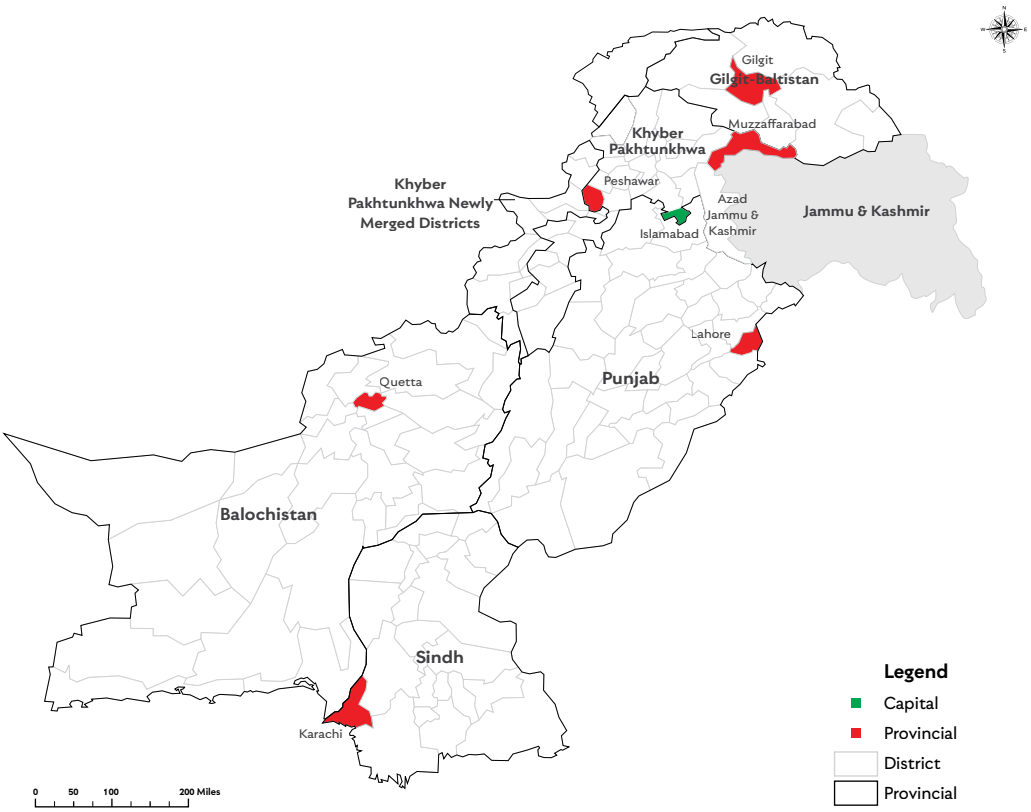
1.1 Background and context

With a population exceeding 200 million, Pakistan is the sixth most populous country in the world and is projected to become the fourth most populous by 2050.[1] The country comprises four provinces: Sindh, Punjab, Balochistan and Khyber Pakhtunkhwa (KP), of which the last includes the Newly Merged Districts of KP (KP-NMD), formerly known as the Federally Administered Tribal Areas (FATA). It also includes three administrative areas: Islamabad Capital Territory (ICT), Gilgit-Baltistan (GB) and Azad Jammu and Kashmir (AJK) (Figure 1-1).[2]

Life expectancy at birth is about 66 years for men and 68 years for women.[3] Adult literacy stands at 58%, with a wide disparity between men (nearly 70%) and women (46%).[4] Pakistan is ranked 150th of 189 countries on the Human Development Index, indicating low human development at the country level.[5] According to the Pakistan Economic Survey 2018, almost a quarter of the population is below the income poverty line, while multidimensional poverty is estimated to affect 39% of the population.[6, 7]

Pakistan also has an extremely youthful population. Over half, 53% of its people, are 0–19 years of age, 15% are below five years of age and 23% are adolescents aged 10–19.[8] According to the Population and Housing Census conducted in 2017, women of reproductive age comprise almost 27% of the total population. About 60% of Pakistanis, and 80% of the poor, reside in rural areas.[9]

Figure 1-1: Map of Pakistan

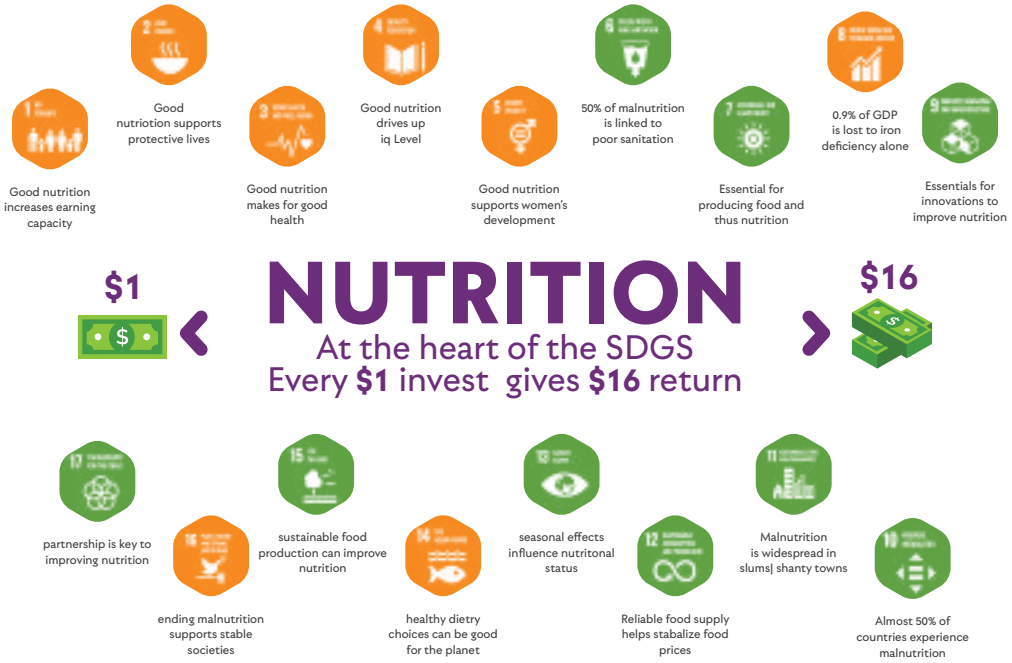


Following slow progress against achieving its Millennium Development Goals, especially in terms of nutrition indicators,[10] in 2015 Pakistan embarked upon the 2030 Agenda for Sustainable Development. This global agenda provides a comprehensive vision that balances social, economic and environmental development through the achievement of 17 Sustainable Development Goals (SDGs) and 169 targets. Two of these goals relate directly to nutrition: SDG-2, Zero Hunger, which

aims to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture"; and SDG-3, Good Health and Wellbeing, which aspires to "ensure healthy lives and promote wellbeing for all at all ages". It must be noted that overall, most of the SDGs are indirectly related to nutrition (see Figure 1-2).

In 2015, Pakistan's National Assembly passed a resolution to adopt the 2030 Agenda, declaring it the country's "national development agenda", and showing exceptional political commitment.[11] An SDG Unit was also established at the federal Ministry of Planning, Development & Reform to monitor and coordinate national and subnational efforts to achieve the SDGs.

Figure 1-2: Nutrition is essential for achieving the SDGs



Source: Sight and Life (2015) Nutrition and the Sustainable Development Goals. Available at: https://scalingupnutrition.org/nutrition/nutrition-and-the-sustainable-development-goals

1.2 Nutrition situation in Pakistan

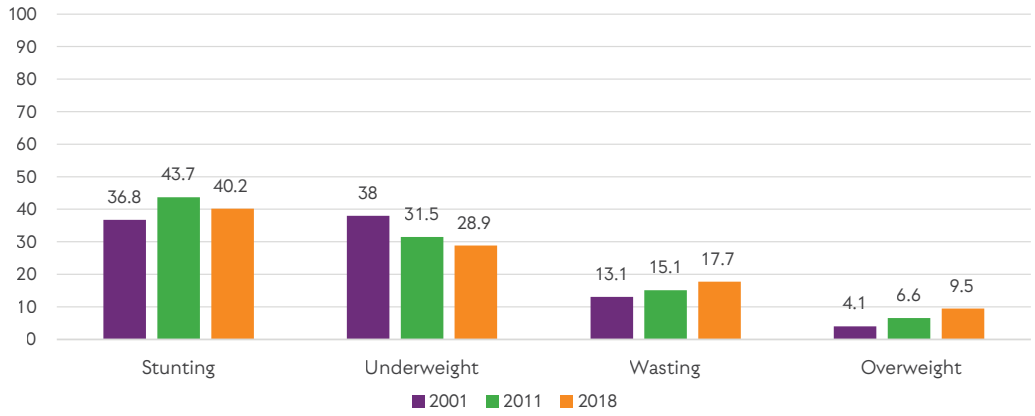
Pakistan has amongst the highest levels of malnutrition in the world, affecting people of all ages and particularly women and children.[12] The prevalence of malnourished children under five years of age in Pakistan exceeds that in other developing countries.[13]

1.2.1 Malnutrition amongst children under five

Inadequate weight gain, weight loss and linear growth faltering are all the result of multiple processes in which the body responds to diverse causes acting on both individuals and population level. *Stunting* is defined as a low height for age (more than -2 standard deviations from the median height for a child's age of a reference population); *wasting* denotes low weight for height (more than -2 standard deviations from the median weight for a child's age) and is considered reflective of acute malnutrition whereas *underweight* signifies low weight for age. Stunting, or growth faltering, beginning in utero (often attributable to maternal malnutrition) can continue for at least the first two years of a child's life.[14] Stunting in early childhood can, in turn, lead to long-term cognitive challenges, motor impairments and health issues.[15-17] While overweight is defined as body mass index (BMI)-for-age greater than 1 standard deviation above the Growth Reference median, it is an abnormal or excessive fat accumulation that may impair health.

Figure 1-3 below shows trends in these four variables for children under five years of age in Pakistan between 2001, 2011 and 2018. Drawing on data from three successive National Nutrition Surveys (NNS), the figure shows that after increasing between 2001 and 2011, the rate of stunting actually decreased over the following decade, with 40.2% of children reported as stunted in 2018, compared to 43.7% in 2011. The prevalence of underweight children fell significantly, with an approximate decline of 1% per year. However, wasting increased steadily, from 13.1% in 1987 to 13% in 2001 and 15% in 2011.[18] Conversely the prevalence of overweight has been increasing steadily in the past two decades from 4.1% in 2001 to 6.6% in 2011 and 9.5% in 2018.

Figure 1-3: Trends in stunting, wasting, underweight and overweight in children under five

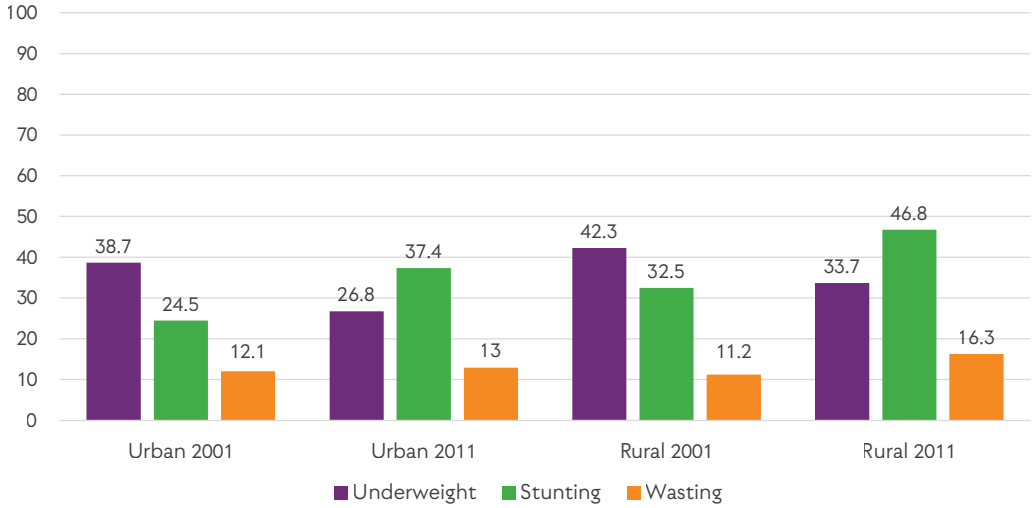


Source: Source: National Nutrition Surveys 2001, 2011 and 2018

1.2.1.1 Disparities by location

Urban-rural disparities in the prevalence of stunting and wasting reflect location-related inequalities across the country.[19] As Figure 1-4 shows, stunting among urban children (37.4%) is lower than in rural areas (46.8%). Similar patterns are also noted for wasting and underweight.

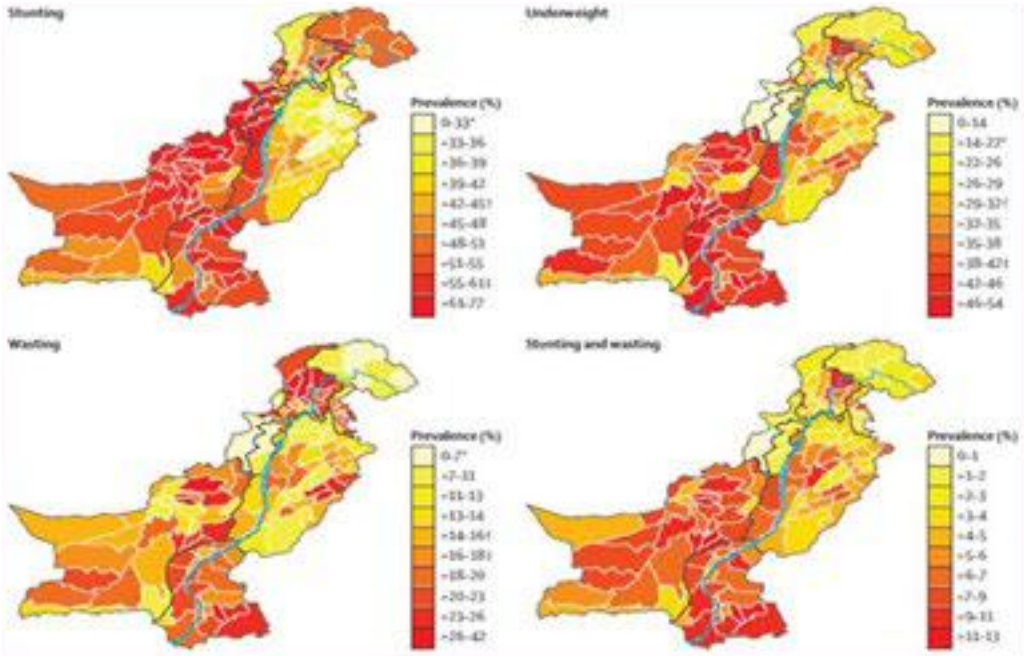
Figure 1-4: Prevalence of malnutrition (all children under five in urban and rural areas)



Source: National Nutrition Surveys 2001, 2011

Significant inter-provincial/regional disparities are also known to exist. Among Pakistan's four provinces, Balochistan and Sindh bear the highest burden of malnourished children (see Figure 1-5), partly due to varying degrees of focus and accountability for nutrition in some provinces compared to others,[20] high poverty rates and low population densities for service delivery.[21] This points to the need for sound evidence-based national nutrition policies that take into account contextualized needs and constraints.[22]

Figure 1-5: Disparities among provinces for stunting, wasting and underweight children

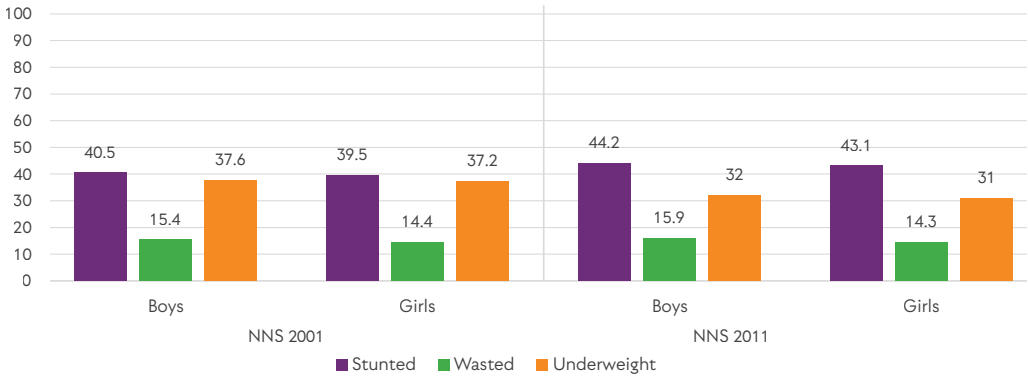


*Source: Lancet. 2013.[13] Note: Prevalence was estimated using a Bayesian spatial model with covariates. *Average prevalence of all developing countries in 2011. †Pakistan's national prevalence in 2011. ‡Highest national prevalence among all developing countries in 2011.*

1.2.1.2 Disparities by sex

NNS 2001 and 2011 both found a slightly higher prevalence of malnutrition amongst boys than girls. For example, in 2011, 43.1% of girls and 44.2% of boys were stunted, while in 2001 these rates were 39.5% and 40.5% respectively. Similar trends were observed for wasting and underweight (see Figure 1-6).

Figure 1-6: Prevalence of malnutrition among boys and girls under five years of age



Source: National Nutrition Surveys 2001, 2011

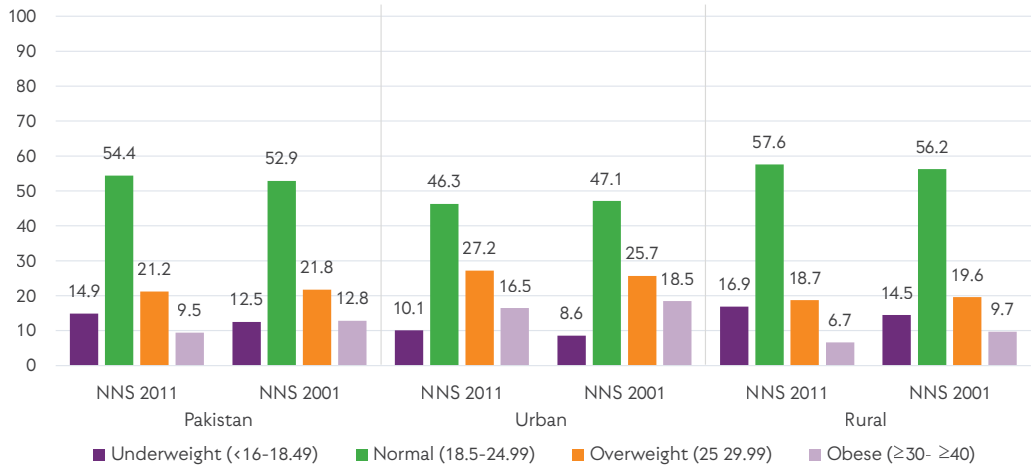
1.2.2 Malnutrition among women of reproductive age

Malnutrition has been noted to be widespread among women of reproductive age. A high proportion of these women suffer from micronutrient deficiencies and wasting, particularly within poorer communities that are food insecure. The NNS 2011 found that almost 15% of adult Pakistani mothers were thin or undernourished, with a body mass index (BMI) below 18.5 kg/m^2. This reflects an increase from 12.5% in 2001 (see Figure 1-7). Both NNS surveys also established that more rural mothers are undernourished than their urban counterparts. Maternal malnutrition

not only increases morbidity and mortality among women of childbearing age, it is a contributing factor to foetal growth retardation (where a baby is smaller than they should be during pregnancy) and stunting in childhood.

Conversely, adult obesity among non-pregnant women of reproductive age has decreased in Pakistan from 12.8% in 2001 to 9.5% in 2011, especially in provinces experiencing a nutrition transition.[a] In 2011, almost 22% of women were overweight and nearly 10% were obese, with marked differences between urban and rural areas (see Figure 1-7).

Figure 1-7: Prevalence of malnutrition among women of reproductive age by BMI



Source: National Nutrition Surveys 2001, 2011

1.2.3 Malnutrition amongst adolescents

Nutritional requirements increase during adolescence to support adequate growth and development. Thus, in settings where dietary intakes are suboptimal, micronutrient deficiencies are high. This has a major impact on the health and nutritional wellbeing of adolescents; as such, they merit particular attention alongside infants, children and women of reproductive age, and adolescent girls may well represent an opportunity to address malnutrition in adulthood. To date there is inadequate data on malnutrition amongst adolescent girls and boys in Pakistan, a gap that NNS 2018 aims to fill.

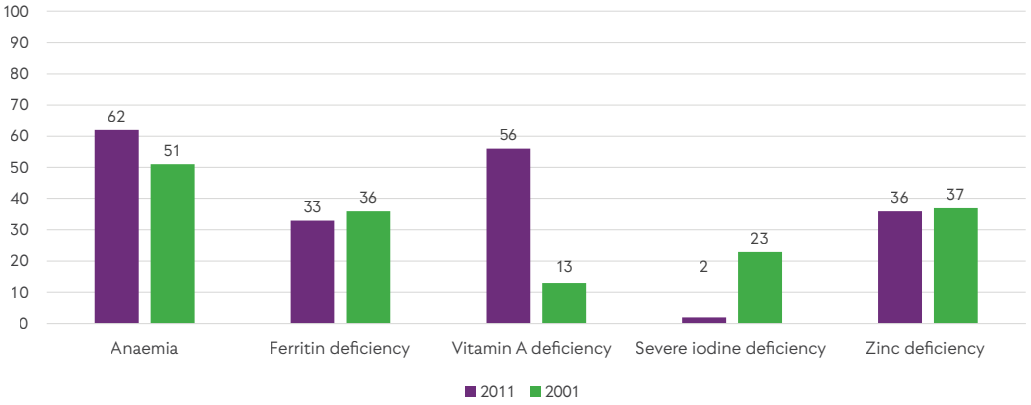
1.2.4 Micronutrient deficiencies

Deficiencies of essential micronutrients, such as iron, vitamins A, C and D, zinc and iodine, among others, are endemic among Pakistani women and children.[19] These micronutrients play a critical role in cellular and humoral immunity, cellular signalling and functioning, work capacity, reproductive health, learning and cognitive functions.[23] Figure 1-8 shows the prevalence of micronutrient deficiencies among children under five years in 2001 and 2011. As the figure demonstrates, more than half of Pakistani children are anaemic, with the rate increasing between 2001 and 2011.[24] Anaemia is associated with an elevated risk of infection, impaired physical and cognitive development and poor school performance.[24]

Vitamin A deficiency is responsible for ocular manifestations like xerophthalmia (abnormal dryness of the eye), a leading cause of preventable childhood blindness. Its earliest manifestation, in the form of night blindness, rose from 13% in 2001 to 56% in 2011. Pakistan is considered to have "severe subclinical deficiency of vitamin A"[25] with nearly half of children (Figure 1-8) and women of reproductive age (Figure 1-9) having biochemical evidence of deficiency.[26]

a *Nutrition transition* refers to the predictable shifts in diet that accompany modernization, urbanization, economic development and increased wealth.

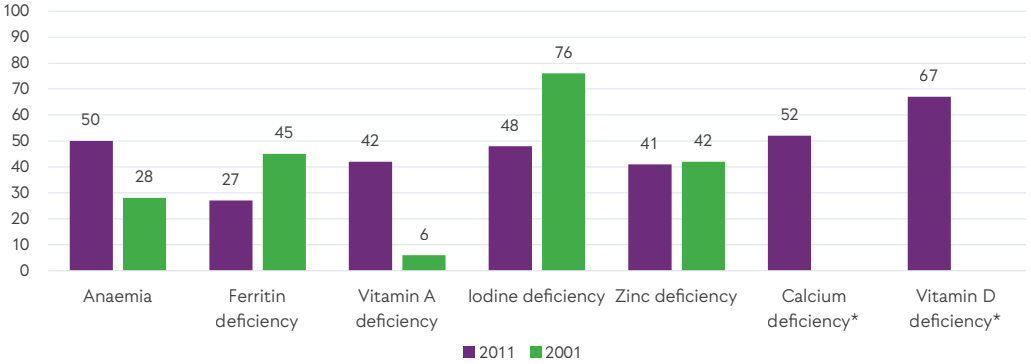
Figure 1-8: Micronutrient status of children under five



Source: National Nutrition Surveys 2001 and 2011

Nearly 40% of children and mothers were noted to be deficient in zinc, a vital micronutrient for early childhood growth and development as well as pregnancy outcomes. Zinc deficiency can lead to impaired immunity and predispose to cancer.[27] Iodine deficiency can lead to critical conditions like goitre and hypothyroidism, among others. Although the prevalence of iodine deficiency disorders across Pakistan has declined between 2001 and 2011,[28] further efforts are required to eliminate them altogether.

Figure 1-9: Micronutrient status of women of reproductive age



** NNS 2001 data is not available for comparison. Calcium levels are not adjusted for serum albumin.*
Source: National Nutrition Surveys 2001, 2011

1.2.5 Breastfeeding and complementary feeding

Under-five mortality can be reduced by more than 13% with optimal breastfeeding, and a further 6% with optimal complementary feeding.[29] Inappropriate feeding practices in early childhood are thus major obstacles to Pakistan's efforts to achieve sustainable socioeconomic development and poverty reduction.

While the World Health Organization (WHO) recommends exclusive breastfeeding for children under six months of age, the Pakistan Demographic Health Survey (PDHS) 2017–2018 found that only 48% of children under six months of age were exclusively breastfed.[30] Nevertheless, rates of exclusive breastfeeding had improved over the five years preceding the survey, rising from 38% in PDHS 2012–2013.[31-33] However, rates of early initiation of breastfeeding (providing colostrum) within one hour after birth declined significantly, from 41% in 2011 to a mere 29% in 2016.[34] According to NNS 2011, nearly 64% of mothers reported predominantly breastfeeding children aged 0–6 months, based on 24-hour dietary recall. An even higher proportion (77%) reported that they continued breastfeeding children up to 12–15 months of age. Overall, the proportion of children who continued breastfeeding at two years of age was reported to be 56%.

While 54% of children aged 6–8 months receive timely complementary foods, the quality of home-based foods tends to be poor. According to the National Complementary Feeding Assessment (NCFA) completed in 2018, minimum meal frequency[b] for children aged 6–23 months was 63% and only 22% received meals with minimum dietary diversity.[c]

1.3 Determinants of malnutrition

Despite substantial evidence at national and subnational levels of the factors associated with poor nutrition in Pakistan, the burden of malnutrition among women and children below five years of age has remained high over the past 20 years.[35, 36] The *Strategic Review of Food Security and Nutrition in Pakistan* estimates that the overall prevalence of undernourishment in the country is 18% or "moderately high" according to the Global Hunger Map threshold.[37] Deprivation of an adequate (quantity) and diverse (quality) diets leads to long-term malnutrition and micronutrient deficiencies.[38]

Malnutrition is part of a vicious cycle involving multifaceted underlying biological and social issues. Some factors are proximal, and are directly responsible for malnutrition such as inadequate diets including poor food consumption/dietary diversity, which can be further aggravated by poor care and feeding practices during disease. Other factors are distal, encompassing socioeconomic elements, and are indirectly accountable for malnutrition.[39] These include livelihood shocks and lack of access to, or knowledge of, safe water, sanitation and hygiene (WASH).[40] The high prevalence of malnutrition in Pakistan is due to a combination of proximal and distal factors on which few studies have been carried out.[41] The studies that do exist find a strong association between poor linear growth in childhood and factors such as family size, household income, the number of children, the age and sex of a child, overcrowding in households, early or multiply pregnancies, a lack of exclusive breastfeeding and inadequate complementary feeding.[42-46]

1.3.1 Proximate causes of malnutrition

Optimal feeding practices are essential for the nutritional status, growth, development and survival of infants and young children. These feeding practices, known collectively as *infant and young child feeding* (IYCF), include breastfeeding and complementary feeding. Many aspects of IYCF are far from optimal in Pakistan and represent a major cause of malnutrition.[47] Research conducted under the UNICEF-supported NCFA in 2018 found that only 15% of Pakistani girls and boys aged 6–23 months received the minimum acceptable diet[d] for effective growth and development.[48]

According to the 2016 WFP-supported study, *Minimum Cost of the Diet*, around 68% of the country's households faced food insecurity. This implies that two out of every three households experienced severe hunger due to the unaffordability and unavailability of food.[49] These statistics are further corroborated by a 2017 survey[11] using Integrated Context Analysis – a programmatic tool that supports strategic planning around safety nets, disaster risk reduction, early warning and preparedness by surveying vulnerability to food insecurity and natural hazards.[50] This revealed that 42 districts (Balochistan: 19; Sindh: 13; KP: 7; Punjab: 3) were highly vulnerable to food insecurity with high to medium risk of natural disasters. The *NCFA Cost of the Diet* study in 2018 provides further corroboration, showing that in some surveyed districts, even households in better-off wealth quintiles were unable to afford an optimal diet for children.[51]

Micronutrient interventions in areas with high levels of undernourishment – such as the provision of multiple micronutrient supplements and iron and folic acid tablets during antenatal care – reduce risks of children suffering from low birth weight, being small for their gestational age, and stillbirth.[52-54] Proper antenatal care connects mothers to the formal health system, increasing their chances of seeking a skilled birth attendant and contributing to good health through the life cycle.[55] It helps ensure mothers have adequate care and essential information on childhood feeding

b When a child eats the minimum recommended number of meals per day based on age and breastfeeding status.

c When a child, during a day, eats from more than four out of the seven food groups recommended by WHO.

d A "minimum acceptable diet" denotes that (1) breastfed children 6-23 months of age, during a day, had at least the minimum dietary diversity (i.e. who received foods from ≥ 4 food groups recommended by WHO during the previous day) and the minimum meal frequency (i.e. who received solid, semi-solid and soft foods the minimum number of times or more); or that (2) non-breastfed children 6-23 months of age, during the previous day, received at least two milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency.

practices (including breastfeeding), preventing childhood illnesses and caring for newborns.[56]

Several other aspects of reproductive health contribute to adverse nutrition outcomes, such as high fertility and parity (the number of pregnancies that reach viable gestational age), early marriage and short intervals between births.[41, 57]

1.3.2 Distal causes of malnutrition

Poverty is associated with malnutrition as well as with low levels of parental education, poor availability and quality of food within households, and lack of access to water, sanitation and adequate health care. All of these factors may lead to increased risk of diseases and contribute to low levels of nutrient intake. Finding that more than two-thirds of households across Pakistan were unable to afford a staple-adjusted nutritious diet, the WFP-supported *Cost of Diet* study in 2016 shows that economic constraints on households and food affordability are a major contributing factors to malnutrition.[51] When assessing the affordability of a nutritious diet across Pakistan's provinces, the study also found that the number of households unable to afford a nutritious diet in a province was closely correlated with the prevalence of stunting in that province.

A range of socioeconomic and cultural variables are indirectly associated with poor nutrition, including region of residence, status of women within the household, parental literacy, access to land, declining food production, soil micronutrient content, natural disaster, population growth due to poor family planning services, scarce water and sanitation facilities and political instability.[58] These issues are deeply interlinked. For instance, WASH has a direct impact on (waterborne) diseases that affect malnutrition, and poor water and sanitation can impact on the health of the gut and absorption capacity, also called enteropathy. Rampant population growth in Pakistan exerts huge pressure on limited and shrinking water resources which are further affected by discharge of untreated wastewater, the unrestricted use of insecticides and fertilizers, climate change and environmental degradation.[59] An analysis of water sources by Pakistan Council for Research in Water Resources (PCRWR) revealed a significant prevalence presence of water quality problems: bacteriological (69%), arsenic (24%), nitrate (14%) and fluoride (5%) contamination.[60]

The use of water which is contaminated by toxic chemicals or disease-causing agents (pathogens) – transmitted during bathing, washing, drinking or the consumption of food contaminated with this water – can lead to severe health problems and contribute to widespread malnutrition. According to PCRWR, an estimated 40% of all reported diseases and deaths in Pakistan may be attributed to poor water quality.[61] Every fifth person in Pakistan suffers from illnesses caused by unsafe water.[62] Moreover, contaminated water is the leading contributor to deaths among infants and children up to 10 years of age. Acute respiratory infections, fever and diarrhoea are leading causes of childhood morbidity and mortality in Pakistan, and are all underpinned by water and sanitation challenges.[60] Furthermore, environmental enteropathy[e] which is predominantly a disease of children in low-income countries, is also caused by continuous exposure to faecally contaminated food and water. Open defecation leads to environmental enteropathy which results in growth faltering and stunting. As stated previously, poor care and feeding practices during common childhood illnesses can further worsen clinical and nutritional outcomes.

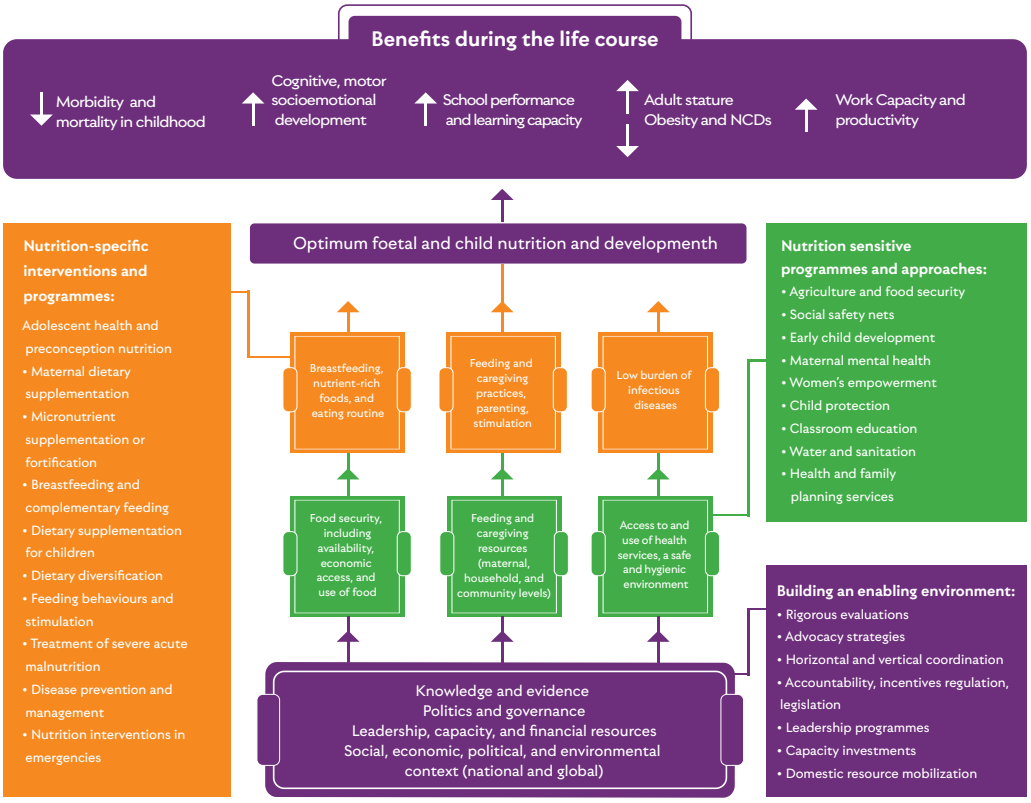
Pakistan is prone to disasters, both natural and manmade,[63] which contribute to a vicious cycle of undernourishment due to food shortages, contamination of water sources and, more broadly, a lack of effective health infrastructure hindering long-term management of malnutrition.[64]

e Environmental enteropathy/Environmental enteric dysfunction (EE/EED) is a chronic disease of the small intestine characterized by gut inflammation and barrier disruption, malabsorption and systemic inflammation, in the absence of diarrhoea.

1.3.3 Conceptual framework for determinants of optimal nutrition

There is an urgent need to address challenges related to malnutrition in Pakistan. However, recognizing the complexity and multidimensional nature of the causes of malnutrition it is essential to adopt an evidence-based multisectoral approach to planning nutrition-specific and nutrition-sensitive interventions that acknowledge and understand the determinants that lie beyond the health sector. As such, the design of NNS 2018 was guided by the *Lancet* conceptual framework illustrating the path towards optimum foetal and child growth and development,[65] as shown in Figure 1-10. This framework outlines the dietary, behavioural and health determinants of optimum nutrition, growth and development. It highlights how these are affected by underlying food security, caregiving resources and environmental conditions which, in turn, are shaped by economic and social conditions, national and global contexts, capacity, resources and governance.[65] The intent is to enhance growth and development through nutrition-specific and nutrition-sensitive interventions that address both the immediate and the underlying causes of malnutrition. The framework also showcases how an enabling environment can be built to support such interventions and programmes. The evidence base provided by NNS 2018 is thus intended to underpin this enabling environment.

Figure 1-10: Lancet framework for actions to achieve optimum foetal and child nutrition and development



Source: Lancet. 2013. Maternal and Child Nutrition Series. [66]

1.4 Nutrition interventions, strategies and policies

Nutrition has historically been accorded a low priority in Pakistan's national health and development agendas. Often, parallel activities are undertaken in both health and food security sectors. Although nutrition was institutionalized in the Planning Commission in 1973, there was minimal progress for many years.[67] Nutrition was raised as a health issue during the 1990s, with a focus on promoting breastfeeding through the Baby Friendly Hospitals Initiative supported by a network of paediatricians and international non-governmental organizations.[68] By the early 2000s, activities expanded to include salt iodization, micronutrient implementation studies and Community-based Management of Acute Malnutrition. Funding for such activities is typically small-scale, short-

term and mainly routed through United Nations agencies and international non-governmental organizations.

In 2005, a Nutrition Wing was established within the Federal Ministry of Health – now the Ministry of National Health Services, Regulation and Coordination (MoNHSR&C) – to support micronutrient supplementation projects.[67] In the same year, a Universal Salt Iodization Programme was revitalized and, as of 2018, is being implemented in 110 districts covering 174 million people.

Political support for hunger alleviation led to the establishment of a National Food Security Task Force in 2008. In 2012, this was followed by creation of the National Ministry of Food Security and a National Zero Hunger Plan.[69] The following year, Pakistan joined the global Scaling Up Nutrition (SUN) movement and established a national SUN Secretariat as a multi-stakeholder platform to combat malnutrition.[70] Similar units were established in the provinces and areas. In February 2016, Parliament hosted the first-ever global forum on the SDGs and nutrition, at which Pakistan's malnutrition situation was declared an "emergency". It is debatable as to how much impact these diverse activities have had on actual nutrition situation on the ground, an issue that the NNS aims to tackle.

Notwithstanding the above, nutrition is a core part of Pakistan's national development plan and central strategic planning document, Vision 2025.[71] The National IYCF Practices Strategy and related guidelines have been formulated and are bolstered by the formation of a National IYCF Technical Advisory Group with representation from all provinces and administrative areas. The landmark NCFA studies completed in 2018 with UNICEF support are providing a valuable evidence on complementary feeding practices base for advocacy and communication. The Pakistan Integrated Nutrition Strategy, policy guidance notes, inter-sectoral nutrition strategies and the Pakistan Multisectoral Nutrition Strategy have also been formulated. These are used as a strategic framework to guide the provinces in positioning nutrition within their respective development agendas.[72] The MoNHSR&C has revitalized the National Fortification Alliance to overcome micronutrient deficiencies, while in Punjab the Food Fortification Programme is partnering with the private sector to fortify wheat and edible oils. The MoNHSR&C has also created a taskforce to look into the adolescent nutrition agenda and devise a framework to address nutritional challenges among adolescents. In addition, the Government is revising the Food Composition Table and Desirable Dietary Patterns for Pakistan with the support of the Food and Agriculture Organization (FAO).

1.5 The scenario after devolution

Decentralized power sharing is widely believed to make decision-makers and service providers better informed and more accountable to the populations they serve.[73] However, decentralization may also lead to a lack of capacity and coordination at subnational levels to exercise responsibility for public services. Pakistan has historically had a strong federal structure until, in 2010, the 18th Amendment to the Constitution devolved the balance of authority for health and other social sectors to the provinces, entrusting them with full policy, fiscal and operational responsibility for these vital sectors.[74] This has provided provincial governments the opportunity to consider and employ best practices in strengthening health systems at subnational level. Nevertheless, devolution has also introduced specific coordinated implementation challenges.

A positive development has been the definite, if variable, drive to formulate integrated provincial health and nutrition strategies. As the provinces move towards this integrated, state-led strategic framework, the nutrition agenda has entered the policy spotlight.[67] Malnutrition prevention requires multisectoral action, with robust coordination across ministries and departments, community engagement, and close linkages with social safety nets and poverty alleviation programmes.

To this end, intersectoral nutrition-related policy guidance notes and strategies were developed by all four provinces in 2013[75] and nutrition programmes were integrated into the health system through integrated provincial Planning Commission (PC-1) forms.[f] SUN Units now exist within

f Planning Commission 1 (PC-1) forms are government project planning documents required for the initiation of projects in the social sector

provincial Planning and Development Departments (P&DD), with technical, human and secretariat support from other stakeholders.[76] The Pakistan Multisectoral Nutrition Strategy, referred to in the previous section, was formulated through a consultative process that utilized provincial policy guidance notes and inter-sectoral nutrition strategies under the national development plan, Vision 2025.[77] All provincial governments developed and endorsed the strategy and, at time of writing, are at various stages of developing integrated PC-1s.

At present, three provincial governments are in the process of devising and funding stunting reduction programmes within the broader sectors of health, WASH, food security, agriculture and education.[74] Momentum has grown in the health sector, with nutrition projects being implemented across all four provinces, funded by Multi-Donor Trust Funds managed by the World Bank and partially co-financed by provincial governments. National and provincial fortification alliances have become functional.

Punjab has advanced significantly in integrating nutrition within health, with substantial organization and restructuring, support from state actors, and strong administrative controls over implementation. However, action on nutrition remains confined to the health sector. In KP, the Health Department has been reorganized around nutrition-related issues with strategies on nutrition introduced as an integrated, essential component. Sindh devised an Accelerated Action Plan for Reduction of Stunting and Malnutrition and has appointed a taskforce to carry it forward.[77] The Balochistan Nutrition Programme for Mothers and Children has been included in the province's PC-1.

Notwithstanding such progress, the provinces continue to face challenges related to nutrition. These include low levels of state ownership, very limited financial assistance from the Federal Government, the complexity of policy frameworks following devolution, and a lack of federal-level policies.[76] While both sustainability and reform are high on provincial development agendas, nutrition has yet to emerge as a cross-sectoral agenda. Moreover, implementation of nutrition-sensitive and nutrition-specific interventions is hampered by access constraints in remote or insecure districts. These challenges are compounded by natural disasters, poverty, patriarchal social structures and gender-based discrimination/ violence and suboptimal strategies on health and WASH. Weak cross-sectoral coalitions, low levels of accountability within districts and a lack of harmonization with national policy development are also likely to undermine nutrition outcomes in Pakistan.

1.6 Rationale for the National Nutrition Survey 2018

Malnutrition is a critical, endemic public health issue in Pakistan. It is partly responsible for the country's exceptionally high rates of morbidity and mortality, and also poses a significant financial burden in both the short and long term. According to a report by the Pakistan SUN Secretariat and WFP, the consequences of malnutrition cost the country US$ 7.6 billion annually, or 3% of GDP, as a result of lost human capital, healthcare expenses and lower levels of productivity throughout the lifecycle. This is in addition to incalculable losses in terms of wellbeing and citizens' basic rights. Simply put, combating malnutrition in all its forms is one of the greatest challenges facing Pakistan.

In order to effectively address this challenge through rational and evidence-based nutrition-sensitive and nutrition-specific interventions, it is essential to have contextual, high quality and up-to-date information on the extent of the problem, including the frequency and distribution of the determinants of malnutrition. For this reason, there is a pressing need for nuanced and up-to-date subnational data on nutrition indicators. Such context-specific data will help to evaluate the impacts of existing provincial nutrition initiatives and set benchmarks for progress on achieving the SDGs, especially SDG-2. Despite the importance of such data, however, a nationwide nutrition survey has not been undertaken since NNS 2011, with respective granularity needed for action at sub-provincial level.

The Government of Pakistan has taken an essential step towards combating malnutrition by conducting NNS 2018 to generate robust estimates of nutrition indicators, offer a clear picture of

development, production and infrastructure sectors. Subsequent forms (PC-2, PC-3 etc) are used for feasibility studies, implementation, project completion and performance reviews.

nutrition status and offer a better understanding of the nutrition scenario following devolution. Based on the findings of NNS 2018, federal and provincial governments can prioritize and plan future nutritional interventions. Its data will enable them to identify key drivers of malnutrition, information that is vital for facilitating evidence-based decision-making and the implementation of food and nutrition interventions at the national and sub-national levels. The survey will also serve as a baseline for evaluating multisectoral interventions (where the current evidence base is not especially strong) and their potential impacts on nutrition. This survey forms part of an ongoing effort to develop the capacity of governments and other partners on nutrition assessment, programming, monitoring and establishing useful institutional linkages.

Critically, NNS 2018 uses a much larger sample size than NNS 2011, and the results are thus representative at district level, rather than just provincial level. In addition, this survey includes adolescent girls and boys (aged 10–19 years) as a separate age group due to their identified vulnerability to the consequences of malnutrition, akin to that of the other target groups.

For NNS 2018, data was also concurrently collected on both nutrition-specific and nutrition-sensitive indicators, unlike past surveys where such information was generally triangulated from limited studies. Nutrition-sensitive indicators include issues related to food security, hand washing practices and salt iodization testing through rapid test kits in the field. Water quality testing has been included due to the severe concerns about water quality in Pakistan. Questions on disability have also been included to create a more equity-focused understanding of nutrition needs of special populations. These questions on disability are based on six core functional domains: seeing, hearing, communication, cognition, mobility and self-care, and will be reported separately.

1.7 Aims and objectives

The aim of NNS 2018 was to undertake a field survey and generate district-specific nutrition information related to malnutrition (both undernutrition and over nutrition) and micronutrient deficiencies among women, children (by gender) and adolescents in Pakistan. It sought to generate robust estimates of nutrition indicators, paint a clearer picture of nutrition statuses across the country, and provide a better understanding of the nutrition landscape since 2010 when significant powers were devolved to subnational administrations through the 18th Amendment to the Constitution.

The findings of this survey are aimed to provide up-to-date insights into the current burden of malnutrition across the country, including amongst groups at risk of becoming malnourished. These insights could aid in the prioritization of nutrition interventions and their implementation in Pakistan, providing the information needed to inform evidence-based decision-making, and to design health and nutrition programmes that meet the real needs of communities. The findings of this survey could also inform advocacy towards securing and sustaining political and financial commitments for nutrition programmes.

1.7.1 Nutritional status

- To determine the prevalence of severe and moderate stunting among children aged 0–59 months.
- To determine the prevalence of severe and moderate underweight among children aged 0–59 months.
- To determine the prevalence of moderate and severe wasting and oedematous[g] malnutrition among children aged 0–59 months of age.
- To determine the BMI and the prevalence of low mid-upper arm circumference (MUAC) measurements among women of reproductive age (15–49 years of age).
- To determine the BMI and prevalence of low MUAC among adolescent girls and boys (10–19 years).

g Oedema is a swelling caused by the accumulation of fluid in the body tissues. According to WHO, children with severe acute malnutrition who have severe oedema have an increased risk of mortality compared to children with severe acute malnutrition but with lesser degrees of oedema

1.7.2 Micronutrient status

- To assess the prevalence of anaemia and iron deficiency and deficiencies of iron, vitamin A, zinc, folic acid, vitamin B12, vitamin D and calcium among women of reproductive age (15–49 years of age)
- To assess the prevalence of anaemia, iron deficiency anaemia and micronutrient deficiencies including, iron vitamin A, zinc, vitamin B12, folic acid, vitamin D and calcium among children aged 6–59 months.
- To estimate the serum C-reactive protein (CRP)[h] and albumin[i] concentrations for the adjustment of serum ferritin and calcium values respectively.
- To assess the excretion of iodine in urine samples of women of reproductive age (15–49 years of age).
- To assess the excretion of iodine in urine samples of children aged 6–12 years.

1.7.3 Infant and young child feeding (IYCF)

- To assess IYCF practices for children aged 0–23 months, including breastfeeding and complementary feeding.

1.7.4 Food intake and security

- To assess the dietary intake among children (0–59 months of age) and women of reproductive age (15–49 years of age) based on representative samples using validated food frequency and semi-quantitative food intake recall tools.
- To assess the status of household food insecurity based on access, availability and utilization of food and its relationship with household nutrition status.

1.7.5 Water, sanitation and hygiene (WASH)

- To assess WASH indicators including access and use of improved water and hand washing practices at household level.
- To test household water quality as per PCRWR[j] standards for microbiological contamination.
- To test household water quality as per PCRWR standards for pH, hardness, TDS, arsenic, iron, fluoride and nitrate.

1.7.6 Common infectious disease and access to health services

- To determine the prevalence of diarrhoea, febrile episodes and acute respiratory infections among children aged 0–59 months of age during the past two weeks through validated recall tools.
- To determine health-seeking patterns for diarrhoea and respiratory infections, especially the use of antibiotics, oral rehydration therapy and zinc treatment for diarrhoea.
- To determine the proportion of pregnant women seeking antenatal care or postnatal care visits and receiving adequate iron and folic acid supplementation and/or micronutrient tablets during pregnancy.

1.7.7 Programmatic coverage

- To estimate the proportion of households with access to iodized salt.

h During an inflammatory process certain acute phase protein increase in the body including ferritin, hampering the detection of depleted iron stores. To confirm the presence of an acute phase response which would lead to elevated ferritin levels, CRP, a test marker for inflammation in the body, is measured concurrently with ferritin.

i Calcium in serum is bound to proteins, principally albumin. As a result, the total serum calcium concentration in patients with low or high serum albumin levels may not accurately reflect the physiologically important ionized (or free) calcium concentration. Therefore, albumin is measured to adjust for calcium.

j The PCRWR is a research and development organization under the administrative control of the Ministry of Science and Technology that acts as the national research organization in applied and basic research related to the water sector. The PCRWR National Water Quality Laboratory in Islamabad is an ISO-17025 accredited laboratory.

- To estimate the proportion of children aged 6–59 months who received vitamin A supplementation in the past six months.
- To estimate the proportion of children aged 12–59 months who received deworming tablets or suspension in the past six months.
- To estimate the proportion of families benefiting from safety nets including Benazir Income Support Programme (BISP), Bait-ul-Maal and Zakat, among others.

1.7.8 Access to and utilization of fortified foods

- To determine the quantitative and qualitative level of iodine concentration in salt collected from selected households.

1.7.9 Socioeconomic status variables

- To collect data on sociodemographic variables permitting classification of households into various income/asset-based strata.

1.7.10 Qualitative data

- To explore the attitudes, challenges, barriers and boosters around breastfeeding practices (by gender of baby) among mothers and key influencers.
- To explore the attitudes, challenges, barriers and boosters around adolescent nutrition among adolescents (girls and boys) and key influencers.
- To explore the challenges, barriers and boosters around breastfeeding among frontline health care workers.
- To determine the extent of nutrition programmes and interventions in provinces and administrative areas through interviews with key informants.

1.8 Main collaborators

The NNS 2018 was planned and implemented using a collaborative approach with the specific aim of supporting and building provincial capacity and engaging local teams with contextual knowledge of culture and geography. It was designed by the Aga Khan University (AKU), Pakistan, in close consultation with MoNHSR&C and UNICEF Pakistan. The survey field activities were implemented by AKU with assistance from the implementing partners listed in Table 1-1.

All collaborators were closely involved in oversight of survey activities from inception until the end of data collection, with responsibility for overseeing the design, instrument finalization and implementation activities. All concerned national and international organizations working in Pakistan were represented and provided inputs during the survey process through membership of various committees, including the National Steering Committee, National Technical Committee, National Technical Sub-Committee and Provincial and Regional Technical Committees. Routine meetings were conducted between representatives of partner organizations (MoNHSR&C, UNICEF, Ministry of Climate Change, AKU, United Kingdom Department for International Development (DFID), WHO, WFP, the Planning Commission and the Pakistan Bureau of Statistics (PBS) to discuss and resolve day-to-day issues and concerns raised by field teams. The progress and daily planning of survey activities were also discussed to ensure timely implementation and to maintain quality.

Table 1-1: Collaborators and their roles in NNS 2018

Collaborators	*Role*
MoNHSR&C	Overall supervision and stewardship
Provincial & Regional Department of Health	For provincial support in survey execution and monitoring
Aga Khan University	Overall implementation and technical lead
UNICEF	Technical support and contract management
DFID	Funding support
PBS	Technical partner in sampling design and sample size
PCRWR	Technical partner in water sample analysis
Nutrition International (NI)	Technical inputs and participation in training for salt iodization component
Khyber Medical University, Peshawar	Implementing partner in KP
Contech International Punjab	Implementing partner in Punjab and AJK
Health & Nutrition Development Society (HANDS)	Implementing partner in Balochistan
Medical Emergency Resilience Foundation (MERF)	Implementing partner in KP and Balochistan
Direct Focus Community Aid (DFCA)	Implementing partner in KP

Quantitative survey

Methodology

NNS 2018 employed a cross-sectional survey design at household level. The quantitative data were district-representative and stratified by urban and rural domains. Surveys were administered to women of reproductive age on reproductive health, child health and nutrition. Household indicators were also collected. Moreover, anthropometric measurements and biochemical samples (urine and blood) were taken.

2. Methodology

2.1 Survey design

NNS 2018 employed a cross-sectional survey design at the household level. It used a mixed-method data collection methodology with both quantitative and qualitative approaches. The quantitative data are district-representative whereas the qualitative data are regional, based on the fact that population diversity in Pakistan is more apparent along cultural differences than religious or racial lines.

2.2 Survey methodology

2.2.1 Approach

The survey was conducted in all provinces and regions of Pakistan including all districts of Punjab, Sindh, KP (including KP-NMD) and Balochistan provinces, as well as the administrative areas AJK, GB and ICT. Through this survey, data on proposed indicators especially those related to malnutrition, micronutrient deficiencies, food intake, dietary diversity, food insecurity and water quality at household level were collected.

2.2.2 Survey population

The target population for the quantitative component of NNS 2018 is as follows:

- Women of reproductive age aged 15–49 years;
- Girls and boys aged 0–59 months;
- Girls and boys aged 6–12 years; and
- Adolescent girls and boys aged 10–19 years

2.2.3 Universe

The universe of the survey consists of household-based population in all urban and rural areas of four provinces of Pakistan, FATA (now KP-NMD), ICT, AJK and GB. At the time of the survey FATA/KP-NMD had not yet been merged with Khyber Pakhtunkhwa, and was therefore, treated as an independent identity/region. The cantonment areas, being restricted areas and with a diverse population, were excluded from the scope of the survey.

2.2.4 Sampling frame

The Pakistan Bureau of Statistics (PBS) used a sampling frame prepared through the Population and Housing Census 2017. PBS has divided the whole country into small compact areas or enumeration blocks, each comprising 200–250 houses on average, with digitized maps containing prominent landmarks within the boundaries of these blocks. PBS uses these blocks as a sampling frame for drawing representative samples for its surveys/studies.

Urban areas

Each city/town is divided into enumeration blocks, each of which consists of an average of 200–250 houses with well-defined boundaries recorded in prescribed forms, with maps and physical features within the blocks.

Rural areas

The Rural Areas Frame consists of enumeration blocks which can be either a whole village or part of a village.

Enumeration blocks are also termed Primary Sampling Units (PSUs). Each urban or rural PSU has well-defined geographical boundaries described on a specified form along with map. The total number of enumeration blocks/PSUs and households recorded during the Population and

Housing Census 2017 are given below:

Table 2-1: Sampling frame

Province/ region	Number of blocks			Number of households		
	Rural	Urban	Total	Rural	Urban	Total
KP	18,356	3,221	21,577	3,269,636	741,014	4,010,650
Punjab	60,048	26,958	87,006	10,714,102	6,389,733	17,103,835
Sindh	17,223	21,916	39,139	4,185,828	4,399,782	8,585,610
Balochistan	8,386	1,826	10,212	1,301,212	474,725	1,775,937
FATA (now KP-NMD)	4,184	43	4,227	542,255	16,124	558,379
ICT	787	727	1,514	165,246	170,936	336,182
Total	**108,984**	**54,691**	**163,675**	**20,178,279**	**12,192,314**	**32,370,593**
AJK*	3,496	526	4,022	524,067	116,098	640,165
GB*	1,098	148	1,246	161,299	35,127	196,426
Total	**4,594**	**674**	**5,268**	**685,366**	**151,225**	**836,591**
Grand Total	**113,578**	**55,365**	**168,943**	**20,863,645**	**12,343,539**	**33,207,184**

**According to the Constitution of Pakistan, Pakistan constitutes four provinces (including KP-NMD), and ICT, whereas GB and AJK are independent territories. Therefore, whenever estimates or results of Pakistan are prepared, GB and AJK are never covered. These territories are treated separately, and their results/ reports are published separately. Similarly, Pakistan estimates will not cover AJK and GB.*

2.2.5 Stratification plan

Each administrative district in the four provinces, AJK, GB, and each agency in FATA (KP-NMD) has been treated as independent and explicit stratum.

Urban and rural parts of administrative districts have been considered urban and rural domains respectively according to the notifications issued by the respective provincial local government departments.

2.2.6 Sample size estimation

District-level representative sample size was computed using the prevalence of indicators related to undernutrition and micronutrients deficiencies among under-five children, married women of reproductive age and adolescent girls and boys. The final sample size was calculated using the prevalence of stunting in children under five years and used the following formula for computation of sample size:

$$n = \frac{t^2(r)(1-r)(Deff)}{(dr)^2(Pb)(h)(RR)}$$

Table 2-2: Description of formula

Component	Value	Source
t= Level of significance = 95%	1.96	
r= Prevalence indicator or variable under reference = stunting (moderate) 0-59 months old children,		Value taken from NNS 2011; PDHS 2012–2013
Deff = Design Effect	2	
RR= Response Rate	90%	
dr= margin of error to be tolerated at 95% level of confidence, defined as relative margin of error	15%	
Pb is the proportion of total population upon which the indicator, r is based	(value for each district computed)	PSLM 2014–2015 (district report)
h= Average household size	(value for each district computed)	Value taken from Census 2017

The most recent district specific prevalence of stunting in children under five years was used along with above given indicators, population at risk "Pb" and average household size "h" were taken at district level from the latest available data sources to estimate sample at household level, and district-specific sample size. NNS 2011, PDHS 2012–2013, Pakistan Social and Living Standards Measurement Survey (PSLM) 2014–2015 and the Population and Housing Census 2017 provisional results were considered for estimation of the proposed sample. Response rate was assumed at 90% whereas margin of error was taken as 15% based on PBS practices. Given the non-replacement strategy i.e. refusal households were not be supposed to be replaced, the overall sample was inflated to adjust for a potential 10% refusal rate and 15% margin of error. Sample size hence obtained was considered representative at overall district level with 15% margin of error and 95% confidence intervals.

Table 2-3: Source of stunting prevalence data for each district

Province/region	Value of prevalence indicator
KP	PDHS 2012–2013
Punjab	MICS Punjab 2014
Sindh	MICS Sindh 2014
Balochistan	Proxy value of 50%
FATA (KP-NMD)	Proxy value for KP taken from PDHS 2012–2013
AJK	MICS AJK 2007–2008
GB	MICS GB 2016–2017

2.2.7 Allocation of sample size

Keeping in view the variability for the characteristics for which estimates are to be prepared, population distribution and main objectives of the survey, an estimated sample of 5,780 PSUs (enumeration blocks) comprising of 115,600 households (HHs) selected from the sampling frame covering all 156 districts was considered appropriate. The detailed district-wise sample size allocation is explained in Annex-A.

Table 2-4: Province/region-wise sample size allocation

Province/region	Sample PSUs			Sample HHs		
	Rural	Urban	Total	Rural	Urban	Total
KP	646	161	807	12,920	3,220	16,140
Punjab	1,365	675	2,040	27,300	13,500	40,800
Sindh	439	506	945	8,780	10,120	18,900
Balochistan	726	203	929	14,520	4,060	18,580
FATA (KP-NMD)	227	13	240	4,540	260	4,800
ICT	35	33	68	700	660	1,360
Total	**3,438**	**1,591**	**5,029**	**68,760**	**31,820**	**100,580**
AJK	344	79	423	6,880	1,580	8,460
GB	287	41	328	5,740	820	6,560
Total	**631**	**120**	**751**	**12,620**	**2,400**	**15,020**
GRAND TOTAL	**4,069**	**1,711**	**5,780**	**81,380**	**34,220**	**115,600**

A total of 5,780 PSUs (enumeration blocks) were selected from the PBS sampling frame covering all 156 districts (see table below). A final sample size of 115,600 household secondary sampling units (SSUs) comprising 5,780 PSUs was considered appropriate for reliable estimates of key population parameters with district, provincial and national specificity within acceptable reliability limits.

Table 2-5: Estimated sample size

Province/ region	Stunting in children (0–59 months)		Number of interviews		
	Sample HHs	Sample PSUs	Children (0–59 months)	Adolescents (10–19 years)	Women of reproductive age (15–49 years)
Balochistan	18,580	929	14,468	25,501	22,290
KP	20,940	1,047	15,542	31,432	29,488
Punjab and ICT	42,160	2,108	26,277	48,030	52,791
Sindh	18,900	945	11,456	21,155	21,282
AJK	8,460	423	4,097	9,293	10,309
GB	6,560	328	4,901	10,436	9,165
Total	**115,600**	**5,780**	**76,742**	**145,847**	**145,324**

For biochemical assessment, a sample of 30,000 blood samples for women of reproductive age and 30,000 samples for children (with equal distribution of girls and boys) was estimated based on the prevalence of anaemia in NNS 2011. For water quality (microbiological contamination) a sample of 30,000 was estimated based on prevalence of total coliform and E.coli contamination of water reported by PCRWR. Equal distribution of 30,000 samples of blood and water across the 5,780 PSUs/ clusters gave a sample size of five households per cluster. Therefore, blood samples of five women of reproductive age and five children under five years of age were taken from each cluster (one per household). The five households were randomly selected via computer assisted randomization from each enumeration block, with the devices used for data collection. Similarly, for urine specimen collection, the total sample size was 5,780; therefore, one sample per cluster was collected. The provisional distribution of sample sizes for survey, biochemical analysis and water testing is shown in Table 2-6.

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Table 2-6: Distribution of sample size

Province/ region	PSUs	HHs	Blood samples		Urine samples		Water samples	
			WRA	Children	WRA	Children	Microbiological contamination	Chemical contamination
Balochistan	794	15,880	7,297	7,297	745	745	7,297	1,490
KP	807	16,140	5,096	5,096	807	807	5,096	1,614
KP-NMD	377	7,540	2,070	2,070	377	377	2,070	754
Punjab	2,051	41,020	7,704	7,704	2,051	2,051	7,704	4,102
Sindh	945	18,900	5,656	5,656	945	945	5,656	1,890
ICT	68	1,360	340	340	68	68	340	136
GB	328	6,560	2,640	2,640	190	190	2,640	380
AJK	410	8,200	1,025	1,025	597	597	1,025	1,194
Total	**5,780**	**115,600**	**31,828**	**31,828**	**5,780**	**5,780**	**31,828**	**11,560**
Quota per PSU		**20**	**5**	**5**	**1**	**1**	**5**	**2**

**HH: household; PSU: primary sampling unit; WRA: women of reproductive age.*

2.2.8 Replacement and dropping of PSUs

Despite numerous efforts, we had to exclude several sample areas comprising of districts/agencies i.e. Mansehra, Abbottabad, Haripur, Diamir, North Waziristan Agency, South Waziristan Agency and 17 PSUs of Sahiwal district from the scope of the survey as the respective provincial governments and security agencies did not issue no-objection certifications.

Table 2-7: Dropped areas

Province/ region	District/ agency	PSUs
KP-NMD	North Waziristan	30
	South Waziristan	30
GB	Baltistan	1
	Diamir	40
	Kharmang	2
	Shigar	1
KP	Abbottabad	42
	Batagram	1
	Chitral	3
	Haripur	34
	Mansehra	34
	Mardan	1
Punjab	Sahiwal	17
Total		**236**

Sample size remained representative at district level. After dropping the 236 PSUs listed above, the remaining 5,544 PSUs were as shown in Table 2-8.

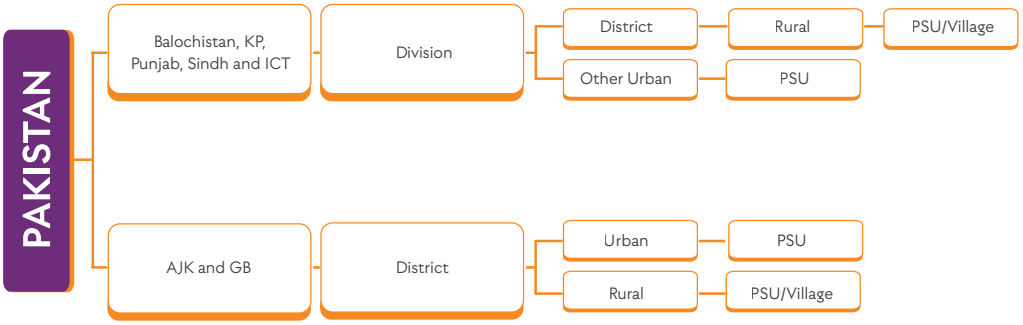
Table 2-8: Details of the PSUs

Province/ region	Rural	Urban	Total
KP	551	141	692
Punjab	1357	666	2023
Sindh	439	506	945
Balochistan	726	203	929
KP-NMD	170	10	180
ICT	34	34	68
Total	**3277**	**1560**	**4837**
AJK	344	79	423
GB	247	37	284
Total	**591**	**116**	**707**
GRAND TOTAL	**3868**	**1676**	**5544**

2.2.9 Sample design

A two-stage stratified sample design was adopted for this survey. The enumeration blocks provided by PBS were treated as primary sampling units (PSUs) and households in enumeration blocks as secondary sampling units (SSUs). In all four provinces, the populations of large cities formed an administrative division; the remaining urban population was grouped together to form a stratum. In rural areas, the rural parts of administrative districts were considered rural domains. In the two administrative areas, AJK and GB, rural and urban strata were divided into PSUs.

Figure 2-1: Stratification plan



** AJK: Azad Jammu and Kashmir; GB: Gilgit-Baltistan; ICT: Islamabad Capital Territory; KP: Khyber Pakhtunkhwa; PSU: primary sampling unit; WRA: women of reproductive age.*

2.2.9.1 Selection of PSUs

PBS was entrusted with the task of developing a sampling frame and to provide enumeration blocks to ensure inclusion of all parts of the country and to maximize coverage. PBS selected the required number of PSUs/ enumeration blocks from each province and division considering their rural and urban proportions, and provided a list of enumeration blocks with the necessary identification information (name/code and other relevant details) and boundary demarcation maps. Sample PSUs from each stratum have been selected with probability proportionate to size method where total number of households within a PSU have been considered as measure of size for all sample PSUs.

2.2.9.2 *Selection of SSUs*

To create accurate household lists, fresh line-listings were undertaken in respect of each sampled PSU by AKU field staff. Line-listers began by visiting the regional PBS office to acquire maps and locations and identify enumeration blocks. They then visited each selected cluster and prepared their own maps. Line-listings of households and structures in the blocks were undertaken before the survey team visited for data collection. Twenty households were selected from rural and urban PSUs adopting systematic random sampling technique with a random start.

In each sampled households, all women of reproductive age, all children under five years of age and under one year of age were enumerated. Electronic devices/tablets were used for line-listings. After completing household listings in each cluster, data were uploaded and received at AKU's Data Management Unit.

2.2.9.3 *Sampling weights*

Two-stage sampling weights were computed for the survey based on selection probabilities, separately for each sampling stage and for each cluster (i.e. enumeration block), briefly explained below:

P_{1hi}: first stage sampling probability of the jth cluster in hth stratum

P_{2hi}: second stage sampling probability within jth cluster (household's selection)

Overall probability of selection of a household in jth cluster of hth stratum is

$$P_{hi} = P_{1hi} * P_{2hi}$$

First stage selection probability computed using sampling frame information as explained below;

n_h : Number of clusters selected in hth stratum,

N_{hi} : Total number of households in a cluster as per sampling frame

N^*_{hi} : Total number of households in hth stratum as per sampling frame

The probability of selection of jth cluster in the survey is calculated as

$$P_{1hi} = n_h * N_{hi} / N^*_{hi}$$

P_{2hi}: Second stage selection probability computed using field information provided by AKU, Karachi as explained below:

M_{hi} : The number of households listed during households listing operation in jth cluster and hth stratum

m_{hi} : Number of households selected within the survey (here 20 households)

$$P_{2hi} = m_{hi} / M_{hi}$$

Two stage sampling weight (wt) is the reciprocal of the overall selection probability by which a household is selected in the sample,

$$w_t = 1/P_{hi}$$

or

$$w_t = \frac{1}{P_{1hi} * P_{2hi}}$$

Adjustment of non- response households:

Household non-response adjustment factor is computed as follows:

R_{hh} = Total number of households completed / Total number of households found

Two stage sampling weights with households non response adjustment is

$$W_{t\,hh} = W_t / R_{hh}$$

i. Calculation of sampling weights for women of reproductive age (WRA):

$$W_{t\,WRA} = W_{t\,hh} / R_{WRA}$$

Where, R_{WRA} = Total number of women of 15-49 years of age completed / Total number women of 15-49 years of age found

ii. Calculation of sampling weights for children under five years of age ($W_{t\,U5}$):

$$W_{t\,U5} = W_{t\,hh} / R_{U5}$$

Where, R_{U5} = Total number of children under five years of age completed / Total number of children under five years of age found

iii. Calculation of sampling weights for children under one year of age ($W_{t\,U1}$):

$$W_{t\,U1} = W_{t\,hh} / R_{U1}$$

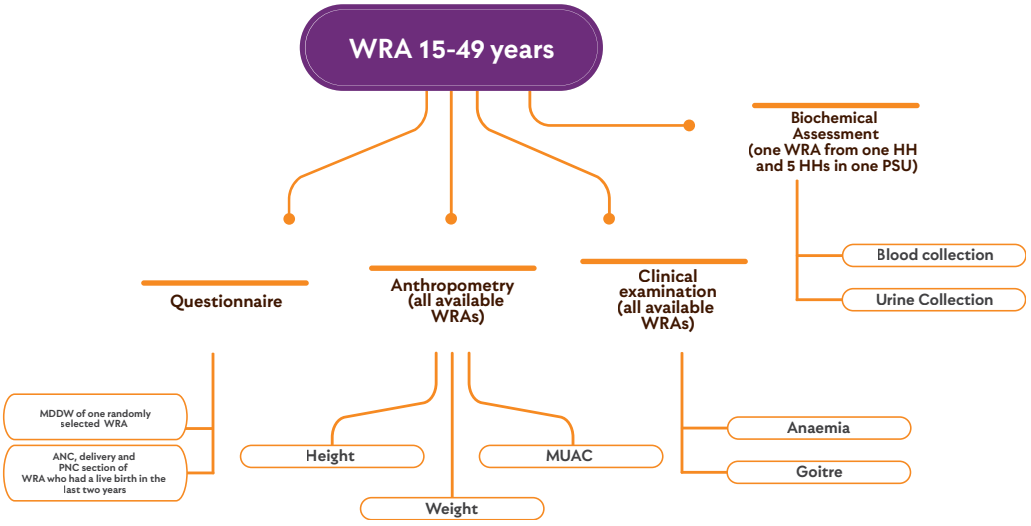
Where, R_{U1} = Total number of children under one year of age completed / Total number children under one year of age found

2.2.10 Selection of respondents and subjects

2.2.10.1 Women of reproductive age

All women of reproductive age in each selected household who were available at the time of the visit were interviewed. If no such woman was available, information was collected from any adult male member of the household. However, in this case only information on household members and socioeconomic status was collected and the remaining modules were skipped. The following information was collected from women of reproductive age who were randomly selected via computer adaptive randomization:

Figure 2-2: Information collected from all women of reproductive age



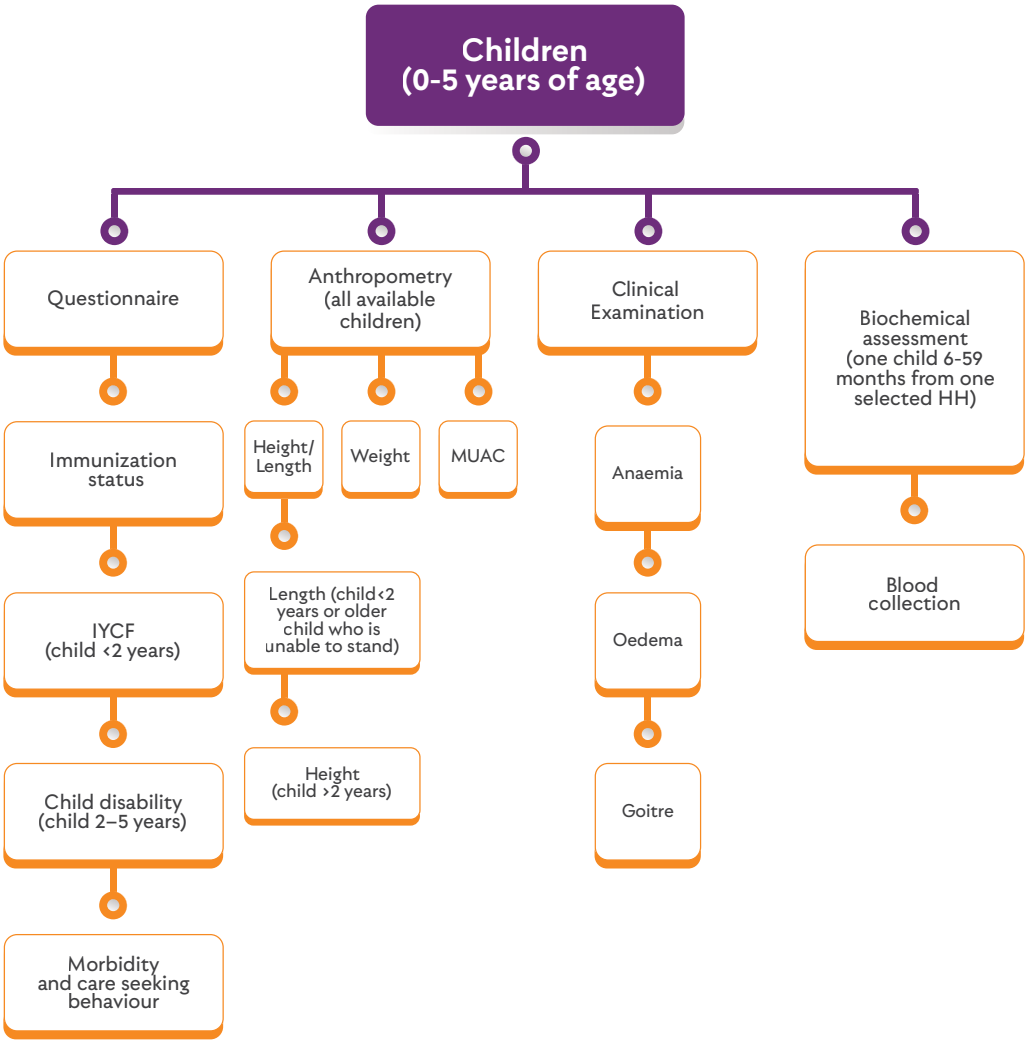
**ANC: antenatal care; HH: household; MDDW: minimal dietary diversity for women; MUAC: mid-upper arm circumference; PNC: postnatal care; PSU: primary sampling unit; WRA: women of reproductive age.*

2.2.10.2 Children under five years of age (0–59 months)

A questionnaire was completed by interviewing mothers or caretakers of all children below five years of age. Some sections of the questionnaire were targeted towards specific age groups, e.g. infant and young child feeding for children under two years of age or childhood disability for children aged 2–5 years. This information was obtained from the mothers of children falling into the appropriate age groups.

Anthropometric measurements of all children aged 0–59 months who were present at the time of the household visit were obtained and recorded. A blood sample was collected from one randomly selected child aged 6–59 months of age via computer adaptive randomization in designated households in each PSU.

Figure 2-3: Information collected from all children under five



** HH: household; IYCF: infant and young child feeding; MUAC: mid-upper arm circumference.*

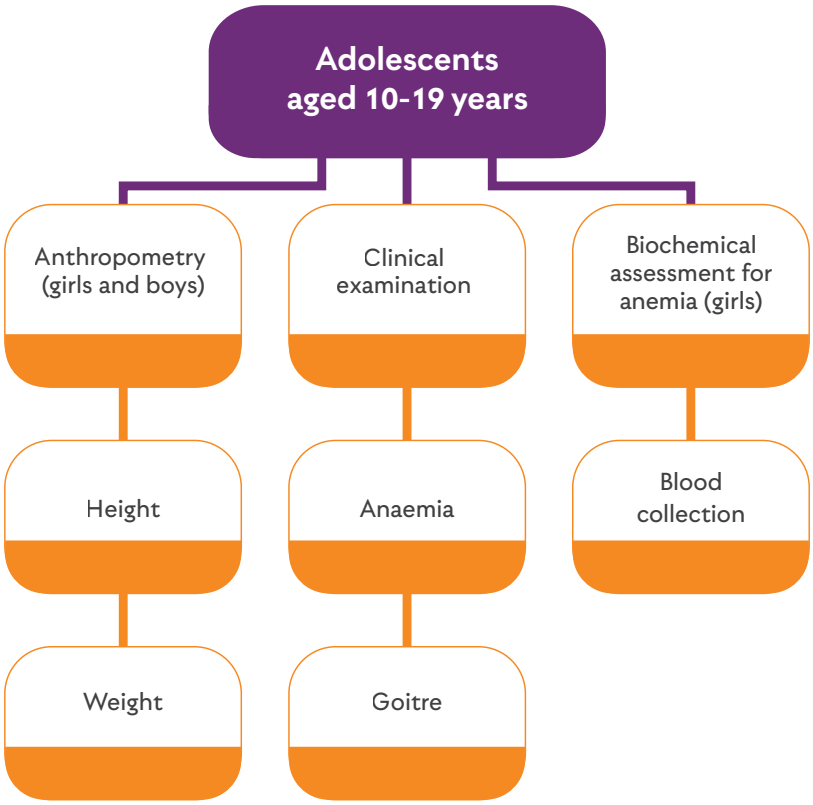
2.2.10.3 Children aged 6–12 years

One child aged 6–12 years was selected from the designated households in each enumeration block to provide a urine sample. Where more than one child in this age group was present in a household, the selection was made randomly using a computer program.

2.2.10.4 Adolescents aged 10–19 years

Anthropometric measurements were recorded for all adolescent girls and boys present at the time of the household visit. All adolescent girls also underwent a clinical examination for anaemia and goitre.[k] One adolescent girl was selected randomly via computer adaptive randomization for a spot haemoglobin check, preferably from a household that had been selected for the collection of other blood specimens in that PSU.

Figure 2-4: Information collected from adolescents aged 10–19 years



2.3 Description of methodology

As Table 2-9 shows, data were collected and analysed using parameters related to household information, reproductive history in the past five years, child health indicators, anthropometry, clinical and biochemical assessment.

k A goitre is an abnormal enlargement of the thyroid gland.

Table 2-9: Parameters for analysis

	Key Indicators			
	Children (0–59 months)	Children (6–12 years)	Adolescents	Women of reproductive age
Anthropometry	- Underweight prevalence - Stunting prevalence - Wasting prevalence - Overweight prevalence - Global acute malnutrition - Severe acute malnutrition - Moderate acute malnutrition		- BMI-for-age z-scores	- MUAC - BMI
Biochemical assessment	- Prevalence of anaemia - Prevalence of iron deficiency anaemia - Prevalence of vitamin A deficiency - Prevalence of vitamin D deficiency - Prevalence of zinc deficiency - Prevalence of ferritin deficiency - Prevalence of folic acid deficiency - Prevalence of calcium deficiency - Prevalence of vitamin B12 deficiency - Plasma albumin deficiency - Assessment of inflammatory biomarkers (CRP, AGP)	- Iodine status	- Prevalence of anaemia (only for girls)	- Prevalence of anaemia - Prevalence of iron deficiency anaemia - Prevalence of vitamin A deficiency - Prevalence of vitamin D deficiency - Prevalence of zinc deficiency - Prevalence of ferritin deficiency - Prevalence of folic acid deficiency - Prevalence of calcium deficiency - Prevalence of vitamin B12 deficiency - Plasma albumin deficiency - Assessment of inflammatory biomarkers (CRP, AGP) - Iodine status
Clinical indicators	- Prevalence of nutritional oedema		- Prevalence of goitre - Prevalence of anaemia	- Prevalence of goitre on clinical examination - Prevalence of anaemia on clinical examination
Child health and nutrition indicators	- Child care and care seeking practices o IYCF indicators o Care-seeking for diarrhoea o Diarrhoea treatment with ORS and zinc o Diarrhoea treatment with ORT and continued feeding o Care-seeking for children with ARI symptoms o Care-seeking for fever - Coverage of health and nutrition services o Deworming o Full immunization coverage o Micronutrient supplementation o Vitamin A supplementation - Child disability			

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	Key Indicators			
	Children (0–59 months)	Children (6–12 years)	Adolescents	Women of reproductive age
Reproductive health indicators				- Antenatal care coverage - Quality content of antenatal care - Low birth weight - Skilled birth attendance - Institutional births/ deliveries - Postnatal care coverage - Skin-to-skin contact - Maternal nutrition supplementation - Deworming
Household indicators	- Food fortification: use of iodized salt - Social safety nets - Population covered by social transfers - Social protection (gender sensitivity) - Social protection (purchase of food) - Food insecurity - Availability of water - Use of safe drinking water - Use of basic sanitation facilities - Handwashing facility with water and soap - Handwashing at five critical times - Safe disposal of child's faeces - Water quality testing - Sociodemographic profiles			

** AGP: alpha-1 acid glycoprotein; ARI: acute respiratory infection; BMI: body mass index; CRP: C-reactive protein; IYCF: infant and young child feeding; MUAC: mid-upper arm circumference; ORT: oral rehydration therapy.*

2.3.1 Components of data collection

2.3.1.1 Demographic and socioeconomic indicators of households

Information on sex, ethnicity, religion, level of education, marital status and occupation of the head of the household, number of family members, ownership of the house, number of rooms used for sleeping, household construction materials, toilet facilities, sources of drinking water, household assets and land ownership were collected as key indicators of socioeconomic status. Information was also collected on WASH and social safety nets.

Household information was captured from the head of the household or any knowledgeable member of the household (aged 18 years or more) who was available at the time of interview

2.3.1.2 Household food insecurity information

Information related to food insecurity was collected from the head of the household by preference, or any knowledgeable member of the family, using the FAO's Food Insecurity Experience Scale (FIES). The FIES is an experience-based metric of the severity of food insecurity, meaning that it relies on people's direct responses to questions regarding access to adequate food. The questions capture self-reported food-related behaviours and experiences associated with increasing difficulties in accessing food due to resource constraints (see Annex B).

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2.3.1.3 *Age determination of children (0–59 months)*

Indicators for the assessment of the nutritional status of children, such as stunting (height for age) and underweight (weight for age), and IYCF practices require accurate determination of the age of the child. For this reason, special emphasis was put on ascertaining the precise age or date of birth in order to avoid over- or under-estimation of nutritional indicators. The date of birth of children below five years of age was determined in two sections of the questionnaire. Firstly, in section 2a, the age of children below five years of age was determined from other members of the household by the team leader. The age was re-confirmed in the IYCF module (section 4a) from the mother of the child. Different sources of information such as birth certificates, identification and immunization cards and celebration of birthdays in relation to known events calendars were used at both stages. In case of non-availability of such documents probing was used for mother/caretaker's recall to determine the exact age by asking the age of any reference child in the family or neighbourhood or using events in the household or general events like holidays, religious occasions, weddings, birthdays, crops cultivated in the area or local events etc. in reference to the birth of the child. The events calendar is provided in Annex C.

2.3.1.4 *Anthropometric measurements*

Height/length, weight and MUAC measurements were obtained to determine nutrition status of all target age groups. For weight measurements a Seca 874 U electronic scale (Hamburg, Germany) was used for all target age groups, measurements were taken to the nearest 0.1 kg. Length and height measurements were evaluated using height boards (3 slab) to the nearest 0.1 cm. The standard MUAC tape was used for women of reproductive age and adolescent girls while the coloured MUAC tape was used for children under five years of age to the nearest 0.1 cm. All instruments were calibrated daily by the team leaders before leaving for data collection. Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology was adapted for anthropometric measurements.

Table 2-10: Anthropometric measurements

Target group	Anthropometric measurements
All children (aged 0–59 months)	- Length for children <2 years - Height for children >2 years - Weight - MUAC
Women of reproductive age (aged 15–49 years)	- Height - Weight - MUAC
Adolescent boys and girls (aged 10–19 years)	- Height - Weight

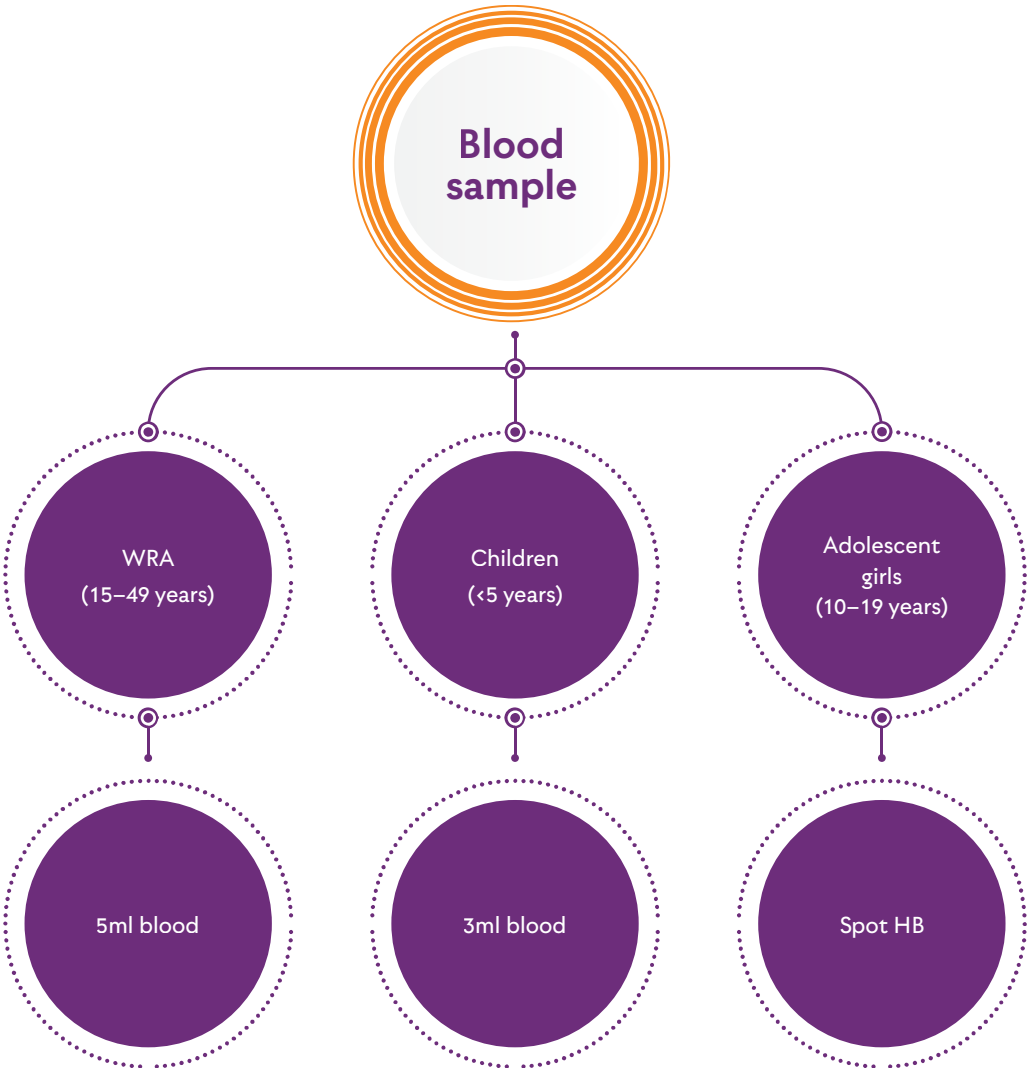
2.3.1.5 *Clinical examination*

Clinical examination was carried out by trained staff for the assessment of nutrition oedema amongst children under five years of age, and thyroid enlargement (goitre) and anaemia in adolescents and women of reproductive age.

2.3.1.6 *Biochemical sample collection and processing: Blood and urine samples*

Blood samples were collected from one available woman of reproductive age and one available child aged 6–59 months from each selected household for the assessment of essential micronutrients. A haemoglobin spot test was conducted for one adolescent girl from each selected household present at the time of the visit.

Figure 2-5: Target groups for blood collection



** HB = Haemoglobin; WRA = women of reproductive age.*

Venous blood samples were taken by trained phlebotomists following standard WHO techniques for phlebotomy and safe injection practices.[78] Haemoglobin levels were tested in the field using HemoCue machines (Angelholm, Sweden).

The collected blood samples were analysed to ascertain the level of target biomarkers to assess haemoglobin concentration and micronutrient deficiencies (ferritin, folate, vitamin A, vitamin D, vitamin B12, zinc and calcium). In addition, serum C-reactive protein (CRP) and albumin concentrations were measured for adjusting the serum ferritin and calcium values respectively (to avoid any errors in interpretation due to subclinical infection).

In order to obtain 1,000 microliters (µL) serum from children aged 0–59 months and approximately 1.4 µL serum from women of reproductive age, at least 3 ml and 5 ml of venous blood was collected respectively in trace element-free vacutainer tubes. After collection of blood, the vacutainer tubes were tagged with pre-printed sample identification barcodes and placed in a cool box with frozen ice packs to clot for at least 30 minutes. At the end of each day, the whole blood was centrifuged using portable battery-operated centrifuges and the serum separated. This serum was then Aliquoted into 4.5ml cryovials by pipetting using a disposable pipette. Sample ID tags were pasted on each cryovial. The tubes were covered with an aluminium foil to avoid photo degradation. The serum was kept in a cool box and put into a freezer (-20°C or colder) within 3–4

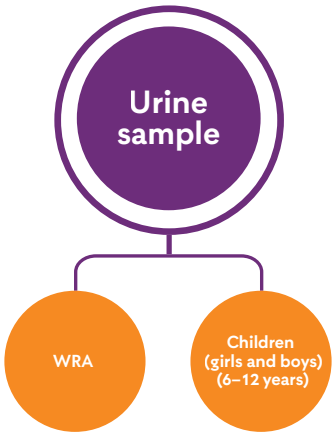
hours. Aliquoted samples of the same cluster were kept together in box with a label of the same cluster on the box. In this way, the laboratory could easily identify which particular clusters were to be tested in a batch to minimize the possibility of freeze/thaw cycles. The standard operating procedures for blood sample collection and transportation were used. A sample record form was filled, indicating the name and ID number of the participant, sample ID number, and the type of analysis to be done. The samples were taken to the AKU nutritional research laboratory. The biochemical assessments performed are listed in Table 2-11.

Table 2-11: Biochemical assessments

Assay	Target
Haemoglobin	- Women of reproductive age (15–49 years) - Adolescent girls (10–19 years) - Children (6–59 months)
Ferritin	- Women of reproductive age (15–49 years) - Children (6–59 months)
Vitamin A	- Women of reproductive age (15–49 years) - Children (6–59 months)
Vitamin D	- Women of reproductive age (15–49 years) - Children (6–59 months)
Zinc	- Women of reproductive age (15–49 years) - Children (6–59 months)
Calcium	- Women of reproductive age (15–49 years) - Children (6–59 months)
Folic acid	- Women of reproductive age (15–49 years) - Children (6–59 months)
Serum albumin	- Women of reproductive age (15–49 years) - Children (6–59 months)
Alpha-1 acid glycoprotein (AGP)	- Children (6–59 months)
C-reactive protein (CRP)	- Women of reproductive age (15–49 years) - Children (6–59 months)
Urinary iodine	- Women of reproductive age (15–49 years) - Children (6–12 years)

Urine samples were collected from women of reproductive age and girls and boys aged 6–12 years to assess urinary iodine excretion. The children and women selected were asked to provide a urine sample in a single-use plastic cup.

Figure 2-6: Target groups for urine collection



** WRA: women of reproductive age.*

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2.3.1.7 *Biochemical sample collection and processing: Transportation of samples*

Pre-printed barcode labels were used to identify blood sample tubes and urine samples. The samples from each PSU were packed, accompanied by a list of samples with identifying information. From the field the samples were transported to the nearest AKU laboratory collection point by the field team leader maintaining cold chain requirements as per the standard operating procedures. From the collection points the samples were transported to the central AKU Laboratories in dry ice for analysis, usually by air across provinces or ground transport in Sindh. If the AKU collection points were not available, courier services were used whilst ensuring cold chain transportation.

2.3.1.8 *Water quality testing*

The quality of household drinking water was ascertained using standard operating procedures recommended by PCRWR for sample collection transportation and analysis methodology (see Annex D).

The PCRWR provided training to NNS master trainers on water sample collection including methodology, field analysis and transportation of samples to laboratories. They also certified trainings of collectors, equipment specifications and analysis for quality assurance. The tests for microbiological and chemical indicators performed on the water samples are listed in Table 2-12.

Table 2-12: Microbiological and chemical indicators for water testing

Microbiological indicators	Chemical indicators
- Total coliforms - E. coli count	- pH - Hardness - Total dissolved solids (TDS) - Fluoride - Nitrate - Arsenic - Iron

The water quality tests for microbiological indicators were performed and recorded at the field site because carrying samples to the laboratory in controlled conditions and within the stipulated time was deemed difficult. These samples were collected in clean, sterile plastic bottles (200 ml) and care was taken to ensure that no accidental contamination occurred during sampling. Samples were taken from non-leaky taps and those without extension taps to avoid outside contamination. The samples were then kept cool and in the dark while being transported. Field testing was performed with Petri-films using field incubators. The temperature range of the incubators was 15–50°C. The incubators were portable and equipped with backup batteries.

Water samples for physico-chemical analysis were collected in 0.5 litre polystyrene bottles with preservatives and transported to the nearest PCRWR laboratory within 4–5 days of sampling.

Quality control samples or duplicate/replicate sampling for E. coli and coliforms testing in laboratories was carried out in 10% of clusters, with field blanks in 5% (600 samples) as a quality control measure. Deionized water was provided by AKU Nutrition Research Laboratory and the teams transferred it to an empty bottle in the same surroundings and circumstances as other collected water samples in order to check for environmental contamination. These samples were transported to PCRWR laboratories maintaining a temperature of 2–8°C for full qualitative analysis in controlled laboratory conditions. These samples were taken from urban areas where the transportation was easy.

2.3.1.9 *Salt iodization test*

Salt samples were tested for iodization at the household level. Teams were trained to use rapid test kits, which give immediate results, during data collection. Adequately iodized salt is ≥15 ppm[l] and <40 ppm iodine at the household level. Teams were instructed to test salt from each of the 20 households selected per enumeration block.

l Parts per million.

2.4 Operational procedures

2.4.1 Development of survey protocol

A detailed survey protocol was developed by the AKU team, following the Terms of Reference provided by UNICEF and considering previous surveys in Pakistan (NNS 2011, Multiple Indicator Cluster Survey and Pakistan Demographic Health Survey) and other countries (NNS Afghanistan 2013, Micronutrient Survey Maldives). It was reviewed by MoNHSR&C and UNICEF and finalized in the first phase of the survey.

2.4.2 Technical committees

Several committees were established by MoNHSR&C to oversee the survey design, development of instruments and manuals and implementation of field activities:

- National Steering Committee;
- National Technical Committee;
- Sub-Technical Committee; and
- Provincial and Regional Technical Committees.

These comprised technical experts from the Government of Pakistan, UNICEF, DFID, GAIN, WFP, Planning Commission, National Institute of Population Studies, PBS, WHO, Nutrition International, World Bank, national and provincial nutrition programmes and AKU, and provided guidance, inputs and approvals throughout the course of the survey. Participation in the committees was quite gender-balanced with encouraging inclusion of women.

2.4.3 Designing of quantitative and qualitative tools, instruments, manuals and standard operating procedures

All data collection instruments (survey questionnaire and interview guides), manuals and standard operating procedures for the facilitation of field staff (consisted of field manuals, job aids, event calendars for each province or area, guidelines and log sheets for biological and water sample collection), were developed. Manuals on interviewing, anthropometry and laboratory procedures were also developed in English, translated into Urdu, and later translated back to English to ensure comprehension and quality of translation (see training manual provided in Annex E). It was mandatory for the teams to carry manuals during field operations and compliance was assured by the district supervisors.

2.4.3.1 Data collection tools

NNS 2018 used a structured questionnaire to conduct the interviews (Annex H). The contents of the questionnaire were finalized in consultation with members of the technical committees, UNICEF and MoNHSR&C representatives. The modules in the quantitative questionnaire are listed in Table 2-13.

Table 2-13: Questionnaire modules

Module	Respondent	Section	Description
A	Head of the household or any knowledgeable member aged 18 years or more	H1	Household demographic information
		H2	List of household member
		H3	Socioeconomic status
		H4	WASH
		H5	Salt iodization and food fortification
		H6	Food Insecurity Experience Scale
		H7	Social safety net
B	Women of reproductive age (15–49 years)	W1	Women information panel
		W2	Reproductive history
		W3	Antenatal care (women who had a live birth in the last two years)
		W4	Delivery and postnatal care (women who had a live birth in the last two years)
		W5	Minimum dietary diversity for women of reproductive age (selected using Kish grid)
C	Mother of the child or any caretaker	C1	Under-5 children information panel
		C2	IYCF and food diversity (children aged 0–23 months)
		C3	Immunization status (children aged 0–59 months)
		C4	Morbidity and care-seeking behaviour (children aged 0–59 months)
		C5	Child disability (children aged 24–59 months)
D	All members of target group		Anthropometry and examination
E	One member of each target age group		Blood, urine, haemoglobin and water specimen collection

The questionnaire was developed upon the following pre-validated tools:

- Pakistan Demographic and Health Survey;
- Previous editions of NNS in Pakistan;
- FIES to assess food insecurity; and
- Standard food frequency and food diversity scales including IYCF (see Annex F1–F3) and minimal dietary diversity for women (MDDW) (see Annex G).

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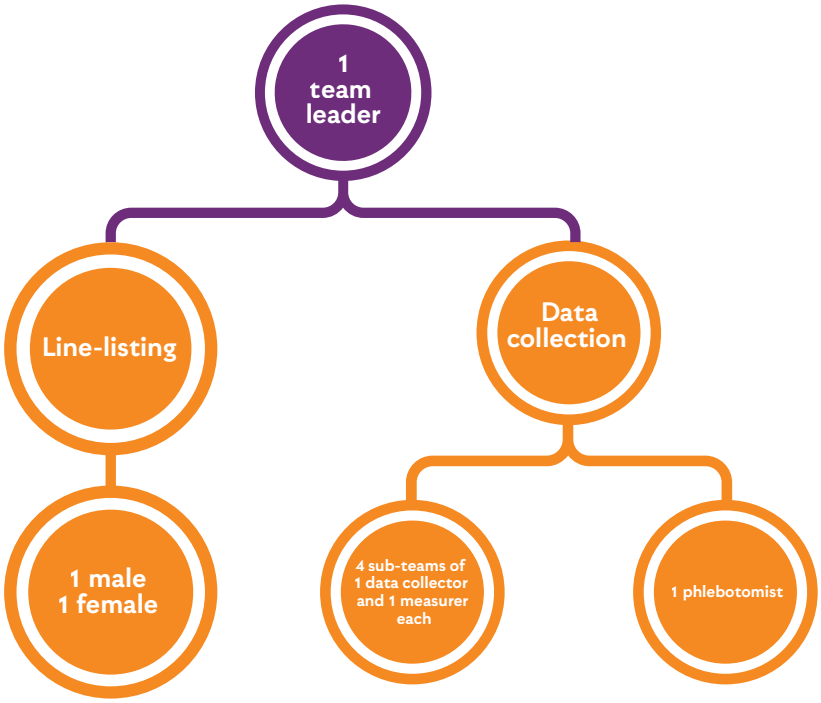
2.4.3.2 *Survey monitoring tools*

A survey monitoring tool was prepared to monitor the performance of enumerators, measurers and laboratory technicians in the field. The tools objectively assessed field performance in light of the standard operating procedures and quantitatively evaluated cluster performance. A monitoring reporting form was developed to capture the average performance of several clusters, measured in quantitative assessments. These tools were helpful to inform the field team about their strengths and weaknesses and thereby improve subsequent performance.

2.4.4 Recruitment of staff

Data collection all over Pakistan was carried out by AKU field staff with other partners in various target districts. Women comprised more than 90% of the staff. The quantitative survey involved three components: data collection at household level, anthropometric measurements and biochemical sampling. The structure of the survey team is shown in Figure 2-7.

Figure 2-7: Data collection team structure



There were more than 100 survey teams all over Pakistan and each survey team comprised of two sub-units: a line-listing team and data collection team. The target for each team was to complete one PSU per day. The line-listing team comprised one male and one female team member, while the data collection team comprised the following:

- One team leader (male): overall supervision of the team (due to the social and cultural norms that prevail in the country it was more reasonable for have male team leaders)
- Four enumerators (female): for data collection; one per sub-team
- Four measurers (female): for anthropometry and clinical examination; one per sub-team
- One phlebotomist (female): for blood, urine and water sample collection and processing.

Field staff were selected locally through advertisement in major newspapers. They were identified and hired based on willingness to work, fluency in local language(s) and cultural sensibilities. Preference was given to candidates with previous experience of fieldwork.

2.4.5 Training of trainers

The training for NNS 2018 was conducted in three phases.

2.4.5.1 Training of master trainers

After the approval of the inception report AKU began hiring master trainers for training trainers. Eight candidates were shortlisted and were called for a pre-training workshop. During the workshop all candidates were evaluated and selected as master trainers. They were then provided an intensive 18-day training in March 2018 by experts from AKU, UNICEF, PBS, Nutrition International and PCRWR.

2.4.5.2 Training of trainers

Three trainings of trainers were conducted in Karachi by AKU for trainers from the implementing organizations: Khyber Medical University, Contech, HANDS, MERF and DFCA.

2.4.5.3 Cascade trainings

In the third phase, comprehensive cascade trainings were led by the master trainers (50% of whom were female) who provided extensive training (two weeks in duration) to field teams in all districts between April and November 2018. A total of 52 cascade trainings were conducted by the AKU-trained master trainers and more than 1,000 team leaders, enumerators and phlebotomists were trained. These trainings of trainers and cascade trainings were closely and regularly monitored by internal and external experts from MoNHSR&C, provincial departments of health, UNICEF and AKU. SMART methodology was used for training, with standardized testing for anthropometry and WHO-recommended manuals for blood, urine and water collection were utilized.

The trainings were structured according to the fieldwork to be conducted by different staff. On the first day, a general introduction to the survey and its methodology was detailed to all field workers in a combined training session. Thereafter the teams were split into groups of three, with enumerators, measurers and phlebotomists trained on areas specific to their work. The enumerators were trained on interviewing skills, consent procedures, question-by-question instrument review, sampling methodology, operational and field procedures, daily documentation/log sheet maintenance and the use of handheld devices for the computer-assisted personal interviewing approach. Measurers were trained on physical examination, anthropometry and field practice. Phlebotomists were trained on blood and urine sampling, safe injection practices, labelling, storage and transportation of samples and water quality testing and sample collection. Training for team leaders included supervision skills, quality assurance, sampling methodology, documentation and reporting.

2.4.6 Pilot

A pre-test was undertaken by the NNS 2018 core team using the approach designed for the main survey activities to pilot the questionnaire and to identify and solve unforeseen problems before actual data collection. The main objectives of the pilot were to improve the language of the questionnaire, establish the order of questions, and check accuracy and adequacy of the questionnaire instructions such as "skip" and "go to". Clarity of instructions to the interviewers, respondents' discomfort or embarrassment with certain questions, translation of technical terms and the time needed to conduct an interview was also assessed during pilot testing. Further field challenges in the conduct of the survey were also identified as well as needs for logistics arrangements and any other requirements to improve data collection. Blood, urine and water samples were not collected in the pre-test due to ethical constraints.

The questionnaire and application were revised and finalized following the pilot test results and direct observations by survey supervisors. A data analysis plan was developed once pilot data collection was completed.

2.4.7 Data collection

Data collection occurred in three phases from April 2018 to January 2019. All field workers were hired and trained in their respective districts/regions. In the first phase (April–July) most districts of Sindh as well as Faisalabad and Rahim Yar Khan in Punjab, Peshawar in KP and Quetta in Balochistan were covered. In the second (July to October) and third (November to January)

phases, data collection was completed in the remainder of the country. The process for data collection was as follows:

- **Acquisition of maps:** Before data collection began in any PSU, line-listers acquired maps and locations from the regional PBS office.
- **Line-listing:** A fresh line-listing was carried out in each PSU on tablets and data were uploaded to an AKU database.
- **List of households:** Listing data were downloaded from the AKU database and a list of 20 households in each PSU was generated using an independent program.
- **Data collection:** In the morning before leaving for data collection, all teams assembled at the field office and held a morning meeting with team leaders and field supervisors. They planned the field activities for the day and discussed solutions to issues or queries they faced in the field. The weighing machines and other instruments were calibrated and recorded in a log sheet by the team leader. All equipment (anthropometric, biochemical collection, portable centrifuge machine, portable incubators and cool boxes) and instruments such as tablets, consent forms, job aids, event calendars etc. were counted and placed in the vehicle before leaving for fieldwork. The team leader had a survey checklist for this purpose and also used it in the field before returning to the office to ensure safe return of all equipment). Team leaders also downloaded a random list of 20 HHs in a PSU/ cluster and proceeded there for data collection with the team of enumerators, measurers and phlebotomists. In the field the team obtained written informed consent, and then administered the questionnaire on survey indicators. Anthropometric measurements were taken from all target groups and recorded using the tablets. This was followed by biochemical sample collection of blood, urine and water using the respective barcodes and following established standard operating procedures. Salt samples were also collected and the qualitative analysis performed in the field using rapid test kits
- **Daily data upload to AKU server:** All data, with all relevant information and barcode scans, were synced daily and uploaded from the field sites to the AKU server and dashboard. The AKU Data Management Unit generated summary reports and returned these to the team leaders for rectification if required.

2.5 Data management, data transfer and data analysis

2.5.1 Software design, data entry, verification and editing

Quantitative data were collected using handheld devices: Samsung T-285 tablets running Android 5.1. A customized application was developed using Java on a SQLite backend for data storage. The key features of the data collection application included access control, onscreen consistency and range checks, onscreen tips, quick reports and GPS tracking. Range and consistency checks as well as skip patterns were built into the program to minimize entry of erroneous data. Special arrangements were made to enforce referential integrity of the database so that all data tables were related to each other. In locations where tablets could not be used for security reasons, data were collected on paper forms and subsequently entered into the tablets.

2.5.2 Developing mobile-based application and dashboard

Two Android apps were developed for quantitative data collection, one for household line-listing and one for data collection in all clusters. Web-based RESTful secure API services were also developed in PHP to sync data from mobile devices to the server. Microsoft Windows 2008 Server was used for hosting Apache Webserver and a MySQL database which was securely installed on the AKU network. The database was backed up regularly to avoid accidental data loss.

The Data Management Unit also developed a web-based information portal using PHP and Google Charts library to visualize collected data in real time. The portal had a comprehensive dashboard for real-time visualization, providing a snapshot of the activities of different teams and supporting

survey data at district, provincial and national levels. Access to the dashboard was restricted to authorized personnel at AKU and key individuals from UNICEF, MoNHSR&C and implementing partners. It had the following features:

- Real-time device synchronization status;
- Real-time report on line-listing activities at cluster, district, provincial and national level;
- Real-time summary of data collection activities in every cluster, including households visited and interview status; and
- Daily and cumulative reports on biochemical and water testing sample collection and transportation in each cluster.

The web-based portal was also used to share related information with teams in the field and provided an interface for laboratories to enter the results for blood, urine and water testing.

A data collection application installation guide, user manual and database documentation were created. The database documentation included description of all variables, their type, description, codes and value labels.

2.5.3 Data security and archiving

Data were transferred from each handheld device at the end of each day after synchronization and were transmitted directly to the AKU server. Where internet access was not available in remote locations, the team leader manually exported a copy of the data to a USB stick and saved it on a laptop to avoid data loss.

The data collection application was password protected. Once the interview was saved it could not be edited by data collection staff. Data were encrypted, both on the handheld devices and during transfer, to avoid breaches of confidentiality or release of participants' personal information.

The data were archived and stored in a data repository at AKU in Karachi. Access to the data repository was limited to data management personnel directly involved in the project through their AKU local area network identification with the level of access depending on the role of the user. Data were replicated daily to a remote location as backup. A fail-over/ slave server was maintained to ensure the database could be restored in the event of a disaster that resulted in downtime for the primary server.

The biological and water specimens were barcoded and the labels were scanned and linked to the respective participant or household at the time of collection. GIS coordinates of all the sampled enumeration blocks were obtained during line-listing. GIS coordinates of participating households were stored in the database.

2.5.4 Analysis methods

NNS 2018 was designed to provide estimates of key indicators at district level. Initial analysis included examining frequency distribution of all variables to identify possible errors. Final analyses were performed after data cleaning and satisfactory quality assurance. Sampling weights were added to the data at household and individual level as provided by the PBS, to account for unequal selection probabilities and non-response. A standard survey module was used to take into account the multi-stage survey design including stratification, clustering and sampling weights.

Descriptive statistics for the subjects were estimated and reported as mean (±SD), median, ranges and frequencies as appropriate. Standard errors, confidence intervals and design effect were reported for selected indicators. The analyses presented in NNS 2018 estimated results at district level with population subgroups such as age, gender, level of education, marital status, economic status, residence (urban/ rural), districts, divisions and region of the country. Data analysis was undertaken using SPSS[m] version 19. This report largely presents summary and aggregate data for a general audience.

m Statistical Package for Social Sciences used by researchers to perform statistical analysis.

Special arrangements were made in the data entry software to capture the correct age or date of birth. The data entry screen not allowed to leave the month and year of birth fields empty. The interviewers used an events calendar to capture the correct date of birth and a code was used to identify if the user failed to capture the date of birth. Such instances were treated as missing.

Summaries of age and anthropometric indicators calculated using Emergency Nutrition Assessment (ENA) software and regularly and communicated with field staff to maintain data quality. Children who were targeted for measurement, but who could not be located for assessments or their mothers refused measurements were considered 'missing' in the data.

Biologically implausible anthropometric values (beyond -5 SD for WHZ and -6 SD for WAZ and HAZ) were also treated as missing and were not included in the analysis. Mean, standard deviation, skewness and kurtosis was also computed for WHZ, HAZ and WAZ but no remarkable deviation was observed in the measurements.

2.6 Ethical approval and maintaining confidentiality

The survey design, sampling strategy, instruments and analytical plans were reviewed and approved by the AKU Ethical Review Committee[n] and the National Bioethics Committee.[o] Confidentiality of all collected data was assigned high priority at each stage of data handling. The research participants were informed about the purpose, methods and benefits and intended uses of the research. Informed verbal consent was obtained from the research subjects. Respondents were free to stop interviews at any time or skip any questions they did not want to answer. They had the right to ask questions at any point before, during or after the interview. All interviews were conducted by trained staff and in conditions of privacy. Before participation in the survey, informed consent was taken from the head of household of all selected households. The respondents were informed about their rights. It was ensured that only female interviewers took consent from and interviewed female respondents. Highly trained enumerators and phlebotomists took anthropometric measurements and blood samples and formal written consent was obtained for blood sampling from every participant. During the interview, if a child was found suffering from severe acute malnutrition or other acute ailments, he/she was referred to the nearest health facility.

Individual names and personal information of respondents were kept confidential and personal identifiers were not used in any form of reporting or dissemination. Datasets were also kept anonymous for analysis. All data files were password-protected and serum and blood samples were duly secured as per standard procedures.

2.7 Quality assurance and monitoring

All survey activities were monitored to ensure the quality of data. Quality control was initiated right from the design stage of the questionnaire through to processing and cleaning of data. The questionnaire was developed by AKU after reviewing other standard survey questionnaires. A meeting was held with collaborators during the planning phase to review and approve the survey protocol, methodology and key indicators prior to survey implementation. During this meeting the questionnaire was reviewed question by question by all the members. The tools were then translated into Urdu and translated back to English to ensure quality of translation.

The questionnaire was pre-tested in the pilot survey prior to its use in the field. Field activities were monitored, filled forms reviewed and feedback provided to all teams during the pilot survey to further improve the tools. Data were analysed and presented to collaborators who then granted approval for implementation of the survey field activities.

Competent staff was hired for data collection in each district, more than 90% of them female as it was easier for them to enter households and acquire information from the women residing there. All trainings were conducted by trained master trainers under the observation and supervision of

n ERC approval references: 5176-WCH-ERC-17.

o NBC approval references 4-87/NBC-278/17/1318.

internal and external experts from MoNHSR&C, UNICEF, AKU, FAO and Nutrition International. Field staff were trained on administering the questionnaire, interviewing techniques, biological and water sample collection and processing, and anthropometry. Standardization tests were performed during each training for anthropometry to check inter-observer and intra-observer variations and technical errors in measurement. Pre-tests and post-tests were also conducted during field staff trainings, scores were reviewed and trainees with a minimum 80% post-test score were hired for data collection.

Steps were taken to ensure quality of data collection. Team leaders managed the daily work of their teams, monitored activities and reviewed all filled questionnaires for completeness and inconsistencies before leaving the cluster. They were also instructed to calibrate all equipment daily prior to field activities and were provided with standard weights of 5kg for calibration of the weighing scales. They maintained log sheets in which calibration readings were recorded daily. HemoCue machines for haemoglobin estimation were also regularly calibrated with field-based controls. Quality control was ensured for water quality testing via duplicate sample collection of field blank as well as quality control samples for drinking water testing from each PSU.

2.7.1 Field based monitoring

A three-pronged approach to regular monitoring and supervision was performed and standard checklists were filled out by monitoring teams.

First-level supervision was performed by AKU monitors and field supervisors who monitored the teams in their respective districts, observed the interviews, sample collection, anthropometry, and conducted repeat interviews where needed. They also did spot checks of data forms and provided guidance and supportive supervision to the field teams through continuous reinforcement of good practices such as good probing and accurate of measurements. Second-level monitoring was carried out by representatives of key collaborators in the survey. MoNHSR&C and UNICEF staff frequently visited the field to oversee data collection activities.

Independent third-party field monitors were also engaged by UNICEF and trained as external monitors to ensure the data collection activity occurred as planned and visited field sites frequently. They used a checklist to monitor the activities of field teams and submitted monitoring reports to UNICEF and MoNHSR&C. The data collection teams reported their locations to these monitors on regular basis.

Representatives of MoNHSR&C, UNICEF and AKU met frequently to review data collection progress and the performance of each team. The challenges teams faced were discussed, solutions developed and feedback provided to team leaders.

2.7.2 Dashboard monitoring and quality assurance

The dashboard developed by the Data Management Unit provided a means for real-time updates and monitoring at each step of the survey. Local experienced staff was taken on board as reviewers to ensure the quality of data collection. They ensured quality assurance by checking for completeness of interviews, anthropometry, biological and water samples by going through both the dashboard and daily electronic reports and analysed the data for plausibility checks and digit preference. The number of attempts to tackle household refusals were also checked on the dashboard, along with the number of family members listed as present in the roster section of the questionnaire and the number of interviews carried out by the teams.

2.7.3 Feedback process

Regular feedback was provided to district supervisors and team leaders for rectification of data and to improve the performance of their teams. The field supervisors then responded to feedback by improving the quality of data collection or by providing refresher trainings to the field staff when required. There was also an upward feedback process where enumerators and measurers communicated issues and challenges that they faced in the field with their team leader who then took measures to resolve them.

Quantitative survey

Household profiles

A total of 100,304 households were surveyed, with 62.4% comprising rural households. Overall 39.6% of urban households belonged to the richest wealth quintile while 29.2% of rural households were in the poorest quintile. While 63.1% of households were food secure, 18.3% of households experienced severe food insecurity, with a higher proportion in rural areas.

3. Household profiles

3.1 Sample coverage and survey response rate

A fairly high sample coverage for all provinces and regions was included in NNS 2018. The required sample size was 110,146 households and 5,780 PSUs across Pakistan. Out of the sampled households, 105,704 were occupied and survey teams were able to interview 100,304 of these (5,507 PSUs), a response rate of 94.9% countrywide. In total, 273 clusters could not be surveyed due to a lack of requisite security clearances and 5.1% of selected households refused to participate in the survey.

In the interviewed households, 155,614 women of reproductive age (15-49 years of age) were identified as eligible and 123,092 were interviewed, yielding a response rate of 79.1%. A total number of 68,493 mothers or caretakers of children aged 0–59 months were interviewed, with a response rate of 84.2%.

The refusal rate was greater in urban (6.4%) than rural settings (4.5%) and this difference was notable in all provinces and regions except in KP-NMD, where the urban and rural differentiation was inexact. Response rate also varied, and was highest in GB (98.3%), followed by AJK (95.8%) and Punjab (95.5%). As stated above the non-response rate was largely driven by security clearance issues.

Table 3-1: Results of household, women's, adolescent girls' and caregivers' interviews

Results of household, women, adolescent girls and caregivers of children under five years of age, Pakistan NNS 2018												
		Households				Women of reproductive age (15–49 years)			Adolescent girls (10–19 years)	Children (0–59 months)		
		Sampled	Occupied	Interviewed	Response rate	Eligible	Interviewed	Response rate	Eligible	Eligible	Mothers/ caretakers interviewed	Response rate
	Total	110146	105704	100304	94.9	155614	123092	79.1	68625	81324	68493	84.2
	Urban	33328	31908	29858	93.6	47155	37367	79.2	20045	22999	19641	85.4
	Rural	76818	73796	70446	95.5	108459	85725	79.0	48580	58325	48852	83.8
Province/ region												
Punjab	Total	40452	38825	37086	95.5	55491	44409	80.0	23689	28139	24281	86.3
	Urban	13312	12712	12016	94.5	18515	14644	79.1	7738	8893	7565	85.1
	Rural	27140	26113	25070	96.0	36976	29765	80.5	15951	19246	16716	86.9
Sindh	Total	18768	18149	17156	94.5	25895	20977	81.0	11429	14802	13082	88.4
	Urban	10027	9702	9003	92.8	14068	11241	79.9	5869	7033	6233	88.6
	Rural	8741	8447	8153	96.5	11827	9736	82.3	5560	7769	6849	88.2
KP	Total	13710	13246	12222	92.3	20166	16110	79.9	9355	9736	8232	84.6
	Urban	2803	2722	2464	90.5	4189	3316	79.2	1905	1952	1640	84.0
	Rural	10907	10524	9758	92.7	15977	12794	80.1	7450	7784	6592	84.7
Balochistan	Total	18145	17230	16315	94.7	24874	20302	81.6	10953	14165	11879	83.9
	Urban	4011	3751	3495	93.2	5699	4625	81.2	2543	2938	2431	82.7
	Rural	14134	13479	12820	95.1	19175	15677	81.8	8411	11227	9448	84.2
ICT	Total	1356	1304	1205	92.4	1792	1473	82.2	697	965	826	85.6
	Urban	659	632	582	92.1	817	654	80.0	324	482	405	84.0
	Rural	697	672	623	92.7	975	819	84.0	373	483	421	87.2

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Results of household, women, adolescent girls and caregivers of children under five years of age, Pakistan NNS 2018												
		Households				Women of reproductive age (15–49 years)			Adolescent girls (10–19 years)	Children (0–59 months)		
		Sampled	Occupied	Interviewed	Response rate	Eligible	Interviewed	Response rate	Eligible	Eligible	Mothers/ caretakers interviewed	Response rate
Province/ region												
KP-NMD	Total	3595	3559	3355	94.3	5229	3475	66.5	2375	2463	1707	69.3
	Urban	199	197	188	95.4	324	201	62.0	164	114	72	63.2
	Rural	3396	3362	3167	94.2	4905	3274	66.7	2211	2349	1635	69.6
AJK	Total	8449	7910	7579	95.8	12039	9229	76.7	4999	5634	4614	81.9
	Urban	1579	1484	1417	95.5	2246	1786	79.5	862	979	847	86.5
	Rural	6870	6426	6162	95.9	9793	7443	76.0	4137	4655	3767	80.9
GB	Total	5671	5481	5386	98.3	10128	7117	70.3	5128	5420	3872	71.4
	Urban	738	708	693	97.9	1297	900	69.4	640	608	448	73.7
	Rural	4933	4773	4693	98.3	8831	6217	70.4	4488	4812	3424	71.2

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3.2 Survey population distribution

3.2.1 Urban-rural distribution

The urban and rural distribution of the surveyed population was based on the sampling frame provided by PBS based on the Population and Housing Census 2017. Overall the rural population (62.4%) of the survey was much greater than the urban population (37.6%), commensurate with the PBS sampling frame with provincial differences. Among the provinces and regions, 53.6% of households included in the survey were from Punjab, 24.8% from Sindh, 5.9% from Balochistan and 10.5% from KP, while less than 10% of the households surveyed were from each of the non-provincial regions.

The rural and urban distribution of all the provinces were generally similar, as more households from the rural strata were incorporated compared to urban population, except in Sindh where the converse was true due to the sampling frame and urban-rural population ratios in the Population and Housing Census 2017.

Table 3-2: Urban-rural distribution of sampled households

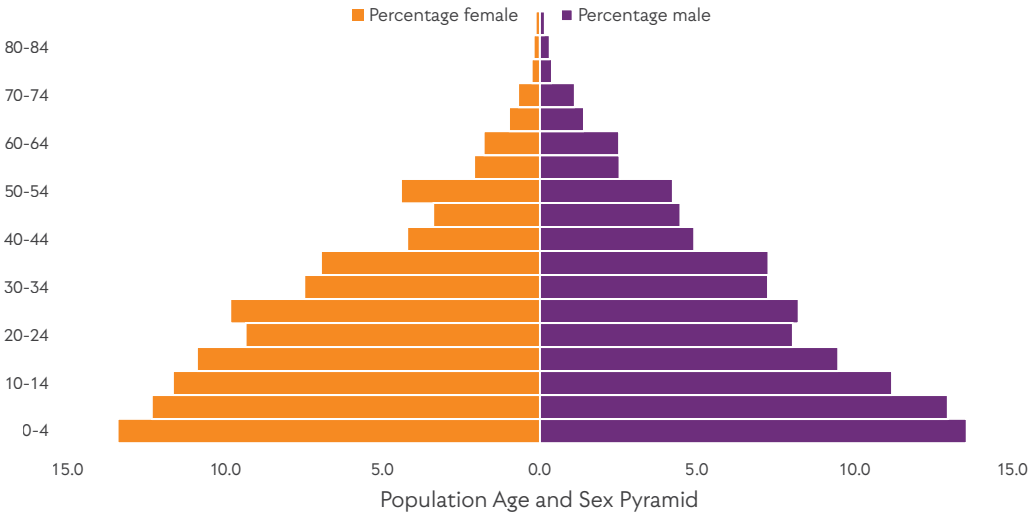
		Weighted percent	Number of households
Total		100.0	100304
Urban		37.6	29858
Rural		62.4	70446
Province/ region			
Punjab	Urban	37.3	12016
	Rural	62.7	25070
	Total	53.6	37086
Sindh	Urban	52.2	9003
	Rural	47.8	8153
	Total	24.8	17156
KP	Urban	19.7	2464
	Rural	80.3	9758
	Total	10.5	12222
Balochistan	Urban	27.4	3495
	Rural	72.6	12820
	Total	5.9	16315
ICT	Urban	52.2	582
	Rural	47.8	623
	Total	1.0	1205
KP-NMD	Total	1.7	3355
AJK	Urban	13.5	1417
	Rural	86.5	6162
	Total	1.9	7579
GB	Urban	20.2	693
	Rural	79.8	4693
	Total	0.5	5386

3.2.2 Age and sex distribution

The age and sex distribution of the survey population is shown in the figure below. The majority (13.5%) fell in the 0–4 year age group, while 13.0% of boys and 12.3% of girls belonged to 5–9 year age group. Those aged 10–14 years constituted 11.4% of the total surveyed population, followed by those aged 15–19 years (10.2%) and 20–24 years (8.7%).

Data in terms of age dependency among total household members show that the dependent age groups, i.e. 0–14 year-olds and 65+ year-olds made up 37.5% and 2.8% respectively, while 15–64 year-olds comprised 59.6% of the surveyed population.

Figure 3-1: Age distribution of household population by sex, Pakistan NNS 2018



3.3 Characteristics of heads of households

Most households were headed by men (96.0%), and female-headed households constituted only 4.0% of the sample. In most families, the head was aged 60+ years (16.3%) followed by people in the 35–39 year age bracket (15.9%). Nationally the mean family size was 5.9 members per family.

Nearly half (48.0%) of heads of households lacked any education. For the rest, 11.0% had a head who had attended primary school, 10.9% middle school, 15.5% secondary school and around 14.6% had acquired higher education. The most common occupations of heads of households were skilled manual labour (31.7%), unskilled manual labour (14.4%) and professional employment (13.4%). Around 11.3% of household heads did not declare any job or occupation.

Table 3-3: Characteristics of heads of sampled households

	Weighted percent	Number of households
Total	100.0	100304
Sex of household head		
Male	96.0	96420
Female	4.0	3884
Age		
15-19	0.4	389
20-24	2.4	2380
25-29	8.0	7939

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	Weighted percent	Number of households
30-34	12.1	12020
35-39	15.9	15247
40-44	12.3	12915
45-49	12.5	12205
50-54	12.4	12431
55-59	7.4	7629
60+	16.3	16662
Missing/DK	0.2	487
Number of household members		
1	0.6	494
2	5.2	4981
3	10.2	9799
4	15.3	14731
5	18.1	17481
6	16.4	16135
7	12.0	12354
8	8.4	8808
9	5.1	5591
10+	8.7	9930
Mean household size	**5.9**	**100304**
Education of household head		
None	48.0	50545
Primary	11.0	10280
Middle	10.9	10616
Secondary	15.5	14951
Higher	14.6	13912
Occupation of household head		
None	11.3	13311
Housewife	2.6	2375
Unskilled manual labour	14.4	14317
Skilled manual labour	31.7	30431
Agriculture	10.5	10477
Sales and services	9.0	8442
Professional	13.4	13092
Student	0.3	374
Unemployed	2.1	2556

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	Weighted percent	Number of households
Retired	3.1	3594
Others (Specify)	1.5	1329

3.4 Housing characteristics

About 94.5% of households indicated that they had an electricity connection in their dwelling; however, some 15.1% in Balochistan, 13.1% in Sindh and 11.8% in KP-NMD had no electricity. With regard to flooring materials, 63.2% of households had finished flooring, ranging from 94.4% in ICT to 22.8% in KP-NMD. This proportion was greater in urban (87.9%) than in rural (48.3%) areas, where natural flooring was more prevalent. Finished roofing was found in almost 80.6% of dwellings in all regions. Similar to finished floors, the proportion of finished roofs was higher in urban (92.7%) than in rural homes (73.4%). Likewise, finished external walls were more common (78.7%) than rudimentary or natural walls except in Balochistan where natural walls were commonly found (45.7%).

At the national level, the greatest proportion (41.5%) of respondents reported having two rooms for sleeping purposes in their households. A similar proportion in rural (40.5%) and urban (43.0%) homes utilized two rooms for sleeping. About 33.5% of respondents reported using one room, and 25% reported three or more rooms for sleeping.

The majority (88.7%) reported that they cooked within the premises of their home, with a similar rate in urban and rural dwellings. Outdoor cooking was more common in rural areas of Punjab and Balochistan. LPG/ natural gas was the most commonly used fuel for cooking (49.5%) followed by wood (38.0%). Household combustion of solid fuel was 43.9% countrywide and 62.9% in rural areas, compared to 12.4% in urban areas. Solid fuels were most commonly used in GB and KP-NMD, exceeding 70% in both regions.

Table 3-4: Housing characteristics

Percent distribution of households by selected housing characteristics according to area of residence and province/ region, Pakistan NNS 2018											
	Total	Residence		Province/ region							
		Urban	Rural	Punjab	Sindh	KP	Balochistan	ICT	KP-NMD	AJK	GB
Electricity											
Yes	94.5	98.9	91.9	98.5	86.9	97.2	84.9	99.0	88.2	99.3	99.4
No	5.5	1.1	8.1	1.5	13.1	2.8	15.1	1.0	11.8	0.7	0.6
Flooring											
Natural floor	35.4	10.9	50.2	28.9	38.9	46.1	60.6	2.4	74.5	19.3	28.2
Rudimentary floor	1.2	0.9	1.3	0.8	0.9	1.3	3.9	3.0	2.4	2.6	2.0
Finished floor	63.2	87.9	48.3	69.9	60.0	52.5	35.3	94.4	22.8	77.6	69.8
Other	0.2	0.3	0.2	0.3	0.1	0.1	0.2	0.2	0.3	0.4	0.0

Percent distribution of households by selected housing characteristics according to area of residence and province/ region, Pakistan NNS 2018											
	Total	Residence		Province/ region							
		Urban	Rural	Punjab	Sindh	KP	Balochistan	ICT	KP-NMD	AJK	GB
Roof											
Natural roofing	7.1	2.3	10.0	2.6	13.5	4.5	25.5	0.2	17.1	2.7	4.3
Rudimentary roofing	11.2	4.4	15.4	5.6	14.4	21.5	24.8	1.1	33.6	8.4	34.4
Finished roofing	80.6	92.7	73.4	90.1	71.7	74.0	49.1	98.7	49.2	88.1	60.9
Other	1.0	0.6	1.2	1.6	0.4	0.1	0.6	0.0	0.2	0.7	0.4
Exterior walls											
Natural walls	12.4	3.5	17.8	5.8	18.9	11.7	45.7	0.6	31.9	4.6	9.4
Rudimentary walls	8.9	3.3	12.2	5.9	8.9	17.5	13.5	1.6	29.9	13.3	14.9
Finished walls	78.7	93.2	69.9	88.3	72.1	70.8	40.7	97.8	38.1	81.1	75.5
Other	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.1	1.0	0.1
Rooms used for sleeping											
1	33.5	30.2	35.5	29.1	52.9	20.4	26.6	22.1	18.2	22.7	25.0
2	41.5	43.0	40.5	45.2	34.0	40.3	39.8	41.8	40.7	45.5	39.8
3 or more	25.0	26.8	23.9	25.7	13.1	39.3	33.5	36.2	41.1	31.8	35.1
Mean number of persons per room used for sleeping	3.4	3.3	3.5	3.2	4.2	3.1	3.1	2.8	2.9	3.1	4.0
Place for cooking											
In the house	88.7	92.1	86.7	88.7	89.6	93.5	75.8	82.3	96.5	85.7	94.8
In a separate building	5.4	4.7	5.9	3.8	6.8	2.6	17.5	14.7	1.1	11.0	4.7
Outdoors	5.8	3.1	7.4	7.4	3.6	3.9	6.7	3.0	2.4	3.2	0.5
Other	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0

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Percent distribution of households by selected housing characteristics according to area of residence and province/ region, Pakistan NNS 2018											
	Total	Residence		Province/ region							
		Urban	Rural	Punjab	Sindh	KP	Balochistan	ICT	KP-NMD	AJK	GB
Place for cooking											
LPG/natural gas/ biogas	49.5	85.8	27.4	51.2	53.0	43.8	41.5	87.5	9.8	32.0	18.4
Coal/lignite	0.4	0.2	0.6	0.3	0.5	0.5	1.2	0.0	0.4	0.3	0.2
Charcoal	2.8	1.0	3.9	2.0	4.0	2.7	5.0	0.4	5.8	2.5	2.2
Wood	38.0	10.6	54.7	36.9	32.9	46.8	41.0	11.4	62.9	64.3	77.6
Straw/shrubs/grass	3.4	0.7	5.0	2.8	3.4	4.5	5.7	0.5	11.4	0.8	0.4
Animal dung	5.8	1.7	8.4	6.8	6.1	1.7	5.6	0.2	9.7	0.0	1.2
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Solid fuel for cooking	43.9	12.4	62.9	41.6	40.2	52.9	50.9	12.3	72.5	67.2	77.3

The most frequently used sources of light in households were energy-saving bulbs (55.8%), followed by incandescent bulbs (46.9%). In rural dwellings incandescent bulbs (52.4%) were more common than energy-saving bulbs (51%).

Table 3-5: Source of light in the household

Percentage of households by source of light according to area of residence, province/ region and wealth index quintile, Pakistan NNS 2018							
		Source of light					Number of households
		Incandescent bulb	Tube [a]	LED bulb	Energy-saving bulb	Lantern	
Total		46.9	18.2	15.6	55.8	3.8	100304
Urban		37.8	22.8	23.6	63.9	1.0	29858
Rural		52.4	15.4	10.7	51.0	5.4	70446
Province/ region							
Punjab	Urban	28.2	23.0	25.0	75.8	0.4	12016
	Rural	43.1	17.3	13.6	64.8	1.7	25070
	Total	37.5	19.4	17.9	68.9	1.2	37086
Sindh	Urban	48.3	20.5	23.2	49.5	1.8	9003
	Rural	64.2	7.5	5.2	25.3	13.8	8153
	Total	55.9	14.3	14.6	37.9	7.5	17156
KP	Urban	55.3	30.0	14.6	60.9	1.1	2464
	Rural	67.2	22.4	9.1	46.8	3.9	9758
	Total	64.9	23.9	10.2	49.6	3.4	12222
Balochistan	Urban	53.6	26.3	18.2	34.3	1.7	3495
	Rural	61.2	13.6	5.6	24.1	15.8	12820
	Total	59.1	17.1	9.1	26.9	11.9	16315
ICT	Urban	29.6	41.9	40.6	66.2	0.5	582
	Rural	26.7	38.4	30.8	67.4	0.4	623
	Total	28.2	40.2	35.9	66.8	0.4	1205
KP-NMD	Total	72.1	7.2	5.8	35.1	9.3	3355
AJK	Urban	35.5	13.2	7.5	77.6	0.4	1417
	Rural	47.1	6.9	9.2	56.9	0.3	6162
	Total	45.5	7.8	8.9	59.7	0.3	7579
GB	Urban	21.4	2.6	26.5	57.6	0.0	693
	Rural	40.7	2.8	21.1	50.8	1.3	4693
	Total	36.8	2.8	22.2	52.1	1.0	5386
Wealth index quintile							
Poorest		61.3	6.2	4.1	26.1	14.4	26840
Second		59.7	12.2	7.7	49.5	2.4	23206
Middle		45.4	18.7	12.5	62.9	1.0	19770
Fourth		34.5	22.2	20.5	69.5	0.4	16649
Richest		33.4	31.5	33.0	71.1	0.5	13839

[a] Fluorescent light

3.5 Household and personal assets

The possession of television and refrigerators was greater than of other assets and this result was consistent throughout the country. As expected, higher number of households in urban areas owned these assets compared to those residing in rural areas, with the exception of radios which were more commonly owned by rural dwellers. With regards to assets owned by at least one member of the household, mobile phone ownership surpassed any other asset with an overall rate of more than 90% countrywide. This was followed by possession of watches and motorcycles or scooters.

Agricultural land ownership was highest in GB and AJK and low elsewhere, ranging from 8.7% in Balochistan to 20.2% in KP-NMD. Ownership of farm animals and/or livestock was 76.6% in GB, 43.7% in AJK and 36.2% in KP-NMD, whereas in the rest of the country ownership ranged from 9.0% to 23.6%. Ownership of a dwelling by a household member was high in all provinces and regions, exceeding 80% (and as high as 96.9% in AJK), except in ICT where it was 63.7%. Ownership was higher in rural (94.7%) than urban (80.8%) areas.

Table 3-6: Household and personal assets

Percentage of households by ownership of selected household and personal assets, by ownership of dwelling, and by ownership of livestock, Pakistan NNS 2018											
	Total	Residence		Province/ region							
		Urban	Rural	Punjab	Sindh	KP	Balochistan	ICT	KP-NMD	AJK	GB
Percentage of households that own a:											
Radio	14.6	11.7	16.4	13.1	7.0	30.3	20.8	18.4	55.2	15.4	9.2
Television	67.8	84.9	57.4	79.0	59.4	48.0	45.2	86.5	23.0	70.5	61.7
Landline phone	15.6	20.0	13.0	18.6	9.4	13.6	16.1	33.0	12.5	19.0	9.7
Refrigerator	59.8	79.9	47.7	67.5	48.4	61.7	41.1	88.5	30.9	59.2	23.7
Air conditioner	10.7	19.4	5.5	11.3	10.6	10.2	7.4	29.8	7.4	4.2	1.9
Computer/ laptop	12.4	22.5	6.4	13.0	11.8	11.0	9.8	43.9	4.9	7.6	19.4
Internet connection	10.5	20.7	4.4	10.9	12.5	5.7	7.0	37.1	3.5	5.5	4.0
Percentage of households that own:											
Agricultural land	15.0	4.9	21.1	16.2	9.9	15.8	8.7	9.5	20.2	45.3	74.8
Farm animals/ livestock	21.8	6.2	31.1	20.9	20.5	23.6	18.2	9.0	36.2	43.7	76.6
Percentage of households where at least one member owns or has a:											
Watch	77.5	85.0	73.0	78.3	65.2	94.0	83.2	90.2	90.4	89.3	74.4
Mobile telephone	91.3	94.9	89.1	93.4	86.7	95.9	81.7	97.6	92.3	92.1	92.6
Bicycle	29.6	27.0	31.1	34.5	15.3	36.3	38.8	35.5	31.0	11.7	6.1

Percentage of households by ownership of selected household and personal assets, by ownership of dwelling, and by ownership of livestock, Pakistan NNS 2018											
	Total	Residence		Province/ region							
		Urban	Rural	Punjab	Sindh	KP	Balochistan	ICT	KP-NMD	AJK	GB
Motorcycle/ scooter	57.6	67.1	51.8	69.9	47.1	36.5	52.2	55.2	20.0	22.4	26.0
Animal-drawn cart	5.9	3.6	7.3	7.6	4.5	3.3	4.2	4.3	2.7	1.4	1.5
Car or truck	6.7	10.2	4.5	6.2	5.4	7.4	9.9	36.5	4.9	6.4	14.0
Boat with a motor	0.7	0.9	0.6	0.8	0.5	0.6	0.8	2.1	1.7	0.5	0.4
Tractor	2.3	1.4	2.9	3.0	1.2	1.3	3.1	3.5	1.9	0.9	2.0
Ownership of dwelling											
Owned by a household member	89.5	80.8	94.7	92.0	86.1	87.7	85.2	63.7	91.2	96.9	92.6
Not owned	10.5	19.2	5.3	8.0	13.9	12.3	14.8	36.3	8.8	3.1	7.4
Rented	9.6	18.2	4.4	7.0	13.1	11.7	13.5	34.3	6.7	2.4	6.4
Other	0.9	1.0	0.9	1.0	0.8	0.7	1.3	1.9	2.1	0.7	1.0

3.6 Wealth index quintiles

The wealth index is a composite indicator of wealth with households given a score based on the number and type of assets owned. The population was divided into quintiles nationally. Overall 39.6% of urban households fell in the richest wealth quintile while the largest share of rural households were in the poorest quintile. ICT (52.1%) and Punjab (24.8%) had the largest proportions of households in the richest wealth quintile, while Balochistan (47.7%) and KP-NMD (45.4%) had the highest proportions of households in the poorest quintile.

Table 3-7: Wealth index quintiles

Percent distribution of the household population by wealth index quintile, according to area of residence and province/ region, Pakistan NNS 2018						
	Wealth index quintile					Number of households
	Poorest	Second	Middle	Fourth	Richest	
Total	20.0	20.0	20.0	20.0	20.0	100304
Urban	4.8	9.9	17.5	28.2	39.6	29858
Rural	29.2	26.1	21.5	15.1	8.2	70446
Province/ region						
Punjab	9.8	20.1	22.0	23.3	24.8	37086
Sindh	36.3	15.0	14.6	17.3	16.8	17156
KP	16.5	26.7	24.4	18.8	13.6	12222

Percent distribution of the household population by wealth index quintile, according to area of residence and province/ region, Pakistan NNS 2018						
	Wealth index quintile					Number of households
	Poorest	Second	Middle	Fourth	Richest	
Balochistan	47.7	23.6	14.6	7.6	6.5	16315
ICT	1.2	6.0	15.5	25.3	52.1	1205
KP-NMD	45.4	34.8	13.7	3.9	2.3	3355
AJK	9.4	25.5	34.4	23.7	6.8	7579
GB	32.7	40.0	20.0	5.7	1.6	5386

3.7 Water, sanitation and hygiene

Lack of safe drinking water and sanitation has negative impacts on human health, with frequent exposure to harmful pathogens causing repeated infection and illness. It affects women and girls disproportionately, due to the time spent collecting water and caring for sick family members.

3.7.1 Drinking water

An improved source of drinking water is defined as any of the following types of supply: piped water (into dwelling, yard or plot, to neighbour, public tap/standpipe); tube well/ borehole, hand pump, protected well, protected spring, rain water, filtration plant and bottled water. However, it is not necessarily synonymous with safe water. Overall, 92.6% of households nationally were using an improved source of drinking water (urban: 93.8%; rural: 91.9%). While most provinces and regions had > 90% access to improved sources, Balochistan (75.3%), AJK (80.9%) and KP-NMD (81.9%) had lower rates of access.

Figure 3-2: Households using improved sources of drinking water, Pakistan NNS 2018

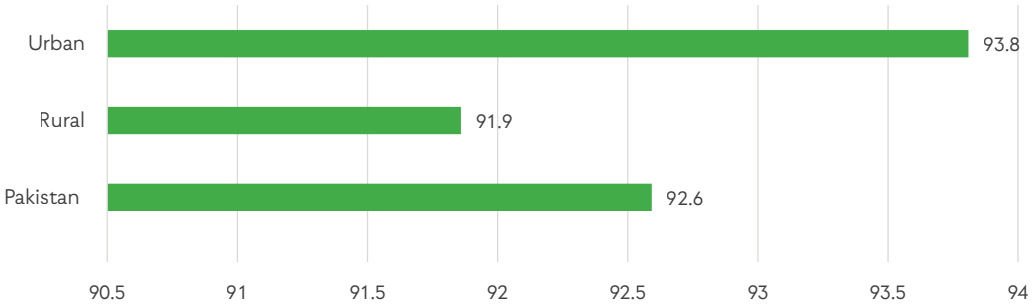
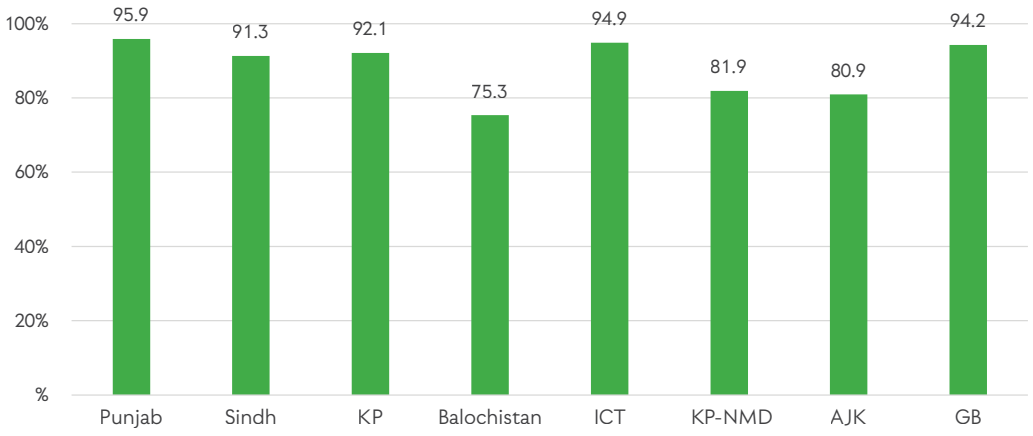


Figure 3-3: Households using improved sources of drinking water (province/region), Pakistan NNS 2018



Households with an educated head tended to make more use of improved sources of drinking water than households where the head had less education or none. Similarly, wealth index was directly proportional to use of improved sources of drinking water: in the poorest wealth quintile, 86.7% of households used improved drinking water compared to greater than 95.1% in the richest, although none of these gradients were steep.

Table 3-8: Improved sources of drinking water

Percentage of households and household population using improved sources of drinking water, Pakistan NNS 2018		
	Households using improved sources of drinking water (%)	Number of household members
Education of household head		
None	91.8	50545
Primary	93.2	10280
Middle	93.2	10616
Secondary	93.7	14951
Higher	93.0	13912
Wealth index quintile		
Poorest	86.7	26840
Second	93.7	23206
Middle	93.6	19770
Fourth	93.9	16649
Richest	95.1	13839

The table below shows commonly utilized methods of water treatment reported by the households. Overall, 88.4% households did not treat water to make it safer, with more than 91.9% of rural households did not treat their water. Urban households were more likely to use a treatment method. The most frequently employed technique was boiling, followed by use of a filter and straining through a cloth. Households in Sindh more frequently used a method of treating water (boiling: 7.5%; strain through a cloth: 5.3%; water filter: 4.8%; let it stand and settle: 2.1%) followed by KP-NMD and KP. People using an improved source of drinking water were less likely to treat it.

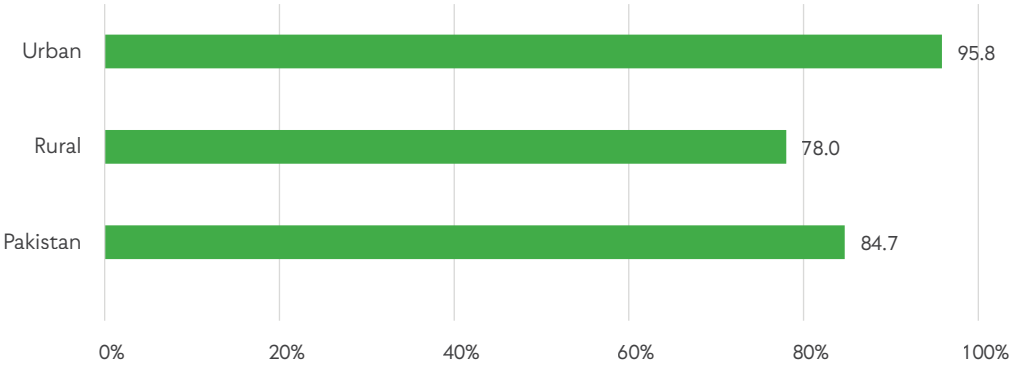
Table 3-9: Household water treatment

Methods of water treatment used in households according to area of residence, province/ region and main source of drinking water, Pakistan NNS 2018								
	Water treatment method used in the household							
	None	Boil	Add bleach/ chlorine	Strain through a cloth	Use water filter	Solar disinfection	Let it stand and settle	Other
Total	88.4	4.6	0.1	1.9	3.4	0.2	1.3	0.1
Urban	82.6	7.3	0.2	1.4	7.7	0.1	0.6	0.1
Rural	91.9	2.9	0.0	2.2	0.9	0.3	1.7	0.0
Province/ region								
Punjab	93.9	2.0	0.0	0.2	3.5	0.1	0.2	0.0
Sindh	79.7	7.5	0.3	5.3	4.8	0.0	2.1	0.2
KP	82.5	10.2	0.2	1.9	1.2	0.1	4.0	0.0
Balochistan	86.2	4.7	0.0	3.0	1.3	2.4	2.4	0.0
ICT	83.2	7.4	0.0	0.3	8.8	0.0	0.1	0.2
KP-NMD	80.4	7.8	0.1	5.8	1.6	1.6	2.7	0.0
AJK	97.3	1.0	0.0	0.0	0.4	0.0	1.1	0.0
GB	85.7	6.2	0.0	1.5	0.8	0.1	5.4	0.3
Main source of drinking water								
Improved	89.0	4.6	0.1	1.2	3.5	0.2	1.3	0.1
Unimproved	81.6	4.0	0.0	10.4	2.5	0.2	1.2	0.0

3.7.2 Sanitation

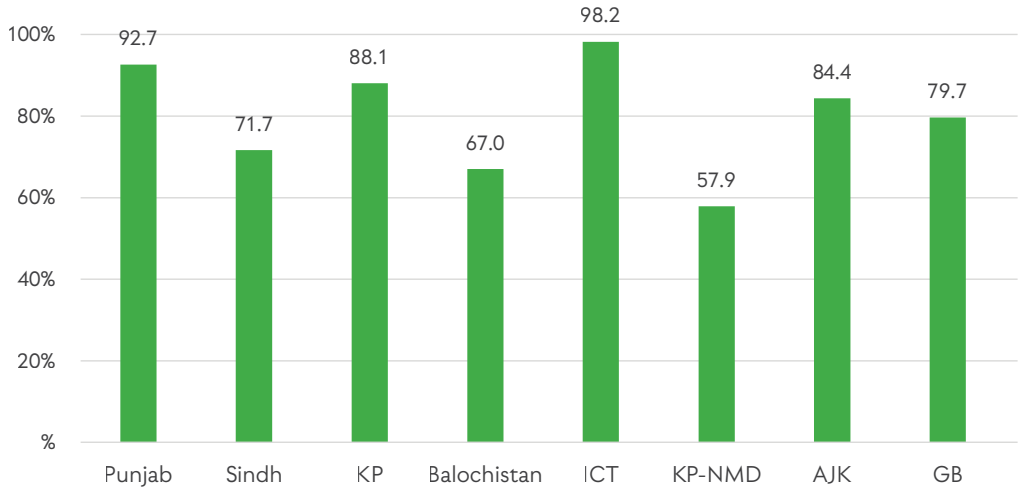
The majority (84.7%) of households in Pakistan had access to improved sanitation facilities including flushed to piped sewer system, septic tank, pit latrine, ventilated improved latrine and pit latrine with slab. Only 78.0% households used an improved facility in rural areas as compared to 95.8% in urban settings (Figure 3-4).

Figure 3-4: Percentage of households using improved sanitation facilities, Pakistan NNS 2018



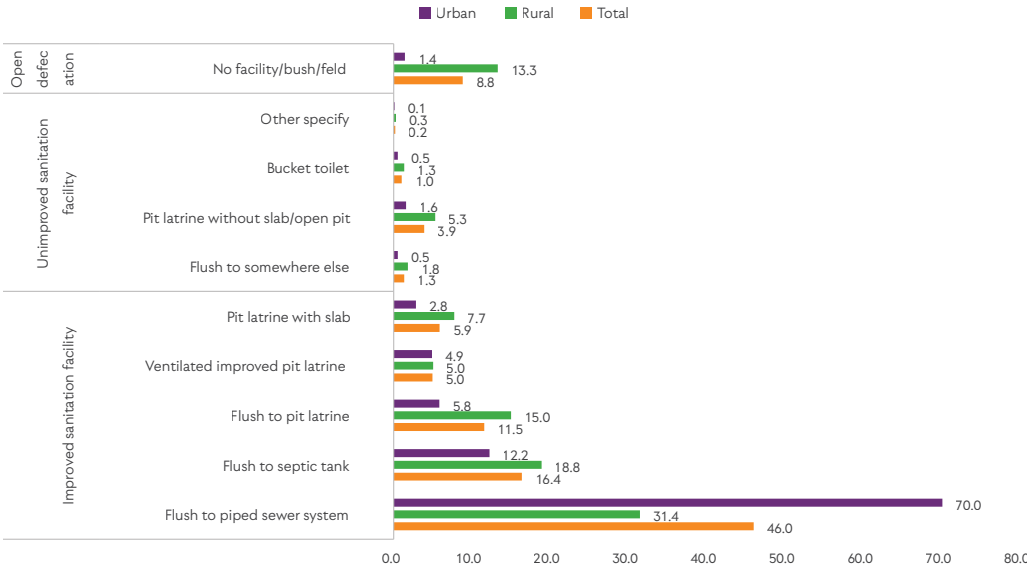
The percentage of households with access to an improved sanitation facility was greatest in ICT (98.2%) and Punjab (92.7%), and lowest in KP-NMD (57.9%), Balochistan (67.0%) and Sindh (71.7%).

Figure 3-5: Households using improved sanitation facilities (province/ region), Pakistan NNS 2018



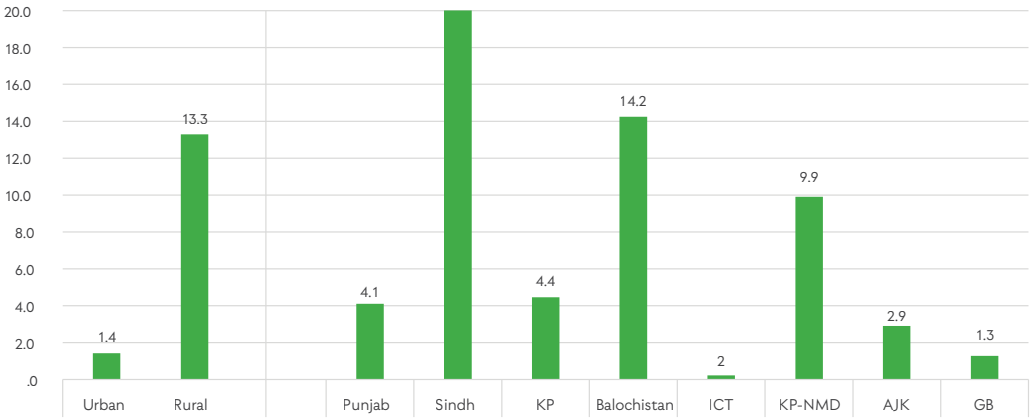
Flushed to sewer system was the most (46.0%) commonly used improved sanitation method. Only 31.4% of rural respondents reported using flush to piped sewer system. More rural respondents reported having no facility at all, or using bushes/open fields, compared to their urban counterparts.

Figure 3-6: Type of sanitation facilities used by households, Pakistan NNS 2018



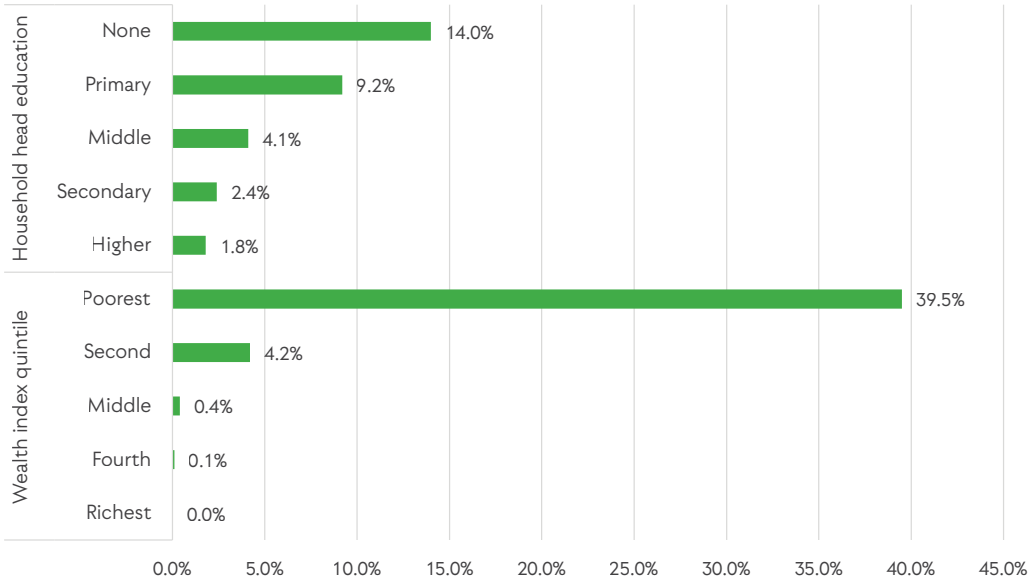
Around 8.8% of households practiced open defecation. This was more common in rural areas (13.3%) than urban (1.4%). Amongst the provinces and regions Sindh had the highest rate of open defecation (20.5%), followed by Balochistan (14.2%). The lowest rate was in ICT (0.2%). Open defecation is particularly harmful for women and girls, as they tend to go out at night, which exposes them to a heightened risk of gender-based violence.

Figure 3-7: Open defecation (no facility, use of bush/ field) by location, Pakistan NNS 2018



Moreover, the rates were inversely proportional to wealth index quintile (poorest: 39.5%; richest: 0%) and education of the household head (none: 14%; higher education: 1.8%).

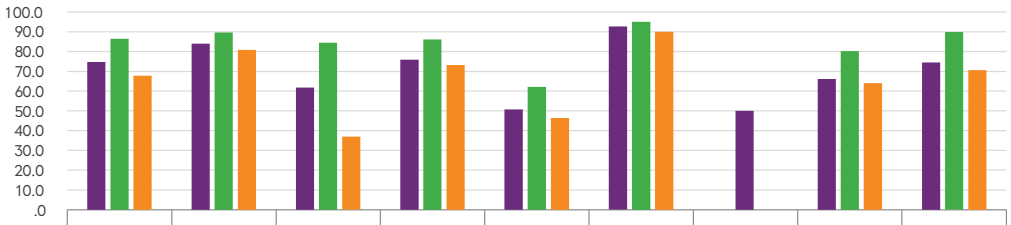
Figure 3-8: Association of open defecation (no facility, use of bush/ field) with household characteristics, Pakistan NNS 2018



3.7.3 Sanitation and drinking water

Households with both an improved source of drinking water and an improved sanitation facility are shown below. Nationally around 74.8% of households had access to both improved water and sanitation facilities (urban: 86.5%; rural: 67.8%). Results from the provinces and regions showed a similar urban-rural divide. ICT had the highest rate of access to both improved water and sanitation at 92.6%, and KP-NMD the lowest at 50.1%.

Figure 3-9: Households with both improved drinking water and improved sanitation facilities, Pakistan NNS 2018



	National	Punjab	Sindh	KP	Balochistan	ICT	KP-NMD	AJK	GB
Total	74.8	84.1	61.7	75.8	50.7	92.6	50.1	66.2	74.5
Urban	86.5	89.7	84.5	86.1	62.2	95.0		80.2	89.8
Rural	67.8	80.8	36.9	73.2	46.4	90.0		64.0	70.6

Total Urban Rural

3.7.4 Disposal of child's faeces

Mothers and caretakers were asked how they disposed of the last stool or faeces of their children. This is a significant source of exposure to faecal pathogens. Safe methods include: child uses toilet/latrine; putting in/rinsing into toilet/ latrine; or buried. Unsafe methods include: putting in/ rinsing into drain/ditch; throwing into garbage or left in the open.

Nationally 65.5% of caretakers stated they had used a safe method of disposal, with a 7.3 percentage point gap between urban and rural practices. Practices in Punjab were better than in other provinces/ regions with 76.6% reporting safe disposal methods, followed by KP at 62%. The lowest rates were recorded for KP-NMD (32.3%) and Balochistan (44.7%). In Pakistan, fathers are rarely responsible for disposing of their children's faeces.

Figure 3-10: Children whose last stool was disposed of safely, Pakistan NNS 2018

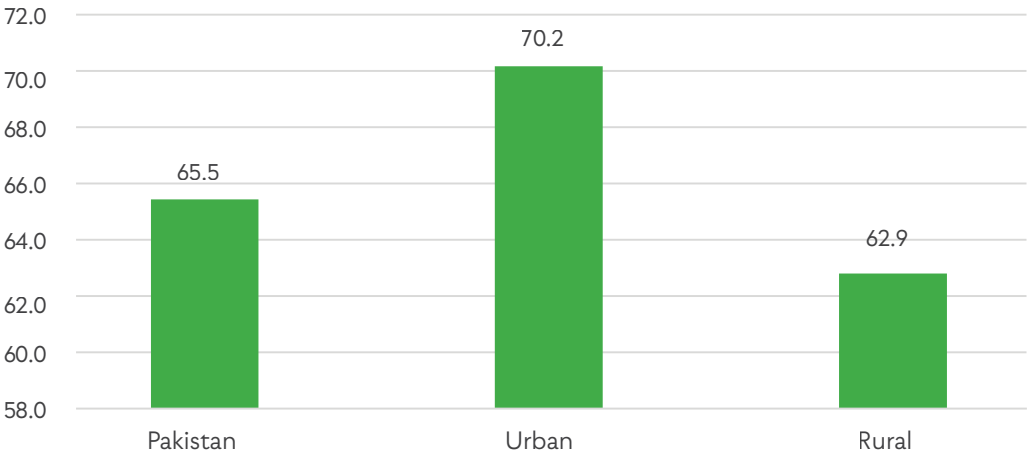
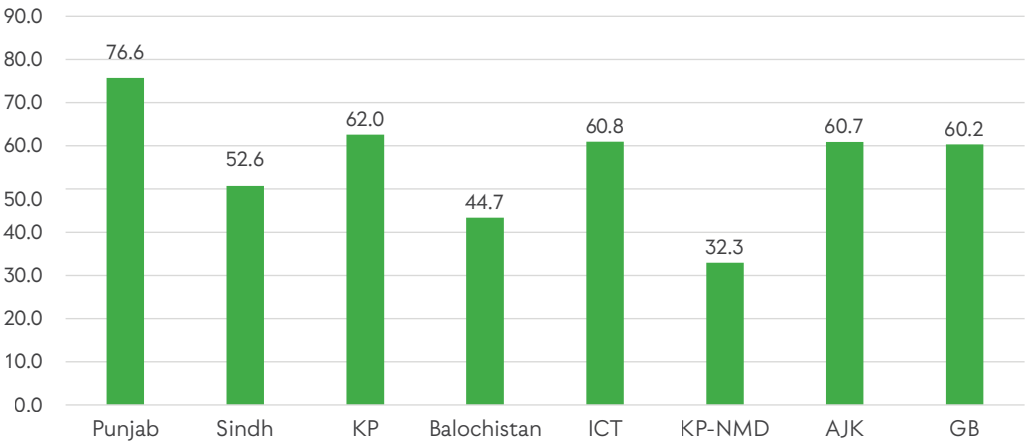


Figure 3-11: Children whose last stool was disposed of safely (province/ region), Pakistan NNS 2018



3.7.5 Handwashing practices

Handwashing practices with soap and water at five critical times (before preparing food; before eating; before feeding a child; after handling faeces or diapers; after defecating or using the latrine) were assessed and the availability of soap at handwashing places observed (Figures 3-12 and 3-13). At the national level, 93.4% of women reported washing hands before eating (urban: 96.5%; rural: 91.5%), with some provincial/ regional variation (AJK: 97.3%; KP: 82.6%). Likewise, 92.3% women usually washed hands before preparing meals, with provincial variations from 83.8% in KP-NMD to 97.3% in AJK. Only 69.9% reported washing their hands after handling faeces or diapers, and 74.5% before feeding a child.

Around 85.7% of households were observed to have soap available at the place designated for washing hands.

Figure 3-12: Handwashing practices, Pakistan NNS 2018

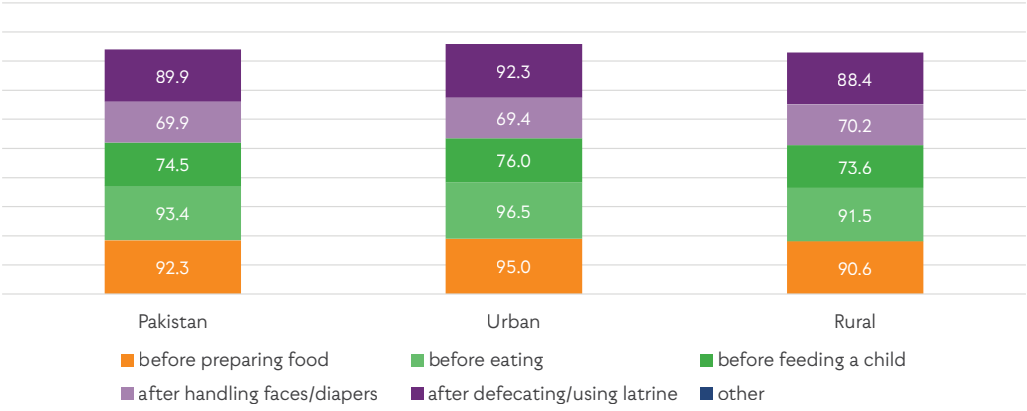
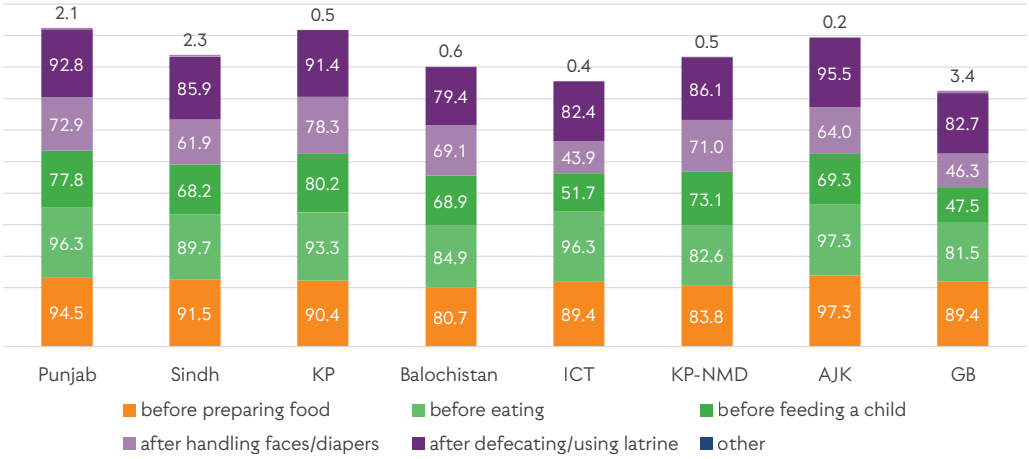


Figure 3-13: Handwashing practices (province/ region), Pakistan NNS 2018



3.8 Household food security

The table below presents the distribution of sampled households according to their level of food security as measured by FIES. More than half of the households (63.1%) were found to be "food secure". In urban areas, 68.2% of households were food secure compared to 60% in rural areas. A larger percentage of households were food secure in GB (75.6%) and KP (70.9%), with smaller proportions in Balochistan (50.3%) and KP-NMD (54.6%).

Nationally, 18.3% of households experienced severe food insecurity (urban: 13.9%; rural: 20.9%). Household food security was lowest in the poorest wealth quintile, with 42.1% of these households reporting severe food insecurity.

Table 3-10: Food insecurity

Percent distribution of household members based on food insecurity status on the FIES scale, Pakistan NNS 2018						
Food secure		Food insecurity status				Number of household members
		Food secure	Mild food insecurity	Moderate food insecurity	Severe food insecurity	
Total		63.1	11.1	7.6	18.3	96307
Urban		68.2	11.1	6.8	13.9	28991
Rural		60.0	11.1	8.0	20.9	67316
Province/ region						
Punjab	Urban	71.3	10.6	5.8	12.3	11670
	Rural	65.4	11.9	7.4	15.3	24232
	Total	67.6	11.4	6.8	14.2	35902

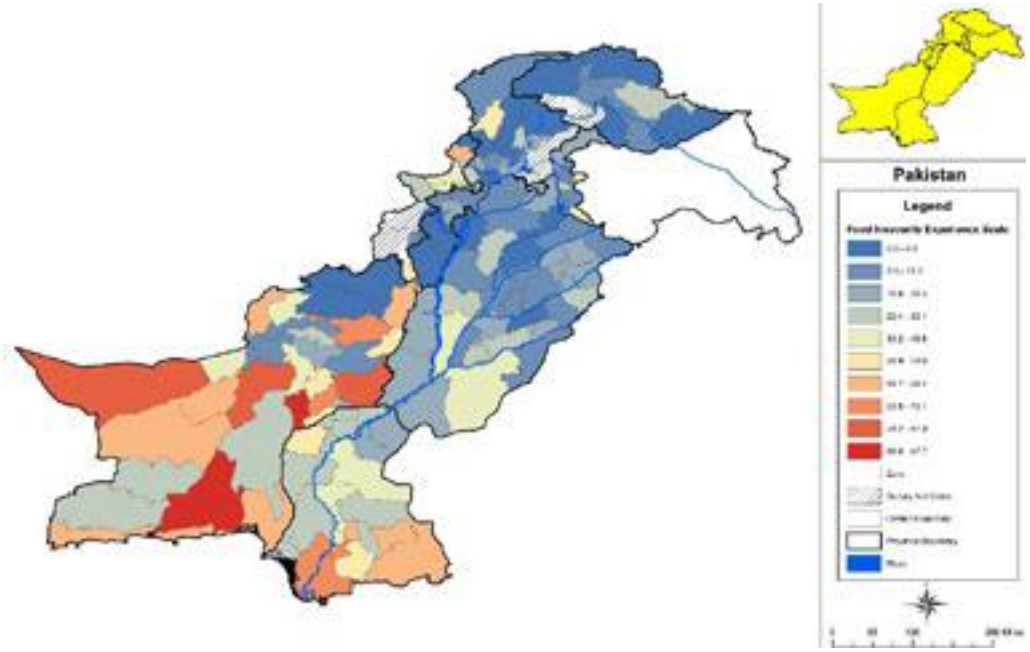
Percent distribution of household members based on food insecurity status on the FIES scale, Pakistan NNS 2018						
Food secure		Food insecurity status				Number of household members
		Food secure	Mild food insecurity	Moderate food insecurity	Severe food insecurity	
Sindh	Urban	64.2	12.1	8.5	15.2	8878
	Rural	40.5	10.0	11.6	37.9	7998
	Total	52.9	11.1	10.0	26.0	16876
KP	Urban	68.9	12.8	6.5	11.8	2335
	Rural	71.4	11.0	5.8	11.8	9252
	Total	70.9	11.4	5.9	11.8	11587
Balochistan	Urban	58.6	8.3	6.3	26.9	3290
	Rural	47.1	7.2	7.2	38.5	11658
	Total	50.3	7.5	6.9	35.3	14948
ICT	Urban	71.1	9.1	6.9	13.0	567
	Rural	62.3	14.0	11.6	12.0	619
	Total	66.8	11.5	9.1	12.5	1186
KP-NMD	Total	54.6	11.5	10.2	23.7	2946
AJK	Urban	77.0	11.7	3.7	7.6	1404
	Rural	66.7	8.6	5.0	19.7	6118
	Total	68.0	9.0	4.8	18.1	7522
GB	Urban	84.7	6.6	5.4	3.3	687
	Rural	73.4	14.8	8.0	3.8	4653
	Total	75.6	13.2	7.5	3.7	5340
Wealth index quintile						
Poorest		36.7	9.8	11.5	42.1	25521
Second		57.2	12.1	9.2	21.4	21934
Middle		63.8	13.5	8.3	14.4	19103
Fourth		73.0	12.1	5.9	9.0	16222
Richest		84.3	7.9	3.0	4.8	13527

3.8.1 District trends in food insecurity

Food insecurity in all districts was also assessed. Districts in Balochistan exhibited the highest degree of food insecurity, with particularly low rates of food security (i.e. high rates of food insecurity) observed in Awaran (0.2%), Jhal Magsi (3.8%) and Dera Bugti (9.0%). Sindh also had low food security (Tando Mohammad Khan: 15.8%; Sujawal: 19.3%; Tharparkar: 21.2%) also exhibited a high prevalence of food insecurity. By comparison, the lowest degre of food insecurity in Punjab was 37.8%, found in Lodhran, although low rates were also observed in KP-NMD and KP, including

FR Dera Ismail Khan (11.0%) and Mohmand Agency (13.6%).

Figure 3-14: District trends in food insecurity, Pakistan NNS 2018



3.9 Iodized salt in households

Cooking salt in in 99.0% of households was tested for the presence of iodine; 1.0% had no salt for testing. Around 79.6% of households were found to possess adequately iodized salt (more than 15 PPM iodine). Possession of adequately iodized salt was higher in urban areas (84.4%) compared to rural areas (76.7%). Regional differences were apparent, with the possession of adequately iodized salt lowest in KP-NMD (31.6%) and Balochistan (60.3%), and highest in GB (90.6%), ICT (90.5%) and AJK (88.3%). The presence of adequately iodized salt was directly proportional to household wealth, from 89.7% in the richest quintile to 63.2% in the poorest quintile.

Survey teams observed salt packaging with Handi iodization labelling in 8,499 households. In households where salt was available for observation, 20.4% of households had salt with Handi labelling (urban: 23.7%; rural: 18.3%).

Table 3-11: Presence of iodized salt in households

Percent distribution of households by presence of iodized salt, Pakistan NNS 2018							
		Households with salt tested (%)	Number of households	Percent of households with			Households with salt with Handi logo (%)
				No salt (%)	Salt test result		
					Not iodized (0 PPM)	15+ PPM	
Total		99.0	100304	1.0	19.4	79.6	20.4
Urban		99.0	29858	1.0	14.7	84.4	23.7
Rural		99.0	70446	1.0	22.3	76.7	18.3
Province/ region							
Punjab	Urban	99.1	12016	0.9	10.3	88.8	23.9
	Rural	99.3	25070	0.7	10.7	88.6	18.1
	Total	99.2	37086	0.8	10.6	88.7	20.3
Sindh	Urban	98.9	9003	1.0	18.8	80.2	22.6
	Rural	99.0	8153	1.0	33.4	65.6	10.6
	Total	99.0	17156	1.0	25.8	73.2	16.8
KP	Urban	99.6	2464	0.4	26.4	73.2	25.2
	Rural	99.2	9758	0.8	37.9	61.3	25.1
	Total	99.3	12222	0.7	35.6	63.7	25.1
Balochistan	Urban	97.6	3495	2.4	24.6	73.0	15.7
	Rural	95.8	12820	4.2	40.2	55.5	14.6
	Total	96.3	16315	3.7	36.0	60.3	14.9
ICT	Urban	97.3	582	2.7	4.2	93.0	46.4
	Rural	99.3	623	0.7	11.5	87.8	31.7
	Total	98.2	1205	1.8	7.7	90.5	39.3
KP-NMD	Total	98.6	3355	1.4	67.0	31.6	22.3
AJK	Urban	99.0	1417	1.0	6.3	92.7	46.0
	Rural	98.9	6162	1.1	11.3	87.6	39.7
	Total	98.9	7579	1.1	10.6	88.3	40.6
GB	Urban	99.8	693	0.2	4.7	95.1	49.2
	Rural	99.4	4693	0.6	10.0	89.4	52.8
	Total	99.5	5386	0.5	8.9	90.6	52.0
Wealth index quintile							
Poorest		98.1	26840	1.9	34.9	63.2	13.4
Second		98.9	23206	1.1	21.5	77.4	16.1
Middle		99.2	19770	0.7	17.2	82.1	18.5
Fourth		99.3	16649	0.6	14.0	85.4	22.1
Richest		99.3	13839	0.7	9.6	89.7	31.6

Quantitative survey

Nutrition status of children under five

Stunting prevalence was 40.2% and was higher in boys (40.9%) than girls (39.4%). The prevalence of wasting was 17.7%, and was higher in boys (18.4%) than girls (17.0%). Concurrence of stunting and wasting among Pakistani children was 5.9%, with higher rates among rural children (6.8%). Overweight prevalence was 9.5%, and was again higher amongst boys (9.7%).

4. Nutrition status of children under five

4.1 Sample characteristics

The table below provides the background characteristics for sampled children aged 0–59 months at national and provincial/ regional levels. In the national sample, 50.9% were boys and 49.1% were girls; 63.6% lived in rural areas; 36.2% were under two years of age; 42.5% to the lowest two quintiles. More than half (55.8%) of the mothers of sampled children had not received any education. Of the total sample, 52.0% were in Punjab (63.0% rural), 26.5% were in Sindh (52.6% rural), 10.2% were in KP (79.8% rural), 6.5% were in Balochistan (73.8% rural), 1.0% were in ICT (47.7% rural), 1.5% were in KP-NMD, 1.8% were in AJK and 0.6% were in GB.

Table 4-1: Background characteristics of children under five years

Percent and frequency distribution of children 0–59 months of age by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Unweighted number
Total		100.0	68493
Urban		36.4	19641
Rural		63.6	48852
Province/region			
Punjab	Urban	37.0	7565
	Rural	63.0	16716
	Total	52.0	24281
Sindh	Urban	47.4	6233
	Rural	52.6	6849
	Total	26.5	13082
KP	Urban	20.2	1640
	Rural	79.8	6592
	Total	10.2	8232
Balochistan	Urban	26.2	2431
	Rural	73.8	9448
	Total	6.5	11879
ICT	Urban	52.3	405
	Rural	47.7	421
	Total	1.0	826
KP-NMD	Total	1.5	1707
AJK	Urban	12.1	847
	Rural	87.9	3767
	Total	1.8	4614
GB	Urban	17.5	448
	Rural	82.5	3424
	Total	0.6	3872
Sex			
Male		50.9	35065
Female		49.1	33428

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Percent and frequency distribution of children 0–59 months of age by selected characteristics, Pakistan NNS 2018		
	Weighted percent	Unweighted number
Age		
0-5 months	8.7	5841
6-11 months	9.3	6074
12-23 months	18.1	12294
24-35 months	20.7	14434
36-47 months	21.5	14730
48-59 months	21.7	15120
Mother's education		
None	55.8	40278
Primary	11.9	6970
Middle	9.2	5824
Secondary	12.0	7190
Higher	11.1	6964
Wealth index quintile		
Poorest	22.1	19771
Second	20.4	16040
Middle	20.2	13441
Fourth	19.8	11077
Richest	17.5	8164

4.2 Low birth weight

Birth weight was recorded using two sources: a written record which included birth weight, and mother's recall for births that had taken place in the two years preceding the survey. In Pakistan, as in many low and middle-income countries, the exact birth weight is not formally recorded using a standardized weighing process at or soon after childbirth. Thus, in the majority of cases, the survey used the mother's estimate of the baby's size at birth, recording her perception of the baby as being "very small", "smaller than average", "average" or "larger than average" at birth. In the absence of exact birth weight, or with home births, such maternal estimates can be a useful proxy for the weight/size of the child.

As in earlier national surveys NNS 2018 shows that the proportion of children weighed at birth was very low (19.9%), with marginally higher figures in urban areas (29.5%). This proportion was consistently low across provinces and regions except in ICT where it was found to be 55.8%.

Using maternal perception of infant size at birth, only 3.7% of children were reported to be very small at birth, and 8.1% were reported to be smaller than average. About 80.8% of children were perceived to be average and 7.4% larger than average. Among babies categorized as "very small" by mothers, newborns of young mothers (below 20 years, about 4.3%) and older mothers (aged 35–49 years, about 4.5%) were more likely to be perceived as very small at birth than babies of mothers aged 20–34 years (3.5%), which is consistent with known birth weight trends by maternal age and parity. A higher proportion of children in rural areas (4.3%) were perceived to be very small compared to children in urban areas (2.9%). A higher proportion (5.1%) of babies were perceived to be very small by mothers who had no education, compared to those who had received higher education (1.6%). Similarly, a far higher proportion of mothers (7.1%) belonging to the poorest wealth quintile perceived their babies to be very small compared to the richest wealth quintile (1.5%).

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Provincial data also showed variations. Balochistan had the highest proportion of mothers who perceived their babies to be very small (9.5%), followed by KP (6.9%) and Sindh 5.9%, with the lowest rates in Punjab (1.6%). Among regions GB had the highest proportion (12.2%) of mothers who perceived their babies to be very small, followed by AJK (4.6%), and ICT (3.6%) and the lowest in KP-NMD (4.5%).

Where a specific birth weight was available, the prevalence of low birth weight was estimated to be 20.1% with a higher proportion (26.2%) among rural dwellers than urban dwellers (16.0%). Similar differences were noted by education level and poverty: babies whose mothers were uneducated had a higher prevalence (23.5%) of low birth weight than those whose mothers had higher education (16.5%). Similarly, babies belonging to the poorest wealth quintile were more likely to be born with low birth weight (24.6%) than babies born to the richest wealth quintile (15.1%).

According to this source, Punjab had the highest prevalence (21.7%) of low birth weight followed by KP (18.5%), Balochistan (14.4%) and Sindh (18.4%). Except in Balochistan, the prevalence of low birth weight was higher among rural children. Among the non-provincial regions, GB had the highest prevalence of low birth weight (33.6%) followed by AJK (30.2%), KP-NMD (14.8%) and ICT (13.1%).

Table 4-2: Low birth weight

Percentage of last live-born children in the last two years that are estimated to have weighed below 2,500 grams at birth and percentage of live births weighed at birth, Pakistan NNS 2018										
		Percent distribution of births by mother's assessment of size at birth				Total	Percentage of live births			Number of last live-born children in the last two years
		Very small	Smaller than average	Average	Larger than average or very large		Below 2,500 grams	Weighed at birth	Number of children Weighed at birth	
Total		3.7	8.1	80.8	7.4	100.0	20.1	19.9	4034	23284
Urban		2.9	7.5	82.7	7.0	100.0	16.0	29.5	1718	6734
Rural		4.3	8.4	79.7	7.6	100.0	26.2	14.4	2316	16550
Province/ region										
Punjab	Urban	1.1	5.4	87.4	6.1	100.0	15.2	23.9	567	2723
	Rural	1.9	6.6	84.6	6.9	100.0	28.4	16.3	915	5795
	Total	1.6	6.2	85.7	6.6	100.0	21.7	19.1	1482	8518
Sindh	Urban	4.9	9.8	78.6	6.6	100.0	16.4	41.8	776	1989
	Rural	6.8	10.1	74.5	8.6	100.0	26.3	12.8	256	2183
	Total	5.9	9.9	76.5	7.6	100.0	18.4	26.7	1032	4172
KP	Urban	4.1	9.8	77.9	8.1	100.0	23.4	14.8	81	606
	Rural	7.6	7.8	78.3	6.3	100.0	16.8	9.8	229	2220
	Total	6.9	8.2	78.2	6.7	100.0	18.5	10.8	310	2826
Balochistan	Urban	9.5	13.0	56.5	21.0	100.0	14.3	17.0	79	764
	Rural	9.5	15.6	63.5	11.4	100.0	14.6	7.1	160	2930
	Total	9.5	15.0	61.8	13.7	100.0	14.4	9.5	239	3694

Percentage of last live-born children in the last two years that are estimated to have weighed below 2,500 grams at birth and percentage of live births weighed at birth, Pakistan NNS 2018

		Percent distribution of births by mother's assessment of size at birth				Total	Percentage of live births			Number of last live-born children in the last two years
		Very small	Smaller than average	Average	Larger than average or very large		Below 2,500 grams	Weighed at birth	Number of children Weighed at birth	
ICT	Urban	2.9	8.1	75.4	13.6	100.0	14.9	55.7	80	145
	Rural	4.3	15.3	70.6	9.8	100.0	11.0	55.9	77	145
	Total	3.6	11.5	73.2	11.8	100.0	13.1	55.8	157	290
KP-NMD	Total	4.5	10.1	74.5	10.9	100.0	14.8	7.8	49	703
AJK	Urban	3.0	9.2	80.6	7.2	100.0	16.4	26.5	82	314
	Rural	4.9	14.7	71.4	9.1	100.0	32.8	22.3	261	1358
	Total	4.6	14.0	72.5	8.9	100.0	30.2	22.8	343	1672
GB	Urban	13.8	14.1	59.7	12.4	100.0	31.1	28.7	46	157
	Rural	11.9	20.0	58.7	9.4	100.0	34.1	27.4	376	1252
	Total	12.2	19.0	58.9	9.9	100.0	33.6	27.6	422	1409
Mother's age										
Less than 20 years		4.3	8.7	79.9	7.1	100.0	25.7	15.1	247	1858
20-34 years		3.5	7.9	81.5	7.1	100.0	20.4	21.2	3142	16831
35-49 years		4.5	8.5	78.1	8.9	100.0	15.5	16.6	645	4595
Education										
None		5.1	9.0	78.5	7.5	100.0	23.5	12.0	1294	13157
Primary		2.4	6.9	83.5	7.2	100.0	23.8	18.4	447	2527
Middle		2.9	8.5	80.8	7.8	100.0	19.8	23.3	476	2170
Secondary		2.4	6.8	84.3	6.5	100.0	19.3	32.4	787	2642
Higher		1.6	6.5	84.0	7.8	100.0	16.5	39.2	1030	2788
Wealth index quintile										
Poorest		7.1	10.9	74.6	7.4	100.0	24.6	7.8	452	6398
Second		4.7	8.4	79.3	7.6	100.0	35.4	11.3	705	5382
Middle		3.3	7.9	82.2	6.7	100.0	26.2	18.4	862	4569
Fourth		2.1	6.6	84.4	7.0	100.0	17.3	26.9	1010	3985
Richest		1.5	6.7	83.5	8.3	100.0	15.1	36.7	1005	2950

4.3 Nutrition status

Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers two broad groups of conditions. One is undernutrition, which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies. The other is overweight and obesity.

The nutrition status of children reflects the overall health of the population and offers a window to its future. Nutrition in early life is essential for proper physical growth and mental development and clearly an important determinant of human capital. An estimated 45% of all deaths among children (both boys and girls) under five years of age are associated with childhood malnutrition in

all its forms (low birth weight, stunting, wasting and micronutrient deficiencies). Undernourished children are significantly more likely to die from common childhood ailments and those who survive are at higher risk of recurring sickness and faltering growth.

In NNS 2018, the 2016 WHO Child Growth Reference Standards to assess the nutritional status of children under five years of age. Each of the three nutrition status indicators – height-for-age (stunting), weight-for-height (wasting and overweight) and weight-for-age (underweight) – are expressed in standard deviation units (z-scores) from the median of the reference population.

4.3.1 Stunting

NNS 2018 reveals that the stunting prevalence (exceeding minus two standard deviations) in Pakistan was 40.2% with a slightly higher prevalence in boys (40.9%) than girls (39.4%). The prevalence was higher in rural (43.2%) than in urban areas (34.8%). Stunting was lowest (28.6%) amongst children aged 0–5 months and highest (46.6%) amongst those aged 18–23 months of age.

Stunting was highest (51.4%) amongst children belonging to the poorest quintile, however a substantial proportion (29.2%) in the richest quintile were also stunted. Stunting prevalence was high (46.0%) among children whose mothers had no education.

Stunting prevalence was highest in Balochistan (46.6%), followed by Sindh (45.5%), KP (40.0%) and Punjab (36.4%). In all provinces the rural population was more likely to be stunted compared to the urban population. Among regions, the stunting prevalence was highest (48.3%) in KP-NMD, followed by GB (46.6%), AJK (39.3%) and ICT (32.6%).

Table 4-3: Nutrition status of children – stunting

Percentage of children under age five by nutritional status according to height for age, Pakistan NNS 2018					
		Stunted (height for age)		Mean Z-score (SD)	Number of children under age five
		Percent below -2 SD	Percent below -3 SD		
Total		40.2	19.6	-1.40	59449
Urban		34.8	16.2	-1.18	17089
Rural		43.2	21.6	-1.52	42360
Province/region					
Punjab	Urban	33.0	15.5	-1.12	6605
	Rural	38.5	18.1	-1.37	14457
	Total	36.4	17.2	-1.28	21062
Sindh	Urban	36.4	16.7	-1.26	5391
	Rural	53.2	28.9	-1.93	6237
	Total	45.5	23.3	-1.62	11628
KP	Urban	34.7	16.7	-1.11	1407
	Rural	41.4	20.3	-1.41	5574
	Total	40.0	19.6	-1.35	6981
Balochistan	Urban	44.0	19.8	-1.37	2073
	Rural	47.7	25.3	-1.51	7591
	Total	46.6	23.7	-1.47	9664
ICT	Urban	32.8	16.4	-1.12	379
	Rural	32.4	12.6	-1.10	392
	Total	32.6	14.6	-1.11	771

Percentage of children under age five by nutritional status according to height for age, Pakistan NNS 2018					
		Stunted (height for age)		Mean Z-score (SD)	Number of children under age five
		Percent below -2 SD	Percent below -3 SD		
KP-NMD	Total	48.3	24.7	-1.55	1505
AJK	Urban	33.1	15.8	-1.10	754
	Rural	40.1	19.1	-1.38	3384
	Total	39.3	18.7	-1.35	4138
GB	Urban	42.4	18.1	-1.42	427
	Rural	47.5	23.5	-1.67	3273
	Total	46.6	22.6	-1.62	3700
Sex					
Male		40.9	20.2	-1.43	30274
Female		39.4	19.1	-1.36	29175
Age					
0-5 months		28.6	14.7	-0.84	4860
6-11 months		31.6	13.6	-0.97	5305
12-17 months		39.3	19.0	-1.30	5513
18-23 months		46.6	23.9	-1.54	5202
24-35 months		44.1	22.2	-1.53	13009
36-47 months		42.2	20.3	-1.51	12841
48-59 months		40.3	19.5	-1.54	12719
Mother's education					
None		46.0	23.4	-1.62	34836
Primary		37.6	17.9	-1.34	6116
Middle		35.2	15.6	-1.24	5073
Secondary		30.8	13.9	-1.03	6269
Higher		27.4	12.2	-0.86	6104
Wealth index quintile					
Poorest		51.4	27.6	-1.82	17103
Second		45.1	22.9	-1.60	14000
Middle		39.1	17.9	-1.38	11672
Fourth		32.6	15.0	-1.13	9628
Richest		29.2	12.5	-0.91	7046

4.3.2 Wasting

The prevalence of wasting (exceeding -2 SD) in Pakistan was 17.7% with a slightly higher prevalence in boys (18.4%) than girls (17.0%). Prevalence was higher in rural (18.6%) than in urban areas (16.2%). A decreasing trend was seen with increasing age: wasting was highest (26.6%) amongst children aged 0–5 months of age and lowest (14.7%) amongst those aged 48–59 months.

Wasting was highest (23.0%) in children belonging to the poorest quintile, but a substantial proportion (14.6%) in the richest quintile were also found to be wasted. Wasting was high (19.4%) among children whose mothers had no education.

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Wasting prevalence was highest in Sindh (23.2%), followed by Balochistan (18.9%), Punjab (15.3%) and KP (15.0%). In most provinces the rural population was more likely to be wasted compared to the urban population, however in Balochistan wasting was slightly higher in the urban (19.7%) than in the rural population (18.5%). Among regions the prevalence of wasting was highest in KP-NMD (23.2%) followed by AJK (16.0%), ICT (12.2%) and GB (9.4%).

Table 4-4: Nutritional status of children – wasting

Percentage of children under age five by nutritional status according to weight for height (wasting), Pakistan NNS 2018						
		Wasting (weight for height)			Mean Z-score (SD)	Number of children under age five
		Percent below -2 SD	Percent below - 3 SD	Percent above + 2 SD		
Total		17.7	8.0	9.5	-0.45	57433
Urban		16.2	6.9	9.6	-0.39	16506
Rural		18.6	8.6	9.4	-0.49	40927
Province/ region						
Punjab	Urban	13.5	5.9	10.6	-0.22	6386
	Rural	16.3	7.7	9.5	-0.40	13972
	Total	15.3	7.0	9.9	-0.33	20358
Sindh	Urban	20.7	8.1	6.7	-0.76	5264
	Rural	25.4	10.0	3.8	-1.09	6059
	Total	23.3	9.2	5.2	-0.94	11323
KP	Urban	13.2	6.1	12.4	-0.05	1346
	Rural	15.5	8.5	13.1	-0.11	5367
	Total	15.0	8.0	12.9	-0.10	6713
Balochistan	Urban	19.7	10.2	16.7	-0.21	1946
	Rural	18.5	9.9	16.7	-0.11	7261
	Total	18.9	10.0	16.7	-0.14	9207
ICT	Urban	10.2	5.4	7.1	-0.22	378
	Rural	14.5	4.6	4.2	-0.48	388
	Total	12.2	5.0	5.8	-0.35	766
KP-NMD	Total	23.2	13.8	18.6	-0.17	1470
AJK	Urban	11.8	6.9	18.6	0.09	716
	Rural	16.6	8.7	12.7	-0.20	3258
	Total	16.0	8.5	13.4	-0.17	3974
GB	Urban	6.2	2.7	14.1	0.50	421
	Rural	10.1	5.5	11.8	0.19	3201
	Total	9.4	5.0	12.2	0.24	3622
Sex						
Male		18.4	8.2	9.7	-0.47	29219
Female		17.0	7.7	9.2	-0.43	28214

Percentage of children under age five by nutritional status according to weight for height (wasting), Pakistan NNS 2018					
	Wasting (weight for height)			Mean Z-score (SD)	Number of children under age five
	Percent below -2 SD	Percent below - 3 SD	Percent above + 2 SD		
Age					
0-5 months	26.6	13.6	12.4	-0.65	4466
6-11 months	21.3	9.2	11.5	-0.45	5177
12-17 months	19.3	9.0	9.9	-0.44	5398
18-23 months	18.4	9.1	8.6	-0.43	5118
24-35 months	16.6	7.7	7.8	-0.48	12685
36-47 months	15.7	6.8	9.1	-0.41	12490
48-59 months	14.7	5.9	9.8	-0.40	12099
Mother's education					
None	19.4	8.8	9.1	-0.55	33634
Primary	16.5	7.3	9.1	-0.43	5899
Middle	15.6	6.7	10.4	-0.31	4896
Secondary	15.7	7.3	10.2	-0.35	6074
Higher	14.3	6.3	10.5	-0.22	5936
Wealth index quintile					
Poorest	23.0	10.2	7.9	-0.75	16440
Second	18.1	8.3	9.4	-0.48	13562
Middle	16.5	7.3	9.8	-0.39	11300
Fourth	15.1	7.0	10.5	-0.30	9300
Richest	14.6	6.6	10.1	-0.27	6831

4.3.3 Concurrent stunting and wasting

We also assessed the prevalence of concurrent stunting and wasting, which indicates a more severe form of malnutrition. The data show that the joint occurrence of stunting and wasting among Pakistani children was 5.9%, and was slightly higher amongst boys (6.5%) than girls (5.4%). The joint concurrence of stunting and wasting was more common (6.8%) in rural children, children of mothers without any education (7.7%), and those belonging to the poorest wealth quintiles (10.7%).

The highest prevalence of concurrent stunting and wasting was found in Sindh (10.0%), followed by Balochistan (6.5%), Punjab (4.3%) and KP (3.7%). In all provinces prevalence was higher in rural areas.

The regional data revealed the highest prevalence (7.9%) of concurrent stunting and wasting occurred in KP-NMD, followed by AJK (4.1%), ICT (3.5%) and GB (2.8%).

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Table 4-5: Nutritional status of children – concurrent stunting and wasting

Percentage of children under age five by nutritional status according to both weight for height and height for age, Pakistan NNS 2018			
		Wasted and stunted (under -2 SD for both)	Number of children under age five (wasted and stunted)
Total		5.9	56752
Urban		4.4	16388
Rural		6.8	40364
Province/ region			
Punjab	Urban	3.2	6347
	Rural	4.9	13897
	Total	4.3	20244
Sindh	Urban	6.4	5257
	Rural	13.0	6025
	Total	10.0	11282
KP	Urban	2.4	1334
	Rural	4.0	5287
	Total	3.7	6621
Balochistan	Urban	6.2	1900
	Rural	6.7	7006
	Total	6.5	8906
ICT	Urban	2.7	375
	Rural	4.3	387
	Total	3.5	762
KP-NMD	Total	7.8	1392
AJK	Urban	2.3	713
	Rural	4.3	3233
	Total	4.1	3946
GB	Urban	1.4	417
	Rural	3.1	3182
	Total	2.8	3599
Sex			
Male		6.5	28852
Female		5.4	27900
Age			
0-5 months		4.1	4375
6-11 months		4.9	5093
12-17 months		7.3	5298
18-23 months		8.0	4997
24-35 months		6.8	12558
36-47 months		5.6	12405

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Percentage of children under age five by nutritional status according to both weight for height and height for age, Pakistan NNS 2018		
	Wasted and stunted (under -2 SD for both)	Number of children under age five (wasted and stunted)
48-59 months	5.1	12026
Mother's education		
None	7.7	33123
Primary	4.7	5866
Middle	4.1	4859
Secondary	3.3	6030
Higher	2.8	5891
Wealth index quintile		
Poorest	10.7	16131
Second	6.2	13390
Middle	5.4	11199
Fourth	3.7	9243
Richest	2.7	6789

4.3.4 Underweight

Underweight prevalence (exceeding minus two standard deviations) in Pakistan was 28.9% with slightly higher prevalence amongst boys (29.3%) than girls (28.4%). Prevalence in rural areas was higher (31.6%) compared to urban areas (24.0%). Underweight prevalence was lowest amongst children aged 12–17 months (25.3%) and highest amongst those aged 0–5 months (31.3%). Underweight prevalence was highest amongst children from the poorest quintile (43.0%), however a significant proportion of those from the richest quintile (17.8%) were also underweight. Underweight prevalence was also high among children whose mothers had no education (34.6%).

Underweight prevalence was highest in Sindh (41.3%), followed by Balochistan (31.0%), Punjab (23.5%) and KP (23.1%), with higher prevalence in rural than in urban areas of all provinces. Among regions the underweight prevalence was found to be highest in KP-NMD (33.7%), followed by AJK (21.9%), GB (21.3%) and ICT (19.2%).

Table 4-6: Nutritional status of children – underweight

Percentage of children under age five by nutritional status according to weight for age, Pakistan NNS 2018					
		Underweight (weight for age)		Mean Z score (SD)	Number of children under age five
		Percent below -2 SD	Percent below -3 SD		
Total		28.9	12.1	-1.1	60977
Urban		24.0	8.9	-0.9	17362
Rural		31.6	13.9	-1.2	43615
Province/ region					
Punjab	Urban	19.9	7.1	-0.8	6678
	Rural	25.7	10.3	-1.1	14632
	Total	23.5	9.1	-1.0	21310

Percentage of children under age five by nutritional status according to weight for age, Pakistan NNS 2018					
		Underweight (weight for age)		Mean Z score (SD)	Number of children under age five
		Percent below -2 SD	Percent below -3 SD		
Sindh	Urban	30.9	11.5	-1.3	5407
	Rural	50.0	24.4	-1.9	6289
	Total	41.3	18.5	-1.6	11696
KP	Urban	18.6	6.8	-0.7	1432
	Rural	24.3	9.6	-0.9	5753
	Total	23.1	9.1	-0.8	7185
Balochistan	Urban	29.8	13.2	-0.9	2200
	Rural	31.5	14.6	-1.0	8199
	Total	31.0	14.2	-1.0	10399
ICT	Urban	18.4	6.6	-0.8	384
	Rural	20.2	8.3	-1.0	392
	Total	19.2	7.4	-0.9	776
KP-NMD	Total	33.7	18.3	-1.1	1701
AJK	Urban	16.1	6.7	-0.5	762
	Rural	22.6	9.3	-0.9	3416
	Total	21.9	9.0	-0.9	4178
GB	Urban	14.0	3.8	-0.5	431
	Rural	22.8	9.1	-0.9	3301
	Total	21.3	8.2	-0.8	3732
Sex					
Male		29.3	12.3	-1.1	31071
Female		28.4	12.0	-1.1	29906
Age					
0-5 months		31.3	14.1	-1.1	5060
6-11 months		26.0	10.5	-0.9	5461
12-17 months		25.3	11.1	-0.9	5690
18-23 months		29.5	13.0	-1.1	5425
24-35 months		29.7	13.2	-1.2	13312
36-47 months		29.1	11.9	-1.2	13111
48-59 months		29.4	11.1	-1.2	12918
Mother's education					
None		34.6	15.5	-1.3	35981
Primary		25.8	9.9	-1.1	6191
Middle		21.9	7.5	-0.9	5153
Secondary		20.7	7.6	-0.8	6370
Higher		17.2	5.8	-0.6	6201
Wealth index quintile					
Poorest		43.0	20.7	-1.6	17795
Second		32.1	13.4	-1.3	14357

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Percentage of children under age five by nutritional status according to weight for age, Pakistan NNS 2018				
	Underweight (weight for age)		Mean Z score (SD)	Number of children under age five
	Percent below -2 SD	Percent below -3 SD		
Middle	26.5	10.4	-1.1	11904
Fourth	20.9	7.8	-0.9	9784
Richest	17.8	5.9	-0.7	7137

4.3.5 Overweight

Overweight prevalence among children under five in Pakistan was 9.5% with slightly higher prevalence amongst boys (9.7%) than girls (9.2%). Prevalence was slightly higher in urban areas (9.6%) than in rural areas (9.4%). When looking at the age distribution, overweight prevalence was highest amongst children aged 0–5 months (12.4%) and lowest amongst those aged 24–35 months (7.8%). Overweight prevalence was highest (10.1%) among children belonging to households in the richest quintile, however 7.9% of children in the poorest quintile were also overweight. Overweight prevalence was high (10.5%) among children whose mothers had higher education.

Overweight prevalence was highest in Balochistan (16.7%), followed by KP (12.9%), Punjab (9.9%) and Sindh (5.2%). In Sindh and Punjab, the urban population was more likely to be overweight than the rural dwelless, while in Balochistan and KP overweight prevalence was slightly higher in the rural population. Overweight prevalence was found to be highest in KP-NMD (18.6%), followed by AJK (13.4%), GB (12.2%) and ICT (5.8%).

Table 4-7: Nutritional status of children – overweight

Percentage of children under age five by nutritional status according to weight for height (overweight), Pakistan NNS 2018				
		Overweight (weight for height)	Mean Z-score (SD)	Number of children under age five
		Percent above +2 SD		
Total		9.5	-0.5	57433
Urban		9.6	-0.4	16506
Rural		9.4	-0.5	40927
Province/ region				
Punjab	Urban	10.6	-0.2	6386
	Rural	9.5	-0.4	13972
	Total	9.9	-0.3	20358
Sindh	Urban	6.7	-0.8	5264
	Rural	3.8	-1.1	6059
	Total	5.2	-0.9	11323
KP	Urban	12.4	0.0	1346
	Rural	13.1	-0.1	5367
	Total	12.9	-0.1	6713
Balochistan	Urban	16.7	-0.2	1946
	Rural	16.7	-0.1	7261
	Total	16.7	-0.1	9207

Percentage of children under age five by nutritional status according to weight for height (overweight), Pakistan NNS 2018				
		Overweight (weight for height)	Mean Z-score (SD)	Number of children under age five
		Percent above +2 SD		
ICT	Urban	7.1	-0.2	378
	Rural	4.2	-0.5	388
	Total	5.8	-0.3	766
KP-NMD	Total	18.6	-0.2	1470
AJK	Urban	18.6	0.1	716
	Rural	12.7	-0.2	3258
	Total	13.4	-0.2	3974
GB	Urban	14.1	0.5	421
	Rural	11.8	0.2	3201
	Total	12.2	0.2	3622
Sex				
Male		9.7	-0.5	29219
Female		9.2	-0.4	28214
Age				
0-5 months		12.4	-0.6	4465
6-11 months		11.5	-0.5	5177
12-17 months		9.9	-0.4	5398
18-23 months		8.6	-0.4	5118
24-35 months		7.8	-0.5	12685
36-47 months		9.1	-0.4	12490
48-59 months		9.8	-0.4	12100
Mother's education				
None		9.1	-0.5	33634
Primary		9.1	-0.4	5899
Middle		10.4	-0.3	4896
Secondary		10.2	-0.4	6074
Higher		10.5	-0.2	5936
Wealth index quintile				
Poorest		7.9	-0.8	16440
Second		9.4	-0.5	13562
Middle		9.8	-0.4	11300
Fourth		10.5	-0.3	9300
Richest		10.1	-0.3	6831

4.3.6 Trends in malnutrition

The figure below shows trends in stunting wasting and underweight among children under five years of age in Pakistan between 2001 and 2018. Drawing on data from three successive National Nutrition Surveys it shows that the rate of stunting rose in the decade following 2001, with 43.7% of children reported as stunted in 2011, compared to 36.8% in 2001. However, this was followed by a decline from 2011 to 2018, with the stunting rate in Pakistan now 40.2%.

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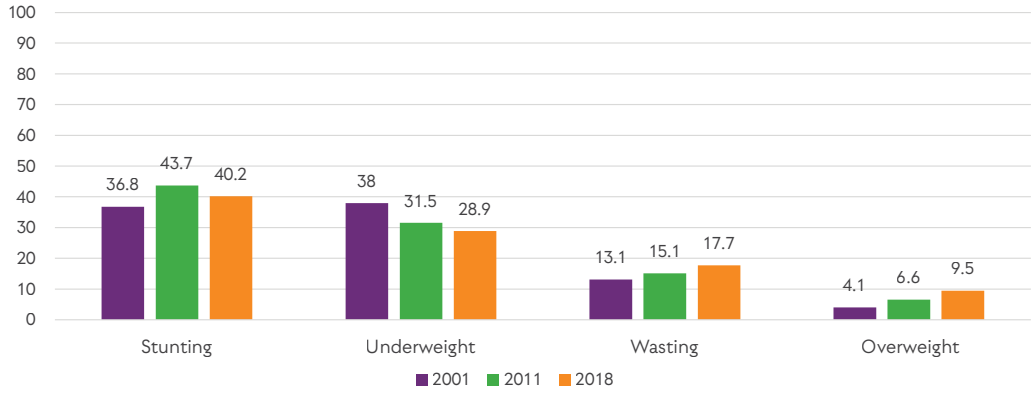
A decline in the prevalence of underweight is observed over time, from 38.0% in 2001, falling to 31.5% in 2011 and further to 28.9% in 2018. Overweight increased steadily from 4.1% in 2001 to 6.6% in 2011 and 9.5% in 2018. Wasting also increased steadily, from 13.1% in 2001 to 15.1% in 2011 and 17.7% in 2018.

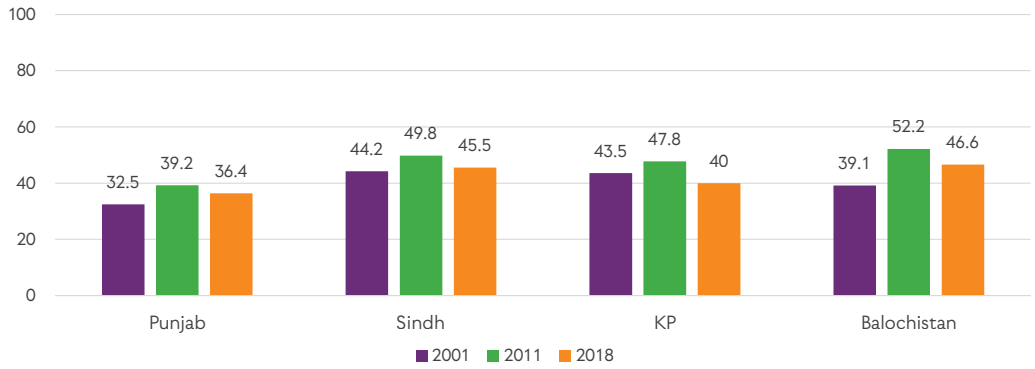
Figure 4-1: Trends in malnutrition for children under five, Pakistan NNS 2018



4.3.7 Provincial trends in malnutrition

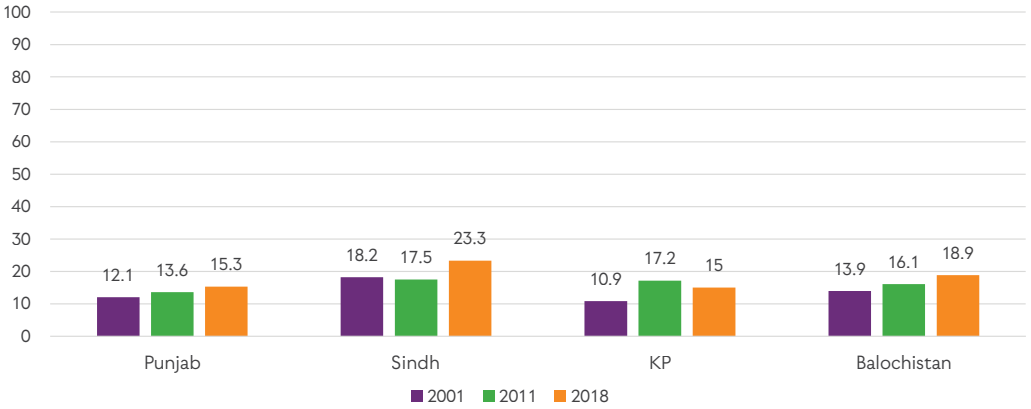
The figure below shows similar trends in stunting over time across the four provinces of Pakistan, with an increase between 2001 and 2011, followed by a decline in 2018. Thus, in Punjab, stunting was lowest (32.5%) in 2001 but rose to 39.2% in 2011 before declining again to 36.4% in 2018. In Sindh the prevalence of stunting was consistently high, at 44.2% in 2001, rising to 49.8% in 2011 and declining to 45.5% in 2018. In KP the stunting prevalance in 2001 was 43.5%, rising to 47.8% in 2011 and declining to 40.0% in 2018. Similarly in Balochistan the prevalence of stunting in 2001 was 39.1%, rising to 52.2% in 2011 and then declining to 46.6% in 2018.

Figure 4-2: Provincial trends in stunting for children under five, Pakistan NNS 2018



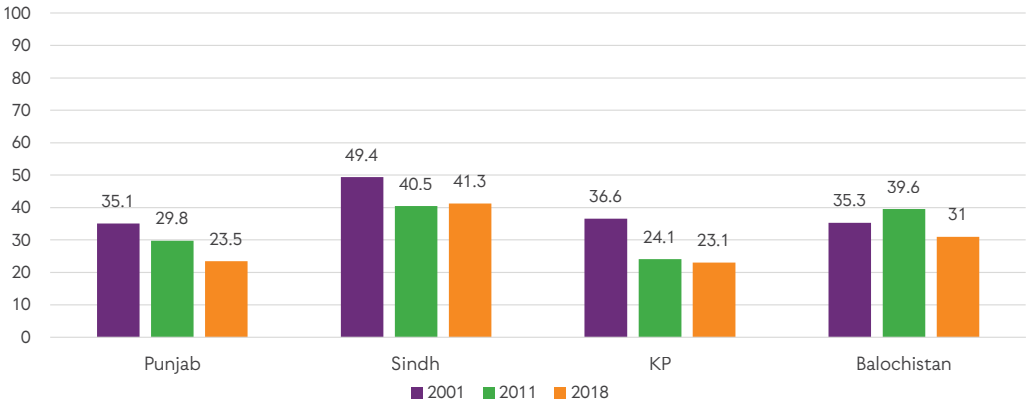
The figure below shows the trend of wasting over time across the provinces was slightly more variable. In Punjab wasting was lowest (12.1%) in 2001 and rose to 13.6% in 2011 and then increased again to 15.3% in 2018. In Sindh wasting stood at 18.2% in 2001, decreased slightly to 17.5% in 2011, and then increased to 23.3% in 2018. In KP the wasting prevalance was 10.9% in 2001, increased to 17.2% in 2011 and then declined to 15.0% in 2018. Balochistan shows a similar trend to that of Punjab, with the prevalence of wasting at 13.9% in 2001, rising to 16.1% in 2011 and rising again to 18.9% in 2018.

Figure 4-3: Provincial trends in wasting for children under five, Pakistan NNS 2018



Provincial trends for underweight are shown in the figure below. In Punjab underweight prevalence was 35.1% in 2001 and declined to 29.8% in 2011, then further decreased to 23.5% in 2018. In Sindh the prevalence of underweight was consistently high at 49.4% in 2001, decreasing to 40.5% in 2011 and rising slightly to 41.3% in 2018. In KP the underweight prevalance in 2001 was 36.6% which decreased to 24.1% in 2011 and declined further to 23.1% in 2018. Balochistan shows different trends from other provinces: here, the prevalence of underweight in 2001 was 35.3%, rose to 39.6% in 2011 and then decreased substantiallyto 31.0% in 2018.

Figure 4-4: Provincial trends in underweight for children under five, Pakistan NNS 2018



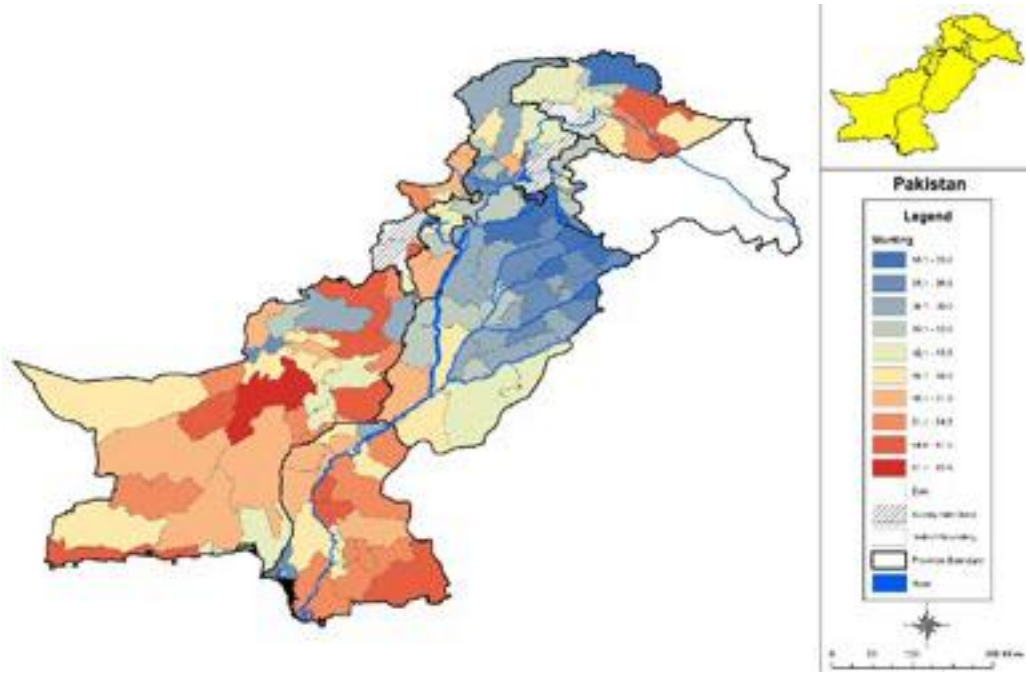
4.3.8 District trends in malnutrition

We estimated prevalence of stunting, underweight and wasting for children in all 156 sampled districts of Pakistan.

4.3.8.1 District trends in stunting

The highest prevalence of stunting was found in Kalat in Balochistan (62.9%), Kacchi in Balochistan (61.6%), FR Tank in KP-NMD (61.0%), Tharparkar in Sindh (60.0%) and Torghar in KP (58.9%). Stunting was widespread across the country except in central and northern Punjab and some areas of KP and AJK, and with higher rates observed in districts of Sindh and Balochistan.

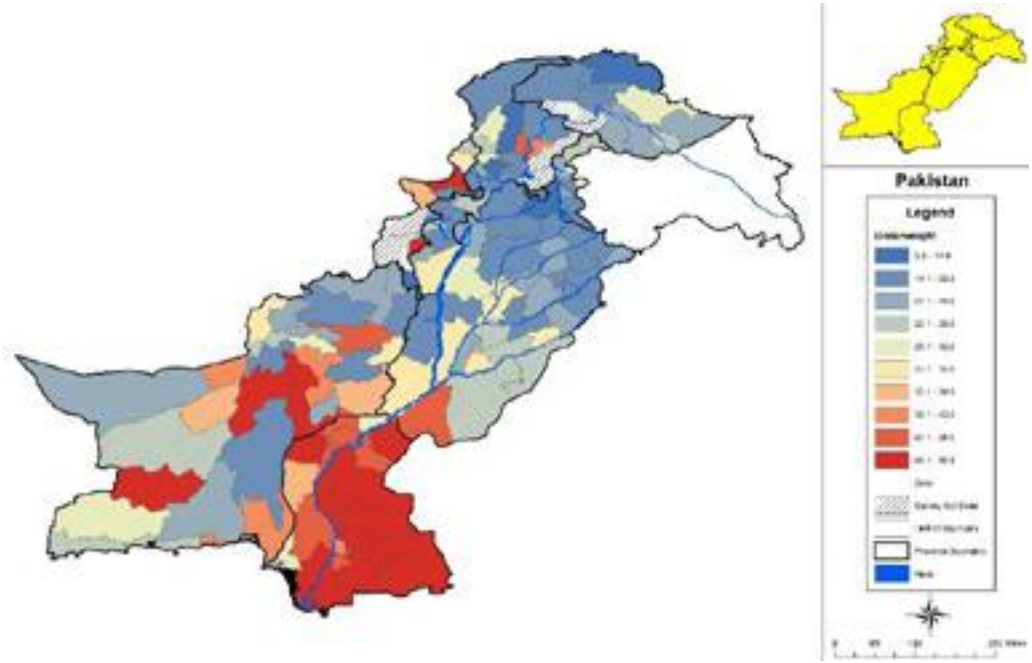
Figure 4-5: District trends in stunting for children under five, Pakistan NNS 2018



4.3.8.2 District trends in underweight

Districts with the highest prevalence of underweight were Tharparkar in Sindh (60.1%), Panjgur and Kachhi in Balochistan (both 57.4%), Umerkot in Sindh (55.0%) and Mirpurkhas in Sindh (53.7%). Of the 10 districts with the highest prevalence of underweight, seven were in Sindh province. Underweight was strongly concentrated in districts of Sindh and Balochistan, with far lower rates in the northern districts of the country.

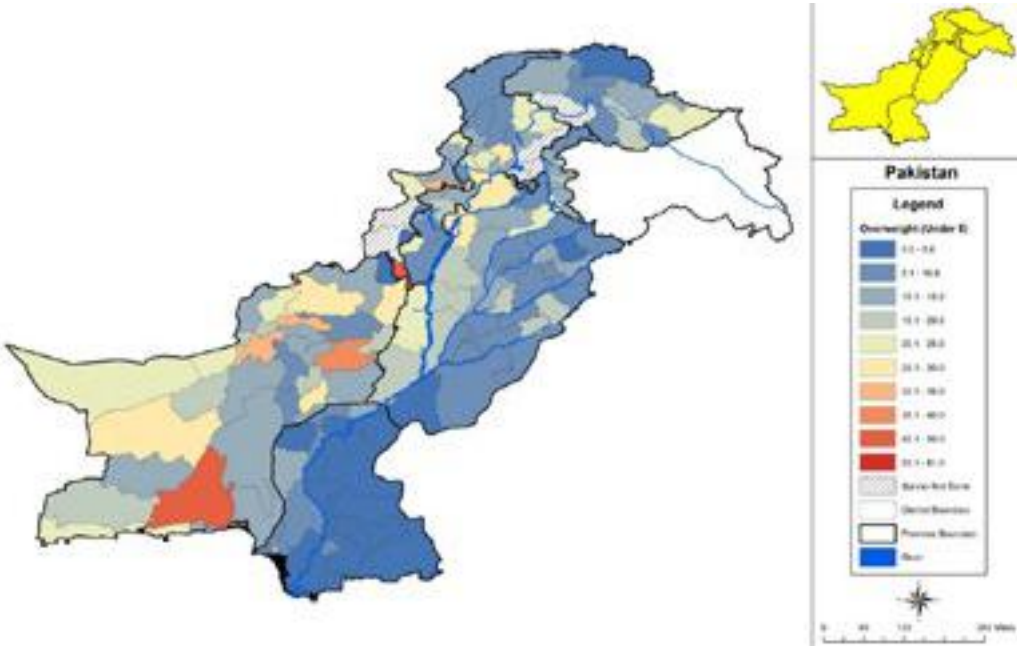
Figure 4-6: District trends in underweight for children under five, Pakistan NNS 2018



4.3.8.3 *District trends in overweight*

Rates of overweight were highest in FR Dera Ismail Khan in KP-NMD (46.8%), Awaran in Balochistan (42.1%), Kohlu in Balochistan (35.1%), Orakzai in KP-NMD (34.1%) and Ziarat in Balochistan (32.8%).

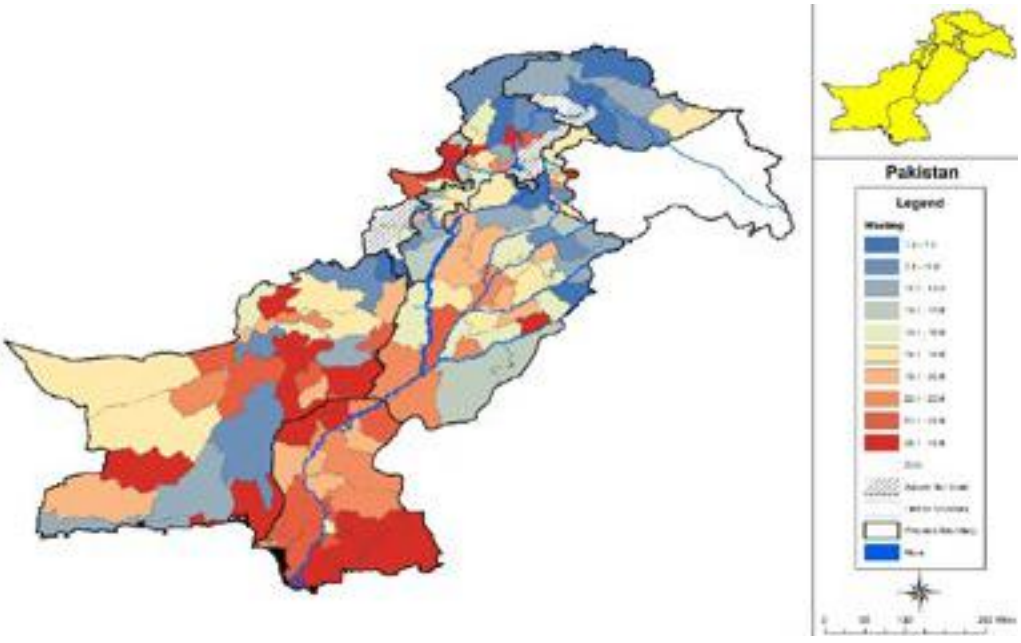
Figure 4-7: District trends in overweight for children under five, Pakistan NNS 2018



4.3.8.4 *District trends in wasting*

Wasting prevalence was highest in Khyber in KP-NMD (42.6%), Jaffarabad in Balochistan (33.9%), Tharparkar in Sindh (33.3%), Umerkot in Sindh (32.2%) and Panjgur in Balochistan (31.6%). Concurrent wasting was commonly seen in districts of Sindh, Balochistan and KP-NMD, as well as in southern districts of Punjab.

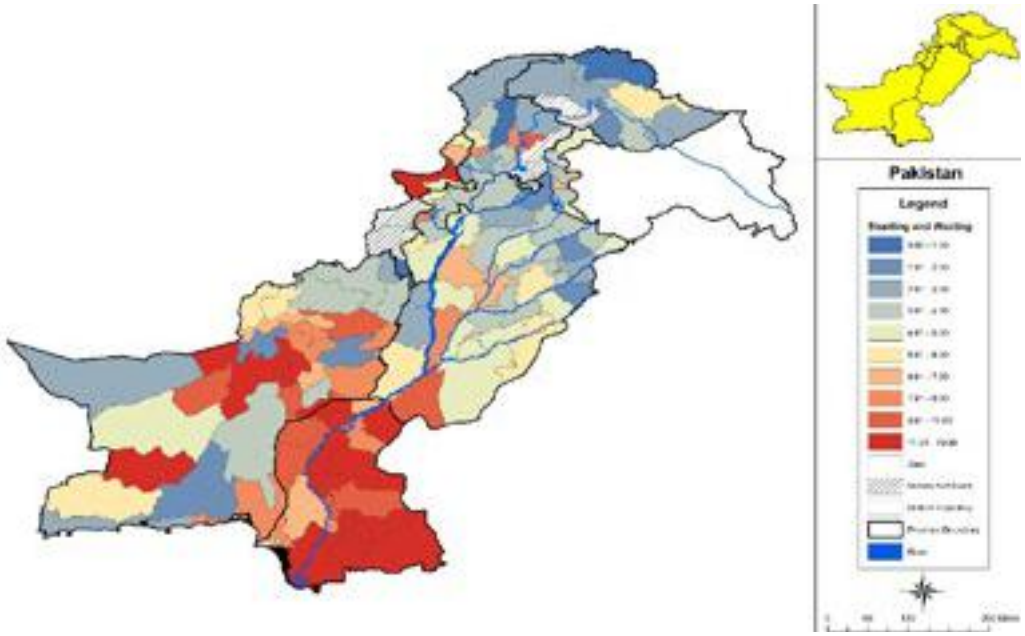
Figure 4-8: District trends in wasting for children under five, Pakistan NNS 2018



4.3.8.5 *District trends in concurrent stunting and wasting*

Nearly a fifth of children in two Sindh districts suffered from both stunting and wasting (Tharparkar: 19.8%; Umerkot: 18.3%). Other districts with high rates of concurrent stunting and wasting were Sujawal in Sindh (16.6%), Khyber in KP-NMD (16.2%) and Panjgur in Balochistan (16.1%)

Figure 4-9: District trends in concurrent stunting and wasting for children under five, Pakistan NNS 2018



4.4 Micronutrient deficiencies

4.4.1 Anaemia

We assessed the anaemia status of children aged 6–59 months using the field spot haemoglobin test using HemoCue 301 equipment. The results revealed that more than half (53.7%) of children in this age group were anaemic, with 5.7% severely anaemic. Anaemia prevalence was slightly higher (54.2%) among boys than girls (53.1%), however prevalence of severe anaemia was higher among girls (5.8%).

Rural children (56.5%) had higher prevalence than their urban counterparts (48.9%) with a similar pattern for severe anaemia (5.9% versus 5.2%). Prevalence of anaemia was also higher among children whose mothers had no education (55.8%) compared to those whose mothers had higher education (47.5%), however it was high even in the latter group. Children belonged to the poorest quintile were more likely to develop anaemia (60.3%) than those from the richest quintile, however even the latter had high prevalence (48.1%).

Balochistan had the highest (70.5%) prevalence of childhood anaemia especially in its rural areas (74.3%). Prevalence of severe anaemia was also high, at 22.4%, rising to 25.5% in rural areas. KP-NMD followed with prevalence standing at 68.3% and prevalence of severe anaemia at 8.6%. In KP prevalence was found to be 60.8% (rural: 62.4%) with severe anaemia at 6.6% (rural: 7.0%). In Punjab 52.1% of children were anaemic, with almost equal prevalence in urban (52.7%) and rural areas (51.8%). Some 5.9% children in Punjab had severe anaemia, with urban prevalence at 7.6%. In Sindh prevalence of anaemia was 51.2%, rising to 61.2% in rural areas. However, severe anaemia had low prevalence in Sindh at 1.7%, reaching 2.2% in rural areas. The lowest prevalence of anaemia was observed in GB (26.9%) and ICT (24.3%).

Table 4-8: Childhood anaemia

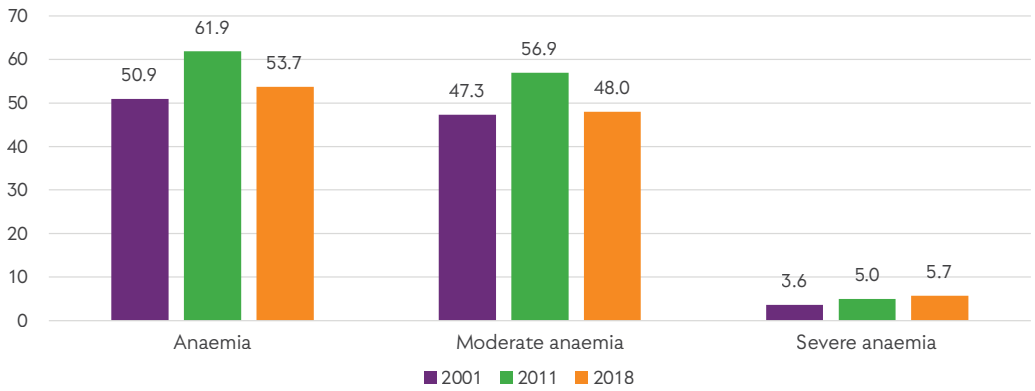
Percentage of children aged 6–59 months classified as having childhood anaemia by various background characteristics, Pakistan NNS 2018						
		Severe anaemia (<7 gm/dL)	Moderate anaemia (7–10.99 gm/dL)	Total Aanemia (severe + moderate)	Normal (>= 11 gm/dL)	Number of children aged 6–59 months
Total		5.7	48.0	53.7	46.3	22806
Urban		5.2	43.7	48.9	51.1	6840
Rural		5.9	50.6	56.5	43.5	15966
Province/ region						
Punjab	Urban	7.6	45.1	52.7	47.3	2773
	Rural	5.1	46.8	51.9	48.1	6266
	Total	5.9	46.2	52.1	47.9	9039
Sindh	Urban	1.3	41.0	42.3	57.7	2261
	Rural	2.2	59.0	61.2	38.8	1977
	Total	1.7	49.4	51.1	48.8	4238
KP	Urban	5.0	49.7	54.7	45.3	585
	Rural	6.9	55.4	62.3	37.7	2267
	Total	6.6	54.2	60.8	39.2	2852
Balochistan	Urban	14.1	46.6	60.7	39.2	668
	Rural	25.5	48.8	74.3	25.6	2515
	Total	22.3	48.2	70.5	29.4	3183
ICT	Urban	0.0	18.5	18.5	81.5	105
	Rural	3.2	27.1	30.3	69.8	110
	Total	1.6	22.7	24.3	75.7	215
KP-NMD	Total	8.6	59.7	68.3	31.8	409
AJK	Urban	0.7	50.0	50.7	49.4	276
	Rural	0.7	55.6	56.3	43.7	1380
	Total	0.7	55.0	55.7	44.3	1656
GB	Urban	0.0	30.4	30.4	69.6	162
	Rural	1.0	25.1	26.1	73.9	1052
	Total	0.8	26.1	26.9	73.1	1214
Sex						
Male		5.5	48.7	54.2	45.8	11714
Female		5.8	47.3	53.1	46.9	11092
Mother's education						
None		6.0	49.8	55.8	44.2	13086
Primary		6.1	48.9	55	45.0	2498
Middle		4.6	47.3	51.9	48.1	2064
Secondary		5.0	44.3	49.3	50.7	2514
Higher		5.4	42.1	47.5	52.6	2189

Percentage of children aged 6–59 months classified as having childhood anaemia by various background characteristics, Pakistan NNS 2018					
	Severe anaemia (<7 gm/dL)	Moderate anaemia (7–10.99 gm/dL)	Total Aanemia (severe + moderate)	Normal (>= 11 gm/dL)	Number of children aged 6–59 months
Wealth index quintile					
Poorest	5.8	54.5	60.3	39.7	5754
Second	6.7	49.9	56.6	43.4	5380
Middle	6.1	47.7	53.8	46.2	4796
Fourth	4.2	45.1	49.3	50.7	4046
Richest	5.5	42.6	48.1	51.9	2830

4.4.1.1 Trends in childhood anaemia

We compared the data for anaemia prevalence over time for all three National Nutrition Surveys since 2001. Prevalence was consistently high across the three surveys, at 50.9% in 2001, which rose to 61.9% in 2011 and declined to 53.7% in 2018. Severe anaemia increased from 3.6% in 2001 to 5.0% in 2011 and a further increase to 5.7% in 2018. However, these relatively minor fluctuations could also reflect varying methodologies and power of the surveys (national, provincial and district for 2001, 2011 and 2018 respectively) and, in essence, show little to no change over time.

Figure 4-10: Trends in childhood anaemia, Pakistan NNS 2018



4.4.2 Iron status (ferritin concentration)

We used low ferritin (<12 µg/L) as an indicator of iron deficiency in children aged 6–59 months, adjusting the IDA rates for inflammation using AGP and CRP biomarkers, comparable to what was done in 2011.

Overall, in Pakistan, 49.1% children had iron deficiency, with a slightly higher prevalence amongst boys (50.0%) and in urban areas (51.5%). Low ferritin concentrations were identified in 47.5% of children whose mothers had no education, with even higher prevalence in children whose mothers had primary (53.9%) or middle (50.7%) education. Prevalence of iron deficiency was almost equally distributed among all wealth quintiles, suggesting that risk factors for iron deficiency are ubiquitous and associated with dietary patterns unrelated to poverty.

Sindh had the highest prevalence at 54.7%, with 57.4% in rural areas. In Punjab prevalence was 53.4% with 52.4% in rural areas. In Balochistan prevalence was 31.6% with 31.9% among rural populations. In KP prevalence was 33.2% and 33.0% among rural dwellers.

The highest prevalence of iron deficiency was seen in ICT (50.2%), followed by GB (43.8%), AJK (35.7%) and KP-NMD (25.5%).

Table 4-9: Iron status (low ferritin concentration) in children (6–59 months)

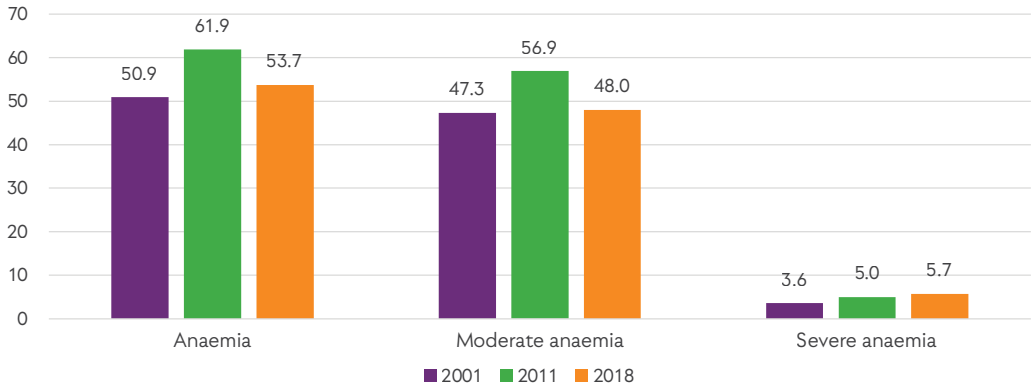
Iron status of children aged 6–59 months, based on low ferritin concentration, by various background characteristics, Pakistan NNS 2018				
		Ferritin concentration		
		Low ferritin (<12 µg/L)	Normal (>=12 ng/mL)	Number of children aged 6–59 months
Total		49.1	50.9	22865
Urban		51.5	48.5	6788
Rural		47.7	52.3	16077
Province/ region				
Punjab	Urban	55.2	44.8	2505
	Rural	52.4	47.6	5679
	Total	53.4	46.6	8184
Sindh	Urban	52.4	47.6	2356
	Rural	57.4	42.6	2040
	Total	54.7	45.3	4396
KP	Urban	33.9	66.1	610
	Rural	33.0	67.0	2243
	Total	33.2	66.8	2853
Balochistan	Urban	30.8	69.2	735
	Rural	31.9	68.1	2817
	Total	31.6	68.4	3552
ICT	Urban	52.2	47.8	103
	Rural	47.8	52.2	90
	Total	50.2	49.8	193
KP-NMD	Total	25.5	74.5	698
AJK	Urban	31.8	68.2	282
	Rural	36.1	63.9	1450
	Total	35.7	64.3	1732
GB	Urban	48.5	51.5	176
	Rural	42.6	57.4	1081
	Total	43.8	56.2	1257
Sex				
	Male	50.0	50.0	11718
	Female	48.2	51.8	11147
Mother's education				
None		47.5	52.5	13328
Primary		53.9	46.1	2367
Middle		50.7	49.3	2006
Secondary		50.5	49.5	2476
Higher		48.4	51.6	2229

Iron status of children aged 6–59 months, based on low ferritin concentration, by various background characteristics, Pakistan NNS 2018			
	Ferritin concentration		
	Low ferritin (<12 µg/L)	Normal (>=12 ng/mL)	Number of children aged 6–59 months
Wealth index quintile			
Poorest	49.0	51.0	6079
Second	48.1	51.9	5379
Middle	47.5	52.5	4676
Fourth	49.6	50.4	3934
Richest	51.5	48.5	2797

4.4.3 Trends in low ferritin concentration

We compared the data for iron deficiency prevalence based on ferritin concentration over time for all three National Nutrition Surveys. Prevalence was high in all three surveys, at 66.5% in 2001, declining to 43.8% in 2011 and then rising again to 49.1% in 2018.

Figure 4-11: Trends in low ferritin concentration, Pakistan NNS 2018



4.4.4 Iron deficiency anaemia

We established rates of iron deficiency anaemia among children based on anaemia and low ferritin levels and adjusted them for inflammation using the AGP and CRP markers. The data showed that the prevalence of iron deficiency anaemia among children in Pakistan was 28.6% with a slightly higher proportion (29.1%) among boys. Iron deficiency anaemia was also found to be slightly more common (28.9%) in the rural population compared to 28.0% in the urban population. A slightly higher prevalence of iron deficiency anaemia was also found in children whose mothers had no education (29.0%) or only had primary education (31.1%). Children belonged to poorest quintiles had higher (32.4%) prevalence of iron deficiency anaemia, however children from the richest quintile also showed high rates (27.1%).

Prevalence of iron deficiency anaemia was found to be highest (32.4%) in Sindh and was far higher in the rural (39.7%) than in the urban (26.3%) population. In Punjab 29.7% of children had iron deficiency anaemia (rural: 31.2%). In Balochistan 23.1% children had iron deficiency anaemia (urban: 22.9%), while KP had a prevalence of 20.3% (rural: 20.5%). Among the regions KP-NMD had the highest prevalence (19%), followed by 18.2% in AJK, 17.1 % in GB and 16.8% in ICT.

Table 4-10: Iron deficiency anaemia in children (6–59 months)

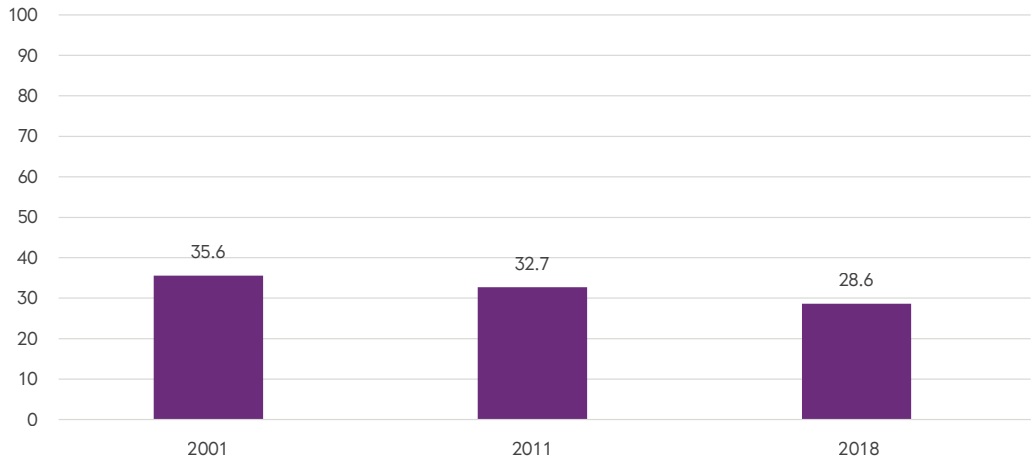
Iron deficiency anaemia among children aged 6–59 months, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018				
		Iron deficiency anaemia		
		Deficient (anaemia and low ferritin)	Non-deficient	Number of children aged 6–59 months
Total		28.6	71.4	20374
Urban		28.1	72.0	6254
Rural		28.9	71.1	14120
Province/ region				
Punjab	Urban	31.2	68.8	2407
	Rural	28.9	71.1	5453
	Total	29.7	70.3	7860
Sindh	Urban	26.3	73.7	2191
	Rural	39.7	60.3	1884
	Total	32.4	67.6	4075
KP	Urban	19.4	80.6	552
	Rural	20.5	79.5	1987
	Total	20.3	79.7	2539
Balochistan	Urban	22.9	77.1	584
	Rural	23.2	76.8	2138
	Total	23.1	76.9	2722
ICT	Urban	15.3	84.7	101
	Rural	18.5	81.5	89
	Total	16.8	83.2	190
KP-NMD	Total	19.0	81.0	383
AJK	Urban	14.7	85.3	251
	Rural	18.6	81.4	1197
	Total	18.2	81.8	1448
GB	Urban	20.1	79.9	160
	Rural	16.3	83.7	997
	Total	17.1	82.9	1157
Sex				
Male		29.1	70.9	10451
Female		28.0	72.0	9923
Mother's education				
None		29.0	71.0	11694
Primary		31.1	68.9	2188
Middle		28.0	72.0	1824
Secondary		26.6	73.4	2266
Higher		25.4	74.6	1994

Iron deficiency anaemia among children aged 6–59 months, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018			
	Iron deficiency anaemia		
	Deficient (anaemia and low ferritin)	Non-deficient	Number of children aged 6–59 months
Wealth index quintile			
Poorest	32.4	67.6	5140
Second	29.7	70.3	4799
Middle	27.2	72.8	4245
Fourth	26.4	73.6	3613
Richest	27.1	72.9	2577

4.4.4.1 Trends in iron deficiency anaemia

We compared iron deficiency anaemia prevalence for all three editions of the NNS in Pakistan. A slight decreasing trend was observed, with an annual rate of reduction of only 0.3% for the last 17 years.

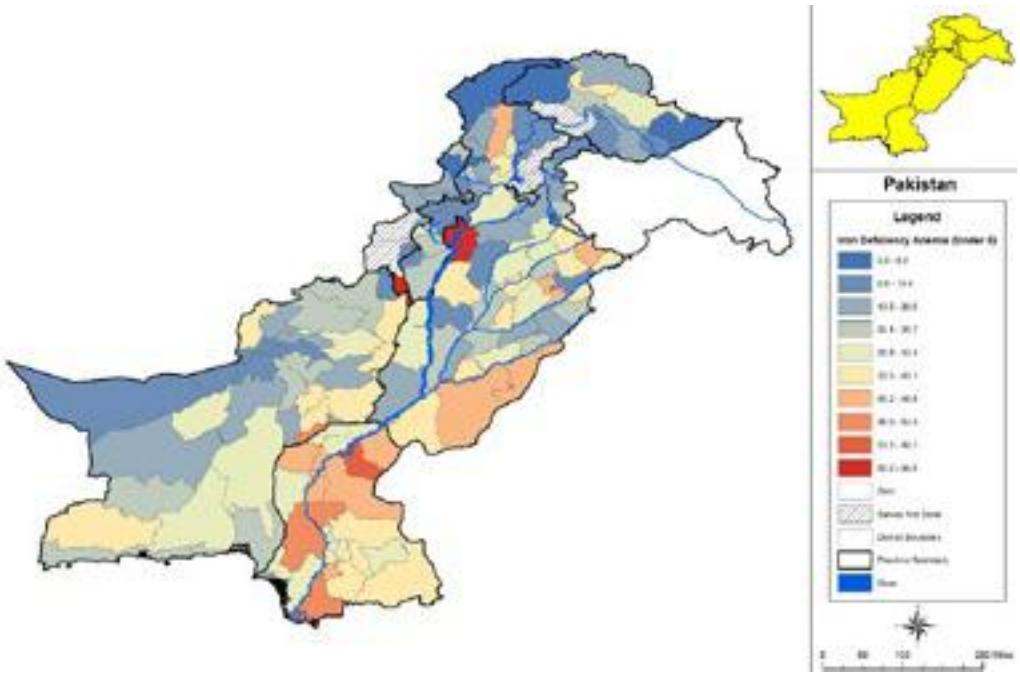
Figure 4-12: Trends in iron deficiency anaemia, Pakistan NNS 2018



4.4.4.2 District trends in iron deficiency anemia

We also estimated trends in iron deficiency anaemia for children in all 156 sampled districts of Pakistan. A wide range of prevalence was observed. Overall Sindh was found to have the highest prevalence. Sajawal, Jamshoro, Shaheed Benazirabad and Sukkur in Sindh presented the highest prevalence in Pakistan. The prevalence of iron deficiency anaemia was found to be highest in Mianwali (Punjab) and in Sherani (Balochistan).

Figure 4-13: District trends in iron deficiency anaemia, Pakistan NNS 2018



4.4.5 Vitamin A deficiency

We assessed the vitamin A deficiency status of children aged 6–59 months and adjusted for inflammation. The results revealed that 51.5% of children in this age group were deficient in vitamin A, of whom 12.1% had a severe deficiency. Prevalence was slightly higher (51.6%) in boys than in girls (51.3%). Severe deficiency was also more prevalent amongst boys (12.4%) than girls (11.8%). Rural children had a slightly higher prevalence (51.7%) than urban children (51.2%), with a similar pattern for severe vitamin A deficiency (12.4% vs. 11.7%). The prevalence of vitamin A deficiency was higher (53.6%) among children whose mothers had no education compared to those whose mother had higher education (46.3%), however prevalence was generally high even among children with educated mothers. Children belonged to poorest quintiles were more likely to experience vitamin A deficiency (56.3%) than those in the richest quintiles (49.5%), however, again, prevalence in the latter was also high.

Balochistan had the highest prevalence (58.4%) of vitamin A deficiency, with a slightly higher proportion (58.7%) coming from rural areas. The province also had a higher prevalence of severe deficiency (18.2%), particularly in urban areas (19.2%). In Sindh, vitamin A deficiency prevalence was 57.8%, with 61.5% in rural areas. Severe vitamin A deficiency in Sindh stood at 14.2% with a higher prevalence (16.4%) in rural areas. In Punjab vitamin A deficiency stood at 49.1%, with 49.4% prevalence in urban areas, and severe vitamin A deficiency was 10.5% with 10.9% in urban areas. In KP the prevalence of vitamin A deficiency was 46.7%, and 47.1% in rural areas. Severe vitamin A deficiency in this province stood at 11.8% with a higher prevalence in rural areas (12.5%).

Amongst the regions KP-NMD had the highest prevalence of vitamin A deficiency (54.9%), with severe vitamin A deficiency at 14.2%. This was followed by GB (47.6%; severe vitamin A deficiency: 9.3%), AJK (42.8%; vitamin A deficiency: 11.6%) and ICT (vitamin A deficiency: 43.3%).

Table 4-11: Vitamin A deficiency in children (6–59 months)

Vitamin A deficiency in children aged 6–59 months, Pakistan NNS 2018						
		Vitamin A deficiency				
		Severe (<0.35 µmol/L)	Mild (0.35– 0.70 µmol/L)	Total VAD prevalence	Non deficient (>0.70 µmol/L)	Number of children aged 6–59 months:
Total		12.1	39.4	51.5	48.5	21979
Urban		11.7	39.5	51.2	48.8	6516
Rural		12.4	39.3	51.7	48.3	15463
Province/ region						
Punjab	Urban	10.9	38.6	49.5	50.6	2498
	Rural	10.2	38.6	48.8	51.2	5517
	Total	10.5	38.6	49.1	50.9	8015
Sindh	Urban	12.2	42.3	54.5	45.5	2240
	Rural	16.5	45.1	61.6	38.4	1926
	Total	14.2	43.6	57.8	42.2	4166
KP	Urban	9.0	35.9	44.9	55.1	567
	Rural	12.5	34.6	47.1	52.9	2105
	Total	11.8	34.9	46.7	53.3	2672
Balochistan	Urban	19.2	38.6	57.8	42.4	650
	Rural	17.8	40.9	58.7	41.3	2659
	Total	18.2	40.3	58.5	41.6	3309
ICT	Urban	19.3	18.3	37.6	62.4	105
	Rural	8.5	40.7	49.2	50.7	106
	Total	14.1	29.2	43.3	56.7	211
KP-NMD	Total	14.2	40.6	54.8	45.2	672
AJK	Urban	13.6	31.4	45	55.0	285
	Rural	11.4	31.2	42.6	57.5	1468
	Total	11.6	31.2	42.8	57.2	1753
GB	Urban	8.1	40.7	48.8	51.3	150
	Rural	9.6	37.7	47.3	52.6	1031
	Total	9.3	38.3	47.6	52.4	1181
Sex						
Male		12.4	39.2	51.6	48.3	11260
Female		11.8	39.5	51.3	48.7	10719
Mother's education						
None		13.4	40.3	53.7	46.4	12731
Primary		10.2	39.2	49.4	50.6	2302
Middle		10.6	39.9	50.5	49.5	1964
Secondary		11.2	37.9	49.1	50.9	2405
Higher		10.0	36.2	46.2	53.7	2144

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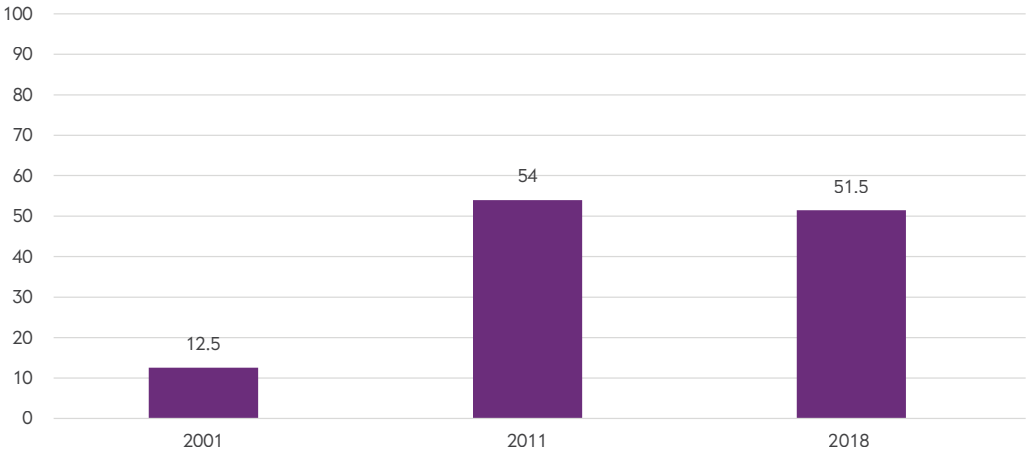
Vitamin A deficiency in children aged 6–59 months, Pakistan NNS 2018					
	Vitamin A deficiency				
	Severe (<0.35 µmol/L)	Mild (0.35– 0.70 µmol/L)	Total VAD prevalence	Non deficient (>0.70 µmol/L)	Number of children aged 6–59 months:
Wealth index quintile					
Poorest	15.5	40.9	56.4	43.7	5759
Second	13.1	39.5	52.6	47.4	5145
Middle	10.9	40.2	51.1	48.8	4502
Fourth	10.2	37.8	48	52.0	3813
Richest	11.0	38.5	49.5	50.5	2760

4.4.5.1 Trends in vitamin A deficiency

We assessed the trend of vitamin A deficiency over time. The data showed that prevalence in 2001 was 12.5%, but was in 2011 found to be 54.0%. Prevalence declined to 51.5% in 2018, an annual reduction rate of below 0.3%.

Figure 4-14: Trends in vitamin A deficiency, Pakistan NNS 2018



4.4.6 Zinc deficiency

The prevalence of zinc deficiency among children aged 6–59 months in Pakistan was 18.6% with similar prevalence for boys and girls. Zinc deficiency was more prevalent in rural children (19.5%) than in urban children (17.1%). A higher prevalence of zinc deficiency was found among children whose mothers were uneducated (19.2%) or had primary education (19.3%). Further children belonging to poorest quintiles had high (22.1%) prevalence of Zinc deficiency, however the richest quintile also showed a considerable (16.2%) Zinc deficiency among children.

Zinc deficiency was found to be highest (21.8%) in Balochistan with 21.7% amongst urban populations. Sindh had 19.2% zinc deficiency with 21.3% prevalence in rural areas. In KP 18.6% of children had zinc deficiency with 20.2% in rural areas, while Punjab had a prevalence of 18.0% with 18.4% in rural areas. Among the regions AJK had the highest prevalence (21.9%) followed by 20.1% in GB, 16.8% in KP-NMD and 9.9% in ICT.

Table 4-12: Zinc deficiency in children (6–59 months)

Zinc deficiency in children aged 6–59 months, Pakistan NNS 2018				
		Zinc deficiency (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Number of children aged 6–59 months
Total		18.6	81.4	23604
Urban		17.1	82.9	6922
Rural		19.5	80.5	16682
Province/ region				
Punjab	Urban	17.3	82.7	2724
	Rural	18.4	81.6	6083
	Total	18.0	82.0	8807
Sindh	Urban	17.4	82.6	2267
	Rural	21.3	78.7	1942
	Total	19.2	80.8	4209
KP	Urban	11.9	88.1	584
	Rural	20.2	79.8	2306
	Total	18.6	81.4	2890
Balochistan	Urban	21.7	78.3	762
	Rural	21.9	78.1	2897
	Total	21.8	78.2	3659
ICT	Urban	7.7	92.3	107
	Rural	12.3	87.7	102
	Total	9.9	90.1	209
KP-NMD	Total	16.8	83.2	725
AJK	Urban	18.8	81.2	280
	Rural	22.3	77.9	1534
	Total	21.9	78.2	1814
GB	Urban	22.8	77.2	177
	Rural	19.4	80.6	1114
	Total	20.1	79.9	1291
Sex				
Male		18.8	81.2	12109
Female		18.4	81.6	11495
Mother's education				
None		19.2	80.8	13717
Primary		19.3	80.7	2490
Middle		16.4	83.6	2098
Secondary		16.8	83.2	2561
Higher		17.9	82.1	2266
Wealth index quintile				
Poorest		22.1	77.9	6188
Second		19.0	81.0	5588

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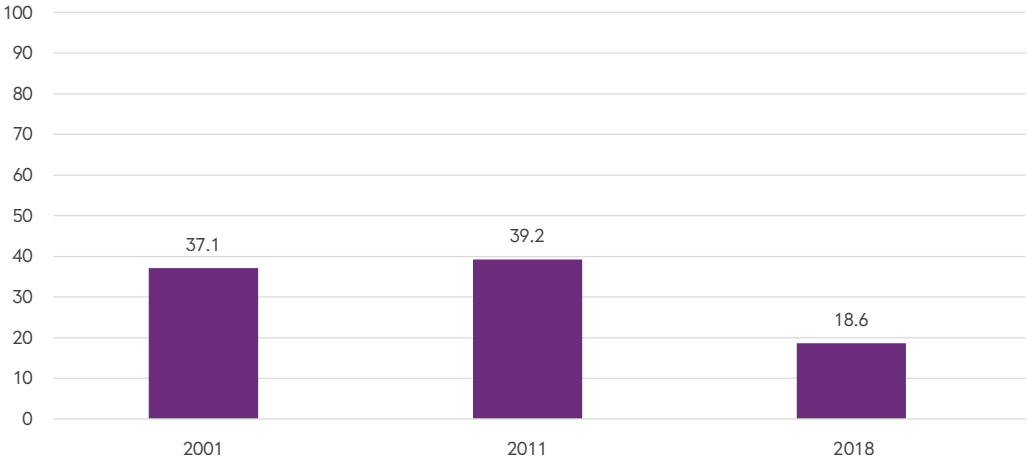
Zinc deficiency in children aged 6–59 months, Pakistan NNS 2018			
	Zinc deficiency (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Number of children aged 6–59 months
Middle	17.9	82.1	4855
Fourth	17.5	82.5	4096
Richest	16.2	83.8	2877

4.4.6.1 Trends in zinc deficiency

The data for zinc deficiency over time reveal significant improvements in overall zinc status. From 39.2% in NNS 2011, there is a steep decline in zinc deficiency to 18.6% in 2018.

Figure 4-15: Trends in zinc deficiency, Pakistan NNS 2018



4.4.7 Vitamin D deficiency

The data revealed high prevalence (62.7%) of Vitamin D deficiency among Pakistani children i.e. less than 20 ng/mL, with 13.2% exhibiting severe vitamin D deficiency (less than 8 ng/mL). Prevalence was slightly higher among girls (63.1%) than boys (62.4%), with severe deficiency also higher in girls (13.5%) than boys (12.9%). Children in urban areas had higher prevalence (65.6%) of vitamin D deficiency compared to those in rural areas (61.0%). A similar pattern was seen for severe vitamin D deficiency (urban: 14.7%; rural: 12.4%). Surprisingly, the prevalence of vitamin D deficiency was higher among children whose mothers had higher education (71.7%) compared to those whose mothers were uneducated (57.8%). Similarly, the survey data showed that children belonged to the richest quintile are more likely to develop vitamin D deficiency (72.1%) compared to the poorest quintile (47.6%). These data may reflect differences in lifestyle and sun exposure across populations and socioeconomic groups.

KP-NMD and GB had the highest prevalence (both 81.5%) of vitamin D deficiency, with 29.1% and 25.8% of children, respectively, experiencing severe deficiency. KP followed, with 76.9% prevalence and 23.7% of children experiencing a severe deficiency, and then Balochistan (70.9%; severe deficiency: 18.4%). In urban areas of Balochistan vitamin D deficiency stood at 75.2%. Sindh had lower prevalence than the other provinces, at 37.1%, with severe deficiency at 5.0%.

Table 4-13: Vitamin D status of children aged 6–59 months

Vitamin D status of children aged 6–59 months, Pakistan NNS 2018							
		Vitamin D status					
		Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Moderate deficiency (8.0–20.0 ng/mL)	Desirable* (20.0–30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Number of children aged 6–59 months
Total		62.7	13.2	49.5	22.4	14.9	23780
Urban		65.6	14.7	50.9	21.4	13.0	7002
Rural		61	12.4	48.6	23.0	16.0	16778
Province/ region							
Punjab	Urban	75.7	18.1	57.6	13.8	10.5	2708
	Rural	67.9	11.4	56.5	19.2	12.9	6087
	Total	70.7	13.8	56.9	17.3	12.0	8795
Sindh	Urban	48.8	7.9	40.9	33.7	17.6	2340
	Rural	23.9	1.8	22.1	45.8	30.3	2035
	Total	37	5.0	32.0	39.4	23.6	4375
KP	Urban	77.8	19.8	58.0	14.1	8.1	611
	Rural	76.7	24.6	52.1	13.0	10.3	2315
	Total	77	23.7	53.3	13.2	9.9	2926
Balochistan	Urban	75.2	25.8	49.4	15.0	9.8	753
	Rural	69.3	15.6	53.7	17.7	13.0	2910
	Total	70.9	18.4	52.5	17.0	12.1	3663
ICT	Urban	55.8	5.4	50.4	31.1	13.2	107
	Rural	31.4	3.2	28.2	38.9	29.7	97
	Total	44.6	4.4	40.2	34.6	20.7	204
KP-NMD	Total	81.5	29.1	52.4	8.7	9.8	709
AJK	Urban	70.8	22.2	48.6	16.5	12.8	287
	Rural	63.5	12.7	50.8	17.9	18.6	1539
	Total	64.2	13.6	50.6	17.7	18.1	1826
GB	Urban	82.5	25.8	56.7	9.0	8.4	175
	Rural	81.2	25.8	55.4	10.2	8.5	1107
	Total	81.5	25.8	55.7	10.0	8.5	1282
Sex							
Male		62.3	12.9	49.4	22.4	15.3	12229
Female		63	13.5	49.5	22.5	14.5	11551
Mother's education							
None		57.8	11.2	46.6	25.6	16.7	13822
Primary		67.1	14.6	52.5	19.7	13.2	2491
Middle		70	16.9	53.1	17.5	12.5	2108
Secondary		67.2	14.8	52.4	19.7	13.2	2590
Higher		71.6	17.1	54.5	16.4	11.9	2298

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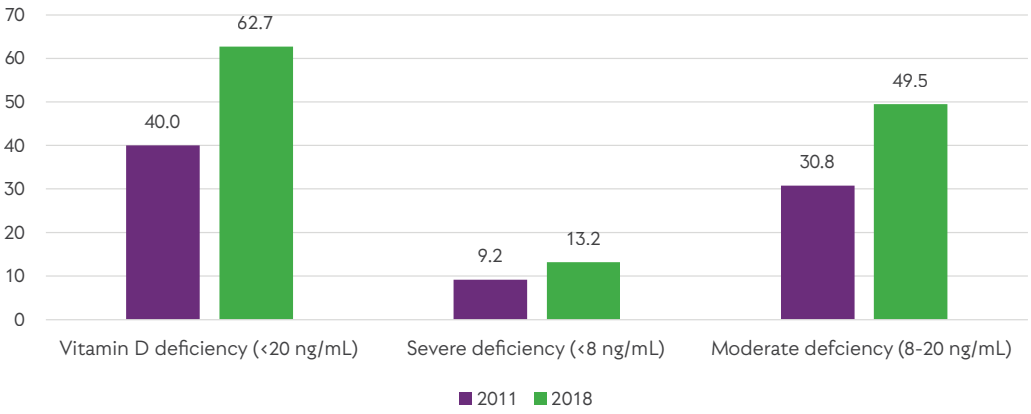
Vitamin D status of children aged 6–59 months, Pakistan NNS 2018						
	Vitamin D status					
	Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Moderate deficiency (8.0–20.0 ng/mL)	Desirable* (20.0–30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Number of children aged 6–59 months
Wealth index quintile						
Poorest	47.5	8.8	38.7	31.1	21.3	6236
Second	61.6	12.0	49.6	22.9	15.6	5606
Middle	63.9	12.8	51.1	22.9	13.2	4905
Fourth	69.1	16.6	52.5	18.6	12.2	4122
Richest	72.1	16.1	56.0	15.9	12.0	2911

* Generally, 20-30 ng/mL is considered acceptable and adequate for bone and overall health in healthy individuals. But because of the vagaries of some of the assays, to guarantee sufficiency, the recommendation is a value above 30 ng/mL for both children and adults

4.4.7.1 *Trends in vitamin D deficiency*

The figure below shows the trend for vitamin D deficiency in 2011 and 2018. In 2001 the vitamin D status was not estimated. The data show that in 2011 the prevalence of vitamin D deficiency was 40% and increased to 62.7% in 2018. Similar patterns are observed for severe and moderate deficiency. These differences may reflect sample size differences between the two surveys.

Figure 4-16: Trends in vitamin D deficiency in children, Pakistan NNS 2018



4.4.8 Calcium status

The prevalence of hypocalcaemia (below 8.4 mg/dL of calcium) and hypercalcaemia (above 10.2 mg/dL of calcium) was evaluated for the first time in NNS 2018. The data revealed that more than half of children (66.4%) had normal levels of calcium in Pakistan. Hypocalcaemia was found in 32.2% of children, with a greater prevalence in urban (28.3%) than rural (35.5%) areas and almost similar results for both sexes (32%). Around 1.4% children had hypercalcaemia (above 10.2 mg/dL).

The prevalence of hypocalcaemia was higher among children whose mothers had no education (32.4%) compared to those whose mothers had higher education (29.2%). Surprisingly, the survey data showed that children belonging to both socioeconomic extremes (poorest and richest wealth quintiles) had lower prevalence of hypocalcaemia than other quintiles and is perhaps attributable to differences in lifestyle and nutrition across different populations.

The highest prevalence of hypocalcaemia was found in GB (56.2%) followed by KP-NMD (51.3%) and KP (47.5%). Sindh had the lowest prevalence at 13.4%.

Table 4-14: Calcium status of children aged 6–59 months

Calcium status of children aged 6–59 months, Pakistan NNS 2018					
		Calcium			
		Hypercalcaemia (>10.2 mg/dL)	Number of children aged 6–59 months	Hypocalcaemia (<8.4 mg/dL)	Normocalcaemia (8.4–10.2 mg/dL)
Total		32.2	66.4	1.4	4231
Urban		28.3	70.0	1.7	1566
Rural		35.5	63.3	1.2	2665
Province/ region					
Punjab	Urban	45.5	53.2	1.3	395
	Rural	45.3	54.3	0.3	748
	Total	45.4	53.9	0.7	1143
Sindh	Urban	15.8	82.0	2.2	801
	Rural	9.1	88.8	2.1	455
	Total	13.4	84.4	2.2	1256
KP	Urban	44.0	56.0	0.0	108
	Rural	48.4	51.5	0.1	428
	Total	47.5	52.5	0.1	536
Balochistan	Urban	46.7	53.3	0.0	140
	Rural	39.6	56.1	4.3	530
	Total	41.7	55.3	3.0	670
ICT	Urban	30.9	69.1	0.0	16
	Rural	.0	100.0	0.0	3
	Total	21.7	78.3	0.0	19
KP-NMD	Total	51.3	48.1	0.6	162
AJK	Urban	36.1	63.9	0.0	32
	Rural	36.0	61.3	2.7	110
	Total	36.1	61.6	2.4	142
GB	Urban	54.9	45.1	0.0	73
	Rural	56.8	41.5	1.0	230
	Total	56.2	42.7	0.7	303
Sex					
Male		32.0	66.8	1.2	2207
Female		32.4	65.9	1.6	2024
Mother's education					
None		32.4	66.4	1.2	2500
Primary		30.4	67.3	2.0	380
Middle		32.9	65.1	2.0	378
Secondary		33.7	64.2	2.2	479
Higher		29.2	69.9	0.9	411
Wealth index quintile					
Poorest		27.6	70.8	1.6	1068
Second		35.1	63.2	1.6	1000
Middle		35.5	63.5	1.0	886
Fourth		32.3	66.2	1.5	744
Richest		29.9	68.7	1.5	533

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4.4.9 Urinary iodine concentration in children aged 6–12 years

Urinary iodine concentration is a reliable outcome indicator of whether a population has adequate iodine intake and median urinary iodine concentrations of 100-200 µg/L indicate adequate iodine intake and optimal iodine nutrition. Urine samples were collected from children 6–12 years which revealed that the median urinary iodine of school-aged children in Pakistan was 122.9 µg/L (urban: 126.8 µg/L; rural: 121.5 µg/L), falling within the range of 100–199 µg/L which represents adequate intake. Moderate and severe deficiency was 8.6% and 7.6% respectively.

Median urinary iodine values were better for boys (126.7 µg/L) than for girls (121.3 µg/L). The survey data showed that children belonging to poorest quintiles are more likely to have lower urinary iodine concentration values (118.9 µg/L) compared to the richest quintiles (132.7 µg/L).

Children in GB, KP-NMD and AJK had the lowest median urinary concentration values, at 59.4 µg/L, 65 µg/L and 73.3 µg/L respectively. KP-NMD and GB also had the highest prevalence severe deficiency, accounting for 21.5% and 16.9% of children respectively. The highest median urinary iodine concentration was in Balochistan at 129.8 µg/L.

Table 4-15: Urinary iodine concentration in children (6–12 years)

Iodine deficiency in children aged 6–12 years based on urinary iodine concentration, Pakistan NNS 2018							
		Iodine deficiency (urinary iodine concentration)					
		Severe (<20 µg/L)	Moderate (20–49 µg/L)	Mild (50–99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine concentration	Number of children aged 6–12 years
Total		7.6	8.6	23.7	60.1	122.9	4934
Urban		6.7	7.7	22.6	63.1	126.8	1523
Rural		8.1	9.3	24.4	58.2	121.5	3411
Province/ region							
Punjab	Urban	6.5	6.9	22.8	63.8	127.4	596
	Rural	8.9	8.4	22.2	60.5	126.7	1259
	Total	8.0	7.8	22.5	61.8	126.9	1855
Sindh	Urban	5.9	8.3	22.3	63.5	126.8	536
	Rural	5.3	10.2	29.6	54.9	119.1	400
	Total	5.6	9.1	25.4	59.8	123.6	936
KP	Urban	3.5	7.7	27.9	60.9	119.7	121
	Rural	5.3	7.6	25.5	61.7	122.3	464
	Total	4.9	7.6	25.9	61.5	121.5	585
Balochistan	Urban	19.8	10.3	14.6	55.3	141.6	148
	Rural	12.6	6.6	18.5	62.3	129.8	579
	Total	14.5	7.6	17.5	60.5	129.8	727
ICT	Urban	2.8	7.4	20.2	69.6	133.8	26
	Rural	0.0	15.7	27.1	53.8	104.1	34
	Total	1.3	11.9	24.0	61.1	121.0	60
KP-NMD	Total	21.5	14.3	25.8	38.3	65.0	113
AJK	Urban	17.1	14.9	30.9	37.1	79.3	61
	Rural	9.1	22.5	35.0	33.5	72.4	334
	Total	9.8	21.8	34.6	33.8	73.3	395

Iodine deficiency in children aged 6–12 years based on urinary iodine concentration, Pakistan NNS 2018							
		Iodine deficiency (urinary iodine concentration)					
		Severe (<20 µg/L)	Moderate (20–49 µg/L)	Mild (50–99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine concentration	Number of children aged 6–12 years
GB	Urban	26.0	15.6	21.8	36.7	64.5	33
	Rural	14.8	31.1	27.1	27.0	57.4	230
	Total	16.9	28.1	26.1	28.9	59.4	263
Sex							
Male		7.2	8.4	22.7	61.6	126.7	2101
Female		7.8	8.9	24.4	58.9	121.3	2833
Mother's education							
None		.	.	.	.	.	0
Primary		.	.	.	.	.	0
Middle		.	.	.	.	.	0
Secondary		.	.	.	.	.	0
Higher		.	.	.	.	.	0
Wealth index quintile							
Poorest		7.6	10.3	26.8	55.4	118.9	1186
Second		7.5	7.8	23.0	61.7	122.7	1169
Middle		9.2	9.6	23.7	57.5	121.5	1028
Fourth		8.6	7.2	23.6	60.6	122.8	896
Richest		4.9	8.5	21.6	65.0	132.7	655

4.5 Deworming

The WHO recommends periodic deworming of children aged 12–59 months in areas where soil-transmitted helminthiasis is endemic. NNS 2018 collected data on deworming coverage in the six months prior to the survey for children in this age group, showing pictures of deworming tablets available in Pakistan to the respondents to clarify the question. Only 13.1% of children had received deworming tablets in the last six months with greater coverage in rural areas (14.5%) than in urban areas (10.7%).

Education level and wealth quintiles did not seem to relate to access to deworming, as coverage was comparable among all categories though it was highest for children whose mothers had primary education (15.7%).

Table 4-16: Deworming

Children aged 12–59 months to whom deworming medication was administered in the six months prior to the survey, Pakistan NNS 2018			
		Deworming medication in last six months	Number of children aged 12–59 months
Total		13.1	56578
Urban		10.7	16264
Rural		14.5	40314
Province/ region			
Punjab	Urban	9.8	6224
	Rural	16.7	13672
	Total	14.1	19896
Sindh	Urban	12.1	5181
	Rural	14.2	5669
	Total	13.2	10850
KP	Urban	11.0	1339
	Rural	11.5	5491
	Total	11.4	6830
Balochistan	Urban	10.5	2060
	Rural	9.6	7987
	Total	9.8	10047
ICT	Urban	6.7	340
	Rural	6.3	348
	Total	6.5	688
KP-NMD	Total	6.7	1386
AJK	Urban	10.3	706
	Rural	10.2	3016
	Total	10.2	3722
GB	Urban	10.8	358
	Rural	15.0	2801
	Total	14.2	3159
Sex			
Male		13.1	29073
Female		13.0	27505
Mother's education			
None		12.5	33651
Primary		15.7	5720
Middle		13.6	4754
Secondary		13.3	5814
Higher		13.0	5519
Wealth index quintile			
Poorest		12.3	16508
Second		14.4	13243
Middle		13.4	11117
Fourth		13.5	9065
Richest		11.6	6645

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4.6 Disease episodes

Dehydration due to diarrhoea, acute respiratory infections (ARI) and fever are significant contributing factors to childhood morbidity and mortality globally. Prompt medical attention when a child presents symptoms of these illnesses is crucial in reducing child morbidity and death. Diarrhoea and pneumonia, especially if prolonged or recurrent, can also be associated with significant nutrition penalty.

NNS 2018 collected information about episodes of diarrhoea, ARI and fever that occurred in the two weeks preceding the survey. Some 8.8% children under five years of age had experienced an episode of diarrhoea in the previous two weeks, 2.3% had symptoms of ARI and 13.7% had an episode of fever. The prevalence of these illnesses was generally comparable between boys and girls.

Prevalence was slightly higher among rural children than urban for diarrhoea (rural: 8.9%; urban: 8.5%), ARI (rural: 2.6%; urban: 1.8%) and fever (rural: 14.3%; urban: 12.8%). The highest prevalence of diarrhoea was seen in Sindh (12.5%), KP (12.0%) and GB (10.0%) with the lowest prevalence reported from Punjab (6.1%).

KP was found to have the greatest prevalence of ARI symptoms in the two weeks preceding the survey (5.9%), followed by GB (5.5%) and Balochistan (4.5%) while ICT had the lowest prevalence (0.7%). Conversely ICT had the highest prevalence of episodes of fever (24.5%) followed by GB (21.0%), KP (16.9%) and Balochistan (11.8%).

Diarrhoea (12.7%) and ARI (3.0%) were most commonly reported for children aged 6–11 months of age, while fever was more commonly reported for children aged 12–17 months. Children of uneducated mothers were more likely to be reported as having had an episode of diarrhoea (9.7%), ARI (2.7%) or fever (14.2%) compared to other levels of education. Children who belonged to the poorest wealth index quintile also had higher prevalence of these illnesses (diarrhoea: 11.4%; ARI: 3.3%; fever: 15.8%). A lower occurrence of reports were noted with increasing maternal education and wealth index.

Table 4-17: Disease episodes

Children aged 0–59 months for whom the mother or caretaker reported an episode of diarrhoea, symptoms of acute respiratory infection, and/or fever in the last two weeks, Pakistan NNS 2018					
		Children who in the last two weeks had:			Number of children aged 0–59 months
		An episode of diarrhoea	Symptoms of ARI	An episode of fever	
Total		8.8	2.3	13.7	68493
Urban		8.5	1.8	12.8	19641
Rural		8.9	2.6	14.3	48852
Province/ region					
Punjab	Urban	5.4	1.0	11.2	7565
	Rural	6.5	1.5	12.6	16716
	Total	6.1	1.3	12.1	24281
Sindh	Urban	12.8	2.2	14.3	6233
	Rural	12.3	2.5	16.5	6849
	Total	12.5	2.3	15.4	13082
KP	Urban	11.3	5.0	16.9	1640
	Rural	12.2	6.1	16.9	6592
	Total	12.0	5.9	16.9	8232

Children aged 0–59 months for whom the mother or caretaker reported an episode of diarrhoea, symptoms of acute respiratory infection, and/or fever in the last two weeks, Pakistan NNS 2018					
		Children who in the last two weeks had:			Number of children aged 0–59 months
		An episode of diarrhoea	Symptoms of ARI	An episode of fever	
Balochistan	Urban	8.2	4.4	10.9	2431
	Rural	10.2	4.5	12.1	9448
	Total	9.7	4.5	11.8	11879
ICT	Urban	7.2	0.2	24.1	405
	Rural	10.2	1.3	24.9	421
	Total	8.6	0.7	24.5	826
KP-NMD	Total	9.2	2.2	14.7	1707
AJK	Urban	9.1	3.0	18.4	847
	Rural	7.2	2.8	16.5	3767
	Total	7.4	2.8	16.7	4614
GB	Urban	11.1	6.2	19.5	448
	Rural	9.8	5.3	21.4	3424
	Total	10.0	5.5	21.0	3872
Sex					
Male		8.8	2.4	14.2	35065
Female		8.7	2.2	13.3	33428
Age					
0-5 months		8.0	2.8	12.7	5841
6-11 months		12.7	3.0	16.8	6074
12-17 months		11.6	2.8	17.8	6297
18-23 months		11.2	2.6	16.0	5997
24-35 months		9.2	2.3	13.9	14434
36-47 months		7.6	2.0	12.8	14730
48-59 months		5.9	1.9	10.9	15120
Mother's education					
None		9.7	2.7	14.2	40278
Primary		9.1	1.8	14.0	6970
Middle		7.2	2.2	13.2	5824
Secondary		7.9	1.9	13.4	7190
Higher		6.3	1.4	12.2	6964
Wealth index qintile					
Poorest		11.4	3.3	15.8	19771
Second		9.2	3.0	13.5	16040
Middle		8.6	2.3	13.8	13441
Fourth		7.8	1.7	13.8	11077
Richest		6.2	1.1	11.5	8164

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4.6.1 Care-seeking during diarrhoea

About 30.0% of children who were reported to have had an episode of diarrhoea in the two weeks preceding the survey were reported to have been taken to a public health facility, 41.4% to a private and 2.5% were taken to a community health provider. No advice was sought in over a fifth of cases (22.2%).

Almost three-quarters of urban children (72.5%) were taken to health providers with a preference for private practitioners (49.4%, compared to 24.6% for public practitioners).

Between 18% and 28% of children in various age groups were not taken to any care provider, nor was advice sought for the treatment of diarrhoea. Children in the poorest wealth quintile (30.6%) and those whose mothers had no education (24.9%) were the most likely to not seek care for childhood diarrhoea.

Table 4-18: Care-seeking during diarrhoea

Children aged 0–59 months with diarrhoea for whom advice or treatment was sought, by source of advice or treatment, Pakistan NNS 2018								
		Percentage of children with diarrhoea for whom:						Number of children aged 0–59 months with diarrhoea in the last two weeks
		Advice or treatment was sought from:					No advice or treatment sought	
		Health facilities or providers			Other source	A health facility or provider		
		Public	Private	Community health provider				
Total		29.9	41.4	2.5	6.6	69.0	22.2	6325
Urban		24.6	49.4	2.3	6.3	72.5	19.7	1752
Rural		32.7	37.0	2.6	6.8	67.1	23.5	4573
Province/ region								
Punjab	Urban	25.0	53.8	2.9	5.7	76.8	15.5	404
	Rural	29.9	46.3	3.8	5.1	74.0	18.6	1031
	Total	28.3	48.8	3.5	5.3	74.9	17.6	1435
Sindh	Urban	20.5	52.9	1.8	5.3	72.6	21.3	796
	Rural	30.8	35.3	1.1	4.5	65.3	29.4	908
	Total	25.8	43.8	1.4	4.9	68.8	25.5	1704
KP	Urban	42.2	26.8	2.8	15.5	65.4	15.5	151
	Rural	42.7	31.1	3.3	9.5	69.5	16.7	710
	Total	42.6	30.3	3.2	10.7	68.7	16.5	861
Balochistan	Urban	36.0	18.9	3.4	6.3	52.5	38.7	240
	Rural	28.3	17.3	1.6	16.2	39.5	38.3	1170
	Total	30.0	17.6	2.0	14.0	42.4	38.4	1410

Children aged 0–59 months with diarrhoea for whom advice or treatment was sought, by source of advice or treatment, Pakistan NNS 2018

		Percentage of children with diarrhoea for whom:						
		Advice or treatment was sought from:						
		Health facilities or providers			Other source	A health facility or provider	No advice or treatment sought	Number of children aged 0–59 months with diarrhoea in the last two weeks
		Public	Private	Community health provider				
ICT	Urban	30.0	38.5	2.7	8.9	68.5	22.5	31
	Rural	19.2	59.1	0.0	4.4	74.8	17.2	43
	Total	23.9	50.1	1.2	6.4	72.0	19.6	74
KP-NMD	Total	48.1	20.9	2.7	12.0	64.7	19.1	150
AJK	Urban	26.5	51.4	0.0	3.9	77.2	18.3	71
	Rural	27.6	38.0	2.5	5.7	59.8	28.7	267
	Total	27.4	40.0	2.2	5.5	62.4	27.1	338
GB	Urban	28.4	32.3	0.0	1.3	52.8	38.0	51
	Rural	52.6	19.1	5.8	5.7	69.6	22.5	302
	Total	47.9	21.7	4.7	4.9	66.4	25.5	353
Sex								
Male		29.3	42.3	2.4	6.1	69.4	22.3	3269
Female		30.5	40.4	2.6	7.2	68.5	22.0	3056
Age								
0-5 months		23.2	47.7	2.1	5.0	68.5	24.0	506
6-11 months		28.9	47.2	4.0	7.3	73.5	16.6	759
12-17 months		27.9	46.9	2.0	6.6	73.1	18.6	745
18-23 months		27.3	44.5	1.7	9.7	69.4	18.5	662
24-35 months		29.5	42.1	2.3	6.2	69.3	22.2	1399
36-47 months		33.9	35.0	3.1	5.8	66.7	25.2	1219
48-59 months		33.4	32.2	2.0	6.2	63.7	28.2	1035
Mother's education								
None		32.0	36.1	2.4	7.0	65.7	24.9	4164
Primary		27.3	44.2	1.9	6.6	69.6	22.0	596
Middle		33.5	44.9	3.8	3.4	75.8	18.1	453
Secondary		25.3	53.2	4.3	7.4	78.1	14.1	556
Higher		19.7	59.7	.9	5.6	76.0	15.0	457
Wealth index quintile								
Poorest		33.8	28.3	2.3	7.4	59.6	30.6	2419
Second		35.2	36.0	3.7	5.8	68.9	23.0	1491
Middle		28.9	43.8	2.1	7.9	70.2	19.5	1099
Fourth		26.2	52.1	2.2	5.3	76.5	16.3	810
Richest		18.4	61.7	2.2	6.3	78.3	13.7	506

4.6.1.1 Use of zinc and oral rehydration salts (ORS) for diarrhoea

About 39.2% of children were given ORS for diarrhoeal episodes while 5.0% had received zinc, a marked increase from 2011. Usage of ORS was similar among urban and rural populations (39.5% and 39.0% respectively). Sindh had the highest utilization rate of ORS (44.1%) while GB had the lowest (20.2%). Use of zinc for diarrhoea was most common in Balochistan (7.2%) and least common in KP (2.3%), although overall use remained extremely low.

A larger proportion of children aged 24–35 months were provided ORS (44.4%) while children aged 0–5 months were least likely to be provided ORS (32.4%). Children whose mothers had no education had the highest usage of ORS (40.4%). Usage of ORS was broadly comparable across wealth quintiles. Usage of zinc was extremely low across all groups, regardless of age group, mother's education, wealth quintile, province/ region etc.

Table 4-19: Use of zinc and ORS for diarrhoea

Percentage of children age 0-59 months with diarrhoea in the last two weeks who were given oral rehydration therapy and percentage who were given other treatments, NNS, 2018-19															
		Children with diarrhoea who were given:												Not given any treatment or drug	Number of children age 0-59 months with diarrhoea in the last two weeks
					Other treatment:										
		Zinc	ORS	Zinc and ORS	Pill or syrup: Antibiotic	Pill or syrup: Antimotility	Pill or syrup: Unknown	Injection: Antibiotic	Injection: Non-antibiotic	Injection: Unknown	Intravenous	Home remedy, herbal medicine	Other		
Total		5.0	39.2	3.0	30.5	30.0	10.7	3.3	0.9	4.0	2.0	1.3	1.1	22.2	6325
Urban		5.8	39.5	3.3	36.8	28.3	9.7	4.3	0.7	3.0	2.1	0.9	1.6	19.7	1752
Rural		4.6	39.0	2.8	27.1	30.8	11.3	2.8	1.0	4.5	2.0	1.5	0.8	23.5	4573
Province/ region															
Punjab	Urban	4.3	28.9	1.5	39.2	34.2	16.1	3.3	0.0	2.8	2.6	0.5	0.7	15.5	404
	Rural	5.5	32.6	2.4	29.9	38.1	15.0	3.1	1.0	4.6	1.4	1.2	0.0	18.6	1031
	Total	5.1	31.4	2.1	32.9	36.8	15.4	3.1	0.7	4.0	1.8	1.0	0.2	17.6	1435
Sindh	Urban	7.0	46.0	4.6	37.6	24.0	5.5	4.6	1.4	2.9	2.0	1.2	2.6	21.3	796
	Rural	4.5	42.3	3.1	28.6	19.5	7.5	2.9	0.8	4.8	1.6	0.8	2.3	29.4	908
	Total	5.7	44.1	3.8	32.9	21.7	6.5	3.7	1.1	3.9	1.8	1.0	2.4	25.5	1704
KP	Urban	2.4	45.4	1.2	32.0	34.2	14.8	10.1	0.0	6.7	1.3	0.0	0.0	15.5	151
	Rural	2.2	48.6	1.7	27.3	40.1	15.9	2.3	1.3	6.2	3.8	2.3	0.0	16.7	710
	Total	2.3	48.0	1.6	28.2	38.9	15.7	3.8	1.0	6.3	3.3	1.9	0.0	16.5	861
Balochistan	Urban	7.4	39.1	7.2	19.2	27.6	3.8	0.4	0.0	1.2	2.3	1.8	0.0	38.7	240
	Rural	7.1	41.9	6.7	9.0	20.2	3.0	1.6	0.9	1.7	2.5	4.2	0.7	38.3	1170
	Total	7.2	41.2	6.8	11.3	21.9	3.2	1.3	0.7	1.6	2.5	3.6	0.5	38.4	1410
ICT	Urban	9.6	36.4	0.0	28.4	14.8	2.7	2.7	0.0	0.0	0.0	5.7	3.7	22.5	31
	Rural	0.0	40.1	0.0	24.1	33.3	0.0	4.3	0.0	0.9	2.6	1.8	3.0	17.2	43
	Total	4.2	38.5	0.0	26.0	25.2	1.2	3.6	0.0	0.5	1.5	3.5	3.3	19.6	74

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Percentage of children age 0-59 months with diarrhoea in the last two weeks who were given oral rehydration therapy and percentage who were given other treatments, NNS, 2018-19

		Children with diarrhoea who were given:												Not given any treatment or drug	Number of children age 0-59 months with diarrhoea in the last two weeks
					Other treatment:										
		Zinc	ORS	Zinc and ORS	Pill or syrup: Antibiotic	Pill or syrup: Antimotility	Pill or syrup: Unknown	Injection: Antibiotic	Injection: Non-antibiotic	Injection: Unknown	Intravenous	Home remedy, herbal medicine	Other		
KP-NMD	Total	2.8	36.0	1.9	25.9	32.7	8.0	3.9	2.4	1.9	2.0	0.0	2.1	19.1	150
AJK	Urban	6.7	29.6	0.0	37.8	41.2	1.9	2.8	0.0	3.3	0.0	1.0	0.0	18.3	71
	Rural	3.3	23.2	0.9	32.6	27.8	3.4	2.9	0.6	1.6	0.0	2.6	0.2	28.7	267
	Total	3.8	24.1	0.8	33.4	29.8	3.2	2.9	0.5	1.8	0.0	2.3	0.2	27.1	338
GB	Urban	7.0	12.1	1.1	27.3	12.0	10.0	1.1	2.4	0.0	0.0	1.3	4.2	38.0	51
	Rural	3.7	22.1	1.4	31.9	31.2	8.2	2.4	0.0	2.1	0.0	0.4	1.8	22.5	302
	Total	4.3	20.2	1.3	31.0	27.5	8.6	2.2	0.5	1.7	0.0	0.5	2.3	25.5	353
Sex															
Male		5.0	39.1	2.9	31.6	29.8	11.4	3.8	0.8	3.6	1.9	1.2	1.0	22.3	3269
Female		5.0	39.3	3.0	29.4	30.1	10.1	2.8	1.0	4.5	2.2	1.4	1.3	22.0	3056
Age															
0-5 months		2.8	32.4	1.4	29.3	32.6	8.5	2.9	0.8	3.3	2.4	2.0	1.0	24.0	506
6-11 months		5.9	38.9	2.7	35.6	32.0	11.2	4.8	0.7	4.3	1.9	1.2	0.9	16.6	759
12-17 months		5.5	40.0	2.5	30.6	31.4	13.2	4.0	0.6	4.6	2.3	0.6	2.5	18.6	745
18-23 months		5.3	38.3	2.2	33.1	33.6	11.4	2.1	0.9	2.7	3.0	2.4	1.7	18.4	662
24-35 months		5.3	44.4	4.3	31.3	29.7	12.0	4.0	1.2	4.4	2.0	0.8	0.8	22.2	1399
36-47 months		3.5	36.8	2.1	29.0	26.4	9.4	3.1	1.2	3.0	1.6	1.2	0.5	25.2	1219
48-59 months		6.2	38.7	4.2	25.4	27.3	8.7	1.8	0.4	5.3	1.5	1.7	1.1	28.2	1035
Mother's education															
None		4.5	40.4	3.1	27.2	29.0	10.1	3.2	1.1	4.4	2.0	1.4	0.7	24.9	4164

Percentage of children age 0-59 months with diarrhoea in the last two weeks who were given oral rehydration therapy and percentage who were given other treatments, NNS, 2018-19														
	Children with diarrhoea who were given:												Not given any treatment or drug	Number of children age 0-59 months with diarrhoea in the last two weeks
				Other treatment:										
	Zinc	ORS	Zinc and ORS	Pill or syrup: Antibiotic	Pill or syrup: Antimotility	Pill or syrup: Unknown	Injection: Antibiotic	Injection: Non-antibiotic	Injection: Unknown	Intravenous	Home remedy, herbal medicine	Other		
Primary	6.0	36.6	3.1	35.0	31.9	11.3	2.7	0.7	3.3	1.4	0.6	0.9	22.0	596
Middle	4.0	37.3	2.3	32.8	29.6	18.0	2.2	0.9	4.8	1.9	1.1	3.3	18.1	453
Secondary	6.9	38.7	3.9	36.2	30.9	8.5	4.6	0.2	3.3	2.3	1.8	3.3	14.1	556
Higher	6.2	36.5	1.8	39.8	35.7	9.8	4.7	0.9	1.9	3.1	1.7	0.2	15.0	457
Wealth index quintile														
Poorest	4.1	38.5	2.9	22.0	25.4	10.2	2.8	0.8	4.5	1.1	2.1	0.9	30.6	2419
Second	4.5	38.5	3.0	27.0	32.6	10.8	3.8	0.7	5.1	2.4	0.8	0.9	23.0	1491
Middle	5.2	38.9	3.4	33.8	32.2	11.6	3.1	1.8	3.3	2.4	1.2	1.8	19.5	1099
Fourth	6.6	41.9	2.8	37.2	30.1	10.7	1.8	0.6	3.7	2.9	1.0	0.7	16.3	810
Richest	5.5	38.7	2.7	41.9	32.0	10.5	6.3	0.4	2.4	1.6	1.0	1.6	13.7	506

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4.6.2 Care-seeking for fever

A greater proportion of children were taken to private health providers (48.2%) and public providers (31.2%); only 2.8% consulted a community health provider while no advice or treatment was sought for 15.0% children. Urban residents were more likely to approach a health facility or provider (84.8%).

Equal gender distribution was observed for care-seeking for fever. A greater proportion of children (48.2%; boys: 49.3%; girls: 47.0%) were taken to private health providers while 31.2% of children (boys: 30%; girls: 32.7%) were taken to public providers. Some 20.4% of children aged 0–5 months of age were not taken to any health provider or facility for treatment while for other age groups this proportion ranged between 11–17%.

KP-NMD residents were most likely to approach public health facilities and providers (54.9%) while those in Punjab preferred private practitioners (55.3%). Children of mothers with no education (34.2%) or those who belonged to the middle income quintile (34.5%) were likely to be taken to public practitioners. Children of mothers who had higher education (64.3%) or who belonged to the richest wealth quintile (66.3%) were likely to consult private providers. However, those whose mothers had no education (18.3%) or belonged to the poorest wealth quintile (24.3%) were least likely to be taken to health providers.

Table 4-20: Care-seeking during fever

Children aged 0–59 months with fever in the last two weeks for whom advice or treatment was sought, by source of advice or treatment, Pakistan NNS 2018								
		Percentage of children for whom:						
		Advice or treatment was sought from:						
		Public health provider	Private health provider	Community health provider	Other source	A health facility or provider	No advice or treatment sought	Number of children with fever in last two weeks
Total		31.2	48.2	2.8	5.6	81.7	15.0	9987
Urban		26.4	56.2	2.6	5.1	84.8	12.2	2617
Rural		33.7	44.0	2.9	5.9	80.1	16.4	7370
Province/ region								
Punjab	Urban	25.6	62.0	3.5	4.3	90.2	8.1	797
	Rural	32.4	51.9	4.0	4.4	86.5	11.4	2014
	Total	30.1	55.3	3.8	4.4	87.7	10.2	2811
Sindh	Urban	21.8	56.0	1.6	5.4	79.6	16.8	920
	Rural	31.7	42.1	1.1	6.0	75.8	20.2	1210
	Total	27.4	48.2	1.3	5.8	77.4	18.7	2130
KP	Urban	47.1	37.5	1.8	6.8	87.2	8.5	239
	Rural	40.9	38.0	2.7	7.8	82.4	13.3	975
	Total	42.2	37.9	2.6	7.6	83.4	12.3	1214
Balochistan	Urban	31.7	39.1	6.1	6.6	70.9	22.6	316
	Rural	27.3	17.0	2.8	10.0	46.9	45.7	1541
	Total	28.4	22.3	3.6	9.2	52.7	40.1	1857
ICT	Urban	34.0	44.7	0.0	7.8	78.7	13.5	96
	Rural	29.8	54.0	3.9	5.1	84.7	11.1	98
	Total	31.9	49.2	1.9	6.5	81.6	12.3	194
KP-NMD	Total	54.9	23.5	2.4	10.6	81.3	11.0	224
AJK	Urban	38.3	53.5	1.8	3.1	92.0	5.1	141
	Rural	29.5	45.9	1.6	4.8	77.0	19.9	601
	Total	30.6	46.9	1.6	4.5	79.0	17.9	742
GB	Urban	39.8	34.6	2.8	3.1	77.5	22.5	97
	Rural	45.3	31.3	3.3	6.7	80.2	16.7	718
	Total	44.4	31.8	3.2	6.1	79.8	17.7	815
Sex								
Male		30.0	49.3	2.7	5.8	81.6	15.0	5225
Female		32.7	47.0	2.9	5.4	81.9	14.9	4762
Age								
0-5 months		28.4	46.0	1.3	5.2	77.0	20.4	805
6-11 months		31.4	52.6	3.5	5.0	86.2	11.0	1074
12-17 months		27.0	53.2	3.2	6.1	82.8	13.7	1095
18-23 months		32.0	48.1	1.9	8.3	83.2	11.6	962
24-35 months		29.0	49.4	3.0	5.4	80.6	16.2	2188
36-47 months		34.4	45.9	3.3	5.4	82.4	14.4	2033
48-59 months		34.1	44.0	2.4	4.8	80.0	17.1	1830

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Children aged 0–59 months with fever in the last two weeks for whom advice or treatment was sought, by source of advice or treatment, Pakistan NNS 2018							
	Percentage of children for whom:						
	Advice or treatment was sought from:					No advice or treatment sought	Number of children with fever in last two weeks
	Public health provider	Private health provider	Community health provider	Other source	A health facility or provider		
Mother's education							
None	34.2	41.7	2.5	5.8	78.1	18.3	6118
Primary	28.0	52.7	3.9	5.8	83.7	13.5	992
Middle	30.2	53.9	3.2	3.3	86.0	12.6	833
Secondary	26.5	58.9	2.7	5.1	88.0	9.4	1002
Higher	22.5	64.3	2.2	7.0	88.9	6.1	883
Wealth index quintile							
Poorest	34.9	34.4	2.3	6.5	71.2	24.3	3422
Second	34.4	42.3	2.8	6.9	79.8	16.3	2335
Middle	34.5	48.5	3.5	4.4	84.8	12.6	1828
Fourth	27.5	58.1	2.6	4.4	87.9	10.0	1444
Richest	21.1	66.3	2.8	5.6	89.9	6.9	958

4.6.2.1 Treatment of children with fever

Of children reported to have had fever in the two weeks preceding the survey, 52.5% were given antibiotic tablets or syrup, while 5% received anti-motility tablets or syrup. Another 10.8% were given antibiotic injections and 3.3% non-antibiotic injections. Only 0.7% received intravenous treatment and 1.7% were treated with home remedies or herbal medicines. Overall, 15.4% of children with fever did not receive any treatment.

In urban areas, people more commonly gave oral (57.3%) and injectable (11.8%) antibiotics as compared to rural areas where unknown oral (30.2%) and injectable (7.5%) medications as well as home remedies (1.8%) were reported. Overall, 16.4% of rural care providers did not provide any medicines to the child for fever, in contrast to 13.6% in urban areas. No gender differences were noted in relation to these care-seeking behaviours. However, 58.2% children aged 6–11 months were given oral antibiotics compared to 12.7% who were given injectables. Home remedies were most commonly give to children aged 12–17 months (2.2%) while 17.7% children in the 48–59 month age group did not receive any treatment for fever.

Oral antibiotics were more commonly used in AJK (64.3%) especially in urban areas (76.4%) whereas antibiotic injections were most commonly used in KP-NMD (16.6%). In Balochistan, 40.1% children did not receive any treatment, the highest proportion in the provinces/ regions. Children of mothers with high education were more likely to receive antibiotics, whether oral (66.4%) or injectable (12.5%). Children from the richest wealth quintile received antibiotics in higher proportions than those from the poorest quintiles.

Table 4-21: Treatment of children with fever

Children aged 0–59 months who had a fever in the last two weeks, by type of medicine given for the illness, Pakistan NNS 2018												
		Children with a fever in the last two weeks who were given:										
		Pill or syrup:			Injection:							
		Antibiotic	Antimotility	Unknown	Antibiotic	Non-antibiotic	Unknown	Intravenous	Home remedy, herbal medicine	Other	Not given any treatment or drug	Number of children aged 0–59 months with fever in the last two weeks
Total		52.5	5.0	27.4	10.8	3.3	6.4	.7	1.7	1.9	15.4	9987
Urban		57.3	5.9	22.0	11.8	3.7	4.2	.5	1.4	2.5	13.6	2617
Rural		50.1	4.5	30.2	10.3	3.1	7.5	.8	1.8	1.5	16.4	7370
Province/ region												
Punjab	Urban	63.0	6.4	28.5	12.5	2.7	4.2	0.2	0.5	0.8	8.1	797
	Rural	52.0	4.3	39.7	10.9	3.1	8.1	0.9	1.3	1.1	11.4	2014
	Total	55.8	5.0	35.8	11.4	3.0	6.8	0.7	1.0	1.0	10.2	2811
Sindh	Urban	52.3	5.7	14.5	12.0	6.2	4.4	0.5	2.0	4.4	20.5	920
	Rural	50.1	5.9	19.8	11.6	4.6	7.6	1.0	0.6	2.3	20.2	1210
	Total	51.1	5.8	17.5	11.8	5.3	6.2	0.8	1.2	3.3	20.4	2130
KP	Urban	50.9	1.6	31.0	10.1	1.3	5.4	1.8	0.6	1.9	8.5	239
	Rural	46.9	3.4	34.7	9.8	2.1	9.0	0.9	3.6	0.3	13.3	975
	Total	47.7	3.0	33.9	9.8	1.9	8.3	1.1	3.0	0.6	12.3	1214
Balochistan	Urban	50.2	5.0	19.1	5.3	0.6	3.4	2.8	5.2	0.6	22.6	316
	Rural	28.4	3.2	14.5	3.6	1.0	5.0	0.3	5.9	0.9	45.7	1541
	Total	33.7	3.7	15.6	4.0	0.9	4.6	0.9	5.7	0.8	40.1	1857
ICT	Urban	55.7	15.3	4.8	11.4	0.0	0.0	0.0	4.9	8.4	13.5	96
	Rural	67.8	13.3	12.1	3.0	0.7	0.0	0.0	4.1	6.1	11.1	98
	Total	61.6	14.3	8.3	7.3	0.4	0.0	0.0	4.5	7.3	12.3	194
KP-NMD	Total	63.8	1.4	14.8	16.6	2.4	4.1	0.4	1.5	4.0	11.0	224
AJK	Urban	76.4	5.2	2.7	11.3	3.0	1.5	0.0	1.1	0.6	5.1	141
	Rural	62.5	3.3	9.6	8.0	1.3	1.3	0.0	1.4	3.3	19.9	601
	Total	64.3	3.6	8.7	8.4	1.5	1.3	0.0	1.4	2.9	17.9	742
GB	Urban	51.0	1.0	23.8	3.7	0.0	1.0	0.0	0.0	9.6	22.5	97
	Rural	56.4	3.8	14.3	3.6	1.4	3.9	0.7	0.5	6.3	16.7	718
	Total	55.5	3.3	15.9	3.7	1.2	3.5	0.6	0.4	6.8	17.7	815
Sex												
Male		52.8	4.8	27.6	10.6	3.9	6.7	.8	1.6	1.8	15.5	5225
Female		52.3	5.2	27.2	11.0	2.7	5.9	.7	1.8	2.0	15.4	4762
Age in months												
0-5 months		49.6	3.8	25.5	9.9	2.7	4.9	.7	1.6	1.5	20.9	805
6-11 months		58.2	0.0	25.8	12.7	4.2	7.6	0.1	1.4	2.5	11.7	1074
12-17 months		54.4	5.5	29.0	10.2	2.9	7.1	.6	2.2	1.6	14.2	1095
18-23 months		56.0	0.0	28	11.3	2.8	7.4	1.3	2.0	3.2	12.3	962
24-35 months		49.1	5.7	28.4	9.5	3.4	6.9	.8	1.3	1.2	16.7	2188

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Children aged 0–59 months who had a fever in the last two weeks, by type of medicine given for the illness, Pakistan NNS 2018											
	Children with a fever in the last two weeks who were given:										
	Pill or syrup:			Injection:							
	Antibiotic	Antimotility	Unknown	Antibiotic	Non-antibiotic	Unknown	Intravenous	Home remedy, herbal medicine	Other	Not given any treatment or drug	Number of children aged 0–59 months with fever in the last two weeks
36-47 months	51.2	5.0	30.6	10.7	3.4	6.0	.9	1.7	1.6	14.6	2033
48-49 months	52.6	4.5	23.0	11.8	3.4	6.4	.6	1.7	2.1	17.7	1830
Mother's education											
None	47.4	5.1	27.7	10.1	3.6	7.2	.6	1.9	1.7	18.5	6118
Primary	51.3	5.8	29.4	12.1	3.1	6.2	1.1	1.8	2.1	14.2	992
Middle	57.3	6.0	25.9	11.3	3.8	5.6	1.1	1.2	2.4	13.1	833
Secondary	63.4	3.9	26.7	11.1	1.6	4.9	.5	1.3	1.8	9.8	1002
Higher	66.4	3.8	26.5	12.5	2.9	3.6	.6	1.1	2.3	7.3	883
Wealth index quintile											
Poorest	42.8	5.4	26.0	8.4	3.1	8.5	1.1	2.2	1.4	24.3	3422
Second	47.3	4.2	30.2	11.4	3.3	7.3	0.9	2.1	2.7	16.3	2335
Middle	54.4	4.3	28.1	11.9	4.1	5.5	0.6	1.4	1.5	13.5	1828
Fourth	58.8	4.7	28.7	11.0	2.9	5.7	0.5	1.0	1.8	10.8	1444
Richest	65.6	6.6	23.4	12.4	3.2	3.4	0.4	1.3	2.1	7.9	958

4.6.3 Care seeking for acute respiratory infection

The data showed that around 68.8% children who were reported to have had ARI in the two weeks preceding the survey were taken to health facilities or providers, while 23.5% sought no advice. More than half, 55.8%, received antibiotics for ARI of which 90.3% were prescribed by a health facility or provider. Of those who accessed health care providers, an equal proportion saw public and private practitioners (35.7% each). However, rural dwellers more commonly consulted public practitioners (37.9%) or did not take advice from anybody (26.3%), and were more likely to be prescribed antibiotics by a health facility or provider (rural: 90.8%; urban: 89.4%). Urban residents consulted private providers (47.7%) more and were more likely to take antibiotics overall (61.7%) than children living in rural areas (53.5%).

Across the board, girls were more likely to receive treatment (71.7%) from private (36.1%) or public (37.9%) health care providers and were prescribed more antibiotics (60.2%) than boys. Children aged 6–11 months were more likely to be taken for treatment (76.8%), commonly to private health facilities (43.5%). Children aged 36–47 months were more likely to be taken to public sector providers (40.5%) or advice was not sought for them (27.4%). A high proportion of children aged 18–23 months (62.1%) were prescribed antibiotics, more commonly by private (46.8%) than public practitioners (43.2%).

KP-NMD had the highest proportion of children (62.0%) taken to public practitioners while ICT had the highest proportion (49.0%) taken to private practitioners. Balochistan had the highest proportion of children (47.9%) for whom no care was sought. The provision of antibiotics was highest in AJK (72.8%) and over half (57.7%) of these medications were prescribed by private practitioners. Almost all prescriptions in ICT and KP-NMD were given at health facilities or by health care providers.

Children of mothers who were not educated were either taken to public sector providers (38.9%) or received no advice (27.2%). Children of mothers with higher education were more likely (62.2%) to take advice from the private sector (62.2%) and to receive more antibiotics to their children (70.4%). Likewise, children from the poorest quintiles were more prone to receive no treatment (38.2%), while those in the richest quintile were most likely to consult a private practitioner or facility (61.6%), to receive antibiotics (65.7%), and for these antibiotics to be provided by a health care provider or facility (94.7%).

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Table 4-22: Care-seeking for, and antibiotic treatment of, symptoms of ARI

Children aged 0–59 months with symptoms of acute respiratory infection (ARI) in the last two weeks for whom advice or treatment was sought, by source of advice or treatment, and percentage of children with symptoms who were given antibiotics, Pakistan NNS 2018															
Percentage of children with symptoms of ARI for whom:									Percentage of children with symptoms of ARI for whom the source of antibiotics was:						
		Advice or treatment was sought from:					No advice or treatment sought	Percentage of children with symptoms of ARI in the last two weeks who were given antibiotics	Number of children age 0-59 months with symptoms of ARI in the last two weeks	Health facilities or providers: Public	Health facilities or providers: Private	Health facilities or providers: Community health providr	Other source	A health facility or provider	Number of children with symptoms of ARI in the last two weeks who were given antibiotics
		Health facilities or providers: Public	Health facilities or providers: Private	Health facilities or providers: Community health provider	Other source	A health facility or provider									
Total		35.7	35.7	2.1	5.0	68.8	23.5	55.8	2207	49.1	44.6	2.1	6.3	90.3	1107
Urban		30.2	47.7	1.3	5.5	75.4	16.6	61.7	507	37.3	56.0	.7	6.7	89.4	288
Rural		37.9	31.0	2.3	4.8	66.1	26.3	53.5	1700	54.5	39.4	2.7	6.1	90.8	819
Province/ region															
Punjab	Urban	31.1	50.6	3.4	5.2	78.0	13.1	66.7	104	37.6	57.6	1.3	4.9	89.7	62
	Rural	37.4	41.7	4.4	0.7	77.3	20.2	55.5	288	54.0	44.8	5.2	1.2	98.1	166
	Total	35.6	44.2	4.1	1.9	77.5	18.3	58.6	392	48.8	48.8	4.0	2.4	95.5	228
Sindh	Urban	23.4	59.8	0.4	3.8	82.3	12.9	59.9	158	28.4	67.6	0.7	4.0	94.5	100
	Rural	29.8	29.5	0.0	4.5	57.4	36.2	52.9	203	41.4	50.6	0.0	7.9	88.5	113
	Total	26.9	43.0	0.2	4.2	68.5	25.8	56.0	361	35.2	58.7	0.4	6.1	91.3	213
KP	Urban	51.6	26.1	0.0	6.6	70.7	15.6	61.8	83	59.2	30.2	0.0	10.6	79.2	53
	Rural	48.9	29.9	1.2	3.8	74.5	17.4	60.5	363	62.9	33.4	1.6	3.7	91.9	221
	Total	49.4	29.2	1.0	4.3	73.8	17.1	60.7	446	62.2	32.8	1.3	4.9	89.7	274
Balochistan	Urban	21.5	25.2	1.4	11.0	46.7	42.3	51.9	114	37.2	44.6	0.0	18.2	81.8	38
	Rural	22.2	9.3	3.5	18.6	29.1	49.9	31.1	538	49.0	13.1	3.7	37.9	57.2	117
	Total	22.0	13.4	2.9	16.6	33.6	47.9	36.4	652	44.7	24.6	2.3	30.7	66.1	155
ICT	Urban	100.0	0.0	0.0	0.0	100.0	0.0	100.0	1	100.0	0.0	0.0	0.0	100.0	1
	Rural	0.0	57.2	0.0	0.0	57.2	42.8	7.6	6	0.0	100.0	0.0	0.0	100.0	1
	Total	14.3	49.0	0.0	0.0	63.3	36.7	20.8	7	68.6	31.4	0.0	0.0	100.0	2
KP-NMD	Total	62.0	18.4	6.1	3.2	80.4	16.4	43.9	37	85.9	14.1	11.8	0.0	100.0	17

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Children aged 0–59 months with symptoms of acute respiratory infection (ARI) in the last two weeks for whom advice or treatment was sought, by source of advice or treatment, and percentage of children with symptoms who were given antibiotics, Pakistan NNS 2018

		Percentage of children with symptoms of ARI for whom:							Percentage of children with symptoms of ARI for whom the source of antibiotics was:						
		Advice or treatment was sought from:					No advice or treatment sought	Percentage of children with symptoms of ARI in the last two weeks who were given antibiotics	Number of children age 0-59 months with symptoms of ARI in the last two weeks	Health facilities or providers: Public	Health facilities or providers: Private	Health facilities or providers: Community health providr	Other source	A health facility or provider	Number of children with symptoms of ARI in the last two weeks who were given antibiotics
		Health facilities or providers: Public	Health facilities or providers: Private	Health facilities or providers: Community health provider	Other source	A health facility or provider									
AJK	Urban	16.4	75.6	1.6	8.0	92.0	0.0	93.0	20	10.1	81.3	1.7	8.6	91.4	18
	Rural	36.2	45.0	1.8	3.4	73.5	15.4	69.9	101	46.9	53.1	2.0	0.0	91.8	68
	Total	33.7	48.9	1.8	4.0	75.8	13.4	72.8	121	41.0	57.7	2.0	1.4	91.7	86
GB	Urban	50.0	37.2	0.0	0.0	87.1	12.9	62.3	26	64.1	35.9	0.0	0.0	100.0	15
	Rural	57.3	28.2	2.0	0.7	83.2	13.8	69.7	165	63.7	35.2	2.4	1.1	95.6	117
	Total	55.8	30.0	1.6	0.6	84.0	13.6	68.2	191	63.8	35.3	1.9	0.9	96.4	132
Sex															
Male		33.7	35.4	2.3	4.2	66.2	26.6	51.9	1189	49.4	46.3	2.8	4.3	92.4	564
Female		37.9	36.1	1.8	5.9	71.7	20.1	60.2	1018	48.8	43.0	1.4	8.2	88.3	543
Age in months															
0-5 months		30.2	42.1	1.0	3.7	70.8	24.0	50.7	204	41.2	55.2	1.5	3.6	93.5	95
6-11 months		36.3	43.5	2.5	1.3	76.8	18.9	58.2	230	44.6	54.1	1.0	1.3	95.3	127
12-17 months		37.5	38.0	2.7	5.6	74.7	18.8	61.2	246	54.0	41.2	2.7	4.8	93.9	146
18-23 months		34.5	38.1	.4	8.9	68.9	18.5	62.1	203	43.2	46.8	.6	10.0	84.6	112
24-35 months		33.4	35.6	2.4	6.6	65.9	24.4	51.2	488	46.8	43.5	2.1	9.6	87.4	231
36-47 months		40.5	26.4	2.6	5.7	64.9	27.4	55.6	425	56.6	34.9	4.3	8.5	88.9	202
48-49 months		35.8	33.8	1.9	3.3	65.6	27.1	55.9	411	51.4	44.3	1.5	4.3	90.7	194
Mother's education															
None		38.9	28.4	2.5	5.5	64.6	27.2	51.9	1553	57.0	36.7	2.8	6.3	90.6	684

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Children aged 0–59 months with symptoms of acute respiratory infection (ARI) in the last two weeks for whom advice or treatment was sought, by source of advice or treatment, and percentage of children with symptoms who were given antibiotics, Pakistan NNS 2018

	Percentage of children with symptoms of ARI for whom:							Percentage of children with symptoms of ARI for whom the source of antibiotics was:						
	Advice or treatment was sought from:					No advice or treatment sought	Percentage of children with symptoms of ARI in the last two weeks who were given antibiotics	Number of children age 0-59 months with symptoms of ARI in the last two weeks	Health facilities or providers: Public	Health facilities or providers: Private	Health facilities or providers: Community health provider	Other source	A health facility or provider	Number of children with symptoms of ARI in the last two weeks who were given antibiotics
	Health facilities or providers: Public	Health facilities or providers: Private	Health facilities or providers: Community health provider	Other source	A health facility or provider									
Primary	32.1	46.2	1.4	2.6	76.4	19.0	65.1	146	37.7	58.6	2.1	3.7	93.3	94
Middle	32.7	47.5	.1	1.6	78.5	18.2	61.3	163	43.5	55.2	.0	1.3	96.0	108
Secondary	28.0	49.4	3.2	5.5	75.2	17.1	56.9	171	38.8	51.5	1.8	9.7	87.6	106
Higher	21.9	62.2	.2	5.6	79.0	10.3	70.4	131	21.0	71.0	.3	8.0	86.3	89
Wealth index quintile														
Poorest	37.8	22.8	2.4	5.7	57.1	33.8	44.4	968	59.9	34.2	2.9	5.9	89.9	358
Second	39.1	32.4	2.2	4.6	68.6	23.9	59.3	592	50.8	42.1	2.8	7.1	89.1	337
Middle	36.8	39.2	2.0	6.6	74.5	17.3	57.8	328	49.5	42.7	1.2	7.9	90.1	198
Fourth	30.2	50.6	0.8	4.9	79.2	14.4	66.1	206	40.7	52.3	1.2	7.0	90.7	140
Richest	24.2	61.6	2.4	0.4	82.4	13.7	65.7	113	30.5	69.0	1.7	0.5	94.7	74

4.7 Infant and young child feeding practices

IYCF practices directly affect the nutritional status of children under two years of age and impact on child growth and survival. In NNS 2018, mothers and caretakers of children below 24 months of age were asked about different components of IYCF, following the principles of the WHO global IYCF strategy.

4.7.1 Breastfeeding practices for newborns

The table below presents breastfeeding practices for children born in the two years prior to the survey.

The percentage of children ever breastfed in Pakistan was 88.7% (urban: 89.6%; rural: 88.2%). Sindh had the highest percentage of children who were ever breastfed (94.3%) and Balochistan the lowest (85.1%). No significant differences were observed related to assistance at delivery, maternal education and wealth quintile.

Early initiation of breastfeeding reduces risk of neonatal mortality, helps establish good breastfeeding practices, and provides the infant with colostrum, which is highly nutritious and provides natural immunity. The recommendation is to feed the child within an hour of birth. Overall, 45.8% of newborns were breastfed for first time within one hour of birth and 25.1% within the first day.

This rate was slightly higher for urban children (47.8%) than for rural (44.6%) and more girls (47.5%) than boys (44.2%) were breastfed within one hour of birth. Balochistan had the highest rate (61.1%) of children who were breastfed within an hour of birth, followed by ICT (51.0%), while the lowest rate was observed in GB (20.1%). No noticeable difference was found between households in the richest wealth quintile and those in the poorest.

While 70.9% of children were breastfed during the first day of life, about 39.9% also received pre-lacteal feed (i.e. before breastfeeding): 40.5% of urban children and 39.6% of rural children. The trend was more common in the richest than the poorest households.

The percentage of children aged 0–23 months who were fed with a bottle with nipple in the day prior to the survey was 28.5% (boys: 32.8%; girls: 26.0%). These rates were highest in ICT (40.2%) and Punjab (36.2%), and lowest in KP-NMD (7.6%) and Balochistan (8.3%). More boys (29.0%) than girls (28.0%) were fed milk with a bottle. Bottle-feeding rates increased with maternal education and wealth index quintile. Data on the most frequently consumed milks via a bottle feed, and who advised putting the baby on formula milk, are provided in Table K9, Annex K.

Table 4-23: Breastfeeding practices for newborns

Most recent live-born children to women aged 15–49 years with a live birth in the last two years who were ever breastfed, breastfed within one hour of birth and within one day of birth, received a pre-lacteal feed or were bottle fed, Pakistan NNS 2018							
		Percentage ever breastfed	How long after birth child was put to breast		Percentage who received a pre-lacteal feed	Bottle feeding (bottle-fed yesterday)	Number of last live-born children in the last two years
			Within one hour of birth	Within first day of birth			
Total		88.7	45.8	25.1	39.9	28.5	24209
Urban		89.6	47.8	24.9	40.5	32.8	7082
Rural		88.2	44.6	25.2	39.6	26.0	17127
Province/ region							
Punjab	Urban	86.2	45.5	18.6	43.9	39.0	2839
	Rural	85.6	42.5	21.0	44.7	34.5	6072
	Total	85.8	43.7	20.1	44.4	36.2	8911

Most recent live-born children to women aged 15–49 years with a live birth in the last two years who were ever breastfed, breastfed within one hour of birth and within one day of birth, received a pre-lacteal feed or were bottle fed, Pakistan NNS 2018

		Percentage ever breastfed	How long after birth child was put to breast		Percentage who received a pre-lacteal feed	Bottle feeding (bottle-fed yesterday)	Number of last live-born children in the last two years
			Within one hour of birth	Within first day of birth			
Sindh	Urban	94.4	50.0	33.4	36.2	27.4	2169
	Rural	94.2	46.2	32.9	30.1	19.1	2294
	Total	94.3	48.0	33.1	33.0	23.1	4463
KP	Urban	93.1	48.2	34.0	43.3	19.1	613
	Rural	90.5	46.6	26.5	40.1	14.4	2259
	Total	91.0	46.9	28.1	40.7	15.4	2872
Balochistan	Urban	90.4	60.9	26.6	23.7	9.7	769
	Rural	83.3	61.2	16.8	27.9	7.9	2969
	Total	85.1	61.1	19.3	26.9	8.3	3738
ICT	Urban	91.5	58.3	22.2	47.6	40.4	158
	Rural	91.1	42.1	27.8	37.4	40.1	148
	Total	91.3	51.0	24.7	43.0	40.2	306
KP-NMD	Total	90.0	37.6	35.6	44.1	7.6	684
AJK	Urban	84.5	42.4	33.0	37.3	35.8	337
	Rural	88.1	38.2	39.2	42.3	29.7	1472
	Total	87.7	38.7	38.5	41.7	30.4	1809
GB	Urban	93.9	21.5	63.6	28.4	25.1	165
	Rural	91.7	19.8	66.9	16.7	19.9	1261
	Total	92.1	20.1	66.3	18.8	20.8	1426
Sex							
Male		88.4	44.2	25.4	41.3	29.0	12216
Female		89.0	47.5	24.8	38.5	28.0	11993
Months since birth							
0-11 months		90.0	45.5	25.1	41.0	47.2	11915
12-23 months		87.4	46.1	25.1	38.8	33.2	12294
Mother's education							
None		90.2	47.2	26.3	37.7	21.8	13436
Primary		87.0	43.8	24.2	41.4	34.7	2578
Middle		87.5	45.8	24.8	43.5	33.8	2229
Secondary		87.4	45.9	23.3	44.1	37.3	2770
Higher		87.7	41.9	24.1	41.8	36.9	2879
Wealth index quintile							
Poorest		91.2	46.1	28.8	32.7	16.0	6573
Second		88.8	45.8	24.5	38.4	23.7	5581
Middle		86.7	44.8	25.1	41.2	31.0	4777
Fourth		89.0	46.5	23.2	44.6	35.3	4168
Richest		87.6	45.8	23.9	42.7	37.2	3110

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4.7.2 Age-appropriate breastfeeding

The table below shows the breastfeeding status of children aged 0–5 months, 12–15 months and 20-23 months.

The survey finding revealed that almost half (48.4%) of infants aged 0–5 months were exclusively breastfed, while 63.3% were predominantly breastfed. Girls were slightly more likely to be exclusively breastfed (48.9%) than boys (47.8%). There was no significant differences for urban and rural populations. KP had the highest rate of exclusive breastfeeding (60.8%) and Punjab the lowest (44.3%). Maternal education had a negative relationship with the rate of exclusive breastfeeding.

Around 68.4% children received continued breastfeeding until one year of age, and 56.5% until two years of age, with no significant differences by gender or urban/ rural residence. Continued breastfeeding at one year of age was highest for Sindh (77.5%) and KP (74.5%), and at two years of age for KP-NMD (70.1%) and KP (64.9%). Continued breastfeeding at both ages was inversely related to maternal education and wealth index quintile.

For infants 0–5 months, exclusive breastfeeding is considered age-appropriate feeding, while children 6–23 months are considered to be appropriately breastfed if they receive daily breastmilk in addition to solid, semi-solid, or soft foods. Only 40.1% of children aged 0–23 months received age-appropriate breastfeeding.

Table 4-24: Age-appropriate breastfeeding

Percentage of children aged 0–23 months who were appropriately breastfed for their age, Pakistan NNS 2018										
		Exclusive breastfeeding (0–5 mos.)	Predominant breastfeeding (0–5 mos.)	Number of children	Continued breastfeeding at 1 year (12–15 mos.)	Number of children	Continued breastfeeding at 2 years (20–23 mos.)	Number of children	Age appropriate breastfeeding (0–23 mos.)	Number of children
Total		48.4	63.3	5841	68.4	4233	56.5	3945	40.1	24209
Urban		48.2	62.3	1611	68.5	1259	58.3	1216	42.4	7082
Rural		48.5	63.8	4230	68.4	2974	55.5	2729	38.8	17127
Province/ region										
Punjab	Urban	45.0	57.6	641	63.4	515	54.1	455	38.2	2839
	Rural	43.9	60.6	1495	62.5	1053	49.6	971	34.7	6072
	Total	44.3	59.5	2136	62.9	1568	51.2	1426	36.0	8911
Sindh	Urban	50.8	68.4	485	75.3	363	63.7	411	48.2	2169
	Rural	53.4	69.3	607	79.6	372	62.4	333	46.5	2294
	Total	52.3	68.9	1092	77.5	735	63.1	744	47.3	4463
KP	Urban	63.2	73.1	153	68.8	107	67.6	91	51.5	613
	Rural	60.1	69.0	510	76.1	402	64.4	349	46.3	2259
	Total	60.8	69.9	663	74.5	509	64.9	440	47.3	2872
Balochistan	Urban	36.8	55.3	185	81.5	153	55.5	117	37.3	769
	Rural	46.2	63.6	745	64.3	549	58.2	493	29.6	2969
	Total	43.9	61.6	930	69.5	702	57.3	610	31.5	3738
ICT	Urban	72.4	83.0	35	73.9	29	51.1	38	48.1	158
	Rural	39.7	47.8	33	74.3	18	63.9	23	35.2	148
	Total	57.6	67.0	68	74.1	47	55.2	61	42.2	306
KP-NMD	Total	59.0	71.6	149	71.1	139	70.0	131	43.6	684

Percentage of children aged 0–23 months who were appropriately breastfed for their age, Pakistan NNS 2018										
		Exclusive breastfeeding (0–5 mos.)	Predominant breastfeeding (0–5 mos.)	Number of children	Continued breastfeeding at 1 year (12–15 mos.)	Number of children	Continued breastfeeding at 2 years (20–23 mos.)	Number of children	Age appropriate breastfeeding (0–23 mos.)	Number of children
AJK	Urban	30.1	45.5	59	64.6	65	41	71	37.6	337
	Rural	43.1	55.8	380	65.9	244	46.7	220	38.5	1472
	Total	42.1	55.0	439	65.7	309	45.8	291	38.4	1809
GB	Urban	51.6	53.7	47	74.0	23	39.8	28	41.0	165
	Rural	55.7	64.6	317	72.0	201	54.5	214	45.6	1261
	Total	54.9	62.4	364	72.3	224	52.0	242	44.8	1426
Sex										
Male		47.8	61.2	2933	69.5	2140	56.1	1976	40.2	12216
Female		48.9	65.4	2908	67.3	2093	56.9	1969	40.0	11993
Mother's education										
None		50.8	67.4	3293	69.9	2356	60.0	2160	40.9	13436
Primary		46.0	60.4	616	70.2	458	53.4	409	39.3	2578
Middle		45.4	60.3	518	62.7	375	54.8	395	39.1	2229
Secondary		45.4	58.5	657	67.8	459	55.7	469	39.0	2770
Higher		46.0	56.6	689	66.4	523	49.4	470	39.9	2879
Wealth index quintile										
Poorest		49.8	67.6	1667	71.2	1124	62.4	1056	40.4	6573
Second		47.3	62.4	1363	69.8	1005	57.0	878	39.5	5581
Middle		50.3	65.6	1136	64.7	821	54.9	790	40.0	4777
Fourth		47.0	60.7	941	69.4	747	54.5	717	40.1	4168
Richest		47.1	59.1	734	66.7	536	53.7	504	40.6	3110

4.7.3 Complementary feeding

4.7.3.1 Timely introduction of complementary foods

Only 35.9% of infants aged 6–8 months of age received solid, semi-solid, or soft foods at least once during the day prior to the survey (Table 4-25). Among currently breastfeeding infants, 38.1% received complementary foods, compared to 29.6% for infants who were not currently breastfed.

Table 4-25: Timely introduction of solid, semi-solid or soft foods

Percentage of infants aged 6–8 months who received solid, semi-solid, or soft foods during the previous day, Pakistan NNS 2018						
Characteristics	Currently breastfeeding		Currently not breastfeeding		All	
	Percent receiving solid, semi-solid or soft foods	Number of children age 6–8 months	Percent receiving solid, semi-solid or soft foods	Number of children age 6–8 months	Percent receiving solid, semi-solid or soft foods	Number of children age 6–8 months
Total	38.2	2201	29.6	717	35.9	2918
Urban	45.3	610	37.6	208	43.2	818
Rural	34.3	1591	24.8	509	32.0	2100

Percentage of infants aged 6–8 months who received solid, semi-solid, or soft foods during the previous day, Pakistan NNS 2018							
Characteristics		Currently breastfeeding		Currently not breastfeeding		All	
		Percent receiving solid, semi-solid or soft foods	Number of children age 6-8 months	Percent receiving solid, semi-solid or soft foods	Number of children age 6-8 months	Percent receiving solid, semi-solid or soft foods	Number of children age 6-8 months
Province/ region							
Punjab	Urban	44.2	236	38.8	110	42.5	346
	Rural	31.9	562	26.6	194	30.4	756
	Total	36.4	798	31.6	304	35.0	1102
Sindh	Urban	51.2	190	39.6	50	48.8	240
	Rural	42.1	255	26.8	44	39.6	299
	Total	45.8	445	33	94	43.5	539
KP	Urban	33.5	61	23.7	10	31.9	71
	Rural	34.9	217	8.9	72	28.5	289
	Total	34.6	278	11.1	82	29.2	360
Balochistan	Urban	37.1	57	20.3	21	31	77
	Rural	18.0	235	25.4	94	19.9	330
	Total	22.4	292	24.3	115	22.3	407
ICT	Urban	37.0	16	19.7	4	33.3	20
	Rural	2.8	14	0.0	1	2.6	15
	Total	23.0	30	16.2	5	21.9	35
KP-NMD	Total	44.1	61	52.0	16	45.5	77
AJK	Urban	61.8	34	15.6	4	55.6	38
	Rural	41.4	126	29.7	59	36.9	185
	Total	44.1	160	29.1	63	38.7	223
GB	Urban	62.5	14	66.8	7	63.9	21
	Rural	39.3	123	17.7	31	35.1	154
	Total	42.6	137	30.2	38	40.0	175
Sex							
Male		35.4	1108	32.6	358	34.6	1466
Female		41.0	1093	26.2	359	37.3	1452
Mother's education							
None		36.2	1220	22.1	379	32.8	1599
Primary		37.5	232	39.1	83	37.9	315
Middle		38.5	210	33.3	47	37.5	257
Secondary		40.4	230	31.3	109	37.4	339
Higher		43.9	282	42.8	84	43.6	366
Wealth index quintile							
Poorest		37.7	577	18.7	178	33.6	755
Second		33.6	553	26.5	170	31.9	723
Middle		38.8	454	24.8	130	35.4	584
Fourth		38.8	365	34.1	127	37.6	492
Richest		42.7	252	39.9	112	41.8	364

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4.7.3.2 Minimum dietary diversity

Children aged 6–23 months consuming foods from four out of seven food groups are considered to have a diet with adequate diversity. As Table 4-26 shows, only 14.2% of children achieved minimum dietary diversity (MDD), with almost the same proportions for boys (14.3%) and girls (14.1%), but slightly higher rates in urban (17.0%) than in rural areas (12.6%). Children in the two richer wealth index quintiles (richest: 19.5%; fourth: 16.9%) were more likely to achieve MDD than the two poorest (second: 11.4%; poorest: 8.4%). Non-breastfed children were more likely to achieve MDD (18.1%) than breastfed children (13.2%).

4.7.3.3 Minimum meal frequency

As Table 4-26 shows, only 18.2% of all children aged 6–23 months received solid, semi-solid, or soft foods the minimum number of times on the day prior to the survey. A slightly higher proportion of urban children (20%) received the minimum meal frequency (MMF), compared to rural children (17.2%). Prevalence was also higher in households belonging to the richest wealth quintile (23.9%) than those in the poorest (14.0%). MMF was higher amongst non-breastfeeding children (33.6%) compared to breastfeeding children (12.8%).

4.7.3.4 Minimum acceptable diet

An overall dietary assessment (combining MMF and MDD) reveals that only 3.6% of children received a diet sufficient in both diversity and frequency. A lower percentage of breastfeeding children (3.1%) had a minimum acceptable diet (MAD) than non-breastfeeding children (5.1%). Around 49.5% of non-breastfeeding children had received the recommended two or more milk feeds the previous day. Children in the wealthiest households (4.6%) were nearly four times as likely to have MAD as those in the poorest (1.7%).

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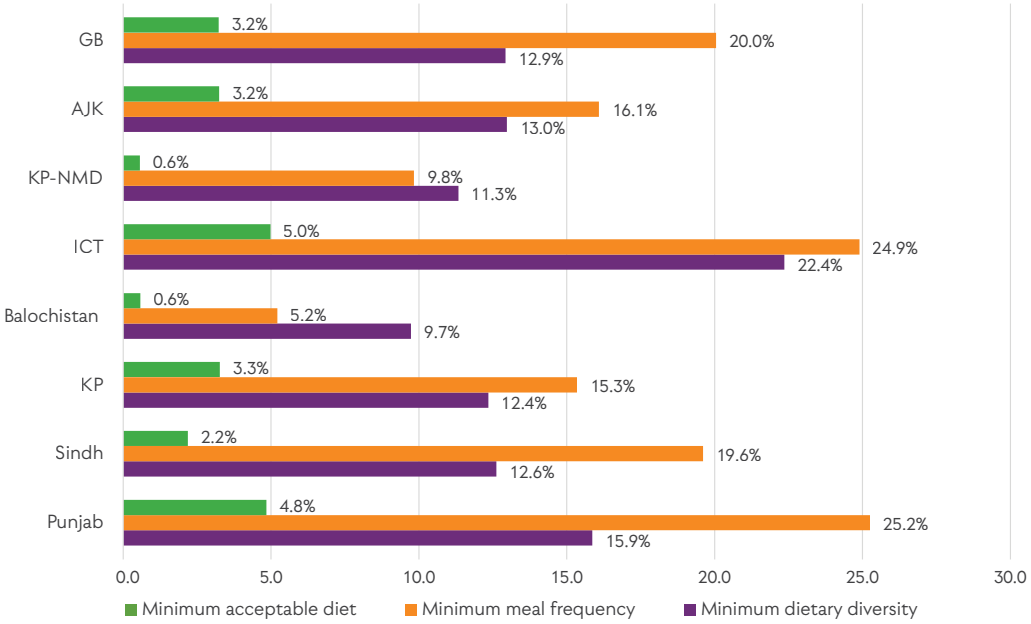
Table 4-26: Complementary feeding

Percentage of children aged 6–23 months who received appropriate liquids and solid, semi-solid, or soft foods the minimum number of times or more during the previous day, by breastfeeding status, Pakistan NNS 2018													
	Currently breastfeeding				Currently not breastfeeding					All			
	Percent of children who received:			Number of children aged 6–23 months	Percent of children who received:				Number of children aged 6–23 months	Percent of children who received:			Number of children aged 6–23 months
	Minimum dietary diversity	Minimum meal frequency	Minimum acceptable diet		Minimum dietary diversity	Minimum meal frequency	Minimum acceptable diet	At least two milk feeds		Minimum dietary diversity	Minimum meal frequency	Minimum acceptable diet	
Total	13.2	12.8	3.1	12277	18.1	33.6	5.1	49.5	4093	14.2	18.2	3.6	18369
Urban	15.0	13.8	3.8	3665	22.1	37.8	7.7	52.8	1262	17.0	20.0	4.8	5471
Rural	12.1	12.3	2.7	8612	15.7	31.1	3.5	47.4	2831	12.6	17.2	2.9	12897
Sex													
Male	13.7	12.8	3.4	6227	18.5	35.1	4.3	52.3	2011	14.3	18.3	3.6	9283
Female	12.8	12.9	2.8	6050	17.8	32.2	5.8	46.9	2082	14.1	18.2	3.6	9085
Mother's education													
None	10.3	11.8	2.0	6956	13.0	26.7	2.7	41.9	2139	10.9	15.4	2.2	10143
Primary	12.8	12.4	2.2	1268	19.1	37.5	6.7	54.4	466	14.1	19.3	3.4	1962
Middle	17.5	12.7	4.0	1090	25.1	41.4	4.8	59.7	415	18.3	20.6	4.2	1711
Secondary	16.9	15.4	5.8	1389	18.2	35.5	3.2	52.6	492	17.4	21.0	5.1	2113
Higher	19.0	15.3	5.4	1444	29.9	47.1	14.3	61.7	518	21.4	24.5	7.9	2190
Wealth index quintile													
Poorest	8.5	12.0	1.7	3387	8.8	20.6	1.5	31.1	1004	8.4	14.0	1.6	4906
Second	11.0	11.9	2.1	2884	13.6	26.8	3.1	44.8	874	11.4	15.6	2.3	4218
Middle	15.2	12.0	3.5	2378	17.6	33.3	3.6	51.1	851	15.1	17.8	3.5	3641
Fourth	15.2	12.8	3.9	2105	23.1	40.6	6.5	59.4	807	16.9	20.3	4.6	3227
Richest	16.7	15.9	4.6	1523	25.6	44.3	10.2	57.6	557	19.5	23.9	6.2	2376

4.7.3.5 *Trends in complementary feeding*

ICT (MMF: 22.2%; MDD: 22.4%; MAD: 4.9%) and Punjab (MMF: 21.6%; MDD: 15.9%; MAD: 4.8%) had better rates for all indicators related to complementary feeding (Figure 4-17), while KP-NMD and Balochistan had the lowest. However, in no province or region did more than a quarter of children receive a minimum acceptable diet.

Figure 4-16: Complementary feeding practices (province/ region), Pakistan NNS 2018



4.7.4 Consumption of iron-rich foods

Only 9.8% of children consumed foods rich in iron in the last 24 hours, more in urban (11.9%) than rural (8.6%). This pattern is almost similar for both genders. ICT had the highest rate of consumption of iron-rich foods (17.3%). Consumption increased with maternal education and wealth quintile.

Table 4-27: Consumption of iron-rich or iron-fortified foods

Children who consumed iron-rich or iron-fortified foods in the 24 hours prior to the survey, Pakistan NNS 2018			
		Consumption of iron-rich or iron-fortified foods [1]	
		Percent consumption	Number of children under 5
Total		9.8	18368
Urban		11.9	5471
Rural		8.6	12897
Province/ region			
Punjab	Urban	10.9	2198
	Rural	7.0	4577
	Total	8.5	6775
Sindh	Urban	14.4	1684
	Rural	12.9	1687
	Total	13.7	3371

Children who consumed iron-rich or iron-fortified foods in the 24 hours prior to the survey, Pakistan NNS 2018			
		Consumption of iron-rich or iron-fortified foods [1]	
		Percent consumption	Number of children under 5
KP	Urban	7.7	460
	Rural	9.8	1749
	Total	9.4	2209
Balochistan	Urban	6.8	584
	Rural	5.2	2224
	Total	5.6	2808
ICT	Urban	21.4	123
	Rural	12.3	115
	Total	17.3	238
KP-NMD	Total	5.8	535
AJK	Urban	11.2	278
	Rural	7.8	1092
	Total	8.3	1370
GB	Urban	8.6	118
	Rural	14.6	944
	Total	13.6	1062
Sex			
Male		9.7	9283
Female		9.9	9085
Mother's education			
None		7.8	10143
Primary		9.1	1962
Middle		11.9	1711
Secondary		13.5	2113
Higher		12.7	2190
Wealth index qintil			
Poorest		5.7	4906
Second		7.9	4218
Middle		11.4	3641
Fourth		10.5	3227
Richest		13.7	2376
[1] - Includes liver, kidney, heart or other organ meat or any meat, such as beef, lamb, goat, chicken or duck, or seafood			

4.8 Child disability

We used the Washington scale to assess disability among children aged 24–59 months. The Washington scale is a four-point scale (1: "no difficulty", 2: "some difficulty"; 3: "a lot of difficulty"; 4: "unable to do") across six domains: seeing, hearing, walking, remembering, self-care and communication.

The study found that 14% children aged 24–59 months had at least one functional difficulty: 1.8% had difficulty in seeing, 2.2% in hearing, 3.5% in walking, 5.3% in remembering, 10.2% in self-care and 6.5%

in communication. These were consistently more commonly found in rural settings except seeing and hearing. All functional problems were also more commonly found among boys. Higher levels of disabilities across all domains were reported for children in the 24–35-month age group except seeing and hearing.

The highest prevalence of all childhood disabilities occurred in KP-NMD. Children of mothers with primary education and children who belonged to the poorest or second quintile were more likely to be reported to have disabilities.

Table 4-28: Child disability

Percentage of children aged 24-59 months with functional difficulty in at least one domain, Pakistan NNS 2018									
		Percentage of children aged 24-59 months who have functional difficulty for the indicated domains:						Percentage of children with functional difficulty in at least one domain	Number of children age 24-59 months
		Seeing	Hearing	Walking	Remembering	Selfcare	Communication		
Total		1.8	2.2	3.5	5.3	10.2	6.5	14.0	44284
Urban		2.0	2.2	3.2	4.2	7.8	5.3	11.1	12559
Rural		1.7	2.1	3.7	5.9	11.6	7.2	15.6	31725
Province/ region									
Punjab	Urban	0.9	1.0	1.8	3.2	8.0	5.0	10.7	4726
	Rural	1.1	1.5	2.7	5.4	12.3	6.9	15.4	10644
	Total	1.0	1.3	2.4	4.6	10.7	6.2	13.7	15370
Sindh	Urban	3.2	3.5	4.2	4.4	6.2	5.3	9.8	4064
	Rural	2.4	2.5	3.9	4.4	8.5	6.9	13.0	4555
	Total	2.8	3.0	4.0	4.4	7.4	6.1	11.5	8619
KP	Urban	2.6	2.3	5.6	7.0	10.2	5.9	15.6	1027
	Rural	1.6	1.8	5.2	9.7	16.4	8.9	20.7	4333
	Total	1.8	1.9	5.3	9.1	15.1	8.3	19.7	5360
Balochistan	Urban	3.4	5.3	6.6	11.4	15.5	7.9	21.0	1662
	Rural	2.9	4.9	6.3	8.6	11.7	6.9	17.3	6479
	Total	3.0	5.0	6.4	9.3	12.7	7.2	18.3	8141
ICT	Urban	1.9	0.3	3.2	1.3	4.6	3.3	9.6	247
	Rural	2.3	1.9	5.5	3.5	4.5	2.7	14.4	273
	Total	2.1	1.1	4.3	2.4	4.5	3.0	12.0	520
KP-NMD	Total	6.1	6.3	10.2	10.4	17.2	13.3	23.8	1023
AJK	Urban	1.8	2.1	2.0	2.0	3.2	5.7	6.7	510
	Rural	1.3	1.1	1.9	1.9	2.8	4.7	6.4	2295
	Total	1.4	1.2	1.9	1.9	2.8	4.8	6.4	2805

Percentage of children aged 24-59 months with functional difficulty in at least one domain, Pakistan NNS 2018									
		Percentage of children aged 24-59 months who have functional difficulty for the indicated domains:						Percentage of children with functional difficulty in at least one domain	Number of children age 24-59 months
		Seeing	Hearing	Walking	Remembering	Selfcare	Communication		
GB	Urban	2.5	1.7	2.5	1.9	1.7	3.7	5.5	283
	Rural	3.2	3.0	3.5	3.3	3.5	10.4	12.2	2163
	Total	3.1	2.8	3.3	3.1	3.2	9.2	11.0	2446
Sex									
Male		2.0	2.3	3.6	5.6	10.4	6.8	14.3	22849
Female		1.6	2.1	3.4	5.0	10.1	6.3	13.6	21435
Age									
24-35 months		1.8	2.1	4.3	6.5	12.6	8.1	16.0	14434
36-47 months		1.8	2.3	3.4	5.1	9.6	6.1	13.8	14730
48-59 months		1.9	2.1	2.9	4.4	8.7	5.4	12.2	15120
Mother's education									
None		2.0	2.4	3.9	5.7	10.3	6.5	14.1	26842
Primary		1.6	1.8	3.5	5.4	11.7	7.5	15.5	4392
Middle		1.3	1.8	3.0	5.0	9.7	6.4	13.5	3595
Secondary		1.4	1.7	2.5	4.3	9.4	5.6	12.2	4420
Higher		1.6	1.3	2.7	4.3	9.7	6.2	13.4	4085
Wealth index quintile									
Poorest		2.3	3.2	4.6	6.7	11.6	7.7	16.0	13198
Second		1.8	2.2	3.7	5.5	10.9	6.7	14.8	10459
Middle		1.9	2.2	3.7	5.5	10.9	6.7	14.5	8664
Fourth		1.7	1.7	3.0	4.5	8.9	5.7	12.1	6909
Richest		1.2	1.2	2.2	3.9	8.4	5.5	11.6	5054

4.9 Immunization

Immunization is one of the most cost-effective and efficient strategies for reduction in child morbidity and mortality. Under WHO immunization guidelines children are considered fully immunized if they have received a single dose of vaccine against tuberculosis (BCG), three doses of polio vaccine (excluding polio vaccine given at birth), three doses of the vaccine against diphtheria, pertussis, and tetanus (DPT), and one dose of measles vaccine, in the first years of their life. The Expanded Programme for Immunization (EPI) was launched in Pakistan more than three decades ago with all six recommended vaccines. In 2003, monovalent hepatitis B vaccine was added, which was eventually administered as a single tetravalent (DPT-HepB) injection. A vaccine against Hemophilus Influenza B (Hib) was introduced in 2009 as part of a pentavalent vaccine (DPT-HepB-Hib) and in 2012 pneumococcal vaccine (PCV) was also included. All these routine vaccines are provided free of cost in public health facilities in Pakistan.

4.9.1 Vaccinations in the second year of life

Information on vaccination was taken from children's vaccination cards kept in the home, which were available for more than half (57.4%) of children aged 12–23 months. These showed that 66%

children aged 12–23 months were fully immunized, while 0.9% did not get any vaccination. BCG coverage was 90.7%, while the polio vaccine was given to 90% of children at birth, with small declines in subsequent doses to 84.0% for Polio-3. For the pentavalent vaccine, the coverage was 87.9%, 85.8% and 83.6% per dose, and for PCV 87.3%, 85.2% and 83.4% respectively. Measles-1 was given to 80.5% of children. Vaccination coverage was consistently high for all vaccines for boys compared to girls, and for urban children compared to rural.

Punjab was found to have the greatest number of children who had received all vaccines on time (90.6%) followed by AJK (89.1%). The lowest rate was observed in Balochistan where only 48.9% were fully vaccinated and 1.5% had received no vaccination. Immunization rates rose increased consistently with maternal education: while children of mothers with higher education (83.9%) and belonging to the richest wealth quintile (79.7%) were most likely to be fully vaccinated, children with uneducated mothers (55.1%) and those from the poorest wealth quintile (40%) were most likely to have not received any vaccination.

4.9.2 Vaccinations in the third year of life

Vaccination coverage for children aged 24–35 months was also assessed by referring to vaccination cards kept in the home. These were available for 53.8% of children in this age group, with slightly higher availability in urban areas (54.8%). Overall, 65.3% of children in this age group were found to be fully immunized at the time of the survey, while 0.7% had received no vaccination at all. With regard to individual vaccines, 90% had received BCG, and 89.5% received polio vaccination at birth. Progressive decline was then observed for each successive dose of polio, pentavalent and PCV. Around 84.4% children were given Measles-1 which decreased to 82.2% for Measles-2. Boys and urban children were slightly more likely to be fully vaccinated.

In Punjab coverage for all doses of vaccines (except for Measles 1 and 2) exceeded 95%; availability of vaccination cards was also highest here (66.5%). Punjab is followed by ICT for having the largest proportion of children vaccinated for BCG (95.3%), polio at birth (94.7%), Polio-1 (93.6%), Pentavalent-1 (93.6%) and PCV-1 (93.6%) with a regular decline in successive doses. Second and third doses of these vaccines were higher in GB than in other provinces/regions. The lowest level of full immunization (52.4%) and the highest proportion of no immunization (37.3%) were observed in Balochistan. A progressive increase in vaccination was seen with wealth and maternal education, and children whose mothers had higher education (80.3%) or belonged to the richest wealth quintile (82.1%) were most likely to be fully vaccinated.

4.9.3 Vaccination record in the first years of life

Information about vaccination timing and dosage was obtained by referring to vaccination cards available in the home, or from the mother's recall only if the card was not available or not shown. In 78.7% of cases, information about vaccinations was collected from either vaccination cards (51.1%) or maternal recall (27.6%).

BCG (60.7%) and polio (60.4%) were the vaccines with the highest rate of documentation, while measles had the least documentation (55.4%). Less information was available on vaccination cards for the second and third doses of almost all vaccines. Based on maternal recall, BCG (30%) and polio (29.6%) had the highest percentage.

Table 4-29: Vaccinations in the second year of life

Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases,Pakistan NNS 2018																	
		Percentage of children age 12-23 months who received:														Percentage with vaccination card seen	Number of children age 12-23 months
		BCG	Polio				Pentavalent			Pneumococcal			Measles-1	Full	None		
			At birth	1	2	3	1	2	3	1	2	3					
Total		90.7	90.0	88.6	86.1	84.0	87.9	85.8	83.6	87.3	85.2	83.4	80.6	66.0	.9	57.4	12294
Urban		94.0	93.4	92.2	89.5	87.6	91.6	89.5	87.2	91.0	88.9	86.9	83.3	68.8	.9	57.8	3705
Rural		88.7	87.9	86.4	84.0	81.9	85.7	83.6	81.4	85.0	83.0	81.3	78.9	64.3	.9	57.2	8589
Province/ region																	
Punjab	Urban	97.8	97.7	97.1	95.9	94.9	97.0	95.9	94.5	96.1	95.3	94.0	92.7	80.4	.7	63.8	1498
	Rural	96.8	96.7	96.0	94.9	93.5	95.9	94.8	93.4	95.5	94.1	93.0	91.8	80.2	.6	70.6	3028
	Total	97.2	97.1	96.5	95.3	94.0	96.4	95.2	93.8	95.7	94.6	93.4	92.2	80.2	.6	68.0	4526
Sindh	Urban	90.5	89.4	86.6	81.7	78.0	85.4	81.6	77.7	85.3	81.2	77.7	69.8	52.1	1.2	49.1	1117
	Rural	81.8	79.1	75.1	68.8	63.3	73.1	67.7	62.6	71.5	66.6	62.6	56.2	37.1	.9	34.9	1114
	Total	86.0	84.1	80.7	75.0	70.4	79.1	74.5	69.9	78.2	73.7	69.9	62.8	44.4	1.0	41.8	2231
KP	Urban	94.0	93.1	92.6	89.0	87.6	92.3	88.9	87.3	92.3	88.3	87.2	84.9	68.9	.4	63.2	312
	Rural	86.5	85.3	83.9	82.7	82.0	83.3	82.3	81.4	83.0	82.2	81.9	79.1	60.0	1.2	53.9	1158
	Total	88.0	86.9	85.6	83.9	83.2	85.1	83.6	82.6	84.9	83.4	82.9	80.2	61.8	1.0	55.8	1470
Balochistan	Urban	73.6	71.2	72.2	69.3	67.6	69.5	68.1	66.6	68.0	66.2	66.0	65.5	48.9	1.5	38.1	398
	Rural	54.9	55.8	54.7	52.7	51.7	53.0	51.8	50.6	52.7	51.2	50.6	51.5	37.1	2.6	31.2	1508
	Total	59.7	59.8	59.2	57.0	55.9	57.3	56.0	54.8	56.7	55.1	54.6	55.1	40.2	2.3	33.0	1907
ICT	Urban	92.9	89.1	89.7	87.1	87.1	89.7	87.1	87.1	88.5	87.1	87.1	76.1	66.8	1.1	59.2	93
	Rural	92.8	92.8	89.5	84.1	82.3	89.5	83.4	82.3	88.7	84.1	81.7	73.2	68.3	.0	64.6	75
	Total	92.9	90.6	89.6	85.9	85.1	89.6	85.6	85.1	88.6	85.9	84.9	74.9	67.4	.6	61.4	168
KP-NMD	Total	76.2	75.6	74.5	71.0	69.1	73.9	70.6	67.1	72.9	70.6	67.1	67.9	47.2	1.7	45.6	362

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Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases,Pakistan NNS 2018																
		Percentage of children age 12-23 months who received:													Percentage with vaccination card seen	Number of children age 12-23 months
		BCG	Polio				Pentavalent			Pneumococcal			Measles-1	Full	None	
			At birth	1	2	3	1	2	3	1	2	3				
AJK	Urban	97.3	96.7	95.9	95.5	95.5	96.7	95.5	95.5	95.9	96.3	95.5	95.5	83.7	.0	72.9	196
	Rural	93.0	92.9	92.4	91.9	90.4	92.1	91.8	90.4	92.1	91.8	90.3	88.9	77.6	2.4	65.9	721
	Total	93.6	93.4	92.9	92.4	91.1	92.7	92.4	91.1	92.6	92.5	91.0	89.8	78.4	2.1	66.9	917
GB	Urban	90.7	90.7	90.7	87.9	87.9	90.7	87.9	87.9	86.5	87.9	87.9	78.6	61.3	3.2	58.7	75
	Rural	94.7	94.5	92.5	89.5	87.9	92.5	89.9	87.6	92.6	89.9	86.7	80.7	62.5	.4	55.0	638
	Total	94.1	93.9	92.2	89.2	87.9	92.2	89.6	87.7	91.6	89.5	86.9	80.4	62.3	.8	55.6	713
Sex																	
Male		91.1	90.3	89.0	86.4	84.6	88.3	86.0	84.2	87.7	85.5	84.1	81.5	66.9	1.0	58.7	6224
Female		90.2	89.6	88.1	85.8	83.5	87.5	85.5	83.0	86.8	84.9	82.7	79.6	65.0	.8	56.1	6070
Mother's education																	
None		85.3	84.2	82.1	78.8	76.3	81.2	78.5	75.8	80.5	77.9	75.7	72.3	55.1	1.1	50.3	6809
Primary		95.4	94.7	93.3	91.3	89.8	92.5	90.9	89.5	92.2	90.7	89.4	86.9	74.0	.9	65.4	1328
Middle		96.1	96.1	95.8	92.4	90.2	95.5	92.3	89.8	94.0	90.8	88.9	86.4	73.3	.7	67.6	1159
Secondary		96.9	97.1	96.0	95.0	93.4	95.9	95.0	93.1	95.4	94.4	92.5	90.0	79.3	.5	65.4	1394
Higher		98.0	97.9	97.8	97.1	96.3	97.6	96.9	96.2	97.2	96.5	96.0	94.4	83.9	.3	63.8	1434
Wealth index quintile																	
Poorest		75.7	74.2	71.6	66.5	63.0	69.8	65.6	62.2	68.6	64.6	62.1	58.4	40.0	1.2	37.5	3310
Second		90.8	90.0	88.2	85.9	84.0	87.6	85.6	83.4	87.1	85.1	83.3	81.0	64.7	1.1	58.5	2784
Middle		92.9	92.8	91.4	89.8	88.1	91.1	89.8	87.6	90.6	88.8	87.5	84.9	70.7	1.2	63.2	2453
Fourth		96.2	95.5	95.0	93.4	91.4	94.9	93.3	91.4	94.2	92.9	91.0	87.9	75.1	.6	66.3	2156
Richest		97.8	97.5	96.6	95.0	93.9	96.4	94.8	93.8	96.1	94.6	93.3	90.8	79.7	.4	61.3	1591

Table 4-30: Vaccinations in the third year of life

Percentage of children aged 24-35 months currently vaccinated against vaccine preventable childhood diseases, Pakistan NNS 2018																		
		Percentage of children age 24-35 months who received:															Percentage with vaccination card seen	Number of children age 24-35 months
		BCG	Polio				Pentavalent			Pneumococcal			Measles-1	Measles-2	Full	None		
			At birth	1	2	3	1	2	3	1	2	3						
Total		90.0	89.5	88.0	86.3	85.5	87.3	85.9	85.2	87.0	85.7	84.9	84.4	82.2	65.3	0.7	53.8	14434
Urban		93.8	93.2	92.0	90.2	89.4	91.6	90.1	89.3	91.2	89.9	89.0	87.6	84.3	70.1	0.8	54.8	4166
Rural		87.7	87.3	85.6	84.0	83.2	84.8	83.4	82.8	84.6	83.3	82.6	82.5	80.9	62.5	0.7	53.2	10268
Province/ region																		
Punjab	Urban	97.4	97.2	96.8	96.0	95.9	96.7	95.9	96.0	96.3	95.6	95.5	94.5	92.3	80.6	0.6	59.4	1589
	Rural	97.0	96.9	96.2	96.0	95.5	96.1	95.9	95.5	95.8	95.7	95.3	95.1	94.0	80.8	0.3	70.7	3398
	Total	97.1	97.0	96.4	96.0	95.7	96.3	95.9	95.7	96.0	95.7	95.3	94.9	93.4	80.7	0.4	66.5	4987
Sindh	Urban	90.9	90.0	87.5	84.3	82.4	86.6	84.0	82.1	86.2	83.9	82.0	79.6	74.4	57.5	1.2	49.1	1329
	Rural	82.4	80.8	76.2	70.3	68.8	73.7	68.9	67.6	73.4	68.9	67.3	66.7	63.4	34.3	0.6	25.1	1443
	Total	86.5	85.2	81.6	77.0	75.3	79.9	76.1	74.6	79.5	76.1	74.4	72.9	68.7	45.4	0.9	36.6	2772
KP	Urban	96.3	95.2	93.4	91.8	90.8	93.4	91.7	90.8	92.0	91.7	90.8	89.0	87.2	68.9	0.0	59.0	298
	Rural	84.4	84.2	82.6	81.4	80.8	81.5	80.6	80.1	81.4	80.8	80.1	80.2	78.4	56.0	1.1	49.1	1402
	Total	86.6	86.3	84.6	83.3	82.7	83.8	82.7	82.1	83.4	82.9	82.1	81.9	80.1	58.5	0.9	51.0	1700
Balochistan	Urban	73.1	72.8	72.7	70.4	70.6	71.3	70.0	70.0	71.0	70.1	69.3	71.5	69.2	48.5	1.1	40.1	588
	Rural	53.7	54.4	52.8	51.9	50.4	52.2	50.9	50.0	51.7	50.6	49.9	51.3	51.3	35.2	1.6	26.6	2127
	Total	59.0	59.4	58.2	57.0	55.9	57.4	56.1	55.5	56.9	55.9	55.2	56.9	56.2	38.8	1.5	30.3	2715
ICT	Urban	98.3	97.3	96.1	91.4	86.4	96.1	91.4	86.4	96.1	91.4	86.4	84.2	78.3	73.9	0.0	59.5	85
	Rural	91.3	91.3	90.3	88.8	89.8	90.3	88.8	89.8	90.3	88.8	89.8	86.6	86.6	81.8	5.7	67.8	76
	Total	95.3	94.7	93.6	90.3	87.9	93.6	90.3	87.9	93.6	90.3	87.9	85.2	81.8	77.3	2.5	63.0	161
KP-NMD	Total	76.0	75.7	76.2	75.0	74.4	75.3	75.5	74.0	75.4	73.5	74.4	73.6	72.7	49.5	0.9	44.5	364

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Percentage of children aged 24-35 months currently vaccinated against vaccine preventable childhood diseases, Pakistan NNS 2018																	
		Percentage of children age 24-35 months who received:														Percentage with vaccination card seen	Number of children age 24-35 months
		BCG	Polio				Pentavalent			Pneumococcal			Measles-1	Measles-2	Full	None	
			At birth	1	2	3	1	2	3	1	2	3					
AJK	Urban	90.7	90.7	90.7	90.1	90.1	90.7	90.1	90.1	90.7	90.1	89.7	89.9	89.9	82.3	0.0	69.6	157
	Rural	83.1	83.1	83.5	83.0	82.7	83.0	83.0	82.9	82.9	83.0	82.7	82.2	81.9	70.1	0.6	58.2	760
	Total	84.0	84.0	84.3	83.8	83.6	83.9	83.8	83.7	83.8	83.8	83.5	83.1	82.8	71.4	0.5	59.5	917
GB	Urban	95.5	95.5	95.5	94.3	94.3	96.2	94.3	94.3	96.2	94.3	94.3	91.3	90.5	72.2	0.8	52.6	104
	Rural	92.3	92.3	92.0	89.9	89.2	90.5	90.6	88.7	91.4	89.6	89.6	88.9	88.8	60.3	0.2	45.3	714
	Total	92.9	92.9	92.7	90.8	90.2	91.6	91.3	89.7	92.3	90.5	90.4	89.4	89.1	62.5	0.3	46.7	818
Sex																		
Male		90.3	89.9	88.2	86.6	85.8	87.6	86.1	85.4	87.3	85.9	85.2	84.5	82.5	65.9	0.6	54.5	7463
Female		89.6	89.1	87.7	86.0	85.2	87.0	85.6	85.0	86.6	85.5	84.6	84.2	81.8	64.7	0.8	53.0	6971
Mother's education																		
None		85.2	84.5	82.0	79.6	78.6	80.9	79.0	78.1	80.5	78.9	77.9	77.3	75.2	54.7	0.7	45.6	8508
Primary		94.4	94.6	93.4	92.5	91.5	93.4	92.5	91.5	93.3	92.2	91.5	90.7	88.1	76.0	0.6	64.0	1472
Middle		94.8	95.0	94.9	94.7	94.0	94.6	94.1	93.6	94.0	93.7	93.0	92.5	90.1	78.7	1.2	65.6	1229
Secondary		97.0	96.3	96.2	95.0	94.9	96.0	94.8	94.8	96.1	94.9	94.5	94.0	91.9	81.1	0.6	64.0	1617
Higher		98.2	97.8	97.8	97.0	96.8	97.6	96.9	96.6	97.5	96.7	96.2	95.9	93.8	80.3	0.3	64.0	1401
Wealth index quintile																		
Poorest		75.3	74.3	71.2	67.3	66.2	69.2	66.5	65.3	68.8	66.5	65.3	65.4	63.7	40.2	0.7	30.7	4264
Second		90.6	90.2	88.6	86.6	85.9	88.0	86.4	85.6	87.8	86.2	85.5	84.8	82.6	63.0	0.6	53.9	3314
Middle		93.1	92.9	91.7	90.9	89.7	91.4	90.5	89.4	90.9	90.2	89.1	88.5	86.3	71.0	0.9	62.0	2914
Fourth		96.3	96.3	95.3	94.7	94.0	95.3	94.3	94.1	94.7	94.0	93.4	92.6	89.7	75.7	0.5	63.5	2198
Richest		97.5	96.8	96.5	95.6	95.5	96.3	95.5	95.5	96.4	95.6	95.3	94.5	92.2	82.1	0.8	62.9	1744

Table 4-31: Vaccination record in the first years of life

Percentage of children aged 12–23 months and 24–35 months who were vaccinated against vaccine-preventable childhood diseases at any time before the survey and by their first birthday, Pakistan NNS 2018						
	Children age 12–23 months vaccinated at any time before the survey according to:			Children age 24–35 months vaccinated at any time before the survey according to:		
	Vaccination card	Recall	Either	Vaccination card	Recall	Either
BCG	60.7	30.0	90.7	57.1	32.9	90.0
Polio at birth	60.4	29.6	90.0	56.9	32.6	89.5
Polio-1	59.9	28.6	88.6	56.6	31.4	88.0
Polio-2	59.0	27.1	86.1	56.1	30.2	86.3
Polio-3	57.6	26.4	84.0	55.7	29.8	85.5
Penta-1	59.8	28.1	87.9	56.6	30.7	87.3
Penta-2	58.9	26.8	85.8	56.0	29.8	85.9
Penta-3	57.4	26.2	83.6	55.7	29.5	85.2
PCV-1	59.4	27.9	87.3	56.3	30.7	87.0
PCV-2	58.5	26.7	85.2	55.9	29.8	85.7
PCV-3	57.3	26.1	83.4	55.5	29.5	84.9
Measles-1	55.4	25.2	80.6	55.2	29.2	84.4
Measles-2	n/a	n/a	n/a	54.0	28.2	82.2
Fully vaccinated	58.5	17.1	75.6	59.1	17.9	77.0
No vaccinations	0.6	0.4	1.0	0.5	0.3	0.8
Number of children	12294	12294	12294	14434	14434	14434

Quantitative survey

Nutrition status of adolescents

While 11.8% of Pakistani adolescent girls were underweight, 16.8% were overweight, and 28.5% had a low height for their age. More than half (54.7%) of adolescent girls were anaemic. Amongst adolescent boys, 21.1% were underweight and 17.8% were overweight, while 31.7% had a low height for their age.

5. Nutrition status of adolescents

Data was collected to assess the nutrition status of adolescent girls and boys aged 10–19 years. We estimated the prevalence of underweight, overweight and obesity and also collected a district-representative sample for anaemia from adolescent girls.

5.1 Adolescent girls

5.1.1 Sample characteristics

The table below provides the background characteristics for sampled adolescent girls aged 10–19 years. About two-thirds of the total sample (62.9%) resided in rural areas, compared to a third (37.1%) in urban areas. Just over half (51.7%) were younger adolescents aged 10–14 years while the remainder (48.3%) were aged 15–19 years. A third (32.5%) had received no education at all – the largest single education group – and 8.6% were in higher education. The majority of sampled adolescent girls (94.7%) were never married, however 5.2% were married at the time of the survey. About 38.0% of sampled adolescent girls belonged to the upper two wealth quintiles, while 41.0% belonged to the lower two wealth quintiles.

Table 5-1: Background characteristics of adolescent girls (10–19 years)

Percent and frequency distribution of adolescent girls aged 10–19 years by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Number of girls (unweighted)
Total		100.0	68625
Urban		37.1	20045
Rural		62.9	48580
Province/ region			
Punjab	Urban	37.5	7738
	Rural	62.5	15951
	Total	51.9	23689
Sindh	Urban	50.9	5869
	Rural	49.1	5560
	Total	24.8	11429
KP	Urban	20.6	1905
	Rural	79.4	7450
	Total	11.8	9355
Balochistan	Urban	26.6	2543
	Rural	73.4	8410
	Total	6.3	10953
ICT	Urban	50.5	324
	Rural	49.5	373
	Total	0.9	697
KP-NMD	Total	1.7	2375
AJK	Urban	11.8	862
	Rural	88.2	4137
	Total	1.9	4999

Percent and frequency distribution of adolescent girls aged 10–19 years by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Number of girls (unweighted)
GB	Urban	19.7	640
	Rural	80.3	4488
	Total	0.7	5128
Age			
10-14		51.7	36033
15-19		48.3	32592
Marital status			
Currently married		5.2	3560
Widowed		0.0	82
Divorced		0.0	28
Separated		0.1	43
Never married		94.7	64912
Education			
None		32.5	24072
Primary		24.9	16444
Middle		22.7	15248
Secondary		11.3	7562
Higher		8.6	5299
Occupation			
Working		2.7	1587
Non-working		97.3	67038
Wealth index quintile			
Poorest		19.6	18119
Second		21.4	17099
Middle		21.1	13968
Fourth		20.0	11148
Richest		18.0	8291

5.1.2 Nutritional status

In NNS 2018 we assessed the nutritional status of adolescent girls using BMI-for-age. The data showed that 11.8% of Pakistani adolescent girls were underweight, of whom 3.6% were severely underweight. The prevalence of underweight was comparable between urban (11.7%) and rural areas (11.8%). Adolescent girls who belonged to the poorest quintiles (15.9%) were more likely to be underweight compared to those in the richest quintile (10.5%). Girls with no education had slightly higher prevalence of underweight (10.8%) compared to those with higher education (7.9%).

The prevalence of underweight among adolescent girls was highest (16.6%) in Sindh, followed by Balochistan (12.2%) and AJK (12.1%), and lowest in GB (6.0%) and KP (6.2%). Except Balochistan, all provinces and regions had higher prevalence of underweight in rural areas. As noted for other parameters in Balochistan, the prevalence of underweight was found to be slightly higher in urban (14.1%) than in rural areas (11.6%), possibly reflecting differences in population clustering and refugee populations.

We also estimated the prevalence of overweight and obesity in the NNS 2018, using the standard WHO cut-offs of BMI +1 SD for overweight and +2 SD for obesity. The data showed that 16.8%

of Pakistani adolescent girls were overweight and 5.5% were obese. The prevalence of overweight was slightly higher (18.1%) in urban compared to rural areas (16.1%). A similar trend was seen for obesity where the prevalence in urban areas was 5.9% compared to 5.2% in rural areas. Adolescent girls belonging to the richest quintile were more likely to be overweight (20.8%) compared to those in the poorest quintile (13.4%). Girls in the richest quintile were slightly more likely to be obese (6.9%) than those in the poorest quintile (4.7%). Girls with higher education had slightly higher prevalence of overweight (16.3%) and obesity (5.3%) compared to those who had no education (overweight: 13.9%; obesity: 4.3%).

Prevalence of overweight among adolescent girls was highest in KP-NMD (35.6%), followed by KP (23.8%) and Balochistan (22.7%). It was lowest in Sindh (11.0%) and GB (11.9%). Obesity was found to be highest in KP-NMD (17.5%), followed by Balochistan (9.1%) and KP (8.5%), and lowest in GB (2.3%) and Sindh (3.1%). Except in Balochistan and ICT, overweight prevalence was found to be higher in urban areas. Except in ICT and GB, obesity was more prevalent in urban than in rural areas of all provinces and regions.

Table 5-2: Nutritional status of adolescent girls – underweight and overweight

Percentage of adolescent girls aged 10–19 years by nutritional status according to BMI for age, Pakistan NNS 2018								
		Underweight		Overweight		Normal	Mean Z-score (SD)	Number of adolescent girls (10–19 years)
		<-2 SD	<-3 SD	>+ 1 SD	>+2 SD	-2<BAZ<+1		
Total		11.8	3.6	16.8	5.5	71.4	-0.35	38789
Urban		11.9	3.4	18.1	5.9	72.0	-0.3	11549
Rural		11.8	3.7	16.1	5.2	72.1	-0.37	27240
Province/ region								
Punjab	Urban	10.3	3.1	19.9	6.2	69.8	-0.2	4259
	Rural	10.5	3.4	16.3	5	73.1	-0.32	9622
	Total	10.5	3.3	17.6	5.5	72.0	-0.28	13881
Sindh	Urban	14.5	3.9	13.9	4	71.6	-0.56	3741
	Rural	18.6	5	8.3	2.2	73.1	-0.88	3799
	Total	16.6	4.5	11	3.1	72.3	-0.73	7540
KP	Urban	5.1	1.7	26	11.2	68.9	0.27	972
	Rural	6.8	2.3	23.0	7.6	70.2	0.08	3679
	Total	6.4	2.2	23.7	8.5	69.9	0.12	4651
Balochistan	Urban	14.2	5.2	21.4	10	64.4	-0.2	1422
	Rural	11.7	5.0	22.9	8.7	65.4	-0.12	4527
	Total	12.4	5	22.5	9.0	65.1	-0.15	5949
ICT	Urban	8.6	1.7	15.6	5.6	75.8	-0.2	211
	Rural	9.2	3	21.5	9.1	69.3	-0.17	239
	Total	8.9	2.3	18.5	7.3	72.6	-0.19	450
KP-NMD	Total	6.8	2.6	35.6	17.5	57.6	0.47	977
AJK	Urban	11	4.7	18.2	5	70.8	-0.33	503
	Rural	12.2	3.9	13.9	4.2	73.9	-0.42	2194
	Total	12.1	4	14.4	4.3	73.5	-0.41	2697
GB	Urban	5.3	1.8	13	1.5	81.7	-0.21	371
	Rural	6.2	2.6	11.5	2.5	82.2	-0.22	2273
	Total	6	2.4	11.9	2.3	82.1	-0.22	2644
Education								
None		10.8	2.9	13.9	4.3	75.4	-0.4	7292

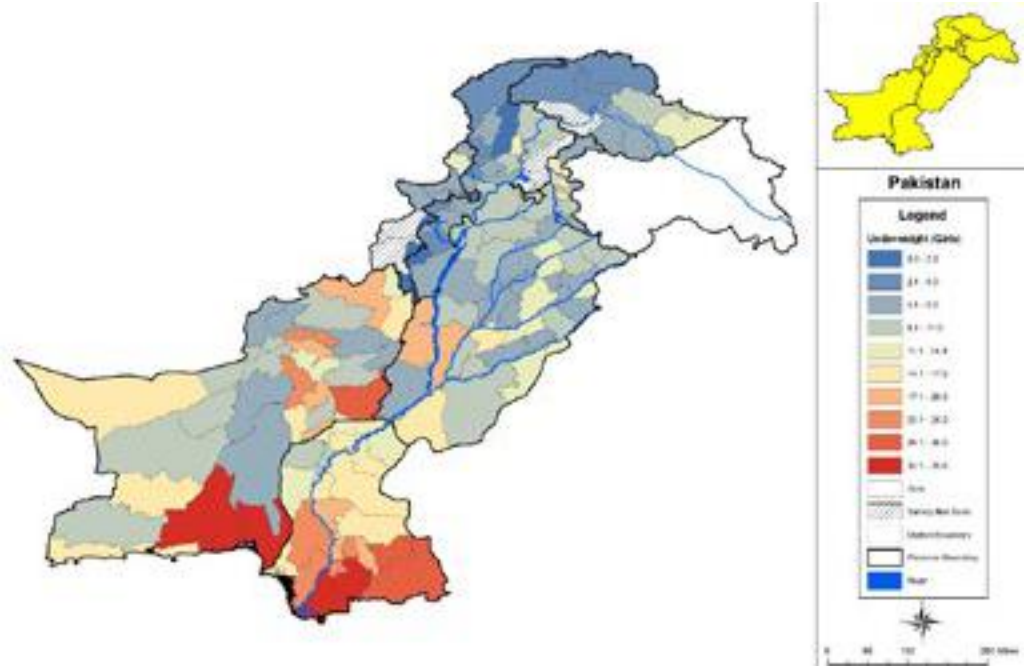
Percentage of adolescent girls aged 10–19 years by nutritional status according to BMI for age, Pakistan NNS 2018							
	Underweight		Overweight		Normal	Mean Z-score (SD)	Number of adolescent girls (10–19 years)
	<-2 SD	<-3 SD	>+ 1 SD	>+2 SD	-2<BAZ<+1		
Primary	9	2.6	15.6	4.1	75.4	-0.33	2401
Middle	10	2.2	12.7	3.7	77.3	-0.36	3044
Secondary	8.8	1.7	16.1	4.6	75.2	-0.27	4348
Higher	7.9	1.6	16.3	5.3	75.8	-0.21	2950
Wealth index quintile							
Poorest	16	5	13.4	4.7	70.7	-0.6	10378
Second	12	4	15.1	4.7	72.9	-0.39	9551
Middle	10	3.1	17.2	5.3	72.9	-0.29	7881
Fourth	10.3	3.2	18.6	6.1	71.0	-0.23	6443
Richest	10.5	2.6	20.8	6.9	68.7	-0.18	4536

5.1.2.1 District trends in malnutrition among adolescent girls

The data showed that the prevalence of underweight ranged from nil to 35.6% in Loralai (Balochistan). The highest prevalence after Loralai was found in Muzaffarabad in AJK (32.0%), FR Kohat in KP-NMD (31.3%), Jacobabad (31.2%) and Multan in Punjab (28.4%). Underweight was heavily concentrated in southern districts of Sindh and Balochistan.

Prevalence of overweight ranged from nil to 90.0% in Sialkot, Punjab. Six districts of this province were among the 10 with the highest prevalence of overweight among adolescent girls. Sialkot was followed by Rahim Yar Khan in Punjab (51.6%), Dera Ismail Khan in KP (49.0%), Baltistan in GB (47.6%) and Dera Ghazi Khan in Punjab (45.9%).

Figure 5-1: District trends in underweight among adolescent girls, Pakistan NNS 2018



5.1.3 Short stature among adolescent girls

We estimated the prevalence of short stature, low height-for-age Z-scores (HAZ), among adolescent girls using the WHO growth reference standard for adolescents. The data revealed

that the prevalence of low stature (more than -2 SD) among Pakistani adolescent girls was 28.5%, and 11.2% were below -3 SD. Short stature was more prevalent in rural areas (30.4%) than in urban areas (25.0%) and girls with no education were more likely to be short for their age (32.9%) than girls with higher education (18.1%). Similarly, girls belonging to the poorest wealth quintile had a higher prevalence of short stature (37.9%) than girls in the richest wealth quintile (19.1%).

Prevalence of low HAZ was highest among adolescent girls in KP-NMD where almost half (46.2%) had short stature, followed by Balochistan (42.3%), Sindh (29.4%) and KP (28.7%). Prevalence was lowest in ICT (13.2%) and Punjab (26.3%). In all provinces and regions except AJK, short stature was more prevalent in rural populations than in urban.

Table 5-3: Short stature among adolescent girls

Percentage of adolescent girls aged 10–19 years with short stature (low height for age), Pakistan NNS 2018					
		Height for age			Number of adolescent girls (10-19 years)
		<-2 SD	<-3 SD	Mean Z-Score (SD)	
Total		28.5	11.2	-1.43	37482
Urban		25.0	8.8	-1.32	11192
Rural		30.4	12.6	-1.49	26290
Province/ region					
Punjab	Urban	23.8	8.8	-1.28	4071
	Rural	27.7	10.9	-1.41	9242
	Total	26.3	10.2	-1.36	13313
Sindh	Urban	25.4	7.5	-1.33	3717
	Rural	33.2	12.7	-1.57	3782
	Total	29.4	10.2	-1.45	7499
KP	Urban	24.0	10.4	-1.27	928
	Rural	30.1	14.1	-1.51	3488
	Total	28.7	13.3	-1.45	4416
Balochistan	Urban	40.0	18.9	-1.83	1340
	Rural	43.2	21.1	-1.81	4262
	Total	42.3	20.5	-1.82	5602
ICT	Urban	12.0	2.9	-0.98	210
	Rural	14.4	6.1	-0.93	239
	Total	13.2	4.5	-0.95	449
KP-NMD	Total	46.2	24.4	-1.94	924
AJK	Urban	28.4	15.8	-1.40	497
	Rural	25.1	11.5	-1.29	2159
	Total	25.5	12.0	-1.31	2656
GB	Urban	22.8	6.7	-1.10	371
	Rural	26.2	10.6	-1.33	2252
	Total	25.4	9.7	-1.28	2623
Education					
None		32.9	10.3	-1.66	7087
Primary		26.8	6.5	-1.51	2361

Percentage of adolescent girls aged 10–19 years with short stature (low height for age), Pakistan NNS 2018				
	Height for age			Number of adolescent girls (10-19 years)
	<-2 SD	<-3 SD	Mean Z-Score (SD)	
Middle	26.1	7.1	-1.50	2980
Secondary	21.8	5.1	-1.32	4291
Higher	18.1	4.2	-1.23	2904
Wealth index quintile				
Poorest	37.9	16.5	-1.73	9938
Second	31.7	12.9	-1.55	9234
Middle	27.3	10.6	-1.39	7650
Fourth	24.3	8.6	-1.29	6245
Richest	19.1	6.4	-1.10	4415

5.1.4 Anaemia among adolescent girls

Anaemia status for adolescent girls was assessed using the spot haemoglobin test with HemoCue 301 equipment. The results revealed that more than half (54.7%) of the adolescent girls were anaemic, with higher prevalence in in rural (56.0%) than in urban areas (52.6%).

The prevalence of anaemia was higher (55.6%) among girls whose mothers had no (55.6%) or only primary level education (58.2%) compared to the daughters of women with higher education (48.0%). Adolescent girls belonging to the poorest quintile were more likely to develop anaemia (59.6%) compared to those from the richest quintile (48.8%). However, the very high rates of anaemia even for girls from richer wealth quintiles and with greater levels of maternal education suggests that risk factors for anaemia were most likely ubiquitous, consistent with trends for childhood anaemia.

Prevalence of anaemia was the highest among girls in Balochistan (71.5%) followed by AJK (65.0%) and Sindh (58.9%). The lowest prevalence was found in ICT (41.1%) and KP (45.2%), but even here substantially more than a third of this population was assessed to be anaemic.

Table 5-4: Anaemia among adolescent girls

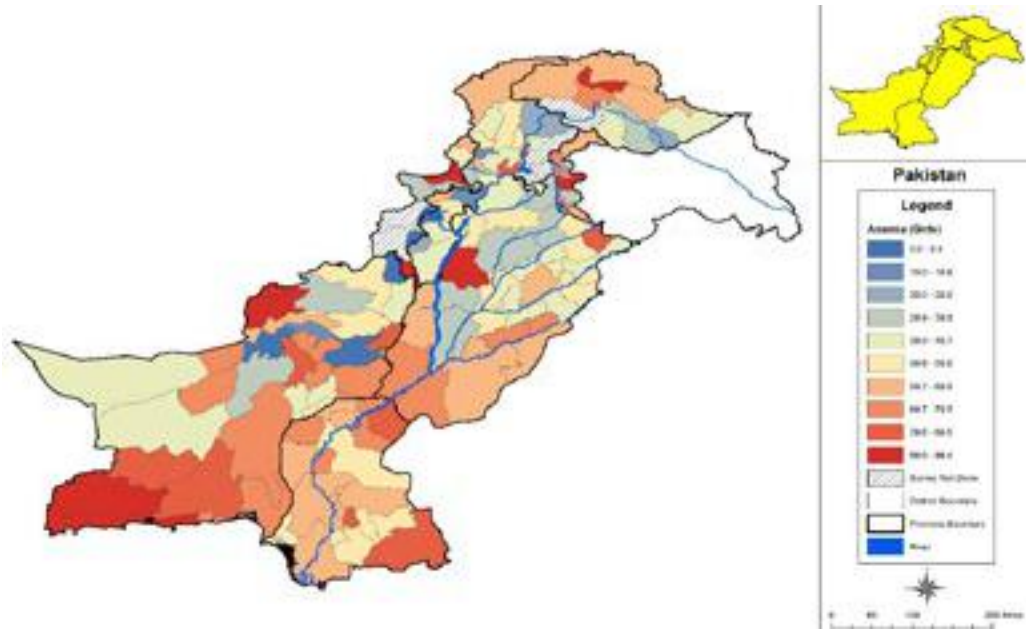
Adolescent girls aged 10–19 years classified as anaemic, Pakistan NNS 2018				
		Haemoglobin (Adolescent girls)		
		Anaemia (<12 gm/dL)	Normal (>= 12 gm/dL)	Adolescent girls (10-19 years)
Total		54.7	45.3	14309
Urban		52.5	47.5	4376
Rural		56.0	44.0	9933
Province/ region				
Punjab	Urban	51.7	48.3	2053
	Rural	54.6	45.4	4315
	Total	53.6	46.4	6368
Sindh	Urban	55.1	44.9	1206
	Rural	63.1	36.9	1101
	Total	58.8	41.2	2307

Adolescent girls aged 10–19 years classified as anaemic, Pakistan NNS 2018				
		Haemoglobin (Adolescent girls)		
		Anaemia (<12 gm/dL)	Normal (>= 12 gm/dL)	Adolescent girls (10-19 years)
KP	Urban	42.8	57.2	347
	Rural	46.1	53.9	1151
	Total	45.3	54.7	1498
Balochistan	Urban	73.1	26.9	320
	Rural	72.2	27.8	1094
	Total	72.4	27.6	1414
ICT	Urban	38.6	61.4	114
	Rural	44.0	56.0	122
	Total	41.2	58.8	236
KP-NMD	Total	55.6	44.4	212
AJK	Urban	62.7	37.3	204
	Rural	64.8	35.2	1031
	Total	64.5	35.5	1235
GB	Urban	56.7	43.3	130
	Rural	49.9	50.1	909
	Total	51.2	48.8	1039
Education				
None		55.6	44.4	2189
Primary		58.4	41.6	946
Middle		50.4	49.6	1227
Secondary		52.5	47.5	1849
Higher		48.0	52.0	1253
Wealth index quintile				
Poorest		60.0	40.0	3099
Second		57.3	42.7	3474
Middle		55.3	44.7	3109
Fourth		52.5	47.5	2672
Richest		48.7	51.3	1955

5.1.4.1 District trends in anaemia among adolescent girls

We also estimated the district wise prevalence of anaemia to analyse disproportions in all 156 sampled districts of Pakistan. The anaemia prevalence among adolescent girls was found to be high in all provinces of Pakistan, especially in districts of Balochistan followed by Sindh, KP and Punjab.

Figure 5-2: District trends in anaemia among adolescent girls



5.2 Adolescent boys

5.2.1 Sample characteristics

Table 5-5 below provides background characteristics for sampled adolescent boys aged 10–19 years in NNS 2018. In the total sample, 63.5% resided in rural areas, compared to 36.5% in urban areas. About 54.1% were aged 10–14 years while and 45.9% were aged 15–19 years.

Only 24.7% adolescent boys had received no education, whereas 7.8% were reported to have higher education. Of the total sample 49.3% belonged to Punjab (62.9% of whom were rural dwellers), 27.2% to Sindh (50.8% rural), 12.0% belonged to KP (80.6% rural), 6.0% belonged to Balochistan (72.3% rural), 0.9% belonged to ICT (53.9% rural), 1.9% belonged to KP-NMD, 1.9% belonged to AJK and 0.7% belonged to GB. The majority of boys (98.4%) in the survey sample were never married while only 1.5% were currently married. A larger proportion (36.9%) of adolescent boys belonged to the upper two wealth quintiles compared to the lower two wealth quintiles (42.7%)

Table 5-5: Background characteristics of adolescent boys

Percent and frequency distribution of adolescent boys aged 10–19 years by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Number of adolescent boys (10–19 years)
Total		100.0	64829
Urban		36.5	18314
Rural		63.5	46515
Province/ region			
Punjab	Urban	37.1	6592
	Rural	62.9	13983
	Total	49.3	20575
Sindh	Urban	49.2	5823
	Rural	50.8	5841
	Total	27.2	11664

Percent and frequency distribution of adolescent boys aged 10–19 years by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Number of adolescent boys (10–19 years)
KP	Urban	19.4	1699
	Rural	80.6	7445
	Total	12.0	9144
Balochistan	Urban	27.7	2310
	Rural	72.3	8173
	Total	6.0	10483
ICT	Urban	46.1	281
	Rural	53.9	376
	Total	0.9	657
KP-NMD	Total	1.9	2319
AJK	Urban	11.7	796
	Rural	88.3	3954
	Total	1.9	4750
GB	Urban	20.7	701
	Rural	79.3	4536
	Total	0.7	5237
Age			
10-14		54.1	35373
15-19		45.9	29456
Marital status			
Currently married		1.5	958
Widowed		0.1	191
Divorced		0.0	26
Separated		0.1	41
Never married		98.4	63613
Education			
None		24.7	16784
Primary		28.6	17784
Middle		25.6	16747
Secondary		13.3	8601
Higher		7.8	4913
Occupation			
Working		16.4	9080
Non-working		83.6	55749
Wealth index quintile			
Poorest		21.2	18402
Second		21.5	16151
Middle		20.3	12827
Fourth		19.2	9880
Richest		17.7	7569

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5.2.2 Nutritional status

In NNS 2018 we estimated the prevalence of undernutrition among adolescent boys. The data showed that 21.1% of Pakistani adolescent boys were underweight (-2 SD) of whom 8.1% were severely underweight (-3 SD). The prevalence of underweight was comparable between urban (20.8%) and rural areas (21.3%). Adolescent boys who belonged to the poorest wealth quintile (28.2%) were more likely to be underweight compared to those in the richest quintile (17.7%). Among boys with no education prevalence of underweight was greater (24.7%) compared to those with higher education (15.7%).

Prevalence of underweight was highest in Sindh (30.6%) followed by ICT (20.8%), AJK (19.6%) and Punjab (18.0%). Prevalence was higher in rural areas in all provinces and regions except KP. KP-NMD and GB (both 7.8%) had the lowest prevalence of underweight amongst adolescent boys.

Overweight and obesity among adolescent boys were also assessed, using the standard WHO cut-offs of BMI +1 SD for overweight and +2 SD for obesity. The data showed that 17.8% of Pakistani adolescent boys were overweight and 7.6% were obese. The prevalence of overweight was higher (19.9%) in urban areas than in rural areas (16.4%). The prevalence of obesity was only marginally higher in urban (7.9%) than in rural (7.5%).

Adolescent boys who belonged to the richest quintile (21.6%) were much more likely to be overweight than those in the poorest quintile (12.4%). Boys in the richest quintile were slightly more likely to be obese (7.8%) than those in the poorest quintile (6.2%). Prevalence of overweight was higher amongst adolescent boys with higher education (21.1%) than those who had no education (17.8%).

Prevalence of overweight among adolescent boys was highest in KP-NMD (40.5%) followed by Balochistan (32.9%) and KP (26.7%). It was lowest in Sindh (12.1%), particularly in rural areas (7.8%) followed by GB (13.8%) and AJK (13.9%). Obesity among adolescent boys was, again, highest in KP-NMD (27.9%) followed by Balochistan (17.1%) and KP (11.7%). It was lowest in GB (3.9%), AJK (4.3%) and Sindh (4.7%). Except in KP and GB, prevalence of overweight and obesity was found to be higher in urban areas than in rural areas.

Table 5-6: Nutritional status of adolescent boys – underweight and overweight

Percentage of adolescent boys aged 10–19 years by nutritional status according to BMI for age, Pakistan NNS 2018								
		Underweight		Overweight		Normal	Mean Z-Score (SD)	Number of adolescent boys (10-19 years)
		-2 SD	-3 SD	+1 SD	+2 SD	-2<BAZ<+1		
Total		21.1	8.1	17.8	7.6	61.1	-0.63	11779
Urban		20.8	7.9	19.9	7.9	59.3	-0.54	3749
Rural		21.3	8.3	16.4	7.5	62.3	-0.69	8030
Province/ region								
Punjab	Urban	16.5	5.8	19.6	8.2	63.9	-0.42	1281
	Rural	19.1	7.3	16.9	7.1	64.1	-0.61	2496
	Total	18.0	6.7	18.0	7.5	64.0	-0.53	3777
Sindh	Urban	29.4	11.6	17.0	6.0	53.5	-0.88	1265
	Rural	31.6	12.2	7.8	3.5	60.7	-1.31	1323
	Total	30.6	11.9	12.1	4.7	57.3	-1.10	2588
KP	Urban	14.7	7.3	26.6	7.2	58.6	-0.20	184
	Rural	12.5	6.1	26.7	12.9	60.8	-0.06	820
	Total	12.9	6.4	26.7	11.7	60.3	-0.09	1004

Percentage of adolescent boys aged 10–19 years by nutritional status according to BMI for age, Pakistan NNS 2018								
		Underweight		Overweight		Normal	Mean Z-Score (SD)	Number of adolescent boys (10-19 years)
		- 2 SD	- 3 SD	+ 1 SD	+ 2 SD	-2<BAZ<+1		
Balochistan	Urban	11.0	4.3	36.5	18.7	52.5	0.22	479
	Rural	13.3	6.3	31.0	16.3	55.7	0.02	1339
	Total	12.5	5.6	32.9	17.1	54.6	0.09	1818
ICT	Urban	14.8	3.5	18.3	8.8	66.8	-0.30	80
	Rural	24.6	5.3	11.9	4.9	63.5	-0.76	154
	Total	20.8	4.6	14.4	6.5	64.8	-0.58	234
KP-NMD	Total	7.8	5.9	40.5	27.9	51.7	0.60	200
AJK	Urban	18.9	6.5	17.7	6.4	63.3	-0.56	256
	Rural	19.7	6.3	12.9	3.8	67.3	-0.74	744
	Total	19.6	6.3	13.9	4.3	66.6	-0.71	1000
GB	Urban	5.9	1.9	11.5	1.9	82.7	-0.28	187
	Rural	8.4	1.9	14.6	4.6	77.0	-0.26	971
	Total	7.8	1.9	13.8	3.9	78.4	-0.26	1158
Education								
None		24.7	10.1	17.8	9.3	57.5	-0.73	3135
Primary		21.1	8.2	15.4	6.9	63.5	-0.72	4040
Middle		19.6	7.0	20.3	8.1	60.1	-0.50	2899
Secondary		18.7	6.7	18.5	4.9	62.8	-0.54	1107
Higher		15.7	6.3	21.1	7.8	63.2	-0.36	598
Wealth index quintile								
Poorest		28.2	11.1	12.4	6.2	59.4	-1.04	3282
Second		20.1	6.7	17.3	8.9	62.6	-0.60	2675
Middle		18.3	7.5	19.8	7.9	61.9	-0.51	2195
Fourth		20.5	8.5	18.2	7.5	61.3	-0.57	1963
Richest		17.7	6.5	21.6	7.8	60.7	-0.40	1664

5.2.2.1 District trends in malnutrition among adolescent boys

District trends in underweight among adolescent boys were estimated. The data showed that the prevalence of underweight ranged from nil to 56.8% in Tharparkar, Sindh. The top ranking districts for prevalence of underweight were all in Sindh, with Tharparkar followed by Sujawal (47.0%), Badin (44.5%), Umerkot (43.3%) and Mirpurkhas (37.6%).

Prevalence of overweight followed very different trends from those for adolescent girls, suggesting cultural associations. The highest prevalence was found in Malakand Protected Area in KP-NMD (63.2%) and Pishin in Balochistan (61.9%), followed by Kalat in Balochistan (58.9%), Charsadda in KP (57.2%) and Buner in KP (51.4%).

Figure 5-3: District trends in underweight among adolescent boys, Pakistan NNS 2018

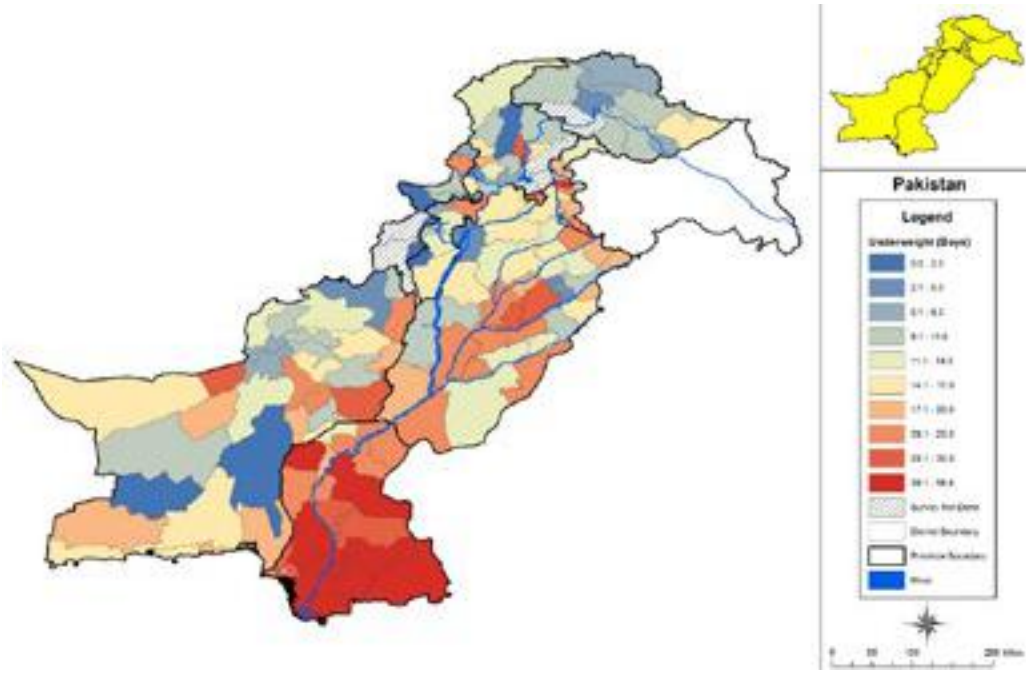
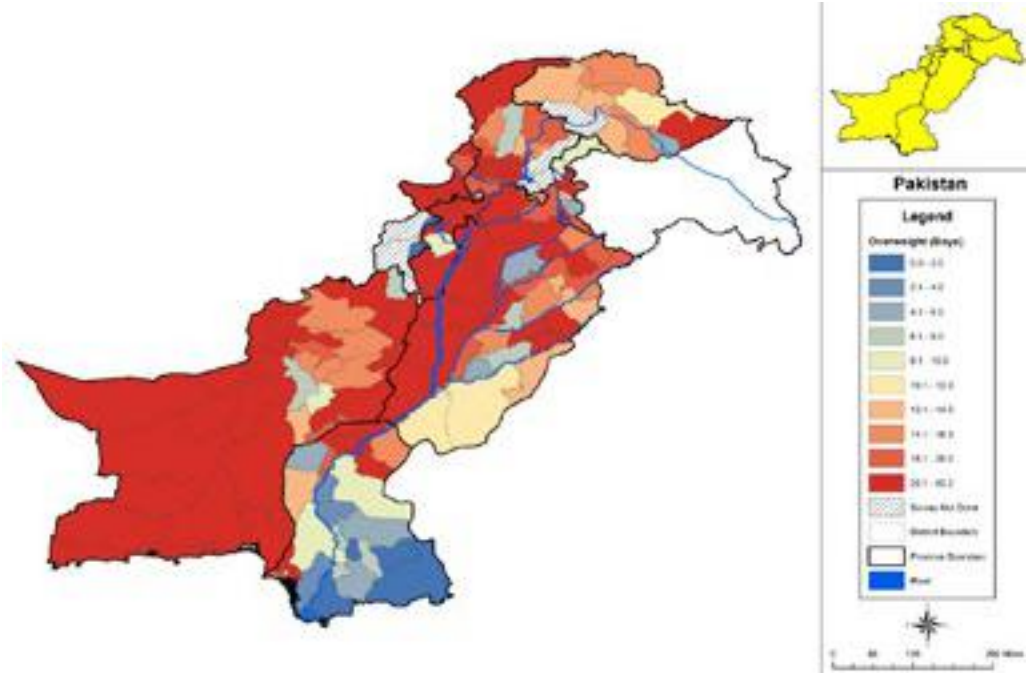


Figure 5-4: District trends in overweight among adolescent boys, Pakistan NNS 2018



Prevalence of overweight in boys ranged from nil to 90.0% in KP-NMD followed by districts of Balochistan and KP. It was lowest in Sindh districts, followed by GB and AJK.

5.2.3 Short stature among adolescent boys

The prevalence of short stature was estimated using WHO growth standards to estimate HAZ scores. The prevalence of low HAZ among Pakistani adolescent boys was 31.7%, with 15.1% below -3 SD. Short stature was more prevalent in rural (34.7%) than in urban areas (27.2%). Prevalence was also higher amongst boys belonging to the poorest wealth quintile (41.4%) than those belonging

to the richest (19.8%). The likelihood of severely low HAZ (-3 SD) was higher amongst boys who belonged to rural areas, the poorest quintile and who had no education.

The provincial data showed that the prevalence of low HAZ among boys was highest (55.6%) in Balochistan followed by KP-NMD (50.7%), KP (46.2%) and Sindh (32.8%). The lowest prevalence was found in ICT (16.0%), GB (26.0%) and Punjab (26.4%). All provinces and regions had higher prevalence of low HAZ among rural adolescent boys except in Balochistan (urban: 58.7%; rural: 54.1%) and AJK (urban: 32.4%; rural: 29.3%).

Table 5-7: Short stature among adolescent boys

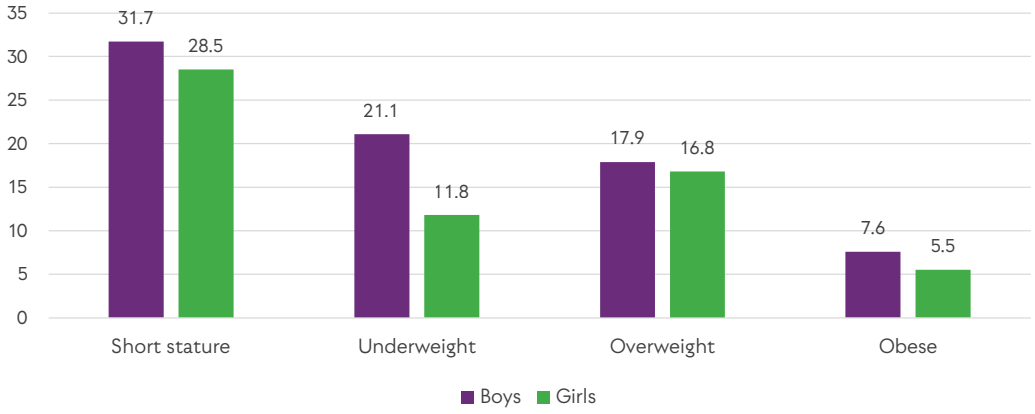
Percentage of adolescent boys aged 10–19 years with short stature (low height for age), Pakistan NNS 2018					
		Height for age			Number of adolescent boys aged 10–19 years
		- 2 SD	- 3 SD	Mean Z-score (SD)	
Total		31.7	15.2	-1.32	11228
Urban		27.2	12.0	-1.12	3569
Rural		34.7	17.3	-1.45	7659
Province/ region					
Punjab	Urban	22.3	9.1	-.96	1173
	Rural	29.3	13.5	-1.22	2335
	Total	26.4	11.7	-1.12	3508
Sindh	Urban	29.9	11.5	-1.17	1270
	Rural	35.4	16.6	-1.52	1321
	Total	32.8	14.2	-1.36	2591
KP	Urban	28.7	16.2	-1.12	166
	Rural	51.2	29.9	-2.05	750
	Total	46.2	26.9	-1.84	916
Balochistan	Urban	58.7	41.1	-2.40	420
	Rural	54.1	33.5	-2.18	1241
	Total	55.6	36.0	-2.25	1661
ICT	Urban	11.6	3.4	-.78	78
	Rural	18.7	7.0	-.81	153
	Total	16.0	5.6	-.80	231
KP-NMD	Total	50.7	33.5	-2.00	179
AJK	Urban	32.4	20.5	-1.33	258
	Rural	29.3	13.1	-1.21	735
	Total	29.9	14.6	-1.24	993
GB	Urban	19.3	8.4	-.67	189
	Rural	28.2	13.2	-1.20	960
	Total	26.0	12.0	-1.07	1149
Education					
None		43.3	24.1	-1.78	2774
Primary		28.4	13.0	-1.20	3968
Middle		26.3	12.0	-1.01	2841

Percentage of adolescent boys aged 10–19 years with short stature (low height for age), Pakistan NNS 2018				
	Height for age			Number of adolescent boys aged 10–19 years
	- 2 SD	- 3 SD	Mean Z-score (SD)	
Secondary	31.5	11.7	-1.39	1070
Higher	30.3	12.6	-1.40	575
Wealth index quintile				
Poorest	41.4	21.0	-1.69	3119
Second	36.1	18.2	-1.50	2565
Middle	33.8	15.9	-1.42	2097
Fourth	28.1	13.2	-1.18	1862
Richest	19.8	7.8	-.81	1585

5.3 Comparing the nutritional statuses of adolescent girls and boys

We compared the malnutrition data for underweight, short stature, overweight and obesity between adolescent boys and girls in Pakistan. The data showed that adolescent boys carry a greater burden of malnutrition than girls in this age group, particularly with respect to underweight.

Figure 5-5: Comparison between adolescent girls and boys, Pakistan NNS 2018



Quantitative survey

Nutrition status of women of reproductive age

The prevalence of underweight in non-pregnant women of reproductive age was 14.8% and of normal weight was 46.3%. Nearly a quarter of women (24.0%) were overweight and 13.9% were obese. About 42.7% of sampled women regardless of pregnancy status were anaemic. Only 27.6% of women had a minimally diverse diet.

6. Nutritional status of women of reproductive age

6.1 Sample characteristics

The table below shows the baseline characteristics of sampled women of reproductive age at national and provincial/ regional levels. Overall, 61.2% of women sampled for NNS 2018 belonged to rural settings and 38.8% were from urban areas. More than half of the study population was from Punjab (53.0%) followed by Sindh (24.4%), KP (11.3%), Balochistan (6.2%), AJK (1.9%), KP-NMD (1.6%) and ICT (1.0%). The smallest proportion was from GB (0.6%). The largest share of sampled women belonged to the 15–19 year (19.4%) and 25–29 year (19.2%) age groups.

The majority of women of reproductive age were married at the time of data collection (69.5%), whereas 28.9% were unmarried. About 62.6% had given birth at some stage while 36.3% had never given birth. Less than a quarter (19.3%) had delivered a child in the last two years.

Nearly half of the sampled women (48.5%) were not educated while 14.5% had received secondary education and another 15.5% had also received higher education. The majority of sampled women of reproductive age (72.0%) were housewives with only 1.9% skilled workers and 1.7% professionals. Of the sampled women, the highest proportion (21.3%) came from the richest wealth index quintile, while 17.8% belonged to the poorest wealth index quintile.

Table 6-1: Background characteristics of women of reproductive age (15–49 years)

Percent and frequency distribution of women of reproductive age, aged 15–49 years by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Number of women
Total		100.0	123092
Urban		38.8	37367
Rural		61.2	85725
Province/ region			
Punjab	Urban	38.7	14644
	Rural	61.3	29765
	Total	53.0	44409
Sindh	Urban	54.2	11241
	Rural	45.8	9736
	Total	24.4	20977
KP	Urban	20.6	3316
	Rural	79.4	12794
	Total	11.3	16110
Balochistan	Urban	28.8	4625
	Rural	71.2	15677
	Total	6.2	20302
ICT	Urban	49.6	654
	Rural	50.4	819
	Total	1.0	1473
KP-NMD	Total	1.6	3475
AJK	Rural	13.1	1786
	Urban	86.9	7443
	Total	1.9	9229

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Percent and frequency distribution of women of reproductive age, aged 15–49 years by selected characteristics, Pakistan NNS 2018			
		Weighted percent	Number of women
GB	Rural	20.2	900
	Urban	79.8	6217
	Total	0.6	7117
Age			
15-19		19.4	23179
20-24		17.8	21545
25-29		19.2	23335
30-34		14.9	18523
35-39		14.1	17492
40-44		8.4	11152
45-49		6.2	7866
Marital status			
Currently married		69.5	86671
Widowed		1.2	1361
Divorced		0.3	369
Separated		0.1	139
Never married		28.9	34552
Motherhood and recent births			
Never gave birth		36.3	43496
Ever gave birth		62.6	78333
Gave birth in last two years		19.3	23284
No birth in last two years		43.2	55049
Missing		1.1	1263
Education			
None		48.5	64867
Primary		11.3	12658
Middle		10.2	12122
Secondary		14.5	16357
Higher		15.5	17088
Occupation			
None		11.2	16540
Housewife		72.0	86302
Skilled		1.9	1968
Unskilled		0.8	845
Professional		1.7	2228
Others		12.4	15209
Weather index quintile			
Poorest		17.8	30405
Second		19.5	28396

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Percent and frequency distribution of women of reproductive age, aged 15–49 years by selected characteristics, Pakistan NNS 2018		
	Weighted percent	Number of women
Middle	20.3	24978
Fourth	21.2	21681
Richest	21.3	17632

6.2 Nutritional status

The nutritional status of women of reproductive age was evaluated by measuring their BMI. The mean BMI was 24 kg/m^2, falling within the normal range, and the mean was almost the same in rural (23.5 kg/m^2) and urban (24.7 kg/m^2) areas.

6.2.1 Nutrition status of women of reproductive age regardless of pregnancy status

Nearly half of the women (46.4%) assessed had normal BMI, 14.5% were underweight, 24.2% were overweight and 13.9% were obese. The highest proportion of underweight women was seen in Sindh (22.8%) and the lowest in KP-NMD (5.5%) which had the highest prevalence of obesity (23.4%). The prevalence of overweight was highest in KP (28.4%) and lowest in GB (19.8%), which also had the lowest prevalence of obesity (7.0%) and the highest prevalence of women with normal BMI (62.6%). Obesity and overweight were more prevalent in urban than rural areas across all provinces and regions with the exception of KP and ICT.

Women who were not educated were more likely to be underweight (15.3%) or to have normal BMI (47.4%). Those who belonged to the richest wealth index quintile were more prone to be overweight (29.0%) or obese (20.4%) while underweight women were more likely to belong to the poorest wealth quintile (24.4%). Women in the 15–19 year age group were more likely to be underweight (32.9%) than older women (7–8% for women over 35 years of age) while overweight and obesity were more prevalent in older women.

Table 6-2: Nutritional status of women of reproductive age (overall)

Nutritional status of women of reproductive age (15–49 years) regardless of pregnancy status, by BMI, Pakistan NNS 2018							
		Nutrition status from BMI				Mean BMI	Number of women reproductive age (15–49 years)
		Underweight (<18.5)	Normal (18.5-24.9)	Overweight (25.0-29.9)	Obese (>30)		
Total		14.5	46.4	24.2	13.9	24.0	113139
Urban		12.1	42.6	26.8	17.3	24.7	34203
Rural		16.0	48.7	22.7	11.8	23.5	78936
Province/ region							
Punjab	Urban	9.8	41.8	27.7	19.3	25.2	12976
	Rural	13.7	48.2	24.3	13.0	23.9	26938
	Total	12.2	45.8	25.6	15.4	24.4	39914
Sindh	Urban	16.3	43.3	25.2	14.3	24.0	10628
	Rural	30.1	50.1	13.9	5.5	21.4	9428
	Total	22.8	46.5	20.0	10.2	22.8	20056
KP	Urban	7.3	43.4	27.6	19.8	25.4	2999
	Rural	8.6	48.0	28.7	13.9	24.6	11584
	Total	8.3	47	28.4	15.2	24.8	14583

Nutritional status of women of reproductive age (15–49 years) regardless of pregnancy status, by BMI, Pakistan NNS 2018							
		Nutrition status from BMI				Mean BMI	Number of women reproductive age (15–49 years)
		Underweight (<18.5)	Normal (18.5-24.9)	Overweight (25.0-29.9)	Obese (>30)		
Balochistan	Urban	12.9	43.6	27.9	14.8	24.4	4268
	Rural	15.6	51.6	20.8	11.1	23.3	14264
	Total	14.8	49.3	22.8	12.2	23.6	18532
ICT	Urban	9.8	46.7	23.8	18.8	24.9	582
	Rural	11.9	38.2	29.6	20.3	25.2	735
	Total	10.8	42.4	26.7	19.6	25.1	1317
KP-NMD	Total	5.5	40.3	25.4	23.4	26.0	3729
AJK	Urban	11.2	44.7	27.5	15.9	24.6	1687
	Rural	13.4	53.7	22.9	9.5	23.4	6998
	Total	13.1	52.6	23.5	10.4	23.6	8685
GB	Urban	9.7	57.1	20.9	12.0	23.7	842
	Rural	10.5	64.1	19.5	5.6	22.8	5481
	Total	10.3	62.6	19.8	7.0	23.0	6323
Age							
15-19		32.9	54.5	8.8	3.6	20.6	20087
20-24		17.5	55.1	19.8	7.0	22.7	18614
25-29		10.7	49.2	26.5	12.8	24.2	21782
30-34		8.7	42.6	30.5	17.2	25.2	17724
35-39		7.3	38.2	31.1	21.8	25.9	16724
40-44		6.6	35.6	31.3	24.6	26.3	10678
45-49		7.1	34.6	32.4	23.9	26.3	7530
Education							
None		15.3	47.4	23.3	13.0	23.8	61181
Primary		12.9	44.6	26.1	15.6	24.4	11807
Middle		14.5	45.9	23.6	14.9	24.1	10980
Secondary		14.8	44.5	25.2	14.4	24.1	14666
Higher		12.6	46.6	25.5	14.4	24.3	14505
Wealth index quintile							
Poorest		24.4	52.2	16.0	6.8	22.0	28453
Second		15.5	51.4	22.0	10.4	23.4	26157
Middle		13.1	47.3	25.3	13.6	24.1	22964
Fourth		10.9	42.5	28.0	17.4	24.9	19818
Richest		9.6	39.4	29.0	20.4	25.4	15747

6.2.2 Nutritional status of non-pregnant women of reproductive age

The study found that the prevalence of underweight in non-pregnant women of reproductive age was 14.8% and of normal weight was 46.3%. Nearly a quarter of women (24.0%) were overweight and 13.9% were obese. Sindh had the highest proportion of underweight women, both non-pregnant (23.2%) and overall (22.8%).

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Younger women were more likely to be underweight and less likely to be overweight or obese than older women. Underweight and normal BMI were more common in women belonging to the poorest wealth quintile while those in the richest wealth index quintile were more likely to be overweight and obese.

Table 6-3: Nutritional status of women of reproductive age (non-pregnant)

Nutritional status of non-pregnant women of reproductive age (15–49 years) by BMI, Pakistan NNS 2018							
		Nutritional status from BMI				Mean BMI	Number of women reproductive age (15–49 years)
		Underweight (<18.5)	Normal (18.5-24.9)	Overweight (25.0-29.9)	Obese (>30)		
Total		14.8	46.3	24.0	13.9	24.0	108529
Urban		12.3	42.7	26.5	17.3	24.7	32941
Rural		16.3	48.6	22.5	11.8	23.5	75588
Province/ region							
Punjab	Urban	10.0	41.9	27.5	19.3	25.2	12549
	Rural	14.0	48.2	24.1	12.9	23.9	25964
	Total	12.5	45.8	25.4	15.3	24.4	38513
Sindh	Urban	16.6	43.3	25.0	14.3	24.0	10175
	Rural	30.8	49.4	13.9	5.5	21.3	8922
	Total	23.2	46.1	19.9	10.2	22.7	19097
KP	Urban	7.2	43.5	27.4	20.0	25.4	2897
	Rural	8.9	47.9	28.3	14.0	24.6	11059
	Total	8.5	47.0	28.1	15.3	24.8	13956
Balochistan	Urban	13.1	43.4	28.1	14.7	24.4	4098
	Rural	15.9	51.8	20.4	10.9	23.3	13468
	Total	15.1	49.3	22.6	12.0	23.6	17566
ICT	Urban	9.9	47.7	24.3	17.3	24.7	550
	Rural	12.3	37.4	29.7	20.5	25.2	697
	Total	11.1	42.4	27.1	18.9	25.0	1247
KP-NMD	Total	5.5	40.0	25.5	23.6	26.1	3617
AJK	Urban	11.1	44.9	27.4	16.0	24.6	1651
	Rural	13.6	53.5	22.9	9.6	23.4	6833
	Total	13.3	52.4	23.5	10.4	23.6	8484
GB	Urban	10.0	57.2	21.1	11.4	23.7	808
	Rural	10.8	64.4	18.9	5.6	22.8	5241
	Total	10.6	62.9	19.4	6.8	23.0	6049
Age							
15-19		33.2	54.3	8.7	3.5	20.6	19823
20-24		17.9	55.4	19.3	6.9	22.6	17472
25-29		10.9	49.3	26.3	12.7	24.2	20313
30-34		8.8	42.6	30.5	17.1	25.2	16834
35-39		7.3	38.1	31.1	21.9	25.9	16149
40-44		6.5	35.5	31.4	24.7	26.4	10476

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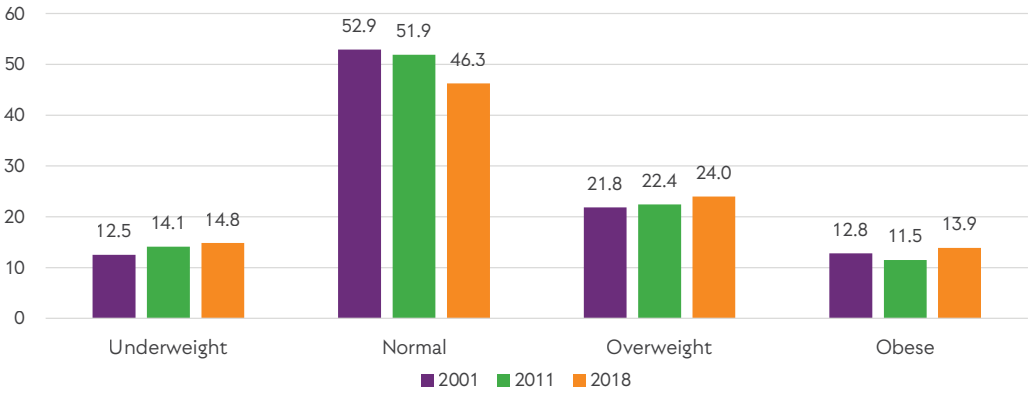
Nutritional status of non-pregnant women of reproductive age (15–49 years) by BMI, Pakistan NNS 2018						
	Nutritional status from BMI				Mean BMI	Number of women reproductive age (15–49 years)
	Underweight (<18.5)	Normal (18.5-24.9)	Overweight (25.0-29.9)	Obese (>30)		
45-49	7.1	34.6	32.4	23.9	26.3	7462
Education						
None	15.5	47.1	23.2	13.1	23.8	58411
Primary	13.1	44.4	25.9	15.8	24.4	11353
Middle	14.9	45.9	23.4	14.8	24.1	10613
Secondary	15.1	44.8	24.7	14.2	24.0	14122
Higher	12.8	46.9	25.3	14.0	24.2	14030
Wealth index quintile						
Poorest	24.9	51.9	15.7	6.8	21.9	27041
Second	15.8	51.2	21.9	10.4	23.3	25070
Middle	13.3	47.3	25.0	13.6	24.1	22115
Fourth	11.2	42.6	27.7	17.4	24.9	19112
Richest	9.7	39.6	28.9	20.3	25.4	15191

6.2.3 Trends in nutritional status among non-pregnant women of reproductive age

On evaluating data from three successive NNS surveys, it is evident that, despite varying sample sizes and specificity, the proportion of underweight non-pregnant women of reproductive age has remained almost unchanged between 2001 (12.5%) and 2018 (14.8%) with a slight increase from 2011 (14.1%). On the other hand, a consistent decline was observed in women with normal BMI from 2001 to 2018 with less than half of women (46.3%) having normal BMI in the 2018 survey, and slight increases in all forms of malnutrition but especially in overweight and obesity. In 2011, (11.5%) the prevalence of obesity was lower than that observed in 2001 (12.8%), but rose in 2018 (13.9%).

Figure 6-1: Trends in nutrition status for non-pregnant women of reproductive age, Pakistan NNS 2018



6.2.4 Provincial trends in the nutritional status of women of reproductive age

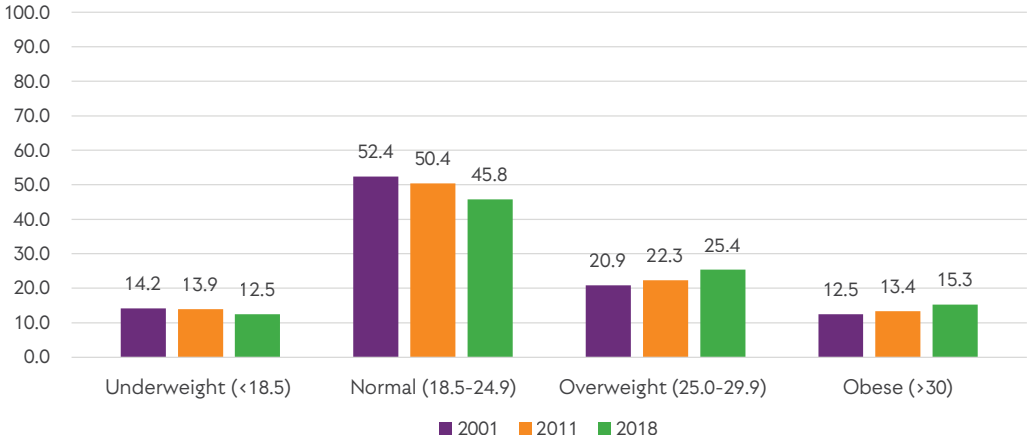
The provincial trends in malnutrition status for women of reproductive age largely reflected national trends.

6.2.4.1 Punjab

The presence of underweight in Punjab was 14.2% in 2001. This slightly decreased to 13.9% in the following decade (NNS 2011); and further declined in 2018 (12.5%). Women with normal BMI

demonstrated a consistent decline from 2001 to 2018; with 52.4% in 2001, 50.4% in 2011 and 45.8% in 2018. Overweight prevalence has been on the rise since 2001 (20.9%), 2011 (22.3%) and 2018 (25.4%). Regarding obesity, NNS 2018 showed that the highest level of obesity (15.3%) was obtained from NNS 2018 survey compared to the previous two surveys. where it was 12.5% in 2001 and 13.4% in 2011.

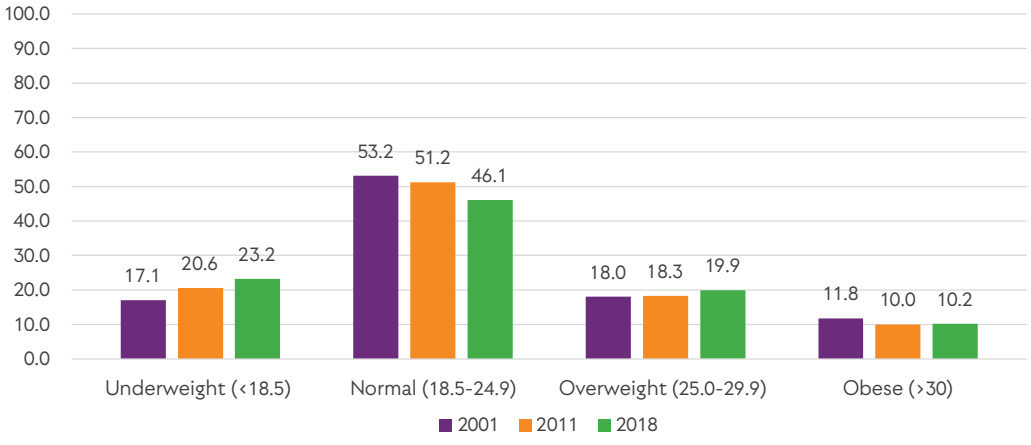
Figure 6-2: Trends in nutrition status for non-pregnant women of reproductive age – Punjab, Pakistan NNS 2018



6.2.4.2 *Sindh*

In Sindh, the prevalence of underweight was lowest in 2001 (17.1%), rose to 20.6% in 2011 and again increased in 2018 to 23.2%. A steady decline (53.2% to 46.1%) was observed between 2001 and 2018 in the proportion of women of reproductive age with normal BMI. There was an increasing trend of overweight from 2001 (18%) to 2018 (19.9%). Obesity was around 11.8% in 2001, decreased in 2011 to 10%, and remained steady thereafter (10.2% in 2018).

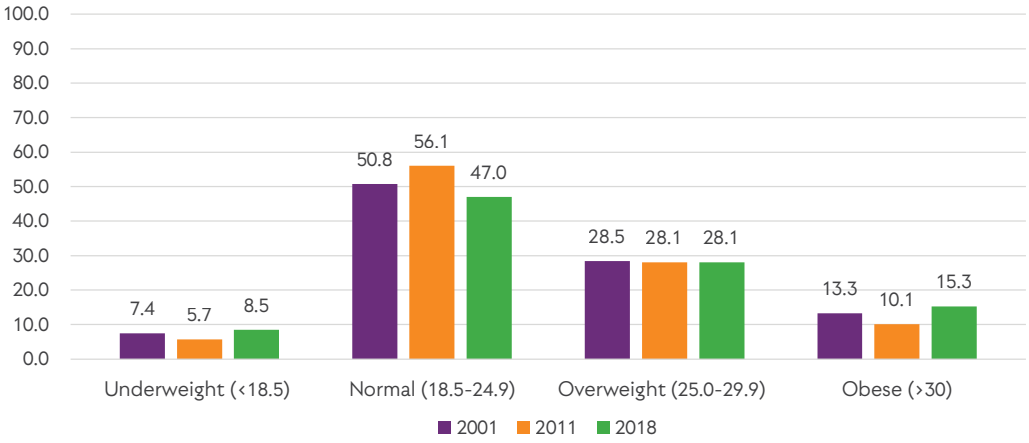
Figure 6-3: Trends in nutrition status for non-pregnant women of reproductive age – Sindh, Pakistan NNS 2018



6.2.4.3 *KP*

Data from KP showed that the lowest prevalence of underweight occurred in 2011 (5.7%) but increased to, 8.5% in 2018. The percentage of women of reproductive age with normal BMI was highest in 2011 (56.1%) from 50.8% in 2001 and further decreased in 2018 (47%). As in other provinces, the proportion of overweight women was 28.5% in 2001 which remained steady in 2011 and 2018 (28.1%). NNS 2001 also showed that obesity was 13.3%, decreased to 10.1% in 2011 but rose to 15.3% in 2018.

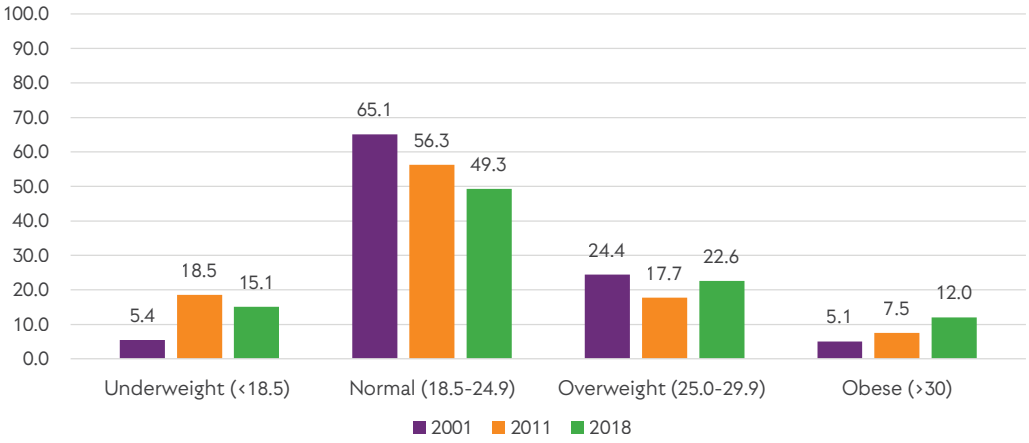
Figure 6-4: Trends in nutrition status for non-pregnant women of reproductive age – KP, Pakistan NNS 2018



6.2.4.4 *Balochistan*

In Balochistan the lowest proportion of underweight women of reproductive age was found in 2001 (5.4%) which drastically increased to 18.5% by 2011. Since then it declined to 15.1% in 2018. A consistent decline in the occurrence of normal BMI was also noticed from 65.1% in 2001 to 49.3% in 2018. The prevalence of overweight was 24.4% in 2001, decreased in 2011 (17.7%) and increased in 2018 (22.6%). A steady increase in obesity was also observed in Balochistan from 5.1% in 2001 to 7.5% in 2011; after which it almost doubled in 2018 to 12%.

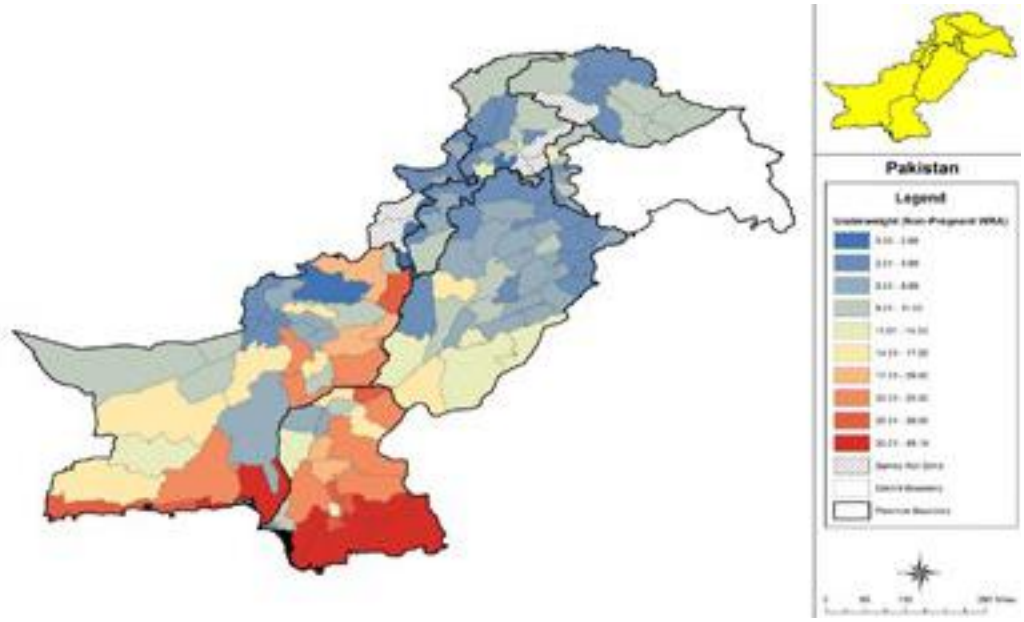
Figure 6-5: Trends in nutrition status for non-pregnant women of reproductive age – Balochistan, Pakistan NNS 2018



6.2.5 District trends in undernutrition among non-pregnant women of reproductive age

We estimated trends of underweight to analyse geographical disparities in all 156 sampled districts of Pakistan. The underweight prevalence among non-pregnant women of reproductive age ranged from nil to 45.2%. Eight of the 10 worst affected districts were in Sindh, with Balochistan also severely affected. The highest prevalence of underweight was found in Sujawal in Sindh (45.2%), followed by Tharparkar (40.4%) and Thatta (36.3%) in Sindh, Lasbela in Balochistan (35.6%) and Umerkot in Sindh (35.1%). In Punjab the southern districts had notably higher prevalence of underweight among non-pregnant women of reproductive age.

Figure 6-6: District trends in underweight among non-pregnant women of reproductive age, Pakistan NNS 2018



6.3 Micronutrient deficiencies

6.3.1 Anaemia

The cut-offs used for classification of anaemia were <11 g/dL for pregnant women and <12 g/dL for non-pregnant women.

NNS 2018 revealed that 42.7% of sampled women of reproductive age (both pregnant and non-pregnant) were anaemic, with a higher proportion in rural areas (44.3%) than in urban settings (40.2%). The prevalence of severe anaemia was 1.0% and was higher among rural women (1.2%).

The highest prevalence of anaemia was found in Balochistan (61.3%) followed by AJK (55.9%) and KP-NMD (52.2%). The highest prevalence of severe anaemia was found in Balochistan (4.7%) followed by Sindh (1.4%) and KP-NMD (1.0%). ICT was found to have the lowest prevalence of anaemia (28.4%) and severe anaemia (0.2%), bet even here nearly a third of women experienced some form of anaemia. Across the provinces, ICT (27.4%), AJK (61.0%) and GB (38.8%) had more anaemic women living in urban settings.

Women who were not educated were more likely to be anaemic (45.4%) and to have severe anaemia (1.4%). Those who belonged to the poorest wealth index quintile also had a higher prevalence of anaemia (52.1%) and severe anaemia (2.2%) compared to those in the richest (anaemia: 37.1%; severe anaemia: 0.4%). A decreasing trend was observed by both education and wealth index quintile, but rates of anaemia were nevertheless high across the board.

Table 6-4: Anaemia in women of reproductive age (overall)

Women of reproductive age (15–49 years) regardless of pregnancy status classified as anemic, Pakistan NNS 2018					
	Anaemia	Severe anaemia (<7 gm/dL)	Moderate anaemia (7 - 11.99 gm/dL)	Normal (>= 12 gm/dL)	Women 15-49 years
Total	42.7	1.0	41.7	57	33328.0
Urban	40.2	0.7	39.5	60	10452.0
Rural	44.3	1.2	43.1	56	22876.0

Women of reproductive age (15–49 years) regardless of pregnancy status classified as anemic, Pakistan NNS 2018						
		Anaemia	Severe anaemia (<7 gm/dL)	Moderate anaemia (7 - 11.99 gm/dL)	Normal (>= 12 gm/dL)	Women 15-49 years
Province/ region						
Punjab	Urban	40.4	0.4	40.0	60	4242.0
	Rural	41.6	0.6	40.9	58	8850.0
	Total	41.1	0.6	40.6	59	13092.0
Sindh	Urban	39.7	0.9	38.8	60	3381.0
	Rural	52.6	2.0	50.6	47	2668.0
	Total	45.3	1.4	43.9	55	6049.0
KP	Urban	31.8	0.1	31.7	68	853.0
	Rural	33.3	0.4	32.9	67	3124.0
	Total	33.0	0.3	32.7	67	3977.0
Balochistan	Urban	55.5	2.3	53.3	44	1098.0
	Rural	63.4	5.6	57.8	37	3835.0
	Total	61.3	4.7	56.6	39	4933.0
ICT	Urban	27.8	0.4	27.4	72	202.0
	Rural	29.1	0.0	29.1	71	229.0
	Total	28.4	0.2	28.2	72	431.0
KP-NMD	Total	52.2	1.0	51.2	48	639.0
AJK	Urban	61.5	0.5	61.0	38	417.0
	Rural	55.2	0.2	54.9	45	1987.0
	Total	55.9	0.3	55.6	44	2404.0
GB	Urban	39.6	0.7	38.8	60	240.0
	Rural	34.8	0.5	34.3	65	1563.0
	Total	35.8	0.6	35.2	64	1803.0
Education						
None		45.3	1.4	44.0	55	17436.0
Primary		42.4	0.8	41.7	58	3674.0
Middle		41.0	0.5	40.5	59	3532.0
Secondary		40.8	0.5	40.2	59	4693.0
Higher		36.4	0.5	35.9	64	3993.0
Wealth index quintile						
Poorest		52.1	2.2	49.9	48	7952.0
Second		45.8	1.1	44.6	54	7681.0
Middle		41.8	0.7	41.0	58	7020.0
Fourth		38.1	0.6	37.5	62	6051.0
Richest		37.1	0.4	36.7	63	4624.0

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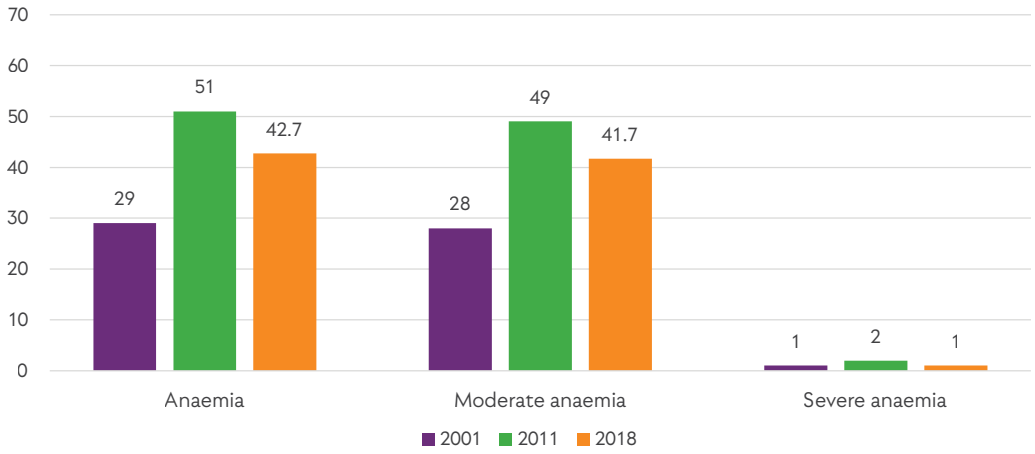
6.3.1.1 *Trends in anaemia among women of reproductive age (overall)*

The figure below shows trends in anaemia amongst women of reproductive age (both pregnant and non-pregnant) in NNS 2001, 2011 and 2018. The prevalence of severe anaemia remained low over this period with a slight rise in 2011. Moderate anaemia showed a more dramatic increase in 2011, to 41.7%, but has since slightly decreased.

Figure 6-7: Trends in anaemia among women of reproductive age (overall), Pakistan NNS 2018



6.3.1.2 *Anaemia in pregnant and non-pregnant women of reproductive age*

Prevalence of anaemia among women of reproductive age who were not pregnant at the time of the study stood at 43% with 40.7% for urban women and 44.5% for rural women. Balochistan had the highest prevalence (61.8%) of anaemia amongst non-pregnant women. Women with no education (45.7%) and those who belonged to the poorest wealth index quintile also had higher rates of anaemia (52.4%).

Nation-wide, the prevalence of anaemia among pregnant women of reproductive age was 35.1%, with 30.0% among urban women and 38.2% among rural women. Pregnant women in Balochistan had the highest prevalence of anaemia (53.9%), as did those with no education (39.3%) and those belonging to the poorest wealth index quintile (45.9%).

Table 6-5: Anaemia in women of reproductive age (non-pregnant)

Non-pregnant women of reproductive age (15–49 years) classified as anaemic, Pakistan NNS 2018						
		Anaemia	Severe anaemia (<7 gm/dL)	Moderate anaemia (7 - 11.99 gm/dL)	Normal (>= 12 gm/dL)	Women 15-49 years
Total		43.0	0.9	42.1	57.0	31841
Urban		40.6	0.7	40.0	59.4	10016
Rural		44.6	1.1	43.4	55.4	21825
Province/ region						
Punjab	Urban	40.9	0.5	40.4	59.1	4081
	Rural	41.6	0.6	41.0	58.4	8517
	Total	41.3	0.6	40.8	58.7	12598
Sindh	Urban	40.1	0.9	39.1	59.9	3230
	Rural	53.3	2.0	51.3	46.7	2493
	Total	45.7	1.4	44.3	54.3	5723
KP	Urban	32.8	0.1	32.7	67.2	825
	Rural	34.4	0.4	34.0	65.6	2950
	Total	34.0	0.3	33.7	66.0	3775

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Non-pregnant women of reproductive age (15–49 years) classified as anaemic, Pakistan NNS 2018						
		Anaemia	Severe anaemia (<7 gm/dL)	Moderate anaemia (7 - 11.99 gm/dL)	Normal (>= 12 gm/dL)	Women 15-49 years
Balochistan	Urban	56.4	1.8	54.6	43.6	1038
	Rural	63.8	5.3	58.4	36.2	3593
	Total	61.8	4.4	57.4	38.2	4631
ICT	Urban	28.8	0.4	28.3	71.2	192
	Rural	28.3	0.0	28.3	71.7	219
	Total	28.5	0.2	28.3	71.5	411
KP-NMD	Total	52.9	1.0	51.9	47.1	626
AJK	Urban	61.8	0.6	61.2	38.2	404
	Rural	55.8	0.2	55.5	44.2	1939
	Total	56.4	0.3	56.2	43.6	2343
GB	Urban	39.6	0.8	38.8	60.4	227
	Rural	35.2	0.5	34.7	64.8	1507
	Total	36.1	0.6	35.5	63.9	1734
Education						
None		45.7	1.3	44.4	54.3	16536
Primary		43.0	0.8	42.2	57.0	3504
Middle		41.5	0.5	41.0	58.5	3416
Secondary		41.1	0.5	40.5	58.9	4520
Higher		36.8	0.5	36.3	63.2	3865
Wealth index quintile						
Poorest		52.4	2.1	50.3	47.6	7531
Second		46.2	1.1	45.1	53.8	7312
Middle		42.2	0.7	41.5	57.8	6731
Fourth		38.4	0.6	37.8	61.6	5793
Richest		37.4	0.4	37.0	62.6	4474

Table 6-6: Anaemia in women of reproductive age (pregnant)

Pregnant women of reproductive age (15–49 years) classified as anaemic, Pakistan NNS 2018						
		Anaemia	Severe anaemia (<7 gm/dL)	Moderate anaemia (7 - 10.99 gm/dL)	Normal (>= 11 gm/dL)	Women 15-49 years
Totals		35.2	1.3	33.8	64.8	1487
Urban		30.0	0.4	29.6	70.0	436
Rural		38.2	1.9	36.3	61.8	1051
Province/ region						
Punjab	Urban	30.5	0.0	30.5	69.5	161
	Rural	39.4	0.6	38.8	60.6	333
	Total	36.1	0.4	35.7	63.9	494

Pregnant women of reproductive age (15–49 years) classified as anaemic, Pakistan NNS 2018						
		Anaemia	Severe anaemia (<7 gm/dL)	Moderate anaemia (7 - 10.99 gm/dL)	Normal (>= 11 gm/dL)	Women 15-49 years
Sindh	Urban	32.2	0.0	32.2	67.8	151
	Rural	43.5	3.0	40.5	56.5	175
	Total	38.2	1.6	36.6	61.8	326
KP	Urban	9.0	0.0	9.0	91.0	28
	Rural	15.4	0.0	15.4	84.6	174
	Total	14.3	0.0	14.3	85.7	202
Balochistan	Urban	38.4	10.4	28.0	61.6	60
	Rural	58.1	9.5	48.6	41.9	242
	Total	53.9	9.7	44.2	46.1	302
ICT	Urban	8.6	0.0	8.6	91.4	10
	Rural	48.9	0.0	48.9	51.1	10
	Total	27.1	0.0	27.1	72.9	20
KP-NMD	Total	31.6	0.0	31.6	68.4	13
AJK	Urban	50.9	0.0	50.9	49.1	13
	Rural	33.1	0.0	33.1	66.9	48
	Total	34.8	0.0	34.8	65.2	61
GB	Urban	38.6	0.0	38.6	61.4	13
	Rural	26.6	1.5	25.1	73.4	56
	Total	29.6	1.1	28.5	70.4	69
Education						
None		39.3	2.0	37.3	60.7	900
Primary		31.8	0.6	31.2	68.2	170
Middle		27.5	0.3	27.2	72.5	116
Secondary		33.1	0.4	32.7	66.9	173
Higher		23.5	0.6	23.0	76.5	128
Wealth index quintile						
Poorest		45.9	3.4	42.5	54.1	421
Second		36.8	1.4	35.4	63.2	369
Middle		33.3	0.9	32.4	66.7	289
Fourth		30.8	0.2	30.6	69.2	258
Richest		27.1	0.7	26.4	72.9	150

6.3.2 Iron status (ferritin concentration)

Data collected for NNS 2018 showed that 34.3% of all women of reproductive age had low ferritin concentrations, with similar trends in rural (34.5%) and urban (34.2%) populations. The highest prevalence of iron deficiency was found among women in Sindh (36.8%), Punjab (36.2%) and GB (34.4%), and the lowest prevalence in KP-NMD (20.9%). Low ferritin levels were more common in rural areas across the provinces and regions except in Balochistan and ICT where they were more common in urban settings.

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Women with no education (35.6%) and those in the poorest wealth index quintile (38.4%) were found to have higher proportions of low ferritin concentrations than those with higher levels of education or belonging to higher wealth index quintiles.

Table 6-7: Iron status (low ferritin concentration) in women of reproductive age (overall)

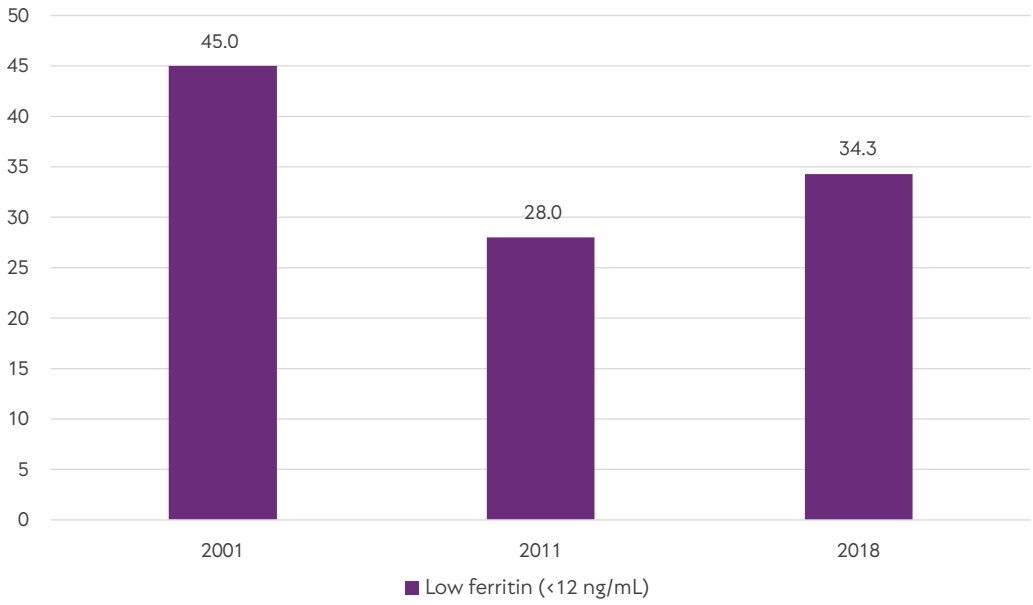
Iron status of women of reproductive age (15–49 years) regardless of pregnancy status, based on low ferritin concentration, Pakistan NNS 2018				
		Low ferritin (<12 ng/mL)	Normal (>=12 ng/mL)	Women 15-49 years
Total		34.3	65.7	25813
Urban		34.2	65.8	8084
Rural		34.5	65.5	17729
Province/ region				
Punjab	Urban	34.9	65.1	3107
	Rural	37.0	63.0	6480
	Total	36.2	63.8	9587
Sindh	Urban	35.5	64.5	2772
	Rural	38.6	61.4	2181
	Total	36.8	63.2	4953
KP	Urban	21.9	78.1	661
	Rural	24.9	75.1	2469
	Total	24.3	75.7	3130
Balochistan	Urban	30.1	69.9	876
	Rural	29.4	70.6	3163
	Total	29.6	70.4	4039
ICT	Urban	31.6	68.4	132
	Rural	21.6	78.4	166
	Total	26.4	73.6	298
KP-NMD	Total	20.9	79.1	608
AJK	Urban	23.1	76.9	338
	Rural	27.9	72.1	1501
	Total	27.3	72.7	1839
GB	Urban	45.4	54.6	178
	Rural	31.6	68.4	1181
	Total	34.4	65.6	1359
Education				
None		35.6	64.4	15064
Primary		34.7	65.3	2756
Middle		34.4	65.6	2315
Secondary		30.7	69.3	2917
Higher		31.9	68.1	2761

Iron status of women of reproductive age (15–49 years) regardless of pregnancy status, based on low ferritin concentration, Pakistan NNS 2018			
	Low ferritin (<12 ng/mL)	Normal (>=12 ng/mL)	Women 15-49 years
Wealth index quintile			
Poorest	38.4	61.6	6474
Second	34.7	65.3	5922
Middle	33.6	66.4	5282
Fourth	33.2	66.8	4618
Richest	32.2	67.8	3517

6.3.2.1 *Trends in low ferritin concentration among women of reproductive age (overall)*

Some improvement in prevalence of low ferritin concentration amongst all women of reproductive age was observed over time, with a steady decrease between 2001 (45.0%) and 2011 (28.0%) but then a slight increase to 34.3% in 2018.

Figure 6-8: Trends in low ferritin concentration among women of reproductive age (overall), Pakistan NNS 2018



6.3.2.2 *Low ferritin concentrations in women of reproductive age (pregnant and non-pregnant)*

The prevalence of low ferritin levels was higher among pregnant women (46.6%) than non-pregnant women (33.6%). The highest prevalence of low ferritin levels was found in pregnant women (68.7%) and non-pregnant women (43.7%) resident in urban GB. Amongst non-pregnant women, urban and rural prevalence of low ferritin was almost identical (urban: 33.5%; rural: 33.6%) and diverged slightly for pregnant women (urban: 45.5%; rural: 47.2 %).

Pregnant women with no education (50.2%) had far higher prevalence of low ferritin levels than those with higher education (38.0%). Non-pregnant women exhibited a similar but less striking trend (no education: 34.7%; higher education: 31.6%).

Table 6-8: Iron status (low ferritin concentration) in women of reproductive age (non-pregnant)

Iron status of non-pregnant women of reproductive age (15–49 years), based on low ferritin concentration, Pakistan NNS 2018				
		Ferritin		
		Low ferritin (<12 ng/mL)	Normal (>=12 ng/mL)	Women 15-49 years
Total		33.6	66.4	24383
Urban		33.5	66.5	7669
Rural		33.6	66.4	16714
Province/ region				
Punjab	Urban	34.2	65.8	2960
	Rural	36.3	63.7	6158
	Total	35.5	64.5	9118
Sindh	Urban	34.8	65.2	2623
	Rural	37.0	63.0	2003
	Total	35.7	64.3	4626
KP	Urban	21.2	78.8	633
	Rural	24.2	75.8	2314
	Total	23.6	76.4	2947
Balochistan	Urban	30.5	69.5	819
	Rural	29.2	70.8	2928
	Total	29.6	70.4	3747
ICT	Urban	31.3	68.7	122
	Rural	20.9	79.1	156
	Total	25.8	74.2	278
KP-NMD	Total	21.5	78.5	594
AJK	Urban	23.6	76.4	327
	Rural	27.4	72.6	1457
	Total	26.9	73.1	1784
GB	Urban	43.7	56.3	165
	Rural	31.3	68.7	1124
	Total	33.8	66.2	1289
Education				
None		34.7	65.3	14193
Primary		34.3	65.7	2596
Middle		33.5	66.5	2201
Secondary		30.1	69.9	2754
Higher		31.6	68.4	2639
Wealth index quintile				
Poorest		37.3	62.7	6056
Second		34.0	66.0	5578
Middle		32.7	67.3	5004
Fourth		32.6	67.4	4374
Richest		31.8	68.2	3371

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Table 6-9: Iron status (low ferritin concentration) in women of reproductive age (pregnant)

Iron status of pregnant women of reproductive age (15–49 years), based on low ferritin concentration, Pakistan NNS 2018				
		Ferritin		
		Low ferritin (<12 ng/mL)	Normal (>=12 ng/mL)	Women 15-49 years
Total		46.6	53.4	1430
Urban		45.5	54.5	415
Rural		47.2	52.8	1015
Province/ region				
Punjab	Urban	47.7	52.3	147
	Rural	50.0	50.0	322
	Total	49.2	50.8	469
Sindh	Urban	47.8	52.2	149
	Rural	56.8	43.2	178
	Total	52.6	47.4	327
KP	Urban	31.8	68.2	28
	Rural	35.5	64.5	155
	Total	34.8	65.2	183
Balochistan	Urban	23.3	76.7	57
	Rural	31.6	68.4	235
	Total	29.7	70.3	292
ICT	Urban	36.5	63.5	10
	Rural	35.1	64.9	10
	Total	35.9	64.1	20
KP-NMD	Total	3.5	96.5	14
AJK	Urban	3.6	96.4	11
	Rural	42.3	57.7	44
	Total	38.9	61.1	55
GB	Urban	68.7	31.3	13
	Rural	37.6	62.4	57
	Total	45.1	54.9	70
Education				
None		50.2	49.8	871
Primary		40.9	59.1	160
Middle		48.8	51.2	114
Secondary		40.1	59.9	163
Higher		38.0	62.0	122
Wealth index quintile				
Poorest		54.9	45.1	418
Second		45.3	54.7	344
Middle		47.4	52.6	278
Fourth		42.5	57.5	244
Richest		41.6	58.4	146

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6.3.3 Iron deficiency anaemia

About 18.2% of all women of reproductive age (both pregnant and non-pregnant) were iron deficient, calculated using ferritin levels and anaemia status. This was more pronounced in rural (18.7%) than in urban settings (17.4%). Sindh was found to have the highest proportion of women with iron deficiency anaemia (22.8%), followed by Balochistan (18.6%) and Punjab (17.9%). Consistent with findings for other nutritional parameters, KP had the lowest prevalence (8.5%) of iron deficiency. Iron deficiency prevalence amongst rural women was higher in Sindh (27.0%), Punjab (18.7%) and AJK (17.4%), while in GB (21.7%), ICT (12.5%) and KP (8.7%) urban women had the higher burden.

A steady decline in prevalence was observed with increasing education and wealth index quintile with higher prevalence among women who were not educated (20.5%) or belonged to the poorest wealth index (24.4%).

Table 6-10: Iron deficiency anaemia in women of reproductive age (overall)

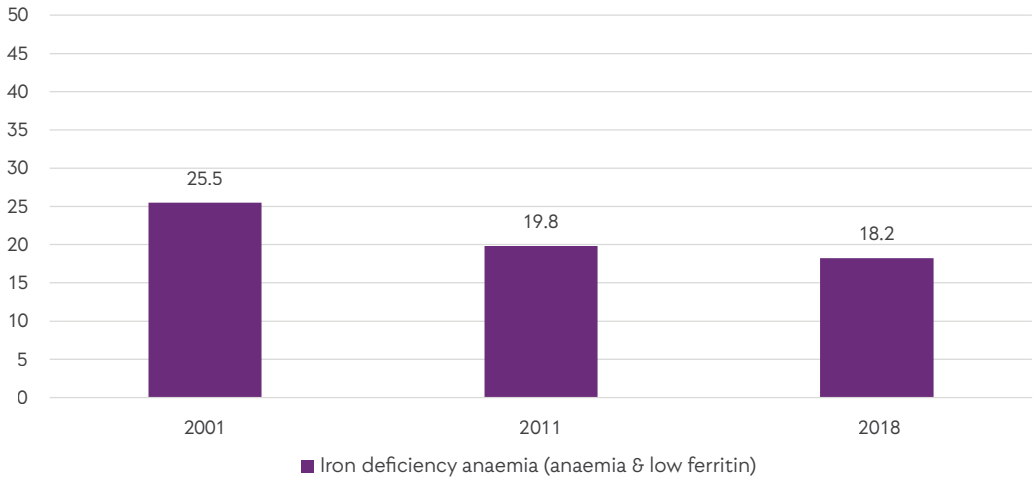
Iron deficiency anaemia among women of reproductive age regardless of pregnancy status, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018			
		Iron deficiency anaemia	
		Deficient (anaemia and low ferritin)	Women aged 15–49 years
Total		18.2	25372
Urban		17.4	7981
Rural		18.7	17391
Province/ region			
Punjab	Urban	16.8	3098
	Rural	18.7	6467
	Total	17.9	9565
Sindh	Urban	19.7	2731
	Rural	27.0	2141
	Total	22.8	4872
KP	Urban	8.7	653
	Rural	8.5	2439
	Total	8.5	3092
Balochistan	Urban	17.8	851
	Rural	19.0	3049
	Total	18.6	3900
ICT	Urban	12.5	132
	Rural	10.5	166
	Total	11.5	298
KP-NMD	Total	13.2	524
AJK	Urban	14.5	325
	Rural	17.4	1465
	Total	17.1	1790
GB	Urban	21.7	176
	Rural	16.6	1155
	Total	17.7	1331

Iron deficiency anaemia among women of reproductive age regardless of pregnancy status, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018		
	Iron deficiency anaemia	
	Deficient (anaemia and low ferritin)	Women aged 15–49 years
Education		
None	20.5	14760
Primary	17.1	2728
Middle	17.4	2288
Secondary	14.5	2878
Higher	13.2	2718
Wealth index quintile		
Poorest	24.3	6308
Second	19.3	5807
Middle	16.6	5219
Fourth	15.9	4563
Richest	15.5	3475

6.3.3.1 *Trends in iron deficiency anaemia among women of reproductive age (overall)*

While the proportion of women of reproductive age with iron deficiency anaemia fell subsequent to NNS 2001 (25.5%), the prevalence largely remained unchanged between 2011 (19.8%) and 2018 (18.2%).

Figure 6-9: Trends in iron deficiency anaemia among women of reproductive age (overall), Pakistan NNS 2018



6.3.3.2 *Iron deficiency anaemia in women of reproductive age (pregnant and non-pregnant)*

Prevalence of iron deficiency anaemia stood at 21.0% for pregnant women, compared to 18.0% for non-pregnant women. The highest proportion of iron deficiency anaemia among pregnant women was reported in rural Sindh (30.9%). Deficiency levels were highest among pregnant women with no education (24.1%) or middle education (18.9%).

Among non-pregnant women, Sindh (26.6%), Balochistan (19.1%) and Punjab (18.3%) had higher deficiency levels among rural populations. Non-pregnant women belonging to the poorest (24.3%) and second-poorest (19.0%) wealth index quintiles had the highest prevalence of iron deficiency anaemia, whereas among pregnant women those in the poorest (26.1%) and fourth-poorest (22.2%) wealth index quintiles had the highest prevalence.

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Table 6-11: Iron deficiency anaemia in women of reproductive age (non-pregnant)

Iron deficiency anaemia among non-pregnant women of reproductive age, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018				
		Iron deficiency anaemia		
		Deficient (anaemia & low ferritin)	Non-deficient	Women aged 15-49 years
Total		18.0	82.0	23975
Urban		17.4	82.6	7571
Rural		18.4	81.6	16404
Province/ region				
Punjab	Urban	16.8	83.2	2951
	Rural	18.3	81.7	6147
	Total	17.7	82.3	9098
Sindh	Urban	19.4	80.6	2583
	Rural	26.6	73.4	1968
	Total	22.5	77.5	4551
KP	Urban	8.9	91.1	626
	Rural	8.6	91.4	2284
	Total	8.6	91.4	2910
Balochistan	Urban	18.1	81.9	795
	Rural	19.1	80.9	2829
	Total	18.8	81.2	3624
ICT	Urban	12.8	87.2	122
	Rural	9.5	90.5	156
	Total	11.1	88.9	278
KP-NMD	Total	13.7	86.3	512
AJK	Urban	14.7	85.3	316
	Rural	17.5	82.5	1423
	Total	17.2	82.8	1739
GB	Urban	21.3	78.7	163
	Rural	16.8	83.2	1100
	Total	17.7	82.3	1263
Education				
None		20.3	79.7	13915
Primary		17.0	83.0	2565
Middle		17.4	82.6	2169
Secondary		14.4	85.6	2729
Higher		13.2	86.8	2597
Wealth index quintile				
Poorest		24.3	75.7	5908
Second		19.0	81.0	5464
Middle		16.5	83.5	4943
Fourth		15.6	84.4	4332
Richest		15.5	84.5	3328

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Table 6-12: Iron deficiency anaemia in women of reproductive age (pregnant)

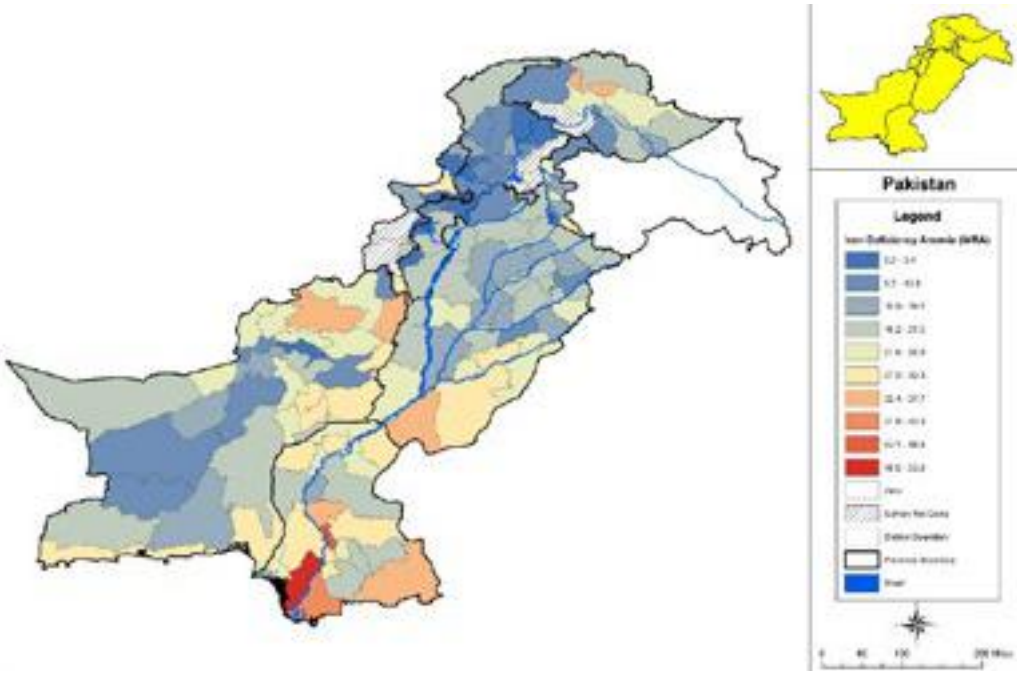
Iron deficiency anaemia among pregnant women of reproductive age status, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018				
		Iron deficiency anaemia		
		Deficient (anaemia & low ferritin)	Non-deficient	Women 15-49 years
Total		21.0	79.0	1396
Urban		18.4	81.6	411
Rural		22.4	77.6	985
Province/ region				
Punjab	Urban	16.2	83.8	147
	Rural	24.6	75.4	320
	Total	21.6	78.4	467
Sindh	Urban	24.0	76.0	148
	Rural	30.9	69.1	173
	Total	27.6	72.4	321
KP	Urban	5.9	94.1	27
	Rural	6.5	93.5	155
	Total	6.4	93.6	182
Balochistan	Urban	11.7	88.3	56
	Rural	17.4	82.6	220
	Total	16.2	83.8	276
ICT	Urban	8.6	91.4	10
	Rural	27.2	72.8	10
	Total	17.1	82.9	20
KP-NMD	Total	.0	100.0	11
AJK	Urban	3.9	96.1	10
	Rural	13.6	86.4	42
	Total	12.7	87.3	52
GB	Urban	28.3	71.7	13
	Rural	11.4	88.6	54
	Total	15.8	84.2	67
Education				
None		24.1	75.9	843
Primary		18.1	81.9	159
Middle		18.9	81.1	113
Secondary		15.9	84.1	160
Higher		14.1	85.9	121

Iron deficiency anaemia among pregnant women of reproductive age status, based on presence of anaemia and low ferritin concentration, by various background characteristics, Pakistan NNS 2018			
	Iron deficiency anaemia		
	Deficient (anaemia & low ferritin)	Non-deficient	Women 15-49 years
Wealth index quintile			
Poorest	26.1	73.9	396
Second	22.0	78.0	341
Middle	19.0	81.0	271
Fourth	22.2	77.8	244
Richest	13.1	86.9	144

6.3.3.3 *District trends in iron deficiency anaemia among women of reproductive age (overall)*

We also estimated the district-wise prevalence of iron deficiency anaemia to analyse geographical disparities for women of reproductive age in all 156 sampled districts of Pakistan. Prevalence showed a wide range. Some districts (Thatta, Sajawal, Tharparkar and Mirpurkhas) in Sindh presented the highest prevalence of iron deficiency anaemia in Pakistan. Prevalence was also found to be high in Rahim Yar Khan in Punjab, and Killa Saifullah and Musakhel in Balochistan. Districts of KP had the lowest prevalence among women of reproductive age.

Figure 6-10: District trends in iron deficiency anaemia among women of reproductive age, Pakistan NNS 2018



6.3.4 Vitamin A deficiency

Over a quarter of all women of reproductive age (27%) were found to have vitamin A deficiency on blood testing, with 4.9% found to have severe and 22.4% moderate vitamin A deficiency. Deficiency was more prevalent among women in rural settings (29%). Balochistan (35%) had the highest proportion of women affected, with 7.7% having severe deficiency. In most provinces and regions vitamin A deficiency was higher amongst rural women, however ICT and GB had higher prevalence in urban populations, which might reflect population transition and local demographic patterns.

Vitamin A deficiency was more prevalent among women with no education (30%) and those in the poorest wealth index quintile (35%). Prevalence of deficiency generally declined with increasing education and wealth.

Table 6-13: Vitamin A deficiency in women of reproductive age (overall)

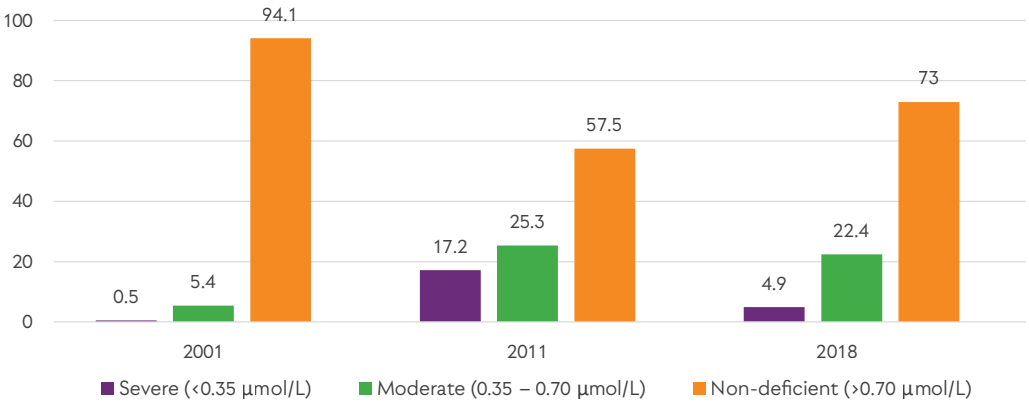
Vitamin A deficiency in women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018						
			Vitamin A			
		Deficiency	Severe deficiency (<0.35 µmol/L)	Moderate deficiency (0.35 - 0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Women 15-49 years
Total		27	4.9	22.4	73	25388.0
Urban		24	4.4	20.1	76	7960.0
Rural		29	5.3	23.9	71	17428.0
Province/ region						
Punjab	Urban	24	4.7	18.9	76	3058.0
	Rural	27	4.6	22.0	73	6374.0
	Total	25	4.6	20.8	75	9432.0
Sindh	Urban	25	3.5	21.5	75	2746.0
	Rural	37	7.2	29.7	63	2153.0
	Total	30	5.1	25.0	70	4899.0
KP	Urban	25	4.1	21.0	75	650.0
	Rural	28	5.5	22.9	72	2436.0
	Total	28	5.2	22.5	72	3086.0
Balochistan	Urban	33	9.9	23.2	67	842.0
	Rural	35	6.9	28.2	65	3052.0
	Total	35	7.7	26.9	65	3894.0
ICT	Urban	13	4.0	9.4	87	131.0
	Rural	12	1.9	10.2	88	167.0
	Total	13	2.9	9.8	87	298.0
KP-NMD	Total	35	6.0	28.6	65	597.0
AJK	Urban	17	3.8	13.4	83	335.0
	Rural	22	3.9	18.3	78	1499.0
	Total	22	3.9	17.7	78	1834.0
GB	Urban	28	2.6	25.8	72	178.0
	Rural	23	2.6	20.1	77	1170.0
	Total	24	2.6	21.2	76	1348.0
Education						
None		30	5.5	24.4	70	14802.0
Primary		26	5.0	20.9	74	2699.0
Middle		24	5.2	19.2	76	2280.0
Secondary		23	3.6	19.8	77	2870.0
Higher		24	3.6	20.0	76	2737.0

Vitamin A deficiency in women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018					
		Vitamin A			
	Deficiency	Severe deficiency (<0.35 µmol/L)	Moderate deficiency (0.35 - 0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Women 15-49 years
Wealth index quintile					
Poorest	35	6.8	28.7	65	6366.0
Second	29	5.1	23.9	71	5794.0
Middle	27	5.3	21.4	73	5211.0
Fourth	25	4.2	20.5	75	4535.0
Richest	22	3.5	18.2	78	3482.0

6.3.4.1 *Trends in vitamin A deficiency among women of reproductive age (overall)*

Some improvement was observed in vitamin A status amongst women of reproductive age in recent years, with a declining proportion of women with severe and mild deficiency since 2011.

Figure 6-11: Trends in vitamin A deficiency in women of reproductive age, Pakistan NNS 2018



6.3.4.2 *Vitamin A deficiency in women of reproductive age (pregnant and non-pregnant)*

Non-pregnant women belonging to the poorest wealth quintile had almost twice the rate (6.7%) of severe Vitamin A deficiency in non-pregnant women in the richest wealth quintile (3.5%). Similarly, the poorest pregnant women had over twice the rate (8.3%) of the richest women (3.6%).

Among pregnant women, mild Vitamin A deficiency was more prevelent severe deficiency across all provinces, with the exception of the urban populations of ICT and AJK (0.0% moderate deficiency in both). Among non-pregnant women, the highest proportion of severe deficiency was found in urban Balochistan (10%). Non-pregnant women with secondary education (3.3%) had the lowest proportion of severe deficiency while pregnant women with secondary education (8.3%) had the highest proportion of severe deficiency across all education strata.

Table 6-14: Vitamin A deficiency in women of reproductive age (non-pregnant)

Vitamin A deficiency in non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018						
		Vitamin A				
		Deficiency	Severe Deficiency (<0.35 µmol/L)	Moderate Deficiency (0.35 - 0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Women 15-49 years
Total		27	4.9	22.3	72.8	23976
Urban		24	4.4	19.9	75.7	7548
Rural		29	5.3	23.8	70.9	16428
Province/ region						
Punjab	Urban	24	4.7	19.1	76.2	2910
	Rural	26	4.6	21.9	73.5	6056
	Total	25	4.6	20.8	74.5	8966
Sindh	Urban	24	3.4	21.0	75.5	2600
	Rural	37	7.2	29.7	63.1	1978
	Total	30	5.1	24.7	70.2	4578
KP	Urban	25	4.0	20.8	75.2	622
	Rural	28	5.4	22.6	72.0	2284
	Total	27	5.1	22.2	72.7	2906
Balochistan	Urban	32	10.0	22.4	67.6	787
	Rural	35	6.9	28.4	64.7	2823
	Total	34	7.7	26.8	65.5	3610
ICT	Urban	14	3.6	10.0	86.4	122
	Rural	12	2.0	10.1	88.0	157
	Total	13	2.7	10.0	87.2	279
KP-NMD	Total	34	5.4	28.9	65.7	584
AJK	Urban	18	3.7	13.8	82.5	322
	Rural	22	3.9	18.3	77.7	1453
	Total	22	3.9	17.8	78.3	1775
GB	Urban	29	2.5	26.6	70.9	165
	Rural	23	2.5	20.1	77.4	1113
	Total	24	2.5	21.4	76.1	1278
Education						
None		30	5.5	24.3	70.2	13950
Primary		26	4.9	20.8	74.3	2537
Middle		25	5.3	19.3	75.4	2168
Secondary		23	3.3	19.5	77.2	2706
Higher		24	3.7	19.8	76.5	2615

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Vitamin A deficiency in non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018						
		Vitamin A				
		Deficiency	Severe Deficiency (<0.35 µmol/L)	Moderate Deficiency (0.35 - 0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Women 15-49 years
Wealth index quintile						
Poorest		36	6.7	28.9	64.5	5962
Second		29	5.2	23.6	71.2	5453
Middle		27	5.3	21.2	73.5	4935
Fourth		25	4.1	20.4	75.5	4291
Richest		22	3.5	18.0	78.5	3335

Table 6-15: Vitamin A deficiency in women of reproductive age (pregnant)

Vitamin A deficiency in pregnant women of reproductive age (15–49 years), Pakistan NNS 2018						
		Vitamin A				
		Deficiency	Severe Deficency (<0.35 µmol/L)	Moderate Deficency (0.35 - 0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Women 15-49 years
Total		30	5.4	24.5	70.1	1412
Urban		27	4.8	22.3	72.9	412
Rural		31	5.7	25.7	68.6	1000
Province/ region						
Punjab	Urban	21	5.1	15.6	79.3	148
	Rural	28	4.3	23.4	72.4	318
	Total	25	4.6	20.5	74.9	466
Sindh	Urban	34	4.0	29.8	66.2	146
	Rural	37	7.2	30.2	62.7	175
	Total	36	5.7	30.0	64.3	321
KP	Urban	30	4.9	25.2	69.9	28
	Rural	34	6.1	27.7	66.2	152
	Total	33	5.8	27.2	66.9	180
Balochistan	Urban	44	7.6	35.9	56.5	55
	Rural	34	7.6	26.5	65.9	229
	Total	36	7.6	28.6	63.8	284
ICT	Urban	10	9.5	0.0	90.5	9
	Rural	13	0.0	13.0	87.0	10
	Total	11	4.9	6.3	88.8	19
KP-NMD	Total	46	26.3	19.4	54.3	13
AJK	Urban	7	7.2	0.0	92.8	13
	Rural	18	1.5	16.9	81.6	46
	Total	17	2.0	15.2	82.7	59

Vitamin A deficiency in pregnant women of reproductive age (15–49 years), Pakistan NNS 2018						
		Vitamin A				
		Deficiency	Severe Deficency (<0.35 µmol/L)	Moderate Deficency (0.35 - 0.70 µmol/L)	Non deficient (>0.70 µmol/L)	Women 15-49 years
GB	Urban	20	4.6	15.4	80.0	13
	Rural	24	5.2	18.6	76.2	57
	Total	23	5.0	17.8	77.1	70
Education						
None		31	5.3	26.0	68.7	852
Primary		28	6.0	22.2	71.8	162
Middle		21	4.3	16.8	79.0	112
Secondary		34	8.3	25.4	66.2	164
Higher		26	2.1	24.4	73.5	122
Wealth index quintile						
Poorest		35	8.3	26.3	65.4	404
Second		32	4.0	27.7	68.3	341
Middle		30	5.6	24.4	70.0	276
Fourth		27	5.0	21.9	73.1	244
Richest		25	3.6	21.1	75.3	147

6.3.5 Zinc deficiency

Over a fifth of all women of reproductive age (22.1%) were found to be deficient in zinc. This was more common in rural (24.3%) than in urban settings (18.7%). Punjab had the highest proportion of women with zinc deficiency (24.1%) followed by Balochistan (23.4%) and Sindh (21.4%). KP had the lowest prevalence (15.9%), commensurate with maternal undernutrition across provinces and regions. Zinc deficiency was more prevalent in rural areas in all provinces and regions except ICT (12.2%) and GB (17.4%) where urban women were more commonly affected.

As with other micronutrient deficiencies, zinc deficiency was more common in women who were not educated (23.9%) and belonged to the poorest wealth index quintile (25.6%). With increasing education and wealth, a consistent decrease in zinc deficiency was observed.

Table 6-16: Zinc deficiency in women of reproductive age (overall)

Zinc deficiency in women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018				
		Deficient (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Women 15-49 years
Total		22.1	77.9	25650
Urban		18.7	81.3	8041
Rural		24.3	75.7	17609
Province/ region				
Punjab	Urban	18.3	81.7	3096
	Rural	27.6	72.5	6446
	Total	24.1	76.0	9542

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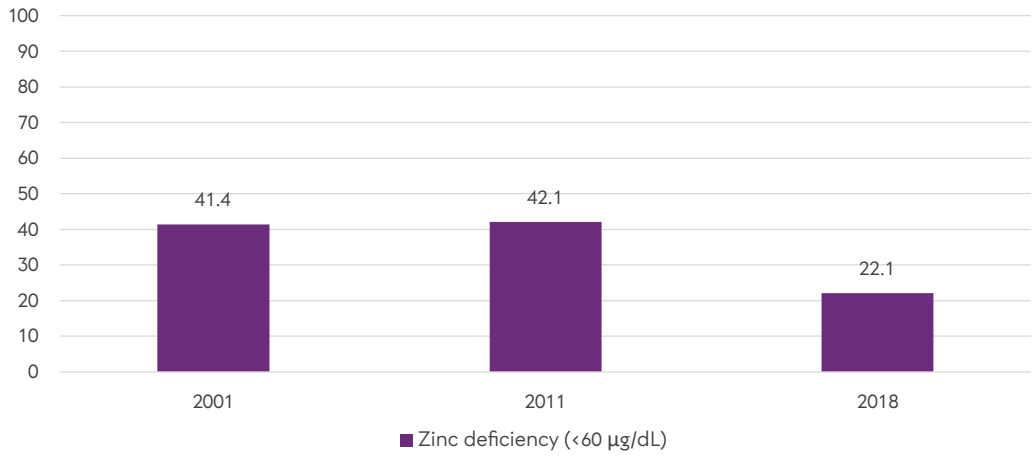
Zinc deficiency in women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018				
		Deficient (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Women 15-49 years
Sindh	Urban	20.2	79.8	2769
	Rural	23.0	77.0	2164
	Total	21.4	78.6	4933
KP	Urban	13.2	86.8	657
	Rural	16.6	83.4	2475
	Total	15.9	84.1	3132
Balochistan	Urban	15.0	85.0	849
	Rural	26.4	73.6	3106
	Total	23.4	76.6	3955
ICT	Urban	25.9	74.1	132
	Rural	12.2	87.8	165
	Total	18.8	81.2	297
KP-NMD	Total	9.8	90.2	602
AJK	Urban	12.3	87.7	338
	Rural	18.2	81.8	1495
	Total	17.5	82.5	1833
GB	Urban	17.4	82.6	179
	Rural	19.3	80.7	1177
	Total	18.9	81.1	1356
Education				
None		23.9	76.2	14955
Primary		22.2	77.8	2730
Middle		20.8	79.2	2302
Secondary		20.0	80.0	2908
Higher		17.2	82.8	2755
Wealth index quintile				
Poorest		25.6	74.4	6413
Second		23.9	76.2	5870
Middle		23.4	76.6	5258
Fourth		21.3	78.7	4604
Richest		16.5	83.5	3505

6.3.5.1 *Trends in zinc deficiency among women of reproductive age (overall)*

The reduction in overall rates of zinc deficiency among women of reproductive age is consistent with reduction in rates of severe anaemia and iron deficiency anaemia. Prevalence remained consistent between 2001 (41.4%) and 2011 (42.1%), and decreased to almost half in 2018 (22.1%).

Figure 6-12: Trends in zinc deficiency among women of reproductive age (overall), Pakistan NNS 2018



6.3.5.2 *Zinc deficiency in women of reproductive age (pregnant and non-pregnant)*

In both pregnant and non-pregnant women, zinc deficiency was highest in the rural population (pregnant: 38.5%; non-pregnant: 23.4%). Pregnant women in ICT's urban areas had the highest prevalence of zinc deficiency (73.0%), while amongst non-pregnant women, Punjab rural-dwellers had the highest prevalence (26.6%).

In non-pregnant women, higher education levels corresponded to lower rates of deficiency. However, among pregnant women, those with higher education were more likely to be deficient in zinc (30.9%) than those with middle (25.6%) and secondary (27.8%) education.

Among pregnant and non-pregnant women alike, those belonging to the poorest wealth index quintile were most likely to be deficient in zinc (pregnant: 43.5%; non-pregnant: 24.4%). However, prevalence was almost double among pregnant women. Higher wealth corresponded to lower rates of zinc deficiency.

Table 6-17: Zinc deficiency in women of reproductive age (non-pregnant)

Zinc deficiency in non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018				
		Deficient (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Women 15-49 years
Total		21.2	78.8	24233
Urban		17.8	82.2	7628
Rural		23.4	76.6	16605
Province/ region				
Punjab	Urban	17.3	82.7	2946
	Rural	26.6	73.4	6126
	Total	23.1	76.9	9072
Sindh	Urban	19.5	80.5	2624
	Rural	21.6	78.4	1988
	Total	20.4	79.6	4612

Zinc deficiency in non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018				
		Deficient (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Women 15-49 years
KP	Urban	11.2	88.8	629
	Rural	16.0	84.0	2321
	Total	15.0	85.0	2950
Balochistan	Urban	14.9	85.1	795
	Rural	25.8	74.2	2877
	Total	22.8	77.2	3672
ICT	Urban	22.3	77.7	122
	Rural	11.1	88.9	156
	Total	16.4	83.6	278
KP-NMD	Total	9.4	90.6	589
AJK	Urban	12.6	87.4	325
	Rural	17.9	82.1	1449
	Total	17.3	82.8	1774
GB	Urban	15.7	84.3	166
	Rural	18.4	81.6	1120
	Total	17.8	82.2	1286
Education				
None		22.7	77.3	14096
Primary		21.1	78.9	2570
Middle		20.5	79.5	2189
Secondary		19.5	80.5	2746
Higher		16.6	83.4	2632
Wealth index quintile				
Poorest		24.4	75.6	6005
Second		22.8	77.2	5529
Middle		22.4	77.6	4979
Fourth		20.4	79.6	4360
Richest		16.0	84.0	3360

Table 6-18: Zinc deficiency in women of reproductive age (pregnant)

Zinc deficiency in pregnant women of reproductive age (15–49 years), Pakistan NNS 2018				
		Deficient (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Women 15-49 years
Total		37.2	62.8	1417
Urban		35.0	65.0	413
Rural		38.5	61.5	1004
Province/ region				
Punjab	Urban	36.4	63.6	150
	Rural	43.9	56.1	320
	Total	41.1	58.9	470

Zinc deficiency in pregnant women of reproductive age (15–49 years), Pakistan NNS 2018				
		Deficient (<60 µg/dL)	Non-deficient (>=60 µg/dL)	Women 15-49 years
Sindh	Urban	32.2	67.8	145
	Rural	39.3	60.7	176
	Total	36.0	64.0	321
KP	Urban	44.6	55.4	28
	Rural	24.9	75.1	154
	Total	28.7	71.3	182
Balochistan	Urban	16.1	83.9	54
	Rural	34.5	65.5	229
	Total	30.5	69.5	283
ICT	Urban	73.0	27.0	10
	Rural	32.7	67.3	9
	Total	55.5	44.5	19
KP-NMD	Total	20.4	79.6	13
AJK	Urban	3.6	96.4	13
	Rural	26.3	73.7	46
	Total	24.0	76.0	59
GB	Urban	40.3	59.7	13
	Rural	35.4	64.6	57
	Total	36.6	63.4	70
Education				
None		41.7	58.3	859
Primary		38.6	61.4	160
Middle		25.6	74.4	113
Secondary		27.8	72.2	162
Higher		30.9	69.1	123
Wealth index quintile				
Poorest		43.5	56.5	408
Second		39.2	60.8	341
Middle		37.9	62.1	279
Fourth		34.1	65.9	244
Richest		29.0	71.0	145

6.3.6 Vitamin D deficiency

The overwhelming majority of all women of reproductive age (79.7%) assessed for NNS 2018 were affected by vitamin D deficiency, with 25.7% showing severe and 54.0% moderate deficiency. Vitamin D deficiency was more prevalent in urban areas (83.6%) than in rural settings (77.1%). Severe deficiency was also observed to be more common in urban (32.5%) than in rural settings (21.4%), potentially due to differences in lifestyle and exposure to sunlight. These findings are also consistent with vitamin D deficiency trends among children under 5.

There were also provincial and regional differences which could relate to geography or culture, with women in KP more affected (85.9%) by vitamin D deficiency (severe deficiency: 43.3%) than

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in other provinces and regions. This was followed by AJK (overall: 83.9%; severe: 25.4%), GB (overall: 83.7%; severe deficiency: 47.2%) and ICT (overall: 83.7%; severe: 10.8%). Women with secondary education were more likely to have vitamin D deficiency (83.0%). The richest women also had a higher prevalence, suggesting a relationship with lifestyle and sun exposure rather than dietary patterns.

Table 6-19: Vitamin D deficiency in women of reproductive age (overall)

Vitamin D deficiency in women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018							
		Vitamin D deficiency					
		Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)	Desirable* (>20.0 - 30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Women 15-49 years
Total		79.7	25.7	54.0	11.5	8.8	25593
Urban		83.6	32.5	51.2	8.8	7.5	8019
Rural		77.1	21.4	55.8	13.3	9.6	17574
Province/ region							
Punjab	Urban	84.1	31.4	52.8	7.5	8.4	3088
	Rural	78.4	19.1	59.2	12.1	9.5	6438
	Total	80.5	23.7	56.8	10.4	9.1	9526
Sindh	Urban	83.0	32.7	50.3	11.0	6.0	2753
	Rural	66.6	6.6	60.0	25.1	8.3	2169
	Total	75.9	21.3	54.5	17.1	7.0	4922
KP	Urban	85.6	41.8	43.9	6.6	7.7	653
	Rural	85.9	43.7	42.3	6.4	7.7	2447
	Total	85.9	43.3	42.6	6.4	7.7	3100
Balochistan	Urban	82.6	38.7	43.8	6.9	10.5	853
	Rural	79.6	31.7	47.8	8.3	12.2	3122
	Total	80.4	33.6	46.8	7.9	11.7	3975
ICT	Urban	76.3	6.3	70.1	13.3	10.3	132
	Rural	90.4	15.0	75.4	9.6	.0	165
	Total	83.7	10.8	72.9	11.4	5.0	297
KP-NMD	Urban	83.8	43.4	40.4	4.9	11.2	21
	Rural	64.6	30.4	34.2	6.0	29.4	575
	Total	64.9	30.6	34.3	6.0	29.1	596
AJK	Urban	87.4	35.5	51.9	5.2	7.3	341
	Rural	83.4	24.0	59.4	7.1	9.6	1495
	Total	83.9	25.4	58.5	6.8	9.3	1836
GB	Urban	86.7	38.0	48.6	4.4	8.9	178
	Rural	83.0	49.5	33.4	6.8	10.2	1163
	Total	83.7	47.2	36.6	6.3	9.9	1341
Education							
None		78.2	22.2	56.0	13.1	8.8	14920
Primary		79.7	27.6	52.2	11.4	8.9	2730
Middle		82.7	28.4	54.4	9.6	7.6	2288

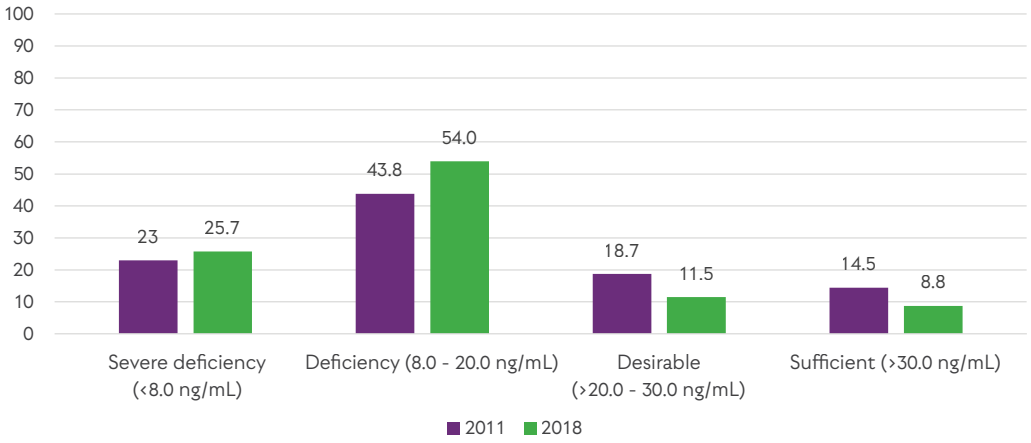
Vitamin D deficiency in women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018						
	Vitamin D deficiency					
	Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)	Desirable* (>20.0 - 30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Women 15-49 years
Secondary	83.1	31.9	51.2	8.6	8.4	2907
Higher	80.9	31.5	49.3	9.3	9.8	2748
Wealth index quintile						
Poorest	71.5	15.5	56.1	18.0	10.5	6411
Second	77.7	22.0	55.7	13.4	8.9	5861
Middle	82.3	27.5	54.9	9.5	8.2	5260
Fourth	83.1	29.9	53.2	9.1	7.7	4580
Richest	83.0	32.8	50.1	8.3	8.7	3481

* Generally, 20-30 ng/mL is considered acceptable and adequate for bone and overall health in healthy individuals. But because of the vagaries of some of the assays, to guarantee sufficiency, the recommendation is a value above 30 ng/mL for both children and adults

6.3.6.1 *Trends in vitamin D deficiency in women of reproductive age (overall)*

Rates of vitamin D deficiency among women of reproductive age do not seem to have changed significantly since 2011, the first time its status was assessed.

Figure 6-13: Trends in vitamin D deficiency in women of reproductive age (overall), Pakistan NNS 2018



6.3.6.2 *Vitamin D deficiency in women of reproductive age (pregnant and non-pregnant)*

Among both pregnant and non-pregnant women, severe vitamin D deficiency was highest in urban dwellers. Severe deficiency among pregnant women was highest in KP-NMD (48.5%), and lowest in Sindh (15.4%). Among non-pregnant women, severe deficiency was highest in rural GB (49.2%), and lowest in urban ICT (5.2%). For pregnant women, all provinces and regions reported similar proportions of sufficient vitamin D. In non-pregnant women, KP had similar figures for severe deficiency in its urban (41.3%) and rural (43.7%) populations, as opposed to Sindh, which had drastic differences in severe deficiency between urban (33%) and rural (6.7%) populations. This could suggest geographical similarities for the provinces that have similar urban and rural trends.

Women with secondary education had the highest proportion of severe vitamin D deficiency in both pregnant and non-pregnant women: 37.4% and 31.6% respectively. Pregnant women in the poorest wealth quintile (13.1%) had less than half the prevalence of severe deficiency compared to those in the middle (32.7%), fourth (31.2%), and richest (30.8%) quintiles.

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Table 6-20: Vitamin D deficiency in women of reproductive age (non-pregnant)

Vitamin D deficiency in non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018								
		Vitamin D						
		Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)	Desirable* (>20.0 - 30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Women aged 15-49 years
Total		79.6	25.8	53.9	11.5	8.9	24172
Urban		83.7	32.5	51.2	8.7	7.6	7603
Rural		77.0	21.3	55.6	13.3	9.7	16569
Province/ region							
Punjab	Urban	83.9	31.3	52.6	7.6	8.5	2941
	Rural	78.1	19.0	59.0	12.2	9.7	6118
	Total	80.3	23.7	56.6	10.5	9.3	9059
Sindh	Urban	83.4	33.0	50.4	10.6	6.0	2605
	Rural	66.5	6.7	59.8	25.3	8.3	1990
	Total	76.1	21.8	54.4	16.9	7.0	4595
KP	Urban	85.6	41.3	44.3	6.7	7.7	624
	Rural	85.6	43.7	42.0	6.5	7.8	2295
	Total	85.6	43.2	42.4	6.6	7.8	2919
Balochistan	Urban	82.5	38.1	44.4	6.9	10.6	796
	Rural	80.0	31.2	48.8	8.2	11.8	2893
	Total	80.6	33.1	47.6	7.8	11.5	3689
ICT	Urban	74.5	5.2	69.3	14.3	11.1	122
	Rural	90.4	15.0	75.3	9.6	0.0	155
	Total	82.8	10.3	72.5	11.9	5.3	277
KP-NMD	Total	64.1	30.1	34.0	6.2	29.7	583
AJK	Urban	87.7	35.9	51.8	5.3	7.0	329
	Rural	83.2	24.3	58.9	7.0	9.8	1450
	Total	83.7	25.7	58.0	6.8	9.5	1779
GB	Urban	87.2	38.5	48.7	4.7	8.1	165
	Rural	82.6	49.2	33.4	6.8	10.6	1106
	Total	83.5	47.0	36.5	6.4	10.1	1271
Education							
None		78.0	22.2	55.8	13.1	8.9	14060
Primary		79.4	27.8	51.6	11.6	9.1	2571
Middle		82.9	28.6	54.3	9.1	8.0	2175
Secondary		83.0	31.6	51.4	8.7	8.3	2742
Higher		81.0	31.4	49.6	9.2	9.8	2624
Wealth index quintile							
Poorest		71.4	15.6	55.8	18.0	10.5	5996
Second		77.4	22.2	55.2	13.6	9.1	5519
Middle		82.4	27.1	55.2	9.3	8.4	4984
Fourth		82.9	29.8	53.0	9.2	7.9	4337
Richest		83.1	32.9	50.2	8.3	8.6	3336

* Generally, 20-30 ng/mL is considered acceptable and adequate for bone and overall health in healthy individuals. But because of the vagaries of some of the assays, to guarantee sufficiency, the recommendation is a value above 30 ng/mL for both children and adults

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Table 6-21: Vitamin D deficiency in women of reproductive age (pregnant)

Vitamin D deficiency in pregnant women of reproductive age (15–49 years), Pakistan NNS 2018							
		Vitamin D deficiency					
		Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)	Desirable* (>20.0 - 30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Women 15-49 years
Total		81.2	25.3	55.9	11.7	7.1	1421
Urban		83.3	31.7	51.6	10.4	6.3	416
Rural		80.0	21.7	58.3	12.4	7.6	1005
Province/ region							
Punjab	Urban	87.8	32.1	55.8	5.2	6.9	147
	Rural	83.6	20.4	63.2	10.2	6.2	320
	Total	85.2	24.7	60.5	8.4	6.5	467
Sindh	Urban	76.5	27.2	49.3	18.4	5.1	148
	Rural	67.8	5.3	62.6	23.3	8.9	179
	Total	71.8	15.4	56.5	21.0	7.1	327
KP	Urban	86.0	48.5	37.5	5.8	8.3	29
	Rural	90.0	43.5	46.5	3.7	6.3	152
	Total	89.2	44.5	44.7	4.1	6.7	181
Balochistan	Urban	84.2	49.2	35.0	6.7	9.0	57
	Rural	74.4	38.2	36.2	9.6	16.0	229
	Total	76.6	40.7	35.9	9.0	14.4	286
ICT	Urban	100.0	20.1	79.9	0.0	0.0	10
	Rural	91.7	14.4	77.3	8.3	0.0	10
	Total	96.2	17.5	78.7	3.8	0.0	20
KP-NMD	Total	91.3	48.5	42.8	0.0	8.7	13
AJK	Urban	76.0	19.2	56.8	3.3	20.7	12
	Rural	89.8	17.0	72.9	8.5	1.7	45
	Total	88.5	17.2	71.3	8.0	3.5	57
GB	Urban	79.2	31.2	48.0	0.0	20.8	13
	Rural	89.8	55.4	34.4	7.4	2.8	57
	Total	87.3	49.6	37.7	5.6	7.1	70
Education							
None		80.3	21.5	58.8	12.5	7.2	860
Primary		85.5	24.7	60.8	8.2	6.3	159
Middle		79.7	24.8	54.9	18.2	2.0	113
Secondary		83.6	37.4	46.3	6.9	9.5	165
Higher		78.4	35.2	43.2	11.7	9.9	124

Vitamin D deficiency in pregnant women of reproductive age (15–49 years), Pakistan NNS 2018						
	Vitamin D deficiency					
	Vitamin D deficiency	Severe deficiency (<8.0 ng/mL)	Deficiency (8.0 - 20.0 ng/mL)	Desirable* (>20.0 - 30.0 ng/mL)	Sufficient* (>30.0 ng/mL)	Women 15-49 years
Wealth index quintile						
Poorest	72.5	13.1	59.4	17.4	10.1	415
Second	82.8	20.2	62.6	10.7	6.5	342
Middle	81.8	32.7	49.2	13.1	5.0	276
Fourth	87.5	31.2	56.3	7.7	4.8	243
Richest	80.3	30.8	49.5	8.7	11.0	145

* Generally, level between 20-30 ng/mL is considered acceptable and adequate for bone and overall health in healthy individuals. But because of the vagaries of some of the assays, to guarantee sufficiency, the recommendation is a value above 30 ng/mL for both children and adults

6.3.7 Calcium status

NNS 2018 reported albumin-adjusted serum calcium concentrations, unlike NNS 2011 where this adjustment could not be made during to resource constraints. Over a quarter, 26.5% of women of reproductive age had hypocalcaemia while 0.4% had hypercalcaemia. Prevalence of hypocalcaemia was 26.8% in rural areas and 26.1% in urban areas. KP-NMD (47.0%), AJK (33.6%) and Balochistan (32.8%) had the highest prevalence of calcium deficiency, whereas GB and AJK (both 0.6%) had the highest prevalence of hypercalcaemia. Across provinces and regions, the urban/ rural distribution was almost equivalent.

Table 6-22: Calcium status in women of reproductive age (overall)

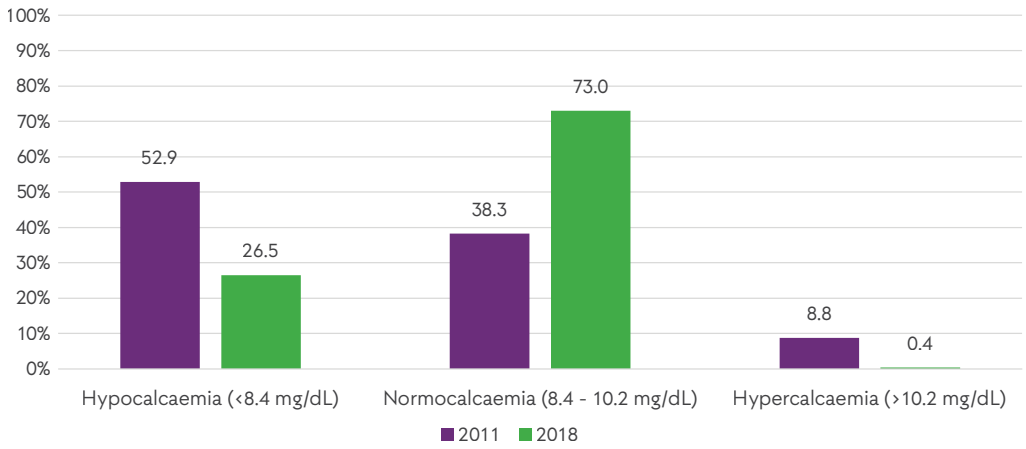
Calcium status of women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018					
		Calcium			
		Hypo calcaemia (<8.4 mg/dL)	Normo calcaemia (8.4 - 10.2 mg/dL)	Hyper calcaemia (>10.2 mg/dL)	Women 15-49 years
Total		26.5	73.0	.4	18126
Urban		26.1	73.5	.4	6100
Rural		26.8	72.7	.5	12026
Province/ region					
Punjab	Urban	34.4	65.0	.5	2251
	Rural	30.0	69.6	.4	4276
	Total	31.8	67.7	.5	6527
Sindh	Urban	16.7	83.1	.2	2447
	Rural	13.3	86.2	.5	1776
	Total	15.3	84.3	.3	4223
KP	Urban	24.5	75.1	.4	497
	Rural	31.7	67.8	.5	1599
	Total	30.1	69.4	.5	2096

Calcium status of women of reproductive age (15–49 years) regardless of pregnancy status, Pakistan NNS 2018					
		Calcium			
		Hypo calcaemia (<8.4 mg/dL)	Normo calcaemia (8.4 - 10.2 mg/dL)	Hyper calcaemia (>10.2 mg/dL)	Women 15-49 years
Balochistan	Urban	36.0	63.7	.3	497
	Rural	31.9	67.5	.5	2149
	Total	32.8	66.7	.4	2646
ICT	Urban	16.3	83.7	.0	98
	Rural	9.1	90.9	.0	143
	Total	12.4	87.6	.0	241
KP-NMD	Urban	52.8	47.2	.0	12
	Rural	47.0	52.3	.5	401
	Total	47.0	52.2	.5	413
AJK	Urban	39.0	61.0	.0	179
	Rural	33.1	66.2	.7	908
	Total	33.6	65.7	.6	1087
GB	Urban	39.9	58.8	1.3	119
	Rural	34.9	64.6	.4	774
	Total	36.0	63.3	.6	893
Education					
None		25.8	73.7	.5	10524
Primary		28.7	70.9	.4	1923
Middle		28.5	71.1	.3	1617
Secondary		25.5	74.0	.5	2109
Higher		26.9	72.7	.2	1953
Wealth index quintile					
Poorest		24.1	75.3	.6	4432
Second		27.7	71.9	.4	3966
Middle		27.0	72.7	.3	3656
Fourth		27.1	72.4	.5	3374
Richest		26.5	73.1	.4	2698

6.3.7.1 Trends in calcium status in women of reproductive age (overall)

A comparison of data from NNS 2011 and 2018 data shows that far more women experienced hypocalcaemia in 2011 (52.9%) than in 2018 (26.5%). Hypercalcaemia was also more prevalent in 2011 (8.8%) than in 2018 (0.4%).

Figure 6-14: Trends in calcium status in women of reproductive age (overall), Pakistan NNS 2018



6.3.7.2 *Calcium status in women of reproductive age (pregnant and non-pregnant)*

Among non-pregnant women, over five times as many women had normocalcaemia (82.2%) compared to hypocalcaemia (16.2%). By contrast, among pregnant women, the total proportion of those with hypocalcaemia (32.7%) was half that of those with normocalcaemia (66.3%).

The highest prevalence of hypocalcaemia was reported amongst pregnant women in Balochistan's urban population (57.5%), followed by those in urban Punjab (42.7%) and urban GB (38.9%). Non-pregnant women had lower prevalence of hypocalcaemia than pregnant women across all provinces and regions, with the lowest in rural ICT (4.5% in ICT).

Pregnant women with higher education were least likely to have hypocalcaemia (25.4%) or hypercalcaemia (0.0%) compared to other education groups. Among non-pregnant women, hypocalcaemia was also lowest among women with higher education (13.8%), but hypercalcaemia was lowest in the secondary education group (1.1%).

Among pregnant women in all wealth quintiles the prevalence of normocalcaemia was about twice that of hypocalcaemia, except in the richest wealth index quintile, in which the proportion of normocalcaemia (73.6%) was almost thrice that of hypocalcaemia (26.4%).

Table 6-23: Calcium status in women of reproductive age (non-pregnant)

Calcium status of non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018					
		Calcium			
		Hypocalcaemia (<8.4 mg/dL)	Normocalcaemia (8.4 - 10.2 mg/dL)	Hypercalcaemia (>10.2 mg/dL)	Women aged 15-49 years
Total		16.2	82.2	1.6	17053
Urban		15.9	82.4	1.8	5763
Rural		16.4	82.1	1.4	11290
Province/ region					
Punjab	Urban	20.4	78.1	1.5	2128
	Rural	18.2	80.8	1.1	4045
	Total	19.1	79.7	1.2	6173
Sindh	Urban	10.5	87.6	1.9	2313
	Rural	8.3	89.9	1.8	1623
	Total	9.6	88.5	1.9	3936

Calcium status of non-pregnant women of reproductive age (15–49 years), Pakistan NNS 2018					
		Calcium			
		Hypocalcaemia (<8.4 mg/dL)	Normocalcaemia (8.4 - 10.2 mg/dL)	Hypercalcaemia (>10.2 mg/dL)	Women aged 15-49 years
KP	Urban	14.5	82.5	2.9	474
	Rural	19.3	79.0	1.7	1505
	Total	18.2	79.8	2.0	1979
Balochistan	Urban	25.4	71.8	2.7	463
	Rural	20.8	76.7	2.5	1980
	Total	21.8	75.6	2.6	2443
ICT	Urban	7.2	92.0	0.9	90
	Rural	4.5	95.5	0.0	135
	Total	5.7	93.9	0.4	225
KP-NMD	Total	27.9	70.4	1.8	401
AJK	Urban	29.0	70.6	0.4	173
	Rural	22.6	76.4	1.0	879
	Total	23.2	75.9	0.9	1052
GB	Urban	27.9	70.7	1.4	110
	Rural	16.9	78.8	4.2	734
	Total	19.4	77.0	3.6	844
Education					
None		16.2	82.1	1.7	9870
Primary		17.7	80.6	1.6	1804
Middle		18.2	80.5	1.3	1530
Secondary		15.7	83.2	1.1	1980
Higher		13.8	84.7	1.5	1869
Wealth index quintile					
Poorest		16.0	82.0	2.0	4132
Second		16.5	82.0	1.5	3710
Middle		16.4	82.2	1.4	3443
Fourth		16.8	81.7	1.4	3183
Richest		15.2	83.2	1.6	2585

Table 6-24: Calcium status in women of reproductive age (pregnant)

Calcium status of pregnant women of reproductive age (15–49 years), Pakistan NNS 2018				
	Calcium			
	Hypocalcaemia (<8.4 mg/dL)	Normocalcaemia (8.4 - 10.2 mg/dL)	Hypercalcaemia (>10.2 mg/dL)	Women aged 15-49 years
Total	32.7	66.3	1.0	1073
Urban	31.8	67.2	1.0	337
Rural	33.3	65.7	1.0	736

Calcium status of pregnant women of reproductive age (15–49 years), Pakistan NNS 2018					
		Calcium			
		Hypocalcaemia (<8.4 mg/dL)	Normocalcaemia (8.4 - 10.2 mg/dL)	Hypercalcaemia (>10.2 mg/dL)	Women aged 15-49 years
Province/ region					
Punjab	Urban	42.7	55.6	1.8	123
	Rural	38.0	62.0	0.0	231
	Total	39.9	59.4	0.7	354
Sindh	Urban	18.1	81.9	0.1	134
	Rural	28.1	69.0	3.0	153
	Total	23.2	75.2	1.6	287
KP	Urban	37.1	62.9	0.0	23
	Rural	32.4	67.6	0.0	94
	Total	33.5	66.5	0.0	117
Balochistan	Urban	57.5	38.3	4.2	34
	Rural	33.0	65.7	1.2	169
	Total	36.6	61.7	1.7	203
ICT	Urban	17.6	82.4	0.0	8
	Rural	14.0	86.0	0.0	8
	Total	15.9	84.1	0.0	16
KP-NMD	Total	9.6	90.4	0.0	12
AJK	Urban	10.7	75.2	14.1	6
	Rural	36.6	63.4	0.0	29
	Total	35.4	63.9	0.7	35
GB	Urban	38.7	40.9	20.3	9
	Rural	39.0	59.3	1.8	40
	Total	38.9	55.0	6.1	49
Education					
None		32.5	66.1	1.3	654
Primary		40.4	59.4	0.2	119
Middle		37.7	62.3	0.0	87
Secondary		27.0	71.5	1.5	129
Higher		25.4	74.6	0.0	84
Wealth index quintile					
Poorest		35.1	62.9	2.0	300
Second		35.5	64.2	0.2	256
Middle		33.3	66.6	0.1	213
Fourth		31.3	66.4	2.3	191
Richest		26.4	73.6	0.0	113

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6.3.8 Urinary iodine concentration in women of reproductive age

Urine was collected from women of reproductive age to assess urinary iodine concentration and iodine status. The results showed that 45.7% of women in this group had urinary iodine deficiency with 4.7% had severe and 13.2% had moderate deficiency. Urinary iodine insufficiency, both severe (5.1%) and moderate (13.9%), was more prevalent in women living in rural areas. KP-NMD had the highest prevalence of urinary iodine deficiency (overall: 72.8%; severe: 7.5%), followed by GB (overall: 76.7%), while Balochistan had the lowest prevalence (37.7%).

Table 6-25: Urinary iodine excretion in women of reproductive age (overall)

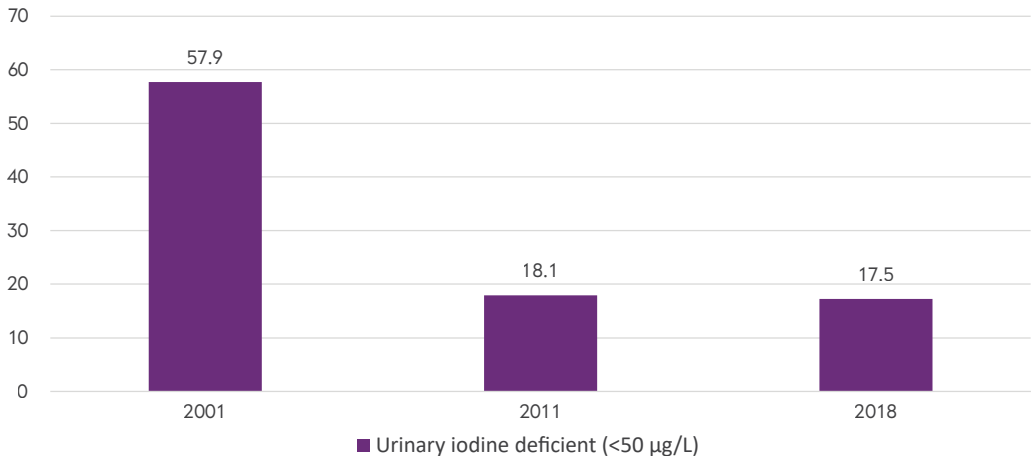
Iodine deficiency in women of reproductive age (15–49 years) regardless of pregnancy status based on urinary iodine concentration, Pakistan NNS 2018							
		Urinary Iodine					
		Severe (<20 µg/L)	Moderate (20 - 49 µg/L)	Mild (50 - 99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine	Women 15-49 years
Total		4.7	13.2	27.7	54.3	108.3	5149
Urban		4.2	12.2	27.8	55.8	108.2	1600
Rural		5.1	13.9	27.7	53.3	108.4	3549
Province/ region							
Punjab	Urban	5.7	11.7	26.0	56.7	107.5	619
	Rural	3.8	13.7	27.3	55.1	112.7	1283
	Total	4.5	12.9	26.8	55.7	108.7	1902
Sindh	Urban	2.4	12.5	30.9	54.2	110.7	567
	Rural	5.9	9.3	26.4	58.3	129.8	433
	Total	3.9	11.2	29.0	55.9	113.1	1000
KP	Urban	3.4	17.3	23.4	55.8	102.6	132
	Rural	6.2	14.4	30.9	48.4	96.9	488
	Total	5.6	15.0	29.4	49.9	99.8	620
Balochistan	Urban	.7	4.4	26.2	68.1	129.8	160
	Rural	5.5	9.9	24.4	60.2	129.2	611
	Total	4.2	8.5	24.8	62.3	129.8	771
ICT	Urban	11.5	17.8	15.5	55.3	117.5	29
	Rural	1.2	12.0	24.5	62.3	117.0	35
	Total	6.3	14.9	20.0	58.8	117.5	64
KP-NMD	Urban	.0	100.0	.0	.0	36.0	2
	Rural	7.6	36.0	29.1	27.4	57.5	121
	Total	7.5	36.4	28.9	27.2	57.5	123
AJK	Urban	5.6	20.1	51.3	22.9	61.5	60
	Rural	13.2	29.1	34.4	23.4	55.4	349
	Total	12.6	28.3	35.8	23.3	56.5	409
GB	Urban	20.1	15.0	34.4	30.6	59.9	31
	Rural	11.2	30.0	33.0	25.6	57.1	229
	Total	12.9	27.2	33.2	26.5	59.9	260

Iodine deficiency in women of reproductive age (15–49 years) regardless of pregnancy status based on urinary iodine concentration, Pakistan NNS 2018						
	Urinary Iodine					
	Severe (<20 µg/L)	Moderate (20 - 49 µg/L)	Mild (50 - 99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine	Women 15-49 years
Education						
None	4.7	13.1	27.1	55.0	109.4	3006
Primary	5.2	12.6	31.9	50.2	100.5	532
Middle	6.4	14.6	27.4	51.6	105.2	465
Secondary	4.3	13.8	29.6	52.3	104.1	600
Higher	3.4	12.5	24.8	59.3	115.7	546
Wealth index quintile						
Poorest	4.6	13.1	25.2	57.0	117.8	1182
Second	6.1	13.5	28.3	52.2	104.6	1226
Middle	3.6	13.4	29.3	53.7	107.7	1060
Fourth	4.8	13.5	28.0	53.7	106.1	973
Richest	4.5	12.4	27.6	55.4	111.1	708

6.3.8.1 Trends in urinary iodine excretion among women of reproductive age (overall)

Prevalence of urinary iodine deficiency fell substantially from 2001 when more than half of women were found to experience this deficiency (57.9%), to 2011 (18.1%). However, it then remained almost the same in 2018 (17.5%).

Figure 6-15: Trends in urinary iodine excretion in women of reproductive age (overall), Pakistan NNS 2018



6.3.8.2 Urinary iodine excretion in women of reproductive age (pregnant and non-pregnant)

Among both pregnant and non-pregnant women, prevalence of non-deficiency in the rural population was 54.1%, while severe urinary iodine deficiency differed slightly in pregnant (6.4%) and non-pregnant (4.5%) women.

Urban Punjab had the highest proportion of pregnant women with severe urinary iodine deficiency (10.2%), followed by rural Balochistan (9.7%). ICT, AJK, and KP-NMD all reported nil severe urinary iodine deficiency amongst pregnant women. Among non-pregnant women, ICT (6.6%), AJK (13%),

and KP-NMD (7.9%) had the highest rates of severe urinary iodine deficiency. Across all provinces and regions, moderate deficiency was higher than severe deficiency among non-pregnant women, except in urban GB (moderate: 14.5%; severe: 19.4%), perhaps indicating a geographical difference here.

The highest proportion of mild deficiency by education among pregnant women was 47.9% in those with middle education, and for non-pregnant women, it was 30.9% among those with primary education. Non-pregnant women belonging to the poorest wealth index quintile had the highest proportion of non-deficiency (58.1%), while their pregnant peers had the second-highest proportion of non-deficiency (58.7%).

Table 6-26: Urinary Iodine excretion in women of reproductive age (non-pregnant)

Iodine deficiency in non-pregnant women of reproductive age (15–49 years) based on urinary iodine concentration, Pakistan NNS 2018							
		Urinary Iodine					
		Severe (<20 µg/L)	Moderate (20 - 49 µg/L)	Mild (50 - 99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine	Women 15-49 years
Total		4.6	13.5	27.5	54.3	108.4	4882
Urban		4.1	12.3	27.7	55.8	108.4	1528
Rural		4.9	14.3	27.4	53.3	108.3	3354
Province/ region							
Punjab	Urban	5.4	11.9	26.3	56.4	107.5	592
	Rural	3.7	14.0	27.2	54.9	111.2	1224
	Total	4.4	13.2	26.8	55.5	108.4	1816
Sindh	Urban	2.4	12.5	30.5	54.7	111.8	541
	Rural	5.5	9.5	27.0	58.1	129.8	389
	Total	3.7	11.3	29.1	56.0	113.7	930
KP	Urban	3.6	18.3	24.4	53.7	102.2	126
	Rural	6.3	15.1	29.4	49.1	98.4	462
	Total	5.7	15.7	28.4	50.1	100.6	588
Balochistan	Urban	0.8	4.1	26.3	68.1	130.2	150
	Rural	5.1	10.0	22.8	62.1	135.1	568
	Total	4.0	8.5	23.7	63.7	132.9	718
ICT	Urban	12.3	19.0	9.4	59.2	129.2	27
	Rural	1.2	12.1	23.5	63.1	117.0	34
	Total	6.6	15.5	16.7	61.2	118.5	61
KP-NMD	Total	7.8	38.0	27.9	26.3	56.7	120
AJK	Urban	5.6	20.1	51.3	22.9	61.5	60
	Rural	13.5	29.2	33.4	23.9	56.3	343
	Total	12.8	28.4	34.9	23.8	56.5	403
GB	Urban	20.7	15.5	32.4	31.5	59.9	30
	Rural	11.7	30.4	32.6	25.1	56.5	216
	Total	13.5	27.4	32.5	26.4	57.1	246
Education							
None		4.4	13.3	27.0	55.1	109.5	2841
Primary		5.1	13.4	31.5	50.0	99.9	509
Middle		6.7	15.0	26.2	52.1	106.0	441
Secondary		4.4	14.2	29.7	51.6	102.4	565
Higher		3.5	12.5	24.7	59.3	115.9	526

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Iodine deficiency in non-pregnant women of reproductive age (15–49 years) based on urinary iodine concentration, Pakistan NNS 2018							
		Urinary Iodine					
		Severe (<20 µg/L)	Moderate (20 - 49 µg/L)	Mild (50 - 99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine	Women 15-49 years
Wealth index quintile							
Poorest		4.5	13.8	24.6	56.9	116.0	1101
Second		5.7	13.7	28.6	52.0	104.3	1153
Middle		3.4	13.7	28.6	54.3	109.3	1012
Fourth		4.9	14.0	27.9	53.3	105.2	931
Richest		4.6	12.4	27.6	55.5	112.2	685

Table 6-27: Urinary iodine excretion in women of reproductive age (pregnant)

Iodine deficiency in pregnant women of reproductive age (15–49 years) based on urinary iodine concentration, Pakistan NNS 2018							
		Urinary Iodine					
		Severe (<20 µg/L)	Moderate (20 - 49 µg/L)	Mild (50 - 99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine	Women 15-49 years
Total		6.7	7.9	31.2	54.3	108.0	267
Urban		6.1	8.9	28.5	56.5	107.8	72
Rural		6.9	7.4	32.5	53.2	109.4	195
Province/ region							
Punjab	Urban	11.0	6.2	19.9	62.8	108.2	27
	Rural	5.8	7.0	29.5	57.7	128.5	59
	Total	7.7	6.7	26.1	59.5	116.1	86
Sindh	Urban	2.3	13.3	38.5	46.0	99.8	26
	Rural	9.2	8.0	22.1	60.7	139.5	44
	Total	6.5	10.1	28.5	54.9	108.0	70
KP	Urban	0.0	0.0	4.5	95.5	209.0	6
	Rural	4.9	4.3	54.5	36.3	85.9	26
	Total	4.0	3.6	45.5	46.9	93.3	32
Balochistan	Urban	0.0	8.6	23.1	68.3	128.0	10
	Rural	9.7	9.1	45.5	35.7	73.8	43
	Total	7.6	9.0	40.5	43.0	87.2	53
ICT	Urban	0.0	0.0	100.0	0.0	61.9	2
	Rural	0.0	0.0	100.0	0.0	58.5	1
	Total	0.0	0.0	100.0	0.0	61.9	3
KP-NMD	Total	0.0	0.0	52.5	47.5	94.2	3
AJK	Urban	.	.	.	.	.	0
	Rural	0.0	23.8	76.2	0.0	50.3	6
	Total	0.0	23.8	76.2	0.0	50.3	6
GB	Urban	0.0	0.0	100.0	0.0	75.1	1
	Rural	5.4	25.9	37.9	30.8	96.8	13
	Total	4.9	23.8	42.9	28.4	89.2	14

Iodine deficiency in pregnant women of reproductive age (15–49 years) based on urinary iodine concentration, Pakistan NNS 2018						
	Urinary Iodine					
	Severe (<20 µg/L)	Moderate (20 - 49 µg/L)	Mild (50 - 99 µg/L)	Non-deficient (>=100 µg/L)	Median urinary iodine	Women 15-49 years
Education						
None	9.1	8.7	28.8	53.4	106.1	165
Primary	7.7	0.0	38.5	53.8	138.2	23
Middle	0.3	8.6	47.9	43.2	99.8	24
Secondary	2.8	6.9	27.2	63.1	108.2	35
Higher	0.0	13.7	27.6	58.7	107.3	20
Wealth index quintile						
Poorest	5.5	4.3	32.7	57.5	139.5	81
Second	10.9	10.1	24.3	54.7	107.8	73
Middle	6.7	9.1	42.0	42.2	99.8	48
Fourth	4.1	4.8	29.4	61.8	114.2	42
Richest	3.4	13.3	28.9	54.4	107.3	23

6.4 Minimum dietary diversity

Minimum dietary diversity is a proxy indicator for nutrient sufficiency and quality of diet consumed. It is a dichotomous indicator of whether or not women of reproductive age (15–49 years) have consumed at least five out of 10 defined food groups the previous day or night. In the NNS 2018, 27.6% of surveyed women met the minimum dietary diversity requirement, with a higher prevalence in urban (30.4%) than rural (26.0%) populations. The most commonly consumed foods were grains (90.7%), pulses (54.9%) and dairy products (49.9%).

The proportion of women who achieved minimum dietary diversity was highest among residents of KP (40.3%), KP-NMD (34.2%) and AJK (26.3%), and lowest in Sindh (16.5%). There was a positive relation between minimum dietary diversity and education level: women who were not educated (21.8%) or only had primary education (27.6%), has less diverse diets than women with secondary (33.4%) and higher education (40.3%). The proportion of women with sufficiently diverse diets was lowest among the poorest households (13.6%) compared to wealthiest quintiles (fourth: 31.5%; richest: 41.5%).

Table 6-28: Minimum dietary diversity for women

Women of reproductive age (15–49 years) who consumed at least five out of 10 defined food groups the previous day or night, Pakistan NNS 2018														
		Percent of women achieving minimum dietary diversity	Mean (SD) of food groups consumed	Consumption of food groups										Number of women
				Animal-source foods			Grain, pulses, nuts & seed			Fruits and vegetables				
				Grains	Pulses	Nuts & seeds	Dairy	Meat, fish & poultry	Eggs	Dark green leafy vegetables	Vitamin A-rich fruits and vegetables	Other vegetables	Other fruits	
Total		27.6	3.8	90.7	54.9	16.9	49.9	40.1	21.9	37.3	10.1	32.6	26.0	86629
Urban		30.4	3.9	92.3	52.8	15.1	49.8	49.5	24.9	34.8	10.8	32.0	29.8	25660
Rural		26.0	3.7	89.7	56.2	18.0	50.0	34.4	20.2	38.9	9.6	32.9	23.7	60969
Province/ region														
Punjab	Urban	34.9	4.1	91.7	54.7	17.3	57.2	45.3	26.8	39.9	11.6	34.5	30.7	10093
	Rural	27.7	3.8	88.7	59.2	16.9	52.1	34.2	19.8	42.0	9.6	34.6	25.9	21062
	Total	30.4	3.9	89.8	57.5	17.1	54.0	38.4	22.4	41.2	10.4	34.5	27.7	31155

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Women of reproductive age (15–49 years) who consumed at least five out of 10 defined food groups the previous day or night, Pakistan NNS 2018														
		Percent of women achieving minimum dietary diversity	Mean (SD) of food groups consumed	Consumption of food groups										Number of women
				Animal-source foods			Grain, pulses, nuts & seed			Fruits and vegetables				
				Grains	Pulses	Nuts & seeds	Dairy	Meat, fish & poultry	Eggs	Dark green leafy vegetables	Vitamin A-rich fruits and vegetables	Other vegetables	Other fruits	
Sindh	Urban	20.8	3.5	96.1	49.4	8.4	36.5	55.0	18.1	26.9	9.3	27.9	26.3	7839
	Rural	11.7	3.1	94.3	46.6	8.0	40.9	27.3	8.9	34.2	7.9	31.4	11.2	7132
	Total	16.5	3.3	95.3	48.1	8.3	38.6	41.9	13.8	30.3	8.6	29.6	19.1	14971
KP	Urban	45.9	4.6	86.7	63.2	28.2	61.2	54.1	37.8	41.4	14.7	37.2	34.8	2218
	Rural	39.0	4.3	88.1	63.1	34.4	56.6	40.9	31.4	38.9	12.8	34.2	31.4	8964
	Total	40.3	4.4	87.8	63.1	33.2	57.5	43.5	32.6	39.4	13.1	34.8	32.1	11182
Balochistan	Urban	32.0	3.9	75.3	46.0	25.3	54.1	50.2	34.9	32.4	9.8	27.4	35.1	3079
	Rural	23.6	3.5	82.6	47.0	22.1	42.9	40.4	23.4	30.0	7.0	24.2	26.4	11276
	Total	25.9	3.6	80.5	46.7	23.0	46.0	43.1	26.6	30.7	7.8	25.1	28.8	14355
ICT	Urban	28.3	3.9	96.7	46.3	11.7	32.5	53.0	31.6	20.6	8.5	39.9	45.7	448
	Rural	21.6	3.6	98.2	44.7	10.5	30.1	50.7	28.1	21.0	7.1	32.6	33.3	547
	Total	24.9	3.7	97.4	45.5	11.1	31.3	51.8	29.9	20.8	7.8	36.2	39.5	995
KP-NMD	Total	34.2	4.1	93.9	67.6	24.4	46.3	33.2	34.6	41.1	15.0	35.8	22.8	2765
AJK	Urban	32.9	3.9	97.0	52.5	9.9	70.3	40.8	27.2	33.3	7.7	24.3	26.4	1231
	Rural	25.3	3.8	97.7	51.7	10.9	69.7	34.4	23.1	38.8	6.1	25.0	19.2	5296
	Total	26.3	3.8	97.6	51.8	10.8	69.8	35.2	23.7	38.1	6.3	24.9	20.1	6527
GB	Urban	23.4	3.5	96.6	33.9	13.3	35.3	53.5	23.3	25.3	9.8	34.5	25.2	599
	Rural	16.0	3.1	95.3	33.0	12.1	30.2	37.3	16.7	26.7	7.7	31.9	21.0	4080
	Total	17.5	3.2	95.6	33.1	12.3	31.2	40.6	18.0	26.4	8.1	32.4	21.8	4679
Education														
None		21.8	3.6	90.2	54.5	15.9	45.7	33.3	18.3	37.4	9.1	32.7	20.5	48297
Primary		27.6	3.8	90.7	57.2	17.5	51.4	39.8	20.3	39.0	8.8	33.2	25.9	8872
Middle		31.9	4.0	90.1	58.3	19.9	51.7	43.2	23.2	36.3	11.0	32.7	30.5	8126
Secondary		33.4	4.0	92.1	55.7	16.9	54.8	48.5	25.8	35.8	10.3	31.3	31.6	10512
Higher		40.3	4.3	91.9	51.6	18.3	58.0	54.8	31.8	37.8	13.6	33.0	37.4	10822
Wealth index quintile														
Poorest		13.6	3.2	89.5	51.1	12.0	40.7	22.9	12.6	35.1	6.8	31.4	13.4	22862
Second		22.7	3.7	88.9	55.4	17.1	47.6	32.1	19.4	41.1	9.3	33.8	21.0	20041
Middle		28.3	3.9	90.8	56.8	18.2	50.6	41.1	21.5	38.7	10.2	33.3	26.2	17272
Fourth		31.5	4.0	91.5	56.7	17.3	52.0	46.9	24.6	36.4	10.9	32.1	29.6	14681
Richest		41.5	4.3	92.8	54.5	19.8	58.4	56.6	31.2	35.5	12.9	32.5	39.0	11773

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6.5 Reproductive health

6.5.1 Early marriage

Early marriage has a profound impact on the health and wellbeing of adolescent girls; it is proven also to have intergenerational effects. Survey data revealed that some 18.4% of women aged 20–24 years were married before the age of 18, with 2.9% married before the age of 15. A higher trend of early marriage was found among women aged 30–49 years of age (20.9%) and 25–29 years of age (18.5%). This pattern of early marriage was more prominent in rural areas across all age groups and provinces/ regions, with a few exceptions. In ICT marriage before reaching 15 years of age was more common in urban areas among women aged 20–24 years. In Sindh, ICT and GB, women in the 25–29 year age group who married before 15 years of age were more common in urban areas, possibly representing population transition patterns. A comparable distribution among urban and rural populations was found in women aged 30–49 years in Punjab, while proportions were higher in urban areas of Sindh, KP and Balochistan.

KP-NMD (8.7%) had the highest proportion of young women aged 20–24 years who were married before reaching the age of 15, followed by KP (6.4%) and Balochistan (4.6%). KP-NMD (33.1%), KP (27.8%) and Balochistan (24.7%) also had the highest proportions of women who were married before reaching 18 years of age.

Among women aged 25–29 years, KP had the highest proportion (6.5%) of women married before reaching 15 years, followed by KP-NMD (5.3%) and GB (5.1%). Similarly, 31% of KP women, 27.5% of women from KP-NMD and 27.1% from GB were married before reaching 18.

Among older women aged 30–49 years, GB (10.6%) had the highest proportion of women who married before 15 years of age followed by KP (6.2%) and KP-NMD (5.9%). A similar trend was observed for women who married before 18 years of age in GB (40.2%), KP (29.0%) and KP-NMD (28.9%).

Early marriages were consistently more common in women who were not educated and who belonged to the poorest wealth index quintile. Rates of early marriage declined with increase in level of education and wealth index quintile.

Table 6-29: Early marriage (women aged 20-49 years)

Percentage of women aged 20–49 years who were married by age 15 or 18, Pakistan NNS 2018										
		Women aged 20-24 years			Women aged 25-29 years			Women aged 30-49 years		
		Percentage of women married before age 15	Percentage of women married before age 18	Number of women aged 20-24 years	Percentage of women married before age 15	Percentage of women married before age 18	Number of women aged 25-29 years	Percentage of women married before age 15	Percentage of women married before age 18	Number of women aged 30-49 years
Total		2.9	18.4	21545	3.3	18.5	23335	3.6	20.9	55033
Urban		2.6	16.0	6566	2.8	14.8	7076	3.6	18.5	16629
Rural		3.2	20.1	14979	3.6	20.7	16259	3.5	22.4	38404
Provision/ region										
Punjab	Urban	1.8	14.4	2615	1.9	12.5	2829	2.3	14.8	6415
	Rural	2.0	15.7	5223	2.6	16.3	5651	2.3	17.4	12889
	Total	1.9	15.2	7838	2.3	14.8	8480	2.3	16.4	19304
Sindh	Urban	3.2	16.7	1910	3.4	16.3	2124	4.9	22.1	5023
	Rural	3.3	24.6	1627	3.0	23.4	1842	4.0	28.5	4282
	Total	3.2	20.3	3537	3.2	19.5	3966	4.5	25.0	9305

Percentage of women aged 20–49 years who were married by age 15 or 18, Pakistan NNS 2018										
		Women aged 20-24 years			Women aged 25-29 years			Women aged 30-49 years		
		Percentage of women married before age 15	Percentage of women married before age 18	Number of women aged 20-24 years	Percentage of women married before age 15	Percentage of women married before age 18	Number of women aged 25-29 years	Percentage of women married before age 15	Percentage of women married before age 18	Number of women aged 30-49 years
KP	Urban	6.6	24.1	572	6.5	27.8	609	6.4	28.5	1476
	Rural	6.3	28.8	2215	6.5	31.8	2632	6.2	29.1	5634
	Total	6.4	27.8	2787	6.5	31.0	3241	6.2	29.0	7110
Balochistan	Urban	3.6	21.2	816	3.1	14.7	848	4.7	21.3	2086
	Rural	5.1	26.2	2681	5.1	22.1	2865	4.6	26.6	7448
	Total	4.6	24.7	3497	4.5	19.9	3713	4.7	25.1	9534
ICT	Urban	4.3	17.8	117	5.1	15.8	136	2.7	12.5	275
	Rural	1.2	13.1	170	4.5	15.0	143	5.8	18.3	359
	Total	2.7	15.3	287	4.8	15.4	279	4.3	15.6	634
KP-NMD	Total	8.7	33.1	536	5.3	27.5	819	5.9	28.9	1739
AJK	Urban	.5	5.5	311	.3	8.0	330	.6	9.9	876
	Rural	1.1	9.0	1311	1.4	11.0	1343	2.2	16.0	3549
	Total	1.0	8.6	1622	1.3	10.6	1673	2.0	15.2	4425
GB	Urban	4.0	19.2	183	5.3	24.0	163	9.6	32.5	383
	Rural	4.8	22.6	1258	5.1	28.0	1001	10.8	42.1	2599
	Total	4.6	21.9	1441	5.1	27.1	1164	10.6	40.2	2982
Education										
None		5.2	29.1	9150	5.0	25.3	12175	4.6	26.0	35481
Primary		3.9	20.4	2129	2.4	18.9	2385	3.9	19.2	5457
Middle		2.2	20.1	2173	2.4	17.5	2165	2.4	16.3	4200
Secondary		1.1	12.4	3252	1.9	11.4	2923	1.1	11.3	4978
Higher		.4	3.5	4841	.7	5.2	3687	.7	6.2	4917
Wealth index quintile										
Poorest		4.9	29.1	4856	4.9	25.4	5533	4.6	28.5	14431
Second		4.2	24.2	4924	3.9	22.9	5323	3.7	23.2	12520
Middle		3.7	19.2	4529	3.5	20.2	4778	4.2	21.7	10770
Fourth		2.3	15.3	3952	3.1	16.4	4159	3.5	18.1	9546
Richest		.6	9.0	3284	1.4	9.3	3542	2.0	13.8	7766

6.5.2 Early childbearing

About 5.0% of girls aged 15–19 years of age had had a live birth at the time of the survey; 0.3% had had a live birth before reaching 15 years of age. Another 0.8% were pregnant at the time with their first baby. Thus, 5.8% of girls in this age group had begun childbearing.

Among girls and women aged 15–24, 25–29 and 30–49 years of age, the proportions of those who had had a live birth before reaching the age of 15 were 0.6%, 0.8% and 0.7% respectively. Early childbearing was more prevalent in rural areas than in urban areas. However, in ICT and GB, urban women were more likely to have had a live birth and to start childbearing aged 15–19 years, whereas no women in these areas had their first live birth before the age of 15. This may represent local demographics instead of true urban/ rural differentials.

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Having a baby before 15 years of age was most common in KP-NMD amongst girls and women aged 15–19 years (1.1%), 15–24 years (1.4%) and 25–29 years (1.5%). Urban areas of Balochistan (1.0%) also had a high proportion of early pregnancies amongst those aged 15–24 years. In the urban areas of GB (2.5%), KP (1.1%) and Sindh (1.0%) the greatest prevalence of early childbirth was reported by women aged 30–49 years.

Women who were not educated were more prone to start childbearing at an earlier age. Early childbearing was also more common among girls and women belonging to the poorest and second wealth index quintiles. A decreasing trend in early pregnancy was observed with increasing education and wealth index.

Table 6-30: Early childbearing

Percentage of women aged 15–19 years who have had a live birth, are pregnant with the first child, have begun childbearing, and who have had a live birth before age 15, and percentage of women aged 15–49 years who have had a live birth before age 15, Pakistan NNS 2018

		Percentage of women aged 15-19 years who:				Number of women aged 15-19 years	Percentage of women aged 15-24 years who have had a live birth before age 15	Number of women aged 15-24 years	Percentage of women aged 25-29 years who have had a live birth before age 15	Number of women aged 25-29 years	Percentage of women aged 30-49 years who have had a live birth before age 15	Number of women aged 30-49 years
		Have had a live birth	Are pregnant with first child	Have begun child bearing	Have had a live birth before age 15							
Total		5.0	0.8	5.8	0.3	23179	0.6	44724	0.8	23335	0.7	55033
Urban		4.0	0.6	4.6	0.2	7096	0.4	13662	0.7	7076	0.8	16629
Rural		5.5	0.9	6.5	0.4	16083	0.7	31062	0.9	16259	0.7	38404
Provision/ region												
Punjab	Urban	3.0	0.4	3.5	0.2	2785	0.4	5400	0.6	2829	0.5	6415
	Rural	4.3	0.7	5.0	0.3	6002	0.5	11225	0.7	5651	0.5	12889
	Total	3.8	0.6	4.4	0.3	8787	0.4	16625	0.6	8480	0.5	19304
Sindh	Urban	4.5	0.8	5.3	0.1	2184	0.4	4094	0.8	2124	1.0	5023
	Rural	5.5	0.7	6.2	0.4	1985	0.6	3612	0.4	1842	0.5	4282
	Total	5.0	0.8	5.7	0.2	4169	0.5	7706	0.6	3966	0.8	9305
KP	Urban	8.8	0.9	9.7	0.3	659	0.8	1231	1.0	609	1.1	1476
	Rural	9.5	2.4	11.9	0.7	2313	1.4	4528	2.2	2632	1.4	5634
	Total	9.3	2.1	11.4	0.6	2972	1.3	5759	2.0	3241	1.4	7110
Balochistan	Urban	4.8	0.6	5.4	0.6	875	1.0	1691	1.3	848	0.8	2086
	Rural	6.2	0.4	6.6	0.2	2683	0.7	5364	1.2	2865	0.7	7448
	Total	5.8	0.5	6.3	0.3	3558	0.8	7055	1.2	3713	0.8	9534
ICT	Urban	4.8	0.6	5.4	0.0	126	0.0	243	1.1	136	0.3	275
	Rural	3.2	1.6	4.8	0.0	147	0.0	317	2.5	143	1.0	359
	Total	4.0	1.1	5.1	0.0	273	0.0	560	1.7	279	0.7	634
KP-NMD	Total	18.8	0.6	19.3	1.1	381	1.4	917	1.5	819	1.0	1739
AJK	Urban	2.4	0.0	2.4	0.0	269	0.3	580	0.0	330	0.1	876
	Rural	3.8	0.3	4.1	0.0	1240	0.0	2551	0.0	1343	0.3	3549
	Total	3.6	0.3	3.9	0.0	1509	0.1	3131	0.0	1673	0.3	4425

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Percentage of women aged 15–19 years who have had a live birth, are pregnant with the first child, have begun childbearing, and who have had a live birth before age 15, and percentage of women aged 15–49 years who have had a live birth before age 15, Pakistan NNS 2018												
		Percentage of women aged 15-19 years who:				Number of women aged 15-19 years	Percentage of women aged 15-24 years who have had a live birth before age 15	Number of women aged 15-24 years	Percentage of women aged 25-29 years who have had a live birth before age 15	Number of women aged 25-29 years	Percentage of women aged 30-49 years who have had a live birth before age 15	Number of women aged 30-49 years
		Have had a live birth	Are pregnant with first child	Have begun child bearing	Have had a live birth before age 15							
GB	Urban	5.9	0.8	6.7	0.0	171	0.5	354	3.1	163	2.5	383
	Rural	4.8	0.9	5.7	0.1	1359	0.4	2617	1.1	1001	1.4	2599
	Total	5.0	0.9	5.9	0.0	1530	0.4	2971	1.6	1164	1.6	2982
Education												
None		9.5	1.2	10.7	0.7	8061	1.2	17211	1.4	12175	0.9	35481
Primary		5.5	0.9	6.4	0.1	2687	0.5	4816	0.4	2385	0.7	5457
Middle		3.7	0.7	4.3	0.3	3584	0.4	5757	0.4	2165	0.5	4200
Secondary		2.1	0.6	2.7	0.0	5204	0.1	8456	0.5	2923	0.3	4978
Higher		1.2	0.3	1.5	0.0	3643	0.1	8484	0.1	3687	0.1	4917
Wealth index quintile												
Poorest		7.0	0.9	7.9	0.7	5585	1.1	10441	1.2	5533	0.8	14431
Second		6.5	0.8	7.4	0.5	5629	0.8	10553	0.9	5323	0.9	12520
Middle		4.6	0.9	5.6	0.2	4901	0.6	9430	1.0	4778	0.9	10770
Fourth		4.3	1.0	5.3	0.1	4024	0.4	7976	0.8	4159	0.7	9546
Richest		2.6	0.3	2.9	0.0	3040	0.1	6324	0.4	3542	0.4	7766

6.5.3 Antenatal care

The NNS 2018 assessed antenatal coverage for women of reproductive age (15–49 years) who had had a live birth in the last two years and found that 63.4% had received antenatal care from a skilled provider (i.e. medical doctor or nurse/midwife) during pregnancy for the last birth, while 31.9% did not receive any antenatal care at all. Antenatal care was more commonly availed by urban women (77.3%) than those living in rural areas (62.8%).

Of the women who availed antenatal care, 53.9% had consulted gynaecologists. Other antenatal care providers included doctors other than gynaecologists (6.3%), community health workers (3.3%), nurses/midwives (3.2%) and traditional birth attendants (1.3%).

The highest proportions of women who received antenatal care from a skilled provider were found in ICT (87.9%), AJK (81.7%), GB (79.0%) and Punjab (68.0%). The lowest proportion was found in Balochistan (21.2%) where 74.2% of women did not receive any antenatal care at all. The majority of women who received antenatal care were from the urban areas of their respective provinces or regions. In urban ICT and GB over 80% of antenatal care consultations were provided by obstetricians and gynaecologists, and in AJK and Sindh the proportion exceeded 70%. Rural GB (10.5%) and Sindh (9.0%) had the greatest proportion of women who consulted other doctors while rural Balochistan (2.9%) and Punjab (1.9%) had the highest proportion who consulted traditional birth attendants.

Women aged 20–34 years of age at the time of delivery were more likely (65.3%) to receive antenatal care from a skilled provider, including gynaecologists (55.1%) or nurses/midwives (3.2%). A third of mothers under 20 years of age did not receive antenatal care (35.7%) or consulted community health workers (4.2%) or traditional birth attendants (1.6%).

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The vast majority of women with higher education (82.5%) consulted skilled providers including obstetricians and gynaecologists (75.3%), compared to 41.8% of women without education who were as likely to consult either a traditional birth attendant (1.9%) or receive no antenatal care (42.5%). Women belonging to the richest wealth index quintile were more likely to avail of antenatal care from skilled providers (82.3%) including gynaecologists (75.1%), while 53.6% of those from the poorest wealth index quintile received no antenatal care at all.

Almost 32% women received no antenatal care overall while among the rest of them who received antenatal care, private sector health facility was the most popular place followed by public sector (27.5%) and home (3.1%)

Table 6-31: Antenatal care coverage

Percent distribution of women aged 15–49 years with a live birth in the last two years by antenatal care provider during the pregnancy for the last birth, Pakistan NNS 2018																
		Provider of antenatal care							Place for antenatal care					Any skilled provider [1]	Number of women with a live birth in the last two years
		Gynaecologist	Other doctor	Nurse	Community health worker	Traditional birth attendant	Other/missing	No antenatal care	Public sector health facility	Private sector health facility	Home	Other	No antenatal care		
Total		53.9	6.3	3.2	3.3	1.3	0.1	31.9	27.5	37.4	3.1	0.1	31.9	64.5	23284
Urban		66.6	5.7	2.4	1.6	0.8	0.1	22.7	28.2	47.1	1.9	0.0	22.7	75.2	6734
Rural		46.6	6.7	3.6	4.3	1.6	0.1	37.2	27.1	31.8	3.8	0.1	37.2	58.3	16550
Province/ region															
Punjab	Urban	67.0	5.1	3.3	1.7	1.0	0.1	21.7	31.3	44.6	2.3	0.1	21.7	75.9	2723
	Rural	51.9	7.0	4.6	5.5	1.9	0.0	29.1	29.8	36.1	5.0	0.1	29.1	65.1	5795
	Total	57.5	6.3	4.2	4.1	1.6	0.1	26.3	30.4	39.3	3.9	0.1	26.3	69.1	8518
Sindh	Urban	71.8	6.9	1.2	0.8	0.3	0.2	18.8	23.1	57.2	0.9	0.0	18.8	79.9	1989
	Rural	44.0	9.0	2.7	0.7	1.1	0.1	42.3	21.9	33.9	1.7	0.1	42.3	55.8	2183
	Total	57.3	8.0	2.0	0.7	0.8	0.2	31.1	22.5	45.1	1.3	0.1	31.1	67.3	4172
KP	Urban	52.8	5.4	1.3	5.6	0.6	0.0	34.3	25.3	36.8	3.7	0.0	34.3	63.7	606
	Rural	42.9	4.3	1.4	5.4	0.7	0.1	45.2	27.4	24.9	2.1	0.3	45.2	51.8	2220
	Total	44.9	4.5	1.4	5.4	0.7	0.1	43.0	26.9	27.4	2.4	0.3	43.0	54.2	2826
Balochistan	Urban	27.6	4.8	2.7	1.5	1.8	0.0	61.6	18.0	17.3	3.2	0.0	61.6	35.4	764
	Rural	9.8	3.3	3.5	2.3	2.9	0.0	78.3	10.0	6.8	4.9	0.0	78.3	17.1	2930
	Total	14.2	3.7	3.3	2.1	2.6	0.0	74.2	11.9	9.4	4.5	0.0	74.2	21.6	3694
ICT	Urban	83.1	4.1	0.7	1.6	0.7	0.0	9.7	51.0	37.8	1.4	0.0	9.7	87.9	145
	Rural	82.7	9.4	0.9	0.0	0.0	0.0	7.0	44.2	48.1	0.8	0.0	7.0	93.0	145
	Total	82.9	6.5	0.8	0.8	0.4	0.0	8.5	47.9	42.5	1.1	0.0	8.5	90.3	290
KP-NMD	Total	25.6	5.0	4.1	10.9	1.5	1.2	51.7	28.1	13.7	6.4	0.2	51.7	37.7	703
AJK	Urban	78.8	2.8	0.3	1.6	0.1	0.0	16.5	41.6	41.2	0.7	0.1	16.5	82.0	314
	Rural	78.5	2.2	1.0	1.8	0.1	0.0	16.3	44.6	37.5	1.4	0.2	16.3	82.4	1358
	Total	78.5	2.3	0.9	1.8	0.1	0.0	16.3	44.2	38.0	1.3	0.2	16.3	82.3	1672
GB	Urban	81.2	3.3	2.1	4.8	0.0	0.0	8.6	49.7	40.2	1.5	0.0	8.6	87.3	157
	Rural	61.8	10.5	5.1	4.5	0.2	0.0	17.9	43.8	37.0	0.9	0.4	17.9	79.0	1252
	Total	65.2	9.2	4.6	4.6	0.1	0.0	16.3	44.9	37.6	1.0	0.3	16.3	80.4	1409

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Percent distribution of women aged 15–49 years with a live birth in the last two years by antenatal care provider during the pregnancy for the last birth, Pakistan NNS 2018

	Provider of antenatal care							Place for antenatal care						
	Gynaecologist	Other doctor	Nurse	Community health worker	Traditional birth attendant	Other/missing	No antenatal care	Public sector health facility	Private sector health facility	Home	Other	No antenatal care	Any skilled provider [1]	Number of women with a live birth in the last two years
Mother's age at birth														
Less than 20	46.5	8.4	3.6	4.2	1.6	0.1	35.7	28.4	32.0	3.6	0.4	35.7	60.0	846
20-34	55.1	6.1	3.2	3.3	1.4	0.1	31.0	28.2	37.7	3.1	0.0	31.0	65.4	12498
35-49	46.4	6.0	3.2	3.2	1.9	0.1	39.2	23.5	33.1	4.0	0.2	39.2	56.5	2921
Missing	54.9	6.6	3.2	3.3	1.0	0.1	30.9	27.6	38.6	2.9	0.1	30.9	65.7	7019
Education														
None	41.8	6.7	3.2	3.8	1.9	0.1	42.5	24.9	28.7	3.8	0.1	42.5	52.9	13157
Primary	58.5	6.6	3.8	4.2	1.1	0.1	25.6	31.0	39.4	3.9	0.1	25.6	70.3	2527
Middle	64.2	6.4	3.6	3.9	0.8	0.0	21.1	35.5	40.5	2.7	0.1	21.1	75.8	2170
Secondary	70.3	6.0	2.7	1.7	0.6	0.0	18.7	30.2	49.6	1.5	0.1	18.7	79.6	2642
Higher	75.3	4.6	2.6	1.6	0.2	0.0	15.6	25.8	57.0	1.5	0.1	15.6	83.1	2788
Wealth index quintile														
Poorest	31.6	6.7	2.7	3.2	1.9	0.2	53.6	20.5	22.4	3.5	0.1	53.6	42.1	6398
Second	42.2	6.8	4.0	4.8	2.0	0.1	40.0	26.5	29.1	4.4	0.1	40.0	54.5	5382
Middle	54.7	6.9	3.2	4.7	1.2	0.0	29.3	30.9	36.4	3.4	0.0	29.3	66.4	4569
Fourth	67.5	6.4	3.4	2.6	0.8	0.0	19.2	32.4	45.9	2.4	0.1	19.2	78.3	3985
Richest	75.1	4.7	2.5	1.1	0.5	0.1	16.1	27.2	54.8	1.8	0.1	16.1	82.6	2950

[1] Skilled providers include gynaecologists, medical doctors, nurses/midwives and LHVs

6.5.3.1 Number of antenatal care visits

WHO recommends expectant mothers receive at least eight antenatal care visits during pregnancy with the first visit during the first trimester. According to the data, 10.7% of women aged 15–49 years had eight or more antenatal care visits, 31.7% had four or more visits and 31.9% had no antenatal care visits. ICT (27.5%) had the highest proportion of women with eight or more antenatal care visits while Balochistan (0.4%) and KP-NMD (3.2%) had the lowest proportion. Across all provinces/regions urban women were more likely to have more antenatal care visits than their rural peers.

Women aged 20–34 years at the time of delivery (10.9%), those with higher education (23.2%) and those who belonged to the richest wealth index quintile (24.1%) were most likely to receive the full eight visits.

Table 6-32: Total number of antenatal care visits

Percent distribution of women aged 15–49 years with a live birth in the last two years by number of antenatal care visits by any provider and by the timing of first antenatal care visit, Pakistan NNS 2018									
		Percent distribution of women who had:						Eight or more visits	Number of women with a live birth in the last two years
		No antenatal care visits	One visit	Two visits	Three visits	Four or more visits	Missing/Don't know		
Total		31.9	4.7	9.9	10.4	31.7	11.4	10.7	23284
Urban		22.7	3.1	7.9	10.1	44.1	12.0	16.9	6734
Rural		37.2	5.5	11.1	10.6	24.5	11.0	7.1	16550
Province/ region									
Punjab	Urban	21.7	2.2	7.0	9.7	44.1	15.3	15.6	2723
	Rural	29.1	4.3	11.2	11.8	30.4	13.2	9.2	5795
	Total	26.3	3.5	9.6	11.0	35.5	14.0	11.6	8518
Sindh	Urban	18.8	4.5	9.0	10.5	50.6	6.5	22.5	1989
	Rural	42.3	9.2	13.6	9.6	18.9	6.4	5.6	2183
	Total	31.1	6.9	11.4	10.1	34.1	6.4	13.7	4172
KP	Urban	34.3	3.7	10.9	11.7	29.1	10.3	7.5	606
	Rural	45.2	6.1	9.6	9.5	18.3	11.3	4.7	2220
	Total	43.0	5.6	9.9	10.0	20.5	11.1	5.2	2826
Balochistan	Urban	61.6	3.5	9.2	8.0	6.3	11.4	.7	764
	Rural	78.3	3.3	3.8	2.9	2.6	9.1	.3	2930
	Total	74.2	3.4	5.2	4.1	3.5	9.6	.4	3694
ICT	Urban	9.7	2.6	3.1	6.3	56.7	21.5	23.9	145
	Rural	7.0	1.8	4.0	6.7	75.8	4.7	31.9	145
	Total	8.5	2.3	3.5	6.5	65.4	13.8	27.5	290
KP-NMD	Total	51.7	3.0	8.9	9.8	10.2	16.4	3.2	703
AJK	Urban	16.5	1.3	7.7	16.0	47.8	10.7	12.2	314
	Rural	16.3	6.2	16.1	19.4	35.9	6.1	4.4	1358
	Total	16.3	5.6	15.0	18.9	37.4	6.7	5.4	1672
GB	Urban	8.6	4.6	17.4	23.2	46.2	.0	8.3	157
	Rural	17.9	13.2	21.1	16.8	29.7	1.3	8.7	1252
	Total	16.3	11.7	20.4	17.9	32.6	1.1	8.6	1409
Mother's age at birth									
Less than 20		35.7	5.9	13.6	12.0	24.2	8.7	6.6	846
20-34		31.0	5.0	10.0	10.6	33.4	10.0	10.9	12498
35-49		39.2	5.1	11.1	10.4	24.4	9.7	7.3	2921
Missing		30.9	4.0	9.2	10.0	32.1	13.8	11.7	7019

Percent distribution of women aged 15–49 years with a live birth in the last two years by number of antenatal care visits by any provider and by the timing of first antenatal care visit, Pakistan NNS 2018								
	Percent distribution of women who had:						Eight or more visits	Number of women with a live birth in the last two years
	No antenatal care visits	One visit	Two visits	Three visits	Four or more visits	Missing/Don't know		
Education								
None	42.5	6.1	11.5	10.2	19.9	9.8	5.5	13157
Primary	25.6	4.2	10.5	12.4	34.4	12.9	10.0	2527
Middle	21.1	3.2	8.6	11.3	41.3	14.5	14.0	2170
Secondary	18.7	2.7	7.9	9.7	49.3	11.7	18.0	2642
Higher	15.6	2.0	6.0	9.3	53.2	14.0	23.2	2788
Wealth index quintile								
Poorest	53.6	7.8	11.8	8.6	10.8	7.4	2.8	6398
Second	40.0	5.9	11.6	10.5	20.7	11.3	5.4	5382
Middle	29.3	4.5	11.6	12.0	30.9	11.6	8.4	4569
Fourth	19.2	3.4	8.0	12.2	44.7	12.5	14.1	3985
Richest	16.1	1.3	6.2	8.5	53.3	14.5	24.1	2950

6.5.3.2 *Timing of the first antenatal care visit*

More than half of women who had a live birth in the two years preceding the survey (39.9%) were in their first trimester at the time of their first antenatal care visit, and another 8.6% received it between 4–5 months of gestation. Urban women (49.2%) was more likely to have ANC visits initiated in the first trimester as compared to rural (34.5%). The highest proportion of women who had their first antenatal visit in the first trimester were found in ICT (61.2%) followed by AJK (54.6%). In contrast, women in GB (5.3%) and Sindh (4.6%) were most likely to have the first antenatal care visit very late (8+ months) in their pregnancies.

Women aged 20–34 years (41.9%), who had higher education (58.0%) and those who were from the richest wealth index quintile (57.5%) were more likely to have their first antenatal care visit in the first trimester.

Table 6-33: Timing of the first antenatal care visit

Percent distribution of women aged 15–49 years with a live birth in the last two years, by number of months pregnant at the time of the first antenatal care visit, Pakistan NNS 2018										
		Percent distribution of women by number of months pregnant at the time of first antenatal care visit						Number of women with a live birth in the last two years	Median months pregnant at first ANC visit	Number of women with a live birth in the last two years who had at least one ANC visit
		No antenatal care visits	First trimester	4-5 months	6-7 months	8+ months	DK/Missing			
Total		31.9	39.9	8.6	3.6	3.3	12.7	23284	2.0	11719
Urban		22.7	49.2	8.2	3.4	3.6	12.8	6734	2.0	3971
Rural		37.2	34.5	8.8	3.7	3.2	12.6	16550	3.0	7748
Province/ region										
Punjab	Urban	21.7	52.3	6.8	2.3	3.4	13.4	2723	2.0	1687
	Rural	29.1	41.3	8.7	3.0	2.9	15.0	5795	2.0	3213
	Total	26.3	45.4	8.0	2.7	3.1	14.4	8518	2.0	4900
Sindh	Urban	18.8	50.5	10.1	5.6	4.1	10.9	1989	2.0	1361
	Rural	42.3	29.2	9.9	6.8	5.2	6.6	2183	3.0	1131
	Total	31.1	39.4	10.0	6.2	4.6	8.7	4172	3.0	2492
KP	Urban	34.3	29.3	12.6	3.6	4.8	15.2	606	3.0	275
	Rural	45.2	25.7	10.0	2.6	2.9	13.6	2220	3.0	802
	Total	43.0	26.5	10.5	2.8	3.3	13.9	2826	3.0	1077
Balochistan	Urban	61.6	17.7	3.4	.7	3.3	13.3	764	2.0	171
	Rural	78.3	8.1	1.9	.9	1.0	9.8	2930	2.0	356
	Total	74.2	10.5	2.3	.9	1.5	10.6	3694	2.0	527
ICT	Urban	9.7	59.8	7.7	.7	1.9	20.2	145	2.0	100
	Rural	7.0	63.0	6.9	8.8	.9	13.5	145	2.0	119
	Total	8.5	61.2	7.3	4.4	1.4	17.2	290	2.0	219
KP-NMD	Total	51.7	19.2	5.4	1.0	1.1	21.6	703	3.0	185
AJK	Urban	16.5	63.0	9.5	2.5	.1	8.3	314	2.0	231
	Rural	16.3	53.3	14.1	6.5	1.8	8.0	1358	3.0	990
	Total	16.3	54.6	13.5	6.0	1.6	8.1	1672	3.0	1221
GB	Urban	8.6	61.0	15.7	7.1	2.2	5.3	157	2.0	134
	Rural	17.9	38.9	18.5	14.2	5.9	4.7	1252	3.0	964
	Total	16.3	42.7	18.0	12.9	5.3	4.8	1409	3.0	1098
Mother's age at birth										
Less than 20		35.7	38.1	9.1	3.0	3.2	11.0	846	3.0	402
20-34		31.0	41.9	8.5	3.9	3.1	11.7	12498	2.0	6572
35-49		39.2	34.9	8.9	3.5	3.4	10.1	2921	3.0	1289
Missing		30.9	38.8	8.5	3.3	3.7	14.8	7019	2.0	3456

Percent distribution of women aged 15–49 years with a live birth in the last two years, by number of months pregnant at the time of the first antenatal care visit, Pakistan NNS 2018									
	Percent distribution of women by number of months pregnant at the time of first antenatal care visit						Number of women with a live birth in the last two years	Median months pregnant at first ANC visit	Number of women with a live birth in the last two years who had at least one ANC visit
	No antenatal care visits	First trimester	4-5 months	6-7 months	8+ months	DK/Missing			
Education									
None	42.5	29.4	8.7	4.2	3.4	11.8	13157	3.0	5085
Primary	25.6	44.7	9.5	4.3	2.7	13.3	2527	2.0	1533
Middle	21.1	48.5	9.4	2.7	4.4	13.9	2170	2.0	1367
Secondary	18.7	54.0	8.5	3.1	2.9	12.8	2642	2.0	1799
Higher	15.6	58.0	6.3	1.8	3.5	14.8	2788	2.0	1935
Wealth index quintile									
Poorest	53.6	20.4	8.4	5.1	4.3	8.2	6398	3.0	2017
Second	40.0	31.3	9.0	3.8	2.9	13.0	5382	3.0	2530
Middle	29.3	40.8	9.3	3.9	3.2	13.6	4569	2.0	2641
Fourth	19.2	50.9	9.5	3.1	2.4	14.9	3985	2.0	2544
Richest	16.1	57.5	6.3	2.1	4.0	14.0	2950	2.0	1987

6.5.3.3 *Content of antenatal care*

We attempted to define the content of antenatal care provided to women, to understand if nutrition-specific interventions were being implemented. Care provided to women during antenatal care visits included measurement of weight (41.4%) and blood pressure (51.4%); sampling of urine (39.4%) and blood (37.4%); and ultrasound (52.9%). Some of these components were delivered together: for 29.3% of pregnant women, blood pressure, urine and blood samples were all taken.

All components were most commonly provided during antenatal visits to women in AJK (54.6%), ICT (54.3%) and GB (48.4%). Ultrasound examinations were most frequently performed in ICT (72.9%), GB (70.4%) and AJK (66.4%).

We assessed ANC visits and content with an eye to nutrition-relevant interventions. Counselling on nutrition (15.1%), breastfeeding (7.4%) and family planning (4.5%) was provided to a minority of women. Counselling on nutrition and breastfeeding was most commonly provided in ICT (nutrition: 26.2%; breastfeeding: 15.0%) and AJK (nutrition: 22.4%; breastfeeding: 10.5%), and family planning in ICT (7.4%) and Punjab (5.2%). At least one component of antenatal care – tests, ultrasound or counselling – was relatively higher in urban areas of all provinces and regions compared to rural areas.

Women who were aged 20–34 years at the time of delivery were more likely to receive antenatal care components including weight measurement (42.4%), blood pressure monitoring (52.8%), urine testing (40.2%), blood testing (38.6%) and ultrasound examination (54.6%). They were also more likely to receive counselling on nutrition (16.8%), breastfeeding (8.0%) and family planning (4.5%). All antenatal care components were much more commonly provided to women who had higher education and who belonged to the richest wealth index quintile.

Table 6-34: Content of antenatal care

Percentage of women aged 15–49 years with a live birth in the last two years who, at least once, had their blood pressure measured, urine sample taken, and blood sample taken as part of antenatal care, during the pregnancy for the last birth, Pakistan NNS 2018											
		Percentage of women who, during the pregnancy of their last birth, had:						Percentage of women who, during the pregnancy of their last birth, received counselling on:			Number of women with a live birth in the last two years
		Weight measured	Blood pressure measured	Urine sample taken	Blood sample taken	Ultrasound done	Blood pressure measured, urine and blood sample taken	Nutrition/dietary intake during pregnancy	Breastfeeding	Family planning	
Total		41.4	51.4	39.4	37.4	52.9	29.3	15.1	7.4	4.5	23284
Urban		53.7	62.5	51.9	50.4	62.7	41.9	21.0	10.9	6.0	6734
Rural		34.3	45.0	32.1	29.9	47.2	22.1	11.7	5.4	3.6	16550
Province/ region											
Punjab	Urban	53.5	61.9	49.1	48.5	65.3	39.7	20.6	10.6	5.3	2723
	Rural	39.8	50.4	35.7	33.7	55.5	24.6	14.6	7.2	5.1	5795
	Total	44.9	54.7	40.7	39.3	59.2	30.3	16.8	8.5	5.2	8518
Sindh	Urban	59.0	67.9	60.7	58.7	64.5	49.9	23.9	12.7	7.7	1989
	Rural	28.1	40.2	25.2	24.1	41.8	16.2	8.1	2.5	1.6	2183
	Total	42.9	53.5	42.2	40.6	52.6	32.3	15.7	7.4	4.5	4172
KP	Urban	38.9	53.5	42.2	38.7	52.0	31.8	12.3	6.3	4.2	606
	Rural	28.5	41.7	32.3	29.3	38.8	22.9	7.0	2.7	2.0	2220
	Total	30.6	44.2	34.4	31.2	41.6	24.7	8.1	3.4	2.4	2826
Balochistan	Urban	22.2	26.6	20.0	14.9	21.8	10.0	12.4	8.0	4.2	764
	Rural	11.7	13.6	10.0	5.6	10.2	4.4	4.3	2.0	.2	2930
	Total	14.3	16.8	12.4	7.9	13.0	5.8	6.3	3.4	1.2	3694
ICT	Urban	78.2	77.8	65.0	59.8	69.1	53.4	25.1	10.7	6.5	145
	Rural	75.9	81.8	70.9	63.5	77.5	55.3	27.4	20.1	8.4	145
	Total	77.2	79.7	67.7	61.5	72.9	54.3	26.2	15.0	7.4	290
KP-NMD	Total	26.3	30.6	20.0	16.9	25.7	12.2	7.8	3.5	3.8	703
AJK	Urban	63.7	74.8	68.9	70.3	65.5	62.1	22.9	14.1	7.5	314
	Rural	56.0	71.1	66.2	61.9	66.5	53.5	22.3	10.0	3.1	1358
	Total	57.0	71.6	66.5	63.0	66.4	54.6	22.4	10.5	3.7	1672
GB	Urban	44.3	76.6	73.3	70.1	73.1	56.2	17.5	5.9	1.4	157
	Rural	38.2	64.4	57.3	59.7	69.8	46.8	20.1	9.5	5.6	1252
	Total	39.2	66.5	60.1	61.5	70.4	48.4	19.7	8.9	4.9	1409
Mother's age at birth											
Less than 20		35.3	47.1	30.6	29.4	50.2	22.6	14.4	5.6	3.2	846
20-34		42.4	52.8	40.2	38.6	54.6	30.6	16.8	8.0	4.5	12498
35-49		36.3	44.7	32.4	31.3	46.0	24.5	13.9	6.8	4.3	2921
Missing		42.0	51.8	40.8	38.2	52.8	29.5	13.2	6.9	4.6	7019

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Percentage of women aged 15–49 years with a live birth in the last two years who, at least once, had their blood pressure measured, urine sample taken, and blood sample taken as part of antenatal care, during the pregnancy for the last birth, Pakistan NNS 2018										
	Percentage of women who, during the pregnancy of their last birth, had:						Percentage of women who, during the pregnancy of their last birth, received counselling on:			Number of women with a live birth in the last two years
	Weight measured	Blood pressure measured	Urine sample taken	Blood sample taken	Ultrasound done	Blood pressure measured, urine and blood sample taken	Nutrition/dietary intake during pregnancy	Breastfeeding	Family planning	
Education										
None	29.5	39.4	28.2	25.8	41.6	19.1	9.7	3.9	2.6	13157
Primary	43.4	56.3	42.0	39.2	59.7	31.0	15.7	8.6	5.3	2527
Middle	51.3	61.8	48.3	45.3	61.6	36.6	19.6	9.8	6.1	2170
Secondary	58.4	67.2	55.1	55.5	68.4	44.4	21.8	10.4	6.1	2642
Higher	64.3	72.7	60.5	60.1	71.1	49.7	27.0	15.8	8.3	2788
Wealth index quintile										
Poorest	18.6	28.1	16.3	15.5	32.1	9.4	6.2	2.2	1.6	6398
Second	30.2	41.1	28.7	25.5	43.4	18.3	11.3	4.8	2.9	5382
Middle	40.9	52.9	41.0	38.8	54.1	30.0	14.3	6.7	4.7	4569
Fourth	54.9	65.3	51.6	50.2	66.0	40.5	18.2	9.5	5.7	3985
Richest	64.5	71.3	61.1	59.0	70.3	50.3	26.6	14.4	7.7	2950

6.5.4 Tetanus vaccination, deworming and night blindness during pregnancy

Around 41.3% of women did not receive a single dose of tetanus vaccination during their last pregnancy, with higher proportions amongst women aged 30–49 years (44.0%) or those who lived in rural areas (45.8%). Women who lived in Balochistan (85.0%) and KP-NMD (72.4%) were least likely to receive a tetanus injection.

A slightly lower proportion of women received two doses (40.3%); 14.0% received three or more and 4.4% received a single dose (4.4%). Tetanus was more commonly provided to women who were 15–29 years of age at time of delivery and those living in urban areas. Receiving one shot was most common in ICT (10.1%), two in Punjab (49.9%) and three or more in GB (31.9%). Mothers in the 35–49 age group, those who were not educated and belonged to the poorest wealth index quintile, were less likely to receive tetanus vaccinations in comparison to those who received at least two doses, who were more commonly found amongst those aged 20–34 years (41.2%), had higher education (51.5%) or belonged to the richest wealth index quintile (53.6%).

The percentage of women who took deworming medication during their last pregnancy was 5.2%, while 7.7% reported night blindness. No age differences were found among those who took deworming tablets, which were more commonly provided in rural settings (5.9%). Deworming medication was taken more often in AJK (7.2%) and KP-NMD (5.5%), and more commonly by women who were highly educated (5.8%) or belonged to the richest wealth index quintile (5.9%). Night blindness was more common in women aged 30–49 years (8.0%) and rural residents (8.1%). It was more prevalent in GB (16.5%) and Sindh (13.3%), in women with no education (9.3%) and those who belonged to the poorest wealth quintile (12.4%).

Table 6-35: Tetanus injection, night blindness and deworming medication during pregnancy

Percent distribution of women aged 15–49 years with a live birth in the last two years who received tetanus injection, took deworming medication and reported night blindness during the pregnancy of the last child, Pakistan NNS 2018								
		Percentage of women who received tetanus injection during last pregnancy				Women who took deworming medication during last pregnancy (%)	Women who reported night blindness during last pregnancy (%)	Number of women
		None	One	Two	Three or more			
Total		41.3	4.4	40.3	14.0	5.2	7.7	23284
Urban		33.4	4.9	47.4	14.3	4.1	6.1	6734
Rural		45.8	4.1	36.3	13.8	5.9	8.7	16550
Province/ region								
Punjab	Urban	29.8	3.7	54.7	11.9	4.4	3.6	2723
	Rural	35.9	3.1	47.0	14.0	6.5	5.6	5795
	Total	33.6	3.3	49.9	13.2	5.7	4.9	8518
Sindh	Urban	32.6	6.4	43.6	17.4	3.6	10.3	1989
	Rural	49.7	5.7	29.4	15.2	6.3	16.0	2183
	Total	41.5	6.1	36.2	16.3	5.0	13.3	4172
KP	Urban	42.5	3.1	31.8	22.6	3.5	7.7	606
	Rural	55.6	5.5	25.1	13.7	4.3	9.4	2220
	Total	52.9	5.0	26.5	15.5	4.1	9.0	2826
Balochistan	Urban	73.8	8.5	10.3	7.4	2.7	3.6	764
	Rural	88.6	3.5	5.1	2.8	4.4	6.3	2930
	Total	85.0	4.7	6.3	3.9	4.0	5.6	3694
ICT	Urban	47.6	9.1	32.0	11.4	3.3	3.1	145
	Rural	31.5	11.3	39.0	18.2	.5	10.6	145
	Total	40.3	10.1	35.2	14.5	2.0	6.5	290
KP-NMD	Total	72.4	2.6	15.2	9.8	5.5	9.3	703
AJK	Urban	36.2	7.0	26.8	30.0	4.2	5.9	314
	Rural	38.2	5.4	31.1	25.2	7.7	13.4	1358
	Total	38.0	5.6	30.5	25.8	7.2	12.5	1672
GB	Urban	41.8	6.8	18.1	33.3	.8	16.0	157
	Rural	38.7	6.4	23.2	31.6	2.7	16.6	1252
	Total	39.3	6.5	22.3	31.9	2.4	16.5	1409
Mother's age at birth								
Less than 20		43.2	6.0	35.3	15.5	5.6	6.1	846
20-34		38.8	4.9	42.6	13.7	5.5	7.4	12498
35-49		45.6	4.4	36.0	14.0	5.9	8.3	2921
Missing		43.2	3.6	39.0	14.2	4.7	8.2	7019

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Percent distribution of women aged 15–49 years with a live birth in the last two years who received tetanus injection, took deworming medication and reported night blindness during the pregnancy of the last child, Pakistan NNS 2018							
	Percentage of women who received tetanus injection during last pregnancy				Women who took deworming medication during last pregnancy (%)	Women who reported night blindness during last pregnancy (%)	Number of women
	None	One	Two	Three or more			
Education							
None	50.6	4.5	32.5	12.5	5.3	9.3	13157
Primary	36.1	4.2	44.3	15.5	4.7	6.6	2527
Middle	30.7	4.2	48.6	16.5	5.5	5.9	2170
Secondary	28.7	4.4	51.2	15.6	4.7	6.0	2642
Higher	28.8	4.4	51.5	15.3	5.8	5.9	2788
Wealth index quintile							
Poorest	59.7	4.9	24.7	10.7	5.6	12.4	6398
Second	48.6	4.0	33.6	13.8	5.7	8.1	5382
Middle	39.0	4.1	41.2	15.6	4.8	6.8	4569
Fourth	30.0	4.7	49.5	15.7	4.3	6.4	3985
Richest	28.0	4.2	53.6	14.1	5.9	4.6	2950

6.5.5 Iron folic acid intake during pregnancy

About 33.4% women received iron folic acid during pregnancy, with the majority receiving it from gynaecologists (76.1%) in urban areas (42.1%), followed by other doctors (8.6%), LHW (6.5%), nurses (3.6%), LHV (2.2%), CHW (1.3%), CMW (0.7%) and traditional birth attendants (0.7%). Women aged 15–29 years were more likely to receive supplements from skilled health providers. Skilled health providers are competent maternal and newborn health professionals who are educated, trained and regulated to national and international standards. As individuals, skilled health professionals are a part of an integrated team of maternal and newborn health professionals; these include midwives, nurses, obstetricians, paediatricians, and anaesthetists. Among those who received iron folic acid, more than half obtained it from private sector providers (51.9%). ICT (66.1%) and GB (54.2%) had greatest proportion of women who took iron folic acid, and in AJK almost 89.4% of iron folic acid supplements were prescribed by gynaecologists.

A large proportion of women (65.0%) consumed iron folic acid on a daily basis while 8.2% used it once a week and 6.3% monthly. As reported by those who received iron folic acid, 66.7% did not take the supplement, 6.1% took it for less than 60 days, 5.1% for 60–89 days and 22.2% for 90 days or more. Highest compliance with the recommendation to take daily iron folic acid for 90 days or more occurred in ICT (56.3%) followed by AJK (31.1%). Women in GB were more likely to receive iron folic acid from private sector providers (69.9%) while in KP-NMD, it was more likely to be provided by public sector providers (55.1%).

Among mothers aged 20–34 years at time of delivery, some 34.5% received iron folic acid, with higher coverage among those with higher education (52.0%), and belonging to the richest wealth index quintile (48.3%). Mothers in this age group were also more likely to take it daily (64.2%). Women who were not educated or only had primary education, or who belonged to the poorest wealth index quintile, were more likely to be provided iron folic acid by unskilled providers, and to consume it irregularly.

Table 6-36: Iron folic acid intake during pregnancy

Percent distribution of women aged 15–49 years with a live birth in the last two years who received iron folic acid during pregnancy with the last child, Pakistan NNS 2018																							
		Percent distribution of women who received IFA during pregnancy of last birth	Percent distribution of who advised taking IFA during pregnancy of last birth									Percent distribution of source for IFA during last pregnancy			Percent distribution of frequency of IFA intake during last pregnancy					Number of days woman took IFA during last pregnancy				Number of women
			Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
Total		33.4	76.1	8.6	3.6	1.3	6.5	.7	2.2	.7	.3	36.5	51.9	11.6	65.0	8.2	5.4	6.3	15.1	66.7	6.1	5.1	22.2	23284
Urban		42.1	84.0	7.7	2.7	.6	2.8	.4	1.2	.4	.2	28.8	59.9	11.3	69.1	7.6	5.4	4.8	13.1	58.0	6.2	5.1	30.6	6734
Rural		28.4	69.3	9.4	4.4	1.9	9.7	.9	3.2	.9	.3	43.1	45.0	11.9	61.4	8.7	5.4	7.7	16.8	71.7	6.0	5.0	17.3	16550
Province/ region																								
Punjab	Urban	36.5	82.8	7.2	3.2	.7	4.3	.4	.9	.4	.0	35.0	52.1	12.9	61.7	8.6	7.6	5.6	16.5	63.5	5.5	5.4	25.7	2723
	Rural	28.5	64.4	9.9	5.1	2.1	14.2	.6	3.0	.6	.1	46.4	41.3	12.3	54.8	9.7	6.8	9.1	19.6	71.6	5.7	5.4	17.3	5795
	Total	31.5	72.4	8.8	4.3	1.5	9.9	.5	2.1	.5	.0	41.5	46.0	12.6	57.8	9.3	7.1	7.6	18.3	68.6	5.6	5.4	20.4	8518
Sindh	Urban	50.5	88.6	6.8	2.0	.3	1.1	.1	.4	.3	.4	20.8	71.4	7.8	78.4	7.1	2.5	2.9	9.2	49.6	8.0	4.6	37.7	1989
	Rural	25.6	77.5	8.8	3.8	1.5	4.7	.7	1.4	.7	.9	37.8	52.9	9.3	72.6	8.8	3.8	5.0	9.9	74.4	7.8	4.2	13.5	2183
	Total	37.5	84.7	7.5	2.7	.8	2.4	.3	.8	.4	.5	26.8	64.8	8.3	76.3	7.7	3.0	3.6	9.4	62.6	7.9	4.4	25.1	4172
KP	Urban	48.0	75.8	9.5	2.1	.4	1.8	.5	7.7	.8	1.4	27.5	48.5	24.0	75.0	5.5	4.0	5.2	10.3	52.6	4.9	6.1	36.4	606
	Rural	35.8	75.0	9.5	1.6	1.4	3.1	.6	6.3	2.1	.4	40.8	40.9	18.3	70.9	5.7	2.8	5.9	14.8	64.3	5.2	5.4	25.2	2220
	Total	38.3	75.2	9.5	1.7	1.2	2.8	.5	6.7	1.8	.6	37.3	42.9	19.8	71.9	5.6	3.1	5.7	13.6	61.8	5.1	5.6	27.5	2826
Balochistan	Urban	28.0	53.6	25.8	5.2	1.9	6.8	5.1	1.6	.0	.0	29.2	59.9	11.0	44.9	6.1	8.9	18.1	22.0	72.4	4.3	4.4	18.9	764
	Rural	9.7	51.8	16.6	10.4	3.2	6.8	7.0	1.9	1.8	.6	47.3	45.2	7.5	49.6	13.4	10.2	3.7	23.1	90.4	2.1	2.6	4.9	2930
	Total	14.2	52.6	21.1	7.9	2.6	6.8	6.1	1.7	.9	.3	38.5	52.3	9.2	47.3	9.9	9.6	10.7	22.6	86.0	2.6	3.1	8.3	3694
ICT	Urban	63.0	84.7	10.4	3.1	.0	.0	.0	.9	.9	.0	45.0	50.4	4.6	71.1	5.3	11	.9	11.7	37.0	3.5	5.9	53.6	145
	Rural	69.9	87.4	7.3	4.7	.0	.6	.0	.0	.0	.0	44.6	50.5	4.8	84.0	1.8	1.1	1.9	11.3	30.1	6.0	4.3	59.6	145
	Total	66.1	86.0	8.9	3.9	.0	.3	.0	.5	.5	.0	44.8	50.4	4.7	77.3	3.6	6.2	1.4	11.5	33.9	4.6	5.2	56.3	290
KP - NMD	Total	26.4	50.0	6.3	6.7	5.6	14.6	7.0	6.8	2.8	.3	55.1	40.2	4.6	37.3	7.1	6.9	13.5	35.3	74.7	4.9	5.5	14.9	703

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Percent distribution of women aged 15–49 years with a live birth in the last two years who received iron folic acid during pregnancy with the last child, Pakistan NNS 2018

		Percent distribution of women who received IFA during pregnancy of last birth	Percent distribution of who advised taking IFA during pregnancy of last birth									Percent distribution of source for IFA during last pregnancy			Percent distribution of frequency of IFA intake during last pregnancy					Number of days woman took IFA during last pregnancy				Number of women
			Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
AJK	Urban	56.8	88.8	2.7	.6	.9	5.2	.0	.2	1.6	.0	20.7	73.9	5.4	68.9	3.9	5.6	14.2	7.4	43.2	5.7	4.6	46.5	314
	Rural	45.2	89.5	2.5	1.2	1.2	3.5	.5	.8	.3	.3	28.2	68.3	3.5	64.3	8.5	4.7	10.9	11.6	55.1	9.0	7.0	28.9	1358
	Total	46.7	89.4	2.6	1.1	1.2	3.8	.5	.7	.5	.2	27.0	69.2	3.8	65.0	7.8	4.9	11.4	10.9	53.6	8.6	6.7	31.1	1672
GB	Urban	62.4	86.0	4.1	4.2	.0	.0	5.0	.6	.0	.0	20.0	77.3	2.7	82.9	.0	1.3	.6	15.1	37.6	14.1	9.3	39.0	157
	Rural	52.4	64.1	10.8	12.6	1.4	6.3	1.9	2.4	.0	.5	28.1	68.1	3.9	81.1	5.2	1.5	4.5	7.7	47.8	15.7	8.6	28.0	1252
	Total	54.2	68.5	9.5	10.9	1.1	5.0	2.5	2.0	.0	.4	26.4	69.9	3.6	81.4	4.2	1.5	3.7	9.2	46.0	15.4	8.7	29.9	1409
Woman's age																								
15-29 years		34.7	76.1	8.8	3.7	1.1	6.2	.7	2.5	.5	.3	36.1	52.9	11.0	65.2	7.9	5.6	6.5	14.8	65.3	6.0	5.2	23.5	13689
30-49 years		31.4	76.0	8.2	3.6	1.5	7.1	.7	1.7	.9	.2	37.3	50.2	12.6	64.6	8.6	5.0	6.1	15.7	68.8	6.1	4.9	20.2	9595
Mother's age at birth																								
Less than 20		30.8	63.8	13.5	4.4	.8	9.4	1.9	3.4	.3	2.5	43.4	45.9	10.8	64.2	8.6	5.6	4.9	16.7	69.2	5.9	5.8	19.1	846
20-34		34.5	77.9	7.4	3.0	1.2	6.7	.8	2.0	.7	.2	35.8	53.9	10.3	64.2	7.9	5.2	6.8	15.9	65.5	6.0	5.1	23.3	12498
35-49		29.9	74.6	5.7	3.9	2.4	9.8	.8	1.9	.3	.5	41.3	47.7	11.1	63.9	8.6	4.1	6.4	17.0	70.3	6.5	4.7	18.5	2921
Missing		33.2	75.0	10.5	4.4	1.1	5.2	.4	2.5	.7	.1	35.9	50.6	13.5	66.3	8.4	6.0	5.8	13.6	67.0	6.1	5.1	21.9	7019
Education																								
None		25.6	69.4	10.0	4.6	1.7	8.7	1.1	3.1	1.0	.5	43.1	44.9	12.0	62.5	9.0	5.6	6.8	16.1	74.6	5.7	4.3	15.4	13157
Primary		33.6	72.8	8.2	4.8	1.6	9.0	.8	2.5	.3	.0	40.0	48.4	11.6	62.3	9.1	6.7	5.3	16.6	66.4	7.2	5.3	21.1	2527
Middle		38.5	75.2	8.7	2.9	.8	7.7	.7	2.6	1.4	.0	39.7	49.0	11.3	65.1	6.8	7.9	5.6	14.6	61.6	5.8	6.3	26.4	2170
Secondary		43.2	84.2	7.4	2.0	.7	3.3	.5	1.2	.4	.2	28.8	61.4	9.9	67.2	6.4	3.6	6.6	16.1	56.8	6.6	5.6	31.0	2642
Higher		52.0	85.7	6.9	2.7	.9	2.5	.0	1.0	.1	.3	25.4	62.2	12.4	69.7	8.2	4.2	6.2	11.8	48.0	6.0	6.8	39.2	2788

Percent distribution of women aged 15–49 years with a live birth in the last two years who received iron folic acid during pregnancy with the last child, Pakistan NNS 2018																						
	Percent distribution of women who received IFA during pregnancy of last birth	Percent distribution of who advised taking IFA during pregnancy of last birth									Percent distribution of source for IFA during last pregnancy			Percent distribution of frequency of IFA intake during last pregnancy					Number of days woman took IFA during last pregnancy				Number of women
		Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
Wealth Index quintile																						
Poorest	18.8	66.3	10.7	4.9	2.6	8.8	1.8	3.1	1.1	.6	45.9	42.8	11.3	61.4	8.8	5.7	7.4	16.7	81.3	5.5	3.4	9.8	6398
Second	25.5	63.8	11.1	4.6	2.7	10.1	1.6	3.8	2.0	.4	43.6	46.2	10.2	61.1	7.3	5.7	8.5	17.4	74.6	5.5	4.8	15.1	5382
Middle	34.2	70.6	8.5	4.9	1.6	9.5	.7	3.3	.5	.3	41.0	47.9	11.2	63.1	8.9	4.7	6.3	16.9	66.0	6.8	5.3	22.0	4569
Fourth	41.6	80.6	8.4	2.9	.6	4.8	.4	1.6	.3	.3	33.9	54.2	11.9	66.0	8.0	4.9	6.3	14.8	58.5	6.9	6.4	28.2	3985
Richest	48.3	87.2	6.5	2.1	.3	2.7	.1	.8	.2	.0	27.5	59.9	12.6	69.1	8.1	6.2	4.6	12.0	51.7	5.4	5.6	37.2	2950

6.5.6 Multiple micronutrient intake during pregnancy

Only 6.2% of women with a live birth in the two years preceding the survey received multiple micronutrient tablets during their last pregnancy. Intake was more prevalent among women aged 15–29 years (6.4%) and those living in urban settings (7.8%). When taken, these were more often prescribed by obstetricians or gynaecologists, i.e. 78.0% overall and 82.8% in urban areas. About half of women who received these supplements (54.0%), consumed them daily, i.e. more commonly than iron folic acid.

GB (19.2%) had the greatest proportion of women receiving multiple micronutrient tablets, followed by ICT (14.3%). The majority of women from GB received these from private sector providers (74.0%) while in KP public sector providers were more common (48.1%). The highest level of reported compliance for daily intake of multiple micronutrient tablets was seen in GB (72.7%) while women from ICT were most likely to take them for 90 days or more (11.1%).

Among those consuming multiple micronutrient tablets, women aged 20–34 years at time of delivery were more likely to get these from gynaecologists (81.4%) whereas women aged 30–34 years were more likely to take them daily (54.9%).

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Table 6-37: Multiple micronutrient intake during pregnancy

Percent distribution of women aged 15–49 years with a live birth in the last two years who received multiple micronutrients during pregnancy with the last child, Pakistan NNS 2018																							
		Percent distribution of women who received multi vitamins during pregnancy of last birth	Percent distribution of who advised taking multivitamins during pregnancy of last birth										Percent distribution of source for multivitamins during pregnancy of last birth			Percent distribution of frequency of multivitamin intake during pregnancy of last birth					Number of days woman took multivitamins during pregnancy of last birth				Number of women
			Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
Total		6.2	78.0	10.1	3.7	1.5	4.8	0.4	0.8	0.1	0.6	27.3	55.8	16.9	54.0	12.4	5.3	7.4	20.8	93.9	1.7	0.9	3.5	23284
Urban		7.8	82.8	9.4	3.0	0.7	2.8	0.0	0.4	0.0	0.8	21.1	59.4	19.5	54.7	12.2	5.9	6.4	20.9	92.2	2.1	1.0	4.6	6734
Rural		5.3	73.9	10.7	4.2	2.2	6.5	0.8	1.2	0.3	0.4	32.6	52.8	14.6	53.4	12.6	4.9	8.3	20.8	94.8	1.5	0.8	2.9	16550
Province/ region																								
Punjab	Urban	7.7	83.1	8.3	2.3	1.0	4.9	0.0	0.3	0.0	0.0	21.7	48.6	29.7	46.4	10.9	8.3	9.6	24.9	92.3	2.1	1.0	4.6	2723
	Rural	5.6	72.7	11.0	5.5	2.1	6.9	1.1	0.4	0.0	0.3	24.6	55.2	20.1	46.5	18.3	6.8	9.2	19.2	94.5	1.7	0.9	3.0	5795
	Total	6.4	77.4	9.8	4.1	1.6	6.0	0.6	0.4	0.0	0.2	23.3	52.3	24.4	46.4	15.0	7.4	9.4	21.8	93.7	1.8	0.9	3.6	8518
Sindh	Urban	8.2	80.4	11.9	4.5	0.4	0.2	0.0	0.4	0.0	2.2	20.6	72.2	7.2	68.8	12.5	2.5	1.6	14.5	91.9	2.4	1.1	4.6	1989
	Rural	3.2	68.6	18.4	4.1	1.5	7.5	0.0	0.0	0.0	0.0	30.8	65.3	3.9	69.7	0.8	1.4	1.7	26.4	96.9	1.4	0.7	1.1	2183
	Total	5.6	76.9	13.8	4.4	0.7	2.3	0.0	0.3	0.0	1.6	23.6	70.1	6.2	69.1	9.0	2.2	1.6	18.0	94.5	1.9	0.9	2.8	4172
KP	Urban	5.9	80.1	16.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	59.8	21.1	67.5	7.9	6.4	3.8	14.5	94.1	0.9	0.6	4.4	606
	Rural	6.2	82.6	6.1	1.1	2.5	3.3	0.3	3.5	0.7	0.0	55.3	36.6	8.1	66.5	3.8	2.7	3.1	23.8	93.8	1.2	0.7	4.2	2220
	Total	6.1	82.1	8.0	1.7	2.0	2.6	0.3	2.8	0.6	0.0	48.1	41.2	10.7	66.7	4.6	3.5	3.2	22.0	93.9	1.2	0.7	4.3	2826
Balochistan	Urban	4.4	99.2	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	17.3	82.7	0.0	11.4	42.0	0.0	0.0	46.7	95.6	1.2	0.7	2.5	764
	Rural	1.2	71.0	3.6	0.0	0.6	3.1	0.0	21.6	0.0	0.0	12.0	19.3	68.7	21.6	53.8	1.6	2.9	20.1	98.8	0.3	0.2	0.7	2930
	Total	2.0	86.0	1.7	0.4	0.3	1.5	0.0	10.1	0.0	0.0	14.8	53.0	32.2	16.2	47.5	0.7	1.4	34.2	98.0	0.5	0.3	1.1	3694
ICT	Urban	12.3	94.6	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	20.4	79.6	0.0	39.2	20.9	5.0	11.5	23.4	87.7	1.4	2.2	8.7	145
	Rural	16.6	83.1	11.3	5.6	0.0	0.0	0.0	0.0	0.0	0.0	48.8	45.3	5.9	77.6	6.6	0.0	8.5	7.3	83.4	1.4	1.3	14.0	145
	Total	14.3	88.5	6.0	3.0	0.0	0.0	0.0	2.5	0.0	0.0	35.4	61.4	3.1	59.6	13.3	2.4	9.9	14.8	85.7	1.4	1.8	11.1	290

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Percent distribution of women aged 15–49 years with a live birth in the last two years who received multiple micronutrients during pregnancy with the last child, Pakistan NNS 2018																							
		Percent distribution of women who received multivitamins during pregnancy of last birth	Percent distribution of who advised taking multivitamins during pregnancy of last birth									Percent distribution of source for multivitamins during pregnancy of last birth			Percent distribution of frequency of multivitamin intake during pregnancy of last birth					Number of days woman took multivitamins during pregnancy of last birth				Number of women
			Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
KP-NMD	Total	8.4	48.6	16.6	2.3	8.6	19.7	1.2	0.0	3.0	0.0	57.7	42.3	0.0	36.9	4.9	0.0	25.2	33.1	92.5	1.7	0.6	5.2	703
AJK	Urban	13.9	92.9	0.4	0.0	0.0	6.6	0.0	0.0	0.0	0.0	28.2	71.8	0.0	55.2	9.2	12.2	16.6	6.9	86.9	0.5	2.6	10.1	314
	Rural	12.0	91.7	1.8	1.6	0.6	3.0	0.4	0.7	0.0	0.3	39.5	58.4	2.1	55.7	6.9	6.8	16.5	14.2	88.0	2.0	2.2	7.8	1358
	Total	12.3	91.8	1.6	1.3	0.5	3.5	0.4	0.6	0.0	0.2	37.8	60.4	1.8	55.6	7.2	7.6	16.5	13.1	87.9	1.8	2.3	8.1	1672
GB	Urban	23.9	96.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	4.9	95.1	0.0	85.7	0.0	0.0	0.0	14.3	76.1	9.4	3.0	11.5	157
	Rural	18.3	69.6	11.3	5.3	1.9	2.6	1.8	1.1	0.6	5.7	22.4	68.3	9.3	69.0	4.3	2.5	9.1	15.0	82.0	7.3	2.2	8.6	1252
	Total	19.2	75.5	8.9	4.2	1.5	2.1	1.4	0.9	0.5	5.2	18.7	74.0	7.3	72.7	3.4	2.0	7.1	14.8	80.9	7.7	2.3	9.1	1409
Woman's age																								
15-29 years		6.4	79.1	10.1	2.9	1.4	4.5	0.6	0.6	0.1	0.7	27.9	57.2	14.9	54.0	12.0	5.7	8.0	20.3	93.7	1.8	1.0	3.5	13689
30-49 years		6.0	76.1	10.2	4.9	1.8	5.3	0.0	1.2	0.2	0.4	26.3	53.5	20.2	54.1	13.0	4.7	6.5	21.8	94.1	1.6	0.7	3.6	9595
Mother's age at birth																								
Less than 20		6.2	76.3	8.6	3.4	0.0	5.4	0.0	6.3	0.0	0.0	42.8	36.5	20.8	49.4	12.0	0.0	13.1	25.6	93.8	1.3	1.5	3.5	846
20-34		6.9	81.4	7.8	2.2	1.6	5.5	0.1	0.3	0.1	0.8	27.5	60.1	12.4	53.9	13.3	5.1	7.8	19.8	93.2	1.7	0.8	4.3	12498
35-49		5.6	75.6	9.8	4.5	2.0	4.6	0.0	1.8	0.6	1.0	28.7	54.2	17.1	54.9	10.7	1.5	9.5	23.4	94.5	1.2	0.9	3.5	2921
Missing		5.4	73.2	14.1	5.9	1.3	3.5	1.0	0.9	0.0	0.0	25.2	51.0	23.8	54.4	11.3	7.3	5.7	21.3	94.6	2.0	0.9	2.5	7019
Education																								
None		4.2	67.9	15.2	5.3	1.9	6.5	0.2	1.5	0.4	1.2	40.8	44.3	14.9	52.8	12.3	3.5	5.6	25.7	95.9	1.4	0.7	2.0	13157
Primary		6.4	78.3	6.8	3.2	4.3	5.8	0.0	0.7	0.0	0.8	27.2	53.8	19.0	55.4	9.4	9.5	8.0	17.7	93.7	2.0	1.0	3.3	2527
Middle		7.3	78.3	7.8	4.4	0.6	5.2	2.8	1.1	0.0	0.0	27.0	52.1	20.9	50.9	14.7	2.5	7.8	24.1	92.8	2.1	0.9	4.2	2170

Percent distribution of women aged 15–49 years with a live birth in the last two years who received multiple micronutrients during pregnancy with the last child, Pakistan NNS 2018																						
	Percent distribution of women who received multivitamins during pregnancy of last birth	Percent distribution of who advised taking multivitamins during pregnancy of last birth									Percent distribution of source for multivitamins during pregnancy of last birth			Percent distribution of frequency of multivitamin intake during pregnancy of last birth					Number of days woman took multivitamins during pregnancy of last birth				Number of women
		Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
Secondary	8.0	86.9	6.9	1.0	0.8	4.0	0.1	0.2	0.0	0.1	17.6	62.7	19.7	56.6	12.7	4.6	7.1	19.0	92.0	1.8	1.2	5.0	2642
Higher	11.6	86.6	7.6	2.9	0.5	2.0	0.0	0.2	0.0	0.1	13.8	71.5	14.7	54.8	12.7	7.8	9.9	14.9	88.4	2.4	1.3	7.9	2788
Wealth Index quintile																							
Poorest	2.7	63.3	12.4	7.2	2.3	10.5	0.3	1.6	1.2	1.3	41.6	49.3	9.1	57.7	4.8	4.1	5.5	27.9	97.3	1.0	0.5	1.2	6398
Second	4.6	66.6	13.5	3.6	3.6	9.5	1.4	0.9	0.2	0.8	38.8	48.3	12.9	51.3	7.7	7.8	8.5	24.7	95.4	1.1	0.7	2.8	5382
Middle	6.3	73.2	13.6	4.9	2.2	3.5	0.9	1.5	0.0	0.2	31.4	52.0	16.5	48.7	17.7	4.7	6.1	22.8	93.7	2.4	1.0	2.8	4569
Fourth	6.9	80.9	10.0	2.6	0.3	4.6	0.0	0.6	0.0	1.1	30.0	57.0	13.0	57.7	11.0	2.8	6.5	22.0	93.2	1.7	1.0	4.2	3985
Richest	10.8	88.5	5.8	2.6	0.8	1.9	0.0	0.4	0.0	0.0	13.2	62.8	24.0	55.0	14.3	6.8	9.0	14.9	89.2	2.4	1.3	7.0	2950

6.5.7 Calcium intake during pregnancy

About a quarter (26.8%) of women with a live birth in the two years preceding the survey reported taking calcium supplements during their last pregnancy. In most cases, skilled providers (obstetricians and gynaecologists: 77.7%; other doctors: 9.3%; nurses: 3.7%) prescribed these. Advice from obstetricians and gynaecologists was more commonly taken in urban areas (36.3%) than in rural areas where other providers were more frequent sources. The majority of urban (62.6%) and younger women (15–29 years: 59.4%) received calcium from private sector providers. They were also more likely to take it daily (urban: 67.3%; 15–29 years: 63.0%) and to continue for 90 days or more (urban: 26.2%; 15–29 years: 18.6%).

ICT (61.3%) had the highest proportion of women who received calcium (61.3%) while Balochistan had the lowest (9.8%). These were most often provided by gynaecologists in AJK (90.8%). Among those prescribed calcium supplements, the majority were given by private sector providers in GB (75.2%) and by public sector providers in KP-NMD (55.2%). GB had the highest proportion of women taking the supplement daily (79.8%), while ICT had the highest proportion of women who took it for 90 days or more (50.2%).

Women who were aged 20–34 years at time of delivery were more likely to take calcium supplements from obstetricians and gynaecologists (78.3%), to consume them daily (61.2%) and to take them for 90 days or more (19.8%). Women with higher education or those belonging the richest wealth index quintile were more likely to receive calcium from gynaecologists, and to receive it from private sector providers, use it daily, and for 90 days or more.

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Table 6-38: Calcium intake during pregnancy

Percent distribution of women aged 15–49 years with a live birth in the last two years who received calcium during pregnancy with the last child, Pakistan NNS 2018																							
		Percent distribution of women who received calcium during pregnancy of last birth	Percent distribution of who advised for taking calcium during pregnancy of last birth									Percent distribution of source for calcium during pregnancy of last birth			Percent distribution of frequency of calcium intake during pregnancy of last birth					Number of days woman took calcium during pregnancy of last birth				Number of women
			Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
Total		26.8	77.7	9.3	3.7	1.4	4.6	0.4	1.6	0.6	0.7	28.8	57.5	13.7	62.6	8.1	6.0	6.3	17.0	73.2	5.2	3.9	17.8	23284
Urban		36.3	84.1	8.9	2.7	0.7	2.0	0.2	0.7	0.2	0.6	23.9	62.6	13.5	67.3	7.5	5.6	4.9	14.7	63.7	5.6	4.4	26.2	6734
Rural		21.3	71.4	9.7	4.6	2.1	7.1	0.7	2.5	1.0	0.9	33.6	52.4	14.0	57.9	8.8	6.3	7.7	19.3	78.7	4.9	3.5	12.9	16550
Province/ region																								
Punjab	Urban	33.3	80.9	8.9	3.9	1.1	3.5	0.2	0.7	0.2	0.7	28.2	55.3	16.5	65.2	6.0	7.1	5.9	15.9	66.7	5.2	4.5	23.6	2723
	Rural	23.8	64.7	10.1	5.5	3.1	10.1	0.8	3.1	1.4	1.3	36.3	48.1	15.6	54.4	8.8	6.5	9.2	21.1	76.2	5.2	4.4	14.2	5795
	Total	27.3	72.1	9.5	4.7	2.2	7.1	0.5	2.0	0.9	1.0	32.6	51.4	16.0	59.3	7.5	6.7	7.7	18.7	72.7	5.2	4.4	17.7	8518
Sindh	Urban	42.7	88.9	8.4	1.7	0.2	0.2	0.0	0.1	0.1	0.4	17.0	74.6	8.5	72.8	8.7	4.2	2.4	11.9	57.3	6.9	4.6	31.2	1989
	Rural	15.0	84.6	7.6	4.0	0.5	1.7	0.3	0.0	0.5	0.8	22.2	65.8	12.0	62.3	8.6	8.5	3.2	17.4	85.0	4.3	2.3	8.4	2183
	Total	28.3	87.7	8.2	2.4	0.3	0.6	0.1	0.1	0.2	0.5	18.4	72.1	9.5	69.9	8.7	5.4	2.6	13.4	71.7	5.6	3.4	19.3	4172
KP	Urban	29.7	83.1	8.7	0.9	1.0	0.4	0.7	4.3	0.2	0.6	22.4	50.1	27.4	60.2	13.4	3.9	5.3	17.3	70.3	3.5	2.2	24.0	606
	Rural	21.6	78.5	11.8	2.5	0.8	1.4	0.8	3.5	0.5	0.3	34.0	48.7	17.4	64.8	10.6	3.5	5.4	15.7	78.4	5.4	2.6	13.7	2220
	Total	23.3	79.7	11.0	2.1	0.9	1.2	0.8	3.7	0.4	0.4	30.9	49.1	20.0	63.6	11.3	3.6	5.4	16.1	76.7	5.0	2.5	15.8	2826
Balochistan	Urban	21.3	62.3	23.7	1.6	0.0	7.8	0.0	4.4	0.3	0.0	32.7	51.6	15.8	27.2	10.5	9.2	24.1	29.1	78.7	4.3	3.9	13.0	764
	Rural	6.1	70.9	13.0	2.9	1.6	6.3	3.6	0.7	1.0	0.0	33.3	56.3	10.4	44.3	9.2	14.3	9.7	22.5	93.9	1.7	1.0	3.4	2930
	Total	9.8	66.3	18.7	2.2	0.7	7.1	1.7	2.7	0.6	0.0	33.0	53.8	13.3	35.2	9.9	11.6	17.4	26.0	90.2	2.3	1.7	5.7	3694
ICT	Urban	56.1	90.0	8.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0	45.7	49.7	4.6	75.4	5.3	1.1	0.0	18.1	43.9	4.2	7.3	44.6	145
	Rural	67.6	87.8	10.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0	46.2	49.8	4.0	78.0	2.5	2.4	3.8	13.3	32.4	5.3	5.5	56.8	145
	Total	61.3	88.9	9.8	1.4	0.0	0.0	0.0	0.0	0.0	0.0	45.9	49.8	4.3	76.7	3.9	1.8	1.9	15.7	38.7	4.7	6.5	50.2	290

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Percent distribution of women aged 15–49 years with a live birth in the last two years who received calcium during pregnancy with the last child, Pakistan NNS 2018

		Percent distribution of women who received calcium during pregnancy of last birth	Percent distribution of who advised for taking calcium during pregnancy of last birth									Percent distribution of source for calcium during pregnancy of last birth			Percent distribution of frequency of calcium intake during pregnancy of last birth					Number of days woman took calcium during pregnancy of last birth				Number of women
			Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
KP-NMD	Total	16.0	61.6	9.0	4.8	1.2	12.1	0.6	9.1	1.6	0.0	55.2	43.8	1.0	38.1	14.5	4.4	15.2	27.8	84.0	3.5	2.1	10.4	703
AJK	Urban	56.9	93.8	2.9	0.0	0.7	1.4	0.0	0.0	0.4	0.9	18.7	76.5	4.8	66.2	7.0	1.6	13.4	11.8	43.1	8.1	6.8	42.0	314
	Rural	46.4	90.3	2.3	1.4	1.0	4.2	0.2	0.3	0.3	0.2	23.9	70.2	5.9	63.6	5.8	6.1	9.8	14.7	53.6	7.9	7.0	31.5	1358
	Total	47.7	90.8	2.4	1.2	1.0	3.8	0.1	0.2	0.3	0.3	23.1	71.2	5.7	64.0	6.0	5.4	10.3	14.2	52.3	7.9	7.0	32.8	1672
GB	Urban	52.7	85.5	5.6	3.0	0.0	0.0	5.9	0.0	0.0	0.0	13.2	85.6	1.2	85.0	0.0	0.0	1.3	13.8	47.3	17.4	8.1	27.3	157
	Rural	41.9	69.1	13.7	12.7	0.5	1.2	0.9	0.7	0.1	1.0	24.6	72.4	3.0	78.4	6.5	2.1	3.2	9.7	58.1	14.5	5.1	22.2	1252
	Total	43.8	72.6	12.0	10.7	0.4	0.9	2.0	0.6	0.1	0.8	22.2	75.2	2.6	79.8	5.2	1.7	2.8	10.6	56.2	15.0	5.7	23.1	1409
Woman's age																								
15-29 years		27.8	78.5	9.1	3.7	1.4	4.1	0.5	1.5	0.5	0.8	27.5	59.4	13.1	63.0	8.4	5.7	6.5	16.5	72.2	5.0	4.1	18.6	13689
30-49 years		25.3	76.2	9.7	3.7	1.4	5.3	0.4	1.8	0.7	0.7	31.0	54.2	14.8	61.9	7.7	6.5	6.1	17.9	74.7	5.4	3.5	16.4	9595
Mother's age at birth																								
Less than 20		24.2	77.7	11.4	3.4	0.6	1.9	0.2	4.9	0.0	0.0	29.8	54.8	15.4	59.9	11.3	5.4	7.4	16.0	75.8	5.6	3.7	14.9	846
20-34		29.1	78.3	8.7	3.4	1.6	4.7	0.4	1.6	0.6	0.8	28.7	59.1	12.2	61.2	8.1	6.6	7.1	17.1	70.9	5.1	4.2	19.8	12498
35-49		24.4	76.3	9.6	2.9	0.9	6.9	0.3	1.6	0.8	0.6	32.4	52.5	15.1	60.9	7.1	5.1	7.6	19.3	75.6	5.4	3.1	15.9	2921
Missing		24.7	77.1	9.9	4.3	1.3	3.9	0.6	1.4	0.7	0.8	28.0	56.5	15.5	65.3	8.3	5.3	4.7	16.4	75.3	5.1	3.7	15.9	7019
Education																								
None		18.2	71.3	11.7	4.2	2.0	6.0	0.5	2.1	1.3	1.0	34.2	52.4	13.4	58.9	9.5	6.6	6.3	18.8	81.8	4.2	3.2	10.9	13157
Primary		27.4	72.2	9.6	5.5	2.5	6.7	0.7	1.1	0.8	1.0	31.1	52.6	16.2	62.9	10.6	6.1	4.9	15.4	72.6	5.9	3.7	17.8	2527
Middle		31.8	76.7	9.1	3.8	1.2	5.3	1.3	2.2	0.2	0.2	33.4	53.5	13.1	59.0	6.8	5.5	10.7	18.0	68.2	4.9	4.6	22.2	2170
Secondary		38.8	83.3	7.5	2.7	0.7	3.5	0.1	1.2	0.2	0.9	22.0	64.3	13.7	62.2	6.8	6.5	5.8	18.8	61.2	7.3	5.4	26.1	2642
Higher		45.9	87.0	6.8	2.6	0.5	1.5	0.1	1.1	0.0	0.4	21.9	65.0	13.1	70.6	6.4	4.7	5.3	13.0	54.1	6.6	4.8	34.6	2788

Percent distribution of women aged 15–49 years with a live birth in the last two years who received calcium during pregnancy with the last child, Pakistan NNS 2018																						
	Percent distribution of women who received calcium during pregnancy of last birth	Percent distribution of who advised for taking calcium during pregnancy of last birth									Percent distribution of source for calcium during pregnancy of last birth			Percent distribution of frequency of calcium intake during pregnancy of last birth					Number of days woman took calcium during pregnancy of last birth				Number of women
		Gynaecologist	Other doctor	Nurse	Community Health Worker	Lady Health Worker	Community Midwife	Lady Health Visitor	Traditional Birth Attendant	Other	Public medical sector	Private medical sector	Other source	Daily	Once a week	Biweekly	Monthly	Rarely	None	<60	60-89	90 or more	
Wealth Index quintile																							
Poorest	11.2	67.4	12.2	5.2	1.7	9.3	0.5	1.9	0.8	1.0	33.9	54.1	12.0	49.6	9.9	8.4	7.1	25.0	88.8	3.5	1.8	5.9	6398
Second	19.6	68.2	11.2	4.9	2.0	6.7	1.0	2.5	2.3	1.1	34.1	50.9	15.0	55.8	11.8	7.0	7.5	17.8	80.4	4.3	4.1	11.2	5382
Middle	27.4	71.8	11.3	4.3	2.1	6.5	0.7	2.2	0.3	0.7	32.5	53.7	13.9	59.8	9.0	6.1	6.3	18.9	72.6	6.2	4.3	16.9	4569
Fourth	33.7	80.4	8.6	3.7	1.0	3.4	0.3	1.2	0.5	1.0	27.4	60.0	12.6	64.2	7.6	4.8	6.7	16.6	66.3	6.1	4.6	23.0	3985
Richest	43.6	87.0	6.8	2.2	0.8	1.8	0.1	1.0	0.0	0.3	23.4	62.1	14.5	70.1	5.7	5.7	5.1	13.4	56.4	5.8	4.6	33.3	2950

6.5.8 Care provided by Lady Health Workers

About 41.5% of eligible households (a unit/dwelling that was in line with the set definition of a household and was sampled in the survey) were not visited by a LHW; 56.2% were visited in the last quarter, 49.4% in the last month and 58.2% in the last year. About 2.1% of women reported weekly visits by an LHW, 2.6% fortnightly, 33.1% monthly, 6.0% occasionally, and 14.7% reported only one visit for polio. Balochistan had the highest proportion of women who reported never receiving an LHW visit 77.7% followed by KP-NMD (76.3%) while GB had the greatest proportion reporting a visit in the last month (58.0%). Weekly visits were more often seen in AJK (2.6%), fortnightly in Punjab (3.5%), and monthly in ICT (43.4%). LHW visits only for administrating polio drops were most often reported in Sindh (62.9%).

The purpose of LHW visits were most commonly to administer polio drops (50.0%), followed by vaccination (24.0%), health and nutrition sessions (6.0%), referrals to healthcare facilities (4.8%), treatment for mothers (3.7%), to provide contraceptive supplies (3.1%), treatment for children (2.5%), and to provide nutrition supplies (1.1%).

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Table 6-39: Care provided by LHW

Percentage of ever married women with a live birth in the last two years who reported that a Lady Health Worker (LHW) visited the house and the purpose of visit, Pakistan NNS 2018																				
		Household visited by LHW					Frequency of visits						Purpose of visits								Number of women
		Never	Last month	Last quarter	Last six months	Last one year	Weekly	Fortnightly	Monthly	Occasionally	Only for polio	Other	Health and nutrition sessions	Contraceptive supplies	Referral to health care facility	Vaccination	Polio drops	Treatment for mother	Treatment for child	Nutrition supplies	
Total		41.5	49.4	56.2	57.2	58.2	2.1	2.6	33.1	6.0	14.7	0.1	6.0	3.1	4.8	24.0	50.0	3.7	2.5	1.1	23284
Urban		44.0	47.2	53.4	54.5	55.7	2.1	2.0	29.7	5.6	16.5	0.1	5.7	3.4	4.2	21.0	49.3	3.1	2.0	1.0	6734
Rural		40.0	50.6	57.7	58.7	59.6	2.1	2.9	35.0	6.3	13.6	0.0	6.2	2.9	5.1	25.8	50.5	4.1	2.8	1.1	16550
Province/ region																					
Punjab	Urban	47.2	44.4	50.0	50.9	52.4	2.1	2.4	30.7	6.0	11.6	0.0	6.3	3.8	5.3	27.9	45.5	4.2	2.5	1.4	2723
	Rural	31.4	60.3	67.0	67.8	68.4	2.6	4.2	41.8	7.0	13.0	0.0	7.9	4.3	7.3	37.2	56.7	6.2	4.2	1.7	5795
	Total	37.3	54.4	60.6	61.5	62.4	2.4	3.5	37.7	6.6	12.5	0.0	7.3	4.1	6.6	33.7	52.5	5.4	3.6	1.6	8518
Sindh	Urban	33.0	57.0	64.6	65.9	66.7	2.4	1.7	31.2	4.2	27.4	0.2	4.7	3.2	3.1	12.9	62.2	1.7	1.5	0.5	1989
	Rural	31.9	51.8	63.9	65.5	67.2	1.9	1.8	37.6	5.0	21.7	0.0	4.6	1.4	2.7	15.3	63.5	1.4	1.0	0.9	2183
	Total	32.4	54.3	64.3	65.7	67.0	2.1	1.7	34.5	4.6	24.4	0.1	4.6	2.3	2.9	14.2	62.9	1.5	1.2	0.7	4172
KP	Urban	56.8	37.4	41.9	43.2	43.2	1.5	2.7	25.2	6.2	7.5	0.2	7.0	2.4	2.5	15.5	30.7	1.9	0.3	0.6	606
	Rural	61.5	34.4	37.6	38.1	38.4	1.1	1.4	22.9	6.0	7.1	0.0	4.6	1.2	2.9	14.0	28.5	1.8	1.3	0.2	2220
	Total	60.5	35.0	38.5	39.2	39.4	1.2	1.6	23.4	6.0	7.2	0.0	5.1	1.5	2.8	14.3	29.0	1.8	1.1	0.3	2826
Balochistan	Urban	74.3	17.7	22.8	24.4	25.5	2.0	0.4	8.7	6.6	8.0	0.0	4.9	2.3	3.0	6.4	18.8	2.0	1.7	0.9	764
	Rural	78.8	15.4	18.1	19.0	20.9	1.4	0.3	8.8	3.4	7.3	0.0	2.4	1.1	1.4	3.3	18.0	1.0	0.8	0.4	2930
	Total	77.7	15.9	19.3	20.3	22.0	1.6	0.4	8.8	4.2	7.4	0.0	3.0	1.4	1.8	4.0	18.2	1.3	1.0	0.5	3694
ICT	Urban	42.2	49.6	54.6	54.6	57.8	0.0	0.0	38.8	6.7	12.4	0.0	3.0	1.5	0.9	10.3	54.2	0.0	0.0	0.0	145
	Rural	38.9	50.5	53.2	53.8	61.1	0.0	3.2	49.0	5.3	3.6	0.0	17.1	2.6	5.6	21.4	49.9	5.5	4.8	0.9	145
	Total	40.7	50.0	53.9	54.2	59.3	0.0	1.5	43.4	6.0	8.4	0.0	9.4	2.0	3.0	15.4	52.2	2.5	2.2	0.4	290
KP-NMD	Total	76.3	20.2	22.5	23.1	23.7	0.3	0.9	10.1	4.6	7.8	0.0	1.9	1.8	1.2	6.9	19.1	1.1	0.9	0.0	703
AJK	Urban	43.5	37.6	52.9	55.5	56.4	1.6	2.0	13.4	16.0	23.5	0.0	6.2	1.2	1.1	12.7	43.7	4.6	0.6	0.1	314
	Rural	42.1	42.1	55.3	57.3	57.4	2.7	1.5	22.9	11.2	19.5	0.0	5.6	1.2	2.7	11.5	45.3	3.6	1.2	0.0	1358
	Total	42.3	41.5	55.0	57.0	57.3	2.6	1.6	21.7	11.8	20.0	0.0	5.7	1.2	2.5	11.7	45.1	3.7	1.1	0.0	1672

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Percentage of ever married women with a live birth in the last two years who reported that a Lady Health Worker (LHW) visited the house and the purpose of visit, Pakistan NNS 2018																				
		Household visited by LHW					Frequency of visits						Purpose of visits								Number of women
		Never	Last month	Last quarter	Last six months	Last one year	Weekly	Fortnightly	Monthly	Occasionally	Only for polio	Other	Health and nutrition sessions	Contraceptive supplies	Referral to health care facility	Vaccination	Polio drops	Treatment for mother	Treatment for child	Nutrition supplies	
GB	Urban	20.7	60.7	76.4	79.3	79.3	0.5	2.1	29.1	16.5	31.7	0.0	4.6	1.9	0.7	15.6	68.7	2.3	1.5	2.0	157
	Rural	32.1	57.4	64.6	65.6	67.4	2.7	2.2	36.5	11.8	14.8	0.2	6.8	1.5	5.7	19.1	46.7	5.2	3.9	3.7	1252
	Total	30.1	58.0	66.6	67.9	69.5	2.3	2.2	35.2	12.6	17.7	0.1	6.4	1.6	4.9	18.5	50.5	4.7	3.4	3.4	1409
Education																					
None		44.4	46.6	53.2	54.3	55.2	1.8	2.0	31.6	5.5	14.6	0.0	4.6	2.1	3.9	21.1	48.9	2.7	1.6	0.7	13157
Primary		34.5	54.9	62.6	63.9	65.1	2.7	4.0	36.6	7.4	14.8	0.0	7.1	4.1	5.5	29.6	54.6	4.8	3.5	1.6	2527
Middle		37.8	52.8	59.9	60.7	61.8	1.9	3.2	35.1	6.8	15.1	0.1	7.7	4.4	5.7	27.5	52.7	6.3	4.4	1.5	2170
Secondary		38.6	53.5	59.8	60.5	61.2	2.6	2.7	34.8	5.8	15.4	0.2	8.3	4.1	6.0	26.2	50.9	5.0	3.3	1.6	2642
Higher		41.9	48.8	55.6	56.6	58.0	2.4	2.9	32.6	6.2	14.0	0.1	7.6	4.0	5.7	26.1	47.4	3.5	2.6	1.3	2788
Wealth index quintile																					
Poorest		45.8	43.2	51.0	52.3	53.7	1.4	2.0	30.5	5.6	14.7	0.0	3.6	1.4	2.5	17.9	48.3	1.8	1.1	0.5	6398
Second		41.3	49.3	56.4	57.6	58.2	1.8	2.5	34.8	6.4	13.3	0.0	5.5	2.9	4.8	25.0	50.5	3.8	2.3	1.0	5382
Middle		38.3	53.4	59.8	60.7	61.3	2.4	3.1	34.8	6.2	15.1	0.1	6.3	3.5	5.1	25.9	52.6	4.3	2.9	1.4	4569
Fourth		39.0	52.9	59.1	60.0	60.8	2.0	3.0	35.2	5.8	15.0	0.0	7.6	3.8	6.2	26.5	50.6	5.0	3.6	1.5	3985
Richest		43.2	48.0	54.2	55.0	56.7	2.9	2.4	29.8	6.1	15.5	0.1	7.3	4.0	5.3	25.1	48.0	3.8	2.5	1.0	2950

6.5.9 Delivery assistance

NNS 2018 data shows that more than half (57.7%) of deliveries were conducted by medical doctors, 10.7% by nurses/midwives, 21.7% by traditional birth attendants, 3.5% by LHVs, 2% by LHWs and 4% by a relative/friend. Thus, deliveries were conducted by a skilled attendant (i.e. a medical doctor, nurse or midwife) in 68.5% of cases (urban: 77.4%; rural: 63.3%). ICT (85.7%), Sindh (71.2%) and AJK (76.1%) had the highest proportion of deliveries conducted by skilled attendants.

Women aged 20–34 years of age (68.5%), who had higher education (84.9%) and belonged to the richest wealth index quintile (84.3%) had the highest proportion of deliveries by skilled attendants. The majority of the births conducted by skilled attendants were in health facilities (91.6%) in comparison to 6.3% deliveries that were conducted at home. Among health facilities, 93.6% were private and 89.5% were public facilities.

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Table 6-40: Person conducting delivery

Percent distribution of women age 15-49 years with a live birth in the last two years by person conducting the delivery, Pakistan NNS 2018										
		Person conducting delivery							Delivery conducted by any skilled attendant	Number of women who had a live birth in the last two years
		Medical doctor	Nurse/midwife	Traditional Birth Attendant	Lady Health Visitor	Lady Health Worker	Relative/friend	Other/missing		
Total		57.7	10.7	21.7	3.5	2.0	4.0	0.4	68.5	23284
Urban		68.4	9.1	15.1	3.2	1.6	2.2	0.5	77.4	6734
Rural		51.6	11.7	25.5	3.6	2.2	5.1	0.3	63.3	16550
Province/ region										
Punjab	Urban	65.2	10.5	16.2	4.2	2.1	1.3	0.5	75.7	2723
	Rural	54.2	13.1	23.1	4.1	3.2	2.2	0.1	67.2	5795
	Total	58.3	12.1	20.5	4.2	2.8	1.9	0.2	70.4	8518
Sindh	Urban	76.3	6.0	13.0	0.7	0.7	2.6	0.7	82.3	1989
	Rural	53.3	7.8	33.4	1.1	0.5	3.5	0.5	61.1	2183
	Total	64.3	6.9	23.6	0.9	0.6	3.1	0.6	71.2	4172
KP	Urban	64.4	9.3	12.2	6.8	1.7	5.4	0.2	73.7	606
	Rural	51.3	9.8	16.5	5.8	1.4	14.8	0.4	61.1	2220
	Total	54.0	9.7	15.6	6.0	1.5	12.8	0.4	63.7	2826
Balochistan	Urban	45.9	16.1	28.4	3.4	1.4	3.8	1.0	61.9	764
	Rural	25.4	17.7	46.7	1.3	0.6	7.8	0.5	43.1	2930
	Total	30.4	17.3	42.2	1.8	0.8	6.8	0.6	47.7	3694
ICT	Urban	82.4	5.1	5.4	2.9	0.0	4.3	0.0	87.4	145
	Rural	76.5	7.2	12.1	0.4	0.7	3.1	0.0	83.7	145
	Total	79.7	6.0	8.5	1.8	0.3	3.7	0.0	85.7	290
KP-NMD	Total	35.8	8.7	25.6	8.4	3.9	15.6	2.0	44.5	703
AJK	Urban	77.2	5.2	6.7	2.7	1.0	6.0	1.1	82.5	314
	Rural	65.0	10.2	10.8	3.2	2.1	7.7	1.1	75.2	1358
	Total	66.6	9.5	10.3	3.1	1.9	7.5	1.1	76.1	1672
GB	Urban	51.6	24.3	1.4	13.1	0.0	7.6	2.1	75.8	157
	Rural	43.1	21.8	4.9	7.7	3.4	16.1	2.9	64.9	1252
	Total	44.5	22.3	4.3	8.6	2.8	14.6	2.8	66.8	1409
Mother's age at birth										
Less than 20		51.0	12.0	25.6	3.5	3.3	3.8	0.9	63.0	846
20-34		57.7	10.9	21.6	3.5	1.9	4.0	0.5	68.5	12498
35-49		51.4	11.3	25.8	3.6	2.0	5.4	0.6	62.8	2921
Missing		59.9	10.3	20.4	3.3	1.9	3.8	0.3	70.3	7019

Percent distribution of women age 15-49 years with a live birth in the last two years by person conducting the delivery, Pakistan NNS 2018									
	Person conducting delivery							Delivery conducted by any skilled attendant	Number of women who had a live birth in the last two years
	Medical doctor	Nurse/midwife	Traditional Birth Attendant	Lady Health Visitor	Lady Health Worker	Relative/friend	Other/missing		
Place of delivery									
Home	6.3	22.0	54.8	1.0	5.0	10.1	0.8	28.4	10348
Health facility	91.6	3.3	0.0	5.1	0.0	0.0	0.0	94.9	12795
Public	89.5	4.1	0.0	6.4	0.0	0.0	0.0	93.6	7055
Private	93.6	2.6	0.0	3.8	0.0	0.0	0.0	96.2	5740
Other/DK/Missing	34.8	8.7	9.5	0.3	0.0	16.7	30.0	43.5	128
Education									
None	48.1	10.9	30.0	3.3	1.7	5.6	0.4	59.0	13157
Primary	58.6	12.6	18.8	3.9	2.9	2.6	0.5	71.2	2527
Middle	65.3	12.2	14.2	3.3	2.4	2.2	0.4	77.5	2170
Secondary	73.3	8.3	10.4	3.9	1.8	2.1	0.3	81.6	2642
Higher	75.4	9.4	7.1	3.2	2.0	2.5	0.3	84.9	2788
Wealth index quintile									
Poorest	38.6	9.8	39.8	2.9	1.2	7.1	0.7	48.4	6398
Second	48.7	12.3	27.2	3.9	1.9	5.6	0.4	61.0	5382
Middle	58.2	12.3	19.2	3.9	2.8	3.2	0.4	70.5	4569
Fourth	69.4	10.1	13.3	2.9	1.8	2.3	0.2	79.5	3985
Richest	75.1	9.2	7.6	3.6	2.2	1.9	0.4	84.3	2950

Information about the person assisting the delivery demonstrated that 37.3% deliveries were assisted by medical doctors, 39.9% by nurse/midwife, 14% by TBAs, 3.3% by LHVs and 1.7% by LHWs while 3.4% were not at all assisted. It was also noted that 68.7% deliveries were assisted by any skilled attendants. Overall, this trend was more evident in urban (78.6%) than rural areas (63.1%). However, this pattern was also observed across all provinces. The highest number of deliveries assisted by any skilled attendant were found in ICT (84.9%), AJK (73.4%) and Sindh (71.1%)

Regarding the place of delivery, 92% deliveries assisted by the skilled attendant were carried out at health facilities whereas 33.6% were home deliveries.

Mothers who were between 20-34 years of age (69%), had higher education (85.7%) and were relatively rich (85.5%) were more likely to have their deliveries assisted by skilled health providers.

Table 6-41: Assistance during delivery

Percent distribution of women age 15-49 years with a live birth in the last two years by person providing assistance at delivery, Pakistan NNS 2018										
		Person assisting at delivery							Delivery assisted by any skilled attendant	Number of women who had a live birth in the last two years
		Medical doctor	Nurse/midwife	Traditional Birth Attendant	Lady Health Visitor	Lady Health Worker	Other/missing	No attendant		
Total		33.2	45.6	14.7	5.5	2.4	15.7	0.4	68.7	23284
Urban		40.0	52.2	10.4	5.1	1.5	10.9	0.5	78.6	6734
Rural		29.3	41.7	17.1	5.8	2.9	18.5	0.3	63.1	16550
Province/ region										
Punjab	Urban	36.5	51.7	11.1	6.7	2.2	10.6	0.2	77.2	2723
	Rural	27.6	48.5	15.7	7.5	4.3	13.8	0.1	66.8	5795
	Total	30.9	49.7	14.0	7.2	3.5	12.6	0.2	70.7	8518
Sindh	Urban	47.7	55.0	8.9	2.5	0.5	9.5	0.8	82.8	1989
	Rural	33.7	32.6	21.3	2.1	0.8	21.6	0.6	60.4	2183
	Total	40.4	43.3	15.4	2.3	0.7	15.8	0.7	71.1	4172
KP	Urban	33.4	47.7	7.8	5.4	0.8	15.0	0.3	75.4	606
	Rural	32.1	37.5	11.6	4.9	1.4	24.7	0.2	62.3	2220
	Total	32.3	39.6	10.8	5.0	1.3	22.7	0.3	65.0	2826
Balochistan	Urban	30.8	40.6	23.1	3.3	0.8	18.8	0.8	63.8	764
	Rural	21.5	26.1	31.1	1.7	1.3	32.8	0.4	44.7	2930
	Total	23.8	29.7	29.1	2.1	1.1	29.3	0.5	49.3	3694
ICT	Urban	42.4	57.0	4.1	4.8	3.0	13.9	1.6	84.5	145
	Rural	29.8	65.8	7.3	4.4	0.7	7.4	0.0	85.5	145
	Total	36.6	61.0	5.6	4.6	1.9	10.9	0.9	84.9	290
KP-NMD	Total	28.1	22.6	18.8	11.0	2.9	29.1	1.1	45.5	703
AJK	Urban	55.4	50.7	4.8	9.5	1.4	9.4	0.6	82.7	314
	Rural	40.3	46.6	7.8	8.6	2.8	12.8	1.1	72.1	1358
	Total	42.2	47.1	7.4	8.7	2.6	12.4	1.0	73.4	1672
GB	Urban	24.8	63.4	2.9	7.2	0.9	11.0	4.6	79.6	157
	Rural	23.0	48.2	5.6	9.6	3.4	20.4	2.2	61.4	1252
	Total	23.3	50.8	5.1	9.1	3.0	18.8	2.6	64.6	1409
Mother's age at birth										
Less than 20		28.5	40.0	15.8	6.6	2.4	20.1	0.7	60.2	846
20-34		33.1	45.7	14.2	5.0	2.2	15.5	0.4	69.0	12498
35-49		29.8	41.6	16.7	4.2	2.3	18.8	0.6	63.6	2921
Missing		34.7	46.9	14.6	6.5	2.6	14.7	0.2	70.5	7019

Percent distribution of women age 15-49 years with a live birth in the last two years by person providing assistance at delivery, Pakistan NNS 2018

	Person assisting at delivery							Delivery assisted by any skilled attendant	Number of women who had a live birth in the last two years
	Medical doctor	Nurse/midwife	Traditional Birth Attendant	Lady Health Visitor	Lady Health Worker	Other/missing	No attendant		
Place of delivery									
Home	12.1	24.4	34.5	4.1	4.4	32.8	0.4	33.6	10348
Health facility	47.1	59.6	1.6	6.5	1.1	4.5	0.2	92.0	12795
Public	47.9	55.7	1.5	8.2	1.5	4.6	0.2	90.5	7055
Private	46.4	63.2	1.7	4.8	0.7	4.4	0.2	93.3	5740
Other/DK/Missing	37.5	27.3	14.5	3.0	0.0	17.4	28.6	54.7	128
Education									
None	28.8	37.9	19.8	4.9	2.1	21.3	0.4	59.4	13157
Primary	31.0	48.7	12.3	6.9	3.4	12.7	0.4	70.0	2527
Middle	38.4	53.0	9.6	6.4	3.0	9.9	0.3	78.0	2170
Secondary	38.6	57.6	8.0	5.7	2.3	8.2	0.2	82.1	2642
Higher	44.4	56.4	6.1	6.1	2.1	7.5	0.5	85.7	2788
Wealth index quintile									
Poorest	25.4	27.8	25.1	4.2	1.6	28.0	0.6	48.3	6398
Second	28.5	39.5	18.9	5.8	2.4	19.7	0.5	60.9	5382
Middle	32.9	48.3	12.6	6.1	3.1	14.0	0.3	70.6	4569
Fourth	36.7	55.4	9.5	5.1	2.4	9.1	0.3	80.0	3985
Richest	43.5	57.9	6.4	6.6	2.4	7.0	0.3	85.5	2950

6.5.10 Place of delivery

Overall, 60.1% of deliveries were conducted at health facilities: 29.2% in public sector facilities and 30.9% in private sector facilities. Urban women were more likely to be delivered in health facilities (70.2%) than their rural peers (54.3%), whereas home deliveries were more common in rural areas (45.4%) than in urban areas (29.3%). Across the provinces and regions, the greatest proportion of deliveries in health facilities were found in ICT (81.4%), AJK (72.4%) and GB (57.6%), and the lowest proportion in Balochistan (31.0%). The greatest proportion of home births were noted in Balochistan (68.0%) followed by KP-NMD (56.6%) and KP (43.1), and the least were in ICT (18.3%).

A much greater proportion of women (81.2%) had a facility-based delivery if they had four or more antenatal care visits, with almost half delivering at private facility (49.6%). A similar proportion of women delivered in public facilities who had had 1–3 (31.9%) or four or more (31.6%) antenatal visits. Those who did not receive antenatal care (57.5%) were more likely to deliver at home. Mothers who were below 20 years of age at the time of birth, were not educated and belonged to the poorest wealth index quintile had higher proportions of home deliveries than their counterparts. Mothers who gave birth when aged 20–34 years, who had higher education or belonged to the richest wealth index quintile, were more likely to have a facility delivery.

Table 6-42: Place of delivery

Percent distribution of women aged 15–49 years with a live birth in the last two years by place of delivery of the most recent live birth, Pakistan NNS 2018								
		Place of delivery					Delivered in health facility	Number of women with a live birth in the last two years
		Public sector health facility	Private sector health facility	Home	Other	Total		
Total		29.2	30.9	39.5	0.3	100.0	60.1	23284
Urban		30.3	39.9	29.3	0.4	100.0	70.2	6734
Rural		28.5	25.8	45.4	0.3	100.0	54.3	16550
Province/ region								
Punjab	Urban	31.7	36.2	31.9	0.2	100.0	67.9	2723
	Rural	30.5	27.5	42.0	0.0	100.0	57.9	5795
	Total	30.9	30.7	38.2	0.1	100.0	61.6	8518
Sindh	Urban	24.8	51.5	23.0	0.7	100.0	76.3	1989
	Rural	22.0	31.5	45.8	0.7	100.0	53.5	2183
	Total	23.3	41.1	34.8	0.7	100.0	64.4	4172
KP	Urban	38.3	28.8	32.4	0.4	100.0	67.1	606
	Rural	31.9	21.8	45.9	0.3	100.0	53.6	2220
	Total	33.2	23.3	43.1	0.4	100.0	56.4	2826
Balochistan	Urban	30.1	16.9	51.6	1.5	100.0	46.6	764
	Rural	16.9	9.1	73.4	0.7	100.0	26.0	2930
	Total	20.1	11.0	68.1	0.9	100.0	31.0	3694
ICT	Urban	52.6	33.3	14.0	0.0	100.0	86.0	145
	Rural	38.3	37.7	23.4	0.6	100.0	76.0	145
	Total	46.1	35.3	18.3	0.3	100.0	81.4	290
KP-NMD	Total	30.5	12.5	56.6	0.4	100.0	43.0	703
AJK	Urban	54.1	25.4	19.9	0.6	100.0	79.4	314
	Rural	46.7	20.4	32.1	0.8	100.0	66.9	1358
	Total	47.7	21.0	30.6	0.8	100.0	68.5	1672
GB	Urban	52.0	20.4	24.6	3.0	100.0	72.4	157
	Rural	41.8	12.8	43.8	1.7	100.0	54.5	1252
	Total	43.6	14.1	40.5	1.9	100.0	57.6	1409
Mother's age at birth								
Less than 20		26.8	25.4	47.6	0.2	100.0	52.2	846
20-34		29.4	30.8	39.4	0.3	100.0	60.2	12498
35-49		27.6	26.0	46.0	0.5	100.0	53.5	2921
Missing		29.5	32.8	37.4	0.3	100.0	62.3	7019
Percent of women who had antenatal care:								
None		25.8	16.3	57.5	0.4	100.0	42.0	11077
1-3 visits		31.9	32.3	35.7	0.1	100.0	64.1	5946
4+ visits		31.6	49.6	18.3	0.4	100.0	81.2	6259
Missing/DK		0.0	0.0	100.0	0.0	100.0	0.0	2

Percent distribution of women aged 15–49 years with a live birth in the last two years by place of delivery of the most recent live birth, Pakistan NNS 2018							
	Place of delivery					Delivered in health facility	Number of women with a live birth in the last two years
	Public sector health facility	Private sector health facility	Home	Other	Total		
Education							
None	26.6	23.7	49.3	0.4	100.0	50.3	13157
Primary	32.6	29.6	37.5	0.2	100.0	62.2	2527
Middle	33.1	34.1	32.4	0.4	100.0	67.1	2170
Secondary	32.5	43.4	23.9	0.2	100.0	75.8	2642
Higher	30.1	47.5	21.9	0.6	100.0	77.5	2788
Wealth index quintile							
Poorest	21.8	18.9	58.8	0.5	100.0	40.7	6398
Second	29.4	22.5	47.7	0.4	100.0	51.9	5382
Middle	32.3	29.3	38.1	0.3	100.0	61.5	4569
Fourth	33.0	37.6	29.2	0.2	100.0	70.5	3985
Richest	29.5	48.0	22.2	0.3	100.0	77.4	2950

6.5.11 Newborn care practices

WHO guidelines recommend that babies be dried and put in skin-to-skin contact with the mother within an hour of birth, that bathing should be delayed until 24 hours after birth, and chlorhexidine should be used for cord care. Almost 43.3% women reported that they put their child directly on their chest (skin-to-skin) within one hour of birth; of these, 65.2% wrapped their newborns before placing them so. These practices were more prevalent in urban areas in the majority of provinces and regions. Skin-to-skin contact was more commonly reported in AJK (57.3%) and Sindh (52.9%), while wrapping the baby before putting it on the bare chest was more common in GB (78.7%) and AJK (75.3%). These practices were also more common among mothers aged 20–34 years and among those with higher education. Skin-to-skin contact for newborns was most common among the poorest wealth index quintile (45.5%).

Around 77.1% of newborns were dried or wiped soon after birth and almost half were bathed (52.3%) on the same day. The highest percentages of those who dried and wiped the baby soon after birth were seen in GB (83.8%) and Sindh (80.6%). Bathing the baby on the day of birth (45.9%) and placing the baby on the bare chest (42.9%) was more common in facility-based deliveries, and the other practices were more prevalent among home-based deliveries, including delayed bathing after birth.

Various substances were applied to the cord stump, including chlorhexidine (12.0%), other antiseptics like alcohol, spirit, gentian violet or Dettol (24.8%), *surma* (18.8%), mustard oil (30.6%), ash (2.0%) and animal dung (0.3%), while 27.9% did not apply anything to the cord. Application of chlorhexidine (15.4%) and other antiseptics (29.1%) was more common in urban settings especially in Punjab (chlorhexidine: 12.6%; other antiseptics: 34.2%). In Balochistan it was more common to apply *surma* (34.1%), ash (5.1%), animal dung (1.2%) or nothing (42.2%), while in AJK mustard oil (53.7%) was commonly applied.

Deliveries in public health facilities were more likely to use chlorhexidine (14.4%) and other antiseptics (27%) for cord care than home deliveries. Mothers who were between 20–34 years of age, had higher education or belonged to the richest wealth index quintile were also more likely to use chlorhexidine and other antiseptics, whereas those who were poorest or not educated were more likely to use other substances.

6.5.12 Postnatal care

Postnatal care contacts are important touchpoints for health and nutrition counselling and screening, and especially for providing breastfeeding support. About 32.2% of women with a live birth in the two years preceding the survey received postnatal care after the delivery, more commonly in urban (38.4%) than rural areas (28.6%). Importantly, 67.8% did not receive postnatal care, with a higher proportion in rural areas (71.4%).

Among those who received postnatal care, 19.9% had it on the day of delivery, 1.5% received it one day after the delivery, 1.0% after two days, 1.6% after 3–6 days, and 4.8% after the first week following birth. About 12.6% had one postnatal check, 9.7% had two, and 9.8% had three or more. Urban women were consistently more likely to receive postnatal care than their rural counterparts.

Women in Sindh (38.1%), followed by ICT (36.3%) and AJK (31.6%), were most likely to receive postnatal care while those in KP-NMD (13.2%), Balochistan (14.7%) and KP (14.9%) were least likely. Punjab (23.2%) and Sindh (23.1%) had the highest proportion of checks on the day of delivery. Postnatal checks were more common in the urban areas of all provinces and regions except in ICT, where they were more common in rural areas. About 33.9% of mothers aged 20–34 years at the time of delivery received postnatal care, either on the same day or within two days of birth, while most mothers (71.1%) less than 20 years of age at birth did not receive postnatal care at all.

Women with higher education and those belonging to the richest wealth index quintile were more likely to receive a postnatal care visit than their counterparts. Women who delivered in a facility (43.7%) were more likely to receive postnatal care, though more if they delivered in a private facility (50.8%) than a public one (36.1%). The majority (85.3%) of women who had home deliveries did not receive postnatal care.

Table 6-43: Postnatal health checks for mothers

Percentage of women aged 15–49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, percent distribution whose last live birth received postnatal care (PNC) visits from any health provider after birth, by timing of visit, and percentage who received postnatal health checks, Pakistan NNS 2018															
		Post-natal health check for the mothers	PNC visit for mothers conducted:								Number of PNC health checks for mothers:				Number of last live births in the last two years
			Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	No post-natal care visit	Missing/DK	Total	None	One	Two	Three or more	
Total		32.2	19.9	1.5	1.0	1.6	4.8	67.8	3.2	100.0	67.8	12.6	9.7	9.8	23284
Urban		38.4	23.3	2.2	1.2	2.4	5.8	61.6	3.5	100.0	61.6	14.7	11.7	12.0	6734
Rural		28.6	18.0	1.2	1.0	1.2	4.1	71.4	3.1	100.0	71.4	11.4	8.6	8.6	16550
Province/ region															
Punjab	Urban	35.7	23.0	1.7	1.0	1.7	3.8	64.3	4.6	100.0	64.3	11.6	11.8	12.3	2723
	Rural	34.8	23.4	1.4	1.2	1.3	4.0	65.2	3.6	100.0	65.2	12.3	11.0	11.5	5795
	Total	35.1	23.2	1.5	1.1	1.4	3.9	64.9	3.9	100.0	64.9	12.0	11.3	11.8	8518
Sindh	Urban	48.2	28.3	3.4	1.2	4.1	9.8	51.8	1.4	100.0	51.8	21.1	12.8	14.4	1989
	Rural	28.8	18.3	1.2	.9	1.7	5.0	71.2	1.6	100.0	71.2	12.8	7.9	8.1	2183
	Total	38.1	23.1	2.3	1.1	2.8	7.3	61.9	1.5	100.0	61.9	16.8	10.2	11.1	4172
KP	Urban	18.4	8.2	.8	.8	.9	5.5	81.6	2.1	100.0	81.6	9.2	6.5	2.6	606
	Rural	14.0	5.8	.4	.2	.7	4.7	86.0	2.2	100.0	86.0	8.2	3.3	2.5	2220
	Total	14.9	6.3	.5	.4	.7	4.8	85.1	2.2	100.0	85.1	8.4	4.0	2.5	2826
Balochistan	Urban	24.7	10.7	.9	4.1	.3	1.7	75.3	6.9	100.0	75.3	12.7	9.6	2.3	764
	Rural	11.5	4.0	.7	.5	.5	1.4	88.5	4.4	100.0	88.5	5.6	4.3	1.7	2930
	Total	14.7	5.6	.8	1.4	.5	1.5	85.3	5.0	100.0	85.3	7.3	5.6	1.8	3694

Percentage of women aged 15–49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, percent distribution whose last live birth received postnatal care (PNC) visits from any health provider after birth, by timing of visit, and percentage who received postnatal health checks, Pakistan NNS 2018

		Post-natal health check for the mothers	PNC visit for mothers conducted:								Number of PNC health checks for mothers:				Number of last live births in the last two years
			Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	No post-natal care visit	Missing/DK	Total	None	One	Two	Three or more	
ICT	Urban	30.6	14.8	.6	1.5	.7	4.6	69.4	8.4	100.0	69.4	13.1	10.0	7.5	145
	Rural	43.0	23.1	1.1	2.0	3.3	6.3	57.0	7.2	100.0	57.0	19.9	14.3	8.9	145
	Total	36.3	18.6	.8	1.7	1.9	5.4	63.7	7.9	100.0	63.7	16.2	11.9	8.1	290
KP-NMD	Total	13.2	5.0	.5	.1	.3	4.0	86.8	3.4	100.0	86.8	6.8	4.0	2.4	703
AJK	Urban	43.8	25.8	1.5	1.1	2.1	6.8	56.2	6.4	100.0	56.2	21.1	11.4	11.3	314
	Rural	29.9	15.5	1.3	1.6	2.1	4.9	70.1	4.4	100.0	70.1	14.2	7.6	8.0	1358
	Total	31.6	16.8	1.4	1.6	2.1	5.2	68.4	4.6	100.0	68.4	15.1	8.1	8.4	1672
GB	Urban	33.0	22.7	2.5	2.0	1.8	2.9	67.0	1.1	100.0	67.0	15.7	4.0	13.4	157
	Rural	22.9	14.5	1.6	.5	1.2	4.0	77.1	1.2	100.0	77.1	12.2	4.2	6.5	1252
	Total	24.7	15.9	1.7	.8	1.3	3.8	75.3	1.2	100.0	75.3	12.8	4.2	7.7	1409
Mother's age at birth															
Less than 20		28.9	16.7	1.5	1.0	1.9	4.0	71.1	3.8	100.0	71.1	14.4	7.9	6.6	846
20-34		33.9	21.0	1.5	1.1	1.7	5.1	66.1	3.5	100.0	66.1	14.1	10.0	9.8	12498
35-49		29.1	16.8	2.0	.9	1.4	5.4	70.9	2.6	100.0	70.9	13.0	9.2	6.8	2921
Missing		30.9	19.7	1.5	1.0	1.6	4.3	69.1	3.0	100.0	69.1	10.5	9.6	10.8	7019
Place of delivery															
Home		14.7	8.4	1.0	.7	1.0	1.8	85.3	1.9	100.0	85.3	5.9	4.7	4.1	10348
Health facility		43.7	27.6	1.9	1.3	2.1	6.7	56.3	4.1	100.0	56.3	16.9	13.1	13.6	12795
- Public		36.1	23.4	1.4	1.0	1.3	4.9	63.9	4.1	100.0	63.9	14.7	11.6	9.8	7055
- Private		50.8	31.7	2.3	1.6	2.8	8.4	49.2	4.1	100.0	49.2	19.1	14.5	17.2	5740
Other/DK/Missing		26.1	4.8	2.5	1.2	3.2	6.8	73.9	7.5	100.0	73.9	21.8	3.0	1.3	128
Education															
None		23.8	14.9	1.2	.7	1.1	3.5	76.2	2.3	100.0	76.2	10.4	6.9	6.5	13157
Primary		35.6	21.3	1.9	1.3	2.4	5.3	64.4	3.5	100.0	64.4	13.7	10.2	11.7	2527
Middle		37.6	24.1	2.1	.9	1.9	4.7	62.4	3.9	100.0	62.4	14.0	12.2	11.4	2170
Secondary		42.2	26.1	2.1	1.8	2.2	5.7	57.8	4.3	100.0	57.8	15.3	14.0	12.9	2642
Higher		49.1	30.4	1.4	1.4	2.5	8.4	50.9	5.0	100.0	50.9	16.9	14.8	17.4	2788
Wealth index quintile															
Poorest		19.8	12.3	1.0	.5	1.3	2.9	80.2	1.9	100.0	80.2	9.0	5.9	4.9	6398
Second		25.7	15.9	1.0	1.0	1.2	3.8	74.3	2.7	100.0	74.3	10.5	7.8	7.4	5382
Middle		32.4	20.4	1.7	1.2	1.5	4.3	67.6	3.3	100.0	67.6	12.8	9.9	9.6	4569
Fourth		39.2	24.6	1.9	1.1	1.9	6.1	60.8	3.6	100.0	60.8	15.1	11.3	12.8	3985
Richest		44.8	27.2	2.0	1.6	2.4	6.7	55.2	4.9	100.0	55.2	15.8	14.2	14.8	2950

6.5.12.1 Postnatal care for mothers within one week of birth

The majority of women who had a live birth in the two years prior to the survey (75.1%) were provided postnatal care by a gynaecologist, especially in urban (83.7%) rather than rural settings

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(68.4%). Other postnatal care providers included any other doctor (8.1%), nurse (7.2%), traditional birth attendant (5%), CHW (2.1%), community midwife (1.5%) and LHV (1%).

Women in ICT were more likely (95.1%) to receive postnatal care from a gynaecologist; in Balochistan from another doctor (21.8%) or traditional birth attendant (14.9%); in GB from a nurse (19.8%); in KP-NMD from a community health worker in KP-NMD (7.4%); and in KP from an LHV (6.3%). In ICT, no postnatal care was provided by CHWs, CMWs, LHVs and traditional birth attendants, while KP-NMD women did not receive any postnatal care from LHVs.

Women who were 20–34 years old at the time of birth (75.3%) were more likely to receive postnatal care from a gynaecologist, while those below 20 years of age were more likely to receive it from other doctors (14%), nurses (13%), LHVs (2.4%) and traditional birth attendants (7.2%).

The majority of women with higher education (84.1%) and those belonging to the richest wealth index quintile (85.3%) received postnatal care from gynaecologists. Women who delivered in health facilities were also more likely to receive postnatal care from gynaecologists (83.3%). Of those delivered at home postnatal care was widely provided by traditional birth attendants (26.9%).

Table 6-44: Postnatal care within one week of birth

Percent distribution of women aged 15–49 years with a live birth in the last two years whose last live birth received a postnatal care visit within one week of birth, by location and provider of the first postnatal care visit, Pakistan NNS 2018										
		Provider of first postnatal care visit for mothers								Number of last live births in the last two years with a postnatal care visit within the first week of life
		Gynaecologist	Other doctor	Nurse	Community Midwife	Community Health Worker	Lady Health Visitor	Traditional Birth Attendant	Total	
Total		75.1	8.1	7.2	1.5	2.1	1.0	5.0	100.0	4796
Urban		83.7	6.8	4.3	1.1	1.0	0.1	3.0	100.0	1783
Rural		68.4	9.1	9.4	1.7	3.0	1.7	6.7	100.0	3013
Province/ region										
Punjab	Urban	82.4	6.1	6.1	1.8	1.6	0.1	1.9	100.0	785
	Rural	65.7	8.7	11.4	1.9	4.0	2.0	6.3	100.0	1609
	Total	72.0	7.7	9.4	1.9	3.1	1.3	4.6	100.0	2394
Sindh	Urban	86.3	7.3	1.8	0.2	0.1	0.0	4.2	100.0	697
	Rural	75.7	10.4	4.8	0.5	0.0	0.0	8.6	100.0	474
	Total	82.1	8.5	3.0	0.3	0.1	0.0	5.9	100.0	1171
KP	Urban	82.4	3.5	4.9	0.4	4.1	1.2	3.5	100.0	66
	Rural	74.2	5.7	3.4	1.6	3.7	8.3	3.1	100.0	165
	Total	76.5	5.1	3.8	1.3	3.8	6.3	3.2	100.0	231
Balochistan	Urban	58.3	21.9	11.2	1.2	1.6	0.0	5.8	100.0	71
	Rural	32.3	21.8	6.7	12.1	2.7	1.4	23.1	100.0	184
	Total	44.7	21.8	8.8	6.9	2.2	0.7	14.9	100.0	255
ICT	Urban	96.7	3.3	0.0	0.0	0.0	0.0	0.0	100.0	25
	Rural	94.0	2.5	3.5	0.0	0.0	0.0	0.0	100.0	46
	Total	95.1	2.8	2.0	0.0	0.0	0.0	0.0	100.0	71

Percent distribution of women aged 15–49 years with a live birth in the last two years whose last live birth received a postnatal care visit within one week of birth, by location and provider of the first postnatal care visit, Pakistan NNS 2018

		Provider of first postnatal care visit for mothers								Number of last live births in the last two years with a postnatal care visit within the first week of life
		Gynaecologist	Other doctor	Nurse	Community Midwife	Community Health Worker	Lady Health Visitor	Traditional Birth Attendant	Total	
KP-NMD	Total	73.5	5.6	5.0	2.4	7.4	0.0	6.1	100.0	45
AJK	Urban	85.1	12.0	0.6	1.6	0.4	0.0	0.3	100.0	87
	Rural	84.4	5.5	7.3	0.8	1.4	0.0	0.6	100.0	254
	Total	84.5	6.7	6.1	0.9	1.2	0.0	0.5	100.0	341
GB	Urban	69.8	8.5	21.7	0.0	0.0	0.0	0.0	100.0	45
	Rural	62.3	13.0	19.1	1.5	2.7	1.3	0.2	100.0	243
	Total	64.2	11.8	19.8	1.1	2.0	1.0	0.1	100.0	288
Mother's age at birth										
Less than 20		58.1	14.0	13.0	3.0	2.2	2.4	7.2	100.0	143
20-34		75.3	7.4	7.7	1.5	2.3	0.8	5.0	100.0	2687
35-49		72.1	9.0	6.9	1.8	2.7	1.1	6.2	100.0	483
Missing		76.8	8.4	6.0	1.2	1.8	1.2	4.7	100.0	1483
Place of delivery										
Home		37.8	8.8	16.3	2.5	7.0	0.8	26.9	100.0	959
Health facility		83.3	8.0	5.2	1.2	1.1	1.1	0.2	100.0	3824
- Public		79.0	9.3	6.2	1.3	2.2	1.7	0.3	100.0	1790
- Private		86.1	7.1	4.5	1.2	0.3	0.6	0.2	100.0	2034
Other/DK/Missing		94.8	2.5	2.0	0.0	0.6	0.0	0.0	100.0	12
Education										
None		68.1	9.4	7.6	1.8	2.3	1.5	9.4	100.0	1908
Primary		72.4	6.7	9.4	1.7	4.2	1.0	4.7	100.0	633
Middle		78.6	7.1	8.0	0.5	2.1	0.7	3.1	100.0	539
Secondary		81.1	7.8	6.6	0.7	1.6	0.5	1.7	100.0	794
Higher		84.1	7.4	4.6	1.9	0.8	0.6	0.5	100.0	922
Wealth index quintile										
Poorest		62.0	12.7	6.8	1.7	2.4	1.4	12.9	100.0	745
Second		66.3	8.5	11.2	1.5	3.6	1.4	7.6	100.0	886
Middle		72.6	8.3	7.7	1.8	2.1	1.7	5.9	100.0	1038
Fourth		79.0	7.6	6.7	1.3	1.9	0.7	2.9	100.0	1141
Richest		85.3	5.9	4.9	1.2	1.4	0.3	1.0	100.0	986

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6.5.12.2 Postnatal care for newborns

About 28.9% of newborns received postnatal care either on the day of birth (18.2%), one day later (1.6%), two days later (1.3%), 3–6 days later (1.6%) or after the first week of birth (3.5%). Among those who received postnatal care, 11.7% had one, 8.7% had two and 8.6% had three or more checks. Urban newborns were more likely to receive postnatal care.

Many newborns (71.1%) received no postnatal care, with a higher proportion in rural areas (73.9%). The highest proportion of newborns who received postnatal care were in ICT (36.9%), Sindh (35.7%) and AJK (33.2%). Those in Sindh were more likely to receive checks on the day of delivery (21.9%) than other provinces and regions. Newborns in Balochistan (88.3%), KP-NMD (85.3%) and KP (81.0%) were least likely to receive postnatal care.

Newborns born in health facilities (38.5%), especially in private sector facilities (43.6%), were more likely to receive postnatal care than those born at home (14.3%). Of the latter, 85.7% did not have any postnatal care. Moreover, newborns born to mothers aged 20–34 years (30.1%), mothers with higher education (43.5%), or those belonging to the richest wealth index quintile (39.1%) were more likely to receive postnatal care.

Table 6-45: Postnatal care for newborns

Percentage of women aged 15–49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, percent distribution whose last live birth received postnatal care visits from any health provider after birth, by timing of visit, and percentage who received postnatal checks, Pakistan NNS 2018

		Post-natal health check for the newborn	Postnatal care visit for newborns								Number of postnatal health checks for newborns:				Number of last live births in the last two years
			Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	No postnatal care visit	Missing/ DK	Total	None	One	Two	Three or more	
Total		28.9	18.2	1.6	1.3	1.6	3.5	71.1	2.7	100.0	71.1	11.7	8.7	8.6	23284
Urban		33.8	21.1	2.0	1.4	2.1	4.3	66.2	2.9	100.0	66.2	13.6	9.6	10.6	6734
Rural		26.1	16.6	1.3	1.2	1.4	3.0	73.9	2.6	100.0	73.9	10.6	8.1	7.4	16550
Province/ region															
Punjab	Urban	29.5	20.1	1.4	0.7	1.0	2.8	70.5	3.3	100.0	70.5	9.6	9.6	10.3	2723
	Rural	29.6	21.0	1.3	1.2	0.8	2.6	70.4	2.8	100.0	70.4	10.7	9.8	9.1	5795
	Total	29.6	20.7	1.3	1.0	0.9	2.7	70.4	3.0	100.0	70.4	10.3	9.7	9.5	8518
Sindh	Urban	44.9	26.8	3.4	2.3	3.6	6.9	55.1	1.9	100.0	55.1	21.5	10.6	12.8	1989
	Rural	27.3	17.3	2.0	1.7	1.9	2.9	72.7	1.5	100.0	72.7	12.3	8.2	6.8	2183
	Total	35.7	21.9	2.7	2.0	2.7	4.8	64.3	1.7	100.0	64.3	16.7	9.4	9.7	4172

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Percentage of women aged 15–49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, percent distribution whose last live birth received postnatal care visits from any health provider after birth, by timing of visit, and percentage who received postnatal checks, Pakistan NNS 2018

		Post-natal health check for the newborn	Postnatal care visit for newborns								Number of postnatal health checks for newborns:				Number of last live births in the last two years
			Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	No postnatal care visit	Missing/ DK	Total	None	One	Two	Three or more	
KP	Urban	19.3	5.1	0.7	2.0	4.3	4.9	80.7	2.5	100.0	80.7	7.3	5.2	6.8	606
	Rural	19.0	6.5	0.7	0.8	2.8	4.8	81.0	3.3	100.0	81.0	9.7	5.0	4.3	2220
	Total	19.0	6.2	0.7	1.1	3.1	4.8	81.0	3.2	100.0	81.0	9.2	5.0	4.8	2826
Balochistan	Urban	22.4	12.4	0.1	2.3	1.1	3.3	77.6	3.2	100.0	77.6	11.1	8.6	2.7	764
	Rural	8.2	2.7	0.8	0.2	0.5	1.1	91.8	2.9	100.0	91.8	4.2	2.5	1.6	2930
	Total	11.7	5.1	0.6	0.7	0.7	1.6	88.3	3.0	100.0	88.3	5.9	4.0	1.8	3694
ICT	Urban	31.2	15.4	3.3	0.7	0.0	4.1	68.8	7.8	100.0	68.8	11.4	11.2	8.7	145
	Rural	43.7	21.9	3.5	1.9	2.8	3.1	56.3	10.5	100.0	56.3	20.1	13.5	10.0	145
	Total	36.9	18.3	3.4	1.2	1.3	3.6	63.1	9.0	100.0	63.1	15.4	12.3	9.3	290
KP-NMD	Total	14.7	5.2	1.2	0.4	1.3	3.3	85.3	3.3	100.0	85.3	7.5	2.5	4.6	703
AJK	Urban	44.3	24.9	5.0	2.3	3.1	6.2	55.7	2.8	100.0	55.7	23.0	10.0	11.3	314
	Rural	31.6	15.5	2.1	2.6	3.2	5.9	68.4	2.5	100.0	68.4	14.9	7.7	9.1	1358
	Total	33.2	16.7	2.4	2.5	3.2	6.0	66.8	2.5	100.0	66.8	15.9	8.0	9.3	1672
GB	Urban	31.7	23.2	1.3	0.0	1.4	5.0	68.3	0.8	100.0	68.3	10.1	6.1	15.5	157
	Rural	27.3	15.3	1.7	0.9	1.3	6.2	72.7	2.0	100.0	72.7	14.7	4.0	8.6	1252
	Total	28.1	16.7	1.6	0.7	1.3	6.0	71.9	1.7	100.0	71.9	13.9	4.3	9.8	1409
Mother's age at birth															
Less than 20		25.2	14.5	1.8	0.8	2.7	2.7	74.8	2.7	100.0	74.8	13.5	5.4	6.3	846
20-34		30.1	19.0	1.7	1.2	1.6	3.8	69.9	2.7	100.0	69.9	12.7	9.0	8.4	12498
35-49		27.2	15.2	1.6	1.1	2.0	3.8	72.8	3.4	100.0	72.8	13.0	7.1	7.0	2921
Missing		28.2	18.3	1.4	1.4	1.5	3.0	71.8	2.6	100.0	71.8	9.9	8.9	9.3	7019

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Percentage of women aged 15–49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, percent distribution whose last live birth received postnatal care visits from any health provider after birth, by timing of visit, and percentage who received postnatal checks, Pakistan NNS 2018

	Post-natal health check for the newborn	Postnatal care visit for newborns								Number of postnatal health checks for newborns:				Number of last live births in the last two years
		Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	No postnatal care visit	Missing/ DK	Total	None	One	Two	Three or more	
Place of delivery														
Home	14.3	7.5	1.2	0.8	1.1	1.9	85.7	1.9	100.0	85.7	6.3	4.6	3.4	10348
Health facility	38.5	25.4	1.8	1.6	2.0	4.5	61.5	3.2	100.0	61.5	15.2	11.4	12.0	12795
Public	33.1	21.2	1.4	1.5	1.7	3.6	66.9	3.6	100.0	66.9	13.6	9.8	9.7	7055
Private	43.6	29.3	2.3	1.7	2.3	5.3	56.4	2.9	100.0	56.4	16.6	13.0	14.1	5740
Other/DK/Missing	24.3	5.6	2.8	0.3	0.3	11.5	75.7	3.8	100.0	75.7	17.8	0.3	6.2	128
Education														
None	22.1	13.1	1.4	1.1	1.3	2.7	77.9	2.5	100.0	77.9	10.2	6.1	5.7	13157
Primary	30.5	20.2	1.4	1.2	1.7	3.3	69.5	2.6	100.0	69.5	11.5	10.4	8.7	2527
Middle	33.1	21.8	1.4	1.2	1.7	2.9	66.9	4.1	100.0	66.9	11.4	11.5	10.1	2170
Secondary	37.8	24.5	1.9	1.9	2.2	4.6	62.2	2.7	100.0	62.2	13.6	11.4	12.8	2642
Wealth index quintile														
Higher	43.5	28.4	2.3	1.5	2.3	6.0	56.5	2.9	100.0	56.5	16.1	12.5	14.9	2788
Poorest	18.7	10.8	1.4	1.0	1.2	2.6	81.3	1.6	100.0	81.3	9.0	5.1	4.5	6398
Second	23.4	14.7	1.1	1.0	1.5	2.4	76.6	2.7	100.0	76.6	9.9	6.8	6.7	5382
Middle	29.5	18.9	1.7	1.4	1.4	3.4	70.5	2.7	100.0	70.5	11.6	9.6	8.4	4569
Fourth	34.7	22.0	1.6	1.5	2.2	4.3	65.3	3.0	100.0	65.3	13.6	10.7	10.5	3985
Richest	39.1	25.1	2.2	1.5	1.8	4.7	60.9	3.8	100.0	60.9	14.6	11.2	13.3	2950

Table 6-46: Newborn care

Percentage of women age 15-49 years with a live birth in the last two years whose most recent live-born child was dried after birth and percentage given skin to skin contact, percent distribution of timing of first bath of child, and substance applied to the cord stump, Pakistan NNS 2018

							Bathed for the first time after birth							Used for cord cutting							
		Women who put child directly on bare chest (skin-toskin) within one hour	Women whose child was dried or wiped soon after birth	Women whose child was wrapped before being placed on the bare chest	Number of last live births in the last two years	Never bathed	Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	Missing/DK	None	Chlorhexidine	Other antiseptic (alcohol, spirit, gentian violet, Dettol)	Surma [1]	Mustard oil	Ash	Animal dung	Number of last live births in the last two years
Total		43.3	77.1	65.2	23284	1.8	52.3	8.8	10.0	11.7	3.8	11.6	27.9	12.0	24.8	18.8	30.6	2.0	0.3	23284
Urban		44.0	78.3	66.3	6734	1.5	49.0	10.2	11.7	13.0	3.4	11.1	25.0	15.4	29.1	14.4	26.7	1.4	0.2	6734
Rural		42.9	76.3	64.5	16550	2.0	54.1	8.0	8.9	11.0	4.0	11.9	29.5	9.9	22.3	21.4	32.8	2.3	0.4	16550
Province/ region																				
Punjab	Urban	40.2	76.4	63.1	2723	1.6	44.1	11.5	14.0	12.1	2.6	14.1	24.4	15.6	40.4	10.8	19.9	1.5	0.1	2723
	Rural	37.9	76.9	63.3	5795	1.1	52.8	8.3	11.0	12.8	1.8	12.3	27.4	10.9	30.5	17.7	28.2	1.9	0.2	5795
	Total	38.7	76.7	63.2	8518	1.3	49.5	9.5	12.2	12.6	2.1	12.9	26.3	12.6	34.2	15.1	25.1	1.7	0.2	8518
Sindh	Urban	50.6	81.5	70.8	1989	1.1	55.5	9.7	9.9	15.9	2.7	5.2	23.7	15.1	15.3	19.7	34.7	1.2	0.2	1989
	Rural	55.1	79.7	69.5	2183	1.1	65.5	11.0	7.9	9.2	1.2	4.1	26.6	9.4	13.9	36.6	37.2	2.3	0.7	2183
	Total	52.9	80.6	70.1	4172	1.1	60.8	10.4	8.8	12.4	2.0	4.6	25.2	12.1	14.5	28.5	36.0	1.8	0.5	4172
KP	Urban	37.6	82.3	71.5	606	2.5	53.3	6.2	4.8	8.2	15.9	9.0	30.2	16.3	15.7	12.1	40.1	1.9	0.0	606
	Rural	42.0	76.0	65.7	2220	4.6	48.2	5.2	5.2	5.8	16.1	15.0	36.0	11.1	15.5	12.8	39.3	2.1	0.3	2220
	Total	41.1	77.3	66.9	2826	4.1	49.2	5.4	5.1	6.3	16.1	13.8	34.8	12.1	15.5	12.6	39.5	2.1	0.2	2826
Balochistan	Urban	57.2	72.0	64.7	764	2.6	65.0	4.4	4.7	3.8	0.7	18.8	37.8	15.0	9.0	29.4	25.0	2.0	0.2	764
	Rural	48.0	63.6	56.6	2930	5.6	57.8	4.9	4.3	4.5	1.0	21.9	43.7	4.9	5.4	35.6	27.5	6.1	1.5	2930
	Total	50.3	65.7	58.6	3694	4.9	59.5	4.8	4.4	4.3	0.9	21.1	42.2	7.4	6.3	34.1	26.9	5.1	1.2	3694
ICT	Urban	29.0	76.1	60.3	145	1.3	35.7	11.4	16.3	18.4	5.9	11.0	20.2	13.6	34.6	9.8	33.6	0.0	0.0	145
	Rural	19.5	74.2	46.2	145	3.2	29.8	7.0	16.7	29.0	6.3	7.9	13.4	4.8	33.6	3.1	43.6	0.0	0.0	145
	Total	24.7	75.2	53.9	290	2.2	33.0	9.4	16.5	23.2	6.1	9.6	17.1	9.6	34.1	6.8	38.1	0.0	0.0	290
KP-NMD	Total	38.5	69.4	56.2	703	4.5	39.2	5.6	3.5	7.4	13.1	26.6	31.8	6.0	11.5	10.7	48.9	4.0	1.2	703
AJK	Urban	61.2	83.8	81.9	314	2.7	25.7	5.8	10.3	25.2	6.1	24.4	25.6	10.8	11.2	1.9	54.4	0.0	0.8	314
	Rural	56.8	78.2	74.3	1358	3.2	32.0	4.7	10.0	28.6	7.6	14.0	26.1	9.4	10.3	3.2	53.6	1.3	0.2	1358
	Total	57.3	78.9	75.3	1672	3.1	31.2	4.8	10.0	28.2	7.4	15.3	26.0	9.5	10.4	3.0	53.7	1.2	0.3	1672
GB	Urban	21.6	86.9	85.8	157	0.6	55.6	6.3	3.7	13.9	11.2	8.7	35.6	8.6	11.7	2.4	26.7	0.7	0.0	157
	Rural	28.0	83.2	77.2	1252	3.2	60.2	8.5	4.1	9.6	6.5	7.9	38.6	9.0	7.0	3.9	35.7	1.9	0.2	1252
	Total	26.9	83.8	78.7	1409	2.7	59.4	8.1	4.0	10.4	7.3	8.0	38.0	8.9	7.8	3.7	34.1	1.7	0.2	1409

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Percentage of women age 15-49 years with a live birth in the last two years whose most recent live-born child was dried after birth and percentage given skin to skin contact, percent distribution of timing of first bath of child, and substance applied to the cord stump, Pakistan NNS 2018

	Women who put child directly on bare chest (skin-toskin) within one hour	Women whose child was dried or wiped soon after birth	Women whose child was wrapped before being placed on the bare chest	Number of last live births in the last two years	Bathed for the first time after birth							Used for cord cutting							Number of last live births in the last two years
					Never bathed	Same day	1 day following birth	2 days following birth	3-6 days following birth	After the first week following birth	Missing/DK	None	Chlorhexidine	Other antiseptic (alcohol, spirit, gentian violet, Dettol)	Surma [1]	Mustard oil	Ash	Animal dung	
Mother's age at birth																			
Less than 20	41.3	76.5	63.3	846	1.3	57.1	10.2	6.9	9.5	2.5	12.5	31.1	11.9	20.4	21.9	33.1	2.4	0.4	846
20-34	45.2	79.3	68.3	12498	1.8	52.3	8.9	10.0	12.8	3.5	10.7	27.5	11.6	26.1	18.4	31.0	2.3	0.4	12498
35-49	44.8	78.8	66.4	2921	2.4	52.7	9.2	10.2	10.4	3.7	11.6	29.0	11.0	20.9	20.0	31.9	2.5	0.5	2921
Missing	40.6	73.8	61.0	7019	1.8	51.7	8.6	10.1	10.8	4.4	12.8	27.7	12.7	24.6	18.8	29.4	1.3	0.2	7019
Place of delivery																			
Home	44.0	75.1	64.0	10348	2.0	62.1	7.6	6.6	5.7	3.2	12.8	33.5	5.9	14.8	25.7	36.8	3.3	0.5	10348
Health facility	42.9	78.5	66.1	12795	1.7	45.9	9.6	12.2	15.7	4.2	10.7	24.0	15.9	31.4	14.4	26.6	1.1	0.2	12795
- Public	45.1	74.1	65.0	7055	1.7	48.8	9.0	10.9	12.3	3.7	13.6	28.0	14.4	27.0	15.3	27.6	1.4	0.3	7055
- Private	40.9	82.6	67.2	5740	1.7	43.3	10.2	13.4	18.9	4.6	8.0	20.2	17.4	35.7	13.5	25.6	0.8	0.2	5740
Other/DK/Missing	32.3	58.9	45.3	128	6.1	33.0	9.2	11.3	7.9	5.7	26.8	57.0	11.6	19.1	4.2	10.7	0.0	1.1	128
Education																			
None	43.2	75.5	63.9	13157	2.0	56.2	9.1	8.1	9.2	3.9	11.6	30.7	8.9	18.1	24.8	33.8	2.6	0.6	13157
Primary	42.1	78.3	64.6	2527	1.1	50.8	9.2	11.5	11.4	4.3	11.8	25.8	11.7	28.8	17.7	28.7	1.6	0.1	2527
Middle	43.3	78.8	67.4	2170	1.5	50.0	7.8	11.0	14.2	3.2	12.4	25.0	13.7	30.9	11.8	30.2	1.5	0.2	2170
Secondary	42.5	78.7	65.0	2642	2.3	46.8	7.2	12.3	16.2	3.9	11.2	23.4	16.2	32.8	10.9	29.0	1.1	0.1	2642
Higher	45.7	79.4	69.3	2788	1.8	44.3	9.9	13.1	16.1	3.4	11.3	24.6	19.3	36.2	8.4	20.9	1.1	0.0	2788
Wealth index quintile																			
Poorest	45.5	74.7	64.2	6398	1.7	61.3	9.0	6.4	7.2	2.9	11.6	30.9	6.8	12.1	33.5	36.6	3.1	0.9	6398
Second	42.9	75.2	64.1	5382	1.8	54.4	8.9	8.3	9.6	4.5	12.5	31.7	9.3	20.1	23.3	33.0	2.5	0.5	5382
Middle	41.9	77.2	65.8	4569	2.2	51.6	8.3	9.8	12.6	4.4	11.0	29.0	12.5	24.1	15.8	30.5	1.8	0.1	4569
Fourth	42.3	79.3	65.7	3985	1.8	48.7	8.9	11.0	13.9	3.9	11.7	25.5	13.6	30.3	11.9	29.2	1.2	0.0	3985
Richest	43.9	79.0	66.1	2950	1.6	44.4	9.2	14.7	15.6	3.4	11.1	21.8	18.1	38.8	8.7	22.8	1.2	0.1	2950

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6.5.12.3 Purpose of postnatal health checks for newborns

Vaccination/polio drops (56.7%) and assessment for complications (49.6%) were cited as the two most common purposes of postnatal checks for newborns, both boys and girls. These were followed by treatment for child (31.2%) and referral to a health facility (9.5%). Vaccination/polio drops (59%) and assessment for complications (50.6%) were more commonly cited in urban than in rural areas where treatment (35.2%) and referral (10.6%) were more frequently identified as the purpose of postnatal checks.

Vaccination/polio drops (71.8%) were cited as the main purpose of postnatal care visits in KP-NMD, Punjab (59.7%), and ICT (47.2%), and treatment of the child in GB (46.3%). Mothers aged 20–34 years at the time of delivery of age were more likely to cite all listed purposes except child's treatment. Mothers from the fourth wealth index quintile cited vaccination/polio drops (59.2%) and assessment for complications (53.3%) more commonly than other wealth quintiles.

Assessment of children (52.4%) was most frequently cited when the child was born in a health facility while vaccination/polio drops (61.7%), referral (13.3%) and treatment (33.8%) were more often cited for home deliveries.

Table 6-47: Purpose of postnatal health checks for newborns

Percent distribution of women age 15-49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, Pakistan NNS 2018							
		Purpose of postnatal health checks for newborns					
		Vaccination/ polio drops	Assessment for complications	Referral to health facility	Treatment for child	Other	Number of women with a live birth in the last two years
Total		56.7	49.6	9.5	31.2	0.4	4611
Urban		59.0	50.6	8.1	25.8	0.5	1673
Rural		55.1	49.0	10.6	35.2	0.3	2938
Province/ region							
Punjab	Urban	63.3	56.1	12.2	25.9	0.3	675
	Rural	57.7	54.1	13.6	37.3	0.1	1434
	Total	59.7	54.8	13.1	33.1	0.2	2109
Sindh	Urban	57.3	44.8	3.9	26.3	0.8	676
	Rural	55.7	41.1	4.9	29.1	0.9	491
	Total	56.6	43.3	4.3	27.4	0.8	1167
KP	Urban	52.5	42.5	0.6	20.3	0.0	72
	Rural	46.7	33.4	4.0	36.0	0.0	227
	Total	48.0	35.4	3.2	32.5	0.0	299
Balochistan	Urban	23.4	63.3	2.0	16.2	0.0	70
	Rural	45.0	33.1	16.7	55.7	0.3	161
	Total	33.1	49.6	8.7	34.1	0.1	231
ICT	Urban	50.9	46.9	32.1	15.8	0.0	28
	Rural	44.3	44.0	11.2	30.3	0.0	45
	Total	47.2	45.2	20.3	24.0	0.0	73
KP-NMD	Total	71.8	39.8	4.9	27.0	1.0	55
AJK	Urban	32.3	47.2	3.9	33.4	0.0	101
	Rural	24.0	50.2	5.4	32.3	0.3	277
	Total	25.5	49.7	5.1	32.5	0.3	378
GB	Urban	33.8	15.7	14.6	60.3	0.0	41
	Rural	24.6	45.0	8.8	42.3	2.3	258
	Total	26.6	38.5	10.1	46.3	1.8	299

Percent distribution of women age 15-49 years with a live birth in the last two years whose last live birth received health checks while in facility or at home following birth, Pakistan NNS 2018						
	Purpose of postnatal health checks for newborns					
	Vaccination/ polio drops	Assessment for complications	Referral to health facility	Treatment for child	Other	Number of women with a live birth in the last two years
Mother's age at birth						
Less than 20	42.4	56.5	0.7	35.6	0.0	142
20-34	54.6	50.7	6.1	27.7	0.4	2583
35-49	54.5	49.3	5.8	29.8	0.4	483
Missing	61.1	47.8	15.7	35.9	0.3	1403
Place of delivery						
Home	61.7	37.6	13.3	33.8	0.5	943
Health facility	55.7	52.4	8.6	30.6	0.4	3657
Public	58.6	49.3	9.1	32.8	0.3	1733
Private	53.6	54.5	8.3	29.1	0.4	1924
Other/DK/Missing	39.8	27.0	43.9	1.0	0.0	11
Education						
None	55.2	44.5	8.4	34.5	0.3	1833
Primary	55.2	51.5	12.8	28.3	0.5	583
Middle	60.4	53.9	6.8	29.7	0.8	516
Secondary	58.2	54.0	7.6	26.9	0.5	760
Higher	57.6	52.6	12.9	31.0	0.1	919
Wealth index quintile						
Poorest	52.2	43.3	8.2	34.2	0.6	713
Second	58.5	46.3	11.6	37.5	0.2	890
Middle	53.9	48.3	9.9	32.8	0.7	1018
Fourth	59.2	53.3	8.8	30.0	0.0	1063
Richest	57.9	52.5	9.3	25.3	0.4	927

6.5.12.4 Postnatal care for mothers and newborns

Postnatal care was more often provided to both mothers and newborns (17.0%) than to mothers (5.5%) or newborns (4.0%) alone, with higher rates in urban than in rural areas. A far greater proportion of women who had given birth in the two years preceding the survey stated that neither the mother nor the newborn had received postnatal care (overall: 72.3%; rural: 74.7%). Sindh (20.4%) and Punjab (19.8%) had the highest proportion of women who stated both mothers and newborns had received postnatal care, while KP-NMD (90.3%) and Balochistan (89.0%) had the highest proportion with neither mother nor child receiving postnatal care.

Women with no education (78.8%) or belonging to the poorest wealth index (82.2%) were more likely to have no postnatal care for mothers or newborns. Women who were less than 20 years of age at time of delivery (75.4%) were also more likely to receive no postnatal care for mother or child. Women who had home deliveries (86.5%) were also more likely to receive no postnatal care for the mother or her newborn, than facility based deliveries (mother: 6.8%; newborn: 4.9%; both: 24.0%), especially in urban settings.

Table 6-48: Postnatal care for mothers and newborns

Percent distribution of women aged 15–49 years with a live birth in the last two years by postnatal health checks for the mother and newborn, within two days of the most recent birth, Pakistan NNS 2018							
		Health checks or postnatal care visits within 2 days of birth for:					Number of women age 15-49 years who gave birth in the 2 years preceding the survey
		Both mothers and newborns	Mothers only	Newborns only	Neither mother nor newborn	Missing	
Total		17.0	5.5	4.0	72.3	1.2	23284
Urban		20.5	6.2	4.0	68.1	1.2	6734
Rural		15.1	5.1	4.0	74.7	1.1	16550
Province/ region							
Punjab	Urban	19.7	6.0	2.6	70.1	1.7	2723
	Rural	19.8	6.2	3.6	69.0	1.4	5795
	Total	19.8	6.1	3.2	69.4	1.5	8518
Sindh	Urban	25.9	7.1	6.6	60.1	0.3	1989
	Rural	15.4	5.1	5.6	73.6	0.3	2183
	Total	20.4	6.0	6.1	67.2	0.3	4172
KP	Urban	4.9	4.8	2.8	86.7	0.7	606
	Rural	4.2	2.3	3.8	88.8	0.9	2220
	Total	4.4	2.8	3.6	88.4	0.8	2826
Balochistan	Urban	12.3	3.4	2.5	79.6	2.2	764
	Rural	2.7	2.5	1.1	92.0	1.7	2930
	Total	5.0	2.7	1.4	89.0	1.8	3694
ICT	Urban	13.3	3.6	6.1	70.6	6.4	145
	Rural	15.9	10.3	11.4	55.6	6.8	145
	Total	14.5	6.7	8.5	63.8	6.6	290
KP-NMD	Total	4.3	1.3	2.6	90.3	1.6	703
AJK	Urban	20.9	7.6	11.3	58.4	1.8	314
	Rural	12.7	5.8	7.4	72.8	1.3	1358
	Total	13.7	6.0	7.9	71.0	1.4	1672
GB	Urban	18.2	9.1	6.3	66.4	0.0	157
	Rural	11.8	4.8	6.0	77.4	0.1	1252
	Total	12.9	5.5	6.1	75.5	0.1	1409
Mother's age at birth							
Less than 20		13.2	6.0	3.9	75.4	1.5	846
20-34		17.7	5.8	4.2	71.0	1.3	12498
35-49		13.9	5.8	4.1	75.1	1.1	2921
Missing		17.3	4.9	3.8	73.0	1.1	7019

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Percent distribution of women aged 15–49 years with a live birth in the last two years by postnatal health checks for the mother and newborn, within two days of the most recent birth, Pakistan NNS 2018						
	Health checks or postnatal care visits within 2 days of birth for:					Number of women age 15-49 years who gave birth in the 2 years preceding the survey
	Both mothers and newborns	Mothers only	Newborns only	Neither mother nor newborn	Missing	
Place of delivery						
Home	6.6	3.4	2.8	86.5	0.7	10348
Health facility	24.0	6.8	4.9	62.8	1.5	12795
Public	20.0	5.8	4.2	68.3	1.7	7055
Private	27.7	7.8	5.5	57.7	1.3	5740
Other/DK/Missing	5.1	3.4	3.6	87.1	0.8	128
Education						
None	12.2	4.7	3.5	78.8	0.9	13157
Primary	18.3	6.1	4.5	69.7	1.3	2527
Middle	20.8	6.3	3.5	67.5	2.0	2170
Secondary	23.3	6.7	5.0	63.4	1.6	2642
Higher	26.9	6.3	5.4	60.2	1.3	2788
Wealth index quintile						
Poorest	9.7	3.9	3.5	82.2	0.6	6398
Second	13.2	4.7	3.5	77.5	1.0	5382
Middle	17.7	5.6	4.3	71.2	1.1	4569
Fourth	20.8	6.8	4.4	66.7	1.3	3985
Richest	24.4	6.3	4.4	63.0	1.8	2950

Quantitative survey

Water quality

Drinking water from 31.3% of households in Pakistan were contaminated with E. Coli. About 4.5% of households had water with arsenic concentration exceeding national standards and 9.8% with nitrate concentration exceeding recommended values. The percentage of households using drinking water with total dissolved solids exceeding 1000 ppm was 19.1%.

7. Water quality

Among the objectives of NNS 2018 was to assess the quality of drinking water. Water was tested for microbiological and chemical contamination. For microbiological testing the field method used was recommended by the PCRWR, while for chemical contaminations the water samples were sent to the PCRWR laboratory in Islamabad for testing.

7.1 Microbiological contamination

We used the Petri film method to assess the contamination of total coliforms and E. coli in water samples collected from the targeted households. The samples were transported under cold chain and were readily incubated for growth. Zero tolerance for both organisms was set as standard and the readings were based on colony forming units (cfu) per millilitre of water. Water was considered as contaminated if >=1 cfu/ml organism growth was found in the next 48 hours of incubation. E. coli growth in water samples is suggestive of faecal contamination.

7.1.1 Escherichia coli (E. Coli)

Drinking water from 31.3% of households in Pakistan were contaminated with E. coli, with a slightly higher proportion in rural (33.2%) than urban areas (28.3%). The highest prevalence of E. coli contamination was found in KP-NMD (61.9%) followed by Balochistan (55.9%) and KP (53.9%), and lowest in GB (10.9%). In Sindh and GB, E. coli contamination was more prevalent in urban areas and elsewhere it was found to be higher in rural areas.

E. coli contamination decreased with wealth index quintile, but even among the richest households a quarter (24.6%) drank water contaminated with E. coli. By contrast, no correlation was observed with education of the household head.

Table 7-1: E. coli contamination in drinking water

Percentage of household members with E. coli contamination risk in drinking water, Pakistan NNS 2018										
		Percentage of household members with E. coli contamination risk in drinking water						Total	Percentage of household with E. coli in household drinking water (>=1 cfu/ml)	Number of households
		0 cfu/ml	1 to 10 cfu/ml	11 to 50 cfu/ml	15 to 50 cfu/ml	51 to 100 cfu/ml	>100 cfu/ml			
Total		68.7	19.4	2.4	4.9	1.2	3.3	100.0	31.3	21402
Urban		71.7	19.5	2.0	4.2	0.9	1.7	100.0	28.3	6703
Rural		66.8	19.3	2.7	5.4	1.4	4.4	100.0	33.2	14699
Province/ region										
Punjab	Urban	75.0	16.5	1.6	4.2	0.8	1.8	100.0	25.0	2954
	Rural	72.3	15.9	2.1	4.6	1.2	3.9	100.0	27.7	6037
	Total	73.3	16.2	1.9	4.5	1.0	3.1	100.0	26.7	8991
Sindh	Urban	70.9	21.4	2.2	3.9	1.1	0.5	100.0	29.1	2129
	Rural	74.9	18.0	1.6	3.8	0.9	0.8	100.0	25.1	1767
	Total	72.7	19.9	1.9	3.9	1.0	0.7	100.0	27.3	3896
KP	Urban	52.3	36.3	4.6	5.8	0.0	1.0	100.0	47.7	510
	Rural	44.1	36.7	6.0	6.9	1.2	5.1	100.0	55.9	1579
	Total	46.1	36.6	5.7	6.6	0.9	4.1	100.0	53.9	2089
Balochistan	Urban	49.5	24.3	2.9	5.7	1.5	16.2	100.0	50.5	587
	Rural	42.7	20.1	2.8	9.4	3.3	21.6	100.0	57.3	2336
	Total	44.1	21.0	2.8	8.7	2.9	20.5	100.0	55.9	2923
ICT	Urban	68.0	20.8	0.7	3.1	2.6	4.9	100.0	32.0	144
	Rural	44.7	26.4	2.4	12.1	4.1	10.4	100.0	55.3	172
	Total	56.2	23.6	1.5	7.6	2.7	7.7	100.0	43.8	316
KP-NMD	Total	38.1	35.6	10.5	8.7	6.8	0.3	100.0	61.9	625
AJK	Urban	66.4	20.9	1.3	8.8	2.0	0.5	100.0	33.6	194
	Rural	51.8	21.9	5.0	17.6	1.5	2.3	100.0	48.2	1050
	Total	53.2	21.8	4.6	16.7	1.5	2.1	100.0	46.8	1244

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Percentage of household members with E. coli contamination risk in drinking water, Pakistan NNS 2018										
		Percentage of household members with E. coli contamination risk in drinking water						Total	Percentage of household with E. coli in household drinking water (>=1 cfu/ml)	Number of households
		0 cfu/ml	1 to 10 cfu/ml	11 to 50 cfu/ml	15 to 50 cfu/ml	51 to 100 cfu/ml	>100 cfu/ml			
GB	Urban	88.6	10.7	0.0	0.0	0.0	0.7	100.0	11.4	168
	Rural	89.2	9.6	0.4	0.6	0.1	0.1	100.0	10.8	1150
	Total	89.1	9.8	0.3	0.5	0.1	0.2	100.0	10.9	1318
Education of household head										
None		67.0	20.1	2.6	5.1	1.3	3.9	100.0	33.0	10362
Primary		73.1	16.0	2.0	4.5	1.0	3.4	100.0	26.9	2348
Middle		67.7	19.7	2.6	5.3	1.4	3.2	100.0	32.3	2350
Secondary		70.2	19.3	2.1	4.9	1.0	2.5	100.0	29.8	3365
Higher		69.9	19.9	2.2	4.4	1.1	2.4	100.0	30.1	2977
Wealth index quintile										
Poorest		62.8	21.7	2.6	5.7	1.7	5.5	100.0	37.2	5223
Second		65.4	20.8	2.7	5.3	1.3	4.4	100.0	34.6	4895
Middle		68.4	19.2	2.7	5.5	0.9	3.3	100.0	31.6	4419
Fourth		71.0	18.2	2.2	5.1	1.4	2.1	100.0	29.0	3836
Richest		75.4	17.5	1.7	3.1	0.8	1.6	100.0	24.6	3029

7.1.2 Total coliforms

Drinking water in 82.7% of households was contaminated with coliforms, with slightly higher prevalence in urban (84.8%) than in rural areas (81.4%). The highest prevalence of total coliform contamination was found in ICT (98.0%) followed by AJK (95.7%), KP (93.7%) and Balochistan (91.3%). Except in Punjab and Sindh, coliform contamination was more common in rural areas compared to urban areas. In rural ICT, 100.0% of water samples were found to be contaminated.

Table 7-2: Bacterial contamination in household water (coliform)

Percentage of household by total coliform contamination in household drinking water, Pakistan NNS 2018										
		Percentage of household members with coliform contamination risk in drinking water						Total	Percentage of households with total coliform contamination in household drinking water (>=1 cfu/ml)	Number of household
		0 cfu/ml	1 to 10 cfu/ml	11 to 50 cfu/ml	15 to 50 cfu/ml	51 to 100 cfu/ml	>100 cfu/ml			
Total		17.3	21.4	5.8	19.5	12.4	23.6	100.0	82.7	21402
Urban		15.2	20.7	6.4	22.7	13.8	21.2	100.0	84.8	6703
Rural		18.6	21.9	5.4	17.4	11.5	25.2	100.0	81.4	14699
Province/ region										
Punjab	Urban	21.2	25.2	7.1	20.0	8.9	17.8	100.0	78.8	2954
	Rural	22.2	25.0	6.1	17.1	10.0	19.5	100.0	77.8	6037
	Total	21.8	25.1	6.5	18.2	9.6	18.9	100.0	78.2	8991
Sindh	Urban	8.0	15.8	5.3	29.1	20.7	21.1	100.0	92.0	2129
	Rural	20.5	21.0	4.3	17.9	14.1	22.2	100.0	79.5	1767
	Total	13.7	18.2	4.8	24.0	17.7	21.6	100.0	86.3	3896
KP	Urban	6.9	11.5	6.4	15.4	18.7	41.2	100.0	93.1	510
	Rural	6.2	12.4	4.3	20.1	14.9	42.2	100.0	93.8	1579
	Total	6.3	12.1	4.8	19.0	15.8	42.0	100.0	93.7	2089
Balochistan	Urban	11.0	18.6	11.2	17.6	2.8	38.8	100.0	89.0	587
	Rural	8.1	18.4	7.4	16.0	6.8	43.4	100.0	91.9	2336
	Total	8.7	18.4	8.2	16.3	5.9	42.4	100.0	91.3	2923

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Percentage of household by total coliform contamination in household drinking water, Pakistan NNS 2018										
		Percentage of household members with coliform contamination risk in drinking water						Total	Percentage of households with total coliform contamination in household drinking water (>=1 cfu/ml)	Number of household
		0 cfu/ml	1 to 10 cfu/ml	11 to 50 cfu/ml	15 to 50 cfu/ml	51 to 100 cfu/ml	>100 cfu/ml			
ICT	Urban	4.1	7.9	2.0	7.8	27.2	51.0	100.0	95.9	144
	Rural	.0	11.4	1.3	3.4	15.2	68.7	100.0	100.0	172
	Total	2.0	9.7	1.6	5.6	21.2	59.9	100.0	98.0	316
KP-NMD	Total	6.0	14.0	3.2	18.8	17.0	41.0	100.0	94.0	625
AJK	Urban	4.3	17.3	11.0	22.3	14.5	30.7	100.0	95.7	194
	Rural	4.3	11.0	3.1	17.5	18.0	46.2	100.0	95.6	1050
	Total	4.3	11.6	3.9	18.0	17.6	44.6	100.0	95.7	1244
GB	Urban	53.5	32.3	3.5	3.4	1.8	5.5	100.0	46.5	168
	Rural	54.6	27.1	2.3	9.1	2.2	4.8	100.0	45.3	1150
	Total	54.4	28.1	2.5	8.0	2.1	4.9	100.0	45.5	1318
Education of household head										
None		17.5	20.8	6.0	18.5	11.8	25.4	100.0	82.5	10362
Primary		20.4	22.9	5.7	17.4	11.5	22.1	100.0	79.6	2348
Middle		16.7	21.0	5.5	18.8	14.1	24.0	100.0	83.3	2350
Secondary		16.3	21.1	5.6	22.3	12.7	22.0	100.0	83.7	3365
Higher		15.6	23.1	5.9	21.8	13.0	20.7	100.0	84.4	2977
Wealth index quintile										
Poorest		17.5	21.3	4.8	16.5	11.1	28.8	100.0	82.5	5223
Second		18.5	21.8	6.1	15.7	12.3	25.6	100.0	81.5	4895
Middle		17.5	21.0	6.2	20.3	13.6	21.4	100.0	82.5	4419
Fourth		16.5	19.5	5.4	22.3	13.1	23.1	100.0	83.5	3836
Richest		16.6	23.7	6.6	22.0	11.5	19.6	100.0	83.4	3029

7.2 Chemical contamination

Household drinking water was analysed for arsenic, nitrate, iron, fluoride, hardness and total dissolved solids by PCRWR lab as per international standards.

Table 7-3: Chemical contamination of drinking water

Chemical contaminant	Cut-off	Pakistan	Urban	Rural
Arsenic	> 50 ppb	4.5	5.6	3.8
Nitrate	>10 ppm	9.8	8.1	11.0
Fluoride	> 1.5 ppm	5.5	4.7	6.1
Iron	>0.3 ppm	4.5	2.5	5.9
Hardness	>500 ppm	13.0	7.9	16.6
Total dissolved solids	>1000 ppm	19.1	12.6	23.6

7.2.1 Arsenic contamination

Across Pakistan, 4.5% of households had more than 50ppb of dissolved arsenic (the Pakistan contamination standard), with an urban and rural distribution of 5.6% and 3.8% respectively. Punjab had the highest percentage of households with arsenic contamination at 7.5%, followed by Sindh at 1.6%.

Table 7-4: Arsenic concentration in drinking water

Percentage of household members with arsenic concentration in drinking water, Pakistan NNS 2018										
		Arsenic concentration								
		No arsenic	> 0 and up to 10 ppb	> 10 and up to 50 ppb	> 50 ppb	Total	Maximum ppb	Household members with > 10 ppb – WHO standard (%)	Household members with > 50 ppb – Pakistan standard (%)	Number of households
Total		2.1	78.1	15.2	4.5	100.0	401.0	19.8	4.5	9736
Urban		3.5	73.5	17.4	5.6	100.0	260.3	23.0	5.6	3149
Rural		1.2	81.2	13.8	3.8	100.0	401.0	17.6	3.8	6587
Province/ region										
Punjab	Urban	0.7	59.2	29.5	10.6	100.0	260.3	40.1	10.6	1261
	Rural	0.3	74.6	19.5	5.6	100.0	401.0	25.1	5.6	2582
	Total	0.4	68.7	23.3	7.5	100.0	401.0	30.8	7.5	3843
Sindh	Urban	7.6	86.8	5.0	0.6	100.0	126.3	5.6	0.6	1087
	Rural	3.6	83.4	10.1	2.9	100.0	224.1	13.0	2.9	874
	Total	5.9	85.3	7.2	1.6	100.0	224.1	8.8	1.6	1961
KP	Urban	0.5	92.8	6.7	0.0	100.0	40.2	6.7	0.0	241
	Rural	1.0	94.9	3.9	0.2	100.0	50.1	4.1	0.2	745
	Total	0.9	94.5	4.5	0.1	100.0	50.1	4.7	0.1	986
Balochistan	Urban	3.8	94.1	2.1	0.0	100.0	20.5	2.1	0.0	297
	Rural	1.1	97.1	1.8	0.1	100.0	99.1	1.9	0.1	1064
	Total	1.9	96.2	1.9	0.1	100.0	99.1	1.9	0.1	1361
ICT	Urban	0.0	100.0	0.0	0.0	100.0	9.9	0.0	0.0	60
	Rural	0.0	100.0	0.0	0.0	100.0	5.1	0.0	0.0	67
	Total	0.0	100.0	0.0	0.0	100.0	9.9	0.0	0.0	127
KP-NMD	Total	0.0	95.9	4.1	0.0	100.0	18.2	4.1	0.0	125
AJK	Urban	6.7	90.8	2.5	0.0	100.0	28.3	2.5	0.0	127
	Rural	3.1	94.7	1.9	0.3	100.0	65.1	2.2	0.3	649
	Total	3.5	94.3	2.0	0.3	100.0	65.1	2.2	0.3	776
GB	Urban	4.9	79.2	15.9	0.0	100.0	35.8	15.9	0.0	74
	Rural	1.6	88.6	9.4	0.4	100.0	55.3	9.8	0.4	483
	Total	2.3	86.6	10.8	0.3	100.0	55.3	11.1	0.3	557
Education of household head										
None		1.1	78.6	15.3	5.0	100.0	400.9	20.3	5.0	4662
Primary		2.4	75.7	16.4	5.4	100.0	401.0	21.9	5.4	1045
Middle		2.2	77.1	17.0	3.7	100.0	250.5	20.7	3.7	1080
Secondary		3.7	76.6	15.5	4.2	100.0	350.1	19.7	4.2	1546
Higher		3.4	80.8	12.5	3.3	100.0	265.2	15.8	3.3	1403
Wealth index quintile										
Poorest		1.6	83.4	11.7	3.2	100.0	270.6	14.9	3.2	2266
Second		0.9	79.9	14.7	4.5	100.0	350.1	19.2	4.5	2143
Middle		1.9	79.9	14.1	4.0	100.0	401.0	18.2	4.0	2029
Fourth		3.1	76.5	16.1	4.3	100.0	280.4	20.4	4.3	1817
Richest		2.8	71.8	18.9	6.4	100.0	250.5	25.3	6.4	1481

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7.2.2 Nitrate contamination

In Pakistan 9.8% of households had nitrate concentration exceeding 10 ppm (the cut-off point for this contaminant), with an urban and rural distribution of 8.1% and 11.0% respectively. In ICT 37.4% of households had nitrate contamination above recommended values, followed by AJK (14.2%), KP and KP-NMD (13.8% each).

Table 7-5: Nitrate concentration in drinking water

Percentage of households with nitrate concentration in drinking water, Pakistan NNS 2018						
		Nitrate concentration				
		Up to 10 ppm	>10 ppm	Total	Maximum ppm	Number of households
Total		90.2	9.8	100.0	99.0	9286
Urban		91.9	8.1	100.0	98.0	3005
Rural		89.0	11.0	100.0	99.0	6281
Province / region						
Punjab	Urban	89.1	10.9	100.0	98.0	1203
	Rural	88.1	11.9	100.0	99.0	2494
	Total	88.5	11.5	100.0	99.0	3697
Sindh	Urban	97.3	2.7	100.0	94.0	1045
	Rural	93.4	6.6	100.0	74.0	809
	Total	95.6	4.4	100.0	94.0	1854
KP	Urban	86.0	14.0	100.0	60.0	220
	Rural	86.3	13.7	100.0	93.0	686
	Total	86.2	13.8	100.0	93.0	906
Balochistan	Urban	93.6	6.4	100.0	39.0	284
	Rural	93.6	6.4	100.0	70.0	1027
	Total	93.6	6.4	100.0	70.0	1311
ICT	Urban	62.6	37.4	100.0	50.0	60
	Rural	62.5	37.5	100.0	82.0	68
	Total	62.6	37.4	100.0	82.0	128
KP-NMD	Total	86.2	13.8	100.0	31.0	122
AJK	Urban	78.4	21.6	100.0	67.0	121
	Rural	86.7	13.3	100.0	70.0	619
	Total	85.8	14.2	100.0	70.0	740
GB	Urban	96.6	3.4	100.0	17.0	70
	Rural	100.0	0.0	100.0	7.7	458
	Total	99.3	0.7	100.0	17.0	528
Education of household head						
None		91.3	8.7	100.0	97.0	4436
Primary		88.4	11.6	100.0	75.0	994
Middle		88.8	11.2	100.0	99.0	1032
Secondary		88.8	11.2	100.0	96.0	1490
Higher		90.9	9.1	100.0	93.0	1333

Percentage of households with nitrate concentration in drinking water, Pakistan NNS 2018					
	Nitrate concentration				
	Up to 10 ppm	>10 ppm	Total	Maximum ppm	Number of households
Wealth index quintile					
Poorest	93.4	6.6	100.0	93.0	2158
Second	90.2	9.8	100.0	99.0	2037
Middle	88.5	11.5	100.0	97.0	1928
Fourth	88.6	11.4	100.0	96.0	1746
Richest	90.8	9.2	100.0	98.0	1417

7.2.3 Fluoride contamination

Around 5.5% of households used water with fluoride levels exceeding 1.5 ppm (urban: 4.7%; rural: 6.1%). Punjab (6.6%), Balochistan (5.7%) and Sindh (5.6%) had the highest proportions of households consuming water with high fluoride levels.

Table 7-6: Fluoride concentration in drinking water

Percentage of household members with fluoride concentration in drinking water, Pakistan NNS 2018							
		Fluoride concentration					
		Up to 1 ppm	>1 to 1.5 ppm	>1.5 ppm	Total	Maximum ppm	Number of households
Total		85.0	9.5	5.5	100.0	8.1	8808
Urban		88.7	6.7	4.7	100.0	6.0	2859
Rural		82.4	11.5	6.1	100.0	8.1	5949
Province/ region							
Punjab	Urban	86.1	7.1	6.9	100.0	5.8	1089
	Rural	81.2	12.4	6.4	100.0	8.1	2236
	Total	83.1	10.4	6.6	100.0	8.1	3325
Sindh	Urban	92.6	4.7	2.7	100.0	6.0	1023
	Rural	77.6	13.0	9.4	100.0	3.9	799
	Total	86.1	8.3	5.6	100.0	6.0	1822
KP	Urban	97.8	2.0	0.2	100.0	3.8	218
	Rural	93.6	4.9	1.5	100.0	4.2	688
	Total	94.6	4.2	1.2	100.0	4.2	906
Balochistan	Urban	58.4	34.8	6.8	100.0	5.0	281
	Rural	73.3	21.5	5.3	100.0	4.7	986
	Total	69.0	25.3	5.7	100.0	5.0	1267
ICT	Urban	100.0	0.0	0.0	100.0	0.8	57
	Rural	99.0	0.0	1.0	100.0	1.8	67
	Total	99.5	0.0	0.5	100.0	1.8	124
KP-NMD	Total	92.8	3.1	4.1	100.0	1.9	114
AJK	Urban	99.2	0.8	0.0	100.0	1.4	122
	Rural	98.7	0.2	1.1	100.0	3.0	610
	Total	98.8	0.3	0.9	100.0	3.0	732

Percentage of household members with fluoride concentration in drinking water, Pakistan NNS 2018							
		Fluoride concentration					
		Up to 1 ppm	>1 to 1.5 ppm	>1.5 ppm	Total	Maximum ppm	Number of households
GB	Urban	100.0	0.0	0.0	100.0	1.0	67
	Rural	96.6	0.7	2.8	100.0	3.9	451
	Total	97.3	0.5	2.2	100.0	3.9	518
Education of household head							
None		83.4	10.1	6.5	100.0	8.1	4203
Primary		83.6	9.4	7.0	100.0	3.5	948
Middle		88.3	7.4	4.4	100.0	4.0	977
Secondary		85.5	9.1	5.5	100.0	7.7	1396
Higher		87.6	9.9	2.5	100.0	3.6	1284
Wealth index quintile							
Poorest		77.8	14.5	7.7	100.0	4.7	2054
Second		83.0	10.8	6.2	100.0	7.7	1959
Middle		85.4	9.0	5.7	100.0	5.0	1816
Fourth		87.3	8.0	4.7	100.0	8.1	1645
Richest		90.2	6.1	3.7	100.0	3.5	1334

7.2.4 Iron contamination

Around 4.5% of households used drinking water with iron concentrations exceeding 0.3 ppm (urban: 2.5%; rural: 5.9%). The highest proportions of households consuming water with higher iron levels than recommended were found in ICT (12.5%), Punjab (5.2%) and Sindh (3.9%).

Table 7-7: Iron concentration in drinking water

Percentage of household members with iron concentration in drinking water, Pakistan NNS 2018						
		Iron concentration				
		Up to 0.3 ppm	>0.3 ppm	Total	Maximum ppm	Number of households
Total		95.5	4.5	100.0	20.0	9736
Urban		97.5	2.5	100.0	6.4	3149
Rural		94.1	5.9	100.0	20.0	6587
Province/ region						
Punjab	Urban	97.6	2.4	100.0	6.4	1261
	Rural	93.1	6.9	100.0	20.0	2582
	Total	94.8	5.2	100.0	20.0	3843
Sindh	Urban	97.6	2.4	100.0	6.0	1087
	Rural	94.1	5.9	100.0	6.8	874
	Total	96.1	3.9	100.0	6.8	1961
KP	Urban	98.5	1.5	100.0	2.3	241
	Rural	96.2	3.8	100.0	12.0	745
	Total	96.7	3.3	100.0	12.0	986

Percentage of household members with iron concentration in drinking water, Pakistan NNS 2018						
		Iron concentration				
		Up to 0.3 ppm	>0.3 ppm	Total	Maximum ppm	Number of households
Balochistan	Urban	99.9	0.1	100.0	5.7	297
	Rural	97.5	2.5	100.0	2.3	1064
	Total	98.2	1.8	100.0	5.7	1361
ICT	Urban	81.2	18.8	100.0	2.1	60
	Rural	94.5	5.5	100.0	0.7	67
	Total	87.5	12.5	100.0	2.1	127
KP-NMD	Total	98.7	1.3	100.0	1.5	125
AJK	Urban	97.3	2.7	100.0	2.2	127
	Rural	97.0	3.0	100.0	5.3	649
	Total	97.0	3.0	100.0	5.3	776
GB	Urban	100.0	0.0	100.0	0.1	74
	Rural	99.4	0.6	100.0	6.6	483
	Total	99.5	0.5	100.0	6.6	557
Education of household head						
None		94.2	5.8	100.0	12.0	4662
Primary		95.5	4.5	100.0	20.0	1045
Middle		95.5	4.5	100.0	6.7	1080
Secondary		97.1	2.9	100.0	3.4	1546
Higher		97.9	2.1	100.0	6.0	1403
Water index quintile						
Poorest		93.6	6.4	100.0	12.0	2266
Second		92.1	7.9	100.0	6.3	2143
Middle		95.3	4.7	100.0	6.7	2029
Fourth		96.8	3.2	100.0	20.0	1817
Richest		98.2	1.8	100.0	3.0	1481

7.2.5 Water hardness

The study showed that 13.0% of households used very hard water (>500 ppm) including 7.9% in urban areas and 16.6% in rural areas. Balochistan (16.9%), KP (14.6%) and Punjab (13.3%) had the highest proportions of households consuming very hard water.

Table 7-8: Hardness of drinking water

Percentage of households with very hard drinking water, Pakistan NNS 2018							
		Hardness of drinking water					
		Up to 300 ppm	>300 and up to 500 ppm	>500 ppm	Total	Maximum ppm	Number of households
Total		52.9	34.1	13.0	100.0	3700	8808
Urban		64.3	27.8	7.9	100.0	2570	2859
Rural		44.9	38.5	16.6	100.0	3700	5949
Province/ region							
Punjab	Urban	58.0	32.9	9.1	100.0	2570	1089
	Rural	44.0	40.1	15.9	100.0	2600	2236
	Total	49.3	37.4	13.3	100.0	2600	3325
Sindh	Urban	75.8	18.1	6.1	100.0	1930	1023
	Rural	39.9	38.5	21.6	100.0	2900	799
	Total	60.6	26.8	12.6	100.0	2900	1822
KP	Urban	50.1	40.9	9.0	100.0	1350	218
	Rural	52.1	31.7	16.2	100.0	2500	688
	Total	51.6	33.8	14.6	100.0	2500	906
Balochistan	Urban	42.0	45.4	12.6	100.0	1800	281
	Rural	38.4	42.9	18.7	100.0	3700	986
	Total	39.4	43.7	16.9	100.0	3700	1267
ICT	Urban	54.9	41.0	4.1	100.0	850	57
	Rural	40.8	54.7	4.5	100.0	710	67
	Total	48.1	47.6	4.3	100.0	850	124
KP-NMD	Total	58.1	33.8	8.1	100.0	610	114
AJK	Urban	48.8	41.6	9.6	100.0	900	122
	Rural	63.8	32.1	4.2	100.0	3110	610
	Total	62.0	33.2	4.8	100.0	3110	732
GB	Urban	96.8	3.2	0.0	100.0	370	67
	Rural	95.3	4.5	0.2	100.0	560	451
	Total	95.6	4.3	0.1	100.0	560	518
Education of household head							
None		49.3	36.3	14.4	100.0	3700	4203
Primary		54.8	33.7	11.4	100.0	2080	948
Middle		51.5	33.4	15.2	100.0	2100	977
Secondary		55.9	31.8	12.3	100.0	2600	1396
Higher		59.8	31.0	9.1	100.0	2900	1284
Wealth index quintile							
Poorest		39.7	38.7	21.6	100.0	3700	2054
Second		45.2	39.5	15.4	100.0	3110	1959
Middle		52.2	34.6	13.2	100.0	2080	1816
Fourth		58.5	31.2	10.3	100.0	2600	1645
Richest		65.6	28.1	6.3	100.0	2350	1334
[a] Percentage of household members using drinking water with hardness level above 500 ppm							

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7.2.6 Total dissolved solids

The percentage of households using drinking water with total dissolved solids exceeding 1000 ppm was 19.1% (urban: 12.6%; rural: 23.6%).

Table 7-9: Total dissolved solids concentration in drinking water

Percentage of household by Total dissolved solids (TDS) concentration in drinking water, Pakistan NNS 2018									
		Total dissolved solids						Percentage of household members using drinking water with TDS level above 1000 ppm [a]	Number of households
		Upto 500 ppm	>500 and upto 1000 pp ppm	>1000 and upto 3000 pp ppm	>3000 ppm	Total	Maximum ppm		
Total		44.4	35.1	19.1	1.4	100.0	9670.0	20.5	8808
Urban		57.5	28.8	12.6	1.1	100.0	7500.0	13.7	2859
Rural		35.4	39.4	23.6	1.6	100.0	9670.0	25.2	5949
Province/ region									
Punjab	Urban	51.7	32.3	14.9	1.1	100.0	5130.0	16.0	1089
	Rural	33.0	41.5	24.2	1.4	100.0	7300.0	25.5	2236
	Total	40.1	38	20.6	1.3	100.0	7500.0	21.9	3325
Sindh	Urban	64.9	22.2	11.6	1.3	100.0	9670.0	12.9	1023
	Rural	22.2	37.8	36.5	3.5	100.0	9670.0	40.0	799
	Total	46.4	29.0	22.4	2.2	100.0	9670.0	24.7	1822
KP	Urban	67.3	31.3	1.4	0.0	100.0	2730.0	1.4	218
	Rural	52.4	39.4	7.7	0.5	100.0	4220.0	8.2	688
	Total	55.7	37.6	6.3	0.4	100.0	4220.0	6.7	906
Balochistan	Urban	33.1	52.7	12.4	1.8	100.0	3280.0	14.2	281
	Rural	32.5	43.7	22.5	1.3	100.0	8336.0	23.8	986
	Total	32.7	46.3	19.5	1.4	100.0	8336.0	21.0	1267
ICT	Urban	56.3	37.7	6.0	0.0	100.0	1427.0	6.0	57
	Rural	43.7	48.7	7.6	0.0	100.0	1629.0	7.6	67
	Total	50.3	43.0	6.7	0.0	100.0	1629.0	6.7	124
KP-NMD	Total	66.8	26.3	6.9	0.0	100.0	1325.0	6.9	114
AJK	Urban	69.9	24.3	5.4	0.4	100.0	3500.0	5.8	122
	Rural	80.7	15.9	3.4	0.0	100.0	1798.0	3.4	610
	Total	79.4	16.9	3.7	0.0	100.0	3500.0	3.7	732
GB	Urban	99.0	1.0	0.0	0.0	100.0	708.0	0.0	67
	Rural	98.5	1.5	0.0	0.0	100.0	769.0	0.0	451
	Total	98.6	1.4	0.0	0.0	100.0	769.0	0.0	518
Education									
None		39.5	36.4	22.6	1.6	100.0	8020.0	24.1	4203
Primary		42.7	34.9	20.7	1.6	100.0	9670.0	22.1	948
Middle		45.7	34.5	17.1	2.6	100.0	8336.0	19.8	977
Secondary		50.0	32.2	16.8	0.9	100.0	7610.0	17.7	1396
Higher		53.6	34.6	11.2	0.6	100.0	8550.0	11.9	1284
Wealth index quintile									
Poorest		26.7	39.8	30.8	2.7	100.0	8550.0	33.5	2054
Second		34.5	40.9	23.4	1.1	100.0	7300.0	24.5	1959
Middle		43.8	36.3	18.7	1.2	100.0	9670.0	20.0	1816
Fourth		51.0	32.3	15.3	1.3	100.0	6672.0	16.7	1645
Richest		62.4	27.5	9.4	0.8	100.0	5180.0	10.2	1334

Qualitative study

Introduction and methodology

The aim of the qualitative component of NNS 2018 was to understand the sociocultural and behavioural reasons for several known determinants of malnutrition including breastfeeding practices, household food insecurity and adolescent nutrition. Three hundred focus group discussions were conducted with 3,048 participants in all provinces and regions of Pakistan.

8. Introduction and methodology

8.1 Introduction

The aim of the qualitative component of NNS 2018 was to understand the sociocultural and behavioural reasons for several known determinants of malnutrition including breastfeeding practices, household food insecurity and adolescent nutrition. With in-depth maternal perceptions around IYCF obtained in the recent National Complementary Feeding Assessment (2018), this study focused in the main on filling gaps in other areas of nutrition determinants and practices. Hence the objectives of this qualitative work included the exploration of attitudes, challenges, barriers and boosters related to:

- Breastfeeding practices among mothers
- Household food insecurity
- Breastfeeding and complementary feeding practices among mothers/ caregivers
- Adolescent nutrition (girls and boys), including dietary patterns and behaviours
- Food hygiene
- Quality and reach of nutrition programmes and interventions in provinces/ regions

8.2 Methodology

In order to explore the areas listed above, identify cultural differences in food consumption patterns, and to gain insight into the factors affecting decision-making, the research used focus group discussions (FGDs) as a qualitative research method with participants including mothers (having at least one child below two years of age), LHWs, community leaders, fathers (having at least one child below two years of age), and adolescent boys and girls (aged 10–19 years). In-depth interviews with nutrition focal persons were also conducted in all provinces and regions.

8.2.1 FGD participants

A total of 4,000 individuals were identified and invited to participate in 300 FGDs. In all, 3,039 persons participated in the discussions. The turnout was 76% i.e. 10 participants per FGD. Women (51%) and men (49%) participated nearly equally and all age groups were represented. The details of participants attending FGDs nationally are given in Table 8-1.

Table 8-1: FGD participants

Participants	Urban	Rural	Total	Percent
Mothers	264	261	525	17
LHWs	268	257	525	17
Community leaders	239	239	478	16
Fathers	245	244	489	16
Adolescent girls	262	255	517	34
Adolescent boys	264	250	514	
Total	**1542**	**1506**	**3048**	**100**

This was the first time adolescents had one-third representation in any nutrition survey conducted in Pakistan. Their perceptions, knowledge and behaviours around nutrition are extremely important given their future roles as parents and decision-makers.

Table 8-2: FGD participants by gender, age, education and profession

	Punjab + ICT	Sindh	KP + KP NMD	Balochistan	GB	AJK	Total
Gender							
Male	342 (46%)	223 (45%)	403 (55%)	297 (50%)	109 (47%)	109 (45%)	1487 (49%)
Female	405 (54%)	269 (55%)	328 (45%)	300 (50%)	123 (53%)	131 (55%)	1560 (51%)
Age in years							
11–19	253 (34%)	166 (34%)	252 (35%)	189 (32%)	83 (36%)	91 (38%)	1037 (34%)
20–29	143 (19%)	79 (16%)	151 (20%)	123 (21%)	31 (13%)	42 (18%)	570 (19%)
30–39	157 (21%)	130 (26%)	193 (26%)	192 (32%)	53 (23%)	39 (16%)	766 (25%)
40–49	119 (16%)	75 (15%)	87 (12%)	71 (12%)	39 (17%)	39 (16%)	432 (14%)
50+	75 (10%)	42 (9%)	48 (7%)	22 (4%)	26 (11%)	29 (12%)	243 (8%)
Education							
No schooling	35 (5%)	71 (14%)	62 (7%)	124 (21%)	10 (4%)	6 (3%)	309 (10%)
Primary	39 (5%)	33 (7%)	0	21 (4%)	12 (5%)	6 (3%)	112 (4%)
Secondary	445 (60%)	222 (45%)	425 (58%)	220 (37%)	133 (57%)	157 (65%)	1605 (53%)
Intermediate	78 (10%)	93 (19%)	127 (19%)	126 (21%)	42 (18%)	33 (14%)	500 (16%)
Higher education	149 (20%)	73 (15%)	117 (17%)	106 (18%)	35 (15%)	38 (16%)	520 (17%)
Profession							
Housewife	234 (31%)	164 (33%)	206 (28%)	187 (31%)	68 (30%)	87 (36%)	947 (31%)
Teacher	28 (4%)	23 (5%)	23 (2%)	34 (6%)	12 (5%)	4 (2%)	125 (4%)
LHW / Lady Health Supervisor	160 (21%)	95 (19%)	119 (17%)	94 (16%)	42 (18%)	40 (17%)	550 (18%)
Private sector employee	30 (4%)	16 (3%)	28 (4%)	17 (3%)	18 (9%)	6 (3%)	122 (4%)
Government employee	22 (3%)	16 (3%)	31 (5%)	28 (4%)	22 (8%)	12 (5%)	136 (5%)
Community leader*	28 (4%)	27 (6%)	78 (11%)	41 (7%)	9 (2%)	15 (6%)	185 (6%)
Daily wage worker	105 (14%)	65 (13%)	88 (11%)	83 (14%)	10 (4%)	26 (11%)	379 (12%)
Unemployed	140 (19%)	86 (18%)	157 (22%)	113 (19%)	48 (21%)	50 (21%)	593 (20%)
TOTAL	**747**	**492**	**731**	**597**	**232**	**240**	**3048**

** Religious leader, social worker, doctor, local influential, etc.*

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8.2.2 Sample size considerations

Sample size depends on what will be useful and what can be done with available time and resources. While there are no hard and fast rules, two considerations guide sampling: *what sample size will reach saturation or redundancy?* and *How large a sample is needed to represent the variations within the target population?* These help determine the size of the sample where no new concepts are emerging, and where an appropriate amount of diversity or variation may be assessed. Some rules of thumb apply, as shown in Table 8-3.

Table 8-3: Sampling rules of thumb for qualitative research methodologies

Research approach	Rule of thumb
Grounded theory	Assess 20–30 people, typically is enough to reach saturation
Data collection method	**Rule of thumb**
Interviewing key informants	Interview approximately five people
In-depth interviews	Interview approximately 30 people
Focus groups	Based on "cultural diversity", plan one FGD for each group

8.2.3 Sampling method

Two sampling methods were used. Stratified purposeful sampling aims to capture major variations rather than to identify a common core, although the latter may also emerge in the analysis. For selection of participants for FGDs, purposive sampling was used.

Table 8-4: Distribution of FGDs

Topic	Participant group	Number of FGDs
Breastfeeding practices	Mothers	50
Infant and young child feeding practices	LHWs	50
Maternal, infant and young child nutrition	Community leaders	50
Household food insecurity	Fathers	50
Dietary patterns and behaviours	Adolescent boys/ girls	100
Nutrition programmes and interventions	Nutrition Focal Persons	7 (in-depth interviews)

8.2.4 Geographical distribution of FGDs

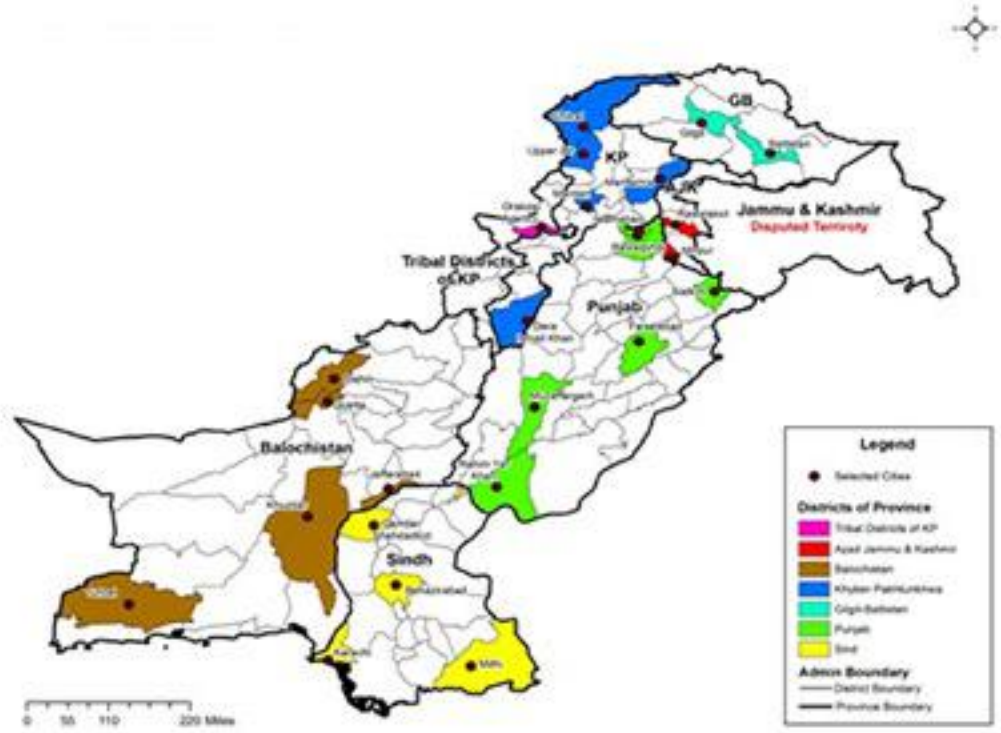
It is important for research to respect human diversity in its design, undertaking, and reporting, particularly when research evidence is presented to policymakers.[79] Ethnicity, sexuality, gender and economic status are also markers for cultural differences "which may be of great importance for the social phenomena studied by qualitative research".[81] Pakistan's substantial diversity[80] must thus be considered in qualitative research, and reflected in the selection of districts for the qualitative portion of NNS 2018 (see Annex I). Taking into consideration cultural and ethnic

differences among populations, and to identify differences, if any, in food consumption patterns and decision-making, 25 districts across Pakistan were selected such that at least one FGD for each participant category in different localities (urban and rural) would be conducted.

Table 8-5: Distribution of FGDs

Province/ region	District	Number of FGDs					Total
		Mothers	LHWs	Community leaders	Fathers	Adolescent boys / girls	
Punjab and ICT	Rahim Yar Khan, Muzaffargarh, Faisalabad, Sialkot, Rawalpindi, Islamabad	12	12	12	12	24	72
Sindh	Karachi, Shaheed Benazirabad, Kamber, Tharparkar	8	8	8	8	16	48
KP and KP-NMD	Mardan, Dera Ismail Khan, Mansehra, Chitral, Upper Dir, Orakzai Agency	12	12	12	12	24	72
Balochistan	Quetta, Pishin, Khuzdar, Turbat, Jaffarabad	10	10	10	10	20	60
GB	Gilgit, Skardu	4	4	4	4	8	24
AJK	Mirpur, Rawalakot	4	4	4	4	8	24

Figure 8-1: Districts selected for FGDs



8.2.5 Training of research staff

Training of the FGD moderators and other core staff was critical to success. The qualitative research staff comprised seven each of moderators, facilitators and notetakers. Apart from the core staff, 24 community recruiters (12 each in urban and rural areas) were also locally recruited to identify FGD participants.

A six-day intensive workshop was held at each provincial and regional capital under the direct supervision of the senior qualitative researcher. There began with three days of classroom training followed by two days of conducting practice FGDs. Finally, one day was devoted to training on making verbatim transcriptions, preparing expanded notes and conducting a debriefing session. The purpose and objectives of the study, underlying outcome, the importance of eliciting consent, ethical considerations and confidentiality were also discussed. During discussion sessions, "do's and don'ts" were explained to help avoid unnecessary delays and inappropriate chatting.

The moderators were selected and trained to be knowledgeable and experienced about the cultural, ethnic and geographical aspects of the target districts. They were thoroughly trained on every question to be asked and on encouraging discussions among participants, particularly among shy and non-vocal participants. Facilitator were also trained to assess the key points being made and if questions were not appropriately asked or answered.

Moderators, facilitators and notetakers were required to hold a planning meeting to clarify the themes and probing questions before each FGD. Appropriate terms and keywords were identified in advance.

8.2.6 Recruitment of participants

Every effort was taken to recruit participants who truly belonged to the community being investigated. For this purpose, local health authorities were contacted well in advance. District health officers and district coordinators of the LHW Programme deputed Lady Health Supervisors and LHWs to recruit participants and facilitate the FGDs. All Lady Health Supervisors and LHWs were provided suitable honoraria and were always accompanied by an AKU team member to ensure recruitment of truly representative individuals. Informed consent was taken from all participants at the time of recruitment and again before the start of each FGD. This cooperation proved very effective, however the recruitment of community leaders in remote areas was a challenge, especially in KP-NMD.

The required number of participants for each FGD was 8–10 but, keeping in view the possibility of absenteeism or refusal, 13 participants on average were initially recruited.

8.2.7 Formation of FGDs

FGDs were conducted in local community settings. In rural areas seating arrangements were mostly in semi-circles on the floor, while in urban areas both floor seating and U-shaped tables and chairs were arranged.

8.2.8 Conducting FGDs

The FGDs were conducted from May to August 2018 in Sindh, Punjab, AJK, GB and parts of KP. In Balochistan and the remainder of KP, FGDs were conducted during November to December 2018. The teams conducted FGDs comprised one moderator, one facilitator and one notetaker. Audio for all FGDs was captured using voice recorders with the consent of FGD participants. After a brief introduction of the participants, the moderator gave an opening statement about the nutrition situation and the objectives of conducting the FGD. Thereafter the FGD began with an open-ended "grand tour" question. Tea, refreshments and lunch were served to the participants after the end of each FGD. FGD discussion guides are provided in Annexes J1-J5

8.2.9 Analysis of FGDs

FGD analysis is always challenging and time-consuming, requiring a great deal of judgement and care, just as any other scientific approach. Indeed, analysis and interpretation of focus group data can be as rigorous as that generated by any other method, and may be conducted manually, or using specialized qualitative analysis software such as NVivo.[82]

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Moreover, for credible evaluation of the findings, systematic analysis is essential using an approach such as content analysis to distil large quantities of qualitative information into categories and thus analyse the themes and main ideas.[83] [84]

NVivo and content analysis were both adopted to analyse and interpret FGD findings.

8.2.10 Analysis and quality assurance

Steps taken to assure quality and to analyse the findings were as follows:

During the FGDs:

- Monitoring by UNICEF , MoNHSR&C and provincial department of health staff.
- Preliminary analysis started whilst still in the group. If, during the discussion participants made inconsistent, vague or cryptic comments, they were probed for clarity.
- Each participant was asked a final preference question.
- A summary of the key questions was described and confirmation sought.

Immediately after the FGDs:

- Voice recordings were checked and the final recording was selected from the dyad voice recorders.
- A debriefing was conducted for the moderator, observer and notetaker.
- Themes, feelings, interpretations and ideas were noted.
- All files, field notes, tapes and other materials were labelled.

Soon after the FGDs – same day:

- Back-ups of the voice recording and photocopies of all notes were made.
- Discussions were held to compare FGDs in general terms.
- Notetakers and facilitators finalized the extended notes, verbatim, without making even trivial changes.

Later – within months:

- Transcriptions of individual FGD recordings were prepared in a question-by-question format with amplifying quotes. This took a team of eight transcribers almost six months as they listened to voice recordings and prepared verbatim transcriptions.
- The transcriptions were then segmented by major themes, sub-themes and emerging themes.
- The transcriptions were compared and contrasted among provinces and regions. A comprehensive report was prepared for each province/ region, for each participant category (i.e. mothers, fathers, community leaders, LHWs and adolescents).

Analysis and preparation of report:

- The senior researcher looked into themes by question and constructed typologies for the analysis and findings.
- Summaries were prepared and specific quotes identified without mentioning individuals' names to illustrate the various perspectives, ideas and concerns.
- The narrative style was chosen for the in-depth analytical report, with bullet-points for the analysis of salient and top-of-the-mind findings.
- The volume of raw information was reduced and sifted to separate trivia from significant information.
- Efforts were also made to go beyond description to link elements and weave a "story behind the story".

Qualitative study

Maternal nutrition and care

Focus group discussions with community leaders and LHWs revealed a range of beliefs and practices around nutrition for pregnant and lactating that impact negatively upon the health of the mother and child alike.

9. Maternal nutrition and care

If a mother's dietary intake is sub-optimal, it can significantly impact the growth and development of the newborn or infant. A healthy maternal dietary pattern, along with adequate maternal body composition, metabolism and placental nutrient supply, reduces the risk of maternal, foetal and long-term effects in the offspring.

Dietary patterns are population-specific and are influenced by sociocultural factors and food availability. The nutrition of the mother is important before conception as well as throughout pregnancy and during breastfeeding. Multiple factors, such as household economic status, women's education, employment and control over income, place of residence, age at marriage, marital status, dietary habits and intra-household food distribution, are major determinants of women's nutrition and health status. We explored the perceptions of LHWs and community leaders in relation to maternal nutrition and antenatal care.

9.1 LHWs' views on maternal nutrition

9.1.1 Maternal dietary practices

The LHWs stated that the majority of the mothers followed a healthy diet for the first few months but thereafter resumed common, less healthy dietary practices. Some women were not permitted by elders and mother-in-law to consume oily food and cold juices after delivery, even in hot weather. Around half of the participants stated that new mothers were considered "unclean" and separate meals were prepared for them for some days after delivery. In urban areas, they stated that most mothers did not prefer homemade food but relied on market or commercial foods.

9.1.2 "Hot" and "cold" food

Almost all LHW participants held the firm belief that every food has "hot" and "cold" characteristics.[p] Many did not know the reason for these beliefs which were passed on by their mothers and grandmothers. These notions influence the diet of women during pregnancy and lactation as well as during early childhood. Many LHWs, especially in rural areas, cited mothers' beliefs that eating "hot" and "cold" foods impacts on the child:

> Yes, diarrhoea can happen due to hot diet and cough; catarrh can happen due to cold diets.
>
> LHW in rural Nawabshah, Sindh

Several believed, for example, that eggs, beef and chicken soup were "hot" foods.

All vegetables except aubergine, pulses except *masoor daal*,[q] mutton and chicken were considered "cold". Fish, eggs, milk and meat were considered "hot" foods and to be harmful for pregnant women as they were believed to increase risk of miscarriage. Fish was also said to reduce milk in lactating mothers, and hence was not consumed. It was common practice not to give a new mother any rice for 40 days as this is said to be "cold". Lentils were also avoided as they were believed to cause colic in the baby. A commonly expressed view, especially amongst rural LHWs was:

p Under the *unani* system of traditional medicine, this classification of the properties of food is independent of temperature and relates to the effects of the food on the body.

q Refer to the glossary for Urdu terms and certain specific terms used in the Pakistani context related to food and diet.

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> If the mother eats cabbage or chana daal the baby may have stomach pain.
>
> LHW in rural Rahim Yar Khan, Punjab

9.1.3 LHW views on antenatal care

Almost all LHWs stated that they not only counselled pregnant women on care and dietary regulation during pregnancy, but also told them what and how to eat. They agreed that they told pregnant women and their families that women should try to eat on time and double meal portions, with small frequent meals and adequate intake of fruits, pulses and green leafy vegetables.

One LHW said:

> *Apna number bhi diya hota hai aur un ka bhi number liya hota hai. Jab koi masala ho aur agar hum pohanch na sakayn tou phone kar kay rabta kar laytay hain.*
>
> We exchange mobile phone numbers so that we can discuss any complications or problems that arise, in case we cannot meet.
>
> LHW in urban Sialkot, Punjab

They stated that the major topics listed were discussed in one-on-one counselling or community mobilization sessions:

- Diet during pregnancy
- Emphasis on balance between doing household chores and rest
- Encourage antenatal check-ups and vaccination
- Ensure compliance of micronutrient supplements
- Importance of breastfeeding just after delivery
- Maternal health issues
- Personal hygiene care

9.2 Community leaders' views on maternal nutrition

Irrespective of province or region, most male community leaders expressed ignorance about maternal nutrition and said that such questions should be asked of the mothers directly. One said:

> I have nothing to do with these issues – what women and children should eat and what they should not eat; better you ask the mother.
>
> Community leader in Orakzai Agency, KP-NMD

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Across the board, community leaders felt uneasy answering questions on the mother's diet during pregnancy. For this reason, all FGDs were time-consuming and much probing was needed for the participants to expand on their perceptions and practices.

9.2.1 Maternal nutrition

While discussing the question "What types of food do pregnant women usually eat in your community?" community leaders gave mixed answers which generally indicated disengagement by male family members and community leaders from women's dietary needs during pregnancy. Many expressed the view below:

> Pregnant women eat the routine diet which is available at home; special foods are not prepared for them.
>
> Community leader in rural Faisalabad, Punjab

> Their meals usually pivot around bread, rice, lentil and vegetables, while eating meat and fruits depends on affordability.
>
> Community leader in urban Islamabad, ICT

However, when asked about diet during lactation the consensus was altogether different. They all said that they arranged a variety of foods for lactating mothers for the sake of the child's nutrition. The foods mentioned included *paratha* with butter, milk with rock candy, dates (*khajoor*), offal, broth (*yakhni*), *desi ghee*, *desi murghi*, eggs, *panjiri*, etc. it was evident that most participants focused on nutrition support during lactation for the sake of the child's health and nutrition rather than the mother's. Others stated that sometimes *sooji*, *ghee* and *lassi* were given, and if fruits were given apples and bananas were preferred.

One community leader made the following revealing remark, pointing to the neglect of women's needs:

> *Jab gaiy ya bakri ke pait mein bacha hoai hey tu loog uski ziyada dekh-bhal kartey hein kiyunke osay mali faida hota hey.*
>
> When a cow or goat is pregnant we take extra care of it because of financial gains later.
>
> Community leader in urban Muzaffargarh, Punjab

On further probing, community leaders gave a range of answers to the question "what should women eat and what should they not eat?", somewhat negating their earlier statements on lack of knowledge.

Table 9-1: Community leaders: What women should and should not eat during pregnancy and lactation

Women should eat	Women should not eat
milk	*desi murghi*
meat	fish
vegetable	egg
fruits	*Multani mitti*
butter	spicy food
yoghurt (*lassi*)	chickpeas
panjiri	*sabut masoor daal*
porridge	*chana daal*
sooji	guava
yakhni	plain white rice
chana pulao	samosa
egg	pakora
offal	fried and fast foods
	aubergine
	cauliflower

Community leaders were probed about the influence of family elders on a pregnant woman's diet. About half of them were of the opinion that in joint families, mothers could not cook and eat as they chose or desired but had to follow the instructions of their mothers-in-law and elders. In some families they could not even take advice from their husbands.

All community leaders agreed that elders' decisions regarding diet during pregnancy should be obeyed. One community leader stated:

> Often pregnant women eat foods secretly if they are able to cook for themselves or foods come from their parents' home.
>
> Community leader in urban Islamabad, ICT

Sometimes husbands did not bring fruits, green leafy vegetables, milk or eggs, etc. for "eating right" during pregnancy and expressed helplessness about convincing their own mothers. This indicates that mothers-in-law have much influence over the diets of their daughters-in-law (and daughters) and offers opportunities for interventions to improve maternal health and nutrition.

9.2.2 Iron and folic acid supplementation during pregnancy

Most community leaders from both urban and rural areas knew the importance of, and were in agreement about, iron and folic acid supplementation during pregnancy. They said that LHWs provided iron and folic acid tablets at the doorstep; however, in some areas LHWs did not perform well and avoided home visits.

Giving the reasons for taking supplements, they stated that iron and folic acid tablets complement low dietary intake and sustain good health.

When asked to describe reasons for not taking iron and folic acid, most had no valid reason other than difficulty in digesting folic acid and fear of side effects. Nearly half of participants attributed it to the "laziness and inattention" of pregnant women themselves, and of immediate family members.

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Qualitative study

Infant and young child feeding

Focus group discussions with mothers of children under two years, LHWs and community leaders revealed common factors that contribute to low rates of exclusive breastfeeding, late initiation of breastfeeding and appropriate complementary feeding, despite relatively widespread knowledge of positive practices.

10. Infant and young child feeding

10.1 Breastfeeding (children aged 0–6 months)

10.1.1 Mothers' knowledge, views and practices

Fifty FGDs in 25 districts across Pakistan were conducted and attended by 525 mothers with at least one child below two years of age. The reason for this restriction was to include mothers who had experience with children of breastfeeding age so that they could discuss issues related to early introduction and exclusive breastfeeding. These FGDs were conducted in both urban and rural areas of the respective districts.

Knowledge, attitude and practices

The majority of participants knew that they should continue exclusive breastfeeding until six months of age and that it should be continued according to the needs of the infant up to 2–3 years of age. One woman said:

> Feeding the child animal milk or infant formula is just like feeding a child poison.
>
> Mother in rural Skardu, GB

Around half said that they provided breastmilk for first few months and, following the advice of doctors, had maintained good hygiene when breastfeeding their baby. Most stated that they breastfed their baby whenever he/she cried. They stated that they were counselled by healthcare providers to drink two glasses of water before breastfeeding.

They also felt that babies should be breastfed as mother's milk is available 24/7 at no cost.

However, almost half of participants agreed that:

> *Maa ko kafi mushkilat ka samna karna parta hai jab bacha maa ka doodh peena chorr dayta hai.*
>
> The mother has to face a great deal of difficulty as the child stops taking the mother's milk.
>
> Mother in rural Faisalabad, Punjab

Some participants avoided breastfeeding their baby to maintain their figures and preferred other milk products. Other said that they did not breastfeed their baby if their breast became infected or they developed cracked and painful nipples. They believed that if mother was "weak due to illness or imbalanced diet and has underdeveloped breasts", she would not had enough milk supply for her baby.

Gender preference

Most mothers said that they did not discriminate on gender when it came to breastfeeding. Around half said that they fed both girls and boys for two years of age with no preferences by gender. However, some felt that daughters had the right to be breastfed till 36 months of age.

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Persons, places and time of counselling

Most rural and urban mothers said that they were counselled about breastfeeding by household elders (mothers, mothers-in-law, and married sisters), *dai* (traditional birth attendants), LHWs and doctors. LHWs usually conducted monthly awareness sessions. Mothers said that these staff mostly provided counselling during pregnancy (antenatal care) and after delivery via home visits. On average LHWs visited the households every three months during pregnancy and immediately after delivery. Around half of the participants also stated that they took advice from female polio workers because they frequently visited their houses.

Number of feeds and duration

The majority of participants in both rural and urban areas had an understanding that breastfeeding was necessary until six months of age, yet most practiced it only till 3–4 months and then began complementary feeding according to their individual family practices. Doctors usually advised them to breastfeed for 10–15 minutes in a single attempt from one side as it was important for the health of mother and baby. Sometime they continued breastfeeding until the baby left the breast. In rural areas around half of participants started breastfeeding when the child cried because they felt this was an indication of hunger. One mother said:

> My baby developed a favourite side and only wants to nurse on one breast. The doctor advised me to do frequent stimulation on the other breast to make it produce enough to feed.
>
> Mother in urban Faisalabad, Punjab

Usually mothers provided feeds 7–8 times a day. They believed that breastmilk fulfils the nutritional needs of a young child. However, around half said that their babies were unable to suckle breastmilk and they had to initiate top feeds. One said:

> My nipples are so sore that they are cracked and sometimes bleeding. The doctor told me how to correctly latch the baby to the breast.
>
> Mother in urban Mansehra, KP

Some mothers said that they fed their children 12 times a day, even waking a sleeping baby to feed. They had been counselled by LHWs and doctors about the proper sitting position while breastfeeding which would help the baby to swallow the milk, inhibit vomiting and help in the growth of the baby.

Mothers said that if they perceived that breastmilk was "insufficient", they fed the baby formula milk usually on a doctor's advice. Mothers reported that they had also been counselled on the importance of maintaining hygiene and routine vaccinations.

Other liquids and milks

A third of the participants believed that water and other liquids (tea, juices) were not required if a newborn was fed breastmilk. However, others stated that they gave water, tea, juices and other liquids because they felt breastmilk was not sufficient.

Around half of the participants gave gripe water to babies who were breastfed. One mother said:

> We usually provide tea and other liquids to babies because we can't afford formula milk and our breastmilk is not enough.
>
> Mother in Orakzai Agency, KP-NMD

In both rural and urban areas most participants gave water to their babies: some after six days and some after 10–15 days because they believed that the baby would be thirsty otherwise.

Of the mothers who did not breastfeed, the majority fed the baby cow's milk, goat's milk or packaged infant formula. The following reasons were given:

- They followed trends in their community
- They were conscious about their physical appearance
- They could not afford infant formula so used animal milk after 4–5 months
- They switched to bottle-feeding when travelling

Number of children and birth order

Around half of the participants said that with more children, mothers become "weak" and milk production capacity decreases. Due to insufficient gap between pregnancies, mothers were unable to properly feed newborns for two years. Some participants said that they could not afford the nutritional requirements of their children due to limited resources and many children. However, birth order was not perceived to have any relation to breastfeeding.

Role of family members

Most mothers were heavily influenced by mothers-in-law, husbands, LHWs and doctors. Most said that husbands influenced their wives to follow the LHW's and doctor's advice on breastfeeding. Their mothers-in-law, but not male household members, helped them out by taking over household chores during breastfeeding.

One mother described a commonly-held cultural practice:

> *Humarey yahan rasam hai ke tesrey din chatti ko dho ke apna doodh shuru karwatey hain.*
>
> Here we have a custom that on the third day [after birth] we wash the breast and start feeding.
>
> Mother in urban Karachi, Sindh

In some families, women were influenced by family members to throw away the colostrum due to a belief that it is not "healthy" for the baby. However, around half of participants agreed that mothers were generally empowered and took their own decisions around feeding children, but support from mothers and mothers-law, family elders and husbands in decision-making was important.

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Early initiation of breastfeeding

Most mothers were aware of the importance of early initiation of breastfeeding. The majority fed their babies only breastmilk and knew that colostrum should be given within an hour of birth. Some mothers provided colostrum to their newborns for 20 minutes in the first hour after birth. Most waited for the colostrum to be expressed and did not give anything else to the baby.

Mothers said that colostrum was a "vaccine" for the baby, and prevented "hundreds of infections". The majority said that, with early initiation of breastfeeding, their babies would not get sick and that it would "clean" the stomach and improve the baby's health. It was also believed to build the baby's immunity and prevent diseases. and to make the baby becomes strong and intelligent. However, around half of the participants stated that if they could not produce enough breastmilk they fed babies infant formula, even immediately after birth.

Additionally, around half of the participants perceived colostrum to be dirty and harmful for their baby. If mothers could not produce breastmilk after delivery, then they provided cow's milk or goat's milk to the newborn.

Pre-lacteal feeds and other liquids

The majority of the participants from both rural and urban areas provided a pre-lacteal feed to both boys and girls. These included *kehwa*, goat's milk, honey, *ghutti*, sugar or glucose water, and date paste.

> *Newborn ko glucose kay dou ya teen qatray pilatay hain, jab tak maa hosh mein nahi ati hai tab tak wo pilatay hain.*
>
> We feed the newborn 2–3 drops [of glucose water] until the mother has returned to consciousness.
>
> Mother in urban Rahim Yar Khan, Punjab

Breastfeeding sick children

The majority of mothers said that they followed the same practices when breastfeeding a sick children as for healthy, except in cases of very serious illness in which case they followed the doctor's advice. A few stated that they reduced frequency of breastfeeding and changed the feeding pattern as sick babies often refuse feed. However, they tried to breastfeed babies during illnesses regardless, and some stated that they breastfed 8–10 times a day if their baby was ill. Some mothers said they fed babies on demand during illness. Around half of the mothers stated sometimes during illness their children demanded more and sometimes they didn't. Almost all participants agreed that they resumed routine practices after children recovered, and breastfed 10–12 times a day.

Exclusive breastfeeding

Although most participants were aware that exclusive breastfeeding should be continued till children were six months of age, around did not practice it themselves and started complementary foods from three months of age, or latest at 4–5 months of age. This was usually done on the advice of mothers-in-law or family elders.

Exclusive breastfeeding: boosters, barriers, myths and preconceptions

Mothers listed a number of boosters for exclusive breastfeeding including love for the child, awareness, family support from elders and husbands, the unaffordability of infant formula, and support from LHWs and doctors. They also said that breastfeeding was effortless and less time-

consuming while breastmilk itself was (unlike infant formula and animal milk) free of cost and, above all, rich in nutrients for optimal growth and development of the child. Moreover, breastfeeding was strongly recommended in Islam.

Mothers said that in their absence, their children, mothers-in-law and relatives fed newborns using a cup and spoon. Sometime their strong attachment to the child led them to return home temporarily to feed the baby. Some women stored expressed breastmilk to feed their babies when they were out of the home. The majority of participants stated that their mothers-in-law took care of their infants after delivery in by clothing, cleaning and massaging babies and taking them for health check-ups. They also cared for babies when mothers slept. Mothers said that other family members, including husbands, married sisters and family elders, helped by performing household chores so they could feed children especially in the first 40 days after delivery.

Mothers also listed several barriers to exclusive breastfeeding. While it is recommended to start breastfeeding right away after a Caesarean section, mothers said that they were told not to. One said:

> My LHV advised not to breastfeed after my baby was born through C-section.
>
> Mother in urban Rawalakot, AJK

Healthcare providers also advised mothers not to breastfeed if they had an illness such as AIDS, tuberculosis or hepatitis. The majority of participants identified severe illness of the mother as a barrier to exclusive breastfeeding. Around half said that doctors also suggested stopping breastfeeding if they were "weak and unhealthy".

Some participants said that they could not breastfeed because they were busy with household chores, tending to livestock, and making handicrafts and embroidery. Some stated that they faced difficulty in breastfeeding because they spent a lot of time working in agricultural fields or at work. A few also stated that their husbands stopped them from breastfeeding in order to maintain their figures and a few said that they did not have breastmilk soon after birth so they gave "kehwa and top feed" to their babies.

Others said they could not exclusively breastfeed their babies because they had many children, and sometimes twin births led them to stop breastfeeding in the third or fourth month of life. Some stated that doctors sometimes recommended they stop breastfeeding if their babies had chest congestion and needed a nebulizer. Around half of the participants said they were shy of breastfeeding in front of family members, even other women.

Participants discussed myths and misconception around breastfeeding with great enthusiasm. Common myths and misconceptions are listed in Table 10-1, along with a summary of the boosters and barriers described in the FGDs. Community leaders also mentioned these factors.

Table 10-1: Exclusive breastfeeding: boosters, barriers, myths and misconceptions

Exclusive breastfeeding: boosters	Exclusive breastfeeding: barriers
Awareness of the importance of breastfeeding	Mothers' serious illnesses
Love, affection and strong attachment with the infant	Involvement in household chores, livestock and home-based work (handicrafts, embroidery, etc.)
Breastmilk is rich in nutrients	C- section delivery
Breastmilk is free of cost, less time-consuming and effortless to provide	Some care providers suggest stopping breastfeeding if mothers are "weak and unhealthy"
Family support in sharing household chores and accompanying during postnatal care visits	Many children, multiple pregnancies and short birth spacing
Breastfeeding is strongly recommended in Islam	Shyness about breastfeeding in front of family members even other women

Myths and preconceptions (acting as barriers)
Myths that prevent mothers from exclusive breastfeeding: • Extreme weather affects the health of a child who is breastfeeding: in hot weather breastfeeding causes the child to become ill and in cold weather it causes the child to suffer from flu and cough; • The amount of milk produced by a lactating mother depends on the size of the breast; • Babies cry mostly because breastmilk is inadequate; • Babies must be given sugar water or honey before the first breastfeeding; • Breastfeeding causes weakness in mothers; • Breastfeeding changes the shape and size of breasts; • First milk (colostrum) should not be given to children; • If babies do not take breastmilk it is because of the evil eye; • Babies need water in addition to breastmilk; • Larger nipples mean babies are provided insufficient milk; • Mothers should not breastfeed if suffering from an infection; • Nipples should be washed each time before feeding the baby; • No medication is safe to take while breastfeeding; • Mothers should not sit in front of the fire as this will increase the temperature of breastmilk; • Nowadays production of breastmilk is naturally low for some reason; and • A woman who becomes pregnant must stop breastfeeding.

Provincial/ regional variations in exclusive breastfeeding

Most mothers in Punjab, rural Sindh and GB believed that breastmilk was sufficient for the health of their babies in the first six months of life as they could only digest breastmilk in early infancy. Although participants in urban Sindh believed that nothing was better than breastmilk for a baby during the first six months of birth, they also believed that mother's milk provides equivalent energy to *ghutti*.

In practice the majority of mothers started feeding their babies cow's milk or goat's milk after four months of age. There were very few areas in rural Sindh, urban AJK and KP where the majority of mothers practiced exclusive breastfeeding for six months, while in both rural and urban Punjab, GB, Balochistan, as well as rural AJK, it was traditional to initiate complementary food from the third or fourth month as it was believed that breastmilk did not provide sufficient nutrition for babies' growth.

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Provincial/ regional variations in other breastfeeding practices

Across most of Pakistan mothers did not have the strength, health or willingness to practice exclusive breastfeeding for six months and continued breastfeeding till two years of age. Most mothers in Punjab, urban Balochistan, KP and GB faced difficulties in breastfeeding because of insufficient milk production, undernourishment, falling ill, painful breasts and feeling uneasy. In rural areas of Balochistan and GB, and urban areas of KP, Sindh and Punjab, some mothers said that due to limited resources they could not have a nutritious diet and did not have enough energy to produce breastmilk; as a result, they depended on animal milk to feed their babies. Some participants, but only in urban Balochistan and AJK, said that their husbands restricted their breastfeeding because it would disfigure them.

FGD participants in almost all urban areas as well as in rural GB and AJK said that women have to supplement their family income through paid jobs or unpaid labour as agricultural workers, and thus relied on infant formula or animal milk. A few urban women, especially in Punjab, Sindh and KP, said that they expressed breastmilk into bottles which was fed to their infants while they were away from home. Some mothers in urban Sindh, Punjab and GB preferred to keep their babies at day care centres when they were at work. In almost all rural areas, women faced difficulties in breastfeeding their babies when at work or working in fields. Only a few mothers said they took their babies with them to the workplace.

Mothers said that household responsibilities keep them busy and sometimes they were unable to breastfeed their babies on demand. One of the common factors was the family pressure to prioritize household chores over breastfeeding, especially in urban Punjab. However, most in rural Punjab, Sindh, Balochistan, AJK, KP and GB reported that family members provide enough support to mother to gain nutrition, rest and breastfeed in the first few months after birth.

10.1.2 LHW perceptions of breastfeeding practices

Colostrum and pre-lacteal feeding

LHWs participating in FGDs said that though most families, both urban and rural, had a positive attitude towards recommended breastfeeding practices, around half did not give colostrum to newborns. One said:

> *Kuch auratein samajhti hein ke ma ka pehla doodh ganda ya napak hota hey aur ye nu zaiyda bachon ko ni dena chahiay.*
>
> Some women believe that the mother's first milk [colostrum] is dirty or impure and should not be given to babies.
>
> LHW in urban Dera Ismail Khan, KP

Another LHW said:

> *Ghar ke buzorg boltay hain ke guthee tou humari sainkron saal purani rasam hai, guthee tou humayn dayni hai.*
>
> The household elders say that ghutti [pre-lacteal feed] is our centuries-old tradition, we simply have to give newborns ghutti.
>
> LHW in rural Jaffarabad, Balochistan

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Barriers to breastfeeding

- LHWs identified a number of malpractices and challenges which frequently acted as barriers to breastfeeding. These included: Women did not know about the correct breastfeeding position and how to help the baby latch
- Women feared their milk production was inadequate and switched to infant formula or animal milk
- Women believed that infant formula would increase the child's weight
- Women stopped breastfeeding early because of employment
- Babies were given a pre-lacteal feed (honey, water, almond oil, tea, kehwa, mashed dates, ghutti)
- Babies were not given colostrum and early initiation of breastmilk was not practiced
- Women preferred to bottle-feed as it was easier
- Women did not maintain hygiene while breastfeeding
- Women did not breastfeed in front of others because of shyness
- Women did not breastfeed if the baby was born by C-section
- Women did not breastfeed when the child was asleep
- Women did not breastfeed In open places, even at home, for fear of the evil eye
- Breastfeeding practices were informed by gender preference.

LHWs also observed that most mothers breastfed from one breast only and that young mothers were often shy and avoided breastfeeding. Moreover, they noted that despite all efforts at increasing awareness, colostrum was still perceived as dirty and poisonous to the child.

LHWs observed the followed challenges which prevented mothers from practicing breastfeeding as recommended:

- Maternal illness and weakness
- Breast engorgement and inflammation
- Nipple retraction
- Painful sucking and trouble latching
- Large-scale publicity in the media about breastmilk substitutes and milk supplements
- Involvement in household chores
- Large number of children
- Separating infants from their mothers caused disruption
- Lack of family support
- Inconsistent information and conflicting advices by healthcare providers
- Other distractions such as use of mobile phones
- Advanced maternal age
- Concern about physical appearance
- Unsupportive environment at workplace.

Examples that LHWs gave in various FGDs include:

> *Meinay apnay bachay ko aik saal tak apna doodh pilaya hai halankay mein job karti thi ab uss ko itni adat hogaie hai kay na woh abb koi doosra doodh pita hey aur na hi kuch khata hey.*
>
> [The mother will say:] I breastfed my child for one year, now he is so accustomed to it that he doesn't take other kinds of milk, nor does he eat anything.
>
> LHW in urban Muzaffargarh, Punjab

> *Kuch maayn chahti hain kay humari chati kharab na ho jaye, kuch maayn bolti hain doodh pilanay say humari jisamat sahi nahi rahay gi.*
>
> Some mothers don't want their breasts to sag, these mothers say that breastfeeding makes their breasts unattractive.
>
> LHW in urban Benazirabad, Sindh

> *Kuch aurtein itni daqianos hoti hein ke wo bachay to doodh ni pilati agar unki saas, nannd ya koi aur ukay aaspass ho chahay bacha doodh ke liay roraha ho.*
>
> Some women are so conservative that they don't breastfeed their infant if their mother-in-law, sister-in-law or anyone else is around them, even baby is crying for milk.
>
> LHW in rural Mirpur, AJK

> *Jo maayn kamzoor hoti hai un kay zahaen mein yehi hota hai kay agar hum doodh pilayen gay tou phir week ho jayen gay.*
>
> Weak mothers have it stuck in their minds that if we breastfeed we will become even more weak.
>
> LHW in urban Mirpur, AJK

Positive practices and enablers of breastfeeding

LHWs described positive practices they had observed amongst mothers over the years:

- Mothers expressed milk when going to work or away from home
- Mothers fed the infant in the right position and with correct latch
- Mothers breastfed on time
- Mothers prioritized breastfeeding over household chores
- Mothers avoided bottle-feeding and used a spoon if feeding the child infant formula or animal milk
- Mothers fed the child colostrum and practiced early initiation of breastmilk.

LHWs identified the following beliefs and factors which they had observed to be enablers of breastfeeding by mothers:

- Breastfeeding was recognized as improving and sustain the good health of the child, with appropriate growth and development
- It was recognized to improve the child's immunity
- It led to emotional bonding between mother and child
- For the mother breastfeeding reduces risk of breast and ovarian cancer
- It leads to rapid uterus involution
- Free of cost, readily available, easy, convenient
- Supportive family and husband
- Means of spacing children
- Maternal education.

10.1.3 Community leaders' knowledge and views

As influential members of their communities, local leaders can help to protect, promote, and support maternal, infant and young child nutrition, and take action to improve the health and well-being of mothers and children in their communities and mobilize others to improve nutrition. For this reason, FGDs with community leaders included a component on the specific nutritional challenges they observed in their communities, and sought to gauge their understanding and views on child nutrition.

Understanding of child nutrition

While most community leaders were able to discuss the importance of a balanced diet, they were, by and large, unable to define it. None mentioned key elements of IYCF including early initiation

of breastmilk, providing colostrum, avoiding pre-lacteal feeds, continued breastfeeding up to six months of age and introduction of semi-solid foods at the age of six months.

A few described aspects of child nutrition and health, stating:

- If the mother was weak her child would have low birthweight and be vulnerable to infections.
- If the child is not breastfed until two years of age, physical and mental growth may be restricted.
- If a balanced diet is not provided to infants and children, they will be malnourished.

Perceptions of challenges related to child nutrition

In response to a question on the nutritional challenges they saw in their communities, community leaders across Pakistan highlighted the following:

- Poor nutritional knowledge and demand:
  - Lack of awareness about nutritious diets
  - Children frequently buy food from the street or from shops
  - Consumption of junk food and fast food
- Difficulty in accessing nutritious food:
  - Unaffordability due to price hikes on food items in general and essential food items in particular leading to diets restricted to lentils and potatoes
  - Early marriages [r], [s]
  - Child spacing and unmet need for contraception
  - Large family size
  - Food adulteration
  - Frequent rains and floods in some part of the country

Breastfeeding

Most community leaders could not clearly articulate knowledge about breastfeeding. A few stated that exclusive breastfeeding is the best way and should be continued till the child is two old as it has benefits for both mother and infant. Others in the group suggested that mothers should be encouraged to breastfeed their children and bottle feeding should be discouraged.

Participants described several "barriers" to exclusive breastfeeding, including insufficient breastmilk, delayed introduction of complementary foods and low water intake. A few believed that breastfeeding is difficult and frequent breastfeeding could make mothers ill.

They Slated some mothers don't breastfeed their children because they are conscious about their figures. On the other hand, the said mothers are overburdened by household chores, working on the farm, milking, etc. so they can't spare time to feed their children properly.

Community leaders identified the following benefits of breastfeeding: mother-child bonding, boosted immunity, and the fact that breastmilk is free of cost.

Pre-lacteal feeding

Community leaders reported a range of substances given to newborns as pre-lacteal feeds, including honey, *ghutti*, gripe water, *kehwa*, *gurh* and mashed dates. However, they could not explain why these substances were given as pre-lacteal feeds.

r https://www.icrw.org/wp-content/uploads/2018/02/ICRW_Brief_ChildHealth-1.pdf

s https://www.girlsnotbrides.org/wp-content/uploads/2016/03/6.-Addressing-child-marriage-Food-Security-and-Nutrition.pdf

10.2 Continued breastfeeding and complementary feeding for children aged 6–23 months

10.2.1 Mothers' knowledge, views and practices

Continued breastfeeding

Across Pakistan, a majority of participants stated that they breastfed their babies until they were two years of age, along with providing complementary foods. Around half of mothers exclusively breastfed their babies till four months and later started providing animal or infant formula because breastmilk production was insufficient. A few believed that if the child burped at the breast, the mother should not breastfeed until the breast is treated, as they said burping caused swelling in the breast which led to breast pain. Another opinion was that poor dietary intake of lactating mothers led to a reduction in breastmilk production and lactation failure.

Provincial/ regional variations in continued breastfeeding

In Balochistan, GB, AJK and KP mothers continued to breastfeed their babies till two years of age unless unforeseen circumstances hindered routine breastfeeding. However, the majority of mothers from Sindh and Punjab said that they started providing goat, cow, and infant formula after nine months of age on the doctor's advice because of insufficient breastmilk.

Some gender discrimination was observed in rural areas of Punjab and GB, and urban areas of AJK and KP where some mothers said that they breastfed their sons for two years and daughters for two and a half years as they believed that daughters need more energy and strength because they have to face a more difficult life than boys. Some said it was a religious injunction that it is the right of a daughter to be breastfed for longer than a son. Across Pakistan, but mainly in urban Punjab and GB, rural Sindh, KP and AJK, mothers said they breastfed their daughters and sons equally.

Introduction of solid and semi-solid foods

Some participants said that they started complementary feeds after the sixth month of life, but without giving reasons. The foods introduced included banana, boiled eggs, boiled potatoes, cake, Cerelac, *daliya*, *dawdoo*, fruits, *halwa*, homemade soft foods, juice, *kheer*, *khichri, lassi*, mashed biscuits, *roti*, rusk, *sabudana, sattu, sooji* and yoghurt. Most mothers said they had to the change food provided frequently because children do not like repeated foods.

Provincial/ regional variations in introduction of solid and semi-solid foods

Mothers from Punjab demonstrated a strong traditional belief in initiating semi-solid foods before the recommended age (around three months of age) in order to strengthen their health. Preferred homemade semi- solid foods were *kheer*, *sooji*, Cerelac and other milk-based foods which would provide energy and encourage weight gain. A few participants from GB, Balochistan, and rural AJK also said that they introduced semi-solid foods after 3–4 months of age. In rural Sindh, KP and urban AJK, however, it was strongly believed necessary to initiate complementary foods only after six months of age when it was believed breastmilk also was insufficient to provide energy to their babies.

10.2.2 LHW perceptions of complementary feeding practices

Barriers to complementary feeding

LHWs participating in FGDs across Pakistan identified misconceptions and challenges which frequently acted as barriers to recommended complementary feeding practices.

Misconceptions and negative practices related to complementary feeding included:

- Cultural beliefs that a "weak" child cannot digest many different kinds of foods
- Child perceived to be too small at birth was fed a restricted variety of foods

- Solid, semi-solid and soft foods were introduced too soon or too late
- Quantity and frequency of feeding was insufficient
- The quality of complementary foods was inadequate
- Not enough variety of food was provided
- Food provided was of inappropriate consistency (too thin or too thick)
- Suitable hygiene practices for weaning food were not used

LHWs observed the followed challenges which prevented mothers from practicing complementary feeding as recommended:

- Large family size
- Inattentiveness
- Gender preference
- Mothers were overburdened with household chores
- Unaffordability of nutritious food
- Dominance of the mother-in-law
- Mother's dependence on family
- Domestic issues and family conflicts.

Positive practices and enablers of complementary feeding

LHWs described positive practices related to complementary feeding which they had observed amongst mothers over the years:

- Extra care for weak children and the belief that such children need more food
- Introduction of solid and semi-solid foods on time
- Sufficient quantity of food and number of feeds
- Providing a diverse diet (e.g. sooji, kheer, boiled potatoes, bread and animal milk (cow, buffalo, goat, sheep, camel), dawdoo (in Gilgit), yoghurt, boiled eggs, pancakes, potato chips, boiled white rice, minced meat, khichri, porridge, custard, sabudana, biscuits, bananas, sattu (in Skardu), tea, juice)
- Separate cooking utensils for the child's meals
- Washing hands before preparing the child's food.

LHWs identified the following factors which they had observed to be enablers of recommended complementary feeding practices:

- Affordability and availability of food items in the household
- Belief in the need to nurture child's physical and cognitive growth and development
- Education of mothers
- Information on social media
- Fewer children
- Supportive family.

10.2.3 Community leaders' knowledge and views

Community leaders stated that complementary feeding started when infants were 4–6 months of age, with soft foods such as Cerelac, *khichri,* fruits, *roti*, eggs, juice, *kheer*, semolina, banana, grapes, melon, *choori*, mashed potatoes and other vegetables, apple, yoghurt, biscuits, *paratha*, *sabudana*, peas, potato chips, etc.

Participants compiled a long list of foods they considered nutritious, which would help the child grow healthily. These included chicken soup and shredded chicken, *paneer*, *kheer*, porridge, *desi*

ghee, goat/cow milk, yoghurt, green leafy vegetables, bananas, apples, broth, chicken liver, etc. However, they felt that most families can't afford a variety of food for children.

Participants said that in their households it was not customary to cook separately for the child, adding that cooking a separate meal would take up a considerable amount of time for the mother, which would be difficult to manage.

10.3 Supportive systems and entry points for child nutrition

10.3.1 Community perceptions of channels of communication about nutrition

Mothers' perceptions

The majority of mothers participating in FGDs stated that they received information about nutrition through the television, internet and social media. However, person-to-person communication was still considered the most reliable channel of information, with sources listed by mothers including physicians, LHWs and family members. Husbands and LHWs were noted by participants as the most reliable sources.

Community leaders' perceptions

Community leaders participating in FGDs stated that LHWs, mothers-in-law, husbands and doctors influenced the mother's decisions regarding her diet during pregnancy and lactation, and on complementary feeding.

10.3.2 LHW perceptions of their role and the health system

Awareness of responsibilities around IYCF

Most LHWs in both urban and rural areas were aware of the work obligations regarding IYCF. One LHW said:

> *Jab hum ghar jakar sheerkhwar aur chotay bachon ki anthropometary kartey hein tu maa baap bohat khush hotay hein.*
>
> When we go to the home and perform the anthropometry of a newborn and young child, it makes the parents really happy.
>
> LHW in rural Rawalpindi, Punjab

Nutrition-related training

LHWs stated that they had received training related to nutrition. This included content on breastfeeding counselling, IYCF, malnutrition, maternal and child care, newborn nutrition, weaning diet and management of pneumonia and diarrhoea.

While they stated that the trainings were supportive and built capacity, they also pointed to a need for more refresher trainings, especially on nutrition-sensitive and nutrition-specific approaches.

Content of nutritional counselling

LHWs identified a number of topics that were included in the counselling they offered to mothers on breastfeeding and complementary feeding.

Table 10-2: Content of nutritional counselling by LHWs

Breastfeeding	Complementary feeding
• Breast care • Breastfeed 12 times a day; 15 minutes from each breast • Importance of breastfeeding • Proper positioning • Breastfeeding creates strong bonding between mother and child • Breastfeeding prevents breast cancer • Breastfeeding as a way of natural family planning • Breastmilk has many benefits and is full of nourishment for the child • Breastmilk protects baby from diseases and should be continued till two years of age • Disadvantages of bottle-feeding • Do not give water to babies, it may cause abdominal infections. Water is already present in breastmilk • Do not wear a bra during the initial days after delivery as it would reduce milk production • The mother should drink plenty of water/fluids before feeding her child • Emphasis on colostrum and feeding the baby immediately after delivery • Initiation of breastfeeding within 30 minutes, its importance as a first natural vaccine • Good maternal diet to enhance breastmilk • Exclusive breastfeeding till the infant is six months of age, continued till the child reaches two years or beyond to protect from diseases, become strong and with good digestion, gain weight and be intelligent • Hygiene care during breastfeeding and weaning.	• Educate mothers not to repeat same diet every day • When preparing meals, keep the baby's preferences in mind and the flavours she or he prefers (sweet or savoury) • Give the infant foods with different tastes and preparations • Maintain weaning food hygiene practices • Alternative weaning diets based on affordability (e.g. replacing meat and fish with green leafy vegetables, pulses and eggs) • Start weaning when the infant is six months of age and continue breastfeeding till two years or later whilst providing a weaning diet • Do not feed children sweets, chips and street foods.

Challenges in their work

In the early years of the LHW Programme, many LHWs faced resistance from communities and families; some mentioned women shutting the door when they visited. Today, however, they felt that the acceptability of LHWs is tremendous and women come themselves to visit health houses. However, they still faced challenges in counselling and influencing families for better health, nutrition and family planning.

Almost all LHWs said that "illiteracy" remained the biggest challenge in rural areas and urban slums, and meant that community knowledge about health and nutrition was very limited. Despite their best efforts, many agreed, pregnant women would not go to a health facility for four antenatal check-ups, and many believed that every medicine the LHWs administered was a contraceptive.

LHWs across the country cited in particular the challenge posed by their participation in polio eradication campaigns, which substantially affected efforts to improve primary health care and maternal, infant and child nutrition. One stated:

> *Yeh jo baar baar polio campaigns ho rahi hain issliay bhi log irritate hogaye hain, kehtay hain kay baar baar kiyun ajati ho? Log samajhtay hain kay polio ke qatron kay zariye nasal kashi kar rahay hein.*
>
> These repeated polio campaigns have irritated people and they say, why do you come again and again? People believe that polio drops are a way of committing genocide.
>
> LHW in Orakzai Agency, KP-NMD

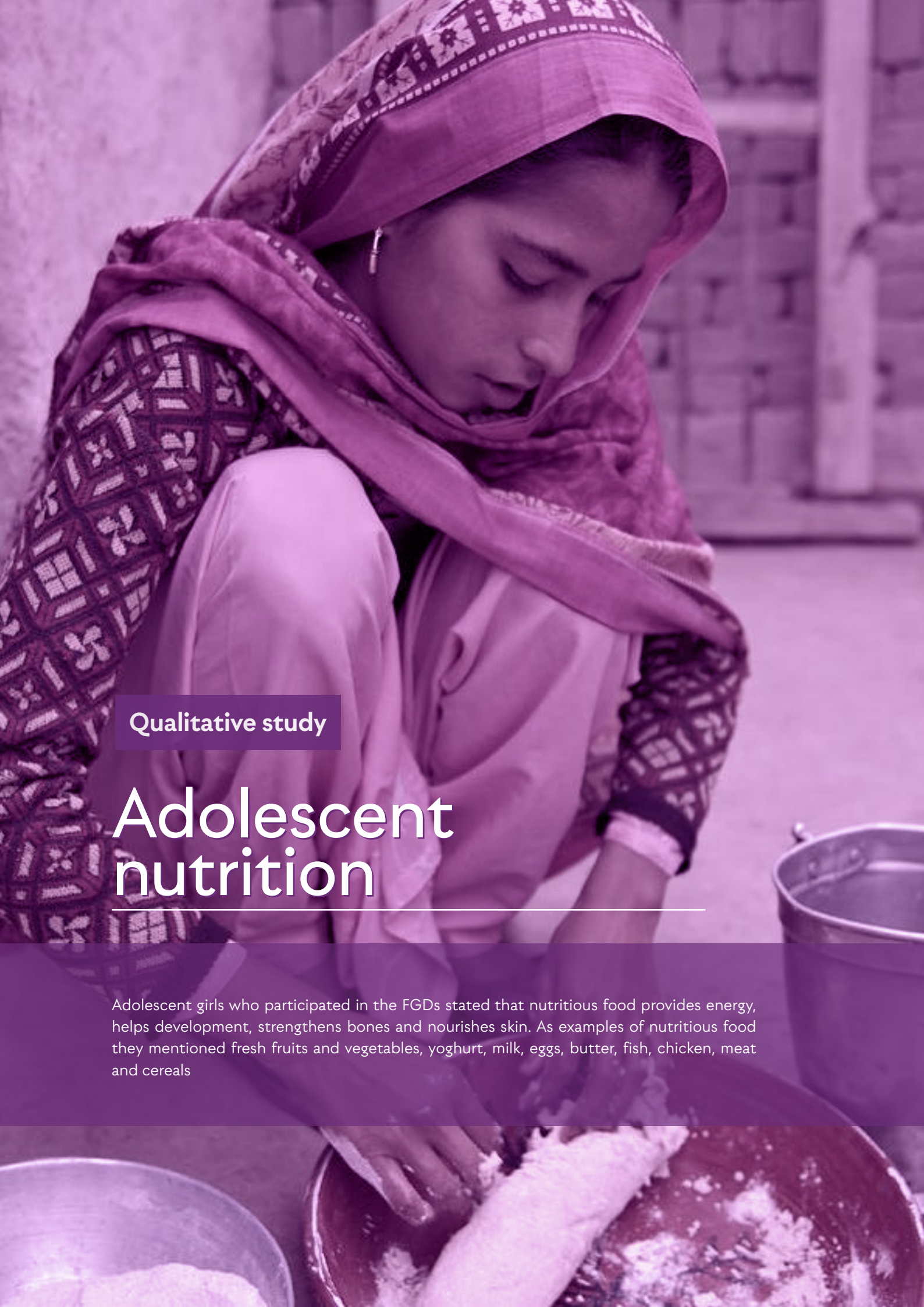
Another added:

> *Larkon ko nahi pilatay hain larkiyun ko phir bhi pilatay hain.*
>
> They [families] don't give [polio drops] to boys, but they do have some leeway for girls.
>
> LHW in rural Rahim Yar Khan, Punjab

Healthcare system

All LHWs faced challenges with patient dissatisfaction with the service received at public health facilities. They said that they received many complaints from patients whom they referred to the nearest facility for antenatal or postnatal care, vaccination or treatment, etc. Complaints included:

- Negative attitude and inattention of medical staff
- Lack of medicines for patients and for LHWs to provide
- Lack of transport for onward referral for tertiary care
- Non-functional equipment
- Unavailability of crash-cart
- Unhygienic conditions, especially in the toilets
- Overcrowding.



Qualitative study

Adolescent nutrition

Adolescent girls who participated in the FGDs stated that nutritious food provides energy, helps development, strengthens bones and nourishes skin. As examples of nutritious food they mentioned fresh fruits and vegetables, yoghurt, milk, eggs, butter, fish, chicken, meat and cereals

11. Adolescent nutrition

11.1 Adolescent girls

11.1.1 Knowledge about nutrition

Adolescent girls who participated in the FGDs stated that nutritious food provides energy, helps development, strengthens bones and nourishes skin. As examples of nutritious food they mentioned fresh fruits and vegetables, yoghurt, milk, eggs, butter, fish, chicken, meat and cereals. One participant explained:

> *Jo cheez humain khanay ko milti hay us ko ghiza kahte hain, fruits me apple khane se vitamin D milta hai, sabzi me karela khane se hamare jisam ke jaraseem saaf hotey hain.*
>
> The food we eat is called our "diet". By eating apples we get vitamin D, and eating bitter gourd cleanses us of germs.
>
> Adolescent girl in urban Gilgit, GB

11.1.2 Nutritional concerns

Most of the participants agreed that nutritious food prevents health issues such as vitamin and calcium deficiencies, short statuce and growth problems, nail discoloration and hair loss. For example, one girl said:

> *Nails pay ajeeb say white colour kay nishan banjatay hain.*
>
> Your nails get strange white markings.
>
> Adolescent girl in urban Chitral, KP

Around half of participants said that, on reaching adolescence, they had started avoiding nutritious foods because of a fear of getting fat. As one put it:

> *Larkian khane se parhaiz karte hain kiyun kay kahtay hai hum log motay ho jayn gay.*
>
> Girls avoid eating food because they say that we'll get fat.
>
> Adolescent girl in urban Sialkot, Punjab

Adolescent girls were also concerned about certain types of food causing acne. A majority of participants believed that many foods, especially chicken and meat, available in the market are of poor quality and cause hormonal issues such as irregular menstrual cycles and facial hair growth:

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> *Aj kal bazar me chicken gosht mil ra ha hai un kay ander bemaari hoti hai ussay humari hormone disturb ho jati hain tou iss wajah say menses ki problems hai zyada hotay hai maheenay me dou bar ati hai ya har 10 din kay bad.*
>
> These days the chicken and meat for sale in the markets has a sickness inside it, which disturbs our hormones. This causes greater problems with menstruation, such as getting two periods a month, or a period every 10 days.
>
> Adolescent girl in rural Rawalpindi, Punjab

Some said that these concerns had led them to skip meals, especially breakfast, and made them weak and pale.

11.1.3 Eating well

Adolescent girls believed that appropriate and nutritious food should contain protein, minerals, carbohydrates, fats and vitamins which would provide energy to work, play and take part in routine activities. They gave examples of healthy foods including fruits, vegetables, lentils, milk and eggs. They agreed that eating more fruit and vegetables would protect them from diseases and digestive issues, provide energy and maintain healthy skin. One also said:

> *Humaray sir nay yeh bataya hai kay har ghiza me 1-2% fat hota hai. Uss lehaaz say agar hum proper way me ghiza lay rahay hain tou humayn 20% fat jo humayn chahiye woh poori ho gi. Jaisay milk hai milk me bhi fat hai, butter hai uss me bhi hai. Agar hum yeh cheezayn lay rahay hai tou 20% poori hoti hai humayn extra laynay ki zaroorat nahi hai. Aur extra lay nay say phir nuqsanat ho jatay hain.*
>
> Our teacher told us every food has 1–2% fat. In this regard, if we are eating properly, we are getting 20% fat, which fulfils our requirement. There's milk, for example, milk has fat; there's butter, butter has fat. If we eat such things we get the 20% we need and we don't need to consume any more. If we take any extra, then it gets harmful.
>
> Adolescent girl in urban Faisalabad, Punjab

Other food items with a high fat content, such as junk food, was believed to be harmful and could cause pimples, obesity, indigestion, hair loss and hormonal disturbances.

11.1.4 Commercial food items

Adolescent girls understood junk food to be shop-bought foods with limited nutritional value but attractive taste. The participants stated that regular intake of junk food could compromise health and lead to obesity. Some stated that it could cause hair loss or early puberty, as one put it:

> *Junk food aur fast food se larkiyan jaldi say baari ho jati.*
> Junk food and fast food makes girls [physically] mature faster.
> Adolescent girl in urban Karachi, Sindh

Participants believed that junk foods contain preservatives, have no nutritional value and could not replace fresh homemade food. Nevertheless, they felt they could not control their desire to eat junk foods.

Participants listed several examples of food items they considered junk foods: potato chips, *samosa*, *pakora*, burgers, pizza, chicken *tikka*, *nimko*, *papar*, biscuits, ice cream, *gol gappay*, *dahi bhallay*, kababs, shawarmas, instant noodles, macaroni, sandwiches, cold drinks, *chaat*, fries, patties, *biryani* and chocolates. Some said that potato chips and other fried items were harmful for health as they cause heartburn and indigestion.

Many of the participants stated that they had replaced intake of homemade food with store-bought junk food because of its taste, texture, toppings, variety and ease of access with convenient home delivery. Some said this was why they often went with friends and family to eat in different restaurants. Since a variety of food was not available at home on a daily basis, many turned their attention to foods in the market. As one girl said:

> *Ghar ka khana kha ke bor hogae hain dil karta hai ke bahir ka khana khaen!*
> We're bored of eating home-cooked food, we want to eat food from outside!
> Adolescent girl in urban Gilgit, GB

Some said that they preferred homemade food when their mothers cooked their favourite meals, with a good taste, texture and appearance. Yet, they were out with their friends they could not resist eating junk food.

A few participants said they had tried to cook similar food items at home but had found it expensive and their families had objected. Junk food, on the other hand, was easily available in all school and college canteens, where they could spend their pocket money without restriction.

Junk food was thus easily available in market. Some felt that the price was high and they could not afford it easily as their pocket money was insufficient. In this case, some resorted to waiting for promotions:

> *Yaheen sochtay hain kay pizza agar aik pay aik free hai tou chalo aj aik kay saath dousra free milay gay tou humayn khushi hoti hai kay chalo aj zyada khayn gay.*
>
> We just think that if this pizza is 'buy one get one free' then let's buy one today and get a second one free. That then makes us happy that, today, we can eat more.
>
> Adolescent girl in urban Sialkot, Punjab

Social media also influenced adolescent girls to seek out junk foods by promoting deals and discount offers daily and in all forums.

Families were generally disapproving of junk food. Almost all participants said that their parents admonished them about consuming junk food, but admitted that it was hard to control their cravings.

Less than half of adolescent girls brought homemade food to school. Instead, most purchased their lunch from the school or college canteen. They listed examples of homemade and purchased foods as follows:

Homemade foods	Rice, chicken, bread, kabab, *biryani*, macaroni, fruits, bread with jam, *dahi bhallay*, chicken nuggets (often pre-packaged), potato chips, instant noodles, *anda paratha*, omelette, vegetables, *daal chapati*, *gajar ka halwa*, *sooji ka halwa*, vegetable curry and chicken *saalan*.
Purchased foods	Lays, *chaat*, *samosa*, *pakora*, potato chips, shawarma, juice, *papar*, biscuits, cake, sandwiches, cold drinks, *aloo cholay*, *gol gappay*, patties, chocolate, burgers, pizza, toffees, bubble gum, betel nuts, milkshakes, pasta, *nimko*, salted biscuits, popcorn.

11.1.5 Barriers to eating healthily

Almost all participants stated that they preferred to eat according to their taste and appetite instead of considering the nutritional content of food. Some had avoided eating meat since they were children and believed that it would make them vomit. Some said that they were "dependent" upon their favourite foods. Most also said that they avoided eating vegetables. Many did not like to drink milk because of its taste and smell. Most were conscious about their weight and believed that healthy food could lead to weight gain.

External barriers to healthy eating included hangouts with friends and cousins where everyone else was eating appealing commercial food items which participants said they were then unable to resist. Some stated that when they tried to develop a healthy eating habit, it was unsuccessful because other family members would bring home unhealthy food which broke their resolve. They also cited attractive discounted offers associated with junk food.

11.1.6 Facilitators for eating healthily

Most participants avoided oily and unhealthy commercially prepared foods only when the doctor recommended it, when they were very ill or when they developed indigestion or acne. Hair loss and skin concerns were mentioned as caused by unhealthy diet, and as factors which encouraged them to eat healthy foods. Pressure from family members. such as parents and elder sisters, were also cited as drivers of change.

11.1.7 Sources of information on healthy diet

Adolescent girls said that they learned about nutritious and healthy food from home: from their parents, especially their mothers, friends and family elders. They also had received some nutritional education from teachers, doctors and the media, saying that information was available on healthy diets, looking good and having shiny healthy skin on television, newspapers and the internet. However, participants showed little intention to learn more about healthy diets.

11.1.8 Foods consumed in the past 24 hours

Participants were asked to list the foods they had eaten at mealtimes and for snacks in the 24 hours preceding the FGD. These are listed in the table below.

Table 11-1: Food items consumed by adolescent girls in the past 24 hours

Breakfast	Tea, omelette, *paratha*, milkshake, *daal chapatti*, yoghurt with *chapati*, mango, *anda paratha*, biscuits, bread, butter, *bakarkhani*, rusk, curry with *chapati*.
Midmorning	Milkshake, biscuits, peanuts, *nimko*, tea, Top Pops.
Lunch	Bean curry, potato curry, *daal*, cabbage curry, *roti*, chicken, shawarma, *karhai*, *biryani*, bottle gourd, *pakoras*, ladyfinger, macaroni, pumpkin, minced meat, rice.
Tea time	Biscuits, peanuts, apples, peaches, Top Pops, *samosas*, fruits, tea, cheese crackers, *papar*, *pakoras*.
Dinner	Chickpea *chaat*, white rice, *biryani*, chicken pulao, tomato chutney, *daal* with chapati, soup, potato *pulao*, bittermelon curry, pumpkin with *chapati*, chicken *saalan*, *tarkaywale chawal*, chicken *karhai*, ladyfinger with *chapati*, *tinday* with *chapati*, mixed vegetable *bhujiya*, bean *daal*, capsicum *sabzi*, *daal* with rice, *kari* with rice, *kaleji* with *chapati*.
Bedtime	*Daal* with rice, *aloo gobi* with *chapati*, mixed fruit juice.

11.2 Adolescent boys

11.2.1 Knowledge about nutrition

Adolescent boys who participated in the FGDs stated that food is necessary for human beings because it provides strength, energy and health.

> *Jab hum ghizayat ka lafuz sunte hain to hame pata chalta hai ghizayat means khana, is ka matlab kafi khane wali cheezain wo cheezain jin se hame faida ho nuqsan na ho.*
>
> When we hear the word "nutrition" we know that it means food, it means eating those things that benefit us, not those that harm us.
>
> Adolescent boy in urban Rawalakot, AJK

> *Jis main tawanaie jis se mile use nutrition kahenge or sehat bakhsh khanay se humara zehan strong hoga.*
>
> We call those foods nutritious that give us strength, and those healthy which make our minds strong.
>
> Adolescent boy in urban Faisalabad, Punjab

Thus, participants preferred foods which would improve physical fitness, mental health and provide energy to do physical work. Examples of foods that the participants mentioned as being healthy included green vegetables, potatoes, wheat, fish, meat, chicken, eggs, rice, fruits, lentils, milk, honey, butter, *sabudana*, dried fruit etc.

11.2.2 Nutritional concerns

While the majority preferred cheap and easily accessible street foods, they displayed some disquiet. As one said:

> *Dosra, aj kal har cheez mein milawat hai or nuqsan deh hai.*
>
> The other thing is, these days everything is adulterated or is harmful to health.
>
> Adolescent boy in urban Mansehra, KP

> *Gosht ka masla hai, jo humaray yahan pay jo gosht sale kartay hain, woh aj kal do number ka gosht hai, koi ghaday ka gosht sale karta hai tou koi kuttay ka, humayn tou pata he nahi hota hai kay yeh gosht ghaday ka hai ya kis ka.*
>
> There's a problem with meat; the people who sell meat here, these days they are selling second-grade meat: some sell donkey flesh, others sell dog flesh. We don't know whether the meat we're buying is from a donkey or whatever.
>
> Adolescent boy in urban Karachi, Sindh

This was contrasted to the purity of food in the past:

> *Jis tarah puranay log hain khalis ghiza khatay thay, woh log kitnay mazbot hain, aur aap humayn hi daikh layn aap ko humari umaron pay hi Shaq ho ga, hum nay ghalat ghiza khaie hai iss liye humari yeh halat hai.*
>
> The people in the past, they used to eat pure food. That's why they [older people] are so strong. And just look at us – you would disbelieve us if we told you our ages [meaning we look weak]; we have eaten a bad diet, this is why we're in this condition.
>
> Adolescent boy in urban Gilgit, GB

In rural areas, it was considered particularly hard to get nutritious food from the market. As one said:

> *Bazar se doodh le aate hain to us mein bhi milawat hoti hai! Aik litre doodh hota hai uss mein adha litre tou pani hota hai. Asar bahut parta hai kiyun kay humayn jin proteins ki zaroorat hai woh nahi milta hai.*
>
> If we get milk from the market, even that is adulterated! If there's one litre of milk, half a litre is actually [added] water. It has a great effect as we don't get the proteins we need.
>
> Adolescent boy in rural Karachi, Sindh

A similar mistrust of food quality was expressed about junk food which, as one said:

> [Junk food] may affect our health as we don't know which oil is used for cooking.
>
> Adolescent boy in urban Sialkot, Punjab

The adolescent boys also complained about water contamination. One participant from AJK said:

> *Pani bhi ganda huwa hai, pani mein machliyan waghera mar jati hain iss liye ganda ho jata hai, aur jab hum yeh pani peetay hain tou humayn bemaariyan waghera lag jati hain.*
>
> The water has also been dirtied. Fish die in the water and contaminate it, and when we drink this water we get ill.
>
> Adolescent boy in urban Mirpur, AJK

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Cold drinks were believed to cause gastrointestinal distress and reduce fitness. The participants agreed that with the passage of time these unhealthy choices could lead to chronic diseases like joint problems, heart diseases or diabetes.

Generally, the participants said that they preferred to avoid oily and spicy food and considered it unhealthy. Some did not eat chicken and eggs and considered themselves "allergic".

11.2.3 Eating well

Participants believed that street foods were unhygienic because sellers use cheap oils which were reused for 3–4 days and kept open; this, they believed, could and could cause flu and chest infections. College and school students mostly preferred fast foods and street foods which they ate with their peers and attributed to these frequent abdominal pain and gastrointestinal upset. As one said:

> *Bahir ke fast food ya junk food ka zyada rujhan hai to aksar maide ki takleef, pait ka dard hojata hai, us time to un khanon ne maza de diya us ke bad risek lena lazmi hojati hai.*
>
> If there is too strong an orientation towards fast food or junk food from outside, often it causes a stomach ache; at the time such food gives pleasure but afterwards it's necessary to take medication.
>
> Adolescent boy in urban Faisalabad, Punjab

Another said:

> Around half of our friends are labourers and they live far away from their homes and families, so they have to eat food from hotels [restaurants]. They mostly eat items that are fried in unhealthy or reheated oil which is dangerous for health. They mostly face gastric upset due to their dietary habits.

Some said that unhealthy foods could lead to obesity, heart attack and diabetes.

The participants agreed that healthy food is that which does not cause any harm, especially homemade food, which provides protein, vitamins and other nutrients. As examples they mentioned green vegetables, lentils, meat, wheat, fruits, milk, desi ghee and chicken.

One participant in Sindh said:

> *Sahih khana wo hai jis ko khane ke baad mutamain ho ke koi takleef nahi hogi jese ghar ka saf suthra khana, dal sabzi or gosht, agar ghar ka bana hai to wo sahih hai agar wohi cheez hotels ki ho to wo sahih nahi hoti.*
>
> The right food is that which doesn't cause harm, such as clean, pure food from home; daal, vegetables, meat, if it's cooked at home then it's fine, but if the same thing is purchased from restaurants then it's not fine.
>
> Adolescent boy in urban Kambar, Sindh

Many adolescent boys agreed that more fruits and vegetables should be eaten as they were good for health.

Vegetables, they said, have vitamins which help in blood formation; fruits help in hydration; milk strengthen the bones; and lentils contain protein. Nevertheless, many retained concerns about impurities. A participant from AJK said:

> *Fruits and vegetables hamari health aur hamari fitness kay liye bohot zaroori hai, Vegetables bhi hai tou us mein bhi chemicals dal kay pakatay hain.*
>
> Fruits and vegetables are really important for our health and fitness. But even if you're having vegetables, they are cooked with added chemicals.
>
> Adolescent boy in rural Mirpur, AJK

Generally, participants considered boiled preparations, reduced salt and less oil to be healthier food.

Some participants said they had been taught that 30% fat content was healthy. Participants believed that lentils, vegetables, desi chicken, mutton and fish had good fats and were good for health, but prepared foods such as *nihari*, *korma* and *karhai* contained a lot of bad fats and should be avoided. One explained:

> *Zyada chiknai se banday ki tabyat bhi kharab hojati hai aur ussay banda kamzoor hona shuru hojata hai issliye kam chiknaie walay khanay khana chahiye.*
>
> Too much fat makes one feel very unwell and one starts becoming feeble, that's why one should eat less fatty food.
>
> Adolescent boy in rural Dera Ismail Khan, KP

The staple carbohydrates were highly valued. One participant explained:

> *Tail agar nahi bhi ho tou insan zinda rah saktay hain lakin agar roti chawal nahi hai tou aap zinda nahi rah saktay.*
>
> A person can survive even if there's no fat, but if there is no rice and roti, then one can't stay alive.
>
> Adolescent boy in urban Quetta, Balochistan

11.2.4 Commercial food items

Adolescent boys participating in the FGDs said that they knew junk food could only provide taste with no health benefits; instead, it would increase weight and, if consumed continuously, lead to many diseases. They also stated that junk foods were cooked outside the home in an unhygienic manner and that oil was often reused until it was completely finished. Examples of junk foods were samosas, barbequed (grilled) meat, burgers, pakoras, sandwiches and potato chips.

Despite this, most felt that they were, in a sense, addicted to such foods. One said:

> *Lekin hum chorr nahi saktay hain. Ab oily cheezayn khanay ki adat ho gai hai hum chorr nahi saktay hain.*
>
> But we can't stop eating it. Now, we're so used to eating fatty foods, we can't stop.
>
> Adolescent boy in urban Rahim Yar Khan, Punjab

The reason given was both flavour and ease of access. If the same foods were cooked at home, they would eat only a small amount. Almost all agreed homemade food was not tasty or spicy. Some also ate outside the home because of peer pressure or to imitate others. Some said that they ate commercially prepared food when ill, to change the taste in their mouths.

Participants all over Pakistan were more or less of same opinion that their parents often prohibited them from eating junk food but they didn't listen. At an FGD in Karachi a participant explained:

> *Humayn mana kartay hain lakin humari adat ban chuka hai tou in kay samnay nahi khatay lakin in kay baghair hum khatay hain.*
>
> They forbid us but we've formed a habit now, so we don't eat in front of them but when we're away from them we eat it.
>
> Adolescent boy in Karachi, Sindh

Participants made a strong distinction between the uncleanliness and impurity of outside food and the healthiness and cleanliness of homecooked food. Almost all agreed about the dilemma they seemed to find themselves in: fast food and junk food was full of flavour but lacked nutrition. By contrast, homemade food was nutritious and freshly cooked in a clean environment, but lacked flavour.

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Junk foods were easily available in the markets, at the doorstep, in school and in every street. By contrast, around half said that those who earned less, and were in rural areas or urban slums, could not afford fruits and healthy foods. Sometime, when they had no or insufficient pocket money, some boys said, they would eat the cheapest food available in the market which would eventually make them ill.

Most of the adolescent boys said that they bought lunch in school or college and a few preferred to eat at restaurants with their friends. Around half said that they ate a healthy breakfast at home but avoided taking a packed lunch. Instead, they purchased items such as potato chips, French fries, paratha rolls, potatoes and chapati, samosas, bubble gum, chocolates, burgers, patties, ice cream, cold drinks, *biryani*, pizza, chickpeas, sandwiches, biscuits, *papar* and juices.

Around half admitted that when they saw reports of the consequences of consuming junk food on social media, it made them feel bad and they refrained from purchasing such foods for a while. However, the information they described was not always fact-based. For example, one said:

> *Hum apni ghizai aadat ko tabdeel karte hain, video mein dikhaya ke chocolate jo hai pig ki charbi se banta hai to jab aisi koi video dekh lain to wo cheez mene khana chor di.*
>
> We tried to change our dietary habits. There was a video which said that chocolate is made with pig fat, so when I saw this video I stopped eating it.
>
> Adolescent boy in urban Quetta, Balochistan

Another said that he stopped eating junk food when he developed appendicitis, and others said that when they became ill they would stop eating junk foods and then resume the habit upon recovering.

11.2.5 Barriers to eating healthily

Participants said that they simply did not enjoy the flavour of homemade food and felt there was no variety in it. This was why they preferred to eat according to taste rather than nutritional content. Some felt they were so dependent on junk food that now they did not like the taste of fruits and vegetables, and found it difficult to eat at home. Some said they had tried to change their habits, but peer pressure made this very difficult.

When meeting friends and cousins, some said, they were unable to resist junk food. Others identified barriers related to the unavailability of healthy food in the market such as fresh meat and vegetables; everything was impure and made of chemicals, they said.

11.2.6 Facilitators for eating healthily

Most stopped eating oily and unhealthy food from the markets only when they became severely ill and on the doctor's recommendation. Some were deterred by seeing the unhygienic conditions in which street food was prepared.

> *Jin cheezon ko hum apnay ankhon say daikhtay hain gandagi hai uss mein machar waghera girta rahta hai tou humara dill mutmain nahi hota hai kay woh cheez kha lay.*
>
> The things we see with our own eyes that are unclean – for example, when there are mosquitos falling in, then our heart turns away from eating those things.
>
> Adolescent boy in urban Nawabshah, Sindh

Some adolescent boys avoided junk food for the sake of their health and fitness, or due to pressure from family members such as parents and elder sisters.

11.2.7 Sources of information on healthy diet

Adolescent boys reported learning about nutrition from their elders, parents, siblings and other family members. They also learned from schoolteachers, doctors and books. Most agreed that nowadays their main sources of information were conventional and electronic media: social media, television news channels, mobile phones, internet, TV shows, WhatsApp messages, Facebook and newspapers. They felt that classroom teaching about healthy diets was unnecessary and believed they already had the knowledge this could impart.

11.2.8 Foods consumed in the past 24 hours

Foods consumed by participants are listed below.

Table 11-2: Food items consumed by adolescent boys in the past 24 hours

Breakfast	*Chapati*, buttermilk, tea, *paratha*, chicken *salan*, *desi ghee*, eggs, lentils, rice, fried potatoes, biscuits, cake, yoghurt, milk, bread.
Midmorning	Cold drink, *biryani*, chips, *samosas*, biscuits, juice, patties, *pakoras*, tea.
Lunch	*Biryani*, vegetables curries (ladyfinger, pumpkin, bitter gourd, chickpeas, lentils, yogurt, potato), *kari*, chicken *salan*, fish, shawarma, *pulao*, burgers, paratha rolls, potatoes with rice, lentils, cabbage, cereals, yogurt, popcorn, minced meat, pickles.
Teatime	Chips, juice, tea, biscuits, cold drinks including colas, fruits, sweets, Top Pops, ice cream, *pakoras* etc.
Dinner	Ladyfinger, potatoes, chickpeas, pulao, biryani, yogurt, bitter gourd, lentils, *korma*, rice, vegetables, zinger burgers, chicken roll etc.
Bedtime	Milk

Qualitative study

Household food insecurity

Focus group discussions with fathers revealed widespread challenges in accessing high quality nutritious food for their families.

12. Household food insecurity

12.1 Livelihoods and major challenges

FGDs with fathers aimed to elicit information about livelihoods, spending patterns and food insecurity.

Fathers participating in FGDs discussed challenges in their communities at length. The majority agreed that these included (in order): widespread unemployment; lack of access to safe drinking water; poor sewerage and drainage systems; food adulteration; lack of trained staff in health facilities; counterfeit, substandard and degraded medicines; low daily wages; dilapidated roads; high transport fares, lack of dietary diversity and low nutrition literacy, especially in women. Participants thus rated nutrition-related issues quite low on their list of priorities. Livelihood challenges were considered critical by many; as one said:

> *Rozgaar na honay ki wajah say aap apnay biwi bachon ko achi khuraak nahi day sakty hain, bachon ko aap achay school mein nahi parha saktay hain, aur na bemaari mein achay hospital mein ilaj karwaiyan gay.*
>
> Due to unemployment people can't provide good food to their wives and children, can't send children to good schools, and when there is illness, can't get it treated at a good health facility.
>
> Father in rural Mardan, KP

Some said that the high cost of education caused them to compromise on diet quality and quantity. Frequent power breakdowns and loadshedding adversely impacted on daily wage earners because of lay-offs.

12.2 Grocery purchasing patterns

About a fifth of fathers stated that groceries were purchased monthly or weekly; a third said daily, and the rest bought groceries as and when the need arose. Participants felt that those who had ample money could more easily manage to buy groceries monthly, whereas other factors – unemployment, lack of money and daily wages – seriously affected the capacity to purchase diverse foods for their families including for pregnant women and children. Most agreed with one participant who said:

> *Ghar mein saman maheenay kay khatum honay say pehlay khatum hojata hai tou dosri dafa laynay ki bari mushkil hoti hai.*
>
> At home, our monthly food supplies finish before the month comes to an end, and it's very hard to get more.
>
> Father in rural Sialkot, Punjab

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12.3 Challenges to food consumption

Many participants said that rising prices of basic food items, specifically fruits, milk, meat, lentils, vegetables and oil, had a devastating effect on consumption. The most vulnerable were the poorest. One father said:

> *Fruit aur gosht bahut mehanga hai, koi banda kha hi nahi sakta, haftay main aik baar milta hai tou woh bahut baari baat hai.*
>
> Fruit and meat is very expensive; no one is able to eat it; if one can get it once a week that's a big thing.
>
> Father in rural Muzaffargarh, Punjab

In this environment, even social intercourse put a burden on food consumption. When friends and relatives visited, it was often unanticipated or for long periods, which increased household food consumption and causing concern about how to manage. One participant said:

> *Jab mehman ajatay hain tou ghar mein jo banta hai woh sara kuch mahman kay samnay rakha jata hai, maheenay ka jo rashan lay kar atay hain woh mehman ajain tou khatum hojata hai.*
>
> When guests arrive we serve them everything we have prepared. But we budget our month's food and if guests come then we run out too soon.
>
> Father in urban Upper Dir, KP

Religious, cultural and traditional events also brought challenges to food consumption. They brought extra expenses for gift-giving, new clothes, preparation of special foods and *lungar* (traditional distribution of free food), which was difficult to afford. The wedding season also upset the household budget and some said they had to borrow money.

Participants felt that dining out with family and friends had also increased tremendously, which impacted adversely on daily food purchasing.

In addition, seasonal price variations, selling of "*haram*" meat (such as dog and donkey flesh), adulteration of milk and oil, excessive use of pesticides, growth hormone injections to chicken and contaminated water were cited as challenges to purchasing food. In KP and GB, participants related food shortages to climate and seasonal variation, with food supplies affected by snow in winter and landslides in summer. Rains and floods were also considered to hamper the continuous supply of commodities. Participants mentioned riots, strikes and political campaigns as hindering supplies and stopping routine activities.

Unexpected medical emergencies and sudden job losses were highlighted as increasing the worry of running out of food. A majority of participants said that a large portion of their income was spent on household utilities, and medical and educational expenses. One participant said:

> We have to compromise on low quality food which affects the health and nutrition status of our women and children.
>
> Father in Orakzai Agency, KP-NMD

Some also highlighted the challenge of large family size. One father said:

> *Ghar mein 10 khanay walay hotay hain, aik kamanay wala tou mehangi cheezon ki jagah sasti cheezayn laytay hain ya miqdar kam kar laytay hain aisay guzara karaty hain.*
>
> When there are 10 mouths to feed in the house and only one breadwinner, then we buy cheap items instead of expensive ones, or else reduce the amount we buy; that's how we get by.
>
> Father in urban Rawalpindi, Punjab

12.4 Food availability

Almost all participants agreed that diverse vegetables, fruits, legumes, cereals and other food products were available in their neighbourhood shops. When the shops were faraway, they said some form on public transport was usually available. However, in KP, GB, Balochistan and south-eastern Sindh (Tharparkar) FGD participants noted that lack of transportation and poor road links were major barriers to food access. Most said that physical accessibility and healthy diets were compromised by high transport costs; this was felt to be particularly true of the poorest families. One participant said:

> *Nahi humein khuraak asani say nahi milti kiyun kay road nahi hai. Yahan transport ka bara masla hai private transport chalti hai kiraye day kar hum jatay hain, paisay transportation mein pooray ho jatay hain aur khuraak kay liye paise nahi bachtay.*
>
> No, we don't get food easily because there are no roads. Here, transport is a big problem. There is private transport where we pay the fare, but all our money then goes to pay for transportation, leaving nothing with which to buy food.
>
> Father in rural Upper Dir, KP

Thus, although food items were largely widely available, limited financial resources and high food costs prevented many from buying them. This posed the single biggest challenge to a diverse and nutritious diet.

12.5 Coping strategies

As one father put it, the "current circumstances" did not allow most families to eat at optimal levels.

All participants were vocal about their coping strategies; as one said,

> *Jab jina hey tu kuch karna hi hey.*
> To survive, one has to do something.
> Father in rural Dera Ismail Khan, KP

The consensus was that every month, households had to take measures to make it through the month. Participants gave several examples of these measures:

- Add extra water to curry
- Borrow food from a friend or relative
- Consume seed stock held for next season
- Eat at a community dastarkhwan (community dining space)
- Harvest immature crops
- Reduce food choices
- Limit food quantity
- Reduce portion sizes
- Purchase food on credit
- Rely on less expensive food
- Restrict consumption by adults, so enough food was available for children
- Send household members to beg
- Sent household members to eat elsewhere
- Skip meals

One participant said:

> Our women skip meals without telling us or eat less. That is why they are malnourished and give birth to malnourished children.
> Father in Orakzai Agency, KP-NMD

Another stated:

> Jin ko gunjaish nahi hoti hai woh aik waqt ka khana kam kartay hain thora thora kar kay khatay hain, subha khatay hain tou sham kayliye bachatay hain.
>
> Those who have no more resources skip a meal or eat less food, saving food from the morning meal for the evening.
>
> Father in rural Rawalpindi, Punjab

In GB, Sindh and Balochistan it was common to preserve foodstuff (such as dried fish, meat, vegetables and cheese) in season and use it during the off-season, when it was expensive or unavailable.

Qualitative study

Nutrition programmes

In-depth interviews with key informants from Pakistan's provinces and regions revealed gaps, challenges, opportunities and success stories in existing nutrition interventions.

13. Nutrition programmes (provinces and regions)

To understand nutrition gaps, challenges and opportunities and ways forward, nutrition focal persons of each province and region were interviewed as key informants, with a total of six interviews conducted. All focal persons were qualified professionals with 3–10 years of experience in nutrition programming, and occupied high positions in provincial and regional nutrition cells and departments. A self-administered questionnaire was sent to all focal persons. These were returned in April 2019. Due to the data collection method used, not all respondents answered each question fully. However, the information available is provided below.

13.1 Gaps and challenges in nutrition interventions

Informants were asked about major gaps and challenges for planning and implementing nutrition interventions in their province/ region.

Province/ region	Policy	Governance	Programme	Human resource
Punjab	No specific barriers at policy level as nutrition is already a priority initiative. The new government has declared nutrition a priority.	No nutrition-specific governance issues. General systemic issues of governance are also applicable to nutrition.	Focus on curative, rather than preventive, actions.	Existing human resources are being trained, however undergraduate / pre-service curricula need to be reviewed.
Sindh	Lack of consensus-building across sectors.	Sustainability, untimely and inadequate financial resources.	Focus on curative, rather than preventive, actions.	Frequent transfers of key players, capacity gaps, lack of coordination and effective communication.
Balochistan	Execution and implementation of developed policies.	Lack of understanding and political will, delays funds provision.	Short-term programmes by different donors and partners.	Lack of technical human resource for nutrition programme implementation at district and provincial levels.
KP				
AJK				
GB				

13.2 Solutions to nutrition challenges

Informants were asked to speak from their experience about potential solutions to the nutrition challenges in their province/ region.

Province/ region	
Punjab	In past there were many challenges but many issues have now been resolved. Some remain which will be overcome with time. The primary health system had been integrated to implement nutrition interventions, however there is a need to strengthen at secondary and tertiary levels. Changes in nutrition curricula and funding for awareness and mass campaigns are important solutions.
Sindh	There is need to develop one platform for all sectors through the Accelerated Action Plan taskforce for more coordinated and informed actions.

Province/ region	
Balochistan	• Create enabling environment for nutrition-specific and -sensitive planning and interventions for girls, boys, women and men • Nutrition messages should be incorporated in curriculum and mass awareness campaigns • Mass campaigns should be launched through electronic and print media. A centralized unit (nutrition cell or directorate) must be in place to assure effective and efficient planning for service provision • Gender-specific and segregated data should be collected and utilized • Effective behaviour change communication strategy should be in place and implemented targeting girls, boys, women and men
KP	
AJK	
GB	

13.3 Policies for improving and supporting nutrition programmes

Informants were asked to list policies that had been made for formulating or advocating for improved nutrition programming and supporting the nutrition agenda in their province/ region.

Province/ region	
Punjab	Multisectoral nutrition strategy approved and under implementation.
Sindh	Gender-sensitive strategies: • Multi-sectoral nutrition strategy • IYCF strategy • IYCF communication strategy • Behaviour change communication strategy • Food fortification strategy • Breastfeeding and Child Nutrition Act drafted (revised act as per WHO guidelines) to be approved by the cabinet. • Wheat Flour Fortification Act
KP	• Gender-responsive multi-sectoral nutrition strategy • Gender-responsive behaviour change communication strategy • Gender-responsive IYCF communication strategy • Food fortification strategy • KP Breastfeeding and Child Nutrition Act passed by KP Assembly in 2015, Rules notified in 2017.
GB	• Provincial nutrition guidance note is prepared and disseminated. • Gender-responsive multi-sectoral nutrition strategy • Gender-responsive behaviour change communication strategy • Gender-responsive IYCF in emergency communication strategy • Breastfeeding and Child Nutrition Act drafted, to be approved shortly • Universal salt iodization act • Edible food act • Pakistan dietary guidelines for better nutrition • Pakistan anaemia reduction plan in adolescent girls • Reproductive, maternal, newborn and child health/ Nutrition strategy for GB • Pakistan food fortification guidelines

Province/ region	
Punjab	Multisectoral nutrition strategy approved and under implementation.
AJK	• Gender-responsive multi-sectoral nutrition strategy • Gender-responsive behaviour change communication strategy • Gender-responsive IYCF communication strategy • Food fortification strategy

13.4 Existing initiatives and programmes related to nutrition

Informants were asked about nutrition initiatives and programmes they were currently leading or supporting in their province/ region and measures that could improve the success and scalability of existing programmes.

Province/ region	Current initiatives	Measures to improve success and scalability
Punjab	The Integrated Reproductive Maternal Neonatal Child Health and Nutrition programme leads all nutrition activities with ongoing interventions including: • Awareness of breastfeeding • Legislation against formula milk in collaboration with Punjab Food Authority • Community Management of Acute Malnutrition Programme for treatment of severe and moderate acute malnutrition • Stabilization centres for children with severe acute malnutrition with complications. • Maternal nutrition care during pregnancy • Iron folic acid for pregnant and lactating women • Iron folic acid for adolescents • Deworming of children under five and adolescents	Political support with in-time budget allocation required for success. Need for more structured and supportive programmes by partner organizations which are in line with government strategies.
Sindh	• Programme to enhance nutrition in Sindh • Programme for improved nutrition in Sindh (consortium) • Accelerated Action Plan for stunting reduction	Integrating nutrition into regular programme side under primary health care, with a single implementation unit for intervention.
KP	• Nutrition services provided at facilities through LHWs in covered areas • 99 nutrition assistants recruited to work in rural health centres as a nutrition component of the integrated health project • 192 out-patient and 26 stabilization centres established • Five regional and 11 district orientation workshops on KP Breastfeeding and Child Nutrition Act and Rules	Integration with vertical programmes and partnership with maternal, newborn and child health programme could have better results in province as a whole.

Province/ region	Current initiatives	Measures to improve success and scalability
Balochistan	• Nutrition services provided at facility level through People's Primary Healthcare Initiative and NGOs in non-covered areas, and LHWs in covered areas • Community engagement: mother and father support groups	Integration with vertical programmes and partnership with maternal, newborn and child health programme could have better results in the province.
GB	Nutrition services provided at facility and community levels through the vertical programme of health and line departments including education, WASH, agriculture, livestock, fisheries, women's development, social nets and NGOs.	Intersectoral/multisectoral interventions implemented thorough tehsil level, through health education and nutrition officers who can also support the nutrition programme.
AJK	• Nutrition services in five districts in collaboration with World Food Programme • Community participation through mother and father support groups	Partnership with maternal, newborn and child health programme and vertical programme in overall province can improve results.

13.5 Government ownership of nutrition programmes

Informants were asked about the extent to which there was increased government ownership of nutrition programmes.

Province/ region	
Punjab	The scenario for nutrition programme funding has changed in Punjab. The government has developed its own reporting system and has control of all funds which were previously delivered by UNICEF and World Food Programme.
Sindh	Government is highly receptive to ownership of nutrition, but there's still need for sufficient funds.
KP	There is ownership from the government, e.g.: • Nutrition emergency declared in KP • Integrated health project with nutrition component • Establishment of Provincial Nutrition Cell at Directorate-General Health Services
Balochistan	Ownership from the government and a new project document (PC-1) for 22 districts submitted to the health department for reflection and resource allocation in the Public Sector Development Programme.
GB	There is ownership from the government and PC-1 project document has been approved; implementation is in process in 10 districts.
AJK	There is little ownership and no allocation in Annual Development Plan/ Public Sector Development Programme from the government. Currently donor-driven programmes in five districts only are in process.

13.6 Stunting and wasting

Informants were asked to describe how stunting and wasting were addressed in their provinces/ regions, and what more could be done.

Province/ region	Addressing stunting and wasting	Next steps
Punjab	Existing programmes will help reduce stunting and wasting.	• Advocacy and sensitization of the media at a large scale to build nutrition awareness • Renewed advocacy strategy • Appropriate provision of funds and allocations to engage media • Large-scale public advocacy and awareness is needed
Sindh	While existing interventions can help address stunting and wasting, only simultaneous nutrition-sensitive and nutrition-specific interventions can prevent and reduce burden. Such multisectoral interventions can improve food security (availability, accessibility, utility and stability), resulting in increased nutrient intake and prevention of disease.	• Ongoing advocacy at district, provincial and national level using multiple media channels • Collaboration between provincial government decision-makers, donor agencies for pooling of funds; with civil society and media partners to advocate for change
KP	Implementation of the province's behaviour change communication strategy accompanied by training and sensitization of health care providers on community management of acute malnutrition, IYCF and micronutrients.	• Implementation of multisectoral strategy • Implementation of IYCF strategy implementation and engagement of influentials at household and community levels • Financing for implementation of nutrition-specific and nutrition-sensitive interventions at provincial/ regional level • Sensitization of policymakers and parliamentarians on nutrition treatment, prevention and promotion • Creating an enabling environment for IYCF
Balochistan		
GB	Multisectoral nutrition PC-1 project document will be developed in consultation with line department to address stunting in Public Sector Development Programme.	
AJK	Multisectoral nutrition PC-1 project document will be developed in consultation with line department to address stunting in Public Sector Development Programme. Implementation of the behaviour change communication strategy accompanied by training and sensitization of health care providers on community management of acute malnutrition, IYCF and micronutrients.	

13.7 Success stories

Informants were asked to list policies and programmes in their province or region which they considered particularly successful.

Province/ region	Success story
Punjab	Nutrition assessment and screening, referral and tracking system of children by LHWs, and monitoring of the programme. The only weakness was the difficulty in maintaining an uninterrupted supply chain. E-monitoring and tracking of data offers a solution to quality care which has successfully been tested and can be scaled up. The Punjab experience may be replicated elsewhere to accelerate other nutrition programmes.
Sindh	• Universal salt iodization programme to eliminate iodine deficiency • Multi-sectoral nutrition strategy • IYCF strategy • IYCF communication strategy

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Province/ region	Success story
KP	• Multisectoral integrated nutrition strategy addressing both nutrition-specific and nutrition-sensitive interventions • KP health department's integrated health programme • IYCF communication strategy
Balochistan	• Multisectoral nutrition strategy addressing both nutrition-specific and nutrition-sensitive interventions • IYCF strategy implementation could play a pivotal role in combating malnutrition
GB	• Elimination of iodine deficiency disorders
AJK	• Multisector nutrition strategy addressing both nutrition-specific and nutrition-sensitive interventions • IYCF strategy implementation could play a pivotal role in combating malnutrition

13.8 Channels of nutrition information

Informants were asked how nutrition information was shared in their provinces/ regions. In all provinces and regions, the following channels were used:

- Nutrition information provided by LHWs and community midwives
- Mass media, community support groups, behaviour change communication strategies, IYCF communication strategies
- Training for health care providers, LHWs and community midwives
- Health sessions for community members delivered by LHWs and volunteer social mobilizers and community resource persons in cases where LHWs were not available
- Health sessions conducted at education institutions (schools, colleges, universities), especially seminars on IYCF and breastfeeding.

The most trusted sources of nutrition information for the informants themselves were:

- WHO guidelines
- Lancet Series, nutrition journals and articles
- Surveys (NNS, PDHS and MICS)
- Programme guidelines, policies and strategies
- Active discussion and involvement in programmes
- Coordination and information-sharing by development partners, NNS and nutrition technical working groups
- Social media

13.9 Nutrition-specific and nutrition-sensitive interventions

The table lists the nutrition-specific and nutrition-sensitive schemes and interventions described by interviewed nutrition focal persons in the provinces and regions.

Table 13-1: Nutrition-specific and nutrition-sensitive interventions

Nutrition interventions		Planned	Implemented
Punjab			
Sensitive	Improved Access to MNCH Services	✓	✓
Specific	CMAM Programme	✓	✓
	Maternal Nutrition during Antenatal Care	✓	✓
	IFA Supplementation in Pregnancy	✓	✓
Sindh			
Sensitive	WASH and Access to Safe Drinking Water	✓	
	School Health and Nutrition Programme	✓	
	Fish Ponds	✓	
	Social Safety Nets	✓	
	Kitchen gardening		✓
	Farm field school		✓
	School enrolment		✓
Specific	Adolescent Nutrition Programme	✓	
	Legislation for IYCF practices	✓	
	Scaling up nutrition interventions	✓	
	CMAM, CMAM Surge, MAM		✓
	Food Fortification		✓
	Supplementation		✓
	Capacity-building		✓
KP			
Sensitive	KP Multi-Sectoral Integrated Nutrition Strategy		✓
	Fortification		✓
Specific	Integrated Health Project (nutrition component)		✓
	KP Breastfeeding and Child Nutrition Act		✓
	Donor-supported nutrition activities in province		✓

Nutrition interventions		Planned	Implemented
Balochistan			
Sensitive	Multi-Sectoral Strategy	✓	
	Monitoring and Evaluation Framework		✓
	Infant and Young Child Feeding Strategy		✓
	Universal Salt Iodization Act	✓	
	Wheat Flour Fortification	✓	
	Breastfeeding Act	✓	
Specific	Balochistan Nutrition Programme for Mother and Child		✓
	Food for Peace Project		✓
	Central Emergency Response	✓	
	Polio Plus		✓
	School Nutrition Programme		✓
GB			
Sensitive	Multi-Sectoral Strategy		✓
	Infant and Young Child Feeding Strategy	✓	✓
	Pure Food Act	✓	
	Wheat Flour Fortification ACT	✓	
	Universal Salt Iodization Act		✓
	Breastfeeding Act	✓	
Specific	GB Nutrition Programme for better nutrition	✓	
AJK			
Sensitive	Multi-Sectoral Strategy	✓	✓
	Infant and Young Child Feeding Strategy	✓	✓
	Universal Salt Iodization Act	✓	
	Wheat Flour Fortification ACT	✓	
	Breastfeeding Act	✓	
Specific	Community Nutrition Programme, AJK		✓
	Stunting Prevention Programme	✓	
	School Nutrition Programme	✓	

Conclusions

Key findings

14. Key findings

As evidenced by the findings of NNS 2018 women and children in Pakistan have wide-ranging malnutrition with strong evidence of the triple burden of malnutrition (undernutrition such as maternal underweight, childhood stunting and wasting; overweight and obesity across adolescents and women of reproductive age and micronutrient deficiencies) that are found across all these populations. In addition multiple underlying determinants of malnutrition are found across the country, with some regional variations, including multi-dimensional poverty, food insecurity and evidence of lack of female education and empowerment.

Despite the focus on stunting as a marker for undernutrition in Pakistan, NNS 2018 points towards ubiquitous malnutrition affecting women of reproductive age, newborns and young infants as well as adolescents. The findings of high rates of stunting and wasting as well as concurrence of the two in parts of Pakistan with high rates of maternal undernutrition also suggest that malnutrition on a continuum and that efforts to prevent maternal malnutrition, childhood wasting and stunting must be integrated and well-coordinated. Although overall gender differentials in rates of undernutrition are not significant, there are clear trends suggesting that the nutritional status of girls has deteriorated over time with worsening prevalence of stunting and underweight among girls by 5 years of age.

NNS 2018 also confirms what people on the ground have suspected for a long time, that despite awareness in policy and planning circles, overall rates of maternal and childhood malnutrition in Pakistan (stunting and wasting rates) have hardly changed in over two decades and demonstrate wide disparities by province and sub-national regions. Consonant with the above observations some of the highest rates of maternal and childhood malnutrition were seen in parts of Sindh and Balochistan and southern Punjab, and populations in the southern parts of KP and its newly merged districts.

While there has been obvious policy attention on stunting of late, it must be highlighted that Pakistan has high and persistent childhood wasting with distribution patterns consonant with the aforementioned geographies. If anything, wasting rates have increased since NNS 2011. Additionally:

1. The concurrence of stunting and wasting in 5.9% of children (with prevalence up to 12% in some districts), suggests that the two could share common risk factors, The age distribution of wasting and stunting differs but both conditions may already be present at birth and persist concurrently in the first year of life. This calls into question the classic teaching of these two forms of undernutrition being distinct and representing different risks. The high prevalence of concurrent stunting and wasting among the districts with high rates of overt maternal undernutrition (BMI<18.5) suggests that maternal factors could be playing a major role in such early infant growth failure and that integrated strategies for prevention and management will be needed during pregnancy and early infancy.

2. There is a close nexus between maternal and child malnutrition, with high rates of maternal undernutrition (low BMI and micronutrient deficiencies) in many parts of the country; it is also evident that many of the infants have established linear growth faltering and low birth weight from the very beginning, reflecting poor growth in utero. Notably more than half of all childhood stunting and wasting is apprent by 6 months of age and the bulk established by 24 to 36 months of age. This is specifically an issue in the southern and tribal regions of the country and reflects on poor status of maternal nutrition and potential foetal malnutrition.

3. Additional factors associated with the maternal-foetal-child continuum of malnutrition include repeated pregnancies and importantly young age at marriage, with "children having children". The rates of LBW, stunting, wasting and underweight are significantly higher among adolescent pregnancies (age < 18 years of age). New data on adolescent health and nutrition among girls (and boys) between 10-19 years of age, point to high rates of undernutrition and anaemia among school-age girls (and boys) and adolescents in Pakistan, suggesting a continuum of malnutrition from the foetal growth period to infancy, early childhood and beyond. This is one of the most important factors feeding the vicious and intergenerational cycle of malnutrition. The widespread anaemia (and possible micronutrient deficiencies) among young adolescent girls in this age group offers enormous opportunities for interventions, potentially starting even earlier.

4. Rates of micronutrient deficiencies are high across various urban and rural strata as well as income gradients, suggesting that in addition to poverty and food security, dietary patterns and behaviors may be contributing to these deficits. Qualitative studies conducted across various provinces in Pakistan also indicated that despite efforts by primary care programmes especially the LHW Programme, widespread misperceptions persist around foods and eating patterns in pregnancy and childhood with considerable influence of family and community. It was also apparent that in a patriarchal society, male and community leader engagement with maternal nutrition was largely in the context of lactation and infant feeding as opposed to the mother's health.

5. NNS 2018 produced data for the first time indicating nutrition status of adolescents age 10-19 years. This period is one in which boys and girls undergo their growth spurt, and enter adulthood or parenthood. The prevalence of significant underweight (low BMI) and short stature among rural boys and girls further underscores the importance of early child malnutrition, as high prevalence of anaemia among girls, providing an opportunity to prevent anaemia before these girls enter motherhood.

6. There is also emerging evidence of nutrition transition and an emerging double burden of malnutrition in Pakistan, notable in the rise of overweight and obesity among rural women, especially among the relatively poor. Rates of overweight and obesity among adolescent girls and women of reproductive age were higher than those overtly underweight. Although NNS 2018 did not collect dietary intake information or data related to life styles, these trends may also be related to poor diets and lack of opportunities for physical activity.

7. We found little evidence of a concerted focus on nutrition relevant activities in programmes across Pakistan with the exception of vitamin A supplementation, iodized salt promotion and the LHW Programme activities. While the gains observed over the last 10-15 years with reduction in the prevalence of moderate to severe iodine deficiency have been maintained, the same cannot be said for vitamin A supplementation as we documented poor coverage and low vitamin A among children under 5.

8. The one area of modest success seems to be around maternal vitamin A deficiency and zinc deficiency rates in the country (among both women and children). It is unclear what is driving this but it was heartening to see the increase in the use of zinc for the treatment of diarrhoea for children across many provinces since the last review in 2011.

9. Several underlying factors are notable as determinants of maternal and childhood malnutrition in Pakistan and include:

    a. The close and known relationship with poverty and food insecurity; this is further underscored by our survey findings. It should be noted however, that even the relatively well-off have high rates of stunting and anaemia among women and children suggesting that nutrition issues in Pakistan may be broader than a mere marker of poverty. The lack of dietary diversity and minimally acceptable diets even among women and children belonging to middle and higher wealth quintiles suggest that there is much room for nutrition awareness and public education with regards to healthy and balanced diets.

    b. Even though malnutrition rates did not vary greatly by gender, there are cogent reasons to believe that gender issues are key to understanding malnutrition trends in Pakistan. Malnutrition is related to high rates of illiteracy and socio-cultural factors resulting in systematic neglect of the girl child; this is reflected in lack of educational opportunities for girls and school drop outs, high rates of early marriage (under 18 and in many instances under 15 years of age) and general lack of female empowerment.

    c. There is lack of community awareness of the importance of nutrition and healthy lifestyle (optimal feeding strategies, especially exclusive breastfeeding under 6 months of age and appropriate complementary feeding).

    d. These underlying determinants of malnutrition are augmented by poor sanitation and hygiene as well as unsafe water, important determinants of high burden of childhood illnesses and enteric inflammation.

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e. Poor disease management persists. It was evident that there is still a significant proportion of mothers who do not seek care for children with illnesses especially diarrhoea and that care is frequently sought from less than fully trained and skilled care providers, especially so in rural areas.

10. While a number of nutrition related activities have taken place over the last few years, Pakistan has failed to produce a steady national nutrition policy in its 72 years of existence. Post devolution a number of provinces have invested in developing multi-sectoral integrated nutrition strategies at the provincial level. A number of nutrition interventions exist in national programmes, their coverage and hence effectiveness varies greatly as evidence by the household level survey and qualitative studies. One of the major reasons for poor coordination across various sectors related to nutrition has been the absence of a central oversight and monitoring mechanism, which has been recently addressed by the creation of a monitoring cell within the Prime Minister's Secretariat.

We also recommend specific attention on the nutrition of HIV/AIDs affected women and children and resilience and emergency response in insecure and conflict affected regions of Pakistan.

Conclusions

Way forward

15. Way forward

Based on the findings of NNS 2018, we propose the following action points for consideration by policymakers and development agencies:

1. Pakistan needs to undertake a comprehensive nutrition review and development of a consensus-based nutrition strategy that encompasses all major determinants and manifestation of malnutrition. Notwithstanding the importance of stunting, we believe that high rates of wasting and concurrent wasting and stunting necessitate a much more holistic response that merely focusing on linear growth. We believe that a strategy to improve the nutritional status of women of reproductive age, coupled with a national effort to improve the health and nutritional status of adolescents, especially adolescent girls, is warranted.

2. Given the evident nutrition transition among adolescents and women of reproductive age in Pakistan with significant overweight and obesity, preventive interventions must be instituted with a focus on promotion on healthy diets and physical activity and regulation of the food environment. There are clear opportunities to do so with a focus on promotion of appropriate facilities in schools, especially for girls, public education and awareness and strong control on the marketing of unhealthy commercial foods and sweetened beverages.

3. The Prime Minister's Secretariat and its nutrition oversight process offer an excellent opportunity to develop a National Nutrition Task Force or Commission for oversight and reporting from a range of key government departments, academia, health care professionals and the private sector. We strongly recommend convening nutrition actors with the objective of launching a National Nutrition Strategy targeting SDG-2 and beyond. We strongly support making nutrition optimization and elimination of malnutrition a national development goal with improvement of human capital as its target. Engagement of the Ministry of Finance and Planning Commission are critical for ensuring adequate financing of nutrition initiatives at federal and provincial/ regional levels.

4. Improving the nutrition and health status of girls and women will necessitate investments outside the health sector. These include addressing the empowerment of girls through education, of women through enhanced targeting via the Benazir Income Support Programme and promotion of social change through mass media and advocacy. The government's recently launched Ehsaas programme offers a unique opportunity to link cash transfers to the most food-insecure and ultra-poor households to promote health and nutrition. This could lead to closer coordination between health services and social protection networks in districts for identification of at-risk households, and appropriate follow up.

5. Gaps identified in the LHW Programme offer an opportunity for provincial health and nutrition departments to work together. We strongly recommend revamping the LHW Programme to:

    a. Focus on improving the nutritional status of women and young girls though community outreach and home visitation services. In particular, home visits and periodic antenatal care sessions can be an opportunity for:

        i. Enhanced preventive nutrition and health education for women of reproductive age and pregnant women.

        ii. Identifying at-risk pregnancies for antenatal care in facilities and appropriate screening and supplementation strategies. Given widespread multiple micronutrient deficiencies in Pakistan, and the relative benefits of addressing them, we recommend replacing iron folate tablets with multiple micronutrient tablets overall and in undernourished women (those with BMI below 20), with an appropriate fortified food supplement.

        iii. In all instances, given low dietary diversity and varied cultural practices, LHWs should provide extensive education to promote good nutritional practices; use of fortified commodities such as wheat flour, iodized salt; appropriate promotion of excusive and early breastfeeding; and postnatal care of the mother and baby.

b. Inappropriate complementary feeding practices for infants and young children are major contributors to childhood malnutrition in Pakistan. Addressing this requires a complete revamping of the promotion and monitoring component of the LHW curriculum coupled with appropriate nutrition counselling in primary care clinics (Basic Health Units and mobile care clinics). Strategies for appropriate care and nutrition of low birthweight infants, especially those with illnesses, should be enhanced and emphasized at each contact point. The use of zinc for the treatment of diarrhoea should be further strengthened to increase coverage over 50%.

6. Given the role of the private sector and its influence on infant and young child feeding practices, a national strategy for private sector engagement in nutrition promotion should be developed. This can be incentivized along the lines of private sector engagement for family planning activities, with mechanisms in place to protect against conflicts of interest.

7. Children with wasting and concurrent stunting and wasting must be identified early and all existing contact points used for such screening and potential interventions. These include LHWs, vaccinators and primary care physicians in facilities who should receive an appropriate set of refreshers in preventive and promotive nutrition care of mothers and young infants. Given the steadily declining performance of the vitamin A supplementation programme of children aged 6–59 months of age, and persistent widespread vitamin A deficiency, this programme must be closely monitored for quality and coverage.

8. Pakistan needs a concerted community awareness programme to highlight the importance of appropriate maternal care during pregnancy and antenatal care as well as early childhood health and nutrition. The Nurturing Care Framework developed by WHO and UNICEF offers a unique opportunity for integrating infant nutrition, stimulation and engaging families in optimizing early child development.

9. Although data on adolescent nutrition suggest the urgent need for using all available outlets to reach adolescents, especially in school, the high rates of dropout of adolescent girls from formal education and low levels of access to technology (including mobile phones and computers) suggest the need for focusing on school health and nutrition preventive programmes. Such programmes are being considered in Punjab and Sindh and could be developed across Pakistan with a focus on improving adolescent diets, lifestyles and prevention of the double burden of malnutrition. Worrying trends in increasing overweight and obesity among adolescent girls and women of reproductive age since 2011 suggest that preventive communication strategies should be made part and parcel of the nutrition and non-communicable disease response strategy.

10. More focus should be placed on updated routine monitoring of nutrition data, eventually replacing surveys such as the NNS with good regular monitoring systems. Pakistan should make nutrition monitoring and accountability an essential part of its LHW management information system and District Health Information System process, and a part of real-time reporting processes. An annual report will go a long way in assessing progress at district level, and NNS 2018 data provide an ideal platform to do so.

11. We also emphasize the need for a national programme for developing public health nutrition professionals through the creation of national and provincial centres of excellence in nutrition. The current situation, with limited to no nutrition capacity, is unacceptable for a country with over 200 million people. A system of continued medical education and promotion of self-learning for nutrition managers through online courses and blended learning would also accelerate capacity enhancement.

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Conclusions

Glossary

17. Glossary

The following table defines the terms referred to in this report.

<table>
<tr><td>Age appropriate breastfeeding (girls and boys)</td><td>Proportion of children 0–23 months of age who are appropriately breastfed, the indicator is calculated from the following two fractions:
$$\frac{\textit{Infants } 0-5 \textit{ months of age who received only breast milk during the previous day}}{\textit{Infants } 0-5 \textit{ months of age}}$$
And
$$\frac{\textit{Children } 6-23 \textit{ months of age who received breast milk, as well as solid, semisolid or soft foods, during the previous day}}{\textit{Children } 6-23 \textit{ months of age}}$$</td></tr>
<tr><td>Anaemia</td><td>Anemia is a condition characterized by reduction in the number of red blood cells and/or hemoglobin (Hb) concentration which impairs the ability to supply oxygen to the body's issues. The thresholds for total anemia are different in different population groups:
<table>
<tr><th>Age or Sex Group</th><th colspan="4">Anemia Measured by Hemoglobin (g/dL)</th></tr>
<tr><td></td><td>All Anemia</td><td>Mild Anemia</td><td>Moderate Anemia</td><td>Severe Anemia</td></tr>
<tr><td>Children 6 -59 mos.</td><td>< 11.0</td><td>10-10.9</td><td>7.0 - 9.9</td><td>< 7.0</td></tr>
<tr><td>Children 5-11 yrs.</td><td>< 11.0</td><td>10-11.4</td><td>7.0 - 9.9</td><td>< 7.0</td></tr>
<tr><td>Children 12-14 yrs.</td><td>< 11.5</td><td>10-11.9</td><td>7.0 - 9.9</td><td>< 7.0</td></tr>
<tr><td>Nonpregnant women > 15 yrs.</td><td>< 12.0</td><td>10-11.9</td><td>7.0 - 9.9</td><td>< 7.0</td></tr>
<tr><td>Pregnant women</td><td>< 12.0</td><td>10- 10.9</td><td>7.0 - 9.9</td><td>< 7.0</td></tr>
<tr><td>Men> 15yrs.</td><td>< 13.0</td><td>12-12.9</td><td>9.0 - 11.9</td><td>< 7.0</td></tr>
</table></td></tr>
<tr><td>Antenatal care coverage</td><td>Percentage of women aged 15-49 years with a live birth in the last pregnancy and were attended during that pregnancy;
a) at least once by skilled health personnel
b) at least four times by skilled health personnel</td></tr>
<tr><td>Anthropometry</td><td>Use of body measurements such as weight, height and mid-upper arm circumference (MUAC), in combination with age and sex, to gauge growth or failure to grow.</td></tr>
<tr><td>Body mass index (BMI)</td><td>An approximate measure of whether non-pregnant adult woman or man is overweight or underweight, calculated by dividing their weight in kilograms by the square of their height in metres. BMI cut off values are as follows
• Underweight (<18.0 kg/m^2)
• Normal (18.0-24.9 kg/m^2)
• Overweight (25-29.9 kg/m^2)
• Obese (≥30 kg/m^2)</td></tr>
</table>

Bottle-feeding	Proportion of children 0–23 months of age who are fed with a bottle. $\frac{Children\ 0-23\ months\ of\ age\ who\ were\ fed\ with\ a\ bottle\ during\ the\ previous\ day}{Children\ 0-23\ months\ of\ age}$
Care-seeking for diarrhoea, fever and acute respiratory infections (ARI)	The prevalence of diarrhea, febrile episodes and acute respiratory infections among children aged 0-59 months of age in the last 2 weeks through validated recall tools weeks for whom advice or treatment was sought from a health facility or health care provider.
Child ever breastfed	Percentage of women with a live birth in the last 2 years who breastfed their last live-born child at any time
Complementary feeding	Process of adding solid foods to the diets of infants when breast milk alone is no longer sufficient to meet their nutritional requirements of infants.
Continued breastfeeding at one year	A child 12- 15 months of age receives breast milk in addition to age-appropriate complementary feeding Percentage of children 12–15 months of age who are fed breast milk $\frac{Children\ 12-15\ months\ of\ age\ who\ received\ breast\ milk\ during\ the\ previous\ day}{Children\ 12-15\ months\ of\ age}$
Continued breastfeeding at two years	An infant receiving complementary foods with continued breastfeeding up to 2 years of age
Diarrhoea	It is characterized by 3 or more loose, watery stools in a 24 hour period.
Dwelling	A dwelling unit is a room or group of rooms occupied by one or more households. It may be distinguished from the next dwelling unit by a separate entrance.
Early initiation of breast feeding	Proportion of children born in the last 24 months who were put to the breast within one hour of birth $\frac{Children\ born\ in\ the\ last\ 24\ months\ who\ were\ put\ to\ the\ breast\ within\ one\ hour\ of\ birth}{Children\ born\ in\ the\ last\ 24\ months}$
Exclusive breastfeeding	Percentage of infants 0–5 months of age who are fed exclusively with breast milk $\frac{Infants\ 0-5\ months\ of\ age\ who\ received\ only\ breast\ milk\ during\ the\ previous\ day}{Infants\ 0-5\ months\ of\ age}$
Food security	The condition in which people at all times have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. secure, adequate and suitable supply of food for everyone

Food fortification	Food fortification – also known as food enrichment – is when essential nutrients are added to staple food and condiments such as flour, oil and salt at higher levels than what the original food provides. This is done to prevent and micronutrient deficiencies in a population.
Full immunization coverage status	Percentage of children who received all vaccinations recommended in the national immunization schedule by their first birthday
Gender equality	It means that women and men, and girls and boys, enjoy the same rights, resources, opportunities and protections.
Global acute malnutrition	Global acute malnutrition (GAM) refers to children aged 0-59 months who have moderate acute malnutrition or severe acute malnutrition together.
Goitre	Enlargement of the thyroid gland in the neck caused by iodine deficiency.
Hardness of water	Hardness is the amount of dissolved calcium and magnesium in the water and is most commonly expressed as milligrams of calcium carbonate equivalent per liter.
Haemoglobin	The protein in red blood cells responsible for transporting oxygen from the lungs to body cells for energy production.
Household	A person or group of persons, related or unrelated, who live together in the same dwelling unit, who acknowledge one adult male or female as the head of household, who share the same living arrangements, and are considered as one unit.
Improved drinking water sources	Improved drinking water source is a source that, by nature of its construction, adequately protects the water from outside contamination, in particular from fecal matter. Common examples: • piped household water connection • public standpipe • borehole • protected dug well • protected spring • Rainwater collection.
Improved sanitation facility	A facility that hygienically separates human excreta from human, animal and insect contact. Improved sanitation facilities include flush/pour-flush toilets or latrines connected to a sewer, septic tank or pit; ventilated improved pit latrines; pit latrines with a slab or platform of any material which covers the pit entirely, except for the drop hole; and composting toilets/latrines
Inflammation	The body's immune system response to pathogens (bacteria, viruses) or injury. Inflammation is commonly measured by C-reactive protein or α1-acid-glycoprotein biomarkers.

Introduction of solid, semi-solid or soft foods	Percentage of infants 6–8 months of age who receive solid, semi-solid or soft foods $\frac{Infants\ 6–8\ months\ of\ age\ who\ received\ solid,\ semi-solid\ or\ soft\ foods\ during\ the\ previous\ day}{Infants\ 6–8\ months\ of\ age}$
Institutional births/ deliveries	Percentage of women whose last pregnancy in the last five years was delivered in a health facility
Iodine deficiency disorders	A range of abnormalities resulting from iodine deficiency, including reduction of IQ, goitre, and cretinism.
Iron deficiency	A condition resulting from a depletion of body iron stores due to increased iron needs, inadequate dietary iron intake, reduced iron absorption, or loss of iron from infections. Iron deficiency is most commonly measured through serum ferritin or soluble transferrin receptor. In this survey we measured serum ferritin of children <5 and women of reproductive age.
Live birth	means the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy, that, after such expulsion or extraction, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached
Low Birth Weight	Defined as a birth weight of less than 2500 g (up to and including 2499 g). It is further categorized into very low birth weight (VLBW, <1500 g) and extremely low birth weight (ELBW, <1000 g).
Malnutrition	A term referring to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. It includes undernutrition (stunting, wasting, underweight, micronutrient deficiencies) and diet-related overweight and obesity.
Micronutrients	Essential vitamins and minerals required by the body in small amounts throughout the life cycle.
Micronutrient malnutrition	Suboptimal nutrition status caused by a lack of intake, absorption, or utilization of vitamins or minerals.
Milk feeding frequency for non-breastfed children	Proportion of non-breastfed children 6–23 months of age who receive at least 2 milk feedings
Minimum acceptable diet	A child 6-23 months of age receives breast milk or at least 2 milk feeds for non-breastfed children, the appropriate number of meals/snacks/milk feeds, and food items from at least 4 out of 7 food groups.

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Minimum dietary diversity	Proportion of children 6–23 months of age who receive foods from 4 or more food groups The 7 foods groups used in the questionnaire of this indicator are: — grains, roots and tubers — legumes and nuts — dairy products (milk, yogurt, cheese) — flesh foods (meat, fish, poultry and liver/organ meats) — eggs — vitamin-A rich fruits and vegetables — other fruits and vegetables
Minimum dietary diversity for women	The Minimum Dietary Diversity for Women (MDD-W) score is an indicator of diet diversity validated for women aged 15-49 years old. According to the MDD-W, women who have consumed at least 5 of the 10 possible food groups over a 24-hour recall period are classified as having minimally adequate diet diversity. The ten food groups required for the MDD-W are: (1) Grains, roots, and tubers (2) Pulses (3) Nuts and seeds (4) Dairy (5) Meat, poultry, and fish (6) Eggs (7) Dark leafy green vegetables (8) Other Vitamin-A rich fruits and vegetables (9) Other vegetables (10) Other fruits
Minimum meal frequency	Proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more. The indicator is calculated from the following two fractions: And
Moderate acute malnutrition	Moderate acute malnutrition (MAM), defined as WHZ between <–2 SD and ≥ –3 SD or MUAC between 115 millimetres and <125 millimetres.
Multiple micronutrient powder (MMP)	A sachet containing essential vitamins and minerals to sprinkle on a child's food to improve the quality of complementary foods.
Obesity	In children 5-19 years, obesity is defined as BMI-for-age > +2 SD above the WHO Growth Reference median. In non-pregnant adult women and men, obesity is defined as BMI ≥ 30 kg/m^2.

Overweight and obesity	Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m2). ***For adults***, WHO defines overweight and obesity as follows: • Overweight is a BMI greater than or equal to 25; and • Obesity is a BMI greater than or equal to 30. For ***children under 5 years*** of age: • Overweight is weight-for-height greater than 2 standard deviations above WHO Child Growth Standards median; and • Obesity is weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median Overweight and obesity are defined as follows for ***children aged between 5–19 years***: • Overweight is BMI-for-age greater than 1 standard deviation above the WHO Growth Reference median; • Obesity is greater than 2 standard deviations above the WHO Growth Reference median.
Predominant breastfeeding	An infant 0-5 months of age receives breast milk as the predominant source of nourishment, however the infant may also receive liquids (water and water-based drinks, fruit juice), oral rehydration salts, and vitamin or medicine drops or syrups.
Pre-lacteal feed	Prelacteal feeds are foods given to new-borns before breastfeeding is established or before breast milk "comes out," usually on the first day of life. Prelacteal feeding is a major barrier to exclusive breastfeeding. Percentage of children born in the last 24 months who were given any liquid before breastfeeding them.
Postnatal care coverage	Percentage of last live births in the last 2 years who received a health check while in facility or at home following delivery, or a post-natal care visit within 2 days after delivery
Quality contents of ANC	Percentage of women age 15-49 years with a live birth in the last pregnancy who had their blood pressure measured, gave urine and blood samples and received Nutrition counselling
Routine immunization schedule for infants	• ***At Birth:*** Bacillus Calmette–Guérin vaccine (BCG) and Oral poliovirus vaccines (OPV-0) • ***6 Weeks:*** Diptheria, tetanus toxoids and pertussis vaccine (DTP)1, OPV-1, Hepatitis B-1, HIB-1, Pneumococcal Conjugate-1 • ***10 weeks:*** DTP-2, OPV-2, Hepatitis B-2, HIB-2, Pneumococcal Conjugate-2 • ***14 weeks:*** DTP-3, OPV-3, IPV, Hepatitis B-3 HIB-3, Pneumococcal Conjugate-3 • ***9 months***: Measles I • ***15 months:*** Measles II

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Safe drinking water	Water in which limits of contaminants are considered safe for nearly everyone to drink. Safe drinking water is free from pathogens and elevated levels of toxic chemicals at all times.
Salt iodization	Iodization is the process of fortifying salt for human consumption with iodine and is an effective strategy to increase iodine intake at the population level.
Serum ferritin	An iron-containing protein mainly found in the intestinal mucosa, spleen, and liver that is the primary form of iron storage in the body.
Severe acute malnutrition	Severe acute malnutrition (SAM), defined as one or more of the following: WHZ <–3 SD, MUAC <115 millimetres; and the presence of bilateral pitting oedema.
Skilled birth attendants	The presence of a skilled health professional (doctor, nurse or midwife) during delivery
Social safety nets	The social safety net is a collection of services provided by the state/ community or other institutions such as friendly societies at the state and local levels. They provide regular or irregular transfers in cash or in-kind to poor and vulnerable people as a means to reduce poverty, reduce food insecurity and malnutrition, increase demand for education and health services and better management of risks and shocks. Following are a few regular social safety programs running in Pakistan: • Social protection and social safety net programs through Benazir Income Support Program (BISP) • Pakistan Bait-ul-Mal (PBM) • Zakat • Employees Old Age Benefit Institution (EOBI) • Workers Welfare Funds
Skin to skin contact	It is a technique of new-born care where babies are kept chest-to-chest and skin-to-skin with a parent, typically their mother.
Still birth	If a woman gave birth to a child that showed no signs of life.
Stunting (height-for-age)	Stunting is a measure of linear growth. Children whose height-for-age is more than 2 standard deviations below the median of the reference population are considered short for their age and are classified as moderately or severely stunted. Those whose height-for-age is more than 3 standard deviations below the median are classified as severely stunted. Stunting is usually a reflection of chronic malnutrition as a result of failure to receive adequate nutrition over a long period, including the period of foetal growth and recurrent or chronic illness.
Supplementation (micronutrient)	Provision of micronutrients via a tablet, capsule, syrup, or powder.
Total Coliforms	Acceptable drinking water is when the percentage of total coliform is <1 /100ml.
Total dissolved solids	Percentage of Total Dissolved Solids (TDS) in milligrams per unit volume of water (mg/L) and also referred to as parts per million (ppm). For drinking water, the maximum concentration level set by Environmental Protection Agency is 500 mg/L.

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Total Escherichia coli (E. Coli) count	Percentage of maximum acceptable concentration for Drinking Water = none detectable fecal material per 100 mL.
Undernutrition	An insufficient intake and/or inadequate absorption of energy, protein, or micronutrients that leads to nutrition deficiency.
Underweight (weight-for-age)	Underweight is a measure of both acute and/or chronic malnutrition. Children whose weight-for-age is more than 2 standard deviations below the median of the reference population are considered moderately or severely underweight, while those whose weight-for-age is more than 3 standard deviations below the median are classified as severely underweight.
Unimproved sanitation facilities	Include public or shared facilities of an otherwise improved type; flush/pour-flush toilets that discharge directly into an open sewer or ditch or elsewhere; pit latrines without a slab; bucket latrines; hanging toilets or latrines; and the practice of open defecation in the bush, field or bodies of water.
Wasting (weight-for-height)	Wasting is a measure of acute malnutrition. Children whose weight-for height is more than 2 standard deviations below the median of the reference population are classified as moderately or severely wasted, while those who fall more than 3 standard deviations below the median are classified as severely wasted. Wasting is usually the result of a recent nutrition deficiency and may reflect seasonal shifts associated with changes in food availability and or disease prevalence.
Water borne diseases	Diarrhea, infectious hepatitis, typhoid and paratyphoid enteric fever are all examples of waterborne diseases that are common problems in our country. These are all caused by microbial contamination. Lead poisoning and fluorosis, caused by chemical contamination, are also classified as waterborne diseases.
Water treatment	Treatment for drinking water production involves the removal of contaminants from raw water to produce water that is pure enough for human consumption without any short term or long term risk of any adverse health effect. The processes involved in removing the contaminants include physical processes such as settling and filtration, chemical processes such as disinfection and coagulation and biological processes such as slow sand filtration.

Urdu glossary

The following table defines certain Urdu and context-specific terms used in the FGDs.

aloo cholay	potato and chickpea curry
aloo gobi	potato and cauliflower curry
anda paratha	fried egg with flatbread made with ghee or oil
bakarkhani	layered flatbread
bhujiya	stir-fried vegetables
biryani	spiced dish of rice and meat
Cerelac	brand of instant infant cereal, used to denote all products in this category
chaat	spiced snack which may consist of fruit, chickpeas and various toppings and chutneys
chana daal	split chickpeas
chana pulao	chickpea pilaf
choori	sweetened crumbled roti or paratha
chapati	flatbread, roti
cold drink	refers to carbonated and soft drinks such as colas
daal	preparation of one or more of a variety of lentils
daal chapati	lentils with roti
daliya	grain porridge
dawdoo	noodle and meat soup
dahi bhallay	traditional snack of lentil and gram dumplings in yoghurt, with chutneys and garnishes
desi ghee	pure clarified butter
desi murghi	domestic variety of chicken
dried fruit	often encompasses both dried fruits (such as sultanas and raisins) and nuts (such as walnuts and almonds)
gajar ka halwa	pudding of carrot, ghee and sugar
ghee/ desi ghee	clarified butter
ghutti	traditional pre-lacteal feed
gol gappay	traditional snack of fried wheat shells stuffed with potatoes and chickpeas, eaten with spiced dressing and chutneys
gripe water	herbal formulation containing sodium bicarbonate, traditionally administered to babies with colic
gurh	unrefined cane sugar
halwa	sweet pudding of semolina or vegetables cooked with ghee
hotel	term used to denote restaurant
kabab	grilled meat or fried meat patty
kaleji	liver
karhai	spiced meat or chicken cooked in a wok
kari	spiced yoghurt and gram flour stew with gram flour dumplings

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kehwa	green tea
khajoor	dates
kheer	rice pudding
khichri	rice and lentils
korma	spiced meat stew
ladyfinger	okra
lassi	buttermilk or yoghurt drink
Lays	brand of potato crisps
macaroni	generically used to denote pasta preparations
masoor daal	red lentils
Multani mitti	Fuller's earth
nimko	umbrella term for traditional snack consisting of spiced and fried salted dough, chickpeas and nuts
nihari	slow-cooked beef shank or chicken
pakora	fried snack consisting of sliced vegetables coated in a batter of gram flour
panjiri	traditional medicinal food consisting of wheat flour, dried fruits and nuts, and fried in ghee and sugar
papar	poppadum: crispy fried snack made of gram or wheat flour
paratha	wheat flatbread incorporating oil or ghee
paratha roll	rolled paratha (often using commercially prepared frozen paratha) filled with chicken, meat or other fillings, and spicy chutneys
patty	vol-au-vent, often filled with chicken or potato
pulao	pilaf
roti	chapatti, flatbread
saalan	stew
sabut masoor daal	black lentils
sabudana	tapioca pearls
sabzi	vegetable dish
samosa	fried snack consisting of meat or potato filling in a wheat wrapper
sattu	traditional sweetened cereal-based drink, often made of roasted barley
sooji	semolina
sooji ka halwa	semolina halwa
surma	kohl
tarkaywale chawal	rice tempered with oil and spices
tikka	spiced grilled meat
tinday	gourd
Top Pops	packaged corn-based snack
yakhni	broth
zinger burger	contained a battered and deep fried chicken patty

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