

SMART

NUTRITION SURVEY

DISTRICT Mirpurkhas

Sindh Province

October, 2023



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Table of Contents

1. List of Acronyms	1
2. Executive Summary	2
3. Introduction.....	7
3.1. Mirpurkhas – district at the glance	7
3.2. Demography and Population	8
3.3. Economy & Livelihoods.....	8
3.4. Survey Justification.....	8
3.5. Survey Objectives	9
3.6. Survey Area	10
3.7. Type of Survey.....	10
3.8. Sample size calculation	10
3.9. Selection of Clusters and households	11
3.10. Training of Field Data Collection Teams.....	12
3.11. List of indicators	13
3.12. Data analysis and review process	15
3.13. Standardization Test.....	15
3.14. Monitoring and Supportive Supervision	15
4. Survey Findings.....	17
4.2. Nutritional status of children 6-59 months	17
4.3. Prevalence of acute malnutrition by age, based on WHZ scores and/or oedema.....	18
4.4. Prevalence of acute malnutrition (Wasting) by Boys vs Girls based on MUAC cut offs (and/or oedema).....	20
4.5. Prevalence of acute malnutrition by age groups, based on MUAC cut off and/or oedema	21
4.6. Prevalence of underweight based on weight-for-age z-scores by sex.....	22
4.7. Prevalence of stunting based on height-for-age z-scores by sex.....	23
4.8. Prevalence of overweight based on WHZ and by sex (no oedema)	25
4.9. Severity of malnutrition among children aged 6-59 months	25
5. Retrospective Mortality	26

6.	Maternal Health and Nutrition Status	28
6.1.	Maternal Nutrition Status	28
6.2.	Women’s Education Status	28
6.3.	Access to Antenatal Care (ANC) Services.....	29
6.3.1.	Iron/Folic Acid Supplementation during Pregnancy:	29
6.3.2.	Family Planning Methods Knowledge:	29
6.3.3.	Support from Family Members during Pregnancy-Lactation Period:	29
6.3.4.	Place of Last Delivery:	30
6.3.5.	Access to Healthcare Facilities (HFs):.....	30
6.3.6.	Recall of Infant, and Child Health (ICYF) Key Messages:.....	31
6.3.7.	Sources of Key Messages:.....	31
6.3.8.	Perceived Importance of IFA/MNT Tablets:.....	32
6.3.9.	Consumption of IFA/MNT Tablets:.....	33
7.	Child Immunization Services.....	35
7.1.1.	Mother’s Knowledge Regarding Family Planning Method.....	36
7.1.2.	Previous history of using Family Planning Method.....	36
7.2.	Knowledge regarding Breast feeding	37
7.2.1.	Opinion Regarding Duration of Exclusive Breastfeeding:.....	37
8.	Infant and Young Child Feeding-IYCF Key indicators	39
9.	WASH.....	42
9.1.	Access to drinking water source: The below data shows the respondents access to the water point from their home	42
	Water Treatment Methods used in MPK District	44
9.2.	Hygiene.....	45
9.3.	Latrine availability and open defecation Practices	46
10.	Food Security	48
10.1.	Minimum Dietary Diversity -Women.....	48
10.2.	Food Insecurity Experience Scale (FIES):	49
10.3.	Reduced Coping Strategy Index (rCSI):.....	49
11.	Discussion	50
12.	Recommendations.....	54
	Annex I: Sphere Standards CDR and U5DR Emergency Threshold Cut-offs by Region	57
13.	Annex –III Event Calendar.....	59
14.	Annex IV Cluster control Form	61

List of Tables

Table 1: Summary Findings of District Mirpurkhas	3
Table 2: Parameters and rationale	11
Table 3. Achieved Sample Size of the SMART Survey in Dadu.....	17
Table 4. Nutritional status of children 6-59 months	17
Table 5: Prevalence of acute malnutrition based on (Wasting) weight-for-height z-scores (and/or oedema) and by Boys vs Girls	18
Table 6: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema	19
Table 7: Distribution of acute malnutrition and oedema based on weight-for-height z-scores	19
Table 8: Prevalence of Acute Malnutrition (Wasting) by Boys vs Girls Based on MUAC cut offs (and/or oedema).....	21
Table 9: Prevalence of acute malnutrition by age groups, based on MUAC cut off and/or oedema	21
Table 10: Prevalence of combined GAM and SAM based on WHZ and MUAC cut offs (Boys vs Girls).....	22
Table 11: Distribution of children according to criteria for combined GAM and SAM.....	22
Table 12: Prevalence of underweight based on weight-for-age z-scores by Boys vs Girls.....	23
Table 13: Prevalence of underweight by age, based on weight-for-age z-scores	23
Table 14: Prevalence of stunting based on height-for-age z-scores and by sex	24
Table 15: Prevalence of stunting by age based on height-for-age z-scores.....	24
Table 16: Mean z-scores, Design Effects and excluded subjects	25
Table 17: Prevalence of overweight based on WHZ and by sex (no oedema)	25
Table 18: Severity of malnutrition among children aged 6-59 months.....	25
Table 19: Retrospective Mortality	27
Table 20. Physiological Status of Women of Reproductive Age and Malnutrition Status.....	28
Table 21. Access to Maternal services	32
Table 22. Child Immunization status	35
Table 23. MIYCF Key Indicators.....	40
Table 24. Sources of Drinking Water	43
Table 25. Water collection from water Sources-Responsibility.....	45
Table 26. Defecation Practices	47
Table 27. Minimum Dietary Diversity-Women (MDD-W)	48
Table 28. Food Insecurity Experience Scale (FIES).....	49
Table 29. Reduced Coping Strategy Index- rCSI.....	50

List of Figures

Figure 1: Maps of District Mirpurkhas	7
Figure 2. Mr. Abdullah, (Nutrition Expert) overview on Malnutrition in Sindh	12
Figure 3. Field work by data collectors.....	16
Figure 4: Gaussian Curve Weight-for-Height z score.....	20
Figure 5: Population Pyramid of mortality data.....	27
Figure 6: Women’s Education Status.....	29
Figure 7. Place of delivery	30
Figure 8. Distance to Health facilities.....	31
Figure 9. Sources of Key messages regarding MIYCF.....	32
Figure 10. Perceived Importance of IFA/MNT Tablets.....	33
Figure 11. Consumption of IFA Tablets.....	34
Figure 12. Reasons for not consuming IFA tablets.....	34
Figure 13. Trends of family planning methods used by respondents	37
Figure 14. Opinion Regarding Duration of Exclusive Breastfeeding.....	38
Figure 15. Opinion about age to stop breastfeeding	38
Figure 16. Opinion about Frequency of breastfeeding.....	39
Figure 17. Reasons for Stop Breastfeeding.....	42
Figure 18. Water Treatment Practices.....	44
Figure 19. Reasons for soap non-availability.....	45
Figure 20. Hand Washing Timings	46
Figure 21. Under 5 children's Faeces Disposal practice.....	47
Figure 22. Prevalence of GAM - 2018-202	51
Figure 23. Stunting Trend (2017-2023)	52
Figure 24. Underweight (2012-2023)	52

1. List of Acronyms

AAH	Action Against Hunger Canada
ACF	Action Contre la Faim
ANC	Antenatal Care
CMAM	Community Management of Acute Malnutrition
CDR	Crude Death Rate
CI	Confidence Interval
DEO	Data Entry Operator
EBF	Exclusive Breastfeeding
EPI	Expanded Program on Immunization
GAM	Global Acute Malnutrition
IYCF	Infant and Young Child Feeding
IPC	Infection Prevention and Control
MAD	Minimally Acceptable Diet
MAM	Moderate Acute Malnutrition
MDD	Minimum Dietary Diversity
MIYCF	Maternal & Infant Young Child Feeding
MUAC	Mid-Upper Arm Circumference
NNS	National Nutrition Survey
NGO	Non-Governmental Organization
PLW	Pregnant and Lactating Women
PPS	Probability Proportion to Size
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring and Assessment of Relief and Transitions
U5DR	Under 5 Death Rate
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation, and Hygiene
WHZ	Weight-for-Height Z-score
MPK	Mirpurkhas

2. Executive Summary

The SMART Nutrition Survey of Mirpurkhas was conducted in collaboration with UNICEF with the support of Himat consulting under the technical supervision of Actions Against Hunger Canada. The survey aimed to address the lack of nutritional data available for children under five years and Pregnant and Lactating Women (PLWs) in Mirpurkhas. The findings of the survey will be used to scale up interventions, design new programs, identify gaps, and advocate for necessary changes in health and nutrition policy.

The objectives of the SMART survey included measuring the prevalence of wasting and stunting in children aged 6-59 months, assessing the Maternal & Infant Young Child Feeding (MIYCF) practices for children aged 0-23 months, determining the coverage of nutrition services for children under five and PLWs, evaluating food security and livelihood situation, assessing household food consumption, determining the urgency of the situation, and comparing data with previous surveys. Additionally, the survey aimed to determine mortality rates, coverage of child health services, prevalence of diarrhea among children, coverage of antenatal care and iron-folic acid supplementation, access to safe water supply and sanitation facilities, and availability and use of hygiene facilities.

The survey covered both rural and urban populations in the Mirpurkhas district, with a two-stage cluster sampling technique applied for sampling and data collection. The sample size was calculated based on parameters related to malnutrition and mortality rates, taking into account the prevalence of Global Acute Malnutrition (GAM) and estimated death rates. The sampling procedure involved the selection of clusters and households using probability proportion to size and systematic random sampling techniques. The division of clusters into smaller segments was done to facilitate the line listing process and ensure timely completion of the survey. In total, 62 clusters were selected for the survey.

Overall, the SMART Nutrition Survey of Mirpurkhas aimed to provide comprehensive data on the nutrition and health status of children under five years and PLWs, as well as related factors such as food security, access to healthcare services, and sanitation facilities. The findings will inform targeted interventions and policy changes to improve the nutritional well-being of the population in the district.

Key findings of Nutritional status of Children and mothers

The SMART Nutrition Survey conducted in Mirpurkhas, in September 2023 provides valuable insights into the anthropometry and nutritional status of children, as well as the demographic profile of households in the district. A total of 567 households were successfully surveyed, representing approximately 100% of the households visited. In terms of anthropometry, a total of 555 children (287 boys, 268 girls) were assessed for their nutritional status, Z-score for 03 children shows out of range therefore, result is based on 552 children. The prevalence of **Wasting amongst children under 5 years of age-Global Acute Malnutrition (GAM)** based on the

Weight for Height (W/H) Z-score **was found to be 27.9%**; 33.3 % in males and 22.2% in females, indicating a high level of malnutrition based on WHO standards¹.

Boys in district MPK are exponentially at a very higher prevalence of acute Malnutrition, underweight and severe wasting proven by the P-values as well which is a unique and alarming trend as compared to all other districts surveyed along with MPK. The causal factors are although not known which needs to be further researched and appropriate action has to be taken to address malnutrition at large and the gender disparities in malnutrition specifically.

The percentage of combined GAM rates, underweight and stunting are alarmingly high in MPK which needs urgent actions as well as further exploration for causal factors.

A total of **17.5% Pregnant and Lactating Women (PLW)** were found to be acutely malnourished in the district which is a determinant of birth outcomes and infant/child nutritional status. Amongst the causal factors the most alarming was the **Minimum Dietary Diversity-Women (MDD-W) were 82.76%** of the PLWs scored medium to low scores on the said indicator. The responses on the **Food Insecurity Experience Scale (FIES)** also depicts the causal routes where **81.8%** of the respondents experienced moderate and severe hunger.

The key indicator of **Minimum Dietary Diversity for 6–23 months (MDD)** shows that only **9.9%** of the target have access to the standard recommendations' food groups.

In Mirpur Khas, a considerable proportion relies on surface water, a factor strongly associated with the prevalence of diseases, particularly a high incidence of diarrhea in children (44%). The data underscores a critical requirement for enhanced sanitation infrastructure, particularly in terms of expanding access to latrine facilities.

Key findings against the selective indicators for demographic and nutrition status of children of 6-59 months are summarized in the table below:

Table 1: Summary Findings of District Mirpurkhas

Indicator	Finding
Demographic	
Total No. of HHs Assessed	567
% of under five children	20.1%
Average Number of Persons per Household	6
Nutrition Status of Children 6 – 59 Months	
Global Acute Malnutrition (WHZ) (<-2 z-score and/or oedema)	27.9 % (23.4 - 32.9 95% C.I.)
Male	33.3 % (26.8 - 40.6 95% C.I.)
Female	22.1 % (16.9 - 28.3 95% C.I.)
Severe Acute Malnutrition (SAM) WHZ (<-3 z-score and/or oedema)	6.5 % (4.7 - 8.9 95% C.I.)
Male	7.4 %

¹ <2.5%: very low, 2.5 to <5%: low, 5 to <10%: medium, 10 to <15%: high, ≥15%: very high

Indicator	Finding
	(4.8 - 11.2 95% C.I.)
Female	5.6 % (3.3 - 9.5 95% C.I.)
Moderate Acute Malnutrition (MAM) WHZ (<-2 z-score and >=-3 z-score, no oedema)	21.4 % (17.7 - 25.6 95% C.I.)
Male	26.0 % (20.4 - 32.4 95% C.I.)
Female	16.5 % (12.5 - 21.4 95% C.I.)
Oedema	0.0%
GAM [MUAC] (< 125 mm and/or oedema)	12.8 % (9.7 - 16.7 95% C.I.)
SAM [MUAC] (< 115 mm and/or oedema)	3.8 % (2.5 - 5.7 95% C.I.)
MAM [MUAC] (< 125 mm and >= 115 mm, no oedema)	9.0 % (6.4 - 12.4 95% C.I.)
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	32.6 % (27.6 - 38.1 95% C.I.)
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema)	8.8 % (6.6 - 11.7 95% C.I.)
Stunting [HAZ] Prevalence of stunting(<-2 z-score)	52.8 % (47.7 - 57.7 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	29.6 % (26.1 - 33.4 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	23.2 % (19.0 - 27.9 95% C.I.)
Underweight [WAZ] Prevalence of underweight (<-2 z-score)	55.6 % (49.3 - 61.8 95% C.I.)

Assessment of Mirpurkhas population through SMART Nutrition Survey in September 2023 revealed high rates of malnutrition among children aged 6 to 59 months, with 27.9% affected by Global Acute Malnutrition (GAM) and 6.5% by Severe Acute Malnutrition (SAM). Stunting affected 52.8% of children, and **55.6%** were underweight. GAM by MUAC **12.8%** (9.7-16.7 95% C.I.), and SAM by MUAC was 3.8% (2.5 - 5.7 95% C.I.).

It is worth mentioning the considerable difference between GAM prevalence identified through WHZ (27.9%) as opposed to 12.8% based on MUAC measurements. This implies a significant impact on the actual number of prevailing cases in the community which is 27.9% Vs the admission criteria of CMAM programmes which considers MUAC only. This indicates a need for a national policy dialogue to contextualize the admission criteria for CMAM programmes as having MUAC criteria alone will result into a huge number missed cases that are actually malnourished but not detected by the MUAC parameter. The national technical committee for nutrition should

discuss the dynamics of body shapes specific to Pakistan and contextualize the recommendations for future programs. However, there is a need to strike balance between the disease burden and resources available as expanding the admission criteria to WHZ will significantly increase the caseload for CMAM programs.

The prevalence of **underweight**² among children aged 6-59 months was 55.6%, and alarming with severe underweight affecting 34.9% of the children. Boys are more at risk of malnutrition as compared to girls.

Stunting, an indicator of chronic malnutrition, was found in 52.8%³ of the surveyed children. Boys had a slightly higher prevalence of stunting compared to girls, although the difference was not statistically significant.

The severity of malnutrition among children aged 6-59 months was classified as "Very High" for wasting, alarming for underweight, and very high for stunting.

A comparison is made between the 2018 NNS and the SMART survey 2023 there is no significant difference in either the wasting or the stunting rates over a period of 5 years. The indicators of MPK are highly concerned coupled with the fact of no improvement over time for which reason this district has to be focused for targeted interventions and further studies.

Indicators	NNS 2017-18	SMART 2023
Global Acute Malnutrition	28.6%	27.9%
Underweight	53.7%	55.6%
Stunting	51.7%	52.8%

Retrospective Mortality

The provided information includes data on retrospective mortality rates and causes of death within a given population. The Crude Death Rate (CDR), which represents the total number of deaths per 10,000 people. Based on the information collected, the overall **Crude Death Rate (CDR) is 0.16%**, with a range of CI 0.07 – 0.38%. This means that out of the total population, a small percentage of people have died within a given period. The CDR is a measure of the total number of deaths in a population, usually expressed per 1,000 or 10,000 people.

In comparison, the **Under 5 death rate (U5DR) was 0.51% death/10,000/day**. The U5DR specifically focuses on deaths of children under the age of five. This rate indicates the number of deaths among children under five years old per 10,000 children per day.

Overall, the mortality rates, including the Crude Death Rate and Under 5 death rates, are below the established public health emergency thresholds, suggesting that the population's mortality and child mortality rates are not of significant concern from a public health standpoint.

²WHO Classification of Underweight: Low - <10%, Medium – 10-19.9%, High -20-29.9%, Alarming/Critical -> 30%

³ <2.5%: very low, 2.5 to <10%: low, 10 to <20%: medium, 20 to <30%: high, ≥30%: very high

Conclusion

These findings highlight the urgent need for interventions and policies to address malnutrition and improve the nutritional status of children in Mirpurkhas. Targeted efforts should focus on prevention and treatment intervention, addressing households' financial constraints to access quality food. Additionally, addressing the high prevalence of wasting, stunting, and underweight requires comprehensive strategies that address the underlying causes of malnutrition, such as inadequate feeding practices, food insecurity, and socioeconomic factors.

Urgent interventions are thus needed, including therapeutic feeding programs, provision of nutrient-rich foods, and improved access to healthcare services. Addressing malnutrition and stunting is crucial to reduce mortality risk, support healthy growth and development, and secure a better future for these children. Collaboration between government, healthcare providers, development partners, NGOs, and communities are essential for effective implementation and monitoring of interventions.

3. Introduction

3.1. Mirpurkhas – district at the glance

Mirpurkhas district is located between 24° 48' 33" to 25° 48' 7" North latitudes and 68° 59' 3" to 69° 16' 53" East longitudes. It is bounded on the North by Sanghar district, on the Northwest by Tando Allahyar district, on the Southwest by Badin and Tharparkar districts, and on the East by Umerkot district. In 1953, after the creation of Pakistan, some area on the northern side was detached from the original Tharparkar District and named Sanghar District. On 31 October 1990 the district was divided into the Tharparkar and Mirpur Khas Districts. In the same year, Mirpurkhas also get the status of divisional headquarter⁴.

The majority religion is Islam, with 60.75% of the population. Hinduism (including those from Scheduled Castes) is practiced by 38.74% of the population. Mirpur Khas is known for its mango cultivation, with hundreds of varieties of the fruit produced each year - it is also called the "City of Mangoes," and has been home to an annual mango festival since 1955.



Figure 1: Maps of District Mirpurkhas⁵

⁴ https://en.wikipedia.org/wiki/Mirpur_Khas_District

⁵ https://en.wikipedia.org/wiki/Mirpur_Khas_District

3.2. Demography and Population

Mirpur Khas is the Southeastern district in Sindh Province, in southern Pakistan. MirpurKhas is only 70 Kilometers from Hyderabad. At the time of the 2017 census, Mirpur Khas district had a population of 1,504,440, of which 434,081 (28.85%) lived in urban areas. Mirpur Khas had a sex ratio of 938 females per 1000 males and a literacy rate of 42.41%: 52.94% for males and 31.22% for females⁶. Most people speak Sindhi but there is a substantial number of Urdu Speaking Sindhi live here. There are about 60% Muslims and 40% Hindus in the city & Surroundings. The city of MirpurKhas has very different demographics than to the district as a whole. The Union councils are widespread and some villages are located in far flung areas.

3.3. Economy & Livelihoods

Mirpur Khas is the major city close to Thar desert. It is fertile and very popular for its mangoes, which is the major export product of this area. The district experiencing multiple shocks that include high inflation, associated with the country's internal economic situation, drought/inadequate rainfall. The Nutrition security situation is likely to deteriorate further due to the devastating impacts of one of the worst monsoon flooding which has damaged the Kharif crops, caused livestock losses and adversely affected food production. According to Acute Food Insecurity Analysis-IPC 2022, food access is a major challenge because of continuous increases in food commodity prices and reduced livelihood opportunities post-flooding, which contributes to higher food insecurity.

3.4. Survey Justification

The national nutrition survey NNS 2018 indicated (28.6%) Global Acute Malnutrition (GAM) prevalence of under 5 year children of district Mirpurkhas. There was a high risk of further deterioration of health and nutrition status, access, and availability of nutrition services due to potential impact of food insecurity and malnutrition. However, there was a lack of nutritional data available for children under five years and Pregnant and lactating women (PLWs). The Department of Health, District Mirpurkhas, decided to conduct a SMART Nutrition Survey in collaboration with UNICEF and with support of Himat Consulting under the technical supervision of Action Against Hunger (AAH) Canada.

The survey findings will be used to scale up the intervention, initiation of new program design, identification of gaps and advocate for any necessary changes in health and nutrition policy. During Survey Implementation necessary technical guidelines recommended by UNICEF,

⁶ Pakistan Census 2017

Director General Health Services Sindh and Action Against Hunger Technical Advisor were followed.

3.5. Survey Objectives

The purpose of the current assignment was to design and conduct a survey in the selected districts of Sindh and contribute to the ongoing interventions on strengthening the nutrition information system, early warning as well as disaster risk reduction. A district-level SMART survey was an extension of the recently conducted NNS 2018, which provides first-ever district-level nutrition and food security data.

The objectives of the SMART surveys were following:

- 1) To measure the prevalence of wasting and stunting in children aged 6-59 months and wasting among pregnant and lactating women (PLW).
- 2) To assess the MIYCF practices for children aged 0-23 months
- 3) To determine the coverage of preventive and curative nutrition services for children under five years of age, and pregnant and lactating women (PLW)
- 4) To determine the food security and livelihood situation
- 5) To assess household food consumption (quantity and quality).
- 6) To assess the urgency of the situation and how it may evolve in the future by comparing data with previous surveys.

Health

- 1) To determine retrospective crude mortality rate (CMR) and under five mortality rates (U5MR).
- 2) To determine the coverage of child health services (Immunization/measles vaccination, vitamin A supplementation, common childhood illness and deworming).
- 3) Prevalence of diarrhea among children aged 6-59 months, and determine use of oral rehydration salt (ORS) and/or zinc during diarrhea episodes in children aged 6-59 months
- 4) To determine enrolment into antenatal care and coverage of iron-folic acid supplementation in pregnant women

WASH

- 1) To determine the population's access to, and use of safe water supply including distance to facility and quality of water
- 2) To determine the population's access to sanitation facilities including issues of safety and privacy of the facilities
- 3) To determine the population's access to hygiene facilities and availability and use of soap.

3.6. Survey Area

The study area of the Mirpurkhas district included both rural and urban population; 71.1% rural and 28.8% urban⁷. Village wise population data was collected from the Expanded Program on immunization EPI for cluster identification using ENA software (version 11th Jan 2020).

4. Methodology

4.1. Type of Survey

A population representative cross-sectional household survey following Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology was designed. Two stage cluster sampling technique was applied for sampling (identification of clusters/households) and data collection. During implementation of survey Infection Prevention and Control (IPC) measures were being followed.

4.2. Sample size calculation

The sample size was designed to achieve reasonable precision for estimating acute malnutrition as well as mortality separately. All calculations were made using ENA for SMART software (version Jan 11th 2020). The parameters and rationale considered for sample size calculations in two different contexts: anthropometry (related to malnutrition) and mortality rates.

For the anthropometric parameters, the prevalence of Global Acute Malnutrition (GAM) in MPK is estimated at 28.6% (NNS-2018). The desired precision set at 5, and 1.5 design effect used to account for heterogeneity in nutritional status within district. The sample size for children aged 6-59 is calculated to be 512, and the average household size is determined to be 7. Additionally, the percentage of the population represented by children under 5 is 14.8%, and a non-response rate of 3% was anticipated.

For the mortality parameters, the estimated death rate was 0.30 deaths per 10,000 populations per day, and a design effect of 1.5 was applied based on SMART recommendations for cluster sampling. The average household size was 7. The anticipated non-response rate was 3%, resulting in a calculated number of individuals (2224) and households (328) to be included in the sample. These parameters and rationale were crucial for determining appropriate sample sizes, ensuring accurate representation and precision in the collected data. They provided a foundation for conducting studies and assessments related to anthropometry and mortality rates. (See Table 2 below):

⁷ https://en.wikipedia.org/wiki/Mirpur_Khas_District

Table 2: Parameters and rationale

Anthro / Mortality Parameters	Updated parameter s	Rationale
Estimate Prevalence	28.6	Global Acute Malnutrition (GAM)-% (NNS 2017-18)
Desired Precision	5	As per SMART Manual Suggested
Design Effect	1.5	A design effect of 1.5 will be used. This is based on the assumption that there is some level of heterogeneity in the nutritional status within the districts.
Sample Size (Children 6-59)	512	Calculated by ENA software
Average HH Size	7	Based on Census Data 2017
% of U5s	14.8	Population Census Pakistan-2017 district tables
% of NRR	3	Non-response
Household to be included	567	Calculated by ENA software
Estimate death rate	0.30	Taken from country level Mortality rate (6.736) 2023 and divided in 10,000/day
Desired Precision	0.3	+/- desired precision per 10,000/day
Design Effect	1.5	As per SMART recommendation for Cluster Sampling
Recall Period in days	94	June 29, 2023 / Eid-ul-Adha, mid of Survey.
Average HH Size	7	Based on Census Data 2017
% of NRR	3	Anticipated non response rate
Population to be included	2224	Calculated by ENA software
Household to be included	328	Calculated by ENA software
Total Clusters	53 ⁸	10 HH/Day/team

4.3. Selection of Clusters and households

Two stage sampling procedure was applied to conduct the SMART survey. In the **first stage**, a cluster or a primary sampling unit (PSU) was selected. A list of villages/clusters with updated population was used to select the sample of clusters by uploading the list in ENA (version Jan, 11 2020) software. In the **second stage** basic sampling unit (BSU) comprising of households present in the sampled cluster were mapped and line listed. The selection of households was then done through a systematic random sampling technique.

In some cases, villages/clusters population was large in size or widely dispersed or scattered, making it difficult for the team to perform line listing and complete the target on time. In order to

⁸ Estimate time in cluster = {Total working hours (510 min)} – {Travel time (120 min), Introduction (25 min), Breaks (30 min)} = 335 minutes
 HHs per day = {Estimate time in cluster (335 min)} / {Average time in HHs (25 min) + Travel time between HHs (10 min)} = 9.57, Rounded to 10,
 Clusters = HHs to be included (567) / HHs per day (10) = 56.7, Rounded to 57

achieve the target and reduce burden of line listing, segmentation process was followed. In this process, village population was divided into smaller (min 50 and max 150HH) equal or unequal segments, based on existing structures (block, sub-blocks, mosque, temples, river, canals, & rail line) and one segment was randomly selected. The selection of segment to represent the cluster was done through application of Probability Proportion to Size (PPS) methodology based on the population size of the households. The clusters were distributed to allow each team to complete one cluster per day.

4.4. Training of Field Data Collection Teams

The training was conducted in District Mirpurkhas for 6 data collection teams, each consisting of a supervisor and two data collectors. The training content covered various modules, including household information, mothers/care-takers data, child nutrition and immunization status, and child's current health. The implementation modalities and ethical considerations were also discussed.



Figure 2. Mr. Abdullah, (Nutrition Expert) overview on Malnutrition in Sindh

The training was conducted over six days, and included theoretical and practical components. The training was delivered by a team of professionals, including SMART experts, and public health consultants.

Pre and post-tests were conducted to assess participants' knowledge gain, and a standardization test was performed to evaluate their anthropometric measurement skills. The results of the pre and post-tests showed a significant improvement in knowledge among participants. The Mirpurkhas district team collectively obtained 123/315 (39%) marks in the pre-test, while in post-test they scored 253/315 (80%) marks, showing an overall improvement of 41%. The capacity enhancement of participants anthropometric measurement skills was also assessed through standardization tests on training day 4 and 6. Overall, the training program successfully built the capacity of the field teams to collect quality data. With the completion of the training and standardization exercises, the teams proceeded for data collection in the field.

4.5. List of indicators

Bilateral Pitting Oedema: was assessed by applying a moderate thumb pressure on BOTH feet for three seconds. If oedema is present, a shallow pit will remain after releasing pressure from the feet. Only children with bilateral oedema (oedema on both feet) are diagnosed positive for nutritional Oedema. Supervisor confirmed all cases of oedema. However, no oedema case found during the assessment h)

Crude mortality rate (CDR): One of the primary goals of humanitarian response to a humanitarian crisis is the prevention and reduction of mortality. The CDR is a metric frequently used to gauge the severity of a humanitarian crisis. It is defined as the number of deaths from all causes per 10,000 people per day over a specified period of time. It is calculated from the following formula:

$$\text{CDR} = \text{Number of deaths} / (\text{mid-interval population} / 10,000) \times \text{time interval} = \text{deaths} / 10,000 / \text{day}$$

Under five death rate (U5DR): U5DR is defined as the number of deaths among children under five from all causes per 10,000 people per day over a specific period of time. It is calculated from the following formula:

$$\text{U5DR} = \text{Number of under 5 deaths} / (\text{mid-interval population} / 10,000) \times \text{time interval} = \text{under 5 deaths} / 10,000 / \text{day}$$
 j) Diarrhea was assessed through two weeks recall period. Diarrhea is defined as passage of three or more loose or liquid stools in a day in children aged 6-59 months. k)

Use of ORS/zinc during a diarrhea episode: The interviewer was asked the mother/caregiver of the child if he/she received ORS sachets and/or zinc during a diarrhea episode. An ORS sachet and a zinc pill were shown when asked to recall.

Measles vaccination in children 9-59 months: Measles vaccination were assessed among children aged 9-59 months by checking for the measles vaccine on the EPI card if available or by asking the caregiver to recall if no EPI card is available.

Vitamin A Supplementation in children 6-59 months: Vitamin A supplementation was assessed among children aged 6-59 months by checking the EPI card if available or by asking the caregiver to recall if no EPI card is available.

Case definitions Infant and Young Child Feeding practices: Only few important IYCF indicators were used to calculate them are detailed below.

Exclusively breastfed for the first two days after birth: Percentage of children born in the last 23 months who were fed exclusively with breast milk for the first two days after birth Children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth Children born in the last 24 months

Early Initiation of breastfeeding: Proportion of children born in the last 24 months who were breastfed within one hour of birth. Children born in the last 24 months who were put to the breast within one hour after birth Children born in the last 24 months

Exclusive breastfeeding under 6 months: Percentage of infants 0–5 months of age who were fed exclusively with breast milk during the previous day Infants 0-5 months of age who received only breast milk during the previous day Infants 0-5 months of age

Bottle feeding: Proportion of children 0–23 months of age who are fed with a bottle. Children 0–23 months of age who were fed with a bottle during the previous day Children 0–23 months of age

Minimum dietary diversity: Percentage of children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day. The eight food groups used for tabulation of this indicator are:

1. Breast milk
2. Grains, roots, tubers and plantains
3. Pulses (beans, peas, lentils), nuts and seeds
4. Dairy products (milk, infant formula, yogurt, cheese)
5. Flesh foods (meat, fish, poultry, organ meats)
6. Eggs
7. Vitamin-A rich fruits and vegetables
8. Other fruits and vegetables.

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.

- Minimum meal frequency for non-breastfed children [6-23 months] [≥ 4 full meals]
- Minimum meal frequency for breastfed children [6-8 months] [≥ 2 full meals]
- Minimum meal frequency for breastfed children [9-23 months] [≥ 3 full meals]

Minimum acceptable diet: Percentage of children 6–23 months of age who consumed a minimum acceptable diet during the previous day

4.6. Data analysis and review process

To ensure data accuracy and precision, the data collected from the field was consistently reviewed on daily basis and at multiple levels.

At the field level, anthropometry, mortality and data submitted in cluster control forms in hard form was reviewed by the monitors before data entry by the DEOs, for cleaning any logical errors. The plausibility analysis was then run by SMART Nutrition expert using ENA software and shared with AAH Regional Advisor for review and endorsement. The result of plausibility analysis was shared with AAH on daily basis before teams proceeded to the next clusters.

Feedback provided to the monitors for correction of errors identified through field verification after revisits. The process of data collection and data output was also reviewed several times during the field activities by joint monitoring team of UNICEF Sindh Provincial Team, AAH and Himat Consulting for taking necessary actions to ensure data quality.

4.7. Standardization Test

Based on satisfactory performance of data collectors recruited in district Qamber Shahdad Kot and Jacobabad for SMART Nutrition survey were taken onboard in district Mirpurkhas. Training on anthropometric techniques and basic concepts of SMART survey were delivered by SMART experts. Majority of the data collectors were new in the MPK, so Standardization Test results were not satisfactory, so the ST was repeated on the next day to equip the data collection team with anthropometry skills.

4.8. Monitoring and Supportive Supervision

Himat Consulting, UNICEF Provincial Sindh team, ensured the quality of data collection processes with support of AAH through continued monitoring and supportive supervision. Stakeholders discussed observations made during the monitoring visits and provided feedback to the teams to further improve data collection process. Following are glimpses of training and field activities relating to SMART Nutrition Survey in Mirpurkhas district.



Households listing at field

Anthropometry in training

Figure 3. Field work by data collectors

5. Survey Findings

5.1. Household Characteristics and Demographic Profile

Exclusion of z-scores from observed mean SMART flags: WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3.

The survey received an excellent overall plausibility score of 3%, showcasing the high quality of the data collected. Few data points (0.5% for WHZ, 2.0% for HAZ, and 0.9% for WAZ) raised concerns according to SMART standards.

Table 3. Achieved Sample Size of the SMART Survey in Dadu

Overall Sample size achievement					
Clusters achievement			# of children recorded		
Clusters achieved	Households achieved	Children achieved	Children 0-59 months	Children 6-59 months	Children 0-23 months
100%	100%	108%	630	555	276

5.2. Nutritional status of children 6-59 months

The age groups 54-59 were slightly under represented and the remaining age groups were well represented as compared to the normal age distribution advised by WHO. The main reason behind this under representation is older age children in some households are in school during the time of the survey.

The overall sex ratio was 1.07 (with a p-value of 0.420) which is within the acceptable range (0.9 – 1.1). This means, survey data is passably representative of boys and girls.

Table 4. Nutritional status of children 6-59 months

Age	Boys		Girls		Total		Ratio
AGE (mo)	no.	%	no.	%	no.	%	Boy:girl
6-17	69	50.4	68	49.6	137	24.7	1.0
18-29	79	58.1	57	41.9	136	24.5	1.4
30-41	68	52.7	61	47.3	129	23.2	1.1
42-53	50	46.7	57	53.3	107	19.3	0.9
54-59	21	45.7	25	54.3	46	8.3	0.8
Total	287	51.7	268	48.3	555	100.0	1.1

The prevalence of Global Acute Malnutrition (GAM) in District Mirpurkhas based on weight for height z-score/and or oedema was 27.9% (23.4 – 32.9 95% C.I), and the prevalence of Severe

Acute Malnutrition (SAM) was 6.5% (4.7 – 8.9 95% C.I.). The overall GAM⁹ prevalence is indicative of very high malnutrition based on the WHO standards. Children were weighed removing of all clothes to the nearest 100g (0.1 kg) by using a SECA electronic scale. The children who can easily stand are asked to stand on the weighing scale and their weight is recorded. In a situation when the children cannot stand, the double weighing method is applied.

GAM analysis of gender shows significant difference of malnutrition among both groups (p-value: <0.014), boys are at higher risk of malnutrition with the prevalence of 33.3 % (26.8 – 40.6 95% C.I.), and 22.1% (16.9 – 28.3 95% C.I.) girls respectively. Boys in district MPK are exponentially at a very higher prevalence of Malnutrition which is different trend as compared to all other districts surveyed along with MPK. The causal factors are although not known which needs to be further researched and appropriate action has to be taken to address malnutrition at large and the gender disparities in malnutrition specifically.

Table 5: Prevalence of acute malnutrition based on (Wasting) weight-for-height z-scores (and/or oedema) and by Boys vs Girls

	All n = 552	Boys n = 285	Girls n = 267	P value
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(154) 27.9 % (23.4 - 32.9 95% C.I.)	(95) 33.3 % (26.8 - 40.6 95% C.I.)	(59) 22.1 % (16.9 - 28.3 95% C.I.)	0.014
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(118) 21.4 % (17.7 - 25.6 95% C.I.)	(74) 26.0 % (20.4 - 32.4 95% C.I.)	(44) 16.5 % (12.5 - 21.4 95% C.I.)	0.013
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(36) 6.5 % (4.7 - 8.9 95% C.I.)	(21) 7.4 % (4.8 - 11.2 95% C.I.)	(15) 5.6 % (3.3 - 9.5 95% C.I.)	0.403

The prevalence of oedema is 0.0 %

5.3. Prevalence of acute malnutrition by age, based on WHZ scores and/or oedema

Prevalence of acute malnutrition by age, based on weight-for-height z-scores data shows that, severe wasting was more prevalent in 6-17 months children than other age group, whereas on contrary moderate wasting was more prevalent in 54-59 months children.

⁹ WHO/UNICEF Cut Off Points wasting using Z-Score (-2 Z scores in populations: <2.5% - very low; 2.5-<5%, - Low; 5<10% - Medium; 10<15% -High;>15%-very High)

Table 6: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema

		Severe wasting (< -3 z-score)		Moderate wasting (≥ -3 and < -2 z-score)		Normal (≥ -2 z score)		Oedema	
Age (mo)	Total no.	No.	%	No.	%	No.	%	No.	%
6-17	136	12	8.8	30	22.1	94	69.1	0	0.0
18-29	136	8	5.9	32	23.5	96	70.6	0	0.0
30-41	129	7	5.4	25	19.4	97	75.2	0	0.0
42-53	105	7	6.7	19	18.1	79	75.2	0	0.0
54-59	46	2	4.3	12	26.1	32	69.6	0	0.0
Total	552	36	6.5	118	21.4	398	72.1	0	0.0

The table given below presents the distribution of acute malnutrition and oedema, on the basis of weight-for-height z-scores. None of the surveyed children had oedema. 6.5% marasmus cases found without clinical presence of oedema.

Table 7: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	< -3 z-score	≥ -3 z-score
Oedema present	Marasmic kwashiorkor. 0 (0.0 %)	Kwashiorkor. 0 (0.0 %)
Oedema absent	Marasmic No. 36 (6.5 %)	Not severely malnourished. 519 (93.5 %)

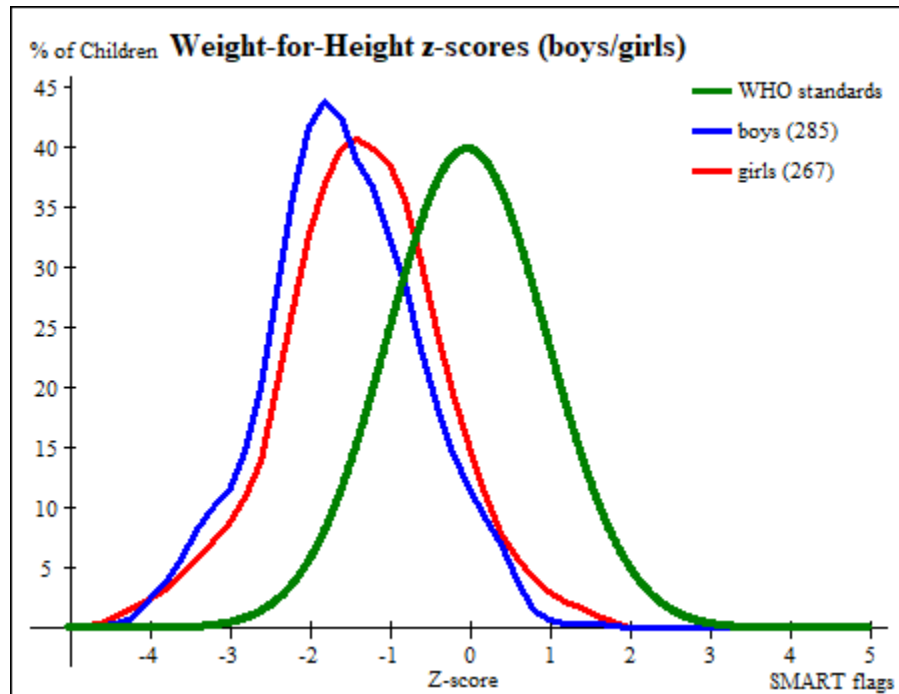


Figure 4: Gaussian Curve Weight-for-Height z score

The above figure shows the comparison of nutrition status of the 6 to 59 months in district Mirpurkhas and the reference population. The green curve represents the reference population while the red & blue curve represents the girls and boys surveyed in population, respectively. The figure shows a significant shift to the left for the reference population which implies that malnourished children are more in surveyed population as compared to reference population.

5.4. Prevalence of acute malnutrition (Wasting) by Boys vs Girls based on MUAC cut offs (and/or oedema)

MUAC can be used as a proxy indicator of wasting and it is also found to be the good indicator for death. MUAC (≤ 11.5 cm for children 6-59 months), is considered a high mortality risk and is a criterion for admission of outpatient therapeutic or patients treated for severe acute malnutrition. A MUAC reading of >11.5 cm to ≤ 12.5 cm is considered as moderate acute malnutrition. As shown in the table below, prevalence of Global malnutrition was 12.8%. The prevalence was higher among boys (14.6%), as compared to girls (10.8%); however, this difference was not statistically significant ($p=0.234$).

Table 8: Prevalence of Acute Malnutrition (Wasting) by Boys vs Girls Based on MUAC cut offs (and/or oedema)

	All n = 555	Boys n = 287	Girls n = 268	P value
Prevalence of global malnutrition (< 125 mm and/or oedema)	(71) 12.8 % (9.7 - 16.7 95% C.I.)	(42) 14.6 % (10.3 - 20.3 95% C.I.)	(29) 10.8 % (7.4 - 15.6 95% C.I.)	0.234
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(50) 9.0 % (6.4 - 12.4 95% C.I.)	(31) 10.8 % (7.1 - 16.2 95% C.I.)	(19) 7.1 % (4.5 - 11.0 95% C.I.)	0.177
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(21) 3.8 % (2.5 - 5.7 95% C.I.)	(11) 3.8 % (2.2 - 6.6 95% C.I.)	(10) 3.7 % (2.1 - 6.5 95% C.I.)	0.945

5.5. Prevalence of acute malnutrition by age groups, based on MUAC cut off and/or oedema

Further analysis was performed based on prevalence of acute malnutrition by MUAC based on age as indicated in Table 8. Severe and moderate wasting was more prevalent in 6-17 months children than other age group. While the ration of moderate wasting is also high in children aged 18-59 months.

Table 9: Prevalence of acute malnutrition by age groups, based on MUAC cut off and/or oedema

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (>= 115 mm and < 125 mm)		Normal (> = 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	137	17	12.4	21	15.3	99	72.3	0	0.0
18-29	136	1	0.7	18	13.2	117	86.0	0	0.0
30-41	129	3	2.3	8	6.2	118	91.5	0	0.0
42-53	107	0	0.0	2	1.9	105	98.1	0	0.0
54-59	46	0	0.0	1	2.2	45	97.8	0	0.0
Total	555	21	3.8	50	9.0	484	87.2	0	0.0

The table below presents the prevalence of combined Global Acute Malnutrition (GAM) 32.6 % (27.6 – 38.1 95% C.I.), and Severe Acute Malnutrition (SAM) 8.8 % (6.6 – 11.7 95% C.I.) based on different anthropometric indicators, namely Weight-for-Height Z-score (WHZ) and Mid-Upper Arm Circumference (MUAC) cut-offs, as well as the presence of edema. The data is categorized by gender, with the total number of participants (n) being 555, out of which 287 are boys and 268 are girls.

The data shows the proportion of children experiencing both GAM and SAM based on the defined anthropometric criteria. It appears that the prevalence of GAM and SAM is higher among boys compared to girls, but the difference is not statistically significant for SAM as indicated by the P-values (0.395).

Table 10: Prevalence of combined GAM and SAM based on WHZ and MUAC cut offs (Boys vs Girls)

	All n = 555	Boys n = 287	Girls n = 268	P value
Prevalence of combined GAM (WHZ <-2 and/or MUAC < 125 mm and/or oedema)	(181) 32.6 % (27.6 – 38.1 95% C.I.)	(110) 38.3 % (31.6 – 45.6 95% C.I.)	(71) 26.5 % (20.9 – 33.0 95% C.I.)	0.012
Prevalence of combined SAM (WHZ < -3 and/or MUAC < 115 mm and/or oedema)	(49) 8.8 % (6.6 – 11.7 95% C.I.)	(28) 9.8 % (6.9 – 13.6 95% C.I.)	(21) 7.8 % (5.1 – 11.8 95% C.I.)	0.395

*With SMART or WHO flags a missing MUAC/WHZ or not plausible WHZ value is considered as normal when the other value is available

The percentage of combined GAM rates, wasting and the underweight is alarmingly high in MPK which needs urgent actions as well as further exploration for causal factors.

The table given below presents details of children having GAM and SAM, with respect to the criteria for GAM and SAM, like MUAC value and weight for height.

Table 11: Distribution of children according to criteria for combined GAM and SAM

	GAM		SAM	
	no.	%	no.	%
MUAC	27	4.9	13	2.3
WHZ	110	19.8	28	5.0
Both	44	7.9	8	1.4
Edema	0	0.0	0	0.0
Total	181	32.6	49	8.8

Total Population: 555

5.6. Prevalence of underweight based on weight-for-age z-scores by sex

Underweight is defined as low weight for age relative to WHO reference median. Children with weight for age less than -2 SD in relation to a reference child are classified as underweight while those with less than -3 SD are classified as severe underweight. The prevalence of underweight among children under 6 to 59 months in district Mirpurkhas was 55.6% (49.3 – 61.8 95% C.I.), while those who were severely underweight was 20.7% (17.0 – 25.1 95% C.I.). Analysis by sex shows significant difference in boys and girls; boys are at higher risk of malnutrition with prevalence of 62.6% (54.8 – 69.8 95% C.I.), and 48.1% (41.0 – 55.3 95% C.I.) respectively.

Table 12: Prevalence of underweight based on weight-for-age z-scores by Boys vs Girls

	All n = 550	Boys n = 286	Girls n = 264	P value
Prevalence of underweight (<-2 z-score)	(306) 55.6 % (49.3 - 61.8 95% C.I.)	(179) 62.6 % (54.8 - 69.8 95% C.I.)	(127) 48.1 % (41.0 - 55.3 95% C.I.)	0.006
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(192) 34.9 % (30.7 - 39.3 95% C.I.)	(119) 41.6 % (35.6 - 47.9 95% C.I.)	(73) 27.7 % (22.1 - 34.0 95% C.I.)	0.002
Prevalence of severe underweight (<-3 z-score)	(114) 20.7 % (17.0 - 25.1 95% C.I.)	(60) 21.0 % (16.1 - 26.8 95% C.I.)	(54) 20.5 % (15.6 - 26.3 95% C.I.)	0.896

The table given below presents the prevalence of underweight by age, based on weight for age z-scores. As shown in Table 12, the highest proportion of severe underweight children was in age group 30-41 months (25.0%), followed by 23.9% in 54-59 months age group. For moderate underweight, the highest proportion of children was in age group 54-59 months (39.1%).

Table 13: Prevalence of underweight by age, based on weight-for-age z-scores

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	134	26	19.4	46	34.3	62	46.3	0	0.0
18-29	135	30	22.2	42	31.1	63	46.7	0	0.0
30-41	128	32	25.0	46	35.9	50	39.1	0	0.0
42-53	107	15	14.0	40	37.4	52	48.6	0	0.0
54-59	46	11	23.9	18	39.1	17	37.0	0	0.0
Total	550	114	20.7	192	34.9	244	44.4	0	0.0

5.7. Prevalence of stunting based on height-for-age z-scores by sex

Stunting is an indicator of chronic (long-term) malnutrition which is mainly due to long term food deprivation, deficiency of micronutrients, recurrent illness and other socio-economic factors that affect normal growth. WHO defines height-for-age less than -2 SD from median height age reference population. Inadequate infant young child feeding and maternal under nutrition results

in childhood stunting. Stunting is associated with impaired neurocognitive development, a risk maker of non-communicable diseases and reduced productivity later in life. Height for age z-score was 52.8 % (47.7 – 57.7 95% C.I.); findings suggested that this rate classified as very high¹⁰. Stunting was higher among boys 55.6% (49.4 – 61.7 95% C.I.) than girls 49.6% (43.1 – 56.1 95% C.I.). However, the p-value 0.181 shows that difference was not statistically significant.

Table 14: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 544	Boys n = 284	Girls n = 260	P value
Prevalence of stunting (<-2 z-score)	(287) 52.8 % (47.7 - 57.7 95% C.I.)	(158) 55.6 % (49.4 - 61.7 95% C.I.)	(129) 49.6 % (43.1 - 56.1 95% C.I.)	0.181
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(161) 29.6 % (26.1 - 33.4 95% C.I.)	(80) 28.2 % (23.7 - 33.2 95% C.I.)	(81) 31.2 % (25.7 - 37.2 95% C.I.)	0.424
Prevalence of severe stunting (<-3 z-score)	(126) 23.2 % (19.0 - 27.9 95% C.I.)	(78) 27.5 % (21.6 - 34.2 95% C.I.)	(48) 18.5 % (13.7 - 24.3 95% C.I.)	0.033

The table given below presents the prevalence of stunting by age, based on height for age z-scores. As shown in Table 15, the highest proportion of severe stunting was in 30-41 months old children (27.6%), followed by 26.3% in 18-29 months age group. For moderate stunting, the highest proportion of children was in age groups of 42-53 months and 30-41 months, 33.7% and 33.1%, respectively.

Table 15: Prevalence of stunting by age based on height-for-age z-scores

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	134	25	18.7	33	24.6	76	56.7
18-29	133	35	26.3	37	27.8	61	45.9
30-41	127	35	27.6	42	33.1	50	39.4
42-53	104	20	19.2	35	33.7	49	47.1
54-59	46	11	23.9	14	30.4	21	45.7
Total	544	126	23.2	161	29.6	257	47.2

The table below presents data related to z-scores, design effects, and excluded subjects for three different indicators: Weight-for-Height, Weight-for-Age, and Height-for-Age. Z-scores are measures of how far a child's anthropometric measurement deviates from the standard reference population, with z-scores less than -2 indicating malnutrition. The z-scores for Weight-for-Height

¹⁰WHO/UNICEF Cut Off Points for stunting using Z-Score (-2 Z scores in populations:<2.5% - Very low; 2.5-<10% - Low; 10-<20% - Medium; 20- <30% - High; >30% - Very High)

(WHZ) and Weight-for-Age (WAZ) were not available for children with edema, which could be due to the difficulty in accurately measuring weight and height in such cases.

The mean z-scores provide an overview of the nutritional status of the subjects, with negative values indicating that, on average, the children in the study have lower measurements compared to the standard reference population. Overall, the data highlights the prevalence of malnutrition among the subjects and emphasizes the importance of monitoring and addressing nutritional status in this population.

Table 16: Mean z-scores, Design Effects and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	552	-1.46±0.97	1.55	0	3
Weight-for-Age	550	-2.19±1.01	2.21	0	5
Height-for-Age	544	-2.14±1.15	1.37	0	11

* contains for WHZ and WAZ the children with edema

5.8. Prevalence of overweight based on WHZ and by sex (no oedema)

Overweight or obesity defined as weight-for-height Z score >+2SD from the median according to WHO growth reference standards 2006. Findings show that prevalence was 0.00%. Results also imply that severe overweight findings were not found in any of the group.

Table 17: Prevalence of overweight based on WHZ and by sex (no oedema)

	All n = 552	Boys n = 285	Girls n = 267
Prevalence of overweight (WHZ > 2)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)
Prevalence of severe overweight (WHZ > 3)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)	(0) 0.0 % (0.0 - 0.0 95% C.I.)

5.9. Severity of malnutrition among children aged 6-59 months

The survey provides information on the severity of malnutrition among children aged 6-59 months, based on the WHO/UNICEF classification from 2018. The findings reveal a worrisome situation regarding malnutrition among children aged 6-59 months. The prevalence of wasting, stunting, and underweight is substantial, with stunting being classified as "very high" in severity; while wasting is also "Very High" category.

Table 18: Severity of malnutrition among children aged 6-59 months

Indicators	Prevalence	Severity
------------	------------	----------

Wasting [WHZ]	27.9%	Very High
Overweight [WHZ]	0.0%	Very low
Stunting [HAZ]	52.8%	Very High
Underweight [WAZ]	55.6%	* Alarming

The Findings of survey are explained as under:

Wasting: Findings indicate that a sizeable proportion of children in this age group suffer from wasting, which refers to a low weight-for-height ratio. The prevalence of 27.9% suggests a concerning level of malnutrition in terms of wasting considered very High.

Over Weight: According to the data, there were no cases of overweight children in this age group. This finding suggests that the prevalence of overweight is extremely low among children aged 6-59 months.

Stunting: The data indicates that a considerable percentage (52.8%) of children suffer from stunting. Stunting refers to a low height-for-age ratio and reflects chronic malnutrition. The high prevalence suggests a concerning level of stunting among children in this age group considered very high.

Underweight: The prevalence of underweight children is 55.6%¹¹, indicating a Critical level of under nutrition in terms of weight-for-age. The severity is categorized as "Alarming," which needs to be addressed.

combined Global Acute Malnutrition (cGAM): The prevalence of combined Global Acute Malnutrition (GAM) is also very high

These findings revealed the need for interventions and policies aimed at addressing malnutrition and improving the nutritional status of children in this age group.

5.10. Retrospective Mortality

Based on the information collected, the overall **Crude Death Rate (CDR) is 0.16%**, with a range of CI 0.07 – 0.38%. This means that out of the total population, a small percentage of people have died within the given period. The CDR is a measure of the total number of deaths in a population, usually expressed per 1,000 or 10,000 people.

In comparison, the **Under 5 death rate (U5DR) was 0.51% death/10,000/day**. The U5DR specifically focuses on deaths of children under the age of five. This rate indicates the number of deaths among children under five years old per 10,000 children per day.

It is mentioned that both the CDR (0.16) and U5DR (0.51) are well below the public health emergency thresholds of 1 and 2 deaths/10,000/day, respectively. These thresholds serve as indicators to monitor the severity of a public health situation. In this case, the death rates are below the thresholds, suggesting that the overall mortality and child mortality rates are not

¹¹ WHO Classification of Underweight: Low - <10%, Medium – 10-19.9%, High -20-29.9%, Alarming/Critical -> 30%

alarming from a public health perspective. Household level questions were asked to determine the cause of each death, under the broad categories of illness or injury/trauma. All deaths (100.0%) were caused by illness. Similarly, data shows that 100% deaths occurred in current location.

Table 19: Retrospective Mortality

	Crude Death Rate (95% CI)	Design Effect	
Overall	0.16 (0.07-0.38)	1	
Sex			
Male	0.19 (0.06-0.58)	1	
Female	0.13 (0.03-0.54)	1	
Years			
Under 5 Children (0-4 years)	0.51 (0.16-1.62)	1.01	
Cause of death	%	Location of death	%
Illness	100.0	In current location	100

* (June 29, 2023 / Eid-ul-Adha) was used as the beginning of the mortality recall period of 94 Days. All household members present during recall period adjusted for in and out-migration.

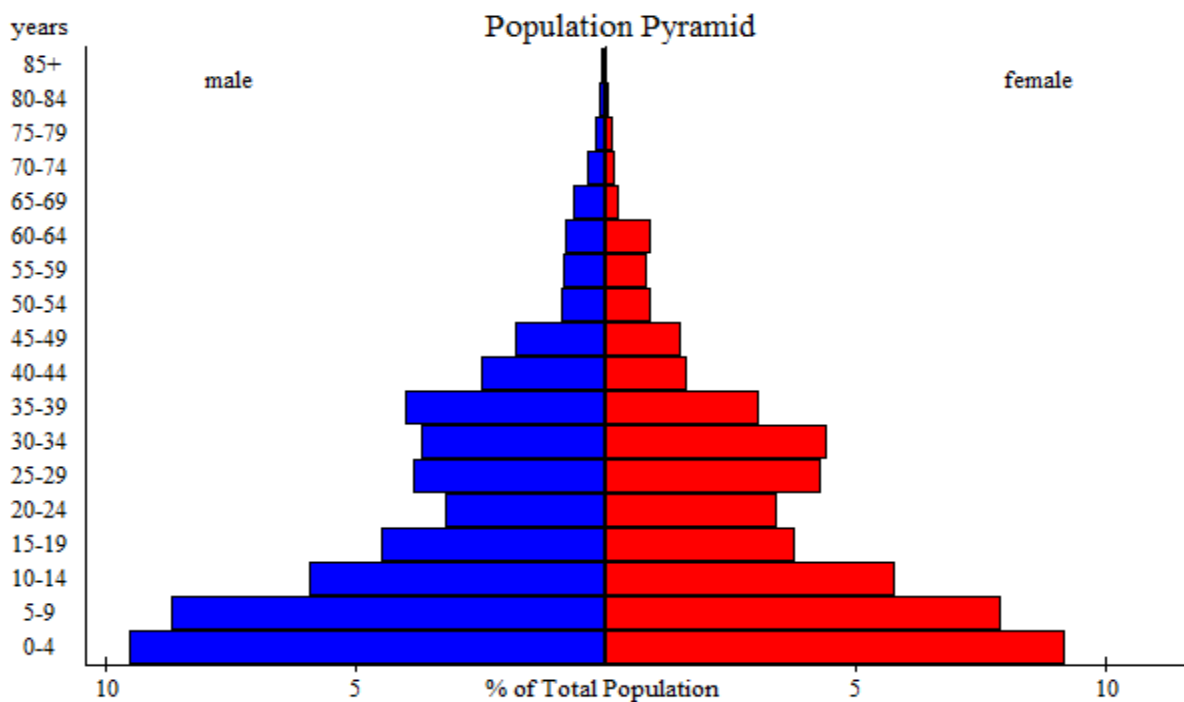


Figure 5: Population Pyramid of mortality data

5.11. Maternal Health and Nutrition Status

5.11.1. Maternal Nutrition Status

It's crucial to monitor the nutritional well-being of pregnant and breastfeeding women to safeguard their health and that of their infants. The Mid-Upper Arm Circumference (MUAC) measurement serves as one method to assess nutritional status in specific settings. MUAC offers a simple way to identify acute malnutrition in adults, including pregnant and breastfeeding women. However, it's important to note that MUAC alone doesn't offer a comprehensive evaluation of overall nutritional status, and other measurements and factors should be taken into consideration.

The following table displays the status of women of reproductive age interviewed. It illustrates the percentages of women currently pregnant, breastfeeding, and those who are both pregnant and breastfeeding. 6.5% of women are currently pregnant (Table 18). MUAC measurement is frequently used as an indicator of nutritional status, and a measurement below 21.0 cm suggests a higher risk of malnutrition. Data indicates that among 229 pregnant and breastfeeding women, 17.5% were identified as malnourished in district MPK based on MUAC criteria of <21.0cm.

Table 20. Physiological Status of Women of Reproductive Age and Malnutrition Status

Current Physiological status	N	n	%	CI 95%
Currently lactating	676	182	26.9	23.61-30.44
Currently pregnant	676	44	6.51	4.77-8.64
Pregnant & lactating	676	2	0.30	(0.03-1.25)
Not Pregnant and Lactating	447	295	66.1	(62.42-68.69)
Women currently malnourished (MUAC <210 mm)	228	40	17.5	(12.78-23.02)

5.11.2. Women's Education Status

Table below shows the women's education status, among the 559 women responded, a substantial majority, approximately 88.6%, had never been to school. This indicates that a significant portion of the surveyed women did not have any formal education. only 3.6% had received primary education. This indicates that a small proportion had completed education up to the primary level, about 1.6% had completed higher secondary education. This percentage signifies a smaller subset of the surveyed population attained education up to the secondary level. A very small percentage, 1.9% had graduated, which indicates an alarming low illiteracy level in women in the district. This needs special attention by the policy makers with smart commitments for girl's education

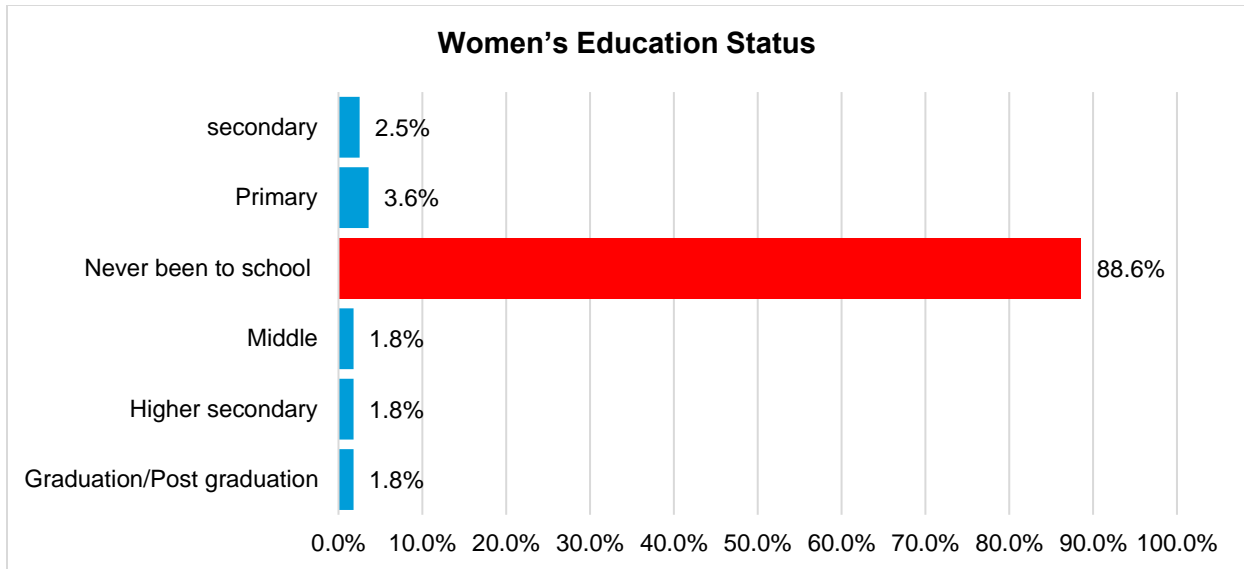


Figure 6: Women's Education Status

5.12. Access to Antenatal Care (ANC) Services

Iron/Folic Acid Supplementation during Pregnancy:

Iron and folic acid are crucial supplements during pregnancy to prevent anemia and ensure proper fetal development. The data suggests that approximately 77.5% of the surveyed women received these supplements during their pregnancies or lactating period. This is essential for maternal and fetal health.

Family Planning Methods Knowledge:

Family planning knowledge is vital for women's reproductive health. The data shows that around 70.1% of the surveyed women had knowledge about various family planning methods. Educating women about family planning can empower them to make informed decisions about their reproductive health.

Support from Family Members during Pregnancy-Lactation Period:

Support from family members plays a significant role in a woman's journey through pregnancy and lactation. The data indicates that 21.3% of the surveyed women felt supported by their family members during this critical period, however, 59.1% felt somehow supported, but was not satisfied with the support provided by family members.

Place of Last Delivery:

The data categorizes the place of delivery into three categories: Dai/TBA, Hospital, and Home. It's observed that a low percentage of deliveries (1.1%) occurred with Dai/TBA, while a significant portion (36.2%) took place in Private hospitals as compared to 42.1% in Public health facilities. However, a considerable number of deliveries (16.4%) still happened at home. Access to skilled healthcare professionals during childbirth, as provided in hospitals, is crucial for safe deliveries and reducing maternal and infant mortality. The preference of home delivery is still common in district MPK, and community only willing to visit hospitals in case of pre identified medical complication.

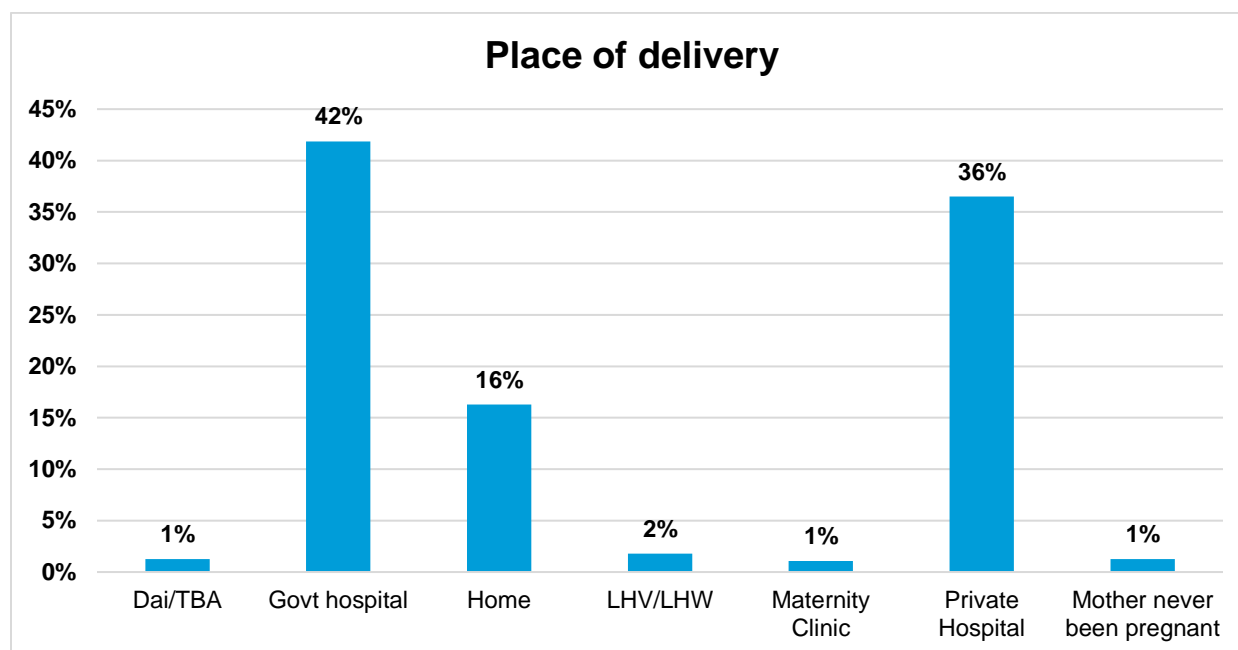


Figure 7. Place of delivery

Access to Healthcare Facilities (HFs):

Access to healthcare facilities within a reasonable distance is crucial for maternal and child health. The data highlights that a high percentage (31%) of surveyed women had access to healthcare facilities within a distance of less than 3 km and 22.4% within 4-6 km. Conversely, a significant percentage (31.9%) had access to facilities at distances greater than 10 km, indicating potential challenges for those women in accessing timely healthcare services.

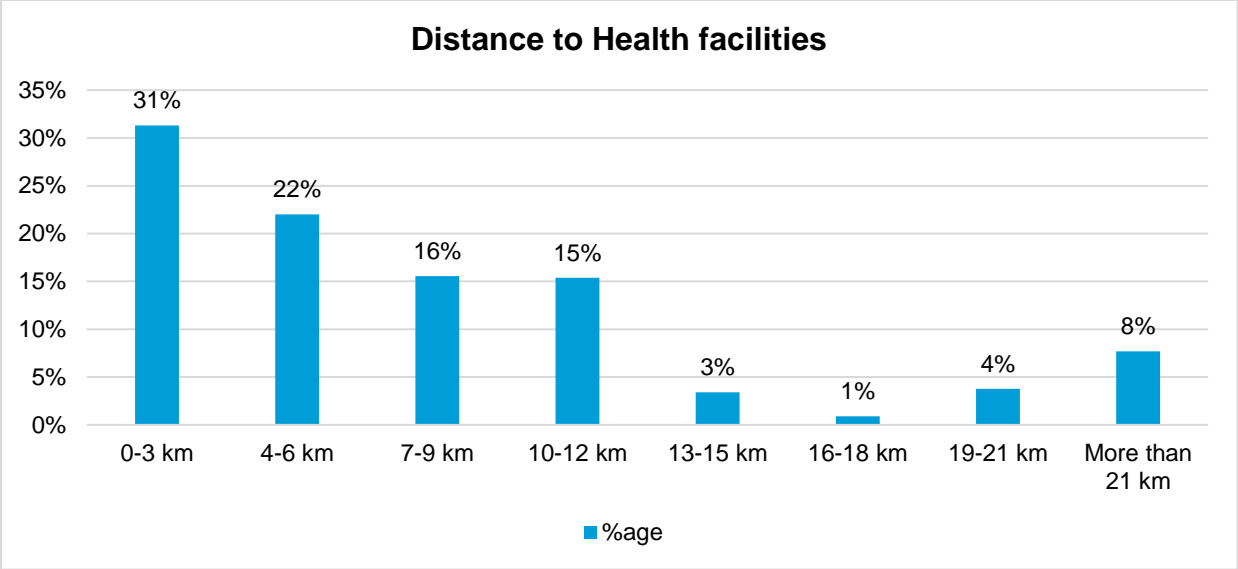


Figure 8. Distance to Health facilities

Recall of Infant, and Child Health (ICYF) Key Messages:

The ability of women to recall key messages related to maternal, infant, and child health was relatively high at 64.7%. This suggests that a significant portion of the surveyed women receive important health-related information, however, the practices of the mothers are not much improved, which show that still the 1000 days’ approach need special attentions to improve the MIYCF practices.

Sources of Key Messages:

The sources from which women received key messages regarding maternal and child health vary. Doctors and nurses 44.9% emerged as the primary source, followed by Family friends (31.2%). This indicates that service providers play a significant role in disseminating health-related information, while healthcare professionals also contribute significantly.

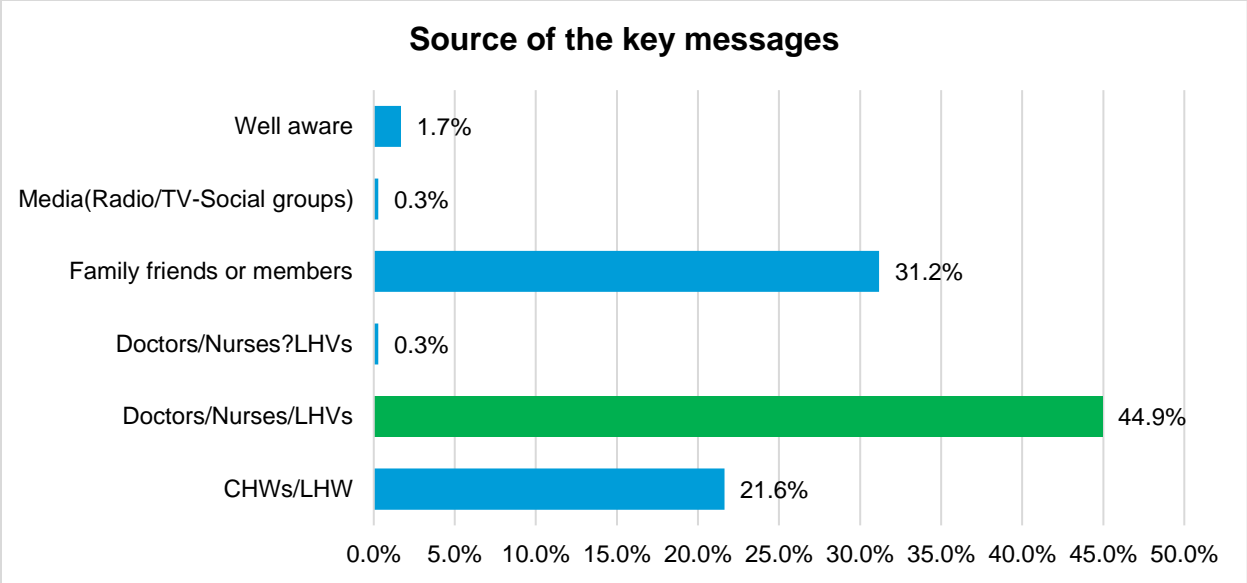


Figure 9. Sources of Key messages regarding MIYCF

In summary, the data highlights both positive aspects and areas for potential improvement in maternal healthcare services. While a majority received essential supplements during pregnancy and had knowledge about family planning, the data also reveals disparities in access to skilled care during childbirth and varying sources of health information. Addressing these disparities could help improve overall maternal and child health outcomes.

Table 21. Access to Maternal services

Access to Maternal services	N	n	%	95% CI	
Iron/folic acid supplementation during pregnancy	559	433	77.5%	0.74	0.81
Family Planning methods knowledge	559	392	70.1%	0.66	0.74
Women felt supported from family members during pregnancy-lactation period	559	515	92.1%	0.90	0.94
Visit Doctor for Postnatal Care	559	356	63.7%	0.60	0.68

Perceived Importance of IFA/MNT Tablets:

Agreement Levels: A significant portion of the respondents showed a positive attitude towards the importance of IFA/MNT tablets, with 35.4% strongly agreeing and 48.5% agreeing, totaling approximately 83.9% expressing some level of agreement, Furthermore, a significant proportion 16.1% did not know about the importance of IFA tablets.

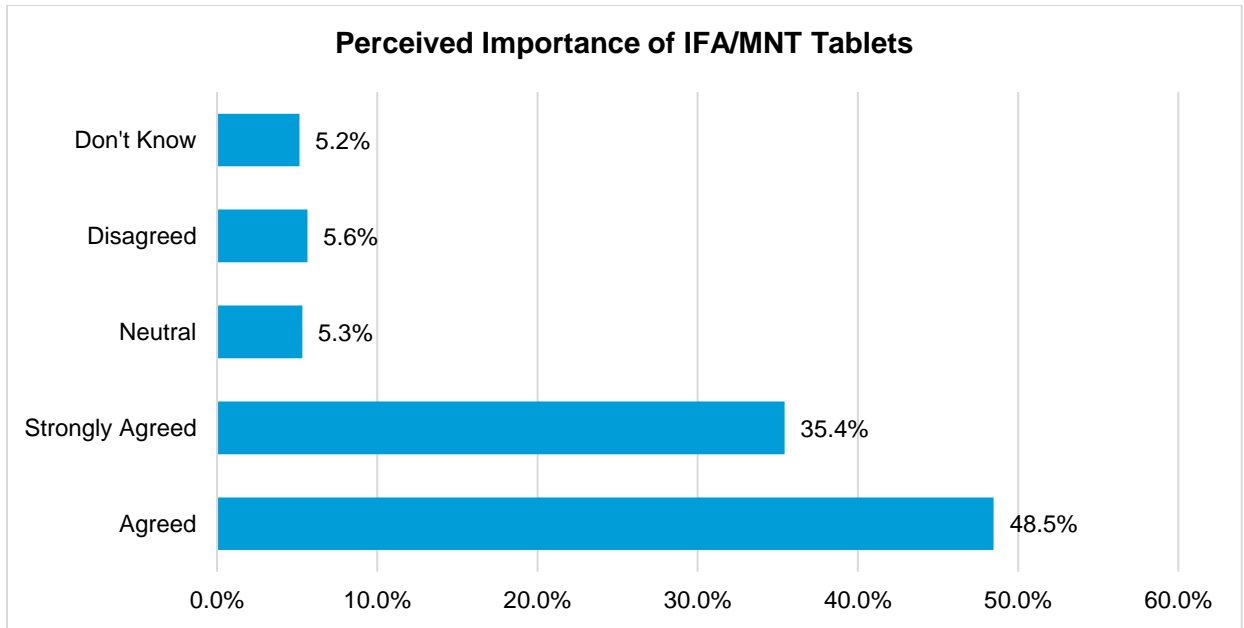


Figure 10. Perceived Importance of IFA/MNT Tablets

Consumption of IFA/MNT Tablets:

This data indicates the responses of individuals regarding their consumption of IFA tablets during a certain period, likely during pregnancy or as prescribed for health reasons. Here's a breakdown of the interpretations:

No (22.4%): This percentage signifies individuals who reported that they did not consume IFA tablets. Reasons for not consuming could vary, including forgetting, negligence, or possibly due to lack of access or understanding about the importance of IFA tablets during pregnancy or other health-related contexts.

Partially (12.1%): This percentage reflects individuals who have consumed IFA tablets partially, indicating that they might not have consistently followed the prescribed regimen or may have missed doses.

Yes (61.5%): This percentage represents individuals who reported consuming IFA tablets as prescribed or recommended. They have adhered to the regimen and have taken the supplements as advised, which is crucial for maternal and fetal health during pregnancy.

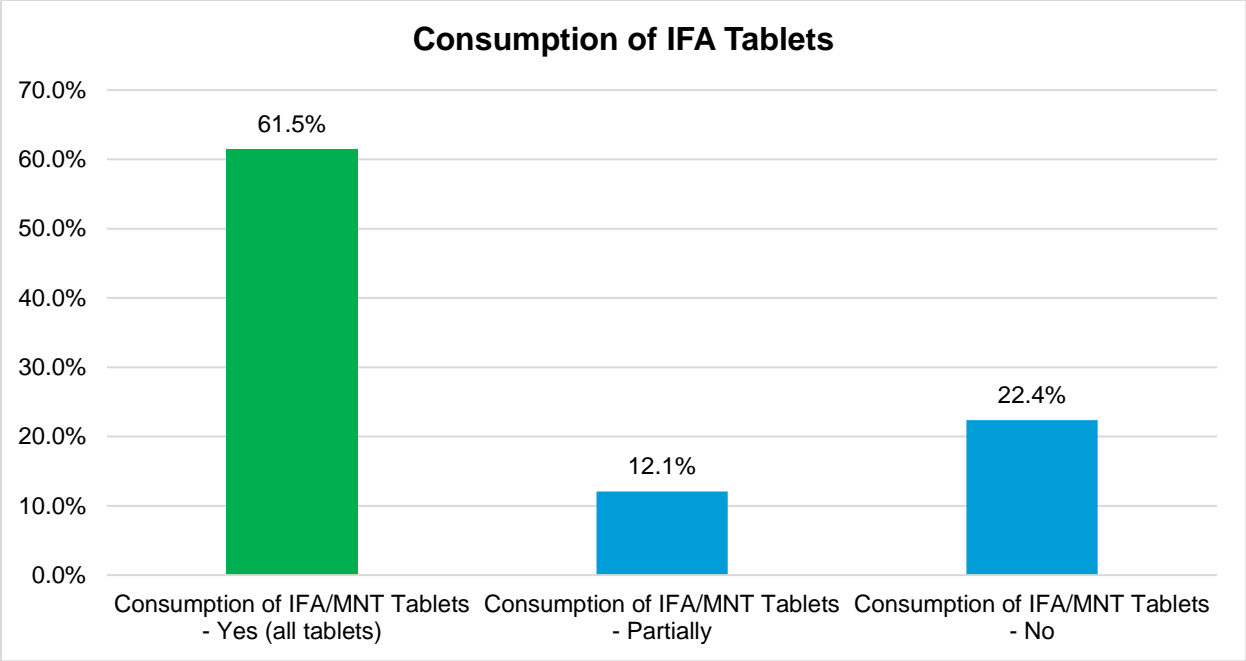


Figure 11. Consumption of IFA Tablets

Interpreting this data suggests that while a significant portion of the respondents have consumed IFA tablets as recommended, there's also a notable proportion who either did not consume them or only partially followed the prescribed regimen. This highlights potential areas for improvement in education, accessibility, and support mechanisms to ensure better adherence to IFA supplementation, particularly among pregnant women and individuals in need of such supplementation for health reasons.

Below figure 6 explains the main reasons of not taking IFA supplementation during pregnancy or lactating, where the top most is stock out, followed by no awareness and perception of side effects.

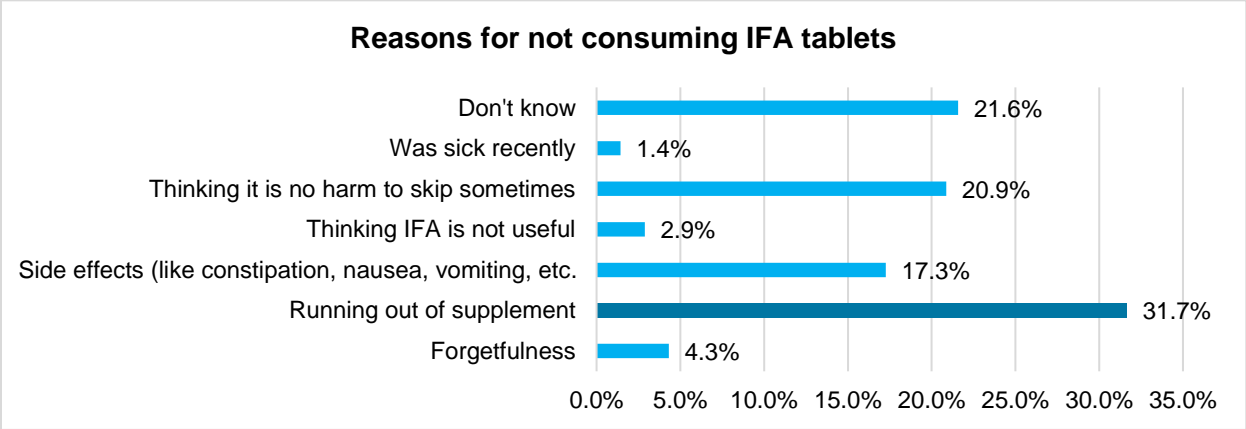


Figure 12. Reasons for not consuming IFA tablets

5.13. Child Immunization Services

Having the third-highest burden of child mortality and ranking third globally for the most under-vaccinated children, Pakistan contains 15% of its population under the age of five, which accounts for 50% of the mortality rate in this country. Every year, almost three million children miss out on an entire course of the most readily available vaccines, leaving them vulnerable to life-threatening diseases¹².

Table 22. Child Immunization status

Child Immunization					
Indicators	N	n	Percent	95% CI Value	
Deworming Coverage –Children 12-59 m	504	63	12.5%	0.10	0.16
Vitamin-A Coverage-Children 6 59 m	630	354	56.2%	0.52	0.60
Measles with Card 9-59 m	542	225	41.5%	0.37	0.46
Measles with Recall 9-59 m	542	209	38.6%	0.34	0.43
Diarrhea U5 Children	630	282	44.8%	0.41	0.49
Diarrhea Treatment with Zinc or ORS (U5)	282	92	32.6%	0.27	0.38

Deworming Coverage – Children 12-59 months: Out of 504 children within the age range of 12 to 59 months, only 12.5% received deworming treatment. Which indicate low deworming coverage, which is essential to prevent parasitic infections in children.

Vitamin-A Coverage – Children 6 to 59 months: Among 630 children between the ages of 6 to 59 months, 56.2% received Vitamin-A supplementation. The confidence interval spans from 0.52 to 0.60. Vitamin-A supplementation is crucial for immune function and vision, however, the coverage of Vitamin-A in MPK district is low.

Measles with Card 9-59 months: Out of 542 children aged 9 to 59 months, only 41.5% had documented measles vaccination cards. For the same age group (9 to 59 months), 38.6% of children were recalled by their caregivers to have received measles vaccination. This indicates a higher documentation rate than recall through vaccination cards.

Diarrhea Prevalence: The households surveyed were questioned regarding incidents of diarrhea in the past 15 days. Among the respondents, 73% either indicated that it was not applicable to them or did not report any instances of diarrhea. Notably, a higher percentage (44.8%) of children under the age of 5 reported experiencing diarrhea during the recall period. Which is very high, that's why 4 FGDs were conducted to reveal the main reasons. On probing the main reasons were bottle feeding, poor hygiene and use of contaminated water and inadequate sanitation facilities resulting from the post-flood situation.

Diarrhea Treatment with Zinc or ORS 0-59 months: Out of 282 children aged 0 to 59 months with diarrhea, only 32% received treatment with Zinc or Oral Rehydration Solution (ORS). The

¹² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8684801>

confidence interval for this percentage ranges from 11.4% to 23.6%. Both Zinc and ORS are essential treatments for managing diarrheal episodes in children.

The data underscores gap in various aspects of child health and immunization. Coverage for Vitamin-A and essential interventions, including deworming, measles vaccination, and appropriate treatment for diarrheal episodes (utilizing Zinc or ORS), appears to be below the desired levels. There is a clear need for enhanced coverage and accessibility to critical interventions such as deworming, measles vaccination, and effective management of diarrheal Family Planning knowledge and Practices, especially in post flood situation.

Mother’s Knowledge Regarding Family Planning Method

Overall, these figures illustrate the distribution of responses from mothers regarding their knowledge about family planning methods. Approximately half of the mothers responded affirmatively (70.1%), signifying their familiarity with these methods. However, a noteworthy portion provided negative responses (20%), indicating a lack of knowledge, or expressed uncertainty. Furthermore, a very small proportion (2.9%) chose not to provide an answer.

Previous history of using Family Planning Method

The awareness of family planning is closely tied to contraceptive use in MPK district. Among the 559 mothers surveyed, only 33% reported using family planning methods, which is very low, a significant portion (67%) reported not using any family planning method previously. This could signify a gap in education, access to services, or personal choices related to contraception

The data showcases a diverse range of contraceptive methods utilized by the surveyed individuals, reflecting a variety of preferences and choices based on individual circumstances. Some methods like pills and injectable appear to be more commonly utilized, possibly due to ease of access, familiarity, or effectiveness.

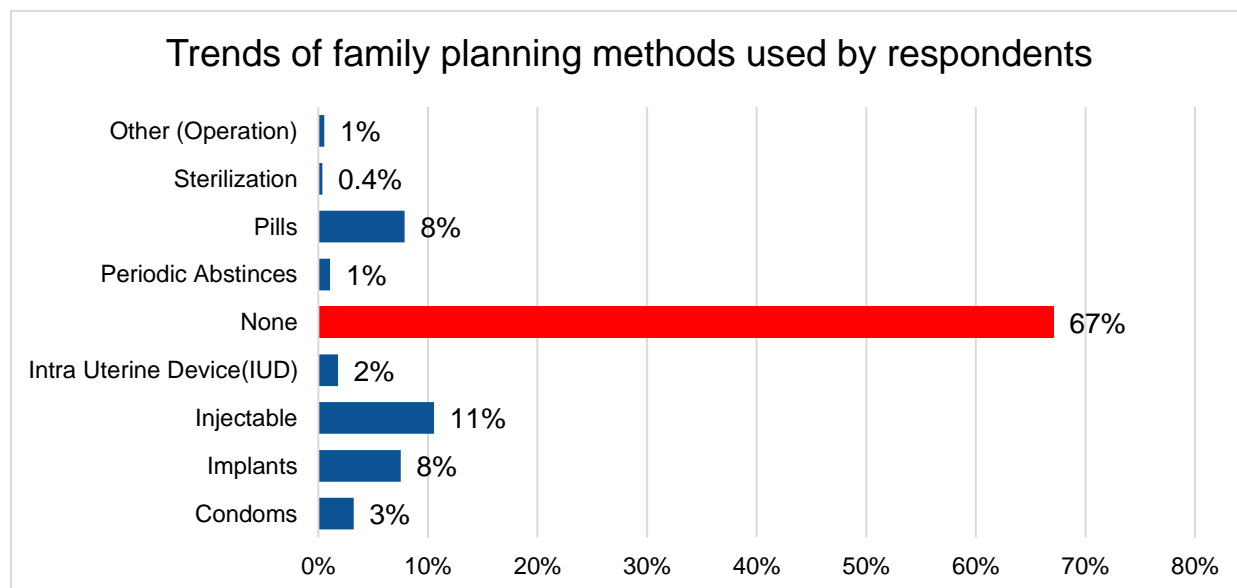


Figure 13. Trends of family planning methods used by respondents

Condoms (3%): Condoms are a barrier method of contraception. Their usage might be influenced by preferences for protection against sexually transmitted infections (STIs) as well as contraception.

Implants (8%): Implants are small, flexible rods placed under the skin, offering long-term contraception. They are effective for several years and can be removed if desired.

Pills (8%): Contraceptive pills are hormonal medications taken daily to prevent pregnancy. They are among the most commonly used reversible methods of contraception.

Injectable (11%): Injectable contraceptives are hormonal shots administered at regular intervals (e.g., Depo-Provera) offering contraceptive protection for weeks or months.

Sterilizations (0.4%): Sterilization procedures, such as tubal ligation (for women) or vasectomy (for men), are permanent methods of contraception often chosen by individuals or couples who do not desire future pregnancies.

The choice of contraceptive method often depends on factors like effectiveness, convenience, personal beliefs, medical considerations, and partner involvement. Understanding these preferences and utilization patterns is crucial for healthcare providers and policymakers to tailor family planning programs, improve accessibility to various methods, offer comprehensive information, and address any barriers preventing individuals from utilizing appropriate contraceptive methods for their reproductive health needs.

5.14. Knowledge regarding Breast feeding

Opinion Regarding Duration of Exclusive Breastfeeding:

A significant majority (76.4%) understand and support the recommended duration of exclusive breastfeeding for the first six months of an infant's life, in line with global health recommendations by organizations like the WHO and UNICEF.

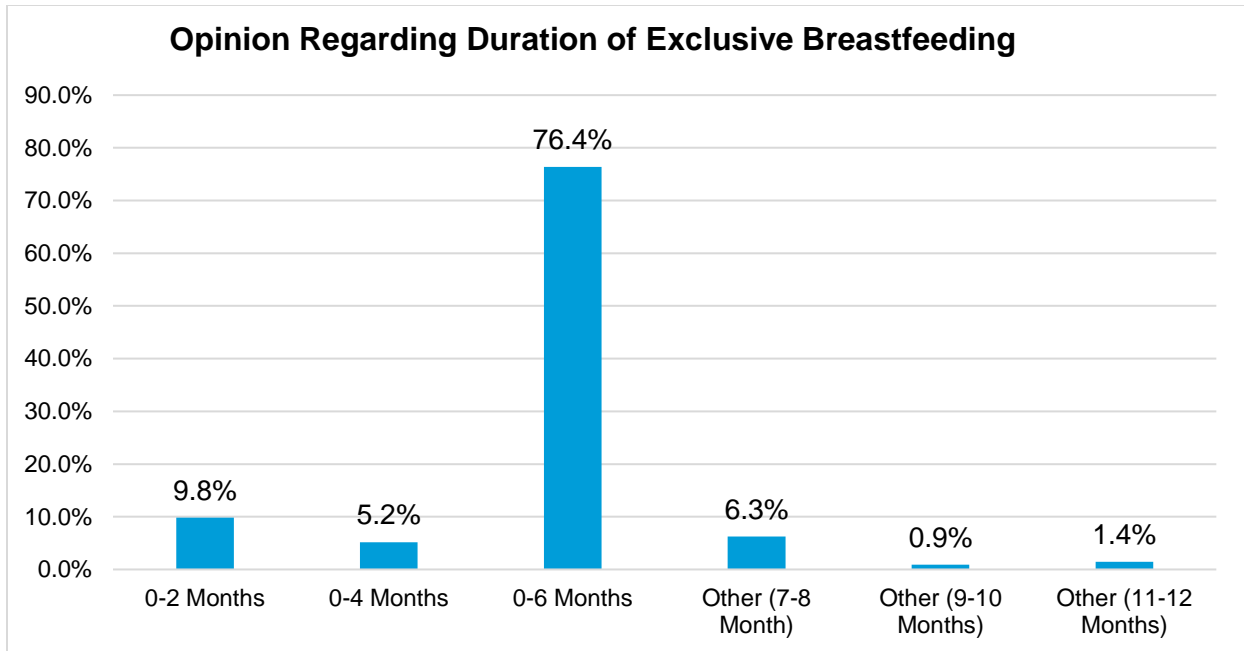


Figure 14. Opinion Regarding Duration of Exclusive Breastfeeding

Age to stop breastfeeding:

A significant majority of respondents (59%) endorse breastfeeding beyond 23 months, with support gradually decreasing for the 18-23 months and 16-18 months categories. This suggests a widespread recognition of the advantages of extended breastfeeding in promoting child health and development. However, a smaller proportion (less than 15%) considered 12 months for stopping breastfeeding (Please refer to figure below).

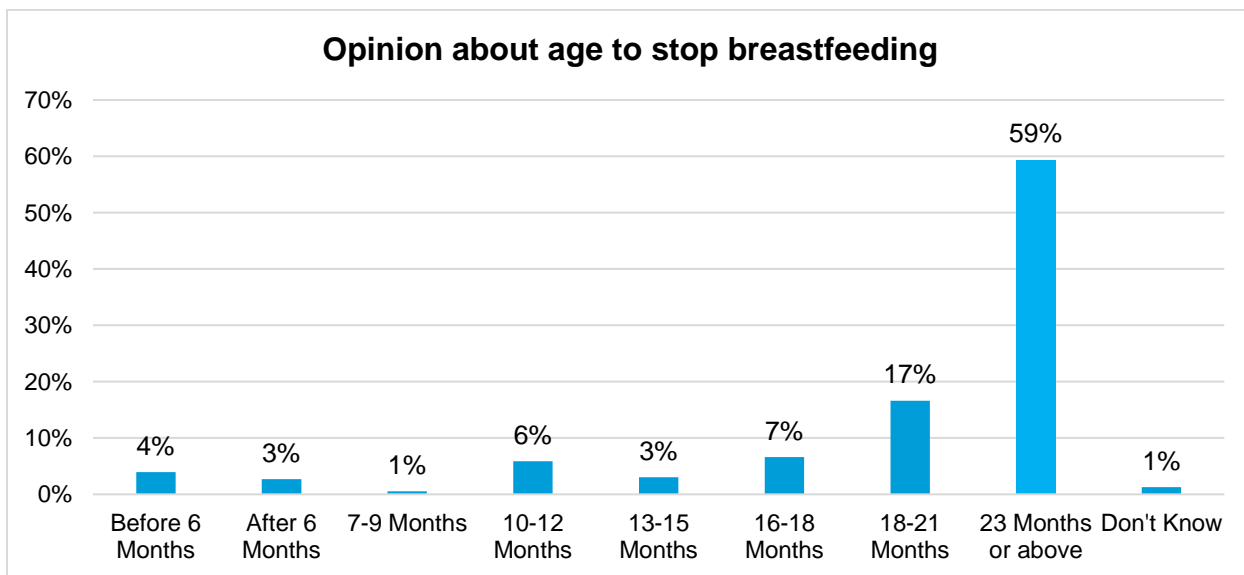


Figure 15. Opinion about age to stop breastfeeding

Frequency of breastfeeding:

The recommended frequency of breastfeeding for infants is generally 8–12 times per day, ensuring that the baby receives sufficient nourishment and benefits from the protective factors in breast milk. The majority of the mother opinion about breast frequency ranging from 5-12 time in 24 hours.

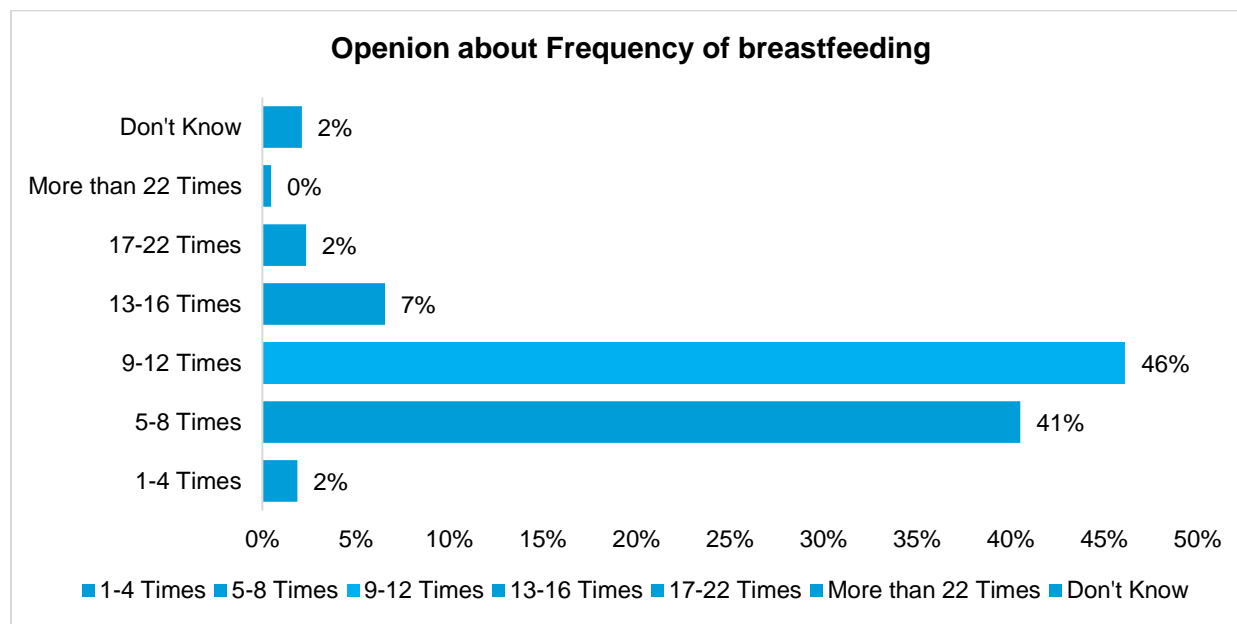


Figure 16. Opinion about Frequency of breastfeeding

The data suggests a positive understanding and adherence to recommended breastfeeding practices among the surveyed mothers, including awareness of the duration of exclusive breastfeeding for the first six months, support for extended breastfeeding beyond 23 months, and frequent breastfeeding sessions. These findings indicate a good level of knowledge and alignment with global recommendations regarding breastfeeding practices for optimal infant health and development.

5.15. Infant and Young Child Feeding-IYCF Key indicators

Inadequate feeding practices are often a critical driver of poor nutritional outcomes in children. WHO recommends exclusive breastfeeding up to six months of age, after which infants should start receiving complementary foods in addition to breastmilk. The transition from exclusive breastfeeding to complementary feeding is a very vulnerable period and is often the time that malnutrition starts in many infants. The MIYCF practices were calculated based on the WHO Guidelines¹³ released in 2021.

Below table represents the MIYCF indicators for MPK district.

¹³ <https://www.who.int/publications/i/item/9789240018389>

Table 23. MIYCF Key Indicators

Section 1. Summary of IYCF Indicators					
Indicators	N	n	%	CI 95%	
Child Ever Been Breastfed-EvBF (0-23 months)	276	265	96.0%	0.93	0.98
Early Initiation of Breastfeeding-(EIBF) (0-23 months)	276	173	62.7%	0.57	0.68
Exclusively breastfed for the first two days after birth-(EBF2D) (0-23 mon)	276	194	70.3%	0.65	0.76
Squeeze Out & Throw Away 1st Milk (Colostrum)	276	47	17.0%	0.13	0.22
Exclusive breastfeeding under six months (EBF) (0-5)	63	38	60.3%	0.47	0.72
Continued breastfeeding 12–23 months (CBF)	150	108	72.0%	0.64	0.79
Bottle feeding 0–23 months (BoF)	276	55	19.9%	0.15	0.25
Mixed milk feeding under six months (MixMF)	63	17	27.0%	0.17	0.40
Introduction of solid, semisolid or soft foods 6–8 months (ISSSF)	25	17	68.0%	0.47	0.85
Minimum meal frequency 6–23 months (MMF)	213	112	52.6%	0.46	0.59
Minimum dietary diversity 6–23 months (MDD)	213	21	9.9%	0.06	0.15
Minimum milk feeding frequency for non-breastfed children 6–23 months (MMFF)	213	6	2.8%	0.01	0.06
Minimum acceptable diet 6–23 months (MAD)	213	19	8.9%	0.05	0.14
Egg and/or flesh food consumption 6–23 months (EFF)	213	22	10.3%	0.07	0.15
Sweet beverage consumption 6–23 months (SwB)	213	30	14.1%	0.10	0.19
Unhealthy food consumption 6–23 months (UFC)	213	4	1.9%	0.01	0.05

Ever breastfed (EvBF) (0-23 Months): 276 out of 265 children (96.6%) in the 0-23 months' age group have ever been breastfed. This high percentage indicates a prevalent practice of initiating breastfeeding among the surveyed children, showcasing widespread acceptance and adoption of breastfeeding.

Early initiation of breastfeeding (EIBF) (0-23 Months): 173 out of 276 children (62.7%) were breastfed within the first hour of birth. While over half the children were breastfed early after birth, the percentage suggests there might be room for improvement in promoting immediate breastfeeding initiation, as per global health recommendations.

Exclusively breastfed for the first two days after birth (EBF2D) (0-23 Months):

A total of 194 out of 276 children (70.3%) received exclusive breastfeeding during the first two days after birth. This high percentage underscores that the majority of the surveyed children benefited from exclusive breastfeeding in the crucial early days post-birth, promoting early bonding and ensuring the provision of essential nutrients and received colostrum in the first 2-3 days.

Exclusive breastfeeding under six months (EBF) (0-5 Months): 38 out of 63 children (60.3%) aged 0-5 months were exclusively breastfed. This high percentage suggests good adherence to the recommendation of exclusive breastfeeding for infants up to 6 months of age, ensuring optimal nutrition and health for the infants.

Continued breastfeeding (CBF) (12-23 Months): 108 out of 150 children (72%) aged 12-23 months were continuing to breastfeed. A significant proportion of children in the 12-23 months age range are continuing to receive the benefits of breastfeeding, contributing to their nutritional intake and immune support.

Introduction of solid, semisolid, or soft foods (6-8 Months) (ISSSF): 17 out of 25 children (68%) aged 6-8 months were introduced to solid, semisolid, or soft foods. While a majority have started complementary feeding by the recommended age, there's potential for improvement in introducing these foods timely to ensure proper nutrition and development.

Minimum dietary diversity 6-23 months (MDD-9.9%), Minimum meal frequency 6-23 months (MMF-52%), Minimum acceptable diet 6-23 months (MAD-8.9%), and Egg and/or flesh food consumption 6-23 months (EFF-10.3%) These indicators represent aspects of a child's diet diversity, meal frequency, and quality.

This shows relatively low percentages, suggesting a need for improvement in meeting dietary diversity and nutritional adequacy among children aged 6-23 months which is the stage where majority of the growth faltering happens.

Bottle feeding 0-23 months (BoF): 55 out of 276 children (19.9%) were reported to have been bottle-fed. The prevalence of bottle feeding in nearly half the surveyed children might indicate a reliance on bottles for feeding, potentially impacting breastfeeding practices and nutritional intake.

The data reflects generally positive adherence to some key breastfeeding and complementary feeding practices. However, it also highlights areas where there's room for improvement, such as early initiation of breastfeeding, dietary diversity, and limiting bottle feeding to ensure optimal nutrition and healthy feeding practices for infants and young children.

Bottle feeding is prevalent in MPK district. When mothers were questioned about the reasons for transitioning from breastfeeding to bottle feeding, it revealed critical aspects that need immediate attention.

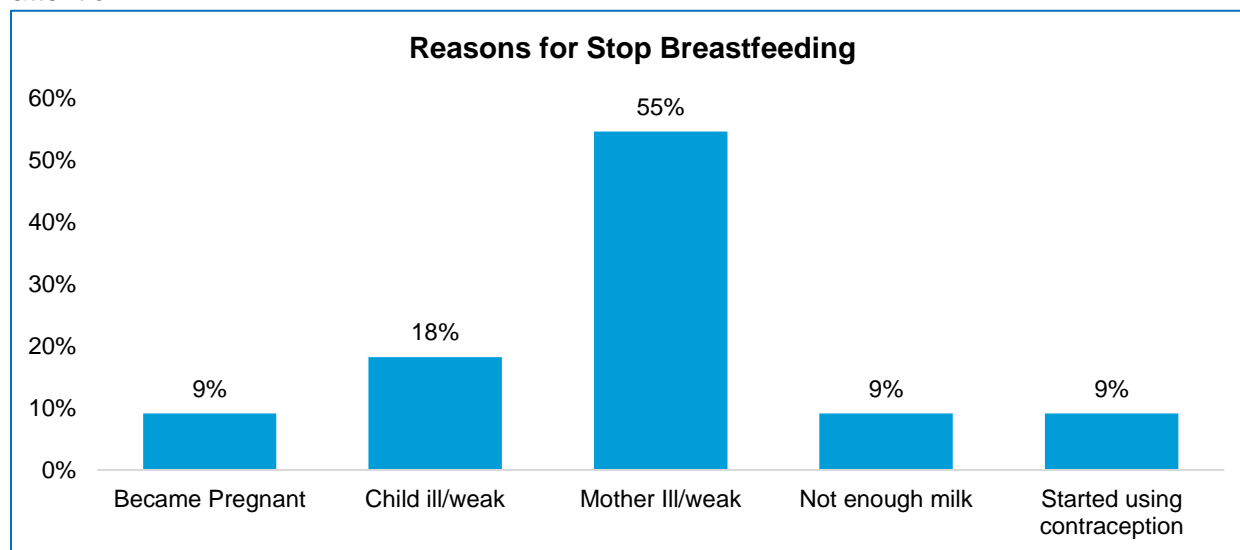


Figure 17. Reasons for Stop Breastfeeding

Among the surveyed mothers, 55% stopped breastfeeding because the mother herself was ill or weak. Maternal health issues can significantly impact breastfeeding practices. The reasons of maternal illnesses in MPK needs to be probed as this is a unique response as compared to other districts and the prevalence is high. Further probing is recommended to assess the reasons of high mother illnesses or is it a problem of perceptions. Illness or weakness in the mother might affect her ability to breastfeed or her perception of the adequacy of her milk supply, leading to discontinuation, while 9% stopped breastfeeding due to becoming pregnant again. This reason indicates that subsequent pregnancies might lead mothers to discontinue breastfeeding, possibly due to concerns about managing breastfeeding alongside a new pregnancy or misconceptions about breastfeeding during pregnancy.

Furthermore, 17% stopped breastfeeding due to reaching the intended weaning age. This reason implies a planned cessation of breastfeeding at a predetermined age, indicating a deliberate decision by the mother to wean the child at a specific time.

The above reasons for stopping breastfeeding encompass a spectrum of factors, spanning maternal health, child health, subsequent pregnancies, and child preferences or developmental stages. External factors, like becoming pregnant again or facing maternal health issues, can impact the continuous practice of breastfeeding. On the other hand, internal factors or personal choices, such as child illness or refusal to breastfeed and reaching the intended weaning age, contribute to the decision to cease breastfeeding.

This data highlighting the diverse array of influences leading to the discontinuation of breastfeeding, emphasizing the need to address both maternal and child health concerns. Providing mothers with comprehensive information and assistance becomes crucial in supporting breastfeeding continuity, considering its manifold benefits for both maternal and child health.

5.16. WASH

Half of all water, sanitation and hygiene facilities in some of the hardest hit flood areas of Pakistan have suffered major damage, leaving already vulnerable communities exposed to increased risk of disease. Especially women and girls are impacted. According to the UN humanitarian organization OCHA, up to 50% of water, sanitation and hygiene facilities in Sindh provinces have suffered major damage. The current survey will give a recent situation in the surveyed population.

5.16.1. Access to drinking water source: The below data shows the respondents access to the water point from their home

Hand pumps/borehole: The main water source for drinking and domestic is hand pumps or boreholes, Majority, (36.9%) access water from hand pumps or boreholes. Hand pumps and boreholes are manually operated systems or drilled wells that provide access to groundwater.

This percentage indicates a significant portion of the population relies on groundwater for their drinking water needs.

Public tap/standpipe: (24.5%) access drinking water from public taps or standpipes. Public taps or standpipes are communal water sources usually connected to a municipal supply. This high percentage suggests that the second most source is public taps, and households relies on a shared or communal water source for drinking purposes.

Piped Connection to house: (17.7%) have a piped connection directly to their house for accessing drinking water. Having a piped connection to the house indicates a more convenient and direct water supply. However, the low percentage suggests that only a small fraction of the surveyed population has this level of direct access.

Surface water (lake, pond, dam, river): Among the surveyed households a significant proportion (11%) also relies on surface water (lake, pond, dam, river), these water sources are mostly contaminated, and households may be more exposed to water borne diseases, which is evident from children diarrhea prevalence in the district stands at 44% (very High).

Water seller/kiosk: (3.4%) obtain drinking water from water sellers or kiosks. Water sellers or kiosks are small vendors selling water. This percentage indicates a portion of the population relies on purchased water from such vendors, potentially due to lack of access to other sources or for convenience.

The data shows a varied range of sources for obtaining drinking water, with public taps/standpipes being the most common source, followed by hand pumps/boreholes. A small fraction has direct piped connections to their houses, indicating the limited availability of such infrastructure in the surveyed area. There's also reliance on alternative sources like water vendors or tanker trucks from protected sources, suggesting that some individuals might face challenges in accessing safe and reliable drinking water. Improving access to safe and reliable drinking water sources, especially through piped connections or increasing access to protected sources, could contribute significantly to ensuring clean and accessible drinking water for the population.

Table 24. Sources of Drinking Water

Source	N	n	%	CI 95%	
Hand pumps/borehole	559	206	36.9%	0.33	0.41
Public tap/standpipe	559	137	24.5%	0.21	0.28
Piped connection (or neighbor's house)	559	100	17.9%	0.15	0.21
Water seller/kiosks	559	19	3.4%	0.02	0.05
Unprotected spring	559	3	0.5%	0.00	0.02
Protected spring	559	2	0.4%	0.00	0.01
Surface water (lake, pond, dam, river)	559	62	11.1%	0.09	0.14
Tanker truck from a protected source	559	8	1.4%	0.01	0.03
Tanker truck from a Unprotected source	559	11	2.0%	0.01	0.03
Unprotected hand-dug well	559	5	0.9%	0.00	0.02
Rain water collection	559	6	1.1%	0.00	0.02

5.16.2. Water Treatment Methods used in MPK District

The data suggests that a vast majority of respondents do not treat their water before consumption, indicating potential risks of consuming untreated water, and only 27.7% treat water before use, but occasionally, not a permanent practice.

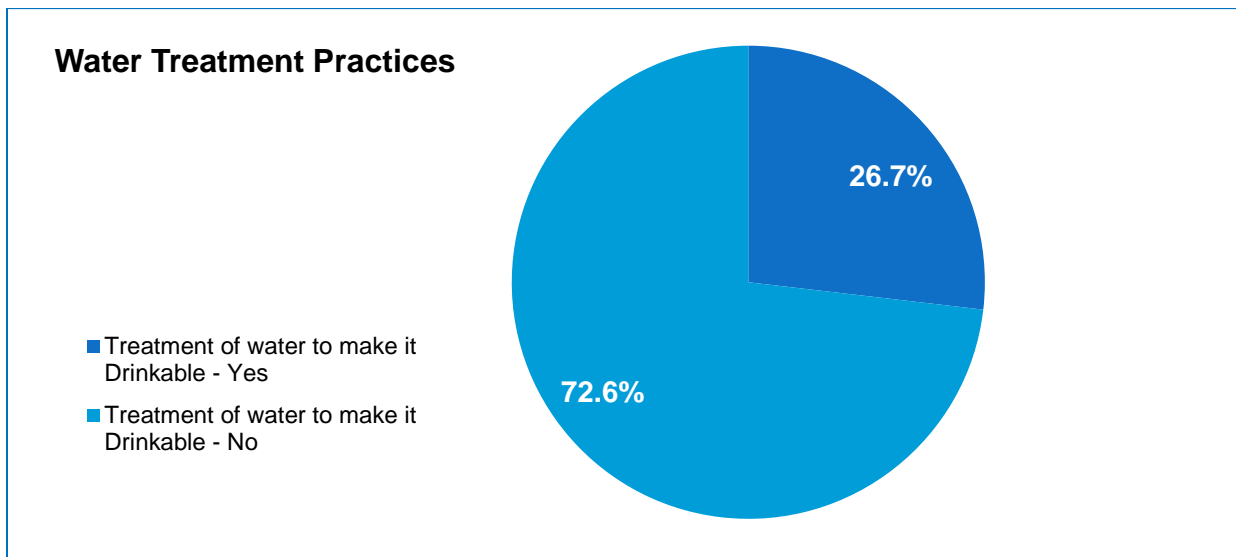


Figure 18. Water Treatment Practices

Water collection from water sources

Household Water Collection by Adult Females: (73.2%) reported that adult females are responsible for household water collection. This statistic shows a prevalent practice where adult females are primarily responsible for fetching water for households, indicating potential gender disparities in water-related chores. While only 18.6% reported adult males being responsible for household water collection. This suggests a proportion of households where adult males are involved in water collection, possibly in addition to or instead of females, indicating variations in gender roles concerning water-related tasks.

Gender disparities in water collection responsibilities are evident, with adult females largely responsible, but a portion of households also involving adult males. These findings highlight the need for interventions focused on water treatment, sanitation improvements, gender equality in household responsibilities, and addressing economic barriers to ensure better hygiene practices and public health outcomes within the surveyed population.

Table 25. Water collection from water Sources-Responsibility

Source	N	n	%	CI 95%	Source
Household water collection by adult Females	559	409	73.2%	0.69	0.77
Household water collection by adult Male	559	104	18.6%	0.15	0.22
Household water collection by child (11-18 years)	559	14	2.5%	0.01	0.04
Household water collection by child (10 Year or Younger)	559	17	3.0%	0.02	0.05

5.16.3. Hygiene

Availability of Soap: (68.2%) reported having soap available. 137 individuals (38.8%) reported not having soap available. While a majority have access to soap, a notable percentage lacks access, which could impact proper hygiene practices, especially hand washing.

Households Unable to Afford Soap: (61.7%) stated that households cannot afford soap. The high percentage reflects financial constraints preventing access to soap, indicating economic challenges affecting hygiene practices. The data reveals concerning trends such as the majority not treating water before consumption, significant open defecation practices, and challenges in soap availability due to affordability issues.

The other reasons for soap unavailability are stated in the figure below.

Source	N	n	%	CI 95%	Source
Cannot afford soap	128	79	61.7%	0.5272	0.7017
Ran out of soap/Used	128	39	30.5%	0.2264	0.3922
Don't like soap	128	6	4.7%	0.0174	0.0992
Soap is unnecessary	128	2	1.6%	0.0019	0.0553
Soap is unavailable in the area/market	128	2	1.6%	0.0019	0.0553

Figure 19. Reasons for soap non-availability

Hand Washing Timings

Handwashing at critical timings is vital for maintaining proper hygiene and preventing the spread of infections, despite the knowledge about the importance, the practices are not up to the mark and caused several public health challenges.

According to survey respondents, 46.7% indicated that they consider handwashing as important solely before eating, 25.6% before cooking. A small proportion only indicates the hand washing importance after handling a child stool/Changing a nappy of child, after defecation or after before breastfeeding. These findings do indicate a need to incorporate hygiene promotion in public health programs as the critical times of handwashing are missed which contributes to orofecal transmission of disease vectors.

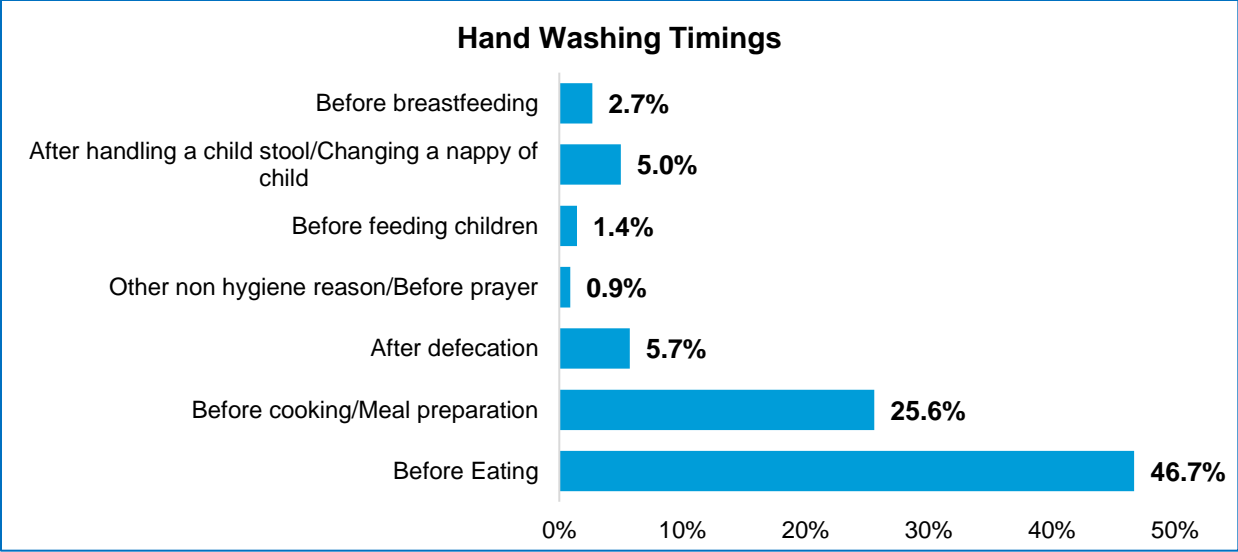


Figure 20. Hand Washing Timings

5.16.4. Latrine availability and open defecation Practices
Types of Latrine Facilities

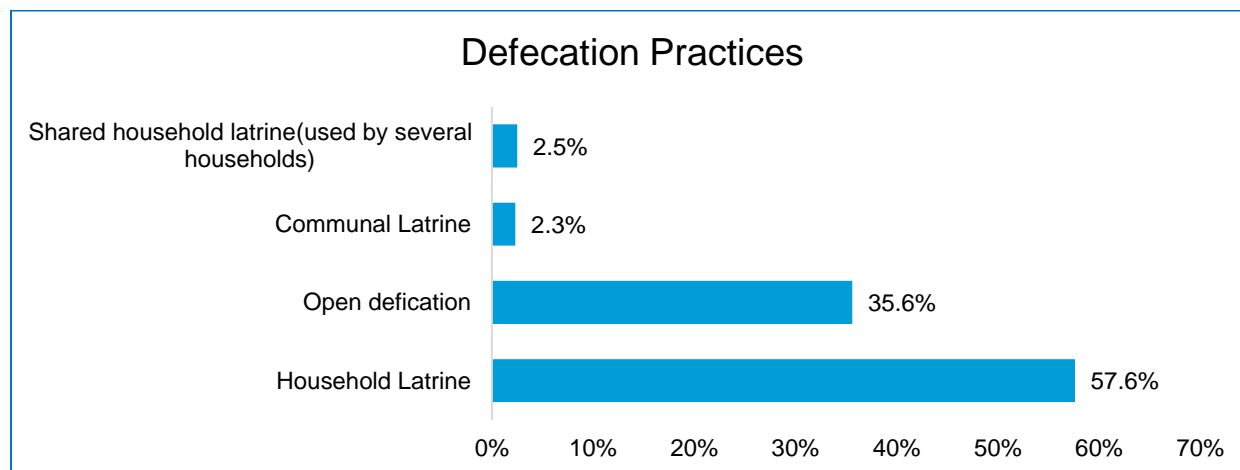
Household Latrine (57.6%): This indicates that a majority of households surveyed have their own private latrine facilities, which are considered beneficial for maintaining privacy and hygiene within the household. Having a household latrine is an essential aspect of proper sanitation, however, the majority of the households reported that latrines are not enough to meet the needs of all household members.

Communal Latrine and Shared Latrines (4.8%): These figures represent households sharing or using communal latrines. Communal or shared latrines are facilities used by multiple households, which might lead to hygiene and privacy concerns due to shared usage.

Open Defecation (35.6%): Open defecation indicates a lack of access to adequate toilet facilities. It poses significant health risks, contributes to environmental pollution, and can lead to the spread of diseases. The data highlights that a substantial proportion of the surveyed population relies on personal or shared latrine facilities, but a considerable number still resort to open defecation, indicating inadequate access to proper sanitation infrastructure for a significant segment of the community. Among the households practicing open defecation, 71% reported no latrine as main reason. This practice is a high risk for water borne diseases, diarrhea and other vector borne diseases, efforts on sanitation transformation are highly required to prevent this practice.

Reasons for Open Defecation: The main reason for open defecation is no latrine availability (59.6%): The majority cited the unavailability of latrines as the main reason for open defecation. This points to a critical shortage or absence of proper sanitation facilities in the community.

Table 26. Defecation Practices



Adequate Privacy in Toilet Facilities: (59.6%) reported having adequate privacy in their toilet facilities. While a majority reported adequate privacy, a notable percentage might lack proper privacy in their toilet facilities, highlighting potential issues in sanitation and privacy standards.

Under 5 children's Faeces Disposal practice: The majority of the respondents (30%) stated that they collect the children's faeces and trash it into the latrine or designated area. However, a significant proportion (35%) still practicing unhealthy methods which are detrimental to environmental sanitation.

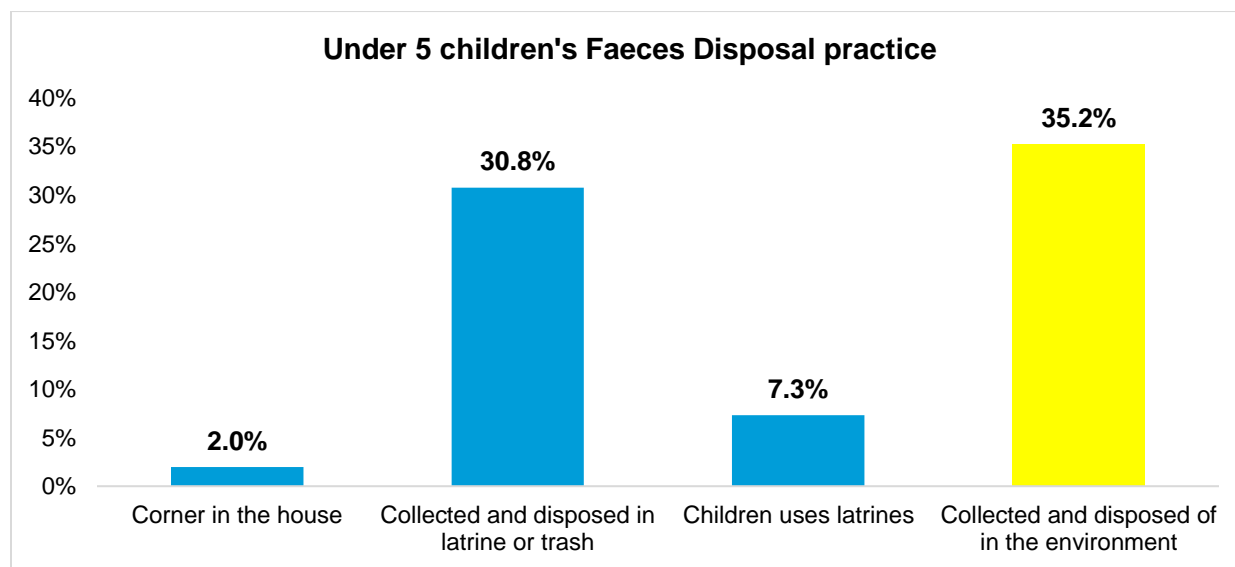


Figure 21. Under 5 children's Faeces Disposal practice

The data revealed a critical need for improved sanitation infrastructure, especially in terms of increasing access to latrine facilities. The majority of households having their own latrines is

positive, but there's still a considerable portion relying on shared or communal facilities and open defecation. The primary reason cited for open defecation is the unavailability of latrines, signifying the urgent need for investment in sanitation infrastructure to ensure proper access to toilet facilities for all community members. Addressing these issues would significantly improve sanitation, hygiene, and overall public health within the surveyed population.

5.17. Food Security

5.17.1. Minimum Dietary Diversity -Women

High MDD-W: Only (5.6%) of women fall into the High Minimum Dietary Diversity category. Women categorized as having high MDD-W consume a wide variety of food groups from various sources. They likely incorporate diverse nutrients into their diet by including different types of fruits, vegetables, proteins, grains, and dairy products, contributing to a balanced and nutritionally rich dietary pattern.

Medium MDD-W: (15.3%) women are classified in the Medium Minimum Dietary Diversity category. Women in this group display a moderate level of dietary diversity. They might consume a reasonable variety of food groups but might not have as wide a range as those in the High category. There is room for improvement to further diversify their diet for better nutrition.

Low MDD-W: The majority (79.1%) of surveyed women fall into the low group, indicating a lack of diversity in their diet. Women in this category likely consume a limited variety of food groups, potentially lacking essential nutrients from various sources, which could impact their overall nutrition and health.

The data indicates that a substantial number of surveyed women exhibit a restricted diversity in their food intake. The majority fall within the Low Minimum Dietary Diversity for Women (MDD-W) category, signaling the necessity for interventions aimed at enhancing dietary diversity among women. Promoting the consumption of a more varied range of food groups can elevate their nutritional intake, ensuring the acquisition of a comprehensive spectrum of essential nutrients crucial for overall health, particularly during pregnancy and lactation.

Strategies might include, nutritional counseling, improving access to diverse food options, and promoting culturally appropriate dietary practices to enhance dietary diversity among women. Enhancing dietary diversity among women is crucial for addressing potential nutritional deficiencies, supporting maternal and child health, and promoting overall well-being among communities.

Table 27. Minimum Dietary Diversity-Women (MDD-W)

Minimum Dietary Diversity-Women (MDD-W)	N	n	%	CI 95%	
High	621	35	5.6%	0.39	0.77
Medium	621	95	15.3%	0.12	0.18
Low	621	491	79.1%	0.75	0.82

The data provided relates to food insecurity experiences and coping strategies among a surveyed population. Here's an interpretation of the information:

5.17.2. Food Insecurity Experience Scale (FIES):

The Food Insecurity Experience Scale (FIES) measures the extent of food insecurity experienced by individuals or households. It typically assesses the prevalence of different levels of food insecurity based on the responses of surveyed individuals. This scale often categorizes food insecurity into various levels, such as:

None/Light Hunger: This category includes individuals who reported experiencing either no hunger or only mild hunger. In this dataset, 18.2% households fall into this category. These individuals face minimal challenges related to obtaining enough food or experiencing hunger.

Moderate Hunger: This category comprises households experiencing a moderate level of hunger. Among the surveyed population 28.8% households fall into this group. These individuals face a higher level of food insecurity, experiencing moderate challenges in accessing sufficient food.

Severe Hunger: The largest proportion, 53% of households falls into this category, indicating a significant prevalence of severe hunger among the surveyed individuals. These individuals face substantial challenges in obtaining enough food, indicating a critical level of food insecurity within this population.

Table 28. Food Insecurity Experience Scale (FIES)

Food Insecurity Experience Scale (FIES) ¹⁴				
Category	N	n	%	CI 95%
None/Light Hunger	559	102	18.2%	(15.13-21.70)
Moderate Hunger	559	161	28.8%	(25.08-32.75)
Severe Hunger	559	259	53.0%	(48.72-57.15)

The FIES results reveal a strikingly high prevalence of food insecurity, with a majority of individuals experiencing moderate to severe hunger. This highlights the significant challenges faced by the surveyed population in accessing adequate and nutritious food.

5.17.3. Reduced Coping Strategy Index (rCSI):

High Coping: This group represents individuals who reported employing effective coping strategies to deal with food insecurity. Among the surveyed population, 45.6% households fall into this category. These individuals likely utilize various strategies to manage food shortages effectively.

¹⁴ 0-1 score: None or light hunger, 2-3 scores,: Moderate hunger, 4-6 scores: Severe hunger

Medium Coping: 17.4% fall into this group, suggesting moderate coping strategies in dealing with food insecurity. They might employ some coping mechanisms but might face challenges in effectively managing food shortages.

No or Low Coping: This category includes individuals who reported having inadequate or no strategies to cope with food insecurity. 37% households fall into this group, indicating a significant portion of the surveyed population have resilience to manage food shortages.

The rCSI results indicate that while a substantial portion of the surveyed population employs coping strategies, there's a considerable percentage facing challenges in coping effectively with food insecurity due to the lack of or limited coping mechanisms.

Table 29. Reduced Coping Strategy Index- rCSI

Reduced Coping Strategy Index (rCSI) ¹⁵				
Category	N	n	%	CI 95%
High Coping	559	207	37.0%	(33.02-41.18)
Medium	559	97	17.4%	(14.30-20.75)
No or Low Coping	559	255	45.6%	(41.43-49.85)

6. Discussion

These findings highlight the urgent need for interventions and policies to address malnutrition and improve the nutritional status of children in MPK. The major factors contributing to acute malnutrition include inadequate quality and quantity of food, high food insecurity, hygiene practices and sanitation coverage. Also, high rates of diarrhea, maternal nutrition and poor health seeking behavior is high. The malnutrition trends in all forms are fluctuating from last 10 years, due to several past shocks like rain floods, inflation, and damage to agriculture land. Which reduced the households access to food and resilience to shocks. Additionally, mother education is still very low as compared to other districts and need immediate attention to improve mother education through integration with health and nutrition programs.

GAM Rate Trend:

The Global malnutrition rate in MPK shows an inconsistent trend from 2018 to 2023, some improvement is seen in 2019, which may be due to large scale integrated nutrition programs, however, the current GAM rate in 2023 is high and need immediate attention and monitoring, many partners are currently working in the districts and covering community outreach and treatment. A fact that needs to be considered is that errors between comparisons of NNS with MICS or Smart with MICs does generate errors due to its different sampling methodologies. The qualitative information revealed that sanitation and drinking water contamination are the main public health issues behind the high rates of malnutrition.

However, if the comparison is made between the 2018 NNS and the SMART survey 2023 there is no significant difference in either the wasting or the stunting rates over a period of 5 years. The

¹⁵ No or low coping (CSI= 0-3), medium (CSI = 4-9, high coping (CSI ≥10).

indicators of MPK are highly concerning coupled with the fact of no improvement over time for which reason this district has to be focused for targeted interventions and further studies.

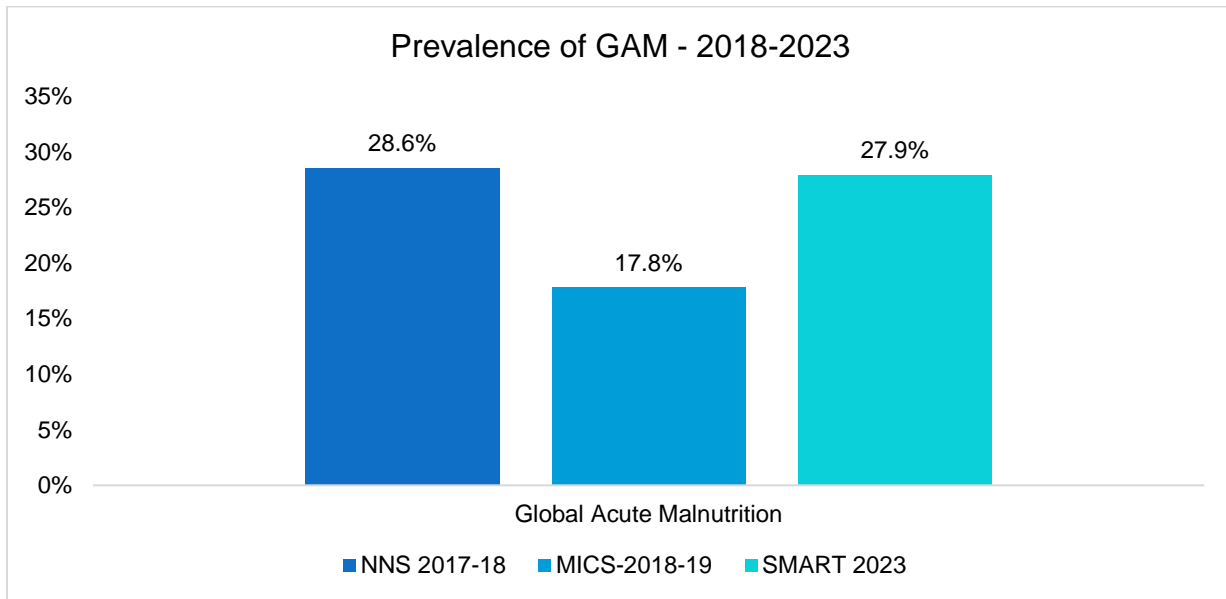


Figure 22. Prevalence of GAM - 2018-202

Stunting:

The trends in stunting indicate no progress over the past 5 years, and must be explore to redesign the health, nutrition and other programs. Because the present rate is very high as compared to National and provincial averages. Continuous monitoring is essential to sustain this progress, emphasizing the need for integrated nutrition-specific and sensitive programs to ensure ongoing improvement.

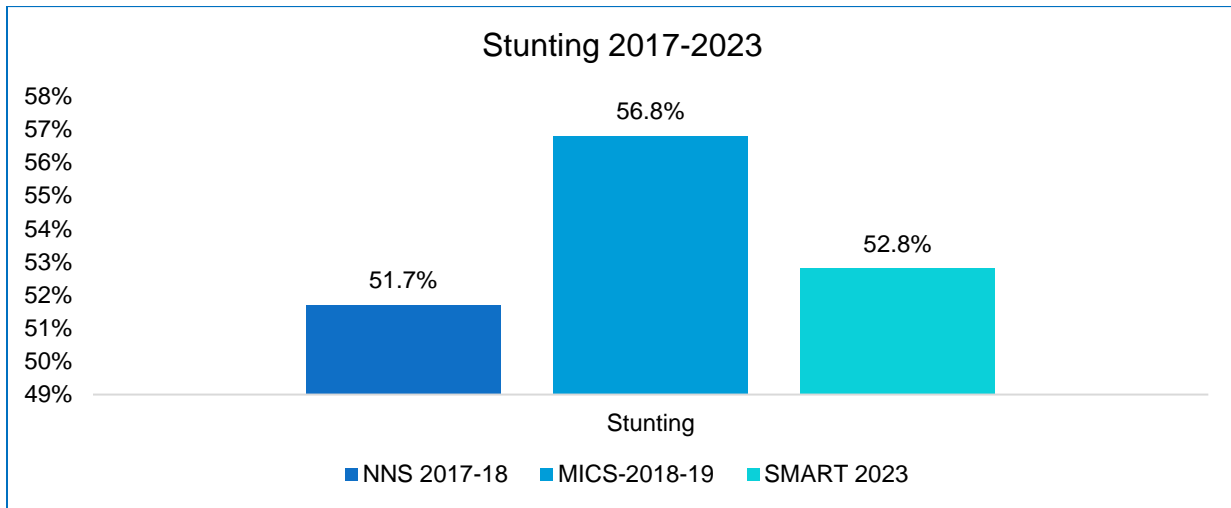


Figure 23. Stunting Trend (2017-2023)

Underweight:

The underweight trend is also consistent and indicates the vulnerability of the district.

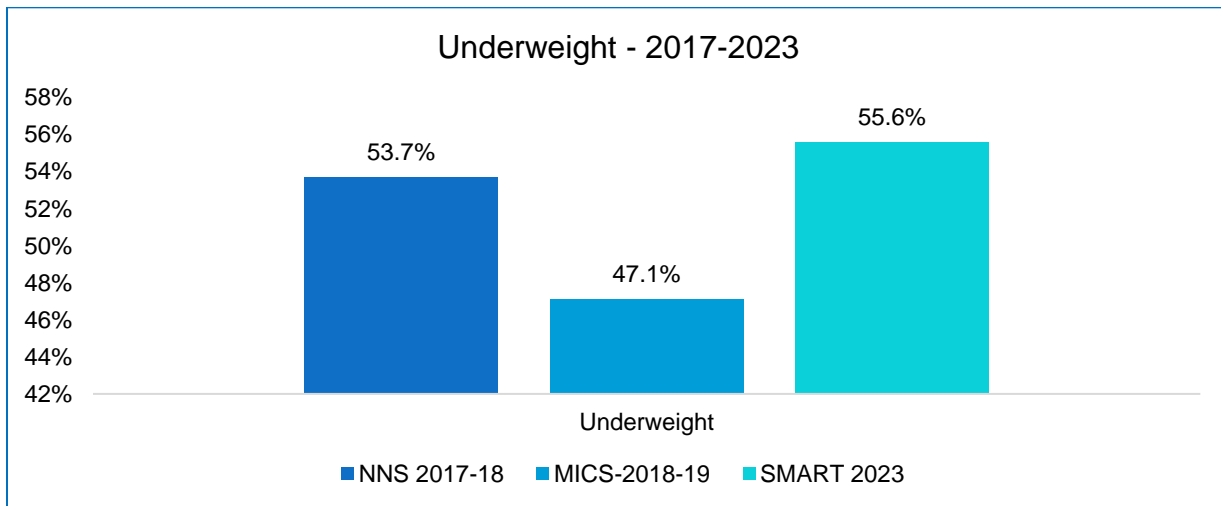


Figure 24. Underweight (2012-2023)

Regarding the breast-feeding practices, the practices indicates a progress as compared to previous years, such as early initiation of breastfeeding, dietary diversity, and limiting bottle feeding to ensure optimal nutrition and healthy feeding practices for infants and young children. However, high maternal nutrition and poor mother food diversity is the main causal factors, which

prevent mothers to continue breast feeding, additionally, bottle feeding is prevalent in MPK district. When mothers were questioned about the reasons for transitioning from breastfeeding to bottle feeding, it revealed critical aspects that need immediate attention.

In Mirpur Khas, a considerable proportion relies on surface water, a factor strongly associated with the prevalence of diseases, particularly a high incidence of diarrhea in children (44%). The data underscores a critical requirement for enhanced sanitation infrastructure, particularly in terms of expanding access to latrine facilities. The majority of households currently resort to open defecation due to the absence of available latrines. The primary reason cited for this practice is the lack of latrines, highlighting the urgent need for investments in sanitation infrastructure to ensure accessible toilet facilities for all community members. Addressing these challenges would significantly enhance sanitation, hygiene practices, and overall public health within the surveyed population.

The data on food insecurity in Mirpur Khas district is alarming, revealing a majority experiencing severe hunger, particularly among women and children whose diet diversity is notably low. While some of the population employs coping strategies, a significant proportion lacks sufficient mechanisms, indicating the imperative for comprehensive interventions to effectively address food insecurity. To tackle these challenges, targeted efforts are essential, including improving access to food resources, implementing supportive policies, enhancing coping strategies, and providing assistance to vulnerable populations, ensuring more favorable food security outcomes.

Gender imbalances in water collection responsibilities are apparent, predominantly with adult females bearing the burden, although a subset of households also includes adult males in this role. These observations underscore the necessity for targeted interventions. Prioritizing water treatment, enhancing sanitation infrastructure, promoting gender equality in domestic responsibilities, and tackling economic obstacles are crucial steps. These measures aim to ensure improved hygiene practices and enhanced public health outcomes among the surveyed population.

Main Contributing factors of high malnutrition and Food insecurity

The district of MPK has faced a series of challenges over the past 10 years, encompassing elevated inflation linked to the nation's internal economic struggles, recurring droughts with insufficient rainfall and heat waves, heavy monsoon rains leading to flooding, and outbreaks of livestock diseases resulting in significant deaths. Consequently, the current period has witnessed adverse outcomes for food security in the region.

Looking ahead, the situation is anticipated to worsen further due to the devastating aftermath of one of the most severe monsoon floods in 2022. This calamity has inflicted extensive damage on agricultural infrastructure, resulted in substantial livestock losses, and had a detrimental impact on overall food production, as well as the availability of food and livelihood opportunities. Accessing food is poised to become increasingly challenging, given the persistent rise in food commodity prices. Moreover, the post-flooding scenario is expected to contribute to a reduction in livelihood opportunities, exacerbating food insecurity in the area.

7. Recommendations

Based on the findings of the SMART Nutrition Survey in MPK, Sindh in 2023, the following recommendations and action plan are proposed for policy makers to address the identified issues:

Indicators	Areas	Actions
Malnutrition and Nutritional Status of Children	Emergency Nutrition Interventions	<ul style="list-style-type: none"> - Initiate and expansion of the nutrition programs focusing on reducing wasting, stunting, and underweight among children aged 6-59 months. - These programs should include strategies for improving dietary diversity, promoting breastfeeding practices enhancing access to nutritious food.
	Monitoring and Evaluation	<ul style="list-style-type: none"> - Study to explore the factor current nutrition and public health challenges in the current interventions - Establish a robust monitoring and evaluation system to track the effectiveness and impact of food security programs regularly. - Continuous assessment and feedback mechanisms will help in refining strategies and addressing evolving challenges effectively. - Nutrition Coverage Assessment to identify the barriers in the current programs and propose redesign.
	Collaboration Mechanism	<ul style="list-style-type: none"> - Provide training and capacity building of health care providers on nutrition related services including Infant and Young Child Feeding (IYCF) counselling, active case finding, referral and treatment of acute malnutrition. - Devise a district-level nutrition strategy from the provincial nutrition strategies and develop a monitoring framework to monitor the situation - Promote Family MUAC and collaboration with outreach team, community leaders, and NGOs is essential for effective implementation. - Scale up education programs to increase literacy rate among women
	Integrated Healthcare Services	<ul style="list-style-type: none"> - Integrate campaigns (polio, measles, vitamin A, deworming, carpet nutrition screening) to reduce the burden of vaccine, preventable diseases and ensure traceability of missed, refusal and defaulter children for immunization and nutrition. - Vaccination drive and mass campaign regularly to identify zero doses, mapping of uncovered areas through additional resources. - Integration of vaccination coverage within the existing nutrition program

	Community Education and Outreach		<ul style="list-style-type: none"> - Promote key family care messages and practices at community level by utilizing the existing community outreach network. - Utilize Social media influencers from the local community to disseminate information effectively through various social media channels - Ensure counseling at ANC visits about balanced diets, the importance of breastfeeding, proper infant and child feeding practices, and hygiene measures to prevent illnesses that contribute to malnutrition. Family planning integration in the IEC materials to promote and provide cost free services.
	Strengthen Antenatal Care Services		<ul style="list-style-type: none"> - Despite good coverage of iron/folic acid supplementation, efforts are needed to enhance family planning knowledge and ensure continuous support from family members during pregnancy and lactation. - Need investment in the family planning services is critical at all stages from ANC to PNC visits
	Improve Access to Healthcare Facilities		<ul style="list-style-type: none"> - Introduce conditional cash transfer schemes for availing ANC, PNC, routine immunization, institutional-based deliveries, WASH facilities at household level with the inclusive DRR and compliance to desired behaviour. - Post flood rehabilitation of the existing health facilities is essential to continue the service delivery - Availability of the health service providers should be ensured by comprehensive mapping to cover the gap.
	Increase in IFA Tablet Consumption		<ul style="list-style-type: none"> - Specialized IFA tablet packing is essential and should be designed to have key messages and importance in local or national language - Engagement of the Schools/institutes (Adolescent Girls) can play a vital role to promote IFA tablets and compliance.
Child Health	Enhance Child Health Interventions		<ul style="list-style-type: none"> - Strengthen deworming campaigns to increase coverage among children aged 12-59 months. - Improve documentation and awareness around measles vaccination to bridge the gap between card-based records and recall.
	Diarrhea Management (iCCM)		<ul style="list-style-type: none"> - The iCCM approach is needed to tackle the high rates of diarrhea - training of community workers to more focus on increasing access to combined Zinc or ORS treatment for diarrhea among children to further reduce morbidity and mortality associated with diarrheal episodes.

Food Security and Livelihood	Enhance Food Security Programs	<ul style="list-style-type: none"> - Develop and implement targeted food security initiatives focusing on the most affected populations experiencing severe hunger. - These programs should aim to increase access to nutritious food through subsidized food distribution, food banks, or community gardens, especially in areas with high reported food insecurity.
	Nutrition Education and Support Program	<ul style="list-style-type: none"> - Investment in income generation activities to support the livelihood of their households - Establish community nutrition programs that provide practical training and support for women to diversify their diets, emphasizing the importance of consuming a variety of nutrient-rich foods for overall health.
	Support Income Generation and Livelihood Opportunities	<ul style="list-style-type: none"> - Develop and strengthen programs that provide economic support, vocational training, and income-generating activities to vulnerable communities. Empowering individuals to earn a sustainable income can mitigate food insecurity by enhancing their purchasing power for food and other essential needs
	Strengthen Safety Nets and Social Support	<ul style="list-style-type: none"> - Expand social safety net programs such as food assistance programs, cash transfers, or food vouchers targeted at households facing severe food insecurity. - Strengthen community-based support systems to provide aid to those struggling to cope with food insecurity. - Design programs that help communities build resilience against food insecurity by promoting income-generating activities, livelihood diversification, and skills training to create alternative sources of income and reduce dependency on a single livelihood
Water, Sanitation, and Hygiene (WASH)	Enhancing Water Access and Infrastructure	<ul style="list-style-type: none"> - Post flood rehabilitation of the water schemes at household's level and promote the use of water reservation techniques. - Advocacy with district stakeholders to ensure safe/protected water sources through regular water checks.
	Improving Sanitation and Hygiene	<ul style="list-style-type: none"> - Detailed WASH assessment is needed to trace the malnourished children and diarrhea cases to identify the problem and design context specific programs. - Rehabilitation and construction of low-cost latrines to vulnerable households
	Soap Availability and Hygiene Promotion	<ul style="list-style-type: none"> - Ensure consistent availability of soap in households by implementing measures to address the reported lack of soap. Launch hygiene education campaigns emphasizing proper hand washing practices to prevent diseases. - Collaborate with local authorities, Schools, Teachers committee and NGOs to distribute soap and educate communities about its importance in maintaining hygiene and preventing illnesses.

8. Annexures

8.1. Annex I: Sphere Standards CDR and U5DR Emergency Threshold Cut-offs by Region

Region	CDR Baseline	CDR Emergency Threshold	U5DR Baseline	U5DR Emergency Threshold
South Asia	0.22	0.40	0.46	0.90
East Asia and Pacific	0.19	0.40	0.15	0.30
Industrialised Countries	0.25	0.50	0.03	0.10
Developing Countries	0.22	0.40	0.44	0.90
Least developed countries	0.33	0.70	0.82	1.70
World	0.25	0.50	0.40	0.80

8.2. Plausibility check for: MPK Report.as

Standard/Reference used for z-score calculation: WHO standards 2006

(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-7.5	>7.5	
(% of out of range subjects)			0	5	10	20	0 (0.5 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.420)
Age ratio(6-29 vs 30-59)	Incl	p	>0.1	>0.05	>0.001	<=0.001	
(Significant chi square)			0	2	4	10	0 (p=0.125)
Dig pref score - weight	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (5)
Dig pref score - height	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	2 (10)
Dig pref score - MUAC	Incl	#	0-7	8-12	13-20	> 20	
			0	2	4	10	0 (7)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>=1.20	
.			and	and	and	or	
.	Excl	SD	>0.9	>0.85	>0.80	<=0.80	
			0	5	10	20	0 (0.97)
Skewness WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (-0.01)
Kurtosis WHZ	Excl	#	<±0.2	<±0.4	<±0.6	>=±0.6	
			0	1	3	5	0 (0.18)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<=0.001	
			0	1	3	5	1 (p=0.031)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	3 %

The overall score of this survey is 3 %, this is excellent.

8.3. Annex –III Event Calendar

Month	EVENT CALENDAR 2018 TO 2023 (SINDH)										
	2018	2019		2020		2021		2022		2023	
Jan		1 Jan New Year's Day Wheat sowing Season (Dec-Jan)	55	1 Jan New Year's Day 29 Jan Basant Panchami Wheat sowing Season (Dec-Jan)	43	1 Jan New Year's Day 06 January- 01 Jamad ul sani Wheat sowing Season (Dec- Jan)	31	1 Jan New Year's Day 06 January- 01 Jamad ul sani Wheat sowing Season (Dec-Jan)	19	1 Jan New Year's Day 26 Jan Basant Panchami Wheat sowing Season (Dec- Jan)	7
Feb		5 Feb Kashmir Day 10 Feb Basant Panchami Lady finger (Jan-Mar) Dera Jaat Water melon (Feb-July) Apple (Feb-July)	54	5 Feb Kashmir Day Nokeen Saal Lady finger (Jan-Mar) Water melon (Feb-July) Apple (Feb-July) 21 feb shivratri	42	5 Feb Kashmir Day 16 Feb Basant Panchami 14 Feb-1st Rajab Lady finger (Jan-Mar)	30	5 Feb Kashmir Day 01 rajab Lady finger (Jan-Mar) Water melon (Feb-July) Apple (Feb-July)	18	5 Feb Kashmir Day 01 shaban 15 Feb- Bargah Dera jat kunday	6
Mar		4 Mar Shivaratri 21 Mar Holi 23 Mar Pakistan Day 21 march Dulhandi Bilot Mela Rabi Corp Harvesting	53	10 Mar Holi 10 march Dulhandi 23 Mar Pakistan Day 23 Mar Shab e-Meraj Rabi Corp Harvesting 10 march dulhandi	41	11 march shivratri 29 Mar Holi 12 March Shab e-Meraj 15 March- 01 Shaban 23 Mar Pakistan Day 29 march dulhandi Rabi Corp Harvesting	29	18 Mar Holi 23 Mar Pakistan Day 01 MArch Shab e-Meraj 29 march ramzan 23 Mar Shab e-Meraj Rabi Corp Harvesting	17	23 Mar Pakistan Day 08 Mar Holi Rabi Corp Harvesting	5
Apr		Sikandar Mela 3 Apr Shab e-Meraj 21 April Ridvan 19 Apr Good Friday 20 Apr Shab e-Barat Rabi Corp Harvesting	52	12 Apr Easter Monday 13 april besakhi Sikandar Mela 09 Apr Shab-e-Barat 30 Apr Buddha Purnima Rabi Corp Harvesting	40	04 Apr Easter Monday 14 Apr 1st ramzan Sikandar Mela Rabi Corp Harvesting Bargah	28	01 shawal Eid ul fitar (holi) 30 April 1st shawal Rabi Corp Harvesting Sikandar Mela	16	09 Apr Easter Monday 01 ramzan Sikandar Mela Rabi Corp Harvesting	4
May		1 May Labour Day 18 May Buddha Purnima 6 may Ramadan start	51	1 May Labour Day 16 may Ramadan start Budha punima 22 May 23-24 May Eid-ul-fitr	39	1 May Labour Day 19 May Buddha Purnima 12-13 May Eid-UL-Fitr (Holi) 14 May- 1st Shawal	27	1 May Labour Day 28 may - 01 zilqad 01-02 May Eid-UL-Fitr	15	01 shawal eidul fitar Urs Mela	3
June		5 Jun Eid-ul-Fitr 6 Jun Eid-ul-Fitr Holiday 7 Jun Eid-ul-Fitr Holiday Summer vacation	50	-	38	12 June- 1st Zilqad	26	29 june 1st zilqad	14	01 Zilhajj Heavy rainfall Storm 27 june football tournament 29 june Eid ul azha	2
July		1 Jul 1 Bank Holiday Monsoon Heavy Rain	49	1 July 1 Bank Holiday Monsoon Heavy Rain 31 Jul Eid al-Adha	37	1 Jul 1 Bank Holiday Monsoon Heavy Rain 12 July -1st Zilhajj 21 July Eid Ul Azha	25	28 July 1st Moharram 1st week of July heavy rain 10 Jul Eid al-Adha Lumpy Skin Disease animal	13	28 July 10 Moharram Lumpy Skin Disease animal	1

August	14 Aug Independence Day 18 Aug Imran Khan Selected 22 Aug Eid al-Adha 23 Aug Eid al-Adha Holiday 24 Aug Eid al-Adha Holiday Monsoon Heavy Rain 28 Aug- Akbar Bugti death anniversary	60	12 Aug Independence Day 13 Aug Eid al-Adha Holiday 15 August Hob 14 Aug Eid al-Adha Day 4 15 August Mischin 24 Aug Janmashtami Monsoon Heavy Rain 28 Aug- Akbar Bugti death anniversary	48	1 Aug Eid al-Adha Holiday 2 Aug Eid al-Adha Holiday 11 Aug Jamnashmti 14 Aug Independence Day 15 August Mischin 15 August Hob 29 Aug Ashura 30 Aug Ashura Holiday Monsoon Heavy Rain	36	14 Aug Independence Day 18 Aug Ashoor 15 August Mischin 15 August Hob 10 Aug- 1st Moharram Monsoon Heavy Rain	24	14 Aug Independence Day 27 August 1st safar 08 Aug Ashura 25 Aug flood 27 August- 1st Moharram 09 Aug Ashura Holiday Monsoon Heavy Rain 23 safar meethitikiyan (Tikray)	12	14 Aug Independence Day 27 August 1st safar 08 Aug Ashura 25 Aug flood 27 August- 1st Moharram 09 Aug Ashura Holiday Monsoon Heavy Rain 23 August Jammashmti	0
Sept	3 Sep Janmashtami Sep 23 Pashtun cultural day 6 Sep Defence Day 21 Sep Ashura Sep 7 Khatam-e-Nobuwwat day 22 Sep Ashura Holiday	59	6 Sep Defence Day 9 Sep Ashura Sep 23 Pashtun cultural day 10 Sep Ashura Holiday Sep 7 Khatam-e-Nobuwwat day	47	6 Sep Defence Day Sep 23 Pashtun cultural day Sep 7 Khatam-e-Nobuwwat day	35	6 Sep Defence Day 28 Sep Chelum 09 Sep- 1st Safar Sep 23 Pashtun cultural day Sep 7 Khatam-e-Nobuwwat day	23	6 Sep Defence Day 25 Sep 1st rabi-ul-awal 17 Sep Chelum Sep 23 Pashtun cultural day Sep 7 Khatam-e-Nobuwwat day	11		
Oct	17 Oct Durga Puja 19 Oct Dussehra 30 Oct Chelum Ghala Kishar 24 Oct Lateef Bhitai Urs	58	20 Oct Chelum 27 Oct Diwali/Deepavali 8 Oct Dussehra 13 Oct Lateef Bhitai Urs	46	8 Oct Chelum 23 Oct durga pooja 25 Oct Dussehra 30 Oct Eid Milad un-Nabi kharif Harvest season 1-3 Oct Lateef Bhitai Urs	34	20 Oct Birthday of Guru Ghala Kishar 27 Oct Diwali/Deepavali kharif Harvest season	22	3 Oct durga pooja 5 Oct dussehra 30 Oct Eid Milad un-Nabi 20 Oct rabi ul sani kharif Harvest season Ghala Kishar	10		
Nov	7 Nov Diwali/Deepavali 9 Nov Iqbal Day 21 Nov Eid Milad un-Nabi 23 Nov Guru Nanak's Birthday	57	9 Nov Iqbal Day 10 Nov Eid Milad un-Nabi 12 Nov Guru Nanak's Birthday	45	9 Nov Iqbal Day 14 Nov Diwali/Deepavali 28 Nov Giarhwin Sharief 30 Nov Guru Nanak's Birthday	33	9 Nov Iqbal Day 10 Nov Eid Milad un-Nabi 7 Nov- 1st Rabiul sani	21	9 Nov Iqbal Day 14 Nov Diwali/Deepavali 26 Nov 1st Jamadi ul awal Rabi ul sani	9		
Dec	19 Dec Giarhwin Sharief 25 Dec Quaid-e-Azam Day Pakhtun Culture Day 31 Dec New Year's Eve 22 Dec Benazeer death Anniversary	56	19 Dec Giarhwin Sharief 25 Dec Quaid-e-Azam Day Pakhtun Culture Day 31 Dec New Year's Eve 22 Dec Benazeer death Anniversary Winter vacation	44	19 Dec Giarhwin Sharief 25 Dec Quaid-e-Azam Day Pakhtun Culture Day 31 Dec New Year's Eve 22 Dec Benazeer death Anniversary winter vacation	32	19 Dec Giarhwin Sharief 25 Dec Quaid-e-Azam Day Pakhtun Culture Day 31 Dec New Year's Eve 22 Dec Benazeer death Anniversary winter vacation	20	19 Dec Giarhwin Sharief 25 Dec Quaid-e-Azam Day Pakhtun Culture Day 31 Dec New Year's Eve 22 Dec Benazeer death Anniversary winter vacation Rabi ul Awal	8		

8.4. Annex IV Cluster control Form

Line list HH #	Order of Visit	Name of HH	First Visit Outcome 1 = completed 2 = partly completed 3 = refused 4 = absent*	Number of eligible children (6-59 months)	Number of eligible children Measured (6-59 months)	Number of children under 2 (0-23 months)	HH needs to be revisited Yes or No	HH Re-visited Yes or No	Second Visit Outcome (If necessary) 1 = completed 2 = part completed 3 = refused 4 = absent	Comments
	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
