

Integrated KAP Survey

Knowledge, Attitudes, and Practices

Tharparkar District, Sindh Province, Pakistan

December 2016



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Acronyms and abbreviations

ARI	Acute Respiratory Infection
BHU	Basic Health Unit
BCC	Behavior Change Communication
CI	Confidence Interval
CMAM	Community Management of Acute Malnutrition
DHO	District Health Officer
DoH	Department of Health
ENA	Emergency Nutrition Assessment
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FSL	Food Security and Livelihoods
HANDS	Health And Nutrition Development Society
HDDS	Household Dietary Diversity Score
HEA	Household Economic Analysis
HH	Household
IDDS	Individual Dietary Diversity Score
IPC	Integrated Food Security Phase Classification
IYCF	Infant and Young Child Feeding
KAP	Knowledge, Attitudes, and Practices
KII	Key Informant Interview
LHV	Lady Health Visitor
LHW	Lady Health Worker
MICS	Multiple Indicator Cluster Survey
NSP	Nutrition Support Program
PKR	Pakistan Rupees
PLW	Pregnant and Lactating Women
PPHI	Peoples Primary Health Initiative
PPS	Proportional to Population Size
SIF	Secours Islamique France
rCSI	Reduced Coping Strategies Index
RNT	Random Number Table
RO	Reverse Osmosis
TBA	Traditional Birth Attendant
UC	Union Council
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

1. EXECUTIVE SUMMARY

The Knowledge, Attitudes, and Practices (KAP) survey was carried out to assess infant and young child feeding practices (IYCF), water sanitation and health (WASH), and food security and livelihoods (FSL) among mothers and caregivers of children aged 0-23 months in Tharparkar, Sindh. The survey was conducted in all union councils (UCs) of district Tharparkar in Sindh. In the district, HANDS, SIF International, and PPHI have implemented programs in community-based management of acute malnutrition (CMAM), FSL, and WASH.

Information gathered was useful in identifying barriers and facilitating factors to young child health, and in developing appropriate recommendations to inform programming in the district. The information was gathered from mothers, other community members, and selected key informants on IYCF practices, household-level WASH and personal hygiene, and household food security. Data collection involved mixed methods, employing both quantitative (household questionnaires) and qualitative (focus group discussions and key informant interviews) techniques. Out of 635 households, a total of 245 mothers were interviewed who had children aged 0-23 months. In Tharparkar, living in a joint family system is common, which leads to more than one mother with children aged 0-23 months per household. The standard definition of a household was followed throughout the assessment.

Data collection was closely supervised by monitoring staff and survey manager throughout the survey. Each questionnaire and data sheet was checked on a daily basis for missing data prior to data entry. Based on the questionnaire reviews, supervisors provided feedback to enumerators every day before enumerators departed for data collection the next day.

With regard to IYCF, survey results indicated that less than half (44%) of the mothers exclusively breastfed their child during the first six months and only 25% started breastfeeding within 1 hour of birth. Negative perceptions of colostrum still persist within the community. Although, breastfeeding was predominant, mothers often introduced other liquids such as goat milk, honey and amaltas¹ in the first three days after birth. Infants were predominantly breastfed till 4-6 months of age at which time they begin to consume complementary foods. However, only 54% of children 6-8 months were given complementary food at the time of the survey, and the use of bottle-feeding was quite common (33% of children 6-23 months). Survey findings showed a low level of dietary diversity (*low consumption of meats and poultry products and high consumption of cereals and vegetables*) and inadequate frequency of feeding, especially for non-breastfed children. The poor dietary diversity and feeding frequency contributed to the overall low proportion of children who received the minimum acceptable diet (10.7%).

The main source of information on IYCF practices were family members, especially grandmothers; lady health workers (LHWs) and traditional birth attendants (TBAs). In some cases, the LHWs and TBAs lack training on appropriate IYCF practices. The survey found that some health practitioners gave inappropriate information to mothers, such as promotion of infant formula. Furthermore, women do not feel comfortable seeking health services when no female health staff is present.

The WASH situation is critical among survey participants; majority of the population used open wells as their source of water, which increases the likelihood of water contamination. Nevertheless, the vast majority of participants felt that their water was safe to drink. Over half of the households required at least an hour or more to reach to the source of water. The fetching water for the household was the main responsibility of the adult women and girls. Most participants did not have access to any latrines and practiced open defecation; over three-quarters of participating households did not have any designated handwashing location.

Food security indicators were also assessed, with more than half of the participating households reporting a medium or low household dietary diversity score. Among participating households, 89%

¹ Extract of herb traditionally used

had adopted one or more food-based coping strategies and 12% had adopted all five food-based coping strategies.

Table 1: Summary of all Indicators

1. Infant and young child feeding Indicators (WHO-standards 2010)				
1.IYCF indicators WHO 2010	Age (months)	n	Percentage	CI (95%)
1. Children ever breastfed	0-23 Months	245	99.2%	98.4-99.9
2. Timely initiation of breastfeeding	0-23 Months	245	25.7%	20.2-31.6
3. Exclusive breastfeeding under 6 months	0-5 Months	77	44.2%	33.1-55.3
4. Predominant breastfeeding under 6 months	0-5 Months	77	46.7%	35.6-57.8
5. Continued breastfeeding at 1 year	12-15 Months	50	64.0%	50.7-77.3
6. Continued breastfeeding up to 2 years	20-23 Months	23	43.5%	23.2- 63.8
7. Age-appropriate breastfeeding	0-23 Months	245	53.9%	47.7-60.1
8. Introduction of solid, semi-solid or soft foods	6-8 Months	31	54.8%	37.2-72.3
9. Milk feeding frequency for non-breastfed infants	6-23 Months	43	18.6%	6.9-30.2
10. Minimum meal frequency-Breast fed Children	6-23 Months	125	49.6%	40.8-58.4
11. Minimum meal frequency- Non-Breast fed Children	6-23 Months	43	30.2%	16.9-43.9
12. Minimum dietary diversity (4 or more food groups)	6-23 Months	168	17.9%	12.1-23.7
13. Minimum acceptable diet (Minimum meal & Min diet diversity)	6-23 Months	168	10.7%	6.0-15.4
14. Bottle feeding	6-23 Months	245	33.5%	27.6-39.4
15. Consumption of iron-rich or iron-fortified foods(At least 1 rich iron food)	6-23 Months	168	25.6%	19.0-32.2
2. WASH indicators				
2.1. Main source of water in community is "Protected well"	Household	228	57.9%	51.5-64.3
2.2. Distance to main source of water is 1-2 Hours	Household	228	28.5%	22.6-34.4
2.3. Adult women and girls responsible for fetching water	Household	228	73.7%	68.0-79.4
2.4. Water quality "not tested" (highest response)	Household	228	79%	73.7-84.3
2.5. Perception that water is safe for drinking	Household	228	90.3%	86.5-94.1
2.6. Local water treatment	Household	228	74.6%	68.9-80.2
2.7. Using protected toilet	Household	228	28.9%	23.0-34.8
2.8. Practicing open defecation	Household	228	71.1%	65.2-76.9
2.9. Disposal of infant stool (Thrown into garbage + Thrown into drainage)	Household	228	91.7%	88.1-95.3
2.10. Waste water drainage system (Just flow open in and outside home)	Household	228	25.9%	20.2-31.9
2.11. Dump solid wastes close to their houses	Household	228	70.6%	64.7-76.5
2.12. Identified handwashing location	Household	228	24.1%	18.5-29.6
2.13. Hand washing with water only (highest response)	Household	228	40.4%	34.0- 46.8
2.14. Diarrhea (Last 2 weeks recall of the household)	Household	228	64.9%	58.7-71.1
3. Food Security				
3.1. Household dietary diversity score (HDDS)	Household	228	5.3 Score	5.10-5.54
3.2. Household Reduced Coping Strategy Index (rCSI)	Household	228	7.5 Score	6.62-8.39

2. INTRODUCTION

The district Tharparkar was established in 1990. It is a desert region located in the southeastern part of the country. It is bordered by districts of Mirpurkhas and Umerkot on the north, district Badin on the west and India on the east and south.

The district has a total area of 19,638 square kilometers²; it is primarily a desert area. The district is known for the pink granite found in the Karronjhar hills, located in taluka Nagarparkar. The district is intensively hot in summer and cold in winter. The maximum and minimum temperatures remain around 28°C and 9°C, respectively, in winter; while temperatures reach above 42.4°C in May. Administratively, the district is divided into seven talukas; Mithi, Islam Kot, Nagar Parkar, Chahchro, Diplo, Dahli, and Kaloi. There are 44 union councils in the district.

District Tharparkar has a population of 914,291³ according to the Pakistan census of 1998. The main source of water is rain, which is often scarce; the maximum-recorded rainfall is only three inches. Due to a failure of monsoon rains since November 2013; a drought has occurred leading to severe shortages of food, fodder, and water. Due to this drought, the government has declared an emergency in the entire district.

The Sindh Multiple Indicator Cluster Survey (MICS⁴) 2014 identified high undernutrition rates across Sindh. Among children under five years of age; 15.4% were wasted, 48% were stunted, and 42% were underweight,⁵ which is above WHO emergency thresholds. In Tharparkar, these indicators showed even more severe levels of undernutrition; with 32.9% of wasting, 63.0% of stunting, and 68.8% of underweight among children under five. Poor infant and young child feeding practices, lack of hygiene and sanitation, and food insecurity are contributing factors that affect the nutritional status of young children and ultimately impact child survival.

IYCF practices impact the nutritional status of young children. In Tharparkar, according to MICS 2014, timely initiation of breast feeding was 31.4%, exclusive breast feeding was 50.8%, age appropriate complimentary feeding was 63%, minimum meal frequency was 47.5%, while 48.9% of mothers were practicing continuous breastfeeding up to two years. Age appropriate breastfeeding was 59.8% and 3.4% of mothers with children aged 0-23 months practiced bottle feeding. Only 1.0% of children aged 6-23 months received the minimum acceptable diet.

In addition to the child's dietary intake, water and sanitation are factors, which influence child health. According to the MICS 2014, 90.5% of households in Sindh had access to an improved source of drinking water, whereas 38.8% of households consumed drinking water contaminated with *E. coli*. Moreover, 53.6% of households drank water from sources contaminated with total coliforms (including *E. coli* and other coliforms). In Sindh, 72.9% of the population lived in households with improved sanitation facilities; though, this percentage decreased to 47.7% when only the rural population was considered. In Sindh, 28.4% of children under five years had had an episode of diarrhea in the preceding two weeks. However, when focusing on Tharparkar, 41.8% of households did not use any water treatment for drinking water, 77% practiced open defecation, and 18.3% used protected toilets. Mother's workload directly and indirectly affects the child's access to water since 86% adult women and girls were responsible for fetching water from distant places within the district.

According to the MQSUN report 2015, Sindh has the lowest rate of food security compared to other provinces, with only 28% of the population considered as food secure. In Tharparkar, the staple crops for selling and consumption are millet and beans and livestock production is the primary source of income. Tharparkar depends on rainfall for crop and livestock production; the recurrent droughts have had a severe impact on livelihoods, household income and food security. Famine-like droughts have

² https://en.wikipedia.org/wiki/Tharparkar_District

³ Pakistan census 1998

⁴ <http://sindhbos.gov.pk/mics-report/>

⁵ MICS Survey Sindh 2014

affected the district in 1987, 2000, and 2013. Provincial Disaster Management Authority (PDMA) Sindh has established the district as a drought-hit area, with an emergency status declared in the most-affected talukas of Mithi, Islamkot, Diplo, Chachro, Dahli, and Nagarparkar. Furthermore, in December 2014, the district was classified as “severely food insecure (emergency)” according to the FAO’s Integrated Food Security Phase Classification (IPC); the IPC also designated Tharparkar outlook as “likely to deteriorate” with regard to its food security status.

The Sindh Drought Needs Assessment (SDNA) conducted in 2016 determined that up to two-thirds of the population lost their livestock due to the drought. In June 2015, about 75% of the population did not have sufficient resources to cover their basic survival and protection needs.

District Tharparkar is one of the primary target areas for nutrition assistance. As highlighted by the SDNA⁶ 2016; compared to other zones, proportionally more households in the southeast zone (where Tharparkar is located) have received different types of assistance; particularly free food, nutritional support, livestock support, and drinking water. The government of Sindh’s Nutrition Support Program (NSP) has been introduced in the district to cover the need for SAM treatment programs, and provide nutrition supplements to pregnant and lactating women. Outreach programs are carried out through LHWs in all union councils. Under the PC-1, HANDS provides nutrition and health services to the drought-affected population of all 44 union councils of Tharparkar, through funding provided from the World Bank. However, many health facilities in the district do not have the required number of LHWs for providing nutrition and IYCF services to community members. In addition, USAID/Jhpiego provides nutrition support to the district by focusing on raising awareness and conducting capacity-building sessions. Despite the substantial assistance provided through these programs, living conditions in Tharparkar remain poor for many households.

⁶ <http://reliefweb.int/report/pakistan/pakistan-sindh-drought-needs-assessment-august-2016>

[illegible]

The main objectives of the KAP survey were:

- ## 4. METHODOLOGY

A cross-sectional population survey was conducted in all union councils of Tharparkar district. The survey used quantitative and qualitative methods to collect relevant information. The data was collected through household questionnaires, Focus Group Discussions (FDGs) and Key Informant Interviews (KIIs) within the community. To determine the survey area, a list of union councils, villages and all other necessary information (average household size, population, etc.) was taken from the 1998 Census of Pakistan, and validated by the concerned district authorities. The following IYCF, FSL and WASH indicators were used for data collection:

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Table 2 Indicators of interest

IYCF Indicators (WHO Guidelines 2010)	
1	Timely initiation of breastfeeding
2	Exclusive breastfeeding under 6 months
3	Continued breastfeeding at 1 year
4	Age appropriate complementary feeding
5	Minimum dietary diversity
6	Minimum meal frequency (breastfed children)
7	Minimum meal frequency (non-breastfed children)
8	Minimum acceptable diet
9	Consumption of iron-rich or iron-fortified foods
10	Children ever breastfed
11	Continued breastfeeding at 2 years
12	Age-appropriate breastfeeding
13	Predominant breastfeeding under 6 months
14	Milk feeding frequency for non-breastfed children
15	Bottle feeding
WASH Indicators	
16	Diarrhea prevalence
17	Designated handwashing location with soap/ash and water available
18	Critical handwashing times
19	Access to improved water source
20	Use of latrine / latrine characteristics
21	Disposal of child stools
FSL Indicators	
22	Household Dietary Diversity Score (HDDS)
23	Reduced Coping Strategy Index (rCSI)

4.2 Study Period

The study period was November and December 2016. The data collection took place in the first two weeks of November 2016.

4.3 Study Population

a) Mothers of children under two years of age: To assess IYCF practices, relevant information was gathered from the mothers of children who were under two years of age via household questionnaires in all selected villages.

b) Pregnant and breastfeeding women: To gauge the level of knowledge of women on IYCF, relevant information was gathered from pregnant and breastfeeding women via focus group discussions in all selected villages.

c) Households: To gauge the FSL and WASH situation, relevant information was gathered via household questionnaires in the intervention areas.

4.4 Study Design and Sample Size

Villages were considered as the smallest geographical unit (when required, groups of small villages were merged into clusters). The primary sampling unit was the village and the basic sampling unit was the household, considering households that had a child aged 0-23 months. The sampling was completed using the following two-stage process:

Stage 1: Random selection of clusters

The survey area was divided into small distinct villages. An approximate size of the population for each village was estimated. Clusters were assigned randomly using the Emergency Nutrition Assessment (ENA) software, which allocates cluster assignment on the proportion of the village's population to the total population. This method is known as probability proportional to population size (PPS).

Stage 2: Selection of household

At cluster locations, data collection teams confirmed the location of the village and number of households in the area. After confirming the village and number of households, one of the following methods was used for household selection:

- I. **Simple random sampling:** When an updated list of all households in the village was available or it was possible to make a list for all the households, households were randomly selected by using a random number table (RNT).
- II. **Systematic random selection of households:** In cases where it was not possible to list all households in the village, the households were selected based on systematic random sampling. When the team arrived at the location identified for the cluster, they confirmed the number of households in the area, and listed all these households. Systematic sampling was employed, using an appropriate sampling interval to move from one household to another. When the assessment team reached the first selected household, they asked whether there was at least one child aged 0-23 months. If there was a child aged 0-23 months, the team collected data and then moved to the next household based on the sampling interval.
- III. **Segmentation:** In some high-density population clusters (having more than 100 households), SMART survey standard procedure was applied before using simple random sampling or systematic sampling; for this purpose, the whole cluster was divided in almost equal parts (subunits) according to the geographical conditions of the area. One subunit was randomly selected for data collection.

For IYCF assessment, a questionnaire was administered for each child aged 0-23 months living in the selected household. The child's primary caregiver filled the study questionnaire. If the child and/or the caregiver were temporarily out of the house, the assessment team revisited the house to collect the information at a later date and time. This process was repeated until the required number of households in a cluster was achieved, and sufficient children aged 0-23 months were assessed for IYCF practices.

4.6 Sample Size

The sample size derived using the formula;

$$N = 2 \left[t^2 \left(\frac{p \times q}{d^2} \right) \right]$$

Parameters defined below.

- N= Sample size (number of children)
- t= test statistics (error risk: 1.96 at 95% confidence interval)
- p= Estimated prevalence (calculated for all indicators)
- q= 1-p (for estimated prevalence 50%: 0.5) *
- d= Desired Precision (7%) and design effect for cluster survey 1.3
- Non response rate: 3%

Note: *Estimated prevalence was calculated for all indicators and the highest sample size was selected for assessment; 241 children.

Conversion of sample size to the number of households to be visited: Based on MICS Sindh, an average household size of 7.2 members and a proportion of children under five of 13.6% were used to determine the number of children aged 0-23 months and total number of households (635 households) to be visited to reach the sample size.

Out of a total sample of 635 households, 245 mothers were interviewed in 228 households with children aged 0-23 months. Since living in a joint family system was common in the community, there

was often more than one mother with a child aged 0-23 months per household. A standard definition⁸ of households was used throughout the assessment.

Each village in the district was considered as a cluster and the sample clusters were selected with probability proportionate to size (PPS). All villages along with their respective populations were entered into the ENA software; the software automatically selected the number of clusters to be included in the study. Data was collected from 42 clusters⁹. All indicators related to IYCF, , food security, and WASH were collected from all households, whereas FGDs and KIIs were conducted in randomly selected clusters.

4.7 Data Collection Methods

a) Household questionnaires: Information was collected on IYCF, FSL, and WASH from participating households using a quantitative questionnaire. The questionnaire respondents were women with children aged 0-23 months, however questions related to WASH and food security were completed by the head of household or any person in the household.

b) FGDs: The village residents participated in FGDs to share their opinions on the WASH and FSL situation. Participants were purposively selected to take into account homogeneity between and within UCs in terms of culture, livelihood activities, WASH, and ecological factors. FGDs were conducted with breastfeeding mothers and grandmothers. Male participants consisting of teachers, religious leaders, farmers, vaccinators, and shopkeepers also participated in FGDs. Each FGD had 8-12 members who participated in the discussion. The data collection techniques used were listening, note taking and observing participants.

c) KIIs: Key informants were Lady Health Workers (LHWs), Lady Health Visitors (LHVs) and Traditional Birth Attendants (TBAs); who discussed IYCF practices and barriers to IYCF and other health practices for PLW.

All data collection tools were translated to Urdu, pilot tested, and revised to strengthen the quality of data.

4.8 Training and Formation of Survey Teams

Survey team members received four days of comprehensive training on overall processes and scope of the study including sessions on questionnaires, interview guidelines, sampling process, and household selection (Annex A). Training included role-play to facilitate understanding of study tools and interviewing techniques. The training consisted of a three-day in-house session, where study tools were tested on the fourth day. Based on feedback, amendments were made to the tools when appropriate.

4.9 Data Analysis

Data was verified on a daily basis in order to correct anomalies and findings were shared with the team on the following day. Data was re-coded into the relevant indices as per IYCF indicators. Data on IYCF, WASH and food security was analyzed using EPI Info Software and Microsoft Excel 2016. Simple descriptive statistics to obtain frequencies and proportions were derived and interpreted accordingly for each indicator. Qualitative data was organized into themes within the scope of the KAP objectives.

5. RESULTS

All mothers with children aged 0-23 months were interviewed; with 115 boys and 130 girls. In households where more than one child under two years of age was present, with the same mother or different mothers, information was gathered for each child on separate questionnaires. Information on WASH and food security was gathered at the household level only.

⁸ One or more people living at the same place and eating in one pot

⁹ Households having 0-23 months of children

Table 3: Detailed information of data collected in the survey

Method respondents						
Section	Method/ respondents	No	Method/ respondents	No	Method/ respondents	No
IYCF	Mother interviewed	248	FGDs	37	KII	12
	Mothers with children aged 0-23 months		PLWs CBA ¹ Grandmothers Mother in law		LHW:3 KIIs TBA: 2 KIIs Private Practitioners: 3 KIIs Doctors: 4 KIIs	
WASH	HH participant	228	FGDs	32	KII	10
	Mother HoH ² HH ³ member		Males in the community Community leaders		Social worker: 3 Local committee members: 6 Village chief: 1	
Food security	HH participant	228	FGDs	35	KII	14
	Mother HoH HH member		Males in the community Community leaders		Social worker: 5 Local committee members: 4 Teachers: 2 Village chief: 2	

1. CBA: Community Birth Attendant

2. HoH: Head of Household

3. HH: Household

5.1 Infant and Young Child Feeding

Proper IYCF can increase the chances of child survival; it can also promote optimal growth and development, especially during the critical window of birth to 2 years of age. Breastfeeding helps protect children from diseases, provides an ideal source of nutrients, and is economical and safe. However, many mothers do not start to breastfeed early or exclusively for the recommended 6 months or stop breastfeeding before the 6 months are completed. Mothers are often pressured to switch to infant formula, which can contribute to growth faltering, micronutrient deficiency, and can be unsafe if hygienic conditions, including safe drinking water are not readily available.

UNICEF and WHO¹⁰ recommend that infants be breastfed within one hour of birth, exclusively breastfed for the first six months of life and continue to be breastfed up to 2 years of age and beyond. Starting at 6 months, breastfeeding should be combined with safe, age-appropriate feeding of solid, semi-solid and soft foods.

Survey participants showed varying levels of knowledge regarding breastfeeding, complementary feeding, dietary diversity, meal frequency, and bottle-feeding. Mothers' knowledge seemed to be strongly influenced by the individuals around her, such as grandmothers, health workers, and other mothers in the community.

¹⁰ WHO (2003); Global Strategy for Infant and Young Child Feeding

Table 4 3-4 Summary of infant and young child feeding practices

Infant young child feeding Indicators (WHO-standards 2010)				
IYCF indicators WHO 2010	Age (months)	n	Percentage	CI (95%)
1. Children ever breastfed	0-23 Months	245	99.2%	98.4-99.9
2. Timely initiation of breastfeeding	0-23 Months	245	25.7%	20.2-31.6
3. Exclusive breastfeeding under 6 months	0-5 Months	77	44.2%	33.1-55.3
4. Predominant breastfeeding under 6 months	0-5 Months	77	46.7%	35.6-57.8
5. Continued breastfeeding at 1 year	12-15 Months	50	64.0%	50.7-77.3
6. Continued breastfeeding up to 2 years	20-23 Months	23	43.5%	23.2- 63.8
7. Age-appropriate breastfeeding	0-23 Months	245	53.9%	47.7-60.1
8. Introduction of solid, semi-solid or soft foods	6-8 Months	31	54.8%	37.2-72.3
9. Milk feeding frequency for non-breastfed infants	6-23 Months	43	18.6%	6.9-30.2
10. Minimum meal frequency-Breast fed Children	6-23 Months	125	49.6%	40.8-58.4
11. Minimum meal frequency- Non-Breast fed Children	6-23 Months	43	30.2%	16.9-43.9
12. Minimum dietary diversity (4 or more food groups)	6-23 Months	168	17.9%	12.1-23.7
13. Minimum acceptable diet (Minimum meal & Min diet diversity)	6-23 Months	168	10.7%	6.0-15.4
14. Bottle feeding	0-23 Months	245	33.5%	27.6-39.4
15. Consumption of iron-rich or iron-fortified foods(At least 1 rich iron food)	6-23 Months	168	25.6%	19.0-32.2

I. Timely Initiation of breastfeeding

Among children born in the last 24 months and who were still living at the time of the survey, there were 25.7% who were put to the breast within one hour of birth (52.1% in boys and 47.9% in girls). There was a total of 44.2% of children aged 0-5 months who had received only breast milk during the last 24 hours.

Most caregivers initiated breastfeeding within 2 to 3 hours of the child's birth. The mothers were not usually able to put the child to the breast within one hour because "the infant had to be washed first". Some mothers believed that "a mother cannot begin breast-feeding until she sees the stars in the sky at night", while others believed that "they did not have enough milk during the first three days after the child's birth". During these initial days, they would instead give the child goat milk because it is easily accessible in the community.

Survey results showed that 67.1% of mothers' breastfed colostrum to their infants, while 22.9% of mothers did not provide colostrum due to misperceptions in the community. Within the community, some mothers believe that colostrum is "bad milk", and therefore colostrum should be thrown away "because it is thick and cause[s] an upset stomach." Cultural practices such as feeding butter to newborns, or giving sweets, honey, water and tea are common in these areas. Honey is provided to the newborn to initiate vomiting of any bad material out from the stomach. Regardless of these ill perceptions towards colostrum, respondents reported receiving information sessions from health workers on the importance of colostrum and exclusive breastfeeding. Mothers reported that these sessions raised awareness in the community about how essential colostrum is to feed their babies. Nevertheless, some mothers continued to throw away colostrum since they perceived that "colostrum is thick, and the yellowish color means it is not good for child health, and that it's a bad milk."

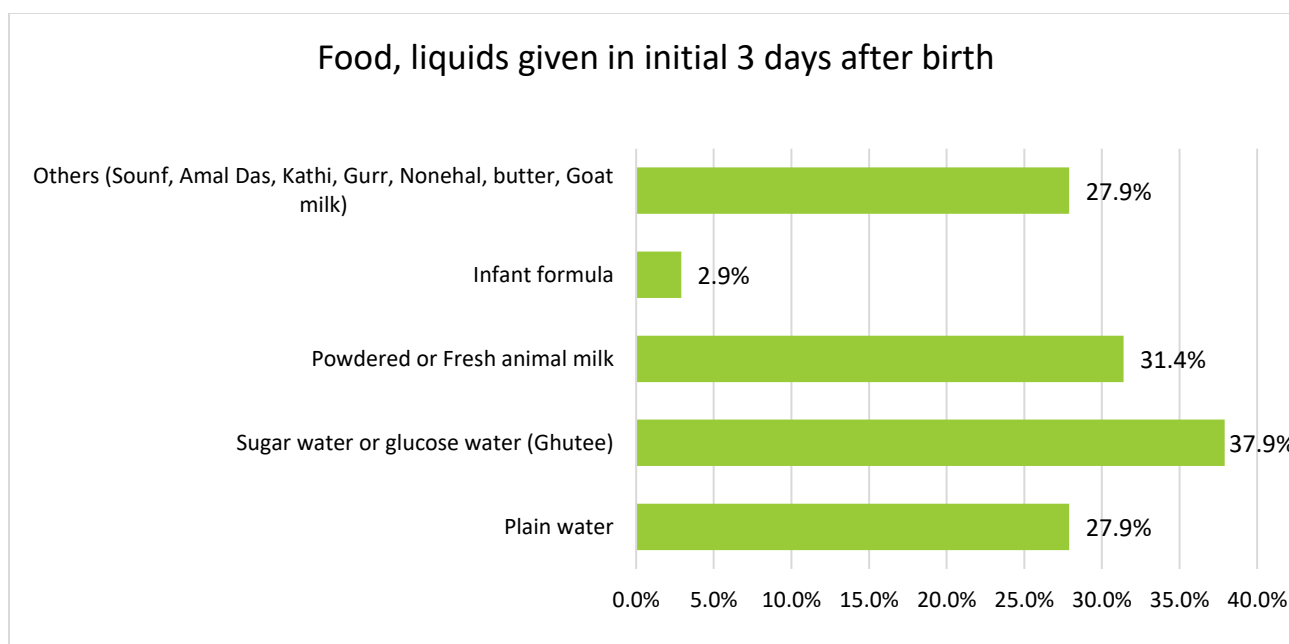


Figure 2 Foods given to newborn infants

I. Exclusive breastfeeding

Exclusive breastfeeding for the full first six months was uncommon; instead, solid or semi-solid foods were typically introduced when the child was 4-5 months of age. Sometimes the reason for breastfeeding cessation was mother's health; if the mother has any illness, she will feed the child food rather than breastmilk. Survey results revealed that 38.2% of boys are exclusively breastfed, while 68.8% girls are breastfed exclusively.

Additionally, mothers described a "transitional" three-day period after birth, referring to this period as the phase of "bad milk" or "lack of enough milk." At this time, the mother introduced goat milk or other substances, constituting a break from exclusive breastfeeding. Other than goat milk, mothers mentioned feeding honey, extracts of "amaltas" (Cassia fistula), and kathi (extract from mixture or different local herbs) to infants. If a child was perceived to be low weight at birth, that child was fed butter since mothers believed it would provide more energy. Ghutee, a herbal concoction, was provided by mothers to ease child stomach pain. Commercially available gripe water (commonly referred to as Nonehal) was bought from chemists' shops for easing the child's stomach pain and to promote child health.

When the child reaches four months of age, most mothers are assured that their child "can eat other foods that make a child strong." Some common foods and fluids given as complementary feedings include infant formulas such as Lactogen 1-2, mashed potatoes, boiled rice, chapatti, and lassi. Mothers expressed that due to their heavy workloads, they cannot continue relying on breast milk and other liquids only; instead, they introduce solid and semi-solid foods as a way of "reducing the child's hunger, which cannot be finished by breast milk alone and which makes the child cry constantly." Another practice adopted by mothers was giving boxed milk to the young child if she did not have enough money to purchase infant formula.

II. Complementary feeding

Complementary feeding is the process of starting other foods and liquids along with breastmilk as needed when breastmilk alone is no longer sufficient to meet the nutritional requirements of an infant. Complementary feeding is generally recommended for children aged 6-23 months. There were 54.8% of children aged 6-8 months who had been introduced to complementary feedings (solid, semi-solid, or soft foods) in a timely manner (47.1% boys and 52.9% girls). However, a significant proportion of mothers introduced solid, semi-solid, and soft foods before their children reached six months of age.

Among children aged 6-9 months, there were 63.2% who had received breast milk and had consumed solid, semi-solid, or soft foods at least once in the past 24 hours.

III. Minimum meal frequency

The proportion of children 6–23 months of age, who received solid, semi-solid, or soft food or milk feeds the minimum number of times was 49.6% in breastfed children and 30.2% in non-breastfed children. Mothers mostly relied on liquids only instead of semi solids or soft foods. Average meal frequency of children aged 6-23 months was 2-3 times a day. Mothers fed their children usually in the morning and in the evening.

IV. Minimum dietary diversity:

There were 17.9% of children 6–23 months of age who received foods from 4 or more food groups out of seven main food groups. This was a very low proportion to meet the minimum dietary diversity standard. The dietary diversity scores for breastfed and non-breastfed children could not be directly compared because breast milk is not included in the seven food groups.

Children were usually dependent on the available seasonal foods prepared for all family members. As most families were poor, the available foods were often limited. During festivals, families prepared special foods (halwa, or other foods cooked with high proportion of oil), which added variety to the child's diet. However, these special foods are not suitable for young children. Due to cultural beliefs, certain foods are associated with negative health impacts and therefore not provided to children, such as yogurt during winter, spicy foods to children under eight months of age and semolina (sooji) to children under two years of age. It is assumed that semolina provided to children will cause abdominal pain.

V. Minimum acceptable diet and consumption of iron-rich food

Minimum acceptable diet is a composite indicator reflecting the adequacy of complementary feeding practices. It incorporates minimum dietary diversity and minimum meal frequency based on a 24-hour dietary recall. Only 10.7% of children aged 6-23 months received a minimum acceptable diet. Among children aged 6-23 months, there were 25.6% who had received at least one iron-rich food in last 24 hours.

Complementary feedings usually begin when the child is between four and seven months of age. Early foods include mashed potatoes, rice porridge, and biscuits. Animal milk and powdered milk are often given to young children. The start of complementary feeding depends on the child's eating habits and on the mother's workload; if the mother is very busy then the child often receives other liquids at a very young age, such as tea. Frequency of feedings usually depends on the child's hunger; often 2-4 times a day. Younger children have lower meal frequency than older children. At four months, mothers begin to increase the energy density of an infant's meals.

VI. Bottle-feeding

Bottle-feeding was assessed by the percentage of children aged 0-23 months who were bottle fed during the previous day. The survey identified that 33.5 % of children aged 0-23 months were bottle-fed during the previous day. Mothers viewed bottle-feeding as convenient. Mothers usually left the bottle filled with formula with infants for continuously feeding while they were away or unavailable to breastfeed on demand. Expressing breastmilk in a cup was rarely reported. Mothers often used bottle-feeding when they needed to work away from home on farms or in fields. At night, when mothers needed to rest, bottle-feeding was used to give the infant milk or other fluids. Bottle-feeding usually began when the child was 4-6 months. Sometimes, mothers provided an empty bottle to calm the child. Bottles were identified to be in unhygienic conditions.

Health care practitioners have contributed greatly to the mothers' use of infant formula. If a mother had challenges while breastfeeding, health staff advised her to use infant formula. Though this information may be directed at specific mothers with serious challenges while breastfeeding, the message has been shared widely among mothers, leading them to believe that formula milk is superior to breast milk. Mothers reported purchasing infant formula or powdered milk when they could afford it.

VII. Continued breastfeeding

Mothers reported breastfeeding children on average up to 20-23 months of age. Some mothers stated that they stopped breastfeeding before the child reached 24 months of age since they became pregnant. A limited number of mothers breastfed their children up to two years of age and beyond. Among children aged 12-15 months, a total of 64% were continuing to be breastfed. However, only 43.5% of children aged 20-23 months were continuing to be breastfed.

VIII. Challenges in IYCF practices

When discussing challenges in IYCF, the most commonly mentioned issue was the lack of adequate milk. Moreover, conflicting IYCF messages may have caused confusion among mothers and lead to the adoption of sub-optimal practices. For instance, some mothers did not breastfeed when the child was ill.

Another challenge is the lack of awareness and participation in child feeding by males. The primary caretaker, usually the mother, is expected to take care of child feeding alone; men rarely discuss issues about child feeding with the caretakers. Generally, children and adults eat their meals separately.

Mothers expressed discouragement about health centers due to unavailability of staff. In particular, there were few female staff, and women felt hesitant to share their challenges with male staff at health centers.

Participating mothers linked diarrhea and vomiting to undernutrition. Although some houses had inadequate hygiene conditions, mothers also connected poor hygiene and unsafe drinking water to diarrheal diseases. They recognized the importance of having a clean breast before beginning breastfeeding, and of washing hands before putting the child to the breast. Despite this knowledge, if water availability was limited mothers were unable to follow these practices.

Furthermore, health-seeking behaviors among mothers showed that 40% of mothers sought treatment from traditional healers, community health workers or grandmothers (Figure 3).

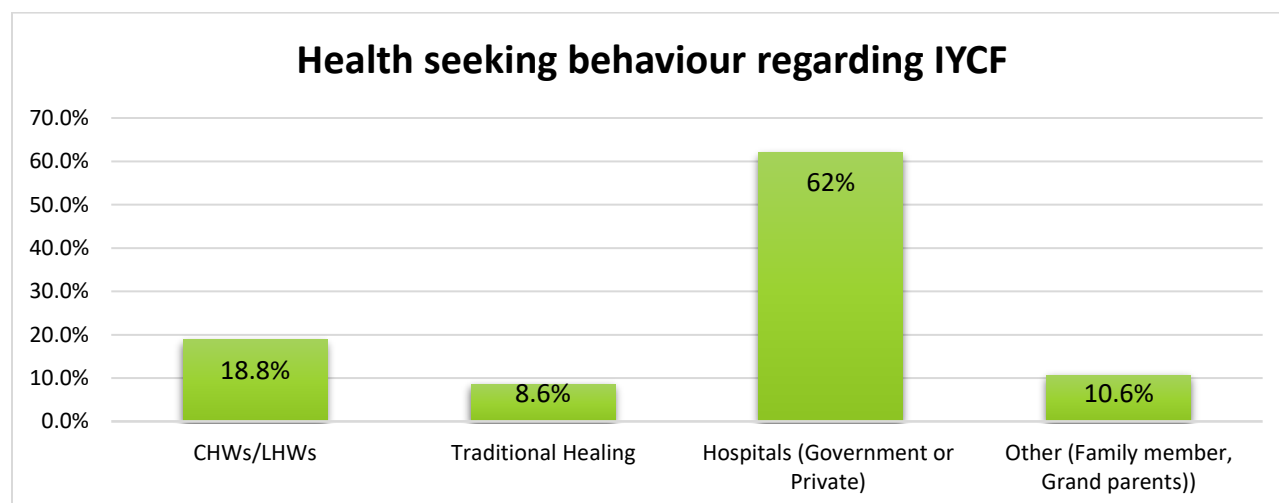
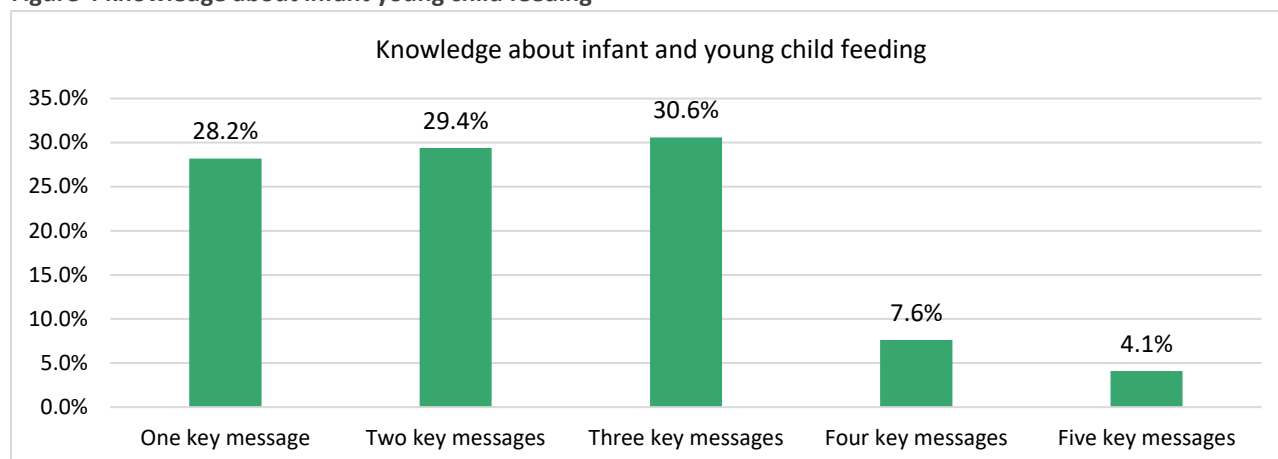


Figure 3 Health seeking behavior of mothers

IX. Knowledge regarding IYCF

Essentially, caretakers had various levels of knowledge regarding breastfeeding and complementary feeding. Interviewed mothers recalled these IYCF messages; number of key messages¹¹ recalled and the sources from which they heard these key messages are shown in figures 4 and 5.

Figure 4 knowledge about infant young child feeding



The main sources to provide key IYCF messages were the community health workers and family members, 52.9% and 38.8%, respectively. The most influential family members were identified as grandmothers, mothers in law and other family elders not living within the household.

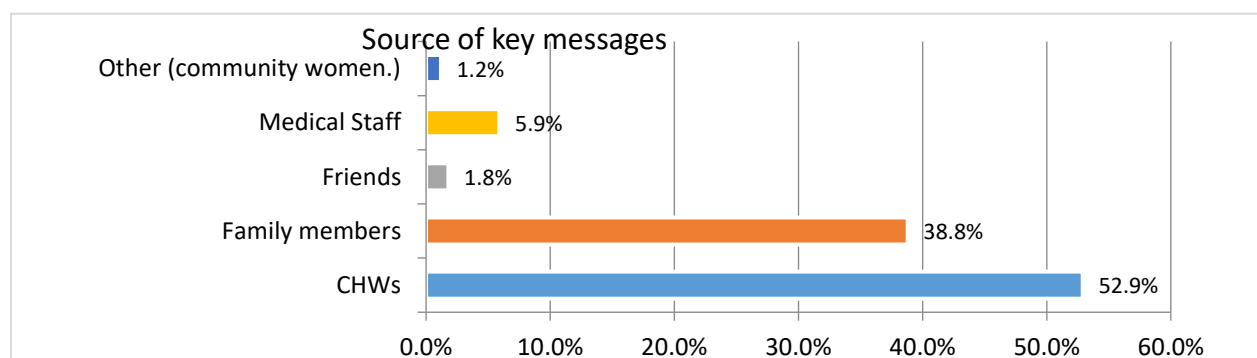


Figure 5: Key messages dissemination source

X. Summary of barriers and facilitating factors for appropriate IYCF practices

Based on the findings, there were numerous factors contributing to sub-optimal IYCF practices.

Gender barrier: Lack of female health workers (FMO, LHW and LHV) in health and nutrition facilities prevented women from seeking health services. The work burden of existing government staff prevented them from properly focusing on IYCF practices. Most of the health staff were males, which made women feel uncomfortable about consulting on breastfeeding or pregnancy issues.

Insufficient milk production: Advice for new mothers about strategies for resolving insufficient milk production were rare; therefore, women often felt that they were not producing enough milk and begin to introduce other foods. Due to weakness in IYCF counseling, some health staff advised mothers to use infant formula when they faced difficulties during breastfeeding. Medical staff was even directing them to use infant formula as early as 3 months of age.

¹¹ 1. Early initiation of BF, 2. Exclusive breast feeding, 3. Age appropriate CF, 4. Continuous BF up to 2 years 5. If any key message from IYCF core indicators

Lack of awareness: Although perceptions about colostrum are improving, many women still discarded their colostrum as “bad milk” due to family traditions. Bottle-feeding was common, even in children under six months of age.

Short birth spacing: When mothers learnt that they were pregnant, they would stop breastfeeding, even if the child was under six months of age.

Inadequate hygiene and sanitation: In poor communities, sanitation is a challenge and awareness is low about hygiene. Due to a lack of awareness on hygiene or unavailability of water, mothers may not have been able to maintain appropriate cleanliness during food preparation or feeding children.

Mothers’ workload: Mothers were solely responsible for childcare, as well as other household work and sometimes agricultural activities. If a mother was working away from home; she was not available for on-demand breastfeeding.

Support of grandmothers: Grandmothers were identified as authority figures on breastfeeding and child feeding, as in other aspects of childcare. The decisions made by grandmothers often determined the practices followed by mothers.

Willingness to deliver in hospitals: Mothers expressed a general willingness to receive services at BHUs, such as delivery, post-natal care services and child immunization. However, there is a need to ensure that staff is available in the health centers, particularly female staff.

Table 5 IYCF indicators results for Tharparkar district and for Sindh (MICS) 2014

Indicator		Age (months)	KAP	MICS ¹²	MICS ¹³
1	Child ever breastfed	0-23	99.2	93.9	95.6
2	Early initiation of breastfeeding	0-23	25.7	31.4	20.7
3	Exclusive breastfeeding under six months	0-5	44.2	50.8	28.9
4	Predominant breastfeeding under six months	0-5	46.7	76	56.0
5	Introduction to solid, semi-solid, or soft foods	6-8	54.8	63.3	63.9
6	Continued breastfeeding at 1 year	12-15	64	86	76.7
7	Continued breastfeeding at 2 years	20-23	43.5	--	48.9
8	Minimum dietary diversity	6-23	17.9	1.7	14.2
9	Minimum meal frequency	6-23	49.6	47.5	55.7
10	Minimum acceptable diet	6-23	10.7	5.8	16.9
11	Bottle feeding	0-23	33.5	3.4	37.0
12	Age-appropriate breastfeeding	0-23	51.1	59.8	53.4
13	Milk feeding frequency for non-breastfed infants	6-23	18.6	--	69.6

5.2 Water, Sanitation, and Hygiene

Safe drinking water is a necessity for good health. Lack of safe drinking water can significantly contribute to the spread of water-related diseases such as cholera, and typhoid. Drinking water can be tainted with chemical and physical contaminants, which have harmful effects on human health. Access to drinking water may be particularly important for women and children in rural areas, where they bear the primary responsibility for carrying water for long distances. Inadequate disposal of human excreta and personal hygiene is associated with a range of diseases including diarrheal diseases and polio and is an important determinant for malnourishment.

¹² MICS Sindh Survey 2014 (Tharparkar Results)

¹³ MICS Sindh Survey 2014 (Provincial figures)

WHO-UNICEF Joint Monitoring Programme (JMP)¹⁴ for water supply and sanitation has established a standard set of drinking water and sanitation categories that were used for monitoring purposes. An "improved" drinking-water source is one that, by the nature of its construction and when properly used, adequately protects the source from outside contamination, particularly faecal matter. An "improved" sanitation facility is one that hygienically separates human excreta from human contact.

I. Water source and related information

Although, the water source used by households in Tharparkar varied from area to area, most families (58%) fetched water from open wells. Other sources of water included public hand pumps (17%) and government water supply schemes (8.8%). Otherwise, 5.3% used surface water and 3.9% had private hand pumps and reverse osmosis (RO)¹⁵ plants.

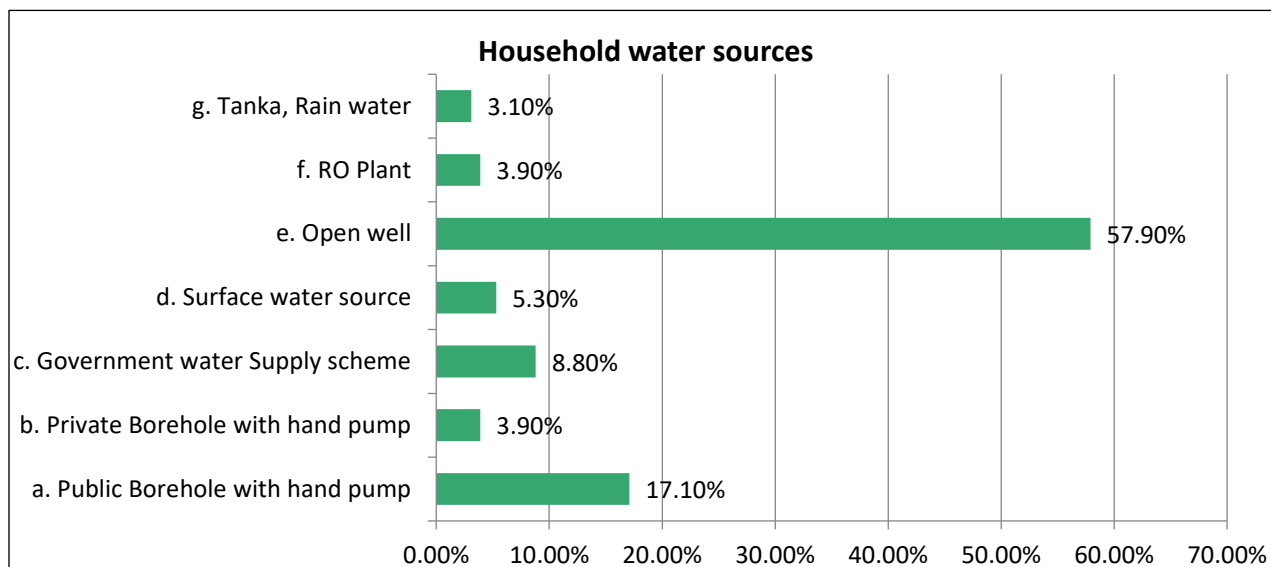


Figure 6: Household Water Source

Based on the findings, open wells and surface water were considered "unimproved or unsafe" sources of water due to outside contamination. Other sources of water were not confirmed safe for drinking because of the high salinity in groundwater. Groundwater in Tharparkar is largely brackish, and unfit for human consumption. However, in the absence of drinking water, the people of Tharparkar had to consume groundwater. Water sources were mostly uncovered in the community, and animals were used for pulling water from the wells. In some areas, RO plants were established but due to the heavy load, these plants were found badly damaged and unable to meet the community water needs.



¹⁴ <http://www.wssinfo.org/definitions-methods/watsan-categories/#>

¹⁵ RO plants are one of the innovative initiatives of Sindh government to desalinate underground saline water, through Reverse Osmosis (RO).

Table 6: Water source and related information

2.1. Main Sources water in community		n=228
2.1a. Public Borehole with hand pump		17.1%
2.1b. Private Borehole with hand pump		3.9%
2.1c. Government water Supply scheme		8.8%
2.1d. Surface water source		5.3%
2.1e. Open well		57.9%
2.1f. RO Plant		3.9%
2.1g. Tanka, Rain water		3.1%

The scarce availability of drinking water hampers water access for the district. Therefore, fetching water becomes one of the main chores for HHs, especially women and girls. More than half of the respondents reported taking more than one – two hours to fetch water daily.

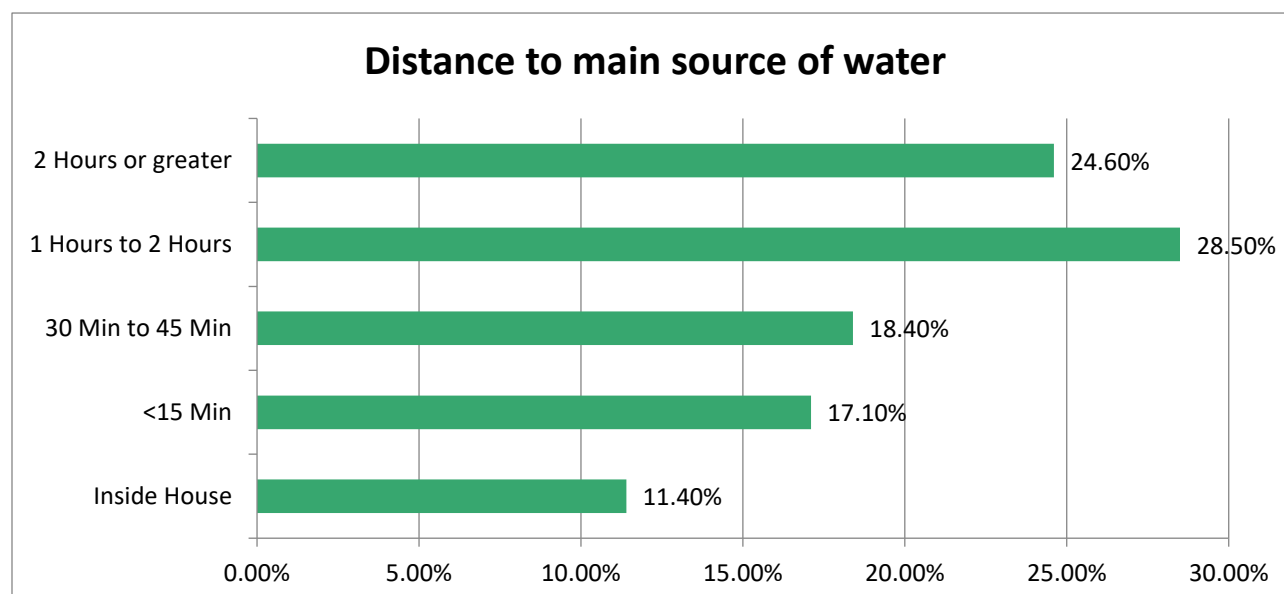


Figure 7: Distance to main source of water

Fetching water is primarily the responsibility of adult women (60.5% of households), followed by girls (13%). Fetching water from long distances takes up big part of the day, which could be used for other productive purposes; like spending time with family, taking care of young children, getting ample rest, socializing, etc. The community used donkey and camels for collecting water. Furthermore, pregnant women were also responsible for collecting water; which sometimes led to miscarriages.

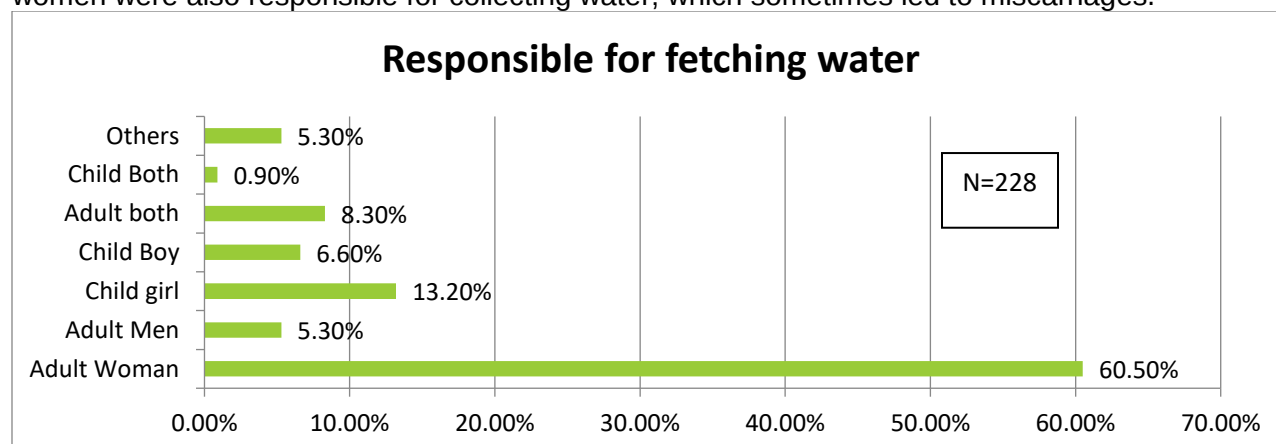


Figure 8: Responsible for fetching water

II. Water quality and water treatment

A total of 79% of participants expressed that they were not aware of water quality, while 20% felt that there had been some water quality testing had been conducted.

Since the majority used open wells, there is a high likelihood of physical contamination and a possibility of biological and chemical contamination. Nevertheless, 90.3% of participants felt that their water was safe for drinking and 74.6% were treating their water. The most common water treatment method (91.8%) used was straining the water through a cloth. Although, filtrating by cloth and waiting for particles to settle at the bottom is not considered as a water treatment procedure, the population still used these means to remove the physical contaminants from water.

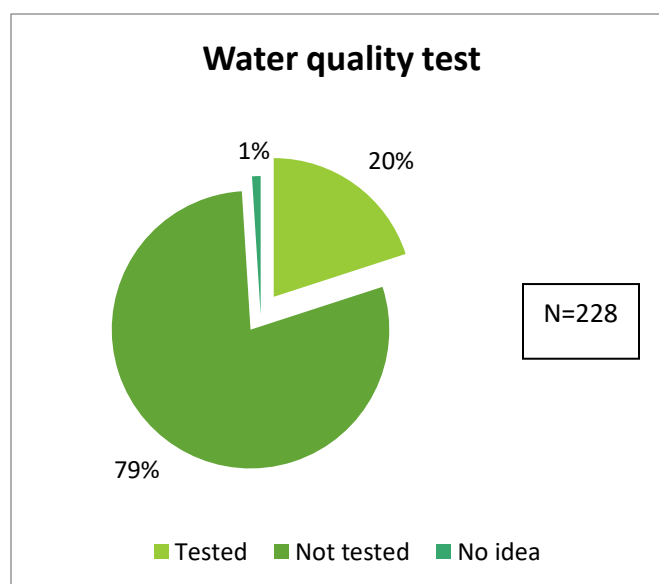


Figure 9: Water Quality Test

Table 7: Water testing and treatment

3.2. Community awareness about water quality	n= 228
a. 3.2.1. Perception that water is safe for drinking	90.3%
3.2.2. Water not safe	9.7%
<i>How community know that water is not safe*¹⁶</i>	<i>n=23</i>
b. 3.2.3. Seems dirty	54.5%
3.2.4. Smells bad	18.2%
3.2.5. Taste	68.2%
3.2.6. Causing sickness	43.4%
3.3. Locally water treatment	n=228 74.6%
3.3.1. Boiling	5.9%
3.3.2. Filtration at HH level with cloth	91.8%
3.3.3. Wait for the dirt to go down	2.4%
No water treatment*	25.4%

*community having no idea about water treatment

III. Protected latrine use

An improved sanitation facility is defined as one that hygienically separates human excreta from human contact. Improved sanitation facilities for excreta disposal include flush or pour flush to a piped sewer system, septic tank, or pit latrine; ventilated improved pit latrine, pit latrine with slab, and use of a composting toilet.

¹⁶ Multi-answers were received from some households

Availability of a protected latrine impacts domestic and personal hygiene and plays a role in prevention of diarrhea. Survey findings indicated that only 28.9% of participants were using protected latrine. Of the participants using protected latrines, 80.3% used a HH latrine, while 19.7% used a shared latrine with other HH. Additionally, 71.1% used open defecation, of which 95.1% would go outside the home, 4.3% used the compound, and 0.6% used a pit latrine.

When asked about the benefits of using a latrine, participants mentioned privacy (68.4%) and the convenience of having a latrine nearby the home (50.9%). A significant proportion of the participants also mentioned cleanliness (32.0%) and disease prevention (31.6%).

According to community, poverty and lack of water for toilet use were the main challenges; they could not afford these expenses; and therefore practiced open defecation. Some communities did not have proper house structures and believed that making a toilet in their homes was useless.

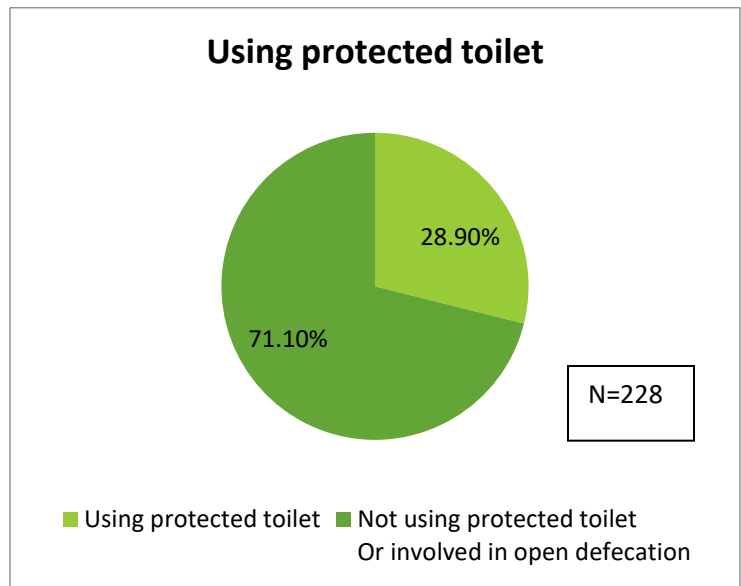


Figure 10: Using Protected Toilet

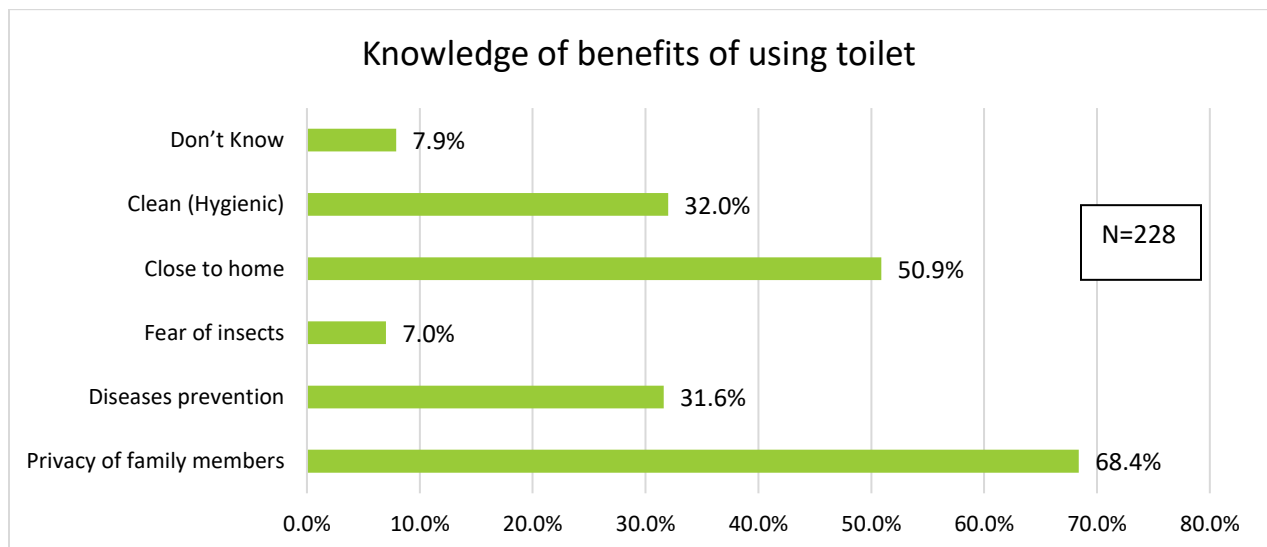


Figure 11 Perceived advantages of using protected toilet

IV. Disposal of child stools and solid wastes

Most participants disposed of child stools by throwing them into the garbage (51.8%), or leaving them in the open space (39.9%). As data depicts that at almost 95% of the instances, the child stool left in open causing health and hygiene issues. In some households the child stools was left in open air, since there were fixed timings for cleaning the house and removing any garbage. Mothers waited for these fixed timings to dispose of their child stools, which indicated unhygienic conditions in the community.

Table 8 Disposal of stools and solid wastes

5.1. Disposal of stool practice (What was done with stool of youngest child)	n=228
5.1.1 Child used Left in the open space toilet/latrine	3.5%
5.1.2. Put/rinsed into toilet or latrine	2.2%
5.1.3. Put/rinsed into drain or ditch	1.8%
5.1.4. Thrown into garbage	51.8%
5.1.5. left the stools in the open space	39.9%
5.1.6. Buried	0.8%

The most common practice for disposing of household solid wastes was to throw it nearby (70.6%), or in a common landfill located far from houses (10.1%). No proper disposal was found in the target villages.

Table 9: Water drainage system

5.2 Waste water drainage system	n=228
5.2.1. Just flow open in and outside home	93.4%
5.2.2. Drained outside home through culvert in open	4.8%
5.2.3. Drained outside home through drain pipe into open area	1.8%
5.3. What do you do with your solid wastes	n=228
5.3.1. Dump wastes close to their houses	70.6%
5.3.2. Dump wastes far from houses	10.1%
5.3.3. Bury wastes	8.3%
5.3.4. Nothing	11.0%

V. Handwashing

Handwashing with water and soap is the most cost effective health intervention to reduce major water related diseases in children under five, especially diarrhea. It is most effective when done using water and soap after visiting a toilet or cleaning a child, before eating or handling food and, before feeding a child. Monitoring correct handwashing behavior at these critical times is challenging. A reliable alternative to observations or self-reported behaviors is observing if a household has a specific place where people most often wash their hands and observing if water and soap (or other local cleansing materials) are present at a specific place for handwashing.

Survey results revealed that, 75.9% of households had no designated handwashing location, which depicts the gravity of the situation. Furthermore, among households with handwashing areas (24.1%), only 67.3% had water, soap or ash available.

In terms of critical handwashing timings, findings indicated that 70.2% of participants washed their hands after doing domestic work, 63.6% before making food, 61% before and after eating, and 49.6% after using the latrine.

Table 10: Handwashing location and materials

Identified handwashing location		n=228
6-a. Identified handwashing location		
1. Hand washing space specified		24.1% (18.5-29.6)
2. No hand washing space specified		75.9% (70.3-81.4)
6-b. Water, Soap/Ash availability in designated area		
	a. Available	67.3%
	b. Not available	32.7%
6-c. Hand washing with:		
1. Water Only		40.4%
2. Water and Soap		40.4%
3. Water and Ash/soil		17.1%
4. Washing Powder		1.3%
5. Sand and Water		0.4%
6. Shampoo		0.4%

Table 11: Handwashing timings

7.1. Hand washing timings analysis						
Practice	Before eating	Before making food	After domestic work	After handling the human/ animal feces	Before child feeding	After using the latrine
Timing	1	2	3	4	5	6
Proportion of the households	61%	63.6%	70.2%	17.5%	29.8%	49.6%

5.3 Morbidity

Waterborne diseases caused by pathogenic microbes can be directly spread through contaminated water. Most waterborne diseases cause diarrheal illness. In general, 88% of diarrhea cases worldwide are linked to unsafe water, inadequate sanitation or insufficient hygiene¹⁷. These cases result in a high volume of deaths each year, mostly in young children. The usual cause of death is dehydration. Most cases of diarrheal illness and death occur in vulnerable or poor communities because of unsafe water, poor sanitation, and insufficient hygiene. Other waterborne diseases do not cause diarrhea; instead, these diseases can cause malnutrition, skin infections, and organ damage. Improved sanitation can reduce diarrheal diseases and can significantly lessen the adverse health impacts of other disorders responsible for death and disease among children.

In 2016, more than 190 children have died and 22,000 have been hospitalized in Tharparkar because of drought-related waterborne and viral diseases¹⁸. Tharparkar is facing a severe drought for the fourth consecutive year, and access to health services is reported to be very difficult, with families travelling an average distance of 17km to reach the nearest health facility.

Based on information collected about morbidity prevalence in the past two-week period, the most commonly reported illnesses were fever, ARI, cough, and diarrhea. The main causes of these diseases

¹⁷ World Health Organization; Safer Water, Better Health: by Annette Prüss-Üstün, Robert Bos, Fiona Gore, Jamie Bartram

¹⁸ <http://reliefweb.int/report/world/global-emergency-overview-snapshot-10-16-february-2016>

were lack of access to safe drinking water, poor sanitation and hygiene, lack of proper nutrition, and lack of access to health facilities.

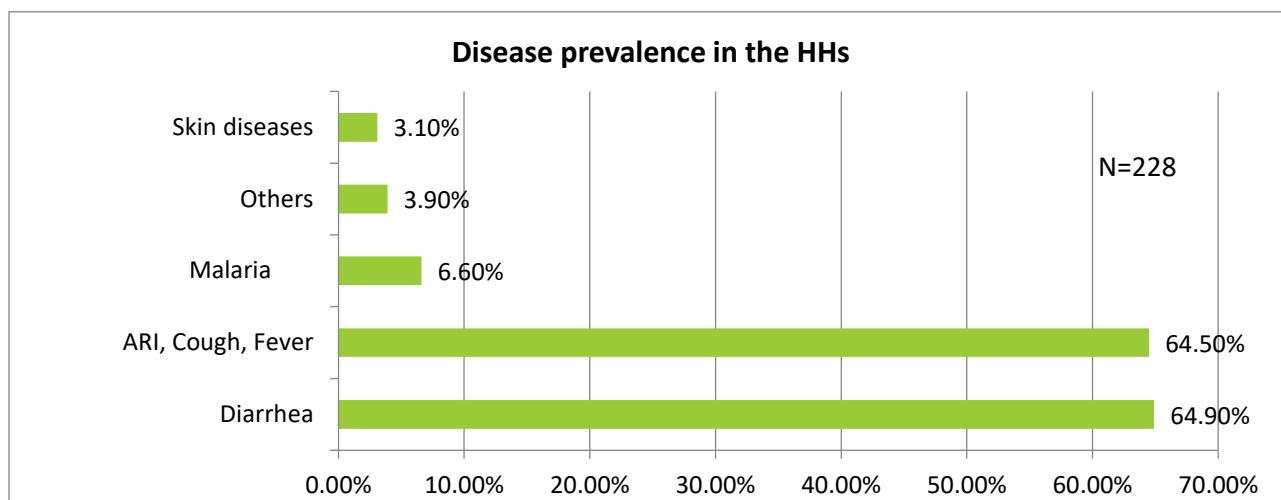


Figure 12: Morbidity prevalence

Data depicted that a significant number of HHs suffered from different diseases. Overall, 80.26% of HHs reported suffering from at least one disease during last two weeks. ARI, cough and fever were very prevalent due to the drought situation. The community perceived that seasonal changes are also one of the contributing factors for ARI, cough and fever.

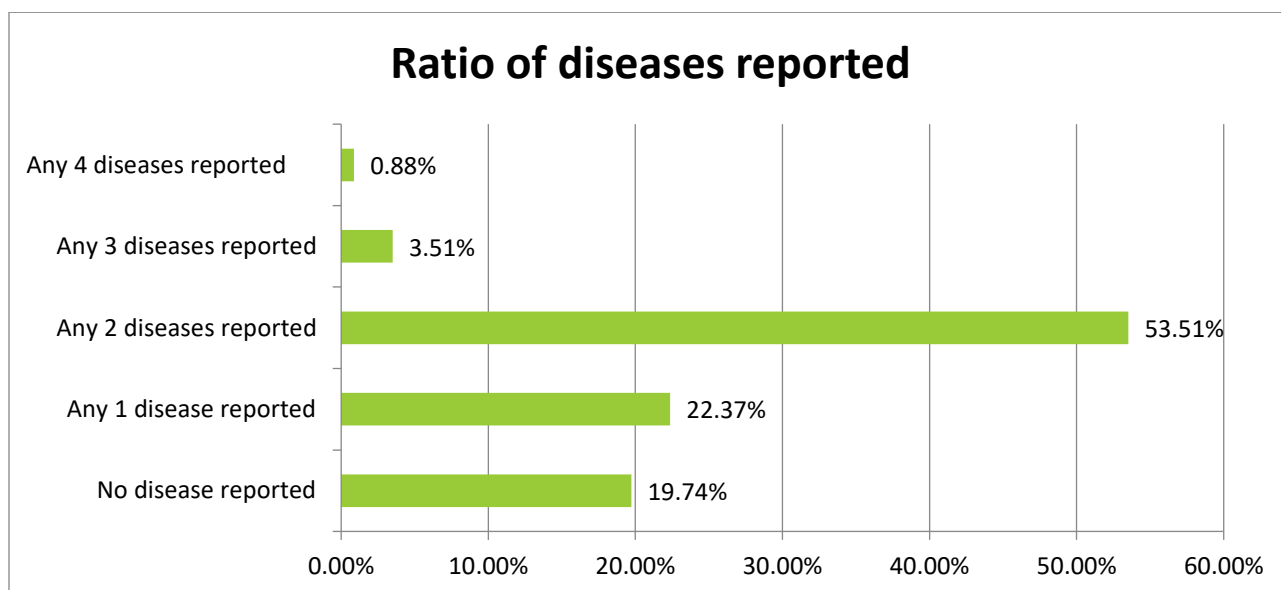


Figure 13: Household diseases

Overall, 64.9% of HH reported suffering from diarrhea during last two weeks. Among the HHs suffering from diarrhea, 58.3% reported only one child suffering from diarrhea, 34.7% reported two children suffering from diarrhea, and 8.3% reported more than two children. Around half of the HHs spent more than 1,000 PKR for treating water related diseases.

Table 12: Morbidity and expenditures

8.2. No. of U-5 children suffered with diarrhea in one household (Last 2 weeks recall of the household) n=146	
a. One child with diarrhea	58.3%
b. Two children with diarrhea	34.7%
c. Three children with diarrhea	7.6%
d. More than three children with diarrhea	0.7%
8.3. Expenses on disease treatment n=146	
8.2a. 1000 <	47.9 %
8.2b. 1000 – 2000	15.6 %
8.2c. 2000 – 3000	31.7 %
8.2d. More than 3000	1.2 %
8.2e. Nothing	3.6 %
*: T.B, Digestive Disease, Pneumonia, Anemia, Asthma, Vomiting and Pain, Anemia, LUNGS Disease, post-Polio (disabled)	
** 3 or more watery stools passed in 24 hours by children <5 Years of age	

5.4 Food Security

Food insecurity is a major issue in Tharparkar, according to MQSUN report 2015. Sindh reported the lowest rate of food security compared to the other provinces, with only 28% of the population considered food secure. In Tharparkar, the main factor for food insecurity is a 3rd consecutive year of drought due to low rainfall in the district. According to community key members, more than half of the land was not cultivated in the last year.

Household dietary diversity score (HDDS)

The HDDS is based on the number of different food groups consumed by the head of household or any other household members in the past 24 hours. The set of 12 food groups are derived from the U.N. Food & Agriculture Organization (FAO). The HDDS ranges from 0 to 12, with lower numbers indicating less dietary diversity. Although the HDDS gives an indication of food groups consumed in the household in the last 24 hours, it serves as a proxy for socioeconomic status. The following set of 12 food groups were used to calculate the HDDS.

- Cereals (Porridge bread, rice noodles/, or other foods made from grains)
- Roots and tubers (White potatoes white- yams, Radish, or any other foods made from roots)
- Pulses/legumes/nuts (Any foods made from beans, peas, lentils, nuts, or seeds)
- Vegetables and leaves (Any dark green leafy vegetables)
- Fruits (Ripe mangoes, ripe papayas or lemon).
- Meat, poultry (Any meat such as beef, lamb, goat, chicken, or duck)
- Fish and seafood (Fresh or dried fish, shellfish , or seafood)
- Milk/Dairy products (Cheese, yogurt, Milk or other milk products)
- Eggs
- Sugar, sugar products, honey
- Oil/fats (Foods made with red palm oil, red palm nut, or red palm nut pulp sauce)
- Condiments (spices, tea, coffee) or other miscellaneous food

The overall HDDS score recorded for the HHs was 5.32, which indicated that, on average, each household consumed 5 of the 12 food groups. This indicated that households had moderate access to diverse foods. Moreover, 44% of the HHs fell in the high dietary diversity scale, meaning these HHs consumed 6 or more different food groups in last 24 hours. Another 44% of HHs fell under the medium diversity scale, indicating that these HHs consumed between 4 to 5 different food groups. Only 12% of HHs fell under the low dietary diversity scale, meaning that they consumed between 0 and 3 different food groups.

Table 13: Household diet diversity

9.1. Household diet diversity score		n=228
Overall HDDS		5.32 CI (5.10-5.54)
Criteria	Categories	
1. (0-3)	Low dietary diversity	12%
2. (4-5)	Medium dietary diversity	44%
3. (6 or above)	High dietary diversity	44%

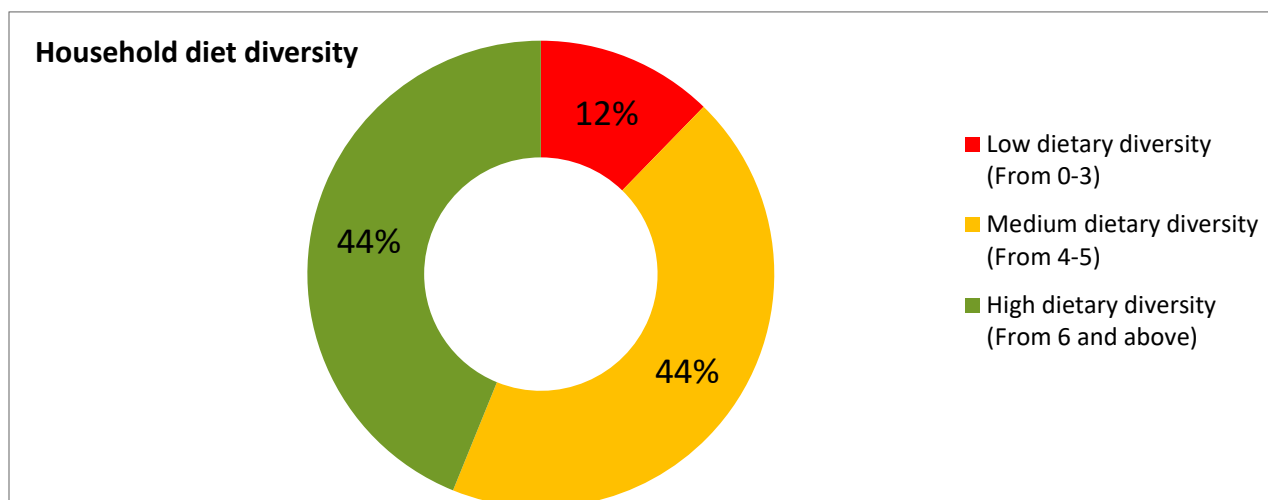


Figure 14: Household diet diversity

As reported by the respondents, cereals (100%), oil/fats (78%), sugar/honey (73%), vegetables (73%), milk & milk products (57%), were the most commonly consumed foods, along with those in the miscellaneous category, such as coffee, tea, bouillon and spices (65%). Fish and seafood (2%), meat and poultry (8%), eggs (11%), fruits (14%), roots and tubers (18%) and pulses/legumes (32%) were consumed least frequently.

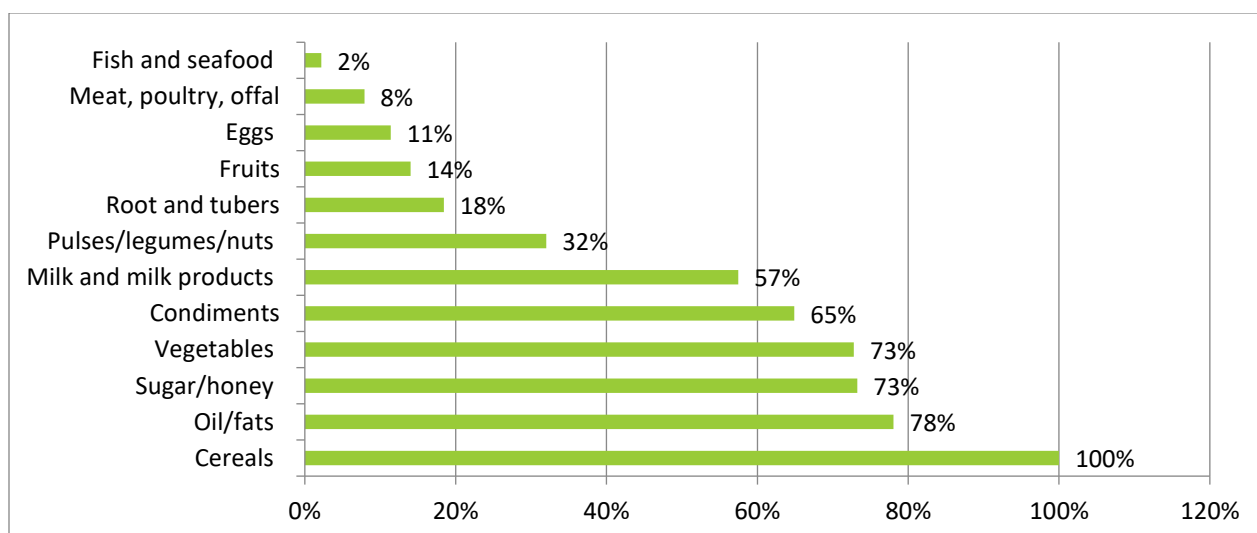


Figure 15: Food consumed by household

Household Coping Strategy Index (CSI)

The reduced CSI was developed to compare food security across different contexts. It is a sub-set of the context-specific CSI, but is calculated using a specific set of behaviors with a universal set of severity weightings for each behavior. Thus, the reduced CSI uses a standard set of five individual coping behaviors that can be employed by any household, anywhere. The five standard coping strategies and their severity weightings are:

- Eating less-preferred foods (1.0),
- Borrowing food/money from friends and relatives (2.0),
- Limiting portions at mealtime (1.0),
- Limiting adult intake (3.0), and
- Reducing the number of meals per day (1.0).

Overall, 89% of the respondents reported that they chose one or more coping strategies in last seven days, with an average coping strategy score of 7.50. Figure 16 shows the percentage of HHs by RCSI scores.

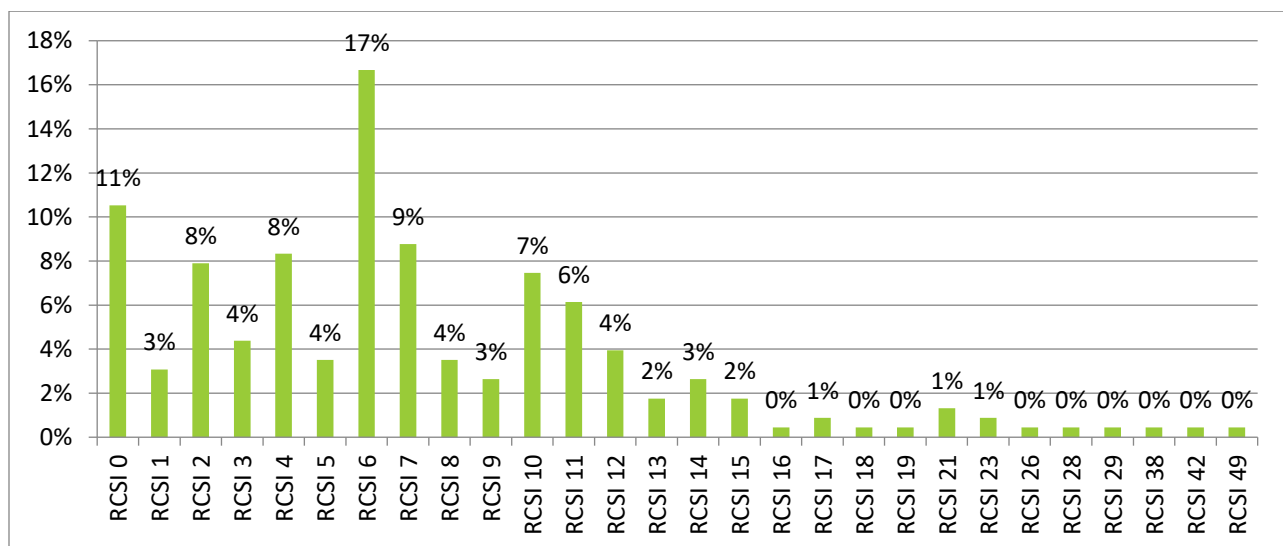


Figure 16: rCSI

The most used coping strategy was “borrowing food/money from friends and relatives” (Figure 17). Furthermore, 57% relied on “less-preferred and less expensive foods”, 25% “limited portion sizes at mealtime”, 21% relied on “reduced number of meals eaten in a day” and 21% “restricted consumption by adults in order for small children to eat”.

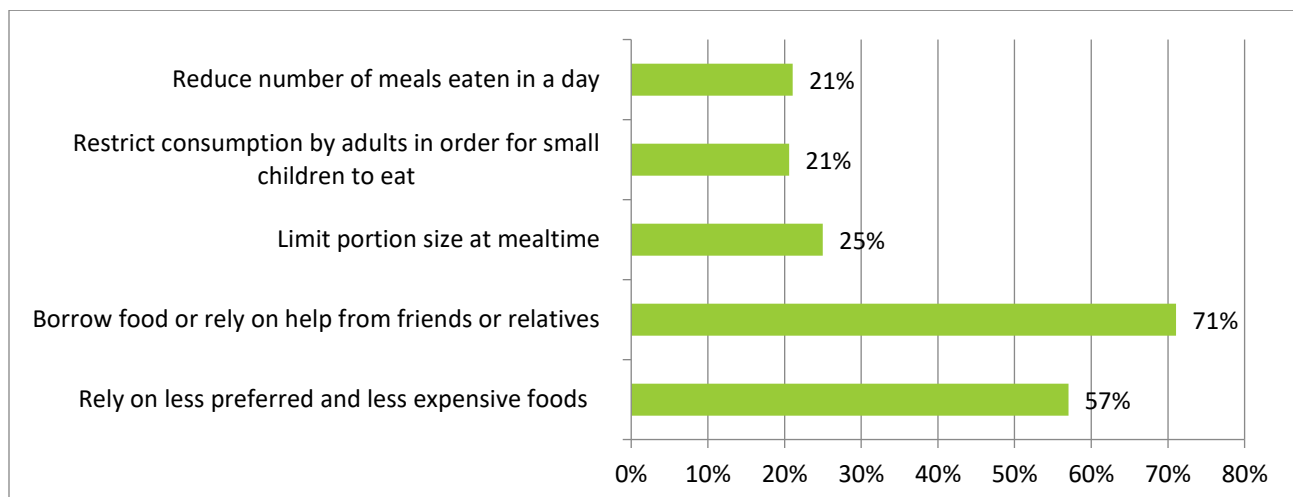


Figure 17: Reduced Coping Strategy

From the families adopting coping strategies, 44% adopted one strategy (any one from the stated five), 18% adopted two strategies (any two from the stated five), 5% adopted three strategies, 10% adopted four strategies and 12% adopted five strategies.

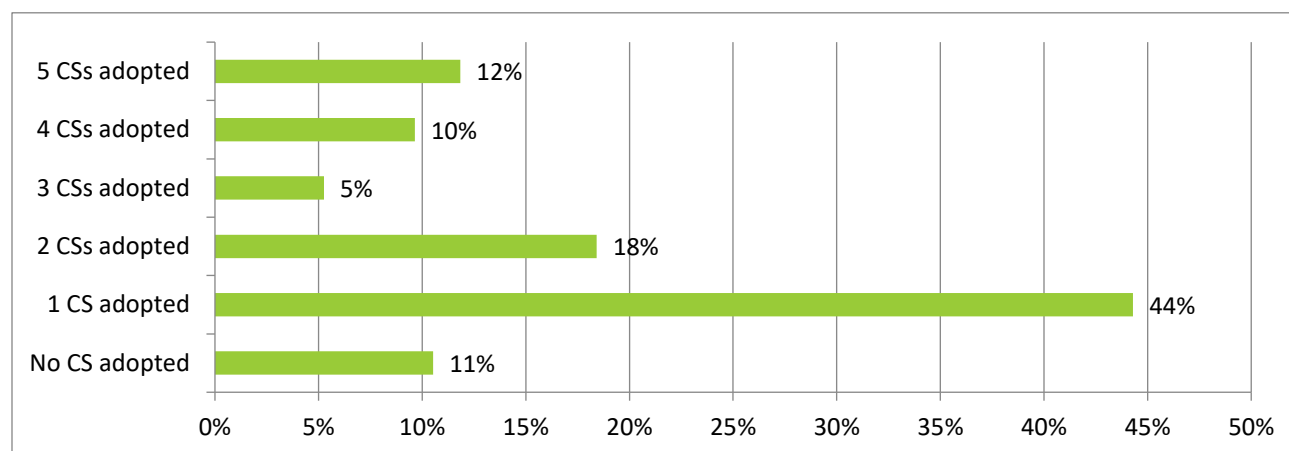


Figure 18: Number of coping strategies adapt by household

6. CONCLUSION

The KAP survey revealed that practices related to IYCF, WASH, and FSL are not satisfactory and the community in the targeted district is lacking awareness about the best practices. There was a common myth in the community that mothers do not have enough breast milk to feed their children without knowing any reasons. There were a certain number of mothers who believed that the colostrum was not good for newborns and therefore they discarded their colostrum before starting breastfeeding. The traditional way of giving liquids (green tea, gripe water, honey and “ghuti”) immediately after the birth was also common in the community. In addition, use of formula milk was common due to the encouragement of general practitioners. All the common myths and practices contributed towards the low prevalence of breastfeeding. Decision-making was another cause of the low prevalence of breastfeeding since the main decision makers in the family are mostly grandmothers and elders. Other significant observations revealed during the survey were the low dietary diversity of food intake, and food provided to children 6-23 months was not rich in micronutrients. During pregnancy, women in the district did not seek antenatal care or received improper antenatal care. PLWs were also unable to seek care or consult relevant health care providers as they were engaged with domestic responsibilities, including fetching water for the family, taking care of the other family members and other domestic work.

In Tharparkar, lack of family planning and birth spacing awareness among women and adolescents and decision-making by the husband and grandmother results in multiple pregnancies within a short span of time. The multiple pregnancies ultimately affect the IYCF practices of children.

Availability of safe drinking water was another problem faced by the community. Although, they have water sources available, purification methods were lacking due to limited knowledge and available resources. Poor sanitation practices like open defecation was very common and handwashing awareness was almost absent in the community, contributing to the increase in malnutrition and disease prevalence. The overall household dietary diversity score was between low and medium, which could further deteriorate because of the prevailing drought situation in the district.

7. RECOMMENDATIONS

- Nutrition sensitive programming needs to be ensure in the district. The dietary diversity and minimum acceptable diet is very low. Further effort should be made in the new projects to improve the dietary diversity and minimum acceptable diet by considering livelihood diversification strategies.
- IYCF knowledge and practices improvement programs need to be initiated to create mass awareness. Further, there is a need to develop and adopt context specific IYCF promotion models, for improving community's knowledge, behaviors and practices regarding IYCF.
- The IYCF component needs to be integrated within the provincial health strategies, policies and guidelines with adequate budgetary allocations
- Modify existing IYCF interventions to focus on key decision makers at household (mother, mother-in-law, father and child caretakers), and promote awareness and behavior change about IYCF practices.
- To understand the reason behind the insufficient number of meals in children under 2 years of age and respond accordingly (more sensitization, complementary meals)
- Develop strict policies to discourage use of infant formula and ensure adherence by private and government medical practitioners, and to evaluate/monitor the condition of infant formula use and bottle-feeding and increase sensitization on safe use of breastmilk substitutes in education sessions.
- Support the scaling up of maternal and child health services at health centers to increase utilization by mothers and children.
- Supplementation of PLW and children aged 6-23 months with MM tablets and sachets, making these products available at health centers to encourage utilization.
- Water, Sanitation and Hygiene programs should be implemented in the district, and to ensure the usage and sustainability of the programs.
- Establish a surveillance system that identifies early disease trends and outbreaks
- Carry out a more extensive assessment on food security and livelihoods to better understand the impact on household capacity, dietary diversity and identify the main determinants limiting the impact of the current nutrition programme. Such a survey should cover topics such as expenditure, prioritization of a certain type of expenditure, availability of foods on the market and cost/feasibility of a balance diet throughout the year.

Annex I: Sampled clusters list for district Tharparkar

Number	Village	Pop	Cluster	Number	Village	Pop	Cluster
1	Chelhar	6944	1	22	Libo	1032	22
2	Kantio	5905	2	23	Khankhniyar Bajeer	1833	23
3	Dalan Jo Tar	2038	3	24	Mau Akheraj	775	24
4	Kagia	1086	4	25	Machayo	700	25
5	Bhutio	356	5	26	Senhar	525	26
6	Bhonio	1495	6	27	Layari	560	27
7	Sakerio	2615	7	28	Mohsan Otho	210	28
8	Allan Abad	637	8	29	Allah Jurio Khaskheli	245	29
9	Karoyo	975	9	30	Borli Muhammad Shah	1200	30
10	Umed Ali Rind	1375	10	31	Moosa Lund	370	31
11	Rohar Charan	915	11	32	Doori Sameja	700	32
12	Kakrario	623	12	33	Galib Shah	1622	33
13	Siar Sakhi	380	13	34	Banbhanio Bheel	2820	34
14	Mir Ali Nawaz	701	14	35	Malehar	4045	35
15	Deadvero	889	15	36	Singario	2170	36
16	Kumbha Ji Dhani	280	16	37	Pilloro	189	37
17	Gourano	503	17	38	Panali	1750	38
18	Bandho	250	18	39	Chahi Chapro	707	39
19	Sumath	511	19	40	Sodoi	1500	40
20	Laloo Bheel	680	20	41	Kapoosar	2630	41
21	Bhaki	462	21	42	Bhukhrio	480	42

Annex II: Key indicators used to measure IYCF practices for children aged 0-23 months

IYCF Indicators (WHO Guidelines 2010)	
1	Timely initiation of breastfeeding
2	Exclusive breastfeeding under 6 months
3	Continued breastfeeding at 1 year
4	Introduction of solid, semi-solid, or soft foods
5	Minimum dietary diversity
6	Minimum meal frequency (breastfed children)
7	Minimum meal frequency (non-breastfed children)
8	Minimum acceptable diet
9	Consumption of iron-rich or iron-fortified foods
10	Children ever breastfed
11	Continued breastfeeding at 2 years
12	Age-appropriate breastfeeding
13	Predominant breastfeeding under 6 months
14	Milk feeding frequency for non-breastfed children
15	Bottle feeding

- Timely initiation of breastfeeding:** Proportion of children born in the last 24 months and still alive who were put to the breast within one hour of birth out of all children born in the last 24 months and still alive
- Exclusive breastfeeding under six months:** Proportion of infants aged 0-5 months who are fed exclusively with breast milk; infants aged 0-5 months of age who received only breast milk during the previous 24 hours / infants aged 0-5 months
- Continued breastfeeding at one year:** Proportion of children aged 12-15 months who are fed breast milk; children aged 12-15 months who received breast milk during the previous 24 hours / children aged 12-15 months
- Introduction of solid, semi-solid, or soft foods:** Proportion of infants aged 6-8 months who received solid, semi-solid, or soft foods; infants aged 6-8 months who received solid, semi-solid, or soft foods during the previous 24 hours / infants aged 6-8 months. Timely complementary feeding measures the proportion of children aged 6-9 months who received breast milk and consumed solid, semi-solid, or soft foods at least once in the past 24 hours.
- Minimum dietary diversity:** Individual dietary diversity scores (IDDS) are derived from information on foods consumed by children aged 6-24 months in the past 24 hours. This score is based on the 17 food groups shown in the table below. These food groups are amalgamated to form 7 food groups for measuring individual dietary diversity score (IDDS). The IDDS is used as a proxy measure of the nutritional quality of an individual's diet. It is considered that minimum dietary diversity is reached when the individual has consumed food from four or more of the seven food groups. Minimum dietary diversity measures the proportion of children aged 6-23 months who consumed foods from four or more of the food groups; children aged 6-23 months who received foods from four or more of the seven food groups during the previous 24 hours / children aged 6-23 months. The seven food groups are:
 - Grains, roots, and tubers
 - Legumes and nuts
 - Dairy products (milk, yogurt, cheese)
 - Flesh foods (meat, fish, poultry, liver/organ meats)
 - Eggs
 - Vitamin A-rich fruits and vegetables
 - Other fruits and vegetables

Number	Food group
1	Bread, rice, noodles, or other foods made from grains, including thick grain-based porridge.
2	White potatoes, white yams, manioc, cassava, or any other foods made from roots
3	Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside
4	Any food made from beans, peas, lentils or nuts, including PlumpyNut
5	Any dark green leafy vegetables
6	Ripe mangoes, ripe papayas, or (insert other local vitamin A-rich fruits)
7	Any other fruits or vegetables
8	Liver, kidney, heart, or other organ meats
9	Any meat such as beef, pork, lamb, goat, chicken, or duck
10	Fresh or dried fish, shellfish, or seafood
11	Grubs, snails, or insects
12	Eggs
13	Cheese, yogurt, or other milk products
14	Any oil, fats, or butter; or foods made with any of these
15	Foods made with red palm oil, red palm nut, and red palm nut pulp sauce
16	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits
17	Condiments for flavor such as chilies, spices, herbs, or fish powder

6. Minimum meal frequency

- Breastfed children:** Proportion of breastfed children aged 6-23 months who receive solid, semi-solid, or soft foods the minimum number of times or more; breastfed children aged 6-23 months who received solid, semi-solid, or soft foods the minimum number of times or more during the previous 24 hours / breastfed children aged 6-23 months
- Non-breastfed children:** proportion of non-breastfed children aged 6-23 months who received solid, semi-solid, or soft foods (also including milk feeds) the minimum number of times or more; non-breastfed children aged 6-23 months who received solid, semi-solid, or soft foods or milk feeds the minimum number of times or more during the previous 24 hours / non-breastfed children aged 6-23 months

Minimum is defined as:

- 2 times for breastfed infants aged 6-8 months
- 3 times for breastfed children aged 9-23 months
- 4 times for non-breastfed children aged 6-23 months
- A “meal” includes both meals and snacks (other than trivial amounts), and frequency is based on caregiver report

- Minimum acceptable diet:** Proportion of children aged 6-23 months who receive a minimum acceptable diet (apart from breast milk). This indicator is composite and is calculated from the following two fractions:

Breastfed children aged 6-23 months who had at least the minimum dietary diversity and the minimum meal frequency during the previous day / breastfed children aged 6-23 months

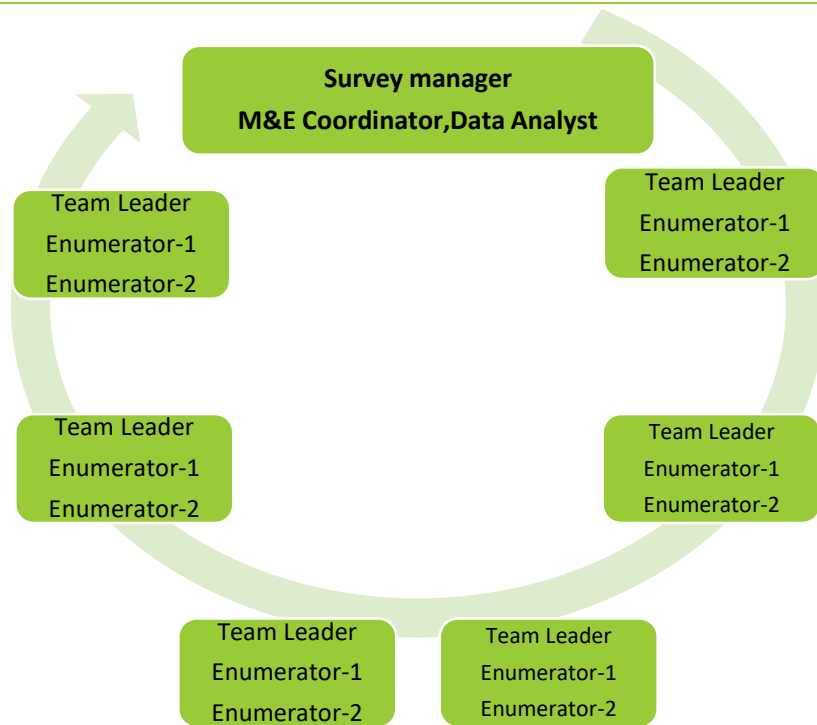
And

Non-breastfed children aged 6-23 months who received at least two milk feedings and had at least the minimum dietary diversity (not including milk feeds) and the minimum meal frequency during the previous day / non-breastfed children aged 6-23 months

- Consumption of iron-rich or iron-fortified foods:** Proportion of children aged 6-23 months who received an iron-rich or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home
- Child ever breastfed:** Proportion of children born in the last 24 months who were ever breastfed; children born in the last 24 months who were ever breastfed / children born in the last 24 months
- Continued breastfeeding at two years:** Proportion of children aged 20-23 months who are fed breast milk; children 20-23 months of age who received breast milk during the previous 24 hours / children 20-23 months of age

11. **Age-appropriate breastfeeding:** Proportion of children aged 0-23 months who are appropriately breastfed; this indicator is calculated using the following two fractions:
Infants aged 0-5 months who received only breast milk during the previous 24 hours / infants aged 0-5 months
And
Children aged 6-23 months who received breast milk as well as solid, semi-solid, or soft foods during the previous 24 hours / children aged 6-23 months
12. **Predominant breastfeeding under six months:** Proportion of children aged 0-5 months who were predominantly breastfed in the previous 24 hours. Predominant breastfeeding allows ORS, vitamin and/or mineral supplements, ritual fluids, water and water-based drinks, and fruit juice. Other liquids, including non-human milks and food-based fluids, are not allowed, and no semi-solid or solid foods are allowed
13. **Milk feeding frequency for non-breastfed children:** Proportion of non-breastfed children aged 6-23 months who received at least two milk feedings in the previous 24 hours
14. **Bottle-feeding:** Proportion of children aged 0-23 months who were fed from a bottle in the previous 24 hours

Annex III: Survey team structure



Annex IV: Focus group discussion guide for IYCF

UC _____ Village Name _____ Cluster No _____ Team No _____ Date: __/ __/ 2016

(Kindly Use these questions as a guideline in focus group discussion, probe the community group for more and more information)

a) Include minimum 8 persons or more b) Don't ask questions from only one persons

1. What are the traditional beliefs that prevent mothers to exclusively breastfeed their baby for the first 6 months?

وہ کون سے علاقائی رسم و رواج ہیں جو بچے کو مسلسل 6 ماہ تک صرف ماں کا دودھ پلانے سے روکتے ہیں؟

2. What is the traditional belief concerning initiation, frequency and duration of breastfeeding (Initiation –traditionally when do they start, Frequency – how many times per day is recommended, Duration – when should the child stop breast milk)

یہاں کے رواج کے مطابق ماں کا دودھ بچے کی پیدائش کے کتنی دیر بعد پلاتے ہیں؟ کتنے عرصے تک پلاتے ہیں؟ اور دن میں کتنی دفعہ پلاتے ہیں؟

3. What are the major problems that prevent you from starting complementary/additional food for your baby after 6 months of age?

وہ کون سے اہم ترین مسائل ہیں جو آپ کو 6 ماہ کی عمر کے بعد بچے کو ماں کے دودھ کے ساتھ دوسری غذا کھلانے سے روکتے ہیں؟

4. For how long do mothers continue to breastfeed their babies in your community?

آپ کے گاؤں میں مائیں کب تک اپنے بچوں کو دودھ پلاتی ہیں؟

5. In this community, what types of foods do you give to children 6 months to 2 years in addition to breast milk?

آپ کے گاؤں میں 6 ماہ سے لیکر 2 سال کے کم عمر بچوں کیلئے ماں کے دودھ کے ساتھ اور کس قسم کی اضافی غذا دی جاتی ہے؟

.Do the complementary foods vary every day/every other day/every week or do not vary at all

کیا بچوں کی لیے بننے والی ہلکی غذا میں تبدیلی کرتی ہیں، روزانہ، ہر دوسرے دن، ہر ہفتے یا پھر کرتے ہی نہیں؟

6. How often do mothers cook/prepare food for babies' age 6-23 months? How do mothers know how much food to give a baby? How often are young infants fed in a day?

عام طور پر مائیں اپنے 6-23 ماہ کے بچوں کے لیے کیسے کھانا بناتی ہیں؟ ماؤں کو کیسے پتا چلتا ہے کہ بچے کو کتنی مقدار میں کھانا دینا

چاہیے؟ عام طور پر چھوٹے بچوں کو دن میں کتنی بار کھانا کھلایا جاتا ہے؟

7. What are the foods that are prohibited for children of age 0-6 months; age 6-12 months; age 12-24 months? and what happens if child consumes these food?

وہ کونسی غذائیں ہیں جو 0-6 ماہ، 6-12 ماہ اور 12-24 ماہ تک کے بچوں کو کھلانا ممنوع ہے، اور کیا ہوگا اگر بچے وہ غذا کھا لیں تو؟
0-6 ماہ:

6-12 ماہ

12-24 ماہ:

8. Is malnutrition common in this district? If yes, what is the cause (probe for food insecurity, knowledge gap, diseases, etc)

کیا غذائی کمی آپ کے علاقے میں عام ہے؟ اگر ہیں تو اسکی وجہ کیا ہے (بیماریاں، کم علمی، خوراک کی قلت وغیرہ)

9. Who are the key persons and institutions who influenced your infant and child feeding practices? (probe for: father of the baby, biological mother, mother-in-law, grandmother, health workers, LHW, religious leader) and why

وہ کونسے اہم لوگ یا ادارے ہیں جو آپ کے بچوں کا غذائی عمل متین کرتے ہیں اور وہ کیوں ہیں؟

10. What are the main problems you face in getting information about child care and feeding practices?

بچوں کی دیکھ بھال کرنے اور کھلانے پلانے کی بہتر معلومات حاصل کرنے میں آپ کو کونسی مشکلات کا سامنا ہے؟

Annex IV: Focus group discussion guide for WASH and food security

UC _____ Village Name _____ Cluster No _____ Team No _____ Date: ____/____/____

(Kindly Use these questions as a guideline in focal group discussion, and probe the community group for more and more information)

a) Include minimum 8 persons or more b) Don't ask questions from only one persons

1. What are the main sources of drinking and domestic water in your community?
2. What are the main challenges community are facing for collecting water, mainly who is responsible for collecting water?
3. What are the common practices in community to treat water for drinking?

4. Please specify main defecation practices in community, and what are the common reasons that people are doing open defecation?
5. What are the main income sources of the community?
6. Did the community aware about Water related diseases? What are these? Who are the key persons for dissemination of its awareness?
7. What are the main occupations, the village residents are involved in?
8. What are the main crops cultivated?
9. What percent of the land in this village is cultivated during the last year? (Estimation)