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RESEARCH REPORT

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Formative Research on Social and Behaviour Change Communication (SBCC), and Analysis on Nutrition Governance in the CHT Region.

SUBMITTED TO:

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REPORT BY

Centre for Qualitative Research
explore everything in-depth

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List of Acronyms

ANC	Antenatal care
BCG	Bacillus Calmette-Guérin (Vaccine)
BDHS	Bangladesh Demographic and Health Survey
BMI	Body Mass Index
BNNC	Bangladesh National Nutrition Council
BNSMH	Bangladesh National Strategy for Maternal Health
CC	Community Clinic
CG	Community Group
CHCP	Community Health Care Provider
CHT	Chittagong Hill Tracks
CNP	Community-based Nutrition Promoter
CQR	Centre for Qualitative Research
DAE	Department of Agricultural Extension
DGHP	Directorate General of Family Planning
DGHS	Directorate General of Health Services
EPI	Expanded Programme on Immunization
ESP	Essential Services Package
FGD	Focus Group Discussion
FWA	Family Welfare Assistant
FWV	Family Welfare Visitor
GOB	Government of Bangladesh
HA	Health Assistant
HDC	Hill District Council
HFIAS	Household Food Insecurity Access Scale
HFIAP	Household Food Insecurity Access Prevalence
HH	Household
Hib	Haemophilus influenzae type b
HPN	Health, Nutrition and Population
HPNSP	Health, Population and Nutrition Sector Program

IDI	In-depth Interview
IPC	Interpersonal Communication
IFA	Iron and Folic Acid
IFM-FFS	Integrated Farm Management-Farmer Field School
IMCI	Integrated Management of Childhood Illness
IPHN	Institute of Public Health Nutrition
IPV	Inactivated Poliovirus Vaccine
IYCF	Infant and young child feeding
KII	Key Informant Interview
MDD-W	Minimum Dietary Diversity for Women
MDDS	Mean Dietary Diversity Score
MJF	Manusher Jonno Foundation
MHFIA	Mean Household Food Insecurity Access Score
MNCH	Maternal, Neonatal and Child Health
MoA	The Ministry of Agriculture
MoFL	The Ministry of Fisheries and Livestock
MoFood	The Ministry of Food
MOHFW	Ministry of Health and Family Welfare
MOWCA	Ministry of Women and Children Affairs
MR	Measles Rubella
MUAC	Mid-upper arm circumference
NCD	Non-communicable disease
NGO	Non-government Organization
NNS	National Nutrition Services
NPAN	Bangladesh National Plan of Action for Nutrition
NVD	Normal Vaginal Delivery
OPV	Oral polio vaccine
PCV	Pneumococcal Conjugate Vaccine
PNC	Postnatal Care
PPFP	Postpartum Family Planning

PRLC	Partnership for Resilient Livelihoods in the CHT Region
SAM	Severe Acute Malnutrition
SBA	Skilled Birth Attendant
SBCC	Social and Behavioural Change Communication
SID-CHT	Strengthening Inclusive Development in CHT
SSN	Social Safety Net
TTBA	Trained Traditional Birth Attendant
UHFWC	Union Health and Family Welfare Center
UHC	Upazila Health Complex
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UTBA	Untrained Traditional Birth Attendants
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WHZ	Weight-for-Length/Height z-score
WRA	Women of Reproductive Age

Executive Summary

Introduction

Manusher Jonno Foundation (MJF), with the technical support from Centre for Qualitative Research (CQR), carried out formative research based on a mixed-method approach of data collection. The assessment was conducted in 16 unions of 8 Upazilas under the three hill districts of Bangladesh: Rangamati, Bandarban, and Khagrachari. Data was collected between April 24, 2024 to June 20, 2024. The overall objective of the study was to conduct a formative study to assess Social and Behaviour Change Communication (SBCC) of the project areas, and to explore the landscape of local-level nutrition governance and nutrition components within the Chittagong hill tracts (CHT) regions to develop informed SBCC strategy and Intervention Design. The study collected and analysed both qualitative and quantitative data regarding the maternal, child and adolescent health and nutrition; Infant and Young Child feeding (IYCF) practices; dietary diversity; household food security, and Water, Sanitation and Hygiene (WASH).

Methodology

Data was collected through quantitative survey, spot check observation, in-depth interviews (IDIs), focus group discussions (FGDs) and key informant interviews (KIIs). A total of 386 surveys were conducted with the lactating mothers of children less than 2 years of age (192), pregnant women (52), adolescent girls of age 15 to 19 years (92) and adolescent boys of age 15 to 19 years (50). Spot check observations were conducted in one (1) community clinic (CC) in each of the 16 selected Unions. among those 16 CCs, 8 CCs were selected for conducting IDIs, considering one (1) IDI in each of the 8 selected Upazilas. Total 24 FGDs were conducted with five different groups of participants: pregnant and lactating mothers (8 FGDs - 1 in each of 8 Upazilas), adult and elderly males (4 FGDs – 1 in 4 out of 8 Upazilas), adult and elderly females (4 FGDs – 1 in 4 out of 8 Upazilas), adolescent girls aged 15 to 19 years (4 FGDs – 1 in 4 out of 8 Upazilas), and adolescent boys aged 15 to 19 years (4 FGDs – 1 in 4 out of 8 Upazilas). A total of 23 KIIs were conducted with the relevant stakeholders including local community elites and leaders; health service providers; and district and central level government officials.

Key Findings and Discussion

Ante-natal care (ANC)

Participants showed overall good level of knowledge and understanding about health and nutrition of a pregnant woman, however only 41% mothers completed required at least 4 ANC visits during their last pregnancy, which is far away from the national target of 80% by 2025 and 100% by 2030. In terms of the MJF outcome indicator, the study found 55.5% mothers had at least 3 ANC visits. Difficult communication system due to topography and inadequate transportation infrastructure; limited availability of comprehensive services at the community as well as Upazila level facilities, financial constraints, and socio-cultural factors are the main barriers to the optimal use of ANC services.

Place of delivery, birth attendants and post-natal care

Around 52% delivery occurred at home. The rate is over 57% in the Bandarban district which is much higher than the national target to reduce it to 30% by 2025 and 15% by 2030. Overall, 51% deliveries were attended by an SBA, while the situation was worst in Bandarban district, with only 33.4%. On the other hand, national target aimed at increasing the rate to 80% by 2025 and 90% by 2030. Only 25% mothers and around 22% children received PNC service within 2 days of delivery. Bangladesh national strategy targeted to increase rate up to 80% by 2025 and 100% by 2030. The current situation in the CHT regions is far away to achieve country level goal. So, there is a huge scope of work on increasing the proportion of above three indicators. Factors determining outcome regarding the above three indicators included distance and difficult transportation system due to hard-to-reach characteristics, inadequate efficiency of available public health facilities, negative perception about the public health facilities, traditional practices, inadequate affordability, and poor educational status.

Breastfeeding, general feeding & pattern of complementary feeding

The rate of exclusive breastfeeding is about 66%, which needs further attention to meet the minimum target of the country to achieve 70% by 2025. Good progress observed regarding breastfeeding initiation within one hour of births (80%) and feeding colostrum (86%). Around 47% children aged 6 to 23 months received minimum diversified diet, indicating that more than half of the children did not receive it. Only 21.2% children received minimum acceptable diet which supposed to be at least 40% by 2025. Inadequate affordability, lack of knowledge to leverage local foods and inadequate awareness to comply nutrition service providers recommendations found to be the main cause behind inadequate diet for the children.

Adolescent health and nutrition

Adolescents were found to skip different meals regularly, specifically 30% girls and 19% boys skipped breakfast for 3 or more times a week. Moreover, >20% adolescent girls avoided certain foods during their menstruation periods. These required special attention to change the behaviours to protect the adolescents to be underweight.

Specific and general health issues among adolescents

Around 20% study household members were infected with diarrhoeal diseases during the last 6 month recall period, which should is remarkable in terms of nutrition status of the study beneficiaries. As of the service providers, unsafe source of drinking water is the main reason of diarrheal diseases in this region. Upazila Health Complex (46%), pharmacy (40%) and Community Clinic (39%) found to be the most visited health facilities for the household members for primary healthcare. Level of affordability, health awareness, public perceptions and traditional practices usually determined the health seeking decision in the study areas.

Household Food Security

Over 97% households had any sort of (mild to severe) food insecurity, where only less than 3% households were food secured. Overall, 14.4% households were severely food insecure, while Bandarban had the highest proportion (20%). Inadequate cash earnings, lack of market access and changing economy determines the level of food security among the study households.

Homestead gardening, and livestock and poultry rearing

51% households produced vegetables by homestead gardening during the one-year period while around 72% household owned at least on livestock or poultry animal during the date of data collection. However, only about half of the households (52.1%) have chicken which can be promoted contextually to increase the nutrition status of in the study household members. It is also remarkable that 21% households do not own homestead lands.

Water Sanitation and Hygiene (WASH)

30% households found to collect drinking water from unsafe sources such as dug-well or other type of well and spring water. 64% households use unsafe or non-sanitary latrine or defecate in open places and 69% caregivers do not manage their child's feces safely. Hadwahing practice with soap after handling child feces and before feeding a child is also low, with only 41%. Nutritional status of the children can be affected by all the above situation related to WASH, which should be taken into consideration while designing any health and nutrition

interventions in the study areas. However, unavailability or inadequate running water at the right place found to be a big challenge in terms of ensuring safe sanitation and improved hygiene behaviour in the study areas.

Situation of the Community Clinics

For most of the qualitive study participants, including the community members, CHCP and key informants who were service providers, CC is a excellent opportunity for the rural village community people for availing primary healthcare and nutrition services. CHCPs are also available through phone call to provide essential suggestions. However, study revealed partial functionality of the CCs because of inadequate service delivery equipment and facilities, and also because of the inadequate monitoring of the CCs opening and closing hours. Moreover, the specific protocol of one CC for 6000 people is found not effective for hard-to-reach CHT areas, which context specific distribution of CCs. Service providers also recommended, considering difficulty of transportation, enhancing all the CCs in the hard-to-reach areas for child delivery can be helpful to decrease the current rate of home-based delivery.

Nutrition governance in CHT

Policies and guidelines considered the geographical (hard-to-reach), economic and cultural context of CHT regions, however, there is a huge gap in the policy phrases and implementation of the planned activities. Collaboration of multi-sectoral nutrition program remarkably poor to achieve targeted goals. There are also gaps in strategies such as a CC for 6000 population is relevant in CHT, and ignoring the good practices established by development organization. There are also institutional and infrastructure level gaps to provide appropriate health and nutrition services. However, any health and nutrition intervention in these regions should carefully consider engaging local level stakeholders and recruiting health workers and volunteers from the community to overcome geographical, socio-cultural and language barriers. Advocacy to strengthen multi-sectoral collaboration and incentives to change initial level behaviour change would also be required.

Factors affecting health and nutrition interventions

The situation of accepting outworld people and modern medicines is changing among Hilly people but the progress is really slower. The study findings revealed that SBCC strategy in CHT regions requires to be specific to certain regions as well as various indigenous groups. Educationally under privilege villagers sometimes failed to communicate with mainstream Bangla language speakers, and do not understand the messages hanging in the health facilities. Findings suggested

that, various NGO workers who visited the study population with health messages received acceptance and popularity, such as Shasthyosebika of BRAC and healthcare worker of Parakendro. Courtyard sessions informed to be a preferred way to deliver the health and nutrition information. Various story from the participants regarding health and nutrition identified that when mothers were accompanied by her husband or other family members, while being counselled for a health and nutrition behaviours, then the needs of the mothers are prioritized. Previous experience of developing promotional materials suggested that specific community based local language should be applied. This is also true for the SBCC material available in the CCs in CHT. According to the participants, anything will be developed for these population should be well informed, community and household level promotion or awareness creation is necessary to get participation from the community.

Recommendations

The study recommends an integrated (including nutrition specific and nutrition sensitive activities) and CHT specific approach to ensure the maternal, newborn, child and adolescent health and nutrition in the study areas:

1. 22 ministries are included for multi-sectoral nutrition program of Bangladesh. Among those 22 ministries, five ministries [Ministry of Health and Family Welfare (MoH&FW), Ministry of Food (MoFood), Ministry of Agriculture (MoA), Ministry of Women and Children Affairs (MoWCA), and Ministry of Fisheries and Livestock (MoFL)] are very important to ensure the nutrition of the people in CHT regions. However, the study revealed that collaboration among the various ministries for the multisectoral program is not up to mark. Therefore, it is necessary to advocate to ensure that these 5 ministries are working in close collaboration to ensure the nutrition of CHT population.
2. The uptake of existing CCs, especially for the ANC and PNC services, found to be facing challenge because of the difficult transportation system due to topography of the region. The bumpy hilly walk ways are also affected in rainy season and/or dry season causing the low uptake of the CCs. There is a need for community clinic should be established in each village or for few closest neighbourhoods so that pregnant and lactating mothers found it convenient to visit the CC throughout the whole year.
3. The study found a very high prevalence of the home-based child delivery in the CHT regions. As per the study participants recommended/demanded, CCs should be further enhanced to deliver child along with a delivery room, manage pregnancy and child delivery related early complications, and newborn care.

4. Community clinic and other public health facilities should be fully functional with necessary staff regularly providing services with necessary equipment and medicines.
5. Because of the difficult transportation system as well as other barriers, home-based child delivery is prevalent. Along with continuous efforts to increase the facility-based child delivery, this is also necessary to ensure that home-based child delivery is attended by at least a Trained TBA. Therefore, the study recommends training program for TBAs, and ensure that in each neighbourhood there is at least one TTBA to attend the home-based deliveries.
6. Increased the awareness regarding essential health & nutrition services for pregnant women, lactating mothers, newborns, children & adolescents
7. Increase the awareness regarding available facilities & services related to health & nutrition of the target groups
8. Strengthen health system responsiveness to increase quality of health and nutrition services
9. Ensure that the pregnant and lactating mothers, and adolescents are informed about their health and nutrition together with their family members.
10. Need continuous effort to keep up early initiation of breastfeeding and increased rate of exclusive breastfeeding.
11. Ensure early initiation of complementary feeding as soon as the child age is 6 months
12. Promote locally available foods and achievable process to arrange complementary feeding that ensure minimum acceptable diet for a child aged 6 to 23 months of age. A separate program to promote 'preparation and serving of local food based complementary food' is recommended.
13. The study findings revealed that still there are some perceptions and practices regarding dietary intake during pregnancy (such as eating much makes the child bigger and delivery is complicated) and lactation periods (such as avoiding meats or other rich foods during first few weeks of delivery), those are harmful for both mother and child. Study recommends promotional and SBCC activities to ensure optimal dietary intake during pregnancy and lactation periods.
14. Adolescent group-based separate nutrition intervention needs to develop, along with parents' participation. Because of most of the CHCPs are female, adolescent boys do not feel encourage to go to the CCs for their health and nutrition problems. Both the girls and boys are also found to skip meals. Adolescent girls found to avoid certain foods during their menstruation. The adolescents need to be sensitized and break the various stigma related to be open up to share health problems with family members and service providers, in terms of staying thin for looking beautiful etc.

15. Promote homestead gardening for nutritious vegetables and fruit trees appropriate for hilly terrain, and household poultry and livestock rearing to ensure household nutrition supply and to increase cash earnings.
16. (if needed) Bridge the poor farmer households with cash transfer during the interim period of crop production to ensure food security and nutrition.
17. Work for improved mechanism to increase water supply among beneficiaries.
18. Advocate for subsidized tube-well and sanitary latrine for the poor households.
19. Ensure that every mother/caregiver manage disposal of child feces safely into a sanitary latrine rather than in an environment.
20. Ensure mothers and other family members wash their hands with soap at least after defecation, after cleaning child anus, after disposal of child feces, during preparing complementary foods, before eating and before feeding a child.
21. Develop appropriate health promotion materials in the indigenous group specific language, and reach them by household visits by a community-based healthcare worker through courtyard meetings as well as interpersonal communication at the beneficiary level.
22. Utilize the available schools and other community-based centres to gather local level key stakeholders to sensitise regarding a health and nutrition program. Also utilize the religious gatherings to promote nutrition information and behaviours.

1. Introduction

Manusher Jonno Foundation (MJF) is one of Bangladesh's largest national grant-making organisations, providing funding and strengthening capacity for human rights and governance activities. MJF has managed partnerships with 400 grassroots organisations in the last 20 years to assist Bangladesh's poor and marginalised population and empower them to raise their voices to claim their rights. Additionally, MJF collaborates with public institutions to foster their responsiveness to the needs of marginalised individuals. Among the various programmes undertaken by MJF, one of the focal areas is the rights of ethnic communities. Through partnerships with local NGOs since 2004, MJF has been diligently working to enhance livelihoods, promote climate-smart agriculture, improve health services, and facilitate quality education for the people of the Chittagong Hill Tracts (CHT) region. Building upon the previous experiences and successful endeavours in improving livelihood opportunities in the CHT region and throughout Bangladesh, MJF has developed a comprehensive and multidimensional project called the "Partnership for Resilient Livelihoods in the CHT Region (PRLC). Financially supported by the European Union, the project consists of four main components: resilient livelihoods, nutrition, social protection, and advocacy, with a goal to contribute to poverty reduction and resilient livelihoods of extremely poor households in the CHT regions of Bangladesh.

MJF conducted a formative study to understand the social and behaviour change communication (SBCC) of the project areas and to explore the landscape of local-level nutrition governance and nutrition components within the CHT regions. Centre for Qualitative Research (CQR), a development consultancy firm based in Dhaka, provided expert technical support to carry out this formative study.

1.1. Background of the Study

The CHT region of Bangladesh consists of three administrative districts: Rangamati, Bandarban, and Khagrachari which represent a diverse cultural and geographical landscape of Bangladesh. Nine percent (9%) of the total land area of the country is covered by the region[1], featuring steep hills and narrow valleys that are often remote and inaccessible. Unfortunately, these three districts experience significant poverty rates, above-average neonatal death rates, seasonal food shortages lasting up to six months, and poor water and sanitation leading to preventable diseases in children. These conditions make climate-resilient livelihood development and watershed management crucial in the CHT to address climate change and natural resource degradation. To alleviate poverty and improve the livelihoods of extremely low-income households in the CHT, MJF and UNDP have collaborated on the "Partnership for Resilient Livelihoods in the CHT Region" project since January 2023, with funding from the European Union. Its top priorities include market access, climate-resilient

agriculture, social safety nets, and the well-being of marginalized people, with a particular focus on gender equality, women's empowerment, and accessibility for individuals with disabilities. The project also employs the UNDP's Integrated Farm Management-Farmer Field School (IFM-FFS) model for livelihood promotion, which has been implemented in the three hill districts since 2017 through the Strengthening Inclusive Development in Chittagong Hill Tracts (SID-CHT) project. The project will reach 20,000 households and approximately 98,000 people focusing on improving the well-being of the poor and marginalized in 8 Upazilas and 26 Unions of the CHT.

1.2. Objectives

Overall objective

To conduct a formative study to assess Social and Behaviour Change Communication (SBCC) of the project areas, and to explore the landscape of local-level nutrition governance and nutrition components within the Chittagong hill tracts (CHT) regions to develop informed SBCC strategy and Intervention Design.

Specific objectives

I. To understand the context and challenges of the project areas regarding nutrition issues and identify the socio-cultural norms, beliefs, behaviours, and rituals that create positive or negative impact to the nutrition practices.
II. To understand the knowledge levels of key community stakeholders, including women, men, adolescents, families, and community influencers, regarding nutrition and primary health care.
III. To identify specific social, cultural, and other drivers influencing adopting practices that enhance health, nutrition, and resilience at the individual, household, and community levels.
IV. To explore the factors contributing to gaps in maternal and child nutrition, health, and hygiene knowledge and practices within the community.
V. To identify barriers to adopting appropriate health behaviours, considering individual, family, community, and institutional levels, and identify feasible solutions to overcome these barriers.
VI. To identify effective engagement and communication activities, tailored programmatic audiences, and their reference groups, such as stakeholders and religious/cultural leaders, for promoting desirable behaviours among the target communities.
VII. To document recommendations provided by the project's target participants regarding practical approaches to engage with them and facilitate social and behavioural changes in nutrition.
VIII. To identify nutrition-sensitive and nutrition-specific interventions being implemented at the CHT.

IX. To inquire into aspects of nutrition governance and primary health care services at the local level, including its structures, processes, functionality and effectiveness.
X. To identify common governance challenges and opportunities at the local level related to nutrition.
XI. To assess the progress and gaps within the nutrition governance system in the Chittagong Hill Tracts (CHT) region.
XII. To make recommendations to improve the nutrition governance system in the CHT areas.

2. Methodology

2.1. Study sites and population

The assessment was conducted in 8 Upazilas and 26 unions in three hill districts of Rangamati, Bandarban, and Khagrachari, under the Chattogram Division of Bangladesh (Figure 1). The study was conducted to collect quantitative data for statistically appropriate sample size and qualitative data from purposively selected necessary number of respondents selecting from 20 thousand beneficiary households. The target populations for data collection were the pregnant women; lactating mothers of children aged 0-23 months; adolescent boys and girls of age 15-19 years; adult and elderly male and female community members. Local community elites and leaders, health service providers, and district and central level government officials from relevant departments were also included in the study.

Chittagong Hill Tracts (the three districts) are the home to around 15 indigenous communities namely Chakma, Marma, Tripura, Tanchangya, Mro, Lushai, Khyang, Khumi, Chak, Pangkhua, Bawm, Santal, Rakhaine, Asam/Asamese and Gorkha. Bengali people are also living in the areas.[2] However, this study has covered the project referred 8 indigenous groups out of those 15 groups, and also the Bengalis. Therefore, total 9 ethnic communities were included in this study as study participants. Those 9 ethnic communities were: Chakma, Marma, Tripura, Tanchangya, Mro, Khumi, Khyang, Bawm and Bangali.

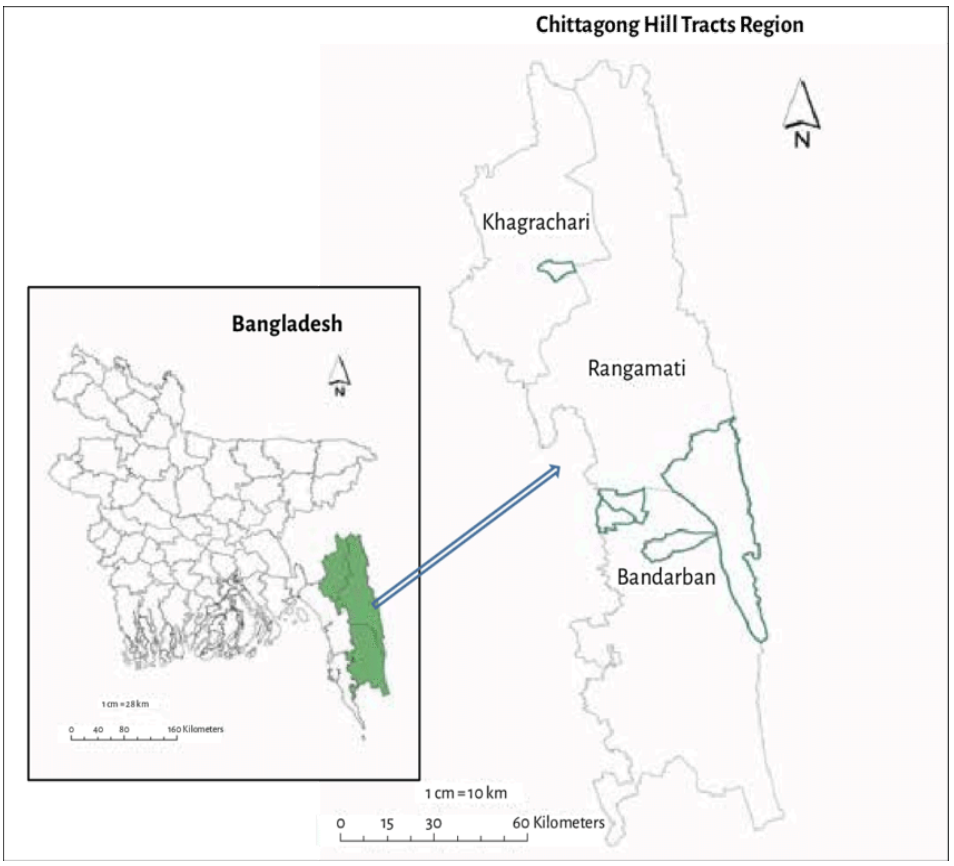


Figure 1: Study districts

2.2. Study design

A mixed-method approach was followed to conduct the study. Desk reviews of the relevant literatures, quantitative surveys, spot-check observations of community clinics as community level health facility, in-depth interviews, focus group discussions, and key informant interviews were used for data collection. The study followed the joint report of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) for the "Indicators for assessing infant and young child feeding practices: definitions and measurement methods"; UNICEF PROGRAMMING GUIDANCE on "Maternal Nutrition: Prevention of malnutrition in women before and during pregnancy and while breastfeeding" and other relevant framework and tools to develop data collection tools, and to collect and analyze the data.

2.3. Detail description of methods and sample composition

2.3.1. Desk review

National Nutrition Policy 2015, Second National Plan of Action for Nutrition (NPAN2), Comprehensive Social and Behaviour Change Communication Strategy 2016, National Strategy for Infant and Young Child Feeding Dietary Guidelines for Bangladesh 2013, and

National Health Policy 2011 were reviewed and analysed to identify gaps and key focus areas that could be addressed through advocacy.,

2.3.2. Quantitative Survey

Quantitative survey data was collected through face-to-face interviews using a structured questionnaire. A total of 386 structured interviews were conducted with lactating mothers of children aged 0-23 months (192), pregnant women (52), adolescent girls of age 15-19 years (92) and adolescent boys of age 15-19 years (50). Statistically appropriate sample size calculation for an unknow population has been shown below:

$$n = \frac{(z)^2 * pq}{(d)^2}$$

Assumptions:

p = Proportion of pregnant women received 4 ANC = 0.54
q = 1 – 0.54 = 0.46
Z = 1.96 (value for 95% level of confidence)
d = Delta = precision = 0.05 from the estimate
n = Sample size = 382

Structured interviews were conducted using Tablet devices based on KOBO software. The total number of samples were equally distributed to the Eight (8) Upazilas. In each Upazila two (2) Unions were randomly selected, thus a total of 16 Unions were selected (Table 1). In each selected Union, one or more villages were selected until the required number of interviews were completed.

Table 1: List of selected Districts, Upazilas and Unions and number interviews

Districts	Upazila	Unions
Rangamati (145)	Sadar (48)	Banduk Bhanga (24)
		Balukhali (24)
	Juraichhari (49)	Banjugi Chhara (25)
		Jurai Chhari Sadar (24)
	Belaichhari (48)	Belai Chhari (25)
		Farua/Kengrachari (23)
Bandarban (144)	Sadar (48)	Rajvila (24)
		Tankabati (24)
	Lama (48)	Gajalia (24)
		Lama (24)
	Thanchi (48)	Bali Para (23)
		Thanchi (25)
Khagrachari (97)	Lakshmichhari (49)	Dulyatali (25)
		Laxmichhari (24)
	Guimara (48)	Sindukchhari (24)
		Guimara Sadar (24)

Out of 386 survey, 192 (49.7%) survey with the lactating mothers, 92 survey (23.8%) with the adolescent girls, 52 survey (13.5%) with pregnant women and 50 survey (13%) with adolescent boys was conducted (Table 2).

Table 2: Category-wise distribution of the sample size

Respondent category	Rangamati	Bandarban	Khagrachari	Total
Lactating mothers of 0-23 months children	72	72	48	**192**
Pregnant women	18	20	14	**52**
Adolescent girls of 15-19y	37	35	20	**92**
Adolescent boys of 15-19y	18	17	15	**50**
Total	**145**	**144**	**97**	***386***

On or before the day of data collection, in each of the selected Unions, field researchers collected the names of all the existing villages of that Union and then purposively selected one village for data collection. In case the required number of surveys were not completed from a village, they moved to another convenient village. Due to the geographical context of the study areas, target households and respondents from a specific village was selected by applying the EPI sampling method. To do this field researchers identified a centre point of the village and chose a random direction by spinning a bottle or pen. Going through the direction they selected the nearest one household as the starting point. Eligible respondents are then sought from that household. If an eligible respondent was available, an interview was conducted. If the household has no eligible respondent, the nearest households from this household was screened for eligible respondents, until an eligible respondent was found and interviewed. Subsequent eligible respondent was sought from household closest to the current household, with the process continuing until required number of interviews were conducted. Field researchers maintained that only one respondent of any category was selected from a particular household.

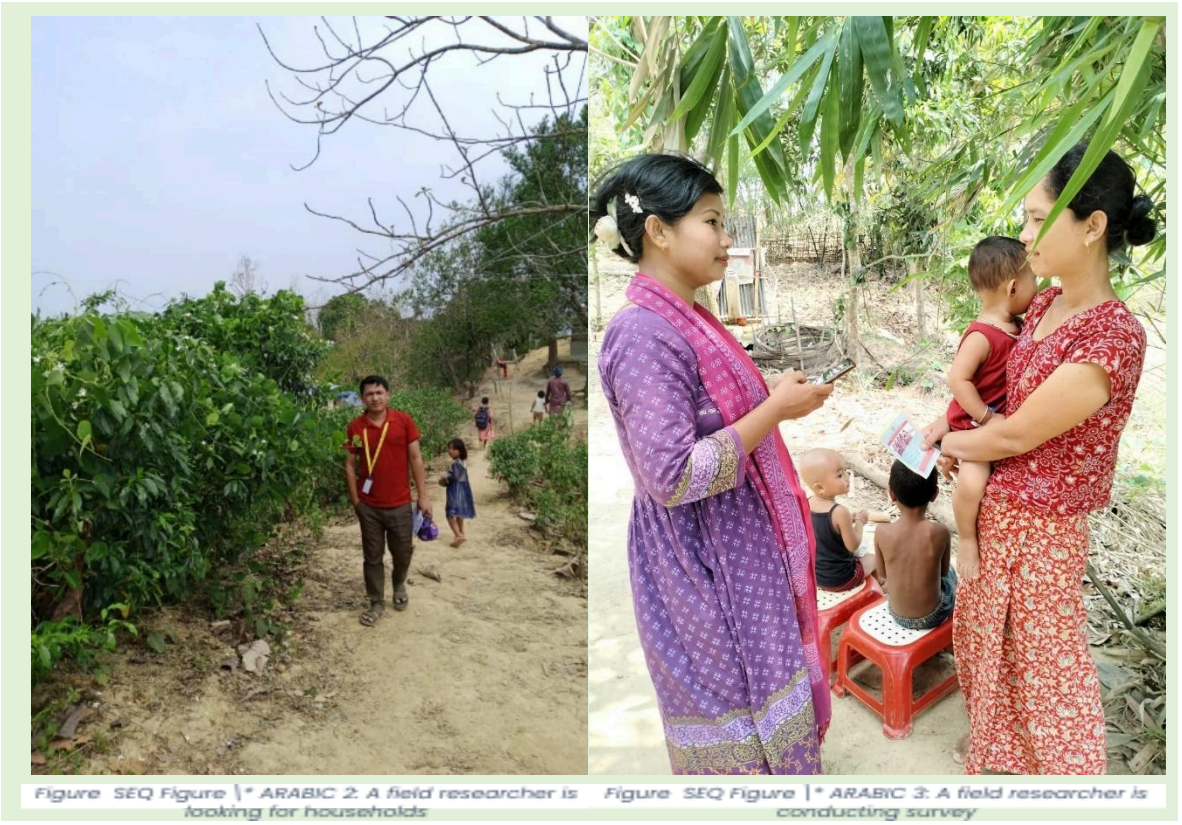


Figure SEQ Figure * ARABIC 2: A field researcher is looking for households

Figure SEQ Figure * ARABIC 3: A field researcher is conducting survey

2.3.3. Spot-check observation

Sixteen (16) spot-check observations of the Community Clinics (CC) were carried out, where one CC was selected in each of the 16 selected Unions (Table 3). Based on a structured format the observations were conducted to record the availability of facilities and equipment in the facility as per protocol.

Table 3: List of the Community Clinics observed

Sl.	Name of community clinic	Sl.	Name of community clinic
1	Bahaltali Community Clinic	9	Koilash Mahajapara Community Clinic
2	Baishpari Community Clinic	10	Kraifyangpara Community clinic
3	Barbosap Community Clinic	11	Merakhola Community Clinic
4	Bashpara Community Clinic	12	Mitingachari Community Clinic
5	Choto Dhuron Community Clinic	13	Narayanpara Community Clinic
6	Ghaskata char community clinic	14	Pai Thui Ong Karbari Community Clinic
7	Jini Ong Para Community Clinic	15	Samirapara Community Clinic
8	Shilchori Community clinic	16	Shafoypara Community Clinic

2.3.4. In-depth interviews (IDI)

Eight (8) IDIs were conducted with the frontline service provider (the community health care provider/CHCP) at the CCs to understand various types of barriers and challenges they faced to provide the health and nutrition services. One IDI was

conducted in each of the study Upazila from among the 16 CCs where spot-check observations were carried out. A thematic guideline was used to conduct the IDIs.

2.3.5. Focus Group Discussion (FGD)

A total of 24 FGDs were conducted with five (5) different groups of participants. The first group included pregnant women and mothers of children aged 0 to 59 months to conduct 8 FGDs in 8 Upazilas; the second group included adult and elderly males to conduct 4 FGDs in 4 Upazilas out of 8 Upazilas; third group included adult and elderly females to conduct 4 FGDs in 4 Upazilas out of 8 Upazilas; forth group included the adolescent girls aged 15 to 19 years to conduct 4 FGDs in 4 of the 8 Upazilas, and fifth group included the adolescent boys aged 15 to 19 years to conduct 4 FGDs in the remaining 4 Upazilas (Table 4).

*Figure SEQ Figure * ARABIC 4: A Research Officer is conducting IDI*

Table 4: Category wise distribution of FGDs

Categories	Distribution	No. of FGD
Pregnant women & mothers of children aged 0 to 59 months	1 in each Upazila	8
Adult & elderly males	1 in each of 4 Upazila out of 8	4
Adult & elderly females	1 in each of 4 Upazila out of 8	4
Adolescent boys of 15-19 years	1 in each of 4 Upazila out of 8	4
Adolescent girls of 15-19 years	1 in each of 4 Upazila out of 8	4
	Total	**24**

Unions, and villages were determined purposively to conduct FGDs. Each FGD consisted of 6 to 10 purposively selected participants. However, variations in geography (such as Unions and Upazilas) and the socioeconomic context of the participants (such as age, education, economic status, etc.) was considered during selection. However, a total of 183 community members participated in the 24 FGDs conducted in this study. Among them 64 were pregnant and lactating mothers, 29 were adult females, 30 were adult males, 30 adolescent girls and 30 adolescent boys.

Figure 5: FGD sessions

Focus group discussions were conducted to gain an in-depth understanding of the correlations, and more generally, to understand the IYCF practice of selected regions, to identify the food consumption level and dietary need and food habits of specific populations, existing hygiene practices as well health seeking behaviour related to maternal, infant, young child, and adolescent health and nutrition. Group-specific thematic guidelines were used to conduct the FGDs.

FGD sessions were recorded using mobile-based voice recorder software, having consent from the participants. Field researchers also took notes of FGD sessions. If any case, participants do not agree to record the discussion in any session, field researchers took elaborated notes of the session and complete the notes on the same day, as soon as they return to their residence.

2.3.6. Key Informant Interview (KII)

A total of **25** KIIs were conducted with the relevant stakeholders including local community elites and leaders; health service providers; and district and central level government officials (Table 5).

Table 5: List of Key Informants

Categories	No. of KII
Deputy Director, BNNC, Dhaka	1
Program Manager, NNS, IPHN, Dhaka	1
Civil Surgeon, Rangamati	1
Nutrition Focal Point (MO), CS Office, Bandarban	1
Deputy Director, Department of Women Affairs (Bandarban)	1
Program Manager – Brac Maleria Program (Lakshmichari, Khagrachari)	1
Medical Officer (Belaichari, Rangamati; Lama, Bandarban; Lakshmichari, Khagrachari)	3
SACMO (Thanchi, Bandarban)	1
NGO Service Provider (Sadar, Rangamati)	1
Traditional Healer (Juraichari, Rangamati)	1
UP Chairman [Lakshmichari, Khagrachari; Thanchi, Bandarban; Juraichari, Rangamati (Female)]	3
CCMC member (Lakshmichari, Khagrachari; Sadar, Bandarban)	2
Headman (Thanchi, Bandarban)	1
Karbari (Guimara, Khagrachari; Belaichari, Rangamati; Sadar, Bandarban)	3
Teacher (Thanchi, Bandarban)	1
NGO (Lama, Bandarban)	1
Total	**23**

Participants were selected purposively and interviewed to understand the social, institutional, and service delivery-related barriers and opportunities for the health and nutrition of mothers, infants, young children, and adolescents in the study areas. Stakeholder type specific thematic guidelines were used for data collection . Each of the KIIs were recorded using mobile-based voice recorder software, having consent from the participants.

2.4. Ensuring data quality

All the data collection tools were developed by engaging expert researchers and based on sufficient reviews of the standard tools related to the study objectives and outcome indicators. The tools were reviewed and accepted by MJF before finalizing. Each of the Upazila-wise data enumerators (two from each Upazila) for collecting quantitative survey were recruited. Curriculum Vitae of the interested candidates having at least a graduate degree of any kind, were collected through the involvement of PNGOs. After primary screening based on previous work experience, each of the candidates were interviewed shortly over phone before selection. Field researchers for qualitative data collection were recruited from relevant academic backgrounds and/or experience in a similar type of research data collection. Three-day training sessions were organized for the field researchers. Two days were dedicated for survey data collection and one day

was for qualitative data. Field researchers were trained on data collection methods and techniques, the content of the tools to be used, ethical issues and consent process, safety during the field visits, and other relevant and sensitive issues were discussed in the training sessions. Additionally, the training sessions included a detail description of the study and its importance. There were enough role plays and field test of the data collection tools was also carried out, based on which the data collection tools were finalized.

Figure 6: Some snapshot from training sessions

Field supervisors (investigator/co-investigator/research manager/research officer) monitored the data collection activities directly by visiting the field while conducting the interviews as part of quality control. Some random phone calls to the respondents were also made to cross-check the collected data. Data was also monitored from the first day of data collection through the KOBO toolbox as well as statistical software (for survey) and by listening to the recording of the FGDs and interviews. Experienced researchers cleaned the survey data and check the quality of the qualitative data, and initiated necessary steps to fill in the gaps.

A WhatsApp group of related field researchers and administrative staff was created at the orientation day of the training to keep the research team in a single communication platform. The WhatsApp group was also used to make the internal communication and to communicate any field and data related issues and concern during the fieldwork period. During the field work, team members participated in a regular virtual de-briefing session under the leadership of the research manager and sometimes also in the presence of the principal investigators/co-investigators. In this session team members shared the daily field experiences, initial findings/observations and challenges.

2.5. Data Analysis

Quantitative survey data was analysed using "R" statistical software for descriptive statistics and inferential statistics. Spot-check observation data from the hard copies was entered into the KOBO tools and findings are presented in relevant tables. Summary or verbatim transcription were prepared from FGD and interview recordings in Bangla. Relevant discussions and quotes were extracted from the transcriptions through colour coding in soft copies. Interpretations of the data were supported by consistent patterns and evidence.

2.6. Ethical and safeguarding concerns

Overview of the consent forms:

As part of the research ethics and safeguarding concern for protecting the human subject involved in the study, verbal consent was obtained from all the participants aged 18 years and above. Verbal assent was secured from the adolescent (boys and girls) participants aged 15 to 17 years, still verbal consent was obtained from their parents or guardians. Verbal consent was also obtained from the participants during recording interviews and group discussions, and while capturing any picture. The participants have had the freedom to not take part in the study or to withdraw from the study at any time after participation. Confidentiality of information was strictly maintained and access to the data was restricted within the research team members. Names and contact information were collected solely for the purpose of re-contacting participants for the follow-up and will be hidden during analysis. No names will be used in any publication, report, or presentation resulting from the study. Once all data analysis is completed, all personally identifying information will be deleted from the datasets.

3. Results and Discussion

3.1. Findings from review of the health and nutrition related policies and strategies in Bangladesh

The aim of this review was to primarily understand the country context regarding health and nutrition in the light of national policies and strategies. The review was also aimed at comparing the specific indicators of this study to be analysed based on the planned activities and specific targets that should be achieved within a specified timeframe, and to identify the area that needs to be addressed or enhanced.

The Government of Bangladesh (GOB) has been formulating and implementing various policies and programs on improving the health and nutrition status of the

people of Bangladesh. Many of the policies have clearly focused on the health and nutrition status of the disadvantaged and marginalized populations, particularly the small ethnic and vulnerable communities, including the tribal people living CHT. The specific indicators of this study that have been analysed based on the planned activities and specific targets are:

- Pregnant mothers received at least 4 ante-natal care (ANC 4+) from a medically trained provider up to 80% by 2025 and 100% 2030
- Reduce the rate of anemia among pregnant women to less than 25% by 2025
- Ensure institutional delivery up to 70% by 2025 and 85% by 2030
- Ensure that child deliveries are attended by a skilled birth attendants (SBA) up to 80% by 2025 and 90% by 2030
- Mothers and child received postnatal care (PNC) within 48 hours from a medically trained provider up to 80% by 2025 and 100% 2030
- Increase the initiation of breastfeeding in the first hour of life to 80% by 2025
- Increase the rate of exclusive breastfeeding to 70% in infants younger than 6 months of age by 2025
- Increase the rate of continued breastfeeding in children aged 20 to 23 months to>95% by 2025
- Increase the proportion of children aged 6-23 months receiving a minimum acceptable diet to more than 40% by 2025

The reviewed documents are summarized in the table below reflecting the objectives of the study (Table 6):

Table 6: Health and Nutrition related policies and strategies in Bangladesh

Name of the documents	Published by (Year)	Synopses
Bangladesh National Strategy for Maternal Health 2019-2030[3]	Ministry of Health and Family Welfare, Bangladesh (2019)	The Bangladesh National Strategy for Maternal Health 2001 was developed based on the then health needs, commitments and knowledge. The overarching goal of the Bangladesh National Strategy for Maternal Health (2019-30) is to accelerate the reduction of maternal and neonatal mortality and to reduce the burden of maternal and neonatal morbidity. The strategy sets a series of key coverage and impact targets which are: 1. Pregnant mothers received ante-natal care services (ANC 4+) at least 4 times from a medically trained provider, up to 80% by 2025 and 100% 2030 2. Ensure institutional delivery up to 70% by 2025 and 85% by 2030 3. Ensure that child deliveries are attended by a skilled birth attendants (SBA) up to 80% by 2025 and 90% by 2030

		4. Mothers and child received postnatal care (PNC) within 48 hours from a medically trained provider up to 80% by 2025 and 100% 2030
Second National Plan of Action for Nutrition (NPAN2)[4]	Ministry of Health and Family Welfare, Bangladesh (2017)	The Second National Plan of Action for Nutrition (NPAN2) 2016-2025 is a multi-sectoral policy document. NPAN2 has taken a lifecycle approach in ensuring adequate nutrition for every Bangladeshi citizen. Specifically, the plan targets the following groups: 1. The first 1000 days, from conception up to 23 months of a child; 2. Adolescent girls; 3. Pregnant and lactating women; 4. Elderly population; 5. Physical, mental & cognitive disabled. The objectives of the NPAN2 specifically aim to: l. improve the nutritional status of all citizens, including children, adolescent girls, pregnant women and lactating mothers; 2. ensure availability of adequate, diversified and quality safe food and promote healthy feeding practices; 3. strengthen nutrition-specific, or direct nutrition, interventions; 4. strengthen nutrition-sensitive, or indirect nutrition, interventions; and 5. strengthen multi-sectoral programs and increase coordination among sectors to ensure improved nutrition. The specific targets and indicators by 2025 for reducing various forms of malnutrition are: 1. Increase the initiation of breastfeeding in the first hour of life to 80% 2. Increase the rate of exclusive breastfeeding to 70% in infants younger than 6 months of age 3. Increase the rate of continued breastfeeding in children aged 20 to 23 months to>95% 4. Increase the proportion of children aged 6-23 months receiving a minimum acceptable diet to more than 40% 5. Reduce the rate of low birth weight to 16% 6. Reduce stunting to 25% among under-5 children 7. Reduce wasting to less than 8% among under-5 children 8. Reduce the proportion of underweight among under-5 children to 15% 9. Reduce the rate of severe acute malnutrition (SAM)(WHZ -3) among children under 5 to less than 1% 10. Reduce malnutrition (Total Thinness, BMI<18.5) among adolescent girls (15-19yrs) less than 15 % 11. Increase Vitamin A capsule supplementation coverage in children aged 6- 59 month by 99% 12. Increase the rate (15PPM) of iodized salt intake to 90% 13. Control & reduce maternal overweight (BMI>23) to 30% 14. Reduce the rate of anemia among pregnant women to less than 25% 15. No increase of childhood obesity (WHZ >+2) among children under 5 years
Comprehensive Social and Behaviour Change Communication Strategy[5]	Ministry of Health and Family Welfare, Bangladesh (2016)	National Comprehensive Social and Behaviour Change Communication (SBCC) Strategy for Health, Nutrition and Population (HPN) sector is the first-ever such documents in Bangladesh. This Strategy has been developed for the effective implementation of high-quality SBCC activities throughout Bangladesh. The National Comprehensive SBCC Strategy was officially disseminated on August 30, 2016, which includes direction for:

		● SBCC to be used to promote healthy behaviours at the community and household levels ● SBCC to encourage social norms that support positive health behaviours and improved health outcomes ● SBCC to drive demand for services
National Nutrition Policy[6]	Ministry of Health and Family Welfare, Bangladesh (2015)	National Nutrition Policy 2015 emphasize on ensuring proper nutrition of people by identifying causes of malnutrition. This policy will work to implement and strengthen the existing strategy, will help to build new strategy and will provide direction to the improvement of public health nutrition status of people of Bangladesh. The main objectives of the policy are: ● Improve the nutritional status of all citizens, including children, adolescent girls, pregnant women and lactating mothers. ● Ensure availability of adequate, diversified and quality safe food and promote healthy feeding practices. ● Strengthen nutrition-specific, or direct nutrition interventions. ● Strengthen nutrition-sensitive, or indirect nutrition interventions ● Strengthen multisectoral programmes and increase coordination among sectors to ensure improved nutrition ● Scale up nutrition-specific or direct programmes for marginalized persons in urban slums and people in hard-to-reach locations ● Ensure adequate nutrition for disadvantaged groups particularly affected during illnesses and natural and manmade disasters. Ensure the adoption of nutrition programmes targeting people living in poor rural and urban areas and in remote locations identified through nutrition surveillance. Give special targeting to those who have very limited access to food and are unable to earn.
Dietary Guidelines for Bangladesh 2013[7]	Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM), 2013	Bangladesh published its dietary guidelines in 2000 and revised them in 2013. The guidelines are directed at the general public. The document includes messages for appropriate feeding of children under 2 years of age. Bangladesh uses a food pyramid divided into five levels of consumption. At the bottom of the pyramid is rice, bread and other cereals to be eaten liberally. On the second level one finds vegetables and fruits to be eaten liberally too. Then comes fish, meat, eggs and pulses followed by milk and dairy products, all to be eaten in moderation. Fats, oils and sugar are at the apex of the pyramid and should be eaten sparingly. The key messages of the guideline are: ● Eat a well-balanced diet with a variety of foods at each meal. ● Consume moderate amounts of oils and fats. ● Limit salt intake and condiments and use only iodized salt. ● Consume less sugar, sweets or sweetened drinks. ● Drink plenty of water daily. ● Consume safe and clean foods and beverages. ● Maintain desired body weight through a balanced food intake and regular physical activity. ● Practice a healthy lifestyle with right cooking and healthy eating. ● Eat additional food during pregnancy and lactation. ● Practice exclusive breastfeeding for 6 months and start adequate complementary foods in time.

National Health Policy 2011[8]	Ministry of Health and Family Welfare, Bangladesh, 2011	In the year 2011, the country's first health policy was published by the government. The specific aims of the Bangladesh National Health Policy 2011 are as follows: 1. Ensure accessibility of primary health care and emergency care for all 2. Ensure quality health-care services for all based on equity. Extend the coverage of quality health-care services 3. Increase community demand for health care considering rights and dignity The primary goals are: 1. Establish health care as a right in all layers of society by ensuring essential elements of care, nutrition, and public health improvement 2. Providing quality and easily accessible care, irrespective of an urban and rural community, mainly focusing on the poor and disadvantaged population 3. Establish a community clinic to provide primary health care for every citizen. Every 6000 population will be under one community clinic 4. Prioritize emergency care 5. Reduce maternal and child mortality rates significantly 6. Achieve a replacement level of fertility within 2021 7. Ensure the necessary steps to improve maternal and child health status and ensure safe delivery services in each village 8. Ensure easy accessibility and availability of family planning services, especially to poor- and low-income community people 9. Ensure gender equality in health-care services 10. Make certain effective and efficient use of information technology in the health-care management system 11. Ensure adequate supply of logistics and manpower in government health-care facilities to deliver quality health-care services 12. Ensure a mechanism to regulate the quality and price of care and educational expenses in private facilities 13. According to the need of the country, ensure modernization and adaptation of medical education and technology 14. Ensure coordination between different health-care-related departments, ministry of GoB, and MOHFW, in addition to coordination between the Government of Bangladesh and NGOs 15. Strengthening preventive services specially expanded program on immunization activities 16. Access to health-related information is right. Steps will be taken to ensure the right 17. Ensuring the availability of essential drugs by regulating prices for essential medicines 18. Ensure adequate epidemiological tracking of disease patterns and impacts of climate change on health 19. Ensure improvement of allied health care (Unani, Ayurveda, and homeopathic) education and care delivery system
National Strategy for Infant and Young Child Feeding[9]	Ministry of Health and Family Welfare, Bangladesh, 2007	The overall goal of the National IYCF Strategy (2007) is to improve nutritional status, growth and development, health, and survival of infants and young children in Bangladesh through optimal IYCF practices. The specific objectives of the National Strategy are to:

		• Increase the national percentage of newborns who are breastfed within one hour of birth from 24% to 50% • Increase the national percentage of infants aged less than 6 months who are exclusively breastfed from 42% to 60% • Maintain the national percentage of children aged 20-23 months who are still breastfed at 90% • Increase the percentage of children aged 6-9 months who are breastfed and receive appropriate complementary foods to 50% • Create an environment to improve IYCF practices by addressing barriers regarding knowledge and practices on infant and young child feeding.

3.2. Socio-demographic Information of the Survey Respondents

3.2.1. Types of participants

The study aimed to collect at least a total of 384 survey, however, 386 valid survey data was collected. Categorically, 192 (49.7%) surveys were conducted with the lactating mothers of children aged 0 to 23 months, 92 (23.8%) with adolescent girls aged 15 to 19 years, and 50 (13%) with adolescent boys aged 15 to 19 years, and 52 (13.5%) with the women who are currently bearing child (Figure 7). Among the 52 pregnant women, 8 women (15.4%) were at their first trimester, 21 women (40.4%) was at second trimester, and 23 women (44.2%) were at third trimester of their pregnancy. The average age of the lactating mothers were 27.2 years, where the minimum age was 18 years and maximum age was 52 years. Out of 192 lactating mothers 5 (2.6%) were 'adolescent mothers. The Majority (64.6%) of the mothers were between the age of 20 to 29 years. The average age of the pregnant women was 26.5 years where the minimum age was 18 years and maximum age was 42 years. Out of 52 pregnant women 2 (3.8%) were adolescents. The Majority (64.6%) of the pregnant women were between the age of 20 to 29 years. Average age of both the adolescent boys and girls were 16.4 years (Table 7).

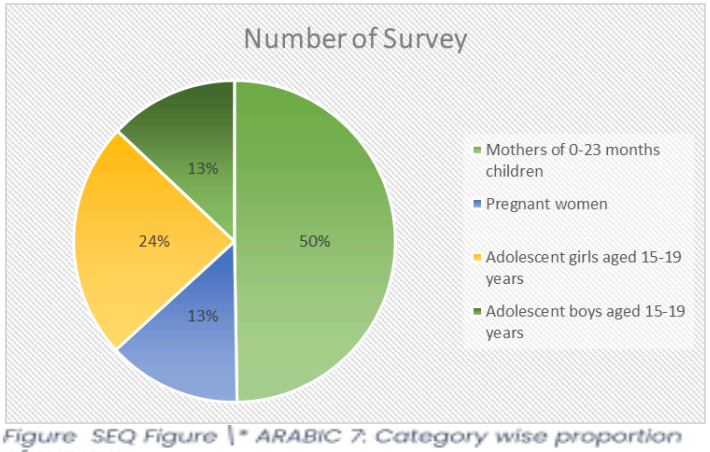


*Figure SEQ Figure * ARABIC 7: Category wise proportion of surveys*

Table 7: Age of the survey respondents

Characteristics	Values (%)

Age of mothers & pregnant women	Lactating mothers (N=192)	Pregnant women (N=52)
Less than 20 years	5 (2.6)	2 (3.8)
20 to 29 years	124 (64.6)	34 (65.4)
30 to 39 years	60 (31.2)	14 (26.9)
40 years and above	3 (1.6)	2 (3.8)
Mean age (SD)	27.2 (5.2)	26.5 (5.6)
Age of Adolescents	**Girls (N=92)**	**Boys (N=50)**
15 years	27 (29.3)	12 (24.0)
16 years	23 (25.0)	19 (38.0)
17 years	24 (26.1)	11 (22.0)
18 years	11 (12.0)	5 (10.0)
19 years	7 (7.6)	3 (6.0)
Mean age (SD)	16.4 (1.2)	16.4 (1.1)

3.2.2. Education of the participants

Among the 192 lactating mothers 44 (22.9%) never went to school. Around thirty percent of the mothers (58/192) went to primary school. While one-fourth of the mothers went to secondary school, only less than 10% mothers (17/192) completed their secondary education. However, five of the mothers (2.6%) also studied in the graduate level. Among the pregnant women, more than one-fourth (14/52) were never enrolled in a formal school and one-fourth went to primary school. However, compared to lactating mothers, higher number (17.3%) of pregnant women went to secondary level school, and similar proportion completed secondary school. 4.3% of the participating adolescent girls and 6% of the adolescent boys found to have no formal education. However, more than 40% of both the adolescent girls and boys went to secondary school and around one-third completed secondary level education (Table 8).

Table 8: Educational status of the survey participants

Characteristics	Values (%)	
Education of mothers & pregnant women	**Lactating mothers (N=192)**	**Pregnant women (N=52)**
No formal education	44 (22.9)	14 (26.9)
Studied in Primary School	58 (30.2)	13 (25.0)
Studied in Secondary school	48 (25.0)	9 (17.3)
Completed Secondary school	17 (8.9)	9 (17.3)
Studied/completed Higher Secondary	20 (10.4)	6 (11.5)
Studied or completed Graduation	5 (2.6)	1 (1.9)
Education of Adolescents	**Girls (N=92)**	**Boys (N=50)**
No formal education	4 (4.3)	3 (6)
Studied in Primary School	8 (8.7)	4 (8)

Studied/studying in High school	38 (41.3)	22 (44)
Completed Secondary school	30 (32.6)	16 (32)
Studied/studying Higher Secondary	11 (12.0)	5 (10)
Studied/studying Graduate school	1 (1.1)	0.00

3.2.3. The main occupation of the respondents

Among the total 192 lactating mothers, one mother did not want to share her occupation. Therefore, occupation data of 191 mothers were analysed. Majority of the lactating mothers (81.2%) were homemaker (Table 9).

Table 9: Main occupation of the survey participants

Characteristics	Values (%)	
Occupation of mothers & pregnant women	**Lactating mothers (N=191)**	**Pregnant women (N=52)**
Homemaker	157 (81.2)	39 (75.0)
Farmer	9 (4.7)	1 (1.9)
Employee	8 (4.2)	1 (1.9)
Daily labor (agriculture)	6 (3.1)	2 (3.8)
Domestic support	5 (2.6)	3 (5.8)
Sewing/handy craft work	2 (1.0)	3 (5.8)
Daily tabor (non-agriculture)	2 (1.0)	1 (1.9)
Grocery shop	1 (0.5)	0 (0.0)
Poultry raring	1 (0.5)	0 (0.0)
Small business	0 (0.0)	1 (1.9)
Student	0 (0.0)	1 (1.9)
Occupation of Adolescents	**Girls (N=91)**	**Boys (N=50)**
Student	76 (83.5)	41 (82)
Farmer	4 (4.4)	2 (4.0)
Homemaker	3 (3.3)	3 (6.0)
Daily labour (agriculture)	3 (3.3)	1 (2.0)
Sewing/handy craft work	2 (2.2)	0 (0.0)
Daily tabor (non-agriculture)	2 (2.2)	0 (0.0)
Domestic support	1 (1.1)	0 (0.0)
Do not work	0 (0.0)	2 (4.0)
Employee	0 (0.0)	1 (2.0)

3.2.4. Ethnicity and religion

Respondents for the survey were primarily categorised as Bengali people and non-Bengali or indigenous people. Around 90% of the respondents were indigenous or from tribal ethnic groups. Among the indigenous participants, Chakma and Marma consisted more than two-third of the respondents (Table 9). Participants of the FGDs, in terms of ethnic groups, 1 was Bawm, 23 were Bengalis, 73 were Chakma, 1 was Khyang, 1 was Khumi, 36 were Marma, Mro were 17, 9 were

Tangchangya, and 26 participants were Tripura. Majority of the respondents (69.9%) in the survey were Buddhist, in terms of religion (Table 10).

Table 10: Overall and district-wise distribution of various ethnic group of population

Characteristics	Values (%)			
	Rangamati	Bandarban	Khagrachari	Overall
Main ethnic diversity	**N= 145**	**N= 144**	**N= 97**	**N= 386**
Indigenous	142 (97.9)	128 (88.9)	78 (80.4)	348 (90.2)
Bengali	3 (2.1)	16 (11.1)	19 (19.6)	38 (9.8)
Indigenous groups	**N=142**	**N=128**	**N=78**	**N=348**
Chakma	114 (80.3)	0 (0.0)	18 (23.1)	132 (37.9)
Marma	10 (7.0)	56 (43.8)	46 (59.0)	112 (32.2)
Tripura	1 (0.7)	22 (17.2)	14 (17.9)	37 (10.6)
Mro	0 (0.0)	34 (26.6)	0 (0.0)	34 (9.8)
Tangchangya	17 (12.0)	0 (0.0)	0 (0.0)	17 (4.9)
Khumi	0 (0.0)	10 (7.8)	0 (0.0)	10 (2.9)
Bawm	0 (0.0)	3 (2.3)	0 (0.0)	3 (0.9)
Khyang	0 (0.0)	3 (2.3)	0 (0.0)	3 (0.9)
Respondents' religion	**N= 145**	**N= 144**	**N= 97**	**N= 386**
Muslim	2 (1.4)	7 (4.9)	18 (18.6)	27 (7.0)
Hindu	1 (0.7)	10 (6.9)	15 (15.5)	26 (6.7)
Buddhist	142 (97.9)	64 (44.4)	64 (66.0)	270 (69.9)
Christian	0 (0.0)	51 (35.4)	0 (0.0)	51 (13.2)
Krama	0 (0.0)	12 (8.3)	0 (0.0)	12 (3.1)

3.2.5. Disability among the study household members

Out of 386 respondents, 4 were with disability such as Visual and hearing impairment, and mental or intellectual disorder. On the other hand, out of 386 households, 16 households (4.1%) were consisted with a person with disability (Table 11).

Table 11: Rate of disable persons among study participants and their household members

Characteristics	Values (%)
	N= 386
Proportion of respondents with disability	4 (1.0)
Proportion of study HHs had a disable member	16 (4.1)

3.2.6. Household heads' characteristics

Around 4% of the heads of the study households were female. Among the 386 participants, 5 participants could not ensure the educational status of their households. Out of 381 household heads, 15 (3.9%) household heads were female. In terms of education 29.4% did not have any formal education, and around 12%

completed secondary school level education. Out of 386 household heads around 45% were farmers (Table 12).

Table 12: Education and occupational status of the household heads

Characteristics	Values (%)
	N= 386
Proportion of female-headed HHs	15 (3.9)
Educational level of the HH heads	**N= 381**
No formal education	112 (29.4)
Studied in Primary School	116 (30.4)
Studied in Secondary school	70 (18.4)
Completed Secondary school	46 (12.1)
Studied/completed Higher Secondary	25 (6.6)
Studied or completed Graduation	12 (3.1)
Occupation of the HH heads	**N= 386**
Farmer	173 (44.8)
Daily labor (non-agriculture)	58 (15.0)
Daily labor (agriculture)	51 (13.2)
Small business	29 (7.5)
Employee	26 (6.7)
Driver	14 (3.6)
Skilled worker (carpenter/mason etc.)	11 (2.8)
Grocery shop	4 (1.0)
Fisherman	4 (1.0)
Transport worker	4 (1.0)
Others	12 (3.1)

3.2.7. Household composition and income

Total 1903 members were currently living in the 386 households we included in the study. Among them 991 members (52.1%) were female and 912 members (47.9%) were found to be male. The average household size was 4.93 which ranged from 2 members to 12 members. There was a total of 161 children among the study households. The average total household monthly income was found to be 9901 BDT (Table 13).

Table 13: Household members and their specific characteristics

Characteristics	Values (%)
	N=1903
HH size (Mean, SD) [N=386]	4.93 (1.6)
Total number of members in the study HHs	1903
Proportion of the HH members are female	991 (52.1)
Number of HHs with at least 1 child aged <6 months	48 (12.4)
Proportion of HH members are children <6 months	50(2.6)
Number of HHs with at least 1 child aged 6-23 months	159 (41.2)

Proportion of HH members are children 6-23 months	161 (8.35)
Number of HHs with at least 1 adolescent aged 10-19	204 (52.8)
Proportion of HH members are adolescents aged 10-19	269 (14.1)
Number of HHs with at least 1 member aged ≥60 years	99 (25.6)
Number of HHs with at least 1 member with any disability	16 (4.1)
Average monthly HH income in Taka (Mean, SD)	9901 (8297.2)

3.3. Maternal health and nutrition

3.3.1. Ante-natal care (ANC)

3.3.1.1. Ante-natal care (ANC) knowledge of pregnant & lactating mothers

During the FGD sessions, participants were asked about their knowledge regarding the health and nutrition of a pregnant woman. Participants, specially the pregnant and lactating mothers, found to have a well understanding in this regard. Various information provided by the FGD participants which demonstrated their knowledge of health and nutrition of a pregnant women is discussed below:

- ***A pregnant woman should eat properly and eat nutritious foods***

According to the FGD participants, a pregnant mother should eat properly and timely. They should give importance to eat nutritious foods every day such as pumpkin, carrot, various leafy vegetables, eggs, fish, meat etc. Participants also remarked that nutritious foods do not necessarily mean to be bought from big market or something those are costly, rather, those foods are available around us.

> *"Nutritious food means pumpkin, carrot, various leafy vegetables, egg, fish etc., which a pregnant woman should eat regularly."* (FGD with pregnant & lactating mothers in Lama, Bandarban)

- ***A pregnant woman should not do heavy work, should move carefully, have enough rest and sleep well***

Participants were aware that pregnant women should not perform heavy work such as pressing a hand-pump tube-well or lifting a large pitcher of water or batter chili. A pregnant woman should take enough rest and should sleep well every day. According to the mothers, the reality was that they have to work for livelihoods, but still a pregnant mother should have enough rest after the essential works, and need to avoid heavy works.

> *"If we do not work, we cannot earn our livelihoods. A pregnant woman may also need to work, but at the same time she should have enough rest for the wellbeing of her child in the womb. She should not perform any heavy work,*

otherwise that may cause miscarriage." (FGD with pregnant & lactating mothers in Sadar Upazila, Rangamati)

- ***Pregnant women should have minimum ANC visit & comply instruction***

Participants demonstrated their knowledge about recommended at least 4 ANC visits to be done by women during their pregnancy.

> *"…. that a pregnant mother should have health checkup several times - at least for four times."* (FGD with pregnant & lactating mothers in Sadar Upazila, Bandarban)

A participant also talked about a very important issue of taking medicine during pregnancy period. According to her, a pregnant woman should be careful before taking any medicine during pregnancy, otherwise it can be harmful for the baby.

> *"As far as I know, a woman can't take medicine during pregnancy, especially those are powerful medicines. She should take medicines only after consultation with doctors."* (FGD with pregnant & lactating mothers in Juraichari, Rangamati)

3.3.1.2. Ante-natal care (ANC) practices of lactating mothers during their last pregnancy

Out of 192, 151 lactating mothers (78.6%) reported that they went to consult with any healthcare provider as part of ANC visit for 'at least once' during their last pregnancy. Lactating mothers were further asked about the total number of ANC visits during their last pregnancy. In this case, 10 mothers could not specify exactly how many ANC visits they had. Therefore, a total of 182 lactating mothers were analysed for the number of ANC visits. More than half (55.5%) of the mothers reported that they had three or more ANC visits, while only around two-fifth (41.2%) had four or more ANC visits during their last pregnancy periods (Table 14).

Table 14: Pregnancy and antenatal care situations

Variables	Values (%)
	[N=192]
Mothers did not want their last pregnancy	14 (7.3)
Lactating mothers had at least 1 ANC visit during their last pregnancy [N=192]	151 (78.6)
Number of ANC visit completed by lactating mothers during their last pregnancy	**N = 192**
"No" visit	41 (21.4)
One visit	17 (8.9)
Two visits	23 (12.0)
Three visits	26 (13.5)
Four visits	71 (37.0)
Five or more visits	4 (2.1)
Not sure	10 (5.2)

Lactating mothers had at least 3 or at least 4 ANC visits during their last pregnancy (excluding not sure)	**N = 182**
At least 3 ANC visits	101 (55.5)
At least 4 ANC visits	75 (41.2)

District-wise analysis of the mothers who had at least 4 ANC visits during their last pregnancy showed that mothers who used to live in Rangamati districts had lower proportion of 4 or more ANC visits (37.9%), compared to Bandarban (44.3%) and Khagrachari (41.3%) (Figure 8).

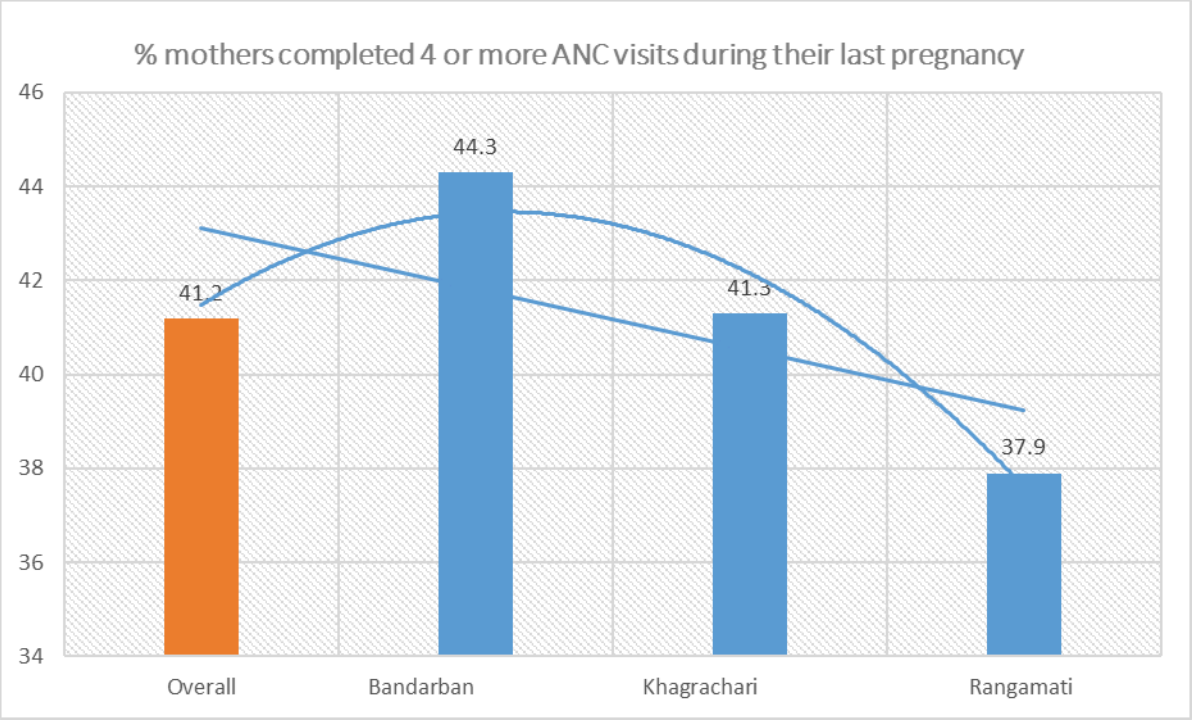


Figure 8: Comparative situation of antenatal care visits in 3 hill districts

3.3.1.3. Barriers to optimal use of ANC services and other good practices during pregnancy

Though the participants showed a good level of knowledge, however, the practice of receiving ANC services was not as expected. Qualitative study participants discussed about some socio-economic, geographic, cultural as well as structural barriers towards the optimal use of ANC services as well as good practices related to the health and nutrition of a pregnant woman.

Difficult transportation system

The first and foremost barrier for receiving any facility-based health service for the people living in rural areas of CHT regions is the inadequate and difficult transportation system. A pregnant woman faced a huge challenge to travel to a health facility for receiving ANC services. Sometimes, a pregnant woman is

required to travel a long distance using mixed transportation systems, including several hours of walking through the hilly terrain. There is also seasonality of the mode of transportation system, such as drying up of the rivers during dry seasons makes it difficult where the only available transportation system is a boat for long distant travel. At the same time, during the rainy seasons, the walking routs become unusable for a pregnant woman to reach any nearest health facility. The lowest ANC service utilization in the Rangamati districts is mainly determined by the hard-to-reach characteristics of some areas of this district. A key informant from this area informed,

> *"… even there are Unions in Rangamati district where there is no CC. And where there is CC, maybe reaching to the nearest CC from an area costs 800 Taka boat fare. Therefore, they do not feel encouraged to visit CC for ANC or other services, rather they depend on traditional healers (Boiddyo)"* (KII with Medical Officer at Bilaichari, Rangamati)

Unavailability of health facility or required ANC services in the nearest facilities

Considering the difficult transportation system in the CHT regions, unavailability of some ANC services, such as Ultrasound and some other tests, in Union and Upazila Level health facilities found to be a barrier to have 4 or more ANC visits by the pregnant women. When Union or Upazila level service providers recommend a pregnant woman to do an ultrasound or a blood test which may be available only in the district level health facilities, it becomes very difficult to travel too long way for a pregnant woman. According to the FGD participants, communication context of the CHT required all the ANC services should be available in the Upazila Health Complex, so that a pregnant woman does not need to travel to the district hospitals. Unavailability or distance of public health facilities sometimes keeps the community people underserved or unserved for necessary health and nutrition services.

> "*There is no community clinic in this neighborhood, it is in another neighborhood, and far away from here. We have to walk a long way to go to the community clinic. If there is a community clinic in this neighborhood then we will have more facilities for both mothers and children*." (FGD with pregnant & lactating mothers in Sadar Upazila, Rangamati)

Inadequate of affordability

Participants mentioned about their inadequate affordability to practice the required behaviour related to a pregnant woman. Community people do not have enough cash earning to buy nutritious food for a pregnant woman. On the other

hand, many families faced it difficult to arrange required amount of money for travelling a long distance to receive ANC services.

> *"The problem of transportation in our area is high. The cost of transportation is also high. In that case, going to a hospital to get treatment becomes difficult."* (FGD with adult male community members in Bilaichari, Rangamati)

Socio-cultural factors

Sometimes, mothers-in-low do not want to send their pregnant daughters-in-low to the hospital or pose some ideas that are harmful to a pregnant woman and her child.

> *"Some mothers-in-law do not agree that a pregnant mother should sleep much. They think that sleeping too much during pregnancy makes the baby's head unusually bigger."* (FGD with pregnant & lactating mother in Bilaichori, Rangamati)

> "*Pregnant women are not allowed to go outside the community. They are not allowed to sit or have much rest; they are told to work. They also say, if a pregnant woman eats too much the baby will be bigger and delivery will be difficult. They do not consider that the baby in the womb needs nutrition*." (KII with NGO personnel of BRAC in Lakshmichari, Khagrachari)

Participants thought that radical position to hold the traditional practices and reluctance to accept new behaviours is a huge barrier to health, nutrition and wellbeing of a pregnant mother.

> *"This has been promoted that a pregnant mother should have health checkup several times - at least for four times. She should not do heavy works. However, some people say that they do not have time to listen to such unnecessary things. They think that what they have been doing traditionally for years is fine."* (FGD with pregnant & lactating mothers in Sadar Upazila, Bandarban)

Study participants mentioned about some negative perceptions regarding the public health facilities. They stated that the medicines provided free of cost in the public health facilities are not of good quality. To get good quality medicines, community members have to buy those from pharmacies which is sometimes not affordable.

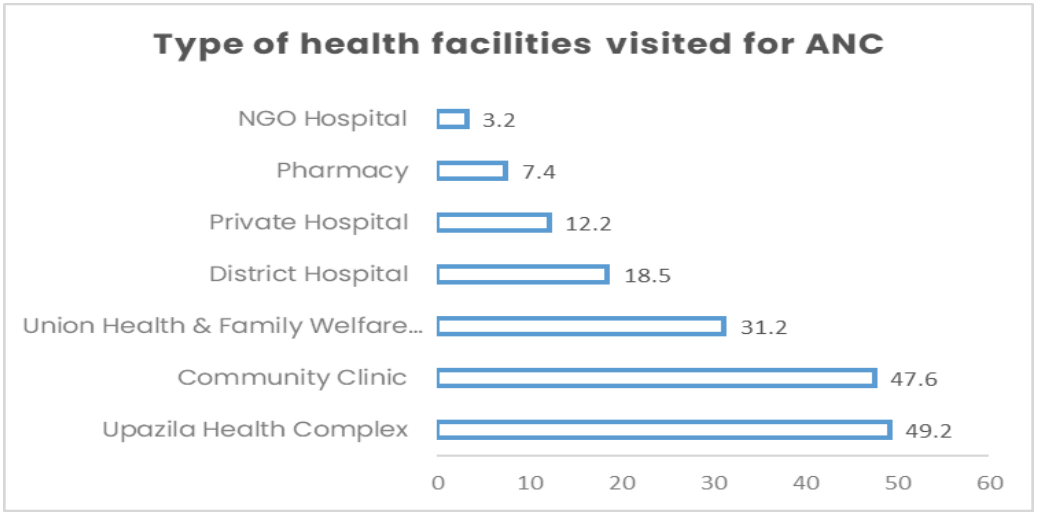
> *"When you go to the (government/public) hospitals, iron and calcium is given, but it doesn't work, you have to buy it from outside. Everyone can't afford buying from outside."* (FGD with pregnant & lactating mothers in Lama, Bandarban)

3.3.1.4. Type of health facilities visited by mothers for ANC services

151 Lactating mothers who had at least one (1) ANC visit during their last pregnancy and 38 pregnant women who had at least one ANC visit before the

date of interview (Total 189 respondents) were asked about the various type of health facilities they visited for ANC services. Near about half of the respondents visited Upazila Health Complex (49.2%) and/or Community Clinic (47.6%) (Figure 9).

*Figure SEQ Figure * ARABIC 9: Type of health facilities visited by for ANC during last pregnancy*



3.3.1.5. Timing of initial ANC visit

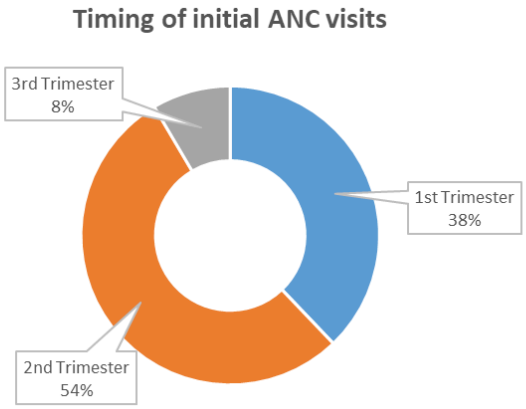


*Figure SEQ Figure * ARABIC 10: Age of pregnancy when mothers had initial ANC visit during last pregnancy*

189 respondents (described in section 3.3.1.4) were also asked about the age of their pregnancy when they first time went for ANC visit. Among them, 12 participants could not remember exact age of their pregnancy. So, the response from 177 mothers were analysed. Majority of the respondents had their first ANC visits when

there were at the 2nd trimester of their last pregnancy (Figure 10).

3.3.1.6. Types of services received during ANC visits

Study respondents who went for at least one ANC visit during their last pregnancy received various services. In analysing the type of ANC service-related responses, respondents those who were "not sure" were excluded from the analysis. The findings revealed that they received services including weight measurement (87.6%), blood pressure measurement (75.3%), urine test (63.3%), blood test (52.8%), counselling on pregnancy danger signs (87.4%), counselling on postpartum family planning (PPFP) (72.6%), counselling on healthy diet (94.5%), counselled to take IFA tablets (89.2%), counselling to take calcium tablets (91.4%) and counselling on breastfeeding (90.5%). Among the 151 lactating mothers who went for ANC visits, 147 mothers could remember whether they took IFA during their last pregnancy or not. Out of 147 mothers, 116 mothers (78.9%) reported that they took IFA during their last pregnancy. Among these 116 mothers, 98 mothers could remember how many days they approximately took IFA. Based on their responses, they took IFA for an average of around 81 days. Respondents were found to get IFA mainly from government facilities (75%) free of cost.

Among the 151 lactating mothers who went for ANC visits, 149 mothers could remember whether they took IFA during their last pregnancy or not. Out of 149 mothers, 110 mothers (73.8%) reported that they took calcium supplements during their last pregnancy. Among these 110 mothers, 94 mothers could remember how many days they approximately took calcium supplements. Based on their responses, they took calcium supplements for an average of around 81 days. Respondents were also found to get calcium supplements mainly from government facilities (73.6%) free of cost. However, out of 69 lactating mothers who were tested for blood during their last pregnancy 13 (18.8%) were diagnosed with anemia (Table 15).

Table 15: Services received as part of ANC

Characteristics	Values (%)
Services received by the respondents at their ANC visits during their last pregnancy	
Measured weight [N=177]	155 (87.6)
Measured blood pressure [N=170]	128 (75.3)
Tested for urine [169]	107 (63.3)
Tested for blood [178]	94 (52.8)
Counseled on pregnancy danger sign [183]	160 (87.4)
Counseled on postpartum family planning [179]	130 (72.6)

Counseled on healthy diet [182]	171 (94.5)
Counseled to take IFA tablets [176]	157 (89.2)
Counseled to take calcium [185]	169 (91.4)
Counseled on breastfeeding [189]	171 (90.5)
Took iron IFA during last pregnancy [N=147]	116 (78.9)
Number of days mothers took IFA [N=98] [Mean, SD]	80.9 (70.2)
Source of IFA [Multiple response]	**N=116**
Free from Govt. facility	87 (75.0)
Free from NGO facility	28 (24.1)
Free from Private facilities	12 (10.3)
Bought from pharmacy	8 (6.9)
Bought from NGO/govt.	10 (8.6)
Took iron calcium during last pregnancy [N=149]	110 (73.8)
Number of days mothers took calcium [N=94] [Mean, SD]	80.4 (72.2)
Source of calcium [Multiple response]	**N=116**
Free from Govt. facility	81 (73.6)
Free from NGO facility	25 (22.7)
Free from Private facilities	11 (10)
Bought from pharmacy	9 (8.2)
Bought from NGO/govt.	6 (5.5)
Diagnosed with anemia by testing blood [N = 69]	13 (18.8%)

3.3.1.7. Quality of ANC services

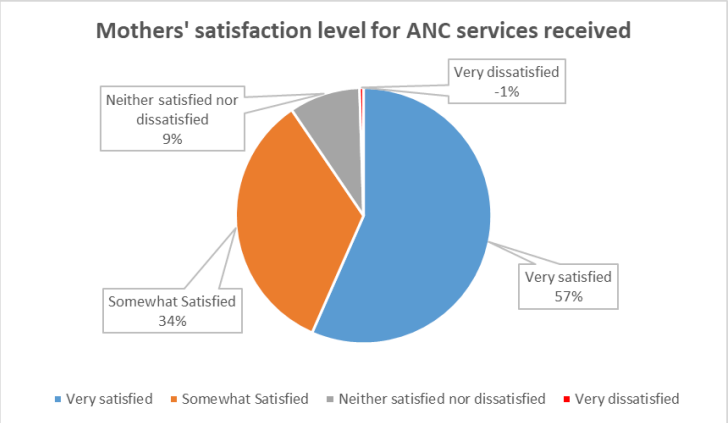


*Figure SEQ Figure * ARABIC 11: Satisfaction level of mothers who received ANC services*

Lactating mothers and pregnant women who had at least one ANC visit during their last pregnancy were measured for their level of service satisfactions. Majority of the participants (56.6%) were very satisfied with the services received, while only 1 out of 189 respondents were very dissatisfied (Figure 11).

Key findings and discussion: Pregnant and lactating mothers demonstrated overall good knowledge and understanding about health and nutrition of a pregnant woman as well as her baby in the womb. At the same time, only 41% mothers completed required at least 4 ANC visits during their last pregnancy, where Rangamati district having lowest prevalence with only 37.9%. In terms of the MJF outcome indicator of "number of pregnant mothers who received

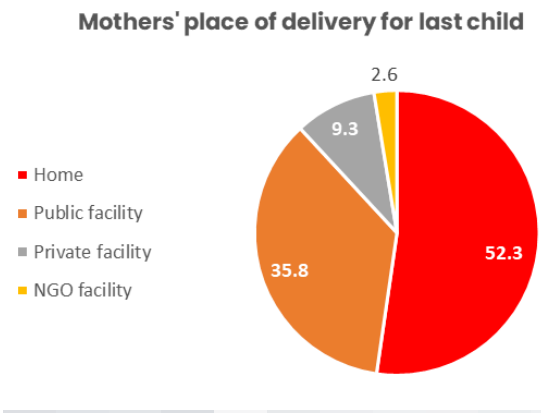
antenatal care at least three times", the study found it was 55.5%. The overall prevalence of at least 4 ANC visit is almost similar to the national prevalence, which was 40.5%, according to the Bangladesh Health and Demographic Survey 2022 (BDHS, 2022). However, according to the Bangladesh National Strategy for Maternal Health 2019-2030 (BNSMH, 2019-30), up to 80% pregnant mother should complete at least four ANC visits, by 2025. Qualitative exploration identified that difficult communication system due to topography and inadequate transportation infrastructure; limited availability of comprehensive services at the community as well as Upazila level facilities, financial constraints, and socio-cultural factors are the main barriers to the optimal use of ANC services. Socio-cultural factors those are found as barriers to optimal ANC visits and also can be harmful to the overall maternal and child health included:

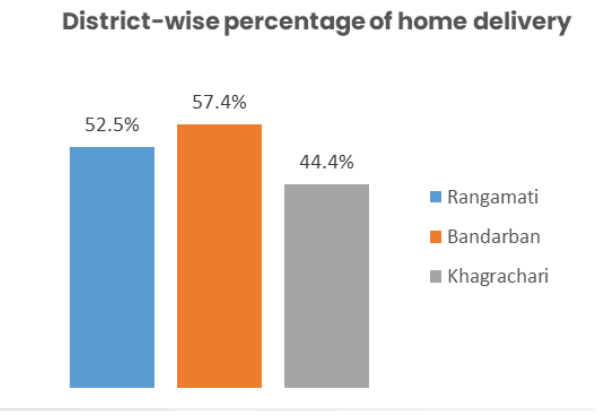
- Restriction of the women to go outside of the community during pregnancy
- Family members' (such as mother-in-law) perception that sleeping or taking rest or eating more than usual time during pregnancy makes the baby unusually bigger which in turn makes child delivery difficult
- Ignorance to accept the modern health system and new behaviours
- Holding or radical position to not to break the traditional practices
- Negative perceptions (such as inadequate, inefficient or corrupted) regarding the government health system and services.

3.3.2. Place of delivery, birth attendants and post-natal care

3.3.2.1. Place of child delivery

During the survey, lactating mothers of children aged 0 to 23 months were asked about the place of delivery of their last children. Majority of the mothers (52.3%) reported that their last children were delivered at home (Figure 12). The proportion of the mothers who delivered their children at home were found highest in Bandarban district (57.4%) and lowest in Khagrachari district (44.4%) (Figure 13).





3.3.2.2. Type of birth attendants

Overall, 51% lactating mothers reported that the delivery of their last child was attended by a skilled birth attendant [SBA - which included doctor, midwife, nurse and trained traditional birth attendant (TTBA)]. Almost one-third (31.2%) of the deliveries were attended by untrained traditional birth attendants (UTBA) and 16.1% deliveries were attended by Family member/relative/neighbours. While comparing between the 3 study districts, majority of the births in Rangamati (68.1%) were attended by an SBA which is lowest in Bandarban (33.4%). While UTBA attended a remarkable number of births in Khagrachari (41.7%), highest number of deliveries occurred in Bandarban were attended by the family members or relatives or neighbours (34.7%) (Figure 14).

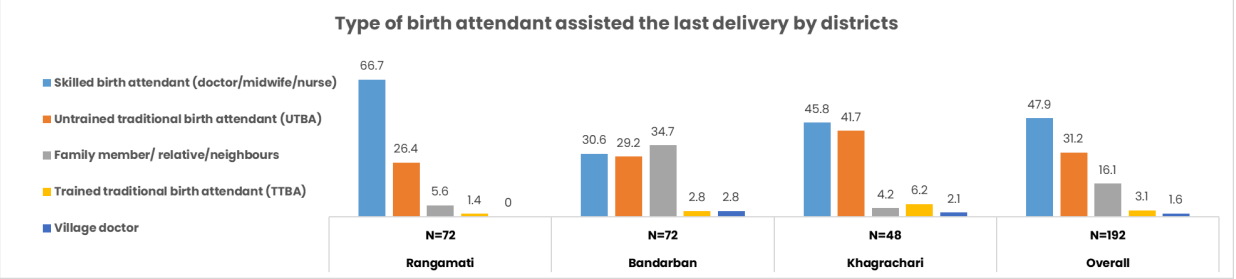


Figure 14: District-wise proportion of deliveries assisted by various type of birth attendants

3.3.2.3. Post-delivery/after-birth healthcare

Overall, out of 192 lactating mothers, 48 (25%) mothers received post-delivery healthcare in 2 days, and in 43 (22.4%) cases their children received after-birth healthcare in 2 days. Compared to the overall scenario, status of receiving both the timely post-delivery healthcare by mothers and after-birth healthcare by the children living in Bandarban districts is very low, 18.1% and 12.5% respectively (Figure 15).

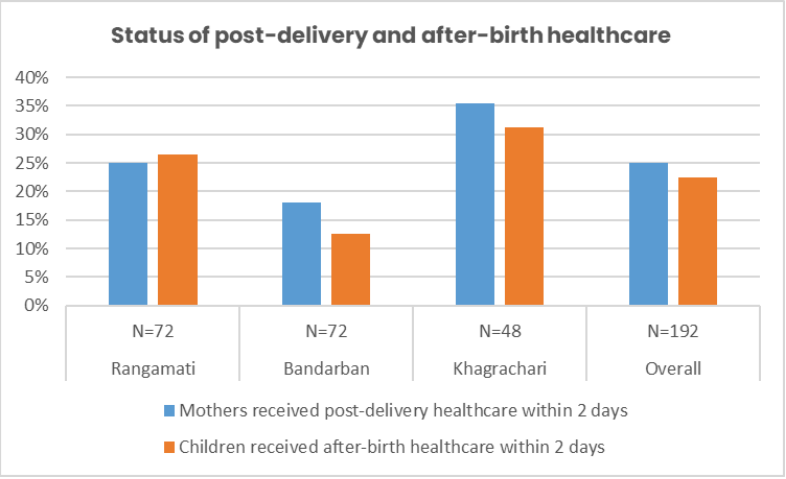


Figure 15: Proportion of mothers and children received Healthcare within 2 days of delivery by districts

3.3.2.4. Factors affecting place of delivery, birth attendants and post-natal care

During the focus group discussions participants explained about the various factors related to place of child delivery, birth attendants and post-natal care in their areas. Participants stated that the government hospitals are providing necessary services, treatment and medicines. The service providers working there, try to do their best to serve the people. However, many people in the villages are not aware and still do not go to the hospitals for child delivery. The service providers were also disappointed by the behaviors of the villagers who decide to deliver at home, according to a participant. She said,

> "*During the time of my last pregnancy I visited Upazila Health Complex for health checkup. The duty nurse talked to me about my decision regarding the place of child delivery. At that time, she regrated that many pregnant women visit the hospital for checkup but they do not deliver at hospital, they deliver at home. She was wondering why people use to do like this*." (FGD with pregnant & lactating mothers in Lama, Bandarban)

Participants also informed that many pregnant women do not go for necessary checkup and do not comply with the instructions and medicines to be taken. They usually deliver child at home and depend on the trained or untrained traditional birth attendants (UTBA/TTBA – locally known as "*ojha*") available in the community. They only move to hospitals when any emergency is occurred.

> "*Lot of pregnant women in the villages are still not going for checkup, not taking medicine properly and delivering child at home. But, now-a-days the government hospitals are doing well. If someone goes to deliver in the hospital, they (doctors and nurses) do as much as they can*." (FGD with pregnant & lactating mothers in Lama, Bandarban).

However, participants elaborated that those who are not complying with the recommended behaviours are not necessarily uninformed, rather they are failed to realize the importance facility-based delivery and are still mediated by the practices of early days. Still many people think it is better to deliver at home. A key informant expressed in this regard,

> "*There are financial reasons, but there is also a lack of awareness for a lot of deliveries are occurring at home. Because of long old tradition of delivering child at home, people want to avoid going to the hospital. Delivering at hospital required money, but the transportation system is also not good. People in this area are not well educated to realize the importance of facility-based delivery*. (KII with UP Chairman in Thanchi, Bandarban)

An IDI participant informed about her experience regarding this,

> *"Last month, I went to attend a delivery in a village of the Mro community. It was the woman's first child and I suggested the family to take the mother to a*

hospital for delivery. I also assured to go with them. Therefore, the mother-in-law scolded me a lot in their Mro language for my unacceptable suggestion." (IDI with CHCP in Sadar Upazila, Bandarban)

Another important point FGD participants discussed is the public perception regarding the unnecessary C-section. Many people think that if they go to the hospitals for delivery, they will have a C-section. So, they find it better to deliver the child at home.

Distance and difficult transportation system is another reason for home-based child delivery among the people living in hard-to-reach areas. A pregnant women cannot travel a long way to get admitted to an available health facility. Participants also talked about a procedure to inform the security/Army Camp to travel from a remote hilly area to the health facility that people sometimes want to avoid or sometimes is barrier to reach to a hospital in an emergency case.

"As it is a remote area, most of the time, delivery is done at home attended by an experienced birth attendant. When any emergency is occurred to the mother, then she is taken to the hospital. Because the travel cost is high, as well as transports and other related things are not easily available." (FGD with adult male community members in Bilaichari, Rangamati).

Participants talked about a union level public health facility named Union Health and Family Welfare canter (UH&FWC). According to them, in the UH&FWC, necessary health services are not readily available. On many occasions qualified doctor is not there. There is no gynae doctor also. So, they have to take the patient to the district hospital. Going to district hospital is really difficult, time consuming and costly.

Study revealed a ritual of naming ceremony in the villages. This ceremony can be held on the 6th day, 15th or 21st day after the delivery or the day may depend on drying the umbilical cord of the baby. Before that particular day the birth attendant (*ojha*) is invited, received with flowers and provided with gifts such as a bowl of rice and cloths, which is related to the wellbeing of the child. Relatives and neighbors are also given feast on this naming ceremony.

Key findings and discussion: Overall, about 52% delivery occurred at home. The rate is over 57% in the Bandarban district. The rate is much higher than national target which aimed at reducing the home-based delivery to 30% by 2025 and 15% by 2030 (BNSMH). Overall, 51% deliveries were attended by an SBA, while the situation was worst in Bandarban district, with only 33.4%. On the other hand, national target aimed at increasing the rate to 80% by 2025 and 90% by 2030 (BNSMH). In terms of PNC services, only 25% mothers and around 22% children received it within 2 days of delivery. Bangladesh national strategy

targeted to increase rate up to 80% by 2025 and 100% by 2030. The current situation in the CHT regions is far away to achieve country level goal. So, there is a huge scope of work on increasing the proportion of above three indicators. However, qualitative exploration revealed that there are multiple factors determining outcome regarding the above three indicators which must be taken into consideration in the CHT regions:

- Distance and difficult transportation system for the people living in hard-to-reach areas. A pregnant women cannot travel a long way to get admitted to an efficient health facility.
- Inadequate efficiency or non-functionality of the available public health facilities.
- Negative perception about the public health facilities to neglect the rural people
- Perception regarding facility-based delivery that unnecessary C-sections are occurring in the hospitals.
- Radical stand to not to break communities' traditional practices of delivering child at home assisted by the traditional birth attendants.
- Inadequate affordability to get admitted in a hospital for child delivery
- Poor educational status to realize the importance of facility-based delivery.
- Ethnicity based cultural practices, such as death in a hospital may make it challenging to return back to the community with dead body and funeral in a traditional ritual.

While hard-to-reach characteristics of many villages in the study areas that makes it difficult to ensure facility-based delivery, there are much work to do to ensure that a home delivery is attended by an SBA or TTBA, along with continuous promotion of facility-based child delivery.

3.3.3. Women's food and nutrition situation in the household

3.3.3.1. Minimum Dietary Diversity for Women (MDD-W) of Reproductive Age

The Minimum Dietary Diversity for Women (MDD-W) of Reproductive Age (15-49) data was analysed to get mean dietary diversity score (MDDS), level of diversity and the proportions of lactating mothers, pregnant women and adolescent girls consumed each food group during the 7-days before the day of data collection. MDDW data over 7-days recall in this study has been used basically to show the differences among the study Upazilas.

During the last 7 days, more than ninety percent women consumed Grains, white roots and tuber (98.8%); Dark Green Leafy Vegetables (98.2%); Meat, poultry and fish (95.5%); and eggs (90.5%). On the other hand, fewer number of respondents

consumed milk and milk products (38.4%), Organ Meat: Liver, kidney, gizzards (38.4%) and nuts and seeds (37.2%) (Figure 16).

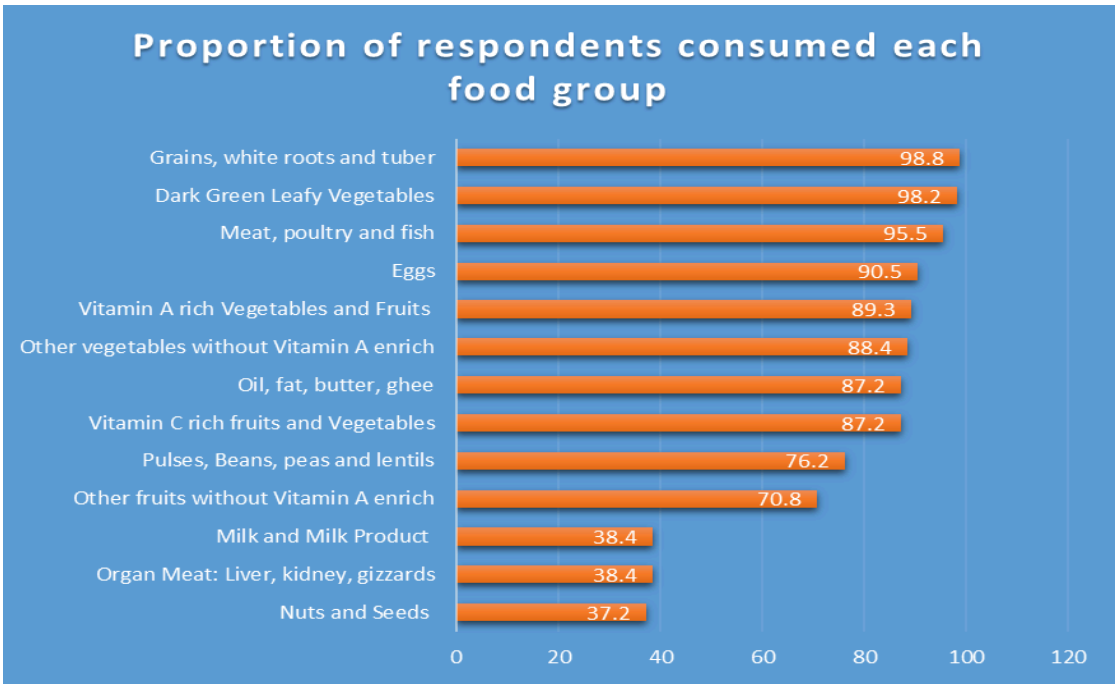


Figure 16: Proportion of respondents consumed different foods groups in the previous week

The overall MDDS among the Women of Reproductive Age (WRA) during the last seven days was 9.96 (SD, 2.17). Segregated by Upazilas, Upazilas in Bandarban district have lowest scores compared to the highest scores among the Upazilas in Khagrachari districts (Figure 17)

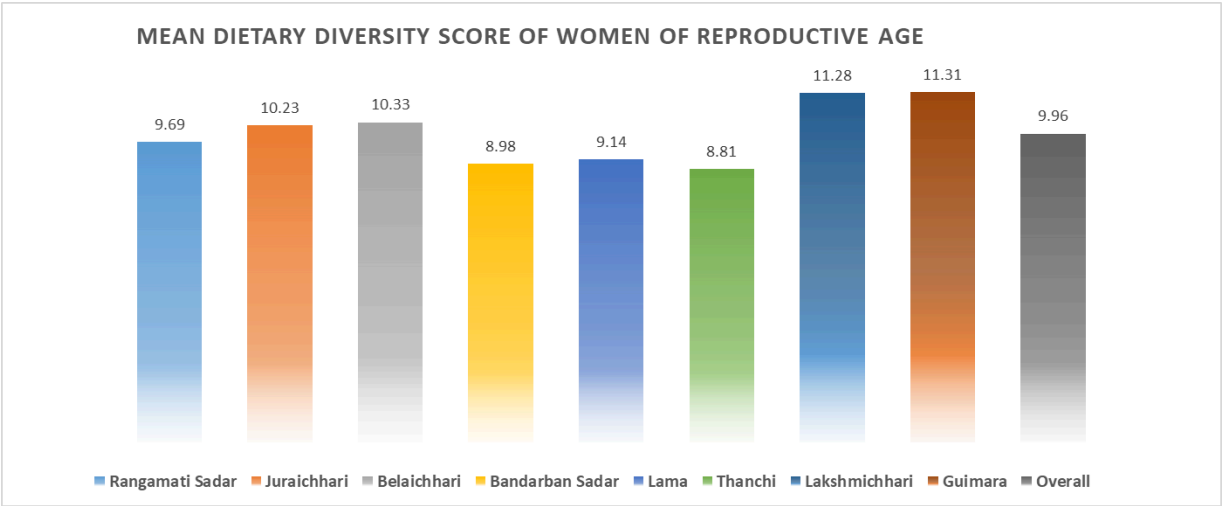


Figure 17: Comparative MDDS among the WRA during the last 7 days

Overall, 62.5% of the participants (210/336) reported they have consumed 10 or more foods groups (out 13 food groups) during the last 7 days. When compared to the different study Upazilas similar trend is observed like MDDS shown above.

However, women and girls living in Thanchi Upazila of Bandarban district have remarkably low diversity in food consumption during the last 7 days (Figure 18).

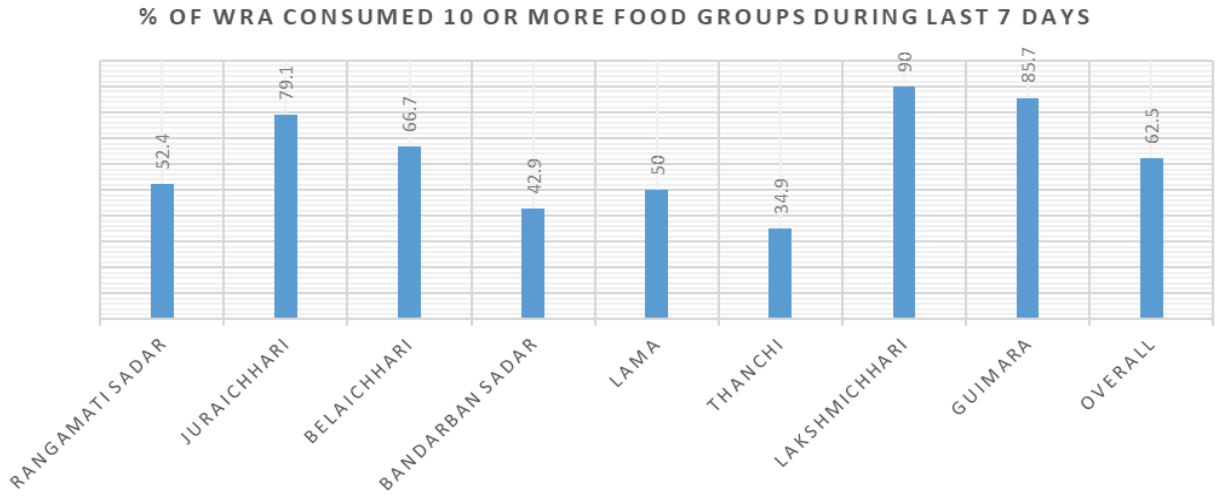


Figure 18: Proportion of WRA in different Upazilas consumed 10 or more food groups during the last 7 days

3.3.3.2. Family awareness of pregnant & lactating mothers' health and nutrition

More than ninety percent of the pregnant women (91.8%) said that their family members considered and prioritized that they required improved diet during their pregnancy period, and more than eighty-five percent was eating improved diet regularly. On the other hand, near about ninety percent lactating mothers informed that their family members consider and prioritized that they should eat extra diet as they were breastfeeding mothers (Table 16).

Table 16: Proportion of pregnant and lactating mothers were prioritized by their family members

Characteristics	Values (%)
Family members consider/prioritize pregnant women needs improved diet [N=49]	45 (91.8)
Pregnant women receiving improved diet regularly [N=49]	42 (85.7)
Family members consider/prioritize lactating mother needs extra diet [N=180]	161 (89.4)
Lactating mothers receiving extra diet regularly [N=185]	146 (78.9)

According to the FGD participants, family members were quite supportive to the pregnant and lactating mothers in terms of their health and nutrition during pregnancy, child birth and lactation periods. It seemed from the explanation of the participants that, while healthcare providers discussed the health and nutrition needs of a mother with the family members, it was helpful to enhance the family support. Participants informed that they received enough support from their family members in terms of eating nutritious foods and reduced workloads.

> *"After the delivery of my child I was on rest for two months. My mother-in-law and my husband did not allow me to do any work."* (FGD with pregnant & lactating mothers in Juraichari, Rangamati)

However, situation is not the same everywhere. How much a pregnant or lactating mother will receive priority for her relevant status varies from household to household.

Participants informed about a cultural practice related to the nutrition of a lactating mother. Sometimes, relatives visit the newly mother with homemade special curry and steamed rice. The curry is prepared of chicken, eggs and coriander leaves having reduced chilli. The food is given to the mother aiming at increasing her breastmilk flow for her child. The food is called as "*Panmuja.*"

Key findings and discussion: Minimum Dietary Diversity for Women of Reproductive Age of 15-49 years (MDD-W) data over 7-days recall in this study has been used basically to show the differences among the study Upazilas. It will not be fruitful to understand the dietary diversity of an individual woman. However, the Minimum Dietary Diversity Score (MDDS) for Women of Reproductive Age based on the history of last seven days was 9.96. The score is lowest in Bandarban district and highest in Khagrachari district. Participants of the study reported a very good level of support from the family in members during the pregnancy and lactating periods in terms of their health and nutrition. Remarkably, cultural practice of *Panmuja,* which is a practice of realizing and serving good foods of the newly mothers, can be promoted to improve the nutrition of both pregnant and lactating mothers.

3.4. Child health and Nutrition

3.4.1. Breastfeeding practices

Among the 192 lactating mothers, one (1) mother informed that her child was never breastfed. 85.9% children were fed with colostrum, that means around 14% children were not fed with colostrum. Over 80% of the study mothers reported that they initiated breastfeeding to their last child within one hour of birth. As a proxy question to identify the rate of exclusive breastfeeding, the respondents were asked about the status of giving their children any water, liquid or other foods before their age was 6 months. Almost 34% mothers said 'yes', meaning that children of those mothers were not exclusively breastfed, which explained that the rate of exclusive breastfeeding was 66% (Table 17).

Table 17: Breastfeeding practices in various key indicators, as reported by the respondent mothers

Variables	Values (%)
	N=192
Number of children never been breastfed	1 (0.5)
Children were fed with colostrum	165 (85.9)
Time interval for early initiation of Breastfeeding	
Within 1 hour of birth	158 (82.3)
1-24 hours after birth	22 (11.5)
>24 hours after birth	5 (2.6)
Not sure	7 (3.6)
The child was given with any liquid/water/food before 6 months of age (variable to measure exclusive breastfeeding) [N=151]	51 (33.8)
Rate of exclusive breastfeeding	100 (66.2)
Mothers of children 0-23 months continuing breastfeeding	185 (96.4)
Mothers started giving complementary foods within 6-8 months of age of their children [N=138]	125 (90.6)

In the FGD sessions, participants were asked about the colostrum. Participants were found aware about the importance of colostrum. The previous practice of throwing out colostrum is no more prevalent in the study areas. As a result of continuous effort by various type government and non-government health workers, community people now know the importance of feeding colostrum. They may be fully not known what is the function of the colostrum, but they were conscious enough that the newborn should be given the colostrum.

> *"Colostrum is important for babies. My child was delivered normally in a health facility and attended by a doctor. The doctor fed the child with colostrum. As we know, a new-born baby should be given the colostrum first and breast milk only. After six months, additional food should be given so that the growth of the baby is normal and the weight is normal. But no additional food can be given to a baby within six months."* (FGD with adult male community members in Lakshmichari, Khagrachari)

Key findings and discussion: The rate of exclusive breastfeeding among the study participants is about 66%, which needs further attention to meet the minimum target of the country to achieve 70% by 2025 (NPAN2). Over 80% mothers did initiate breastfeeding within one hour of births, which is a very good progress in terms of the target of NPAN2, which is also 80%. Awareness and practice regarding feeding colostrum achieved much progress with 86% rate among the study mothers. However, still around 14% children were not fed with colostrum. Nutrient-dense and high in antibodies and antioxidants, colostrum helps to build a newborn baby's immune system. So, this is necessary to ensure that all newborns are fed with colostrum. Study findings

revealed that people may have low level of understanding about the actual benefits, promoting the fact may be helpful to increase the rate to be near about 100%.

3.4.2. General feeding practices and pattern of complementary feeding

Data of a total of 151 children aged 6 to 23 months has been analysed for general feeding practices on the day before data collection. Remarkably, around half of the children were fed with foods or juice from outside shop. Only less than half (46.4%) children were fed with any soft/semi-solid/solid (other than liquid) food for at least once on the previous day (Figure 19).

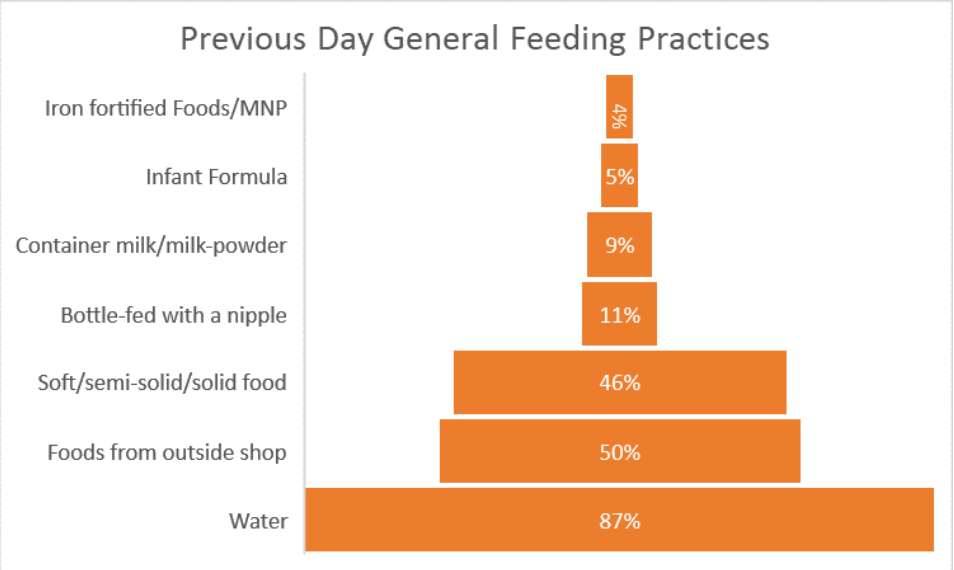


Figure 19: General feeding practices 6 to 23 months children on previous day

Minimum dietary diversity in infant and young child feeding (MDD-IYCF) data was analysed for 151 children age 6 to 23 months. However, the number of children with valid data varied for various variable, and therefore percentages have been considered as the basic value for findings. "When the children were fed with five or more food groups out of nine defined food groups, during the day before the day of data collection, the feeding practice was considered as good dietary diversity." On the other hand, when the children who were fed solid, semi-solid, or soft foods for minimum twice during the previous day of data collection, the feeding practices was considered as having minimum meal frequency (MMF).

Grain, roots and tubers (such as nan, chapatti, parata, bread, rice, potato) found to be received by the majority of the children (87%). Besides this staple foods, higher number of children consumed eggs (72%). Fifty to sixty percent children received sugary foods such as chocolates, sweets, candies, pastries, cakes, biscuits or just sugar (59%); vitamin A rich fruits and vegetables such as carrot,

pumpkin, orange, sweet potato, mango, papaya, dark green leafy vegetables and long beans (59%); oil and fats foods directly or processed (57%); other fruit and vegetables such as banana, apples, pineapple, watermelon, eggplant, onion, cucumbers and tomatoes (57%); and flesh foods such as meat, fish, poultry, liver/organ meat (51%). However, a lower proportion of children have had legumes or nuts such as lentils, peanuts or seeds or any foods made from these (40%), and milk or milk products (29%) (Figure 20). Mean dietary diversity score (MDDS) of the study children aged 6 to 23 months was calculated to be 4.3 (SD, 2.32), where 71 (47%) children received at least five food groups during the day before the day of data collection (Table 18).

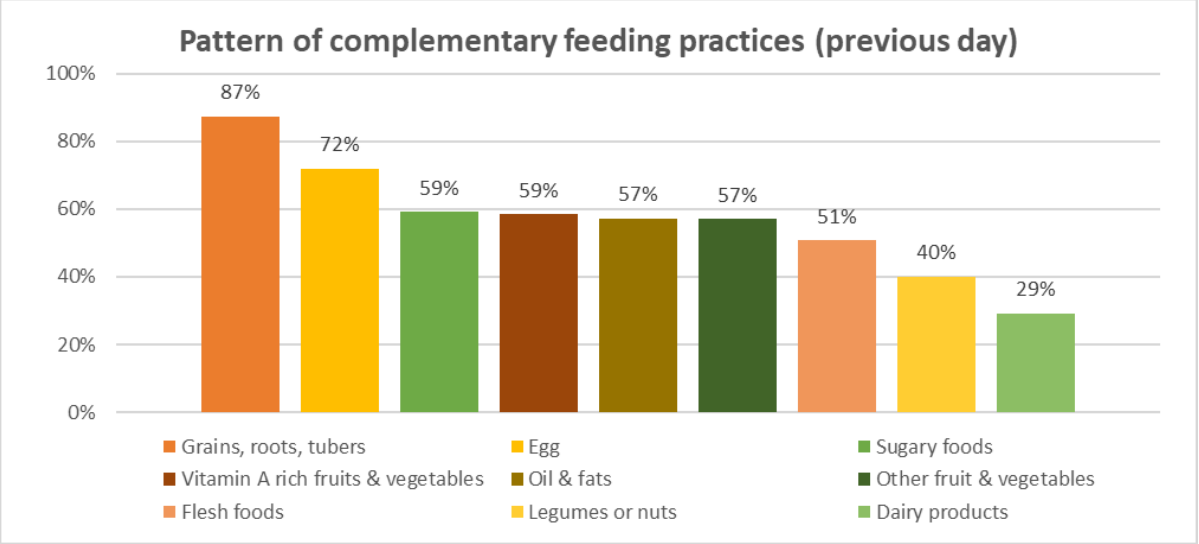


Figure 20: Proportion of children aged 6-23months received various food groups in the previous day

A minimum acceptable diet (MAD) for the infants and young children aged 6 to 23 months means that they should be fed adequately diverse foods along with breastmilk and appropriate food frequency for their proper nourishments. Out of 151 children, we found only 92 children's data were valid for minimum meal frequency analysis. Among the 92 children 64 (69.6%) received soft/semi-solid/solid food for at least twice in the previous day which is considered as the minimum meal frequency. Further analysis revealed that out of 151 children only 32 children received both five food groups and solid/semi-solid foods at least twice (including breastfeeding) in the previous day, which means 21.2% children were fed with minimum acceptable diet during the day before the day of data collection (Table 18).

Table 18: Level of dietary diversity among children aged 6-23 months based on previous day intake

Variables	Values (%)
	N=151

Mean dietary diversity score (MDDS) [Mean, SD]	4.3 (2.32)
Minimum dietary diversity (MDD) [>=5 food groups]	71 (47.0)
Minimum meal frequency (MMF) **[N=92]**	64 (69.6)
minimum acceptable diet (MAD) **[N=151]**	32 (21.2)

FGD participants perceived that fish, meat, eggs, milk and liver are the 5 foods should be given to the children on regularly basis. However, all the families cannot afford giving these foods properly to their children.

> "*After one year of age, children should be given with various foods frequently all the day. But parents in our areas are poor and cannot give necessary diet. Usually, children are given with the family foods which may not be appropriate for them. Family members may eat vegetables but they should be given special foods like eggs and fish regularly. We cannot maintain this all the time. Therefore, our children suffer from malnutrition.*" (FGD with adult male community members in Lakshmichari, Khagrachari)

Participants also mentioned about the MoniMix (Micronutrient Powder, MNP) which is made of necessary nutrients for children aged 6 to 23 months of age. Some mothers feed their children a food made of rice powder. In some cases, children do not get enough breastmilk, and in such cases, mothers often feed their children with formula milk consulting with a doctor.

After six months of age, mothers usually feed their children *khichuri (mixture of rice, vegetables, lentils and oil),* steamed rice with pumpkin, mere steamed rice, noodles, semolina, boiled rice powder, banana, boiled egg, and various fruits.

Key findings and discussion: Around 47% children aged 6 to 23 months received minimum diet of five food groups which indicates that more than half of the children did not receive recommended at least five categories of food during the previous day of data collection. At the same time, only 21.2% children received minimum acceptable diet in the previous day which supposed to be at least 40% by 2025, as per the NPAN2. Therefore, there is need for a careful intervention to increase the proportion of children having minimum acceptable diet. However, as of the qualitative findings, there is a need for increasing the affordability among the study population and also need to promote how the beneficiaries can leverage local foods to ensure the minimum acceptable diet for children.

3.5. Adolescent health and nutrition

3.5.1. Adolescent girls' specific health and nutrition information

The average age of starting menstruation among the participating adolescent girls was 13 years. Out of 85 girls 6 reported that they were facing some sort of irregularity in their menstruation cycle. A remarkable number of adolescent girls (21.2%) talked about avoiding certain foods during their menstruation periods, especially fish (7/18) and meat (6/18) (Table 19) (Figure 21). However, FGD participants could only explained that these types of foods are related to longer menstruation cycle.

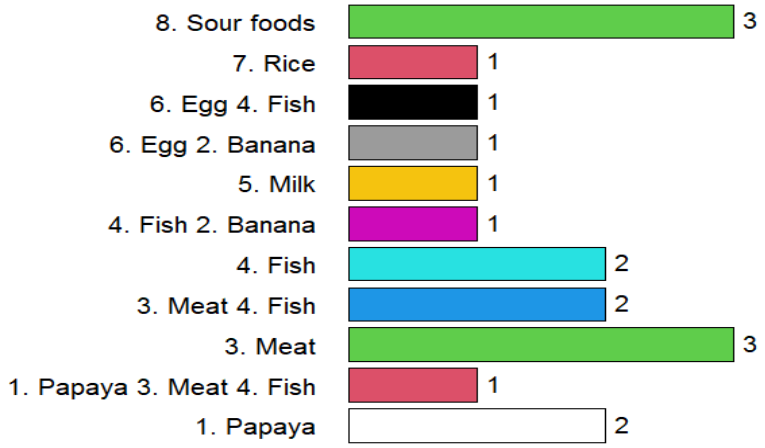


Figure 21: Variations in number of foods avoided by the adolescent girls during menstruation

Less than half (48.3%) of the adolescent girls ever taken IFA, while 36% received during the last 6 months. Among the 83 adolescent girls, who could remember well, 6% ever suffered from anemia and 3.6% suffered during the last 6 months (Table 19).

Table 19: Adolescent girls' specific health and nutrition information

Characteristics	Values (%)
Age of menarche among girls (in years), mean (SD) [N=81]	13 (1.2)
Girls were experiencing Irregular menstruation [N=85]	6 (7.1)
Girls avoid some foods during menstruation [N=85]	18 (21.2)
Type of foods adolescent girls usually avoid during menstruation	**N=18**
Fish	7 (38.9)
Meat	6 (33.3)
Papaya	3 (16.7)
Any sour food	3 (16.7)
Banana	2 (11.1)
Egg	2 (11.1)
Rice	1 (5.6)
Milk	1 (5.6)

Ever taken iron/folic acid [N=89]	43 (48.3)
Taken iron/folic acid in the last 6 months [N=89]	32 (36.0)
Adolescent girls ever suffered from anemia (N=83)	5 (6.0)
Suffered from anemia in the last 6 months (N=83)	3 (3.6)
Suffered from Abdominal pain in the last 6 months (N=92)	7 (7.6)

3.5.2. Adolescents' daily health and nutrition related behaviours

Around 30% of adolescent girls and 19% of adolescent boys skipped breakfast for three or more times in a week. In terms of lunch, the percentage was 8.8% for adolescent girls and 6.1% for adolescent boys. On the other hand, 12.2% of adolescent girls and 8.3% of adolescent boys skipped dinner (Figure 22).

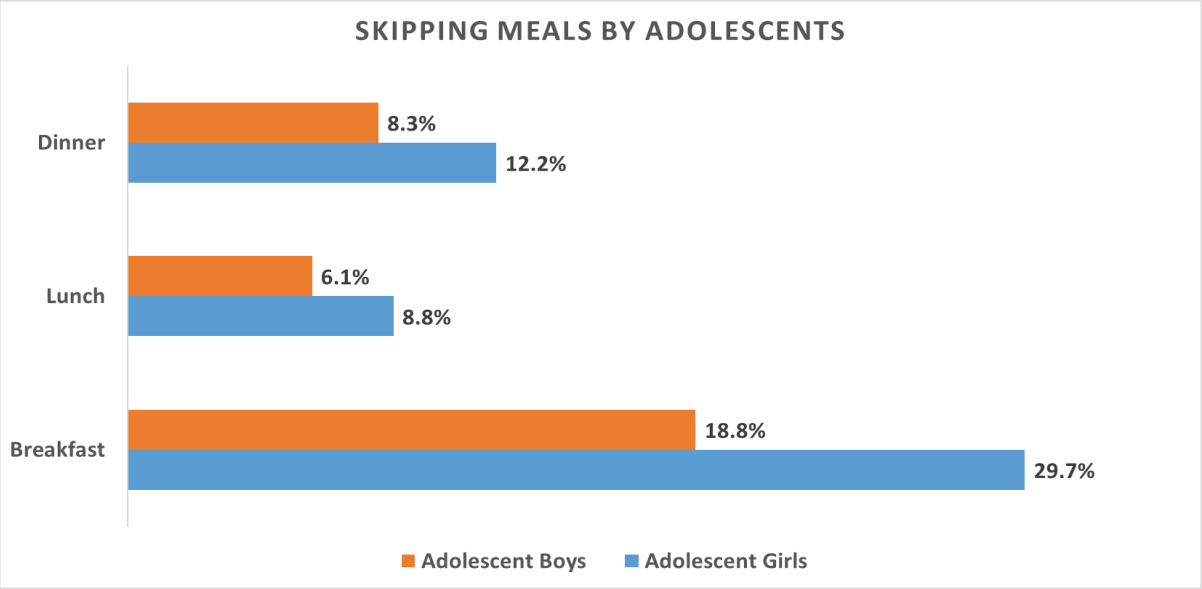


Figure 22: Proportion of adolescent boys and girls skipped regular meals for 3 or more times a week

During the FGD sessions, adolescents admitted that they, sometimes, skip meals. Among various reasons they explained are: laziness or late rising in the morning, attending school without a tiffin, lack of appetite and, especially for the adolescent girls, it is intentional to stay thin/slim.

> *"I do not eat breakfast. Not even on weekend. During school days, I do not have time to have breakfast at morning due to school and private. And on weekend I sleep till noon and do lunch. So, I do not usually have breakfast."* (FGD with adolescent boys in Guimara, Khagrachhari)

Around 33% of the adolescent girls and 40% of the adolescent boys missed eating lunch or dinner with their family members 4 or more times a week. Eight (8) out of 48 boys and 9 out of 92 girls informed about their habits of eating meals from a fast-food restaurant 2 or more times a week. Around 11% of the adolescent boys and 15% girls reported of having problems with their appetite. Though a

remarkable number of adolescent boys (40%) told they participated in some sort of physical exercise on regular basis, only around one-fourth girls informed the similar practice. 3 out of 48 adolescent boys were current smokers, however, no adolescent girls talked about having such habits (Table 20).

Table 20: Critical health and nutrition related behaviours of the study adolescents

Characteristics	Values (%)	
Eat lunch/dinner with their family 4 or more times a week	**Boys [N=48]**	**Girls [N=92]**
	29 (60.4)	62 (67.4)
Eat/take out a meal from a fast-food restaurant 2 or more times a week	**Boys [N=48]**	**Girls [N=92]**
	8 (16.7)	9 (9.8)
Appetite problems, like not feeling hungry, or feeling hungry all the time	**Boys [N=46]**	**Girls [N=90]**
	5 (10.9)	13 (14.6)
Number of adolescents participate in any kind of physical exercise regularly	**Boys [N=45]**	**Girls [N=90]**
	18 (40.0)	23 (25.6)
Number of adolescents currently smoke	**Boys [N=48]**	**Girls [N=90]**
	3 (6.3)	0 (0.0)

3.5.3. Specific and general health issues among adolescents

Among the 140 adolescent boys and girls, 21 (15%) ever experienced worm infestation to their knowledge, where 4 out of those 21 adolescents experienced recent incidence of worm infestation. Around 12% (17/140) adolescents experienced malaria in their life and 3 out of those 17 cases occurred within the last 6 months. Thirty percent adolescents (42/139) infected with diarrhoea in their lifetime, while 18% (25/139) occurred recently in the last 6 months. Almost forty percent (54/139) adolescents were infected with Chickenpox in the past, however, only 3 of those 54 cases occurred in the recent past within last 6 months.

Adolescents were also asked about other diseases or health problems they faced in the last 6 months. Sixty-five percent (91/140) have experienced cold and fever, followed by cough (40.7%). A remarkable number of adolescents also suffered from stomach-aches (25%) and headache (20.7%). However, over 11% adolescents confessed that they used to skip sharing their health problems because of shame or hesitation (Table 21).

Table 21: Proportion of adolescents experienced specific and general health issues, ever or in past 6 months

Characteristics	Values (%)
Ever suffered from worm infestation [N=140]	21 (15)
Suffered from worm infestation in last 6 months [N=140]	4 (2.9)
Ever suffered from Malaria [N=140]	17 (12.1)
Suffered from Malaria in last 6 months [N=140]	3 (2.1)

Ever suffered from Diarrhoea [N=139]	42 (30.2)
Suffered from Diarrhoea in last 6 months [N=139]	25 (18.0)
Ever suffered from chickenpox [N=139]	54 (38.8)
Suffered from chickenpox in last 6 months [N=139]	3 (2.2)
Diseases/health problems adolescents suffered in last 6 months	**N=140**
Cold and fever	91 (65.0)
Cough	57 (40.7)
Stomachache	35 (25.0)
Headache	29 (20.7)
Mode swing	8 (5.7)
Vomiting/nausea	3 (2.1)
Constipation	2 (1.4)
Others (Asthma, Malaria, Fungal infection)	3 (2.1)
Did not suffer from any health issues	30 (21.4)
Ever skipped sharing health problems due to shame [N=140]	16 (11.4)

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Key findings and discussion: A remarkable number of adolescent girls (21.2%) avoided certain foods during their menstruation periods, especially fish, meat, milk and eggs. While menstruation periods required additional and nutritional food supply for the menstruating adolescents, especially during their menstruation cycle, avoiding such nutritious foods during this period may cause malnutrition among the adolescent girls. This required special attention to change the behaviours. Adolescents were found to skip different meals regularly, specifically 30% girls skipped breakfast for 3 or more times during the last seven days before the day of data collection while 19% adolescent boys did the same. This type of behaviours may contribute to the rate of underweight adolescents. Therefore, these behaviours should be changed effectively to achieve the national goal of keeping the rate of underweight among adolescent less than 15%.

3.6. General health issues and care seeking behaviours

3.6.1. Common health issues among household members during last 6 months

Data was collected regarding the occurrence or present of any disease among any members of the households of pregnant and lactating mothers during the last 6 months of period. More than 4 every 5 household members (84.4%) were affected with cold and fever during the last 6 months. More than half of the members (52%) were also suffered from cough. More than twenty percent

household members were infected with headache (23%) and diarrhoea or cholera (20.1%) (Table 22).

Table 22: List all diseases occurred among household members of pregnant and lactating mothers

Characteristics	Values (%)
Type of diseases/health problems	**N=244**
Cold and fever	206 (84.4)
Cough	127 (52.0)
Headache	56 (23.0)
Diarrhea/cholera	49 (20.1)
Stomachache	36 (14.8)
Mode swing	15 (6.1)
Vomiting/nausea	14 (5.7)
High blood pressure	10 (4.1)
Malnutrition	10 (4.1)
Asthma	9 (3.7)
Constipation	7 (2.9)
Abdominal pain	4 (1.6)
Respiratory infection	4 (1.6)
Diabetes	3 (1.2)
Fungal infection	3 (1.2)
Anemia	2 (0.8)
Chicken pox	2 (0.8)
Anxiety/depression	2 (0.8)
Cancer	1 (0.4)
Malaria	1 (0.4)
TB	1 (0.4)

3.6.2. Respondents' status of suffering from specific disease

Pregnant and lactating mothers were asked if they suffered from some specific diseases during their lifetime as well as during the last 6 months periods (considered as recent incidence). More than 40% mothers ever suffered from chickenpox, while only less than 1% experienced recent incidence. 17.7% suffered from anemia in their lifetime and 10.5% was experienced it within last 6 months. 17.5% respondents were infected with worm for at least once in their life time, where 4.3% was recent infestation. Though no respondent reported any recent incidence of malaria, almost 15% respondents have experienced it in their lifetime (Figure 23).

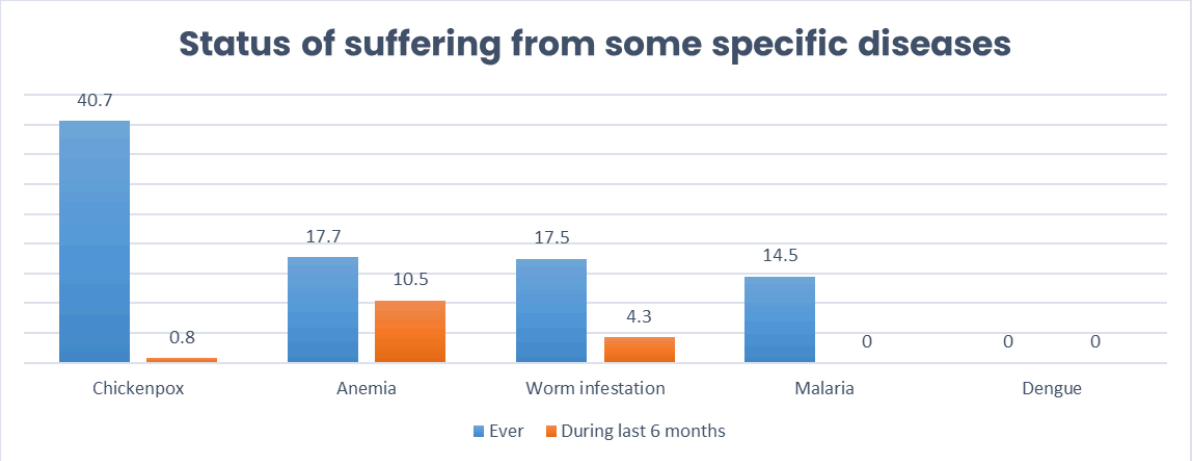

Figure 23: Percentage of pregnant and lactating mothers suffered from some specific diseases during her lifetime and last 6 months

3.6.3. General health seeking behaviours

Pregnant and lactating mothers were asked in the survey about the preferred place of their household members to seek primary healthcare, usually. Upazila Health Complex found to be the most popular health facility with 45.9% preferred this one. However, pharmacy hold the second most popular place where 39.8% participants and their family members use to go for primary healthcare (Table 23).

Table 23: Preferred place for seeking primary healthcare

Variables	Values (%)
Preferred place for seeking primary healthcare	**N=244**
Upazila Health Complex	112 (45.9)
Pharmacy	97 (39.8)
Community Clinic	95 (38.9)
Union Health & Family Welfare Center	59 (24.2)
District Hospital	49 (20.1)
Private Hospital	11 (4.5)
NGO Hospital	6 (2.5)
Village Doctor	7 (2.9)
Traditional healer	1 (0.4)

Qualitative study participants discussed that usually people go to the community clinics for primary healthcare services where available, and if the patient is not getting well treating there, they move to upper-level public hospitals or NGO or private clinics. However, there were negative perceptions regarding the behavior of the service providers in the public hospitals. On the other hand, NGO hospitals were perceived as good place for seeking health.

> *"Govt hospital means negligence. They do not take our health problem seriously. But the NGO hospitals do not do like that. They provide treatment very well."* (FGD with pregnant & lactating mothers in Sadar Upazila, Bandarban)

According to the participants, health seeking behaviours are mediated by both the economic conditions and level of consciousness of the people. Many people cannot think and decide wisely in terms of the seeking health in a timely manner. This was also revealed that health seeking behaviour of mother, for her or her children, depends on her age as well as her position in the family.

> *"Nine years ago, when I had my first child, I did not get the services I needed. At that time my husband was working abroad. I did not get necessary support even after I have requested for. Now, during the time of my 2nd child, I am much aware than before. No one can impose any decision on me. I have to get proper health and nutrition services for my child."* (FGD with pregnant & lactating mothers in Lama, Bandarban)

People in the study areas usually stated as reluctant to accept modern healthcare and any new health seeking behaviours. They rarely want to break their traditional practices. A central level key informant expressed,

> *"During the first years in my service life, I have conducted many camps in them. They did not accept us. Now-a-day, the previous tendencies are changing gradually. Now they want health and nutrition services."* (KII with Civil Surgeon_Rangamati)

Key findings and discussion: 84.4% household members were affected with cold and fever during the last 6 months. However, it is remarkable that around 20% were infected with diarrhoeal diseases during the last 6 month recall period, which is alarming in terms of nutrition status of the study beneficiaries. According to a service provider key informant, unsafe source of drinking water (such as spring water or dug-well water) is the main reason of diarrheal diseases in this region. Upazila Health Complex (46%), pharmacy (40%) and Community Clinic (39%) found to be the most visited health facilities for the household members for primary healthcare. Level of affordability, health awareness, public perceptions and traditional practices usually determined the health seeking decision in the study areas.

3.7. Household Food Security

Food security status of the study households was measured and analysed using the Household Food Insecurity Access Scale (HFIAS). A questionnaire of 9 items was used along with a follow up question regarding frequency-of-occurrence: (1) rarely (once or twice in the past four weeks); (2) sometimes (three to ten times in

the past four weeks); and (3) often (more than ten times in the past four weeks). HFIAS score has been calculated based on a continuous measure of the degree of food insecurity (access) in the household in the past four weeks (30 days). The maximum score for a household is 27 (response to all nine frequency-of-occurrence questions are "often" which coded as 3); and the minimum score is 0 (response to all 9 items are "no" which coded as 0). The higher the score, the more food insecurity the household experienced. If the HFIAS score of 0-1, the level is categorized as food secure and if the score is 2 and above then the score is broadly categorized as food insecure. However, food insecurity further sub-categorised as mildly, moderately and severely food insecure households in case of households scored 2 to 7, 8 to 14 and 15 to 27, respectively. Household food insecurity status was also analysed based on a categorical indicator to present the Household Food Insecurity Access Prevalence (HFIAP) and make geographically specific decisions.

For more than one-third households, at least one member was not able to eat preferred foods, or household members were worried that there would not have enough food, or at least one member ate such foods that otherwise would not eat during the last 30 days. In a typical day in the last month, there was no food to eat of any kind for the members of around 12% study households (Figure 24).

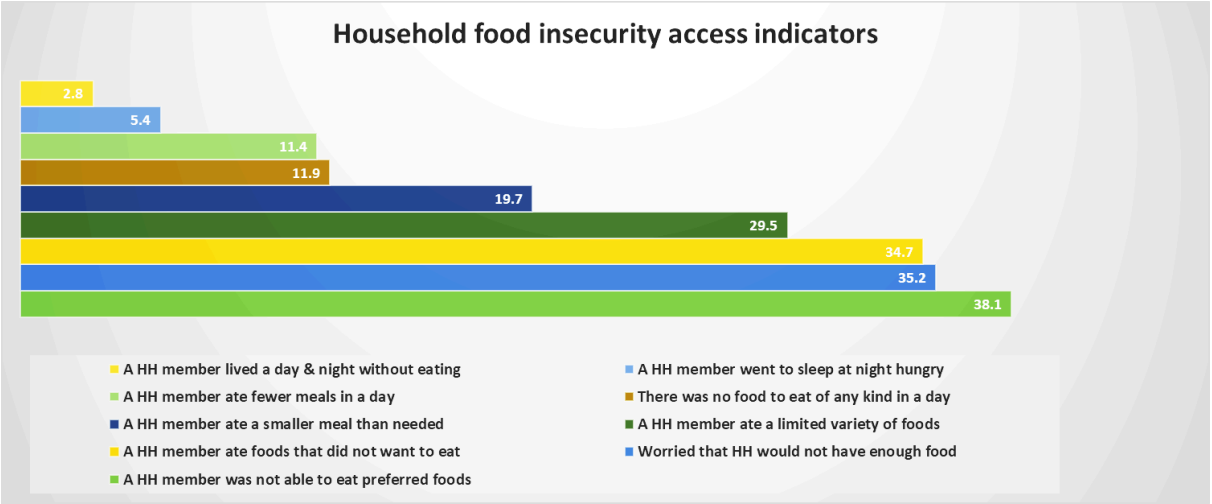

Figure 24: Proportion of households went through the defined condition as of HFIAS in last 30 days

The Mean Household Food Insecurity Access Score (MHFIA) was found to be 3.78. This means that, overall, the study households were in a situation of mildly food insecurity during the past 4 weeks. When categorised, in terms of Household Food Insecurity Access Prevalence (HFIAP), more than forty percent households were found mildly food insecure, and almost similar proportion of the households were

moderately food insecure. Near about fifteen percent households also passing through severe food insecurity (Table 24).

Table 24: Overall food security status of the study households

Characteristics	Values (%)
Mean Household Food Insecurity Access Score (MHFIA) [Mean, SD]	**N=386**
	3.78 (4.96)
Household Food Insecurity Access Prevalence (HFIAP)	**N=374**
Food secure	11 (2.9)
Mildly food insecure access	157 (42.0)
Moderately food insecure access	152 (40.7)
Severely food insecure access	54 (14.4)

When segregated the food insecure households by districts, higher proportion of the mild and moderate insecure households found to be in the Rangamati districts, while maximum number of the severely insecure households were situated in Bandarban district (Figure 25)

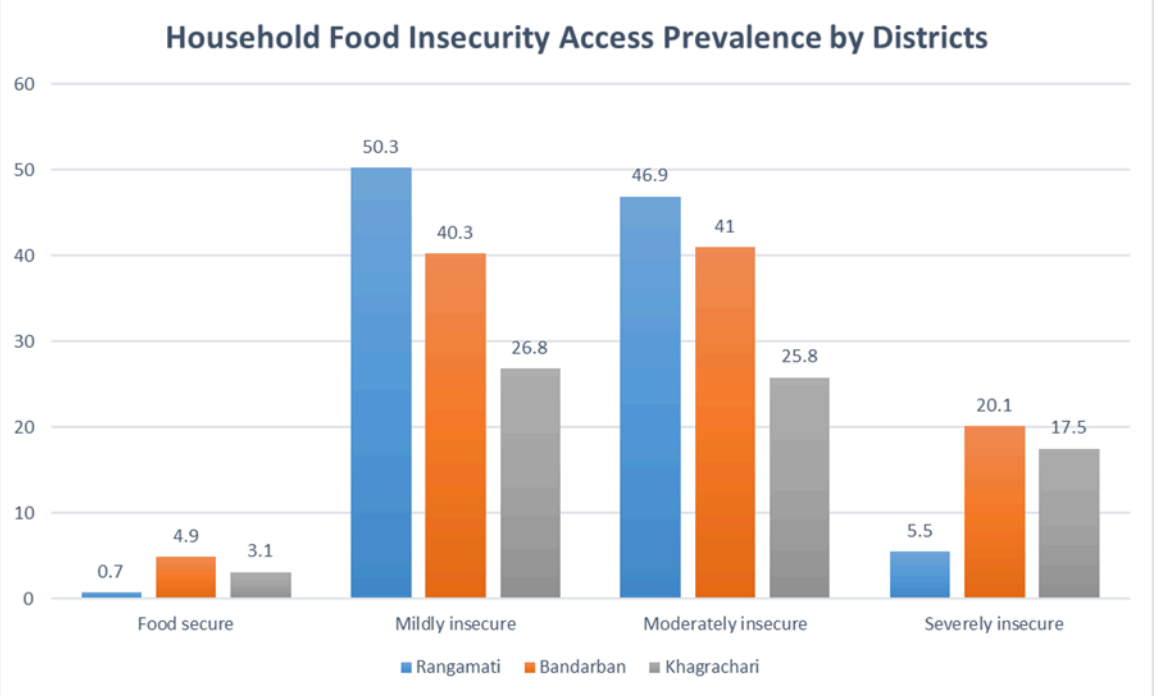

Figure 25: Proportion of households in three districts were in different level of food insecurity

Study adolescents were asked, if there was any day in the last months when they were in situation that the family didn't have enough food to eat or enough money to buy food. More than one of each four adolescent responded "yes" (Table 25).

Table 25: Proportion of adolescent observed at least one day in the last month when their families were in extreme food insecurity

Variable	Values (%)

A day in the last month when family didn't have enough food to eat or enough money to buy food	Boys [N=47]	Girls [N=90]	Overall [N=137]
	13 (27.7)	23 (25)	36 (26.3)

Participants of the qualitative component informed that currently the people in study areas going through poverty and food insecurity. They also explained how it was happening. As of them, hilly land areas are losing fertility day by day. Gradually the earning from Jum cultivation is decreasing, on the other hand expenditure for the families is increasing. Moreover, earning from crop production is not continuous, it is time bound. So, people do not have cash in hands to spend for their family members' health and nutrition. During the main crop production period around June to August, farmers have to spend lot of money. They do not have earning until the harvesting period started in September. People who live on selling labour in the agricultural field also do not have regular work for around 2 months before harvesting starts. During this period people of the CHT suffer most for food insecurity. This is also important that, hilly peoples' nutrition totally depends on the area-wise crop production and availability. However, people are not educated and aware enough to utilize the available foods wisely to get enough nutrition. A male community member in a FGD said,

> *"Since you are talking about nutrition, you need to get inside hilly villages in remote areas. The type of nutritious food, such as eggs and milk, which is suggested to eat regularly, are difficult to get. Sometimes, it takes around a day to get those from a market."* (FGD with adult male in Thanchi, Bandarban)

Key findings and discussion: Less than 3% of the study households found to be food secured where over 97% households were identified as having mild to severe food insecurity. Overall, 14.4% households were suffering from severe food insecurity, while Bandarban district representing the highest number of food insecure households. Qualitative explanation suggested that inadequate cash earnings, inadequate of market access and changing economy of the country has pushed the hilly poor subgroup of population to be more marginalized. Therefore, interventions are required to increase their income, cash transfer during the interim periods of agricultural productions and improve market access.

3.8. Homestead gardening, and livestock and poultry rearing

3.8.1. Situation of homestead and cultivable lands

Among the 386 survey respondents, 3 respondents could not inform the type of ownership of their homestead land. However, majority (79.1%) of the participants'

homestead was owned by themselves. Around 9% participants were living in *khas* land while 8.6% were living in land provided by any of their relatives (Table 26).

Out of 386 respondents, 220 respondents could inform the total land area of their homestead. Among them, average area of homestead land found to 23.6 decimal, which range from 2 decimal to 300 decimal. Among them 194 respondents could inform approximately how much homestead land area was free where the families could grow something. Average 11.7 decimal land area was found to be free for homestead gardening. However, 9.3% households did not have any free land area other than their home space to do homestead gardening or anything else (Table 26).

Around 60% of the study households (234/386) owned any type of/any sort of cultivable land, other than homestead land. However, out of 234 respondents only 137 respondents could approximately inform how much cultivable land their households owned. 137 households owned average 67.8 decimal of cultivable land. However, 18% of those households owned less than 10 decimals of cultivable land (Table 26).

Table 26: Ownership of homestead and cultivable lands

Characteristics	Values (%)
Type of ownership of homestead lands	**N = 383**
Own land	303 (79.1)
Relative's land	33 (8.6)
Government land/Khas land	35 (9.1)
Other's land	11 (2.9)
Government housing project	1 (0.3)
Total land area of homestead in decimal [Mean, SD] [N=220]	23.6 (41.5)
Free space for homestead gardening in decimal [Mean, SD] [N=194]	11.7 (20.19)
Households with no free space [N=194]	18 (9.3)
Household ownership of cultivable land [N = 386]	234 (60.6)
Total amount of cultivable land [Mean, SD] [N=137]	67.8 (72.19)
Households with <10 decimal of cultivable lands [N=194]	25 (18.2)

3.8.2. Status of the study households produced crops last year

In terms of crop production during the last year, more than 60% of the study households produced mainly rice, 46% produced various types of vegetables and 17.6% households produced different types of fruits. However, around 20% of all households did not produce any crops during the last year period (Table 27).

Table 27: Type of crops produced by study households in the past year

Characteristics	Values (%)
Crops produced in last year	**N = 386**
Rice	233 (60.4)
Vegetables	178 (46.1)
Fruits	68 (17.6)
Potato	38 (9.8)
Maize	25 (6.5)
Legumes	18 (4.7)
Watermelon	8 (2.1)
Spices	7 (1.8)
Wheat	7 (1.8)
Sunflower	5 (1.3)
Kaju badan	4 (1.0)
Pulses	2 (0.5)
Nothing	76 (19.7)

3.8.3. Homestead vegetables gardening

Study participants were asked about whether they produced any vegetables by homestead gardening during the previous year. More than half (197/386) of the study households found to produce various types of homestead vegetables. Among them, around half (48.7%) produced bottle gourd and 40.1% produced red spinach (Table 28).

Table 28: List of all vegetables household members produced in their homestead last year

Characteristics	Values (%)
Produced any homestead vegetables last year **[N = 386]**	197 (51.0)
Type of homestead vegetables Produced last year	**[N = 197]**
Bottle gourd	96 (48.7)
Red Spinach	79 (40.1)
Green flat beans	78 (39.6)
Pumkin	73 (37.1)
Papaya	70 (35.5)
Malabar Spinach	69 (35.0)
Eggplants	65 (33.0)
Tomato	64 (32.5)
Green Chili	60 (30.5)
Radish	49 (24.9)
Spinach	36 (18.3)
Cucumber	31 (15.7)
Snake gourd	23 (11.7)
Green Banana	17 (8.6)
Coriander Leaf	12 (6.1)

Red Amaranth	9 (4.6)
Spearmint	3 (1.5)
Sponge gourd	2 (1.0)
Wax gourd	2 (1.0)
Taro	2 (1.0)
Turnip	1 (0.5)
Bitter gourd	1 (0.5)
Okra	1 (0.5)
Onion	1 (0.5)

3.8.4. Fruit trees within the homestead

More than 80% of the study households reported to have at least one fruit trees. Of those households, majority owned mango (85.7%) and jackfruit trees (68.8%) (Table 29)

Table 29: List of all fruit trees could be found in the study households' homestead

Characteristics	Values (%)
Households with any fruit trees within the homestead [N = 386]	314 (81.3)
Type of fruit trees households have within the homestead	N = 314
Mango	269 (85.7)
Jackfruit	216 (68.8)
Coconut	138 (43.9)
Litchi	110 (35.0)
Guava	82 (26.1)
Tamarind	73 (23.2)
Betel nut	72 (22.9)
Banana	62 (20.3)
Papaya	49 (16)
Jujube	48 (15.3)
Pummelo	48 (15.3)
Lemon	46 (14.6)
Amla	27 (8.6)
Wood apple	22 (7.0)
Orange	11 (3.5)
Date palm	9 (2.9)
Golden apple	8 (2.5)
Indian olive	5 (1.6)
Velvety apple	4 (1.3)
Malta Sweet orange	4 (1.3)
Palmyra palm	3 (1.0)
Bullock heart	3 (1.0)
Blackberry	3 (1.0)
Elephant apple	2 (0.6)

Pineapple	2 (0.6)
Wax apple	1 (0.3)
Carambola	1 (0.3)
Sapota	1 (0.3)
Pomegranate	1 (0.3)
Dragon	1 (0.3)

3.8.5. Ownership status of livestock animals & poultry birds

All the respondents were asked about the current ownership status of their households of any type of livestock animals and poultry birds. More than half of the households (52.1%) were raring chicken, 30.6% were raring cows, 22.5% were raring goat and 21.4% were rearing pigs. However, 27.8% households were not raring any livestock and poultry birds during the study periods (Table 30).

Table 30: Type livestock animals and poultry birds study households were rearing

Characteristics	Values (%)
Livestock animals or poultry, household currently own	**N = 386**
Chicken	201 (52.1)
Cow	118 (30.6)
Goat	87 (22.5)
Pig	81 (21.4)
Duck	27 (7.0)
Gayal	2 (0.5)
Pigeon	2 (0.5)
Nothing	105 (27.8)

.

Key findings and discussion: Homestead gardening and rearing poultry is one of the best strategies to improve the nutrition status of a poor households. Sometimes, this is also a mechanism of increasing the cash earning of a household. However, a remarkable number of households do not own (21%) or poorly own homestead and cultivable lands. Slightly above half (51%) of the study households produced vegetables by homestead gardening during the one-year period before the date of data collection. On the other hand, around 72% household owned at least on livestock or poultry animal during the date of data collection. However, only about half of the households (52.1%) have chicken which is the main poultry animal which can be promoted contextually to increase the nutrition status of in the study household members.

3.9. Water Sanitation and Hygiene (WASH)

3.9.1. The main source of drinking water

The main source of drinking water related data was collected to show basically the quality of water sources. Both the motor pumps and hand pumps were considered as tube-well and categorized as whether the tube-well was deep (>= 250 Feet) or the tube-well was shallow (<250 Feet).

Type of main source of drinking water for the majority of the households were deep tube-well, either directly from the source (41.5%) or the water was transporting to the household through pipe system (4.1%). Second highest number of households reported about collecting drinking water from shallow tube-well (24.4%). Source of drinking water of a good number of households was also spring water – through pipe system (9.8%) or directly from spring water (3.4%). Almost 13% of the households do not have their main source of water available for them throughout the year. Forty percent of the households collect their drinking water from more than 150 feet of distance. Waters sources more than 150 feet distant from the household were for around 40% cases (Table 31).

Table 31: Type and characteristics of the main source of drinking water

Characteristics	Values (%)
Main source of drinking water	**N=386**
Tube-well (deep)	160 (41.5)
Tube-well (shallow)	94 (24.4)
Patkua/dug-well	41 (10.6)
Spring water piped to dwelling	38 (9.8)
Tube-well (deep) water piped to dwelling	16 (4.1)
Spring water	13 (3.4)
Ring-well	12 (3.1)
Protected well	7 (1.8)
Unprotected well	5 (1.3)
Number of HHs that do not have water availability all the year round from the main source	49 (12.7)
Distance of drinking water source from home	
Less than 150 feet	231 (59.8)
More than 150 feet	155 (40.2)

FGD participants discussed about the drinking water scarcity in their areas. Even in low lands, a tube-well should be at least 300 feet deep to get the water. So, all the villagers cannot get drinking water from a tube-well. A tube-well may be found in one kilometre of distance. So, many people use dug-well (*patkua*), which is open, and 4 to 5 family members may use it.

3.9.2. Type of latrine used

Respondents were asked about the type of latrine they mainly used. Enumerators also observed the latrine to confirm the information. Most of the respondents found using a latrine without water-seal (35.2%), followed by the latrines with water seal (19.4%). More than 15% latrine was also built in having a septic tank. Around 20% households found to use either hanging latrine or open space for defecation (Figure 26).

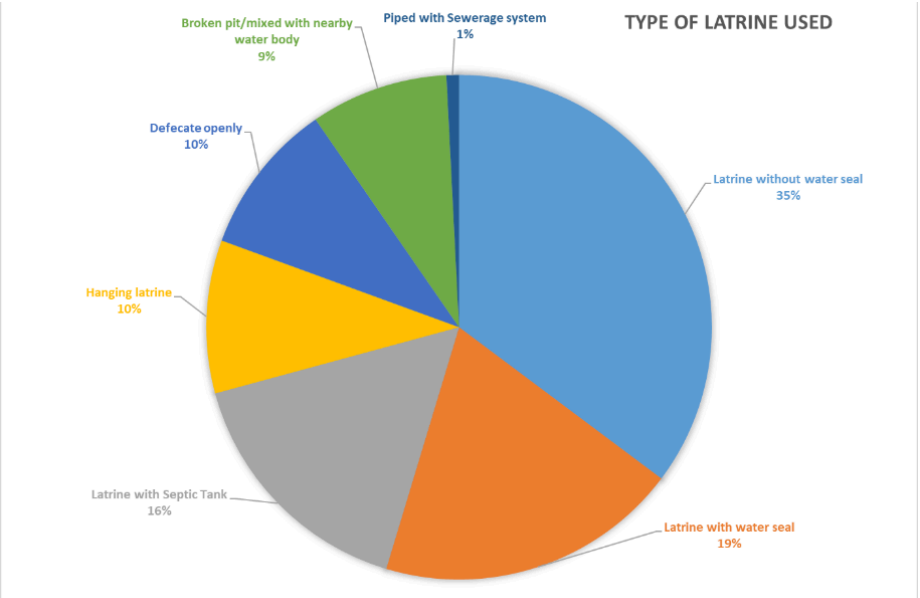

Figure 26: Type of latrines household members of the respondents usually use to defecate

Low rate of using sanitary latrine among the study population is defined by many factors. The two main factors/barriers for using sanitary latrine are: the cost of establishing a sanitary latrine and scarcity of water necessary for using a sanitary latrine. At least 20 thousand takas would be necessary to establish a sanitary latrine, which most of the family cannot afford; and the water required to use a sanitary is not available adequately.

> *"Without water, you cannot use a sanitary latrine. There are many villages that take 30 minutes to an hour to fetch water. Collecting water climbing these hills also drains our energy."* (FGD with adult male community members in Thanchi, Bandarban)

3.9.3. Management of child feces

Participants were asked about what did they do with the feces when the young child defecated for the last time. Only around 21% of the respondents reported that that they used to dispose it into a latrine while only around 8% told that they

have buried the feces. The remaining others basically managed it unsafely (Figure 27).

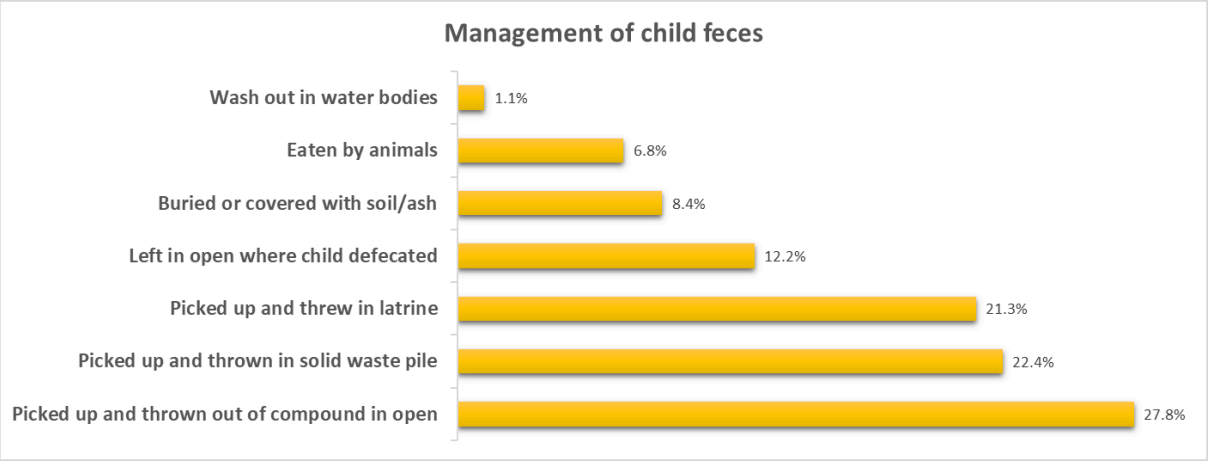

Figure 27: Evidence of how household members treated feces of under 5 children during last defection time

3.9.4. Reported practice of handwashing

Hand hygiene practice only of the respondent mothers has been analysed to concentrate for the well-being of children. Though the mothers reported a high level of practice of handwashing with soap after defecation (82.3%) and before eating (72.4%), they reported low practice of washing hands with soap after cleaning child's anus/disposing child's feces and before feeding a child, both in a rate of 40.6% (Figure 28).

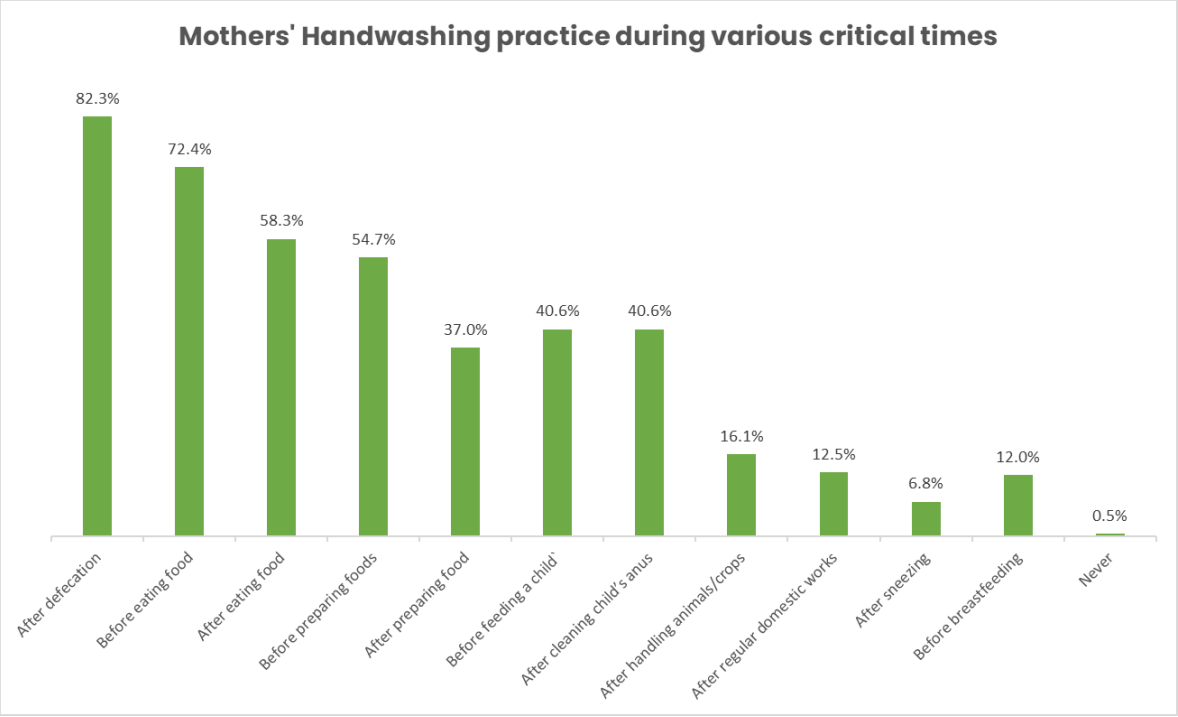

Figure 28: Proportion of mothers washed their hand with soap during various critical times

FGD participants mainly reported about washing hands with soap after defecation and before eating. Others time included, when hands are too dirty, after eating etc. Mothers do not wash hands regularly with soap before feeding a child.

> *"There is soap and water at my home. "I never eat without washing hands with soap. I also wash hand with soap after eating. I do not forget wash hand with soap before eating when I am at others home also. After coming from toilet (after defecation), we wash our hands with soap for up to one minute."* (FGD with adult male in Lakshmichari)

3.9.5. Menstruation management products

A total of 275 women and girls' data was analysed for the main absorbent products they usually used to manage their menstrual blood. Majority of the women and girls (64.7%) reported they were using sanitary pads to manage their menstrual bloods during the data collection period (Figure 29).

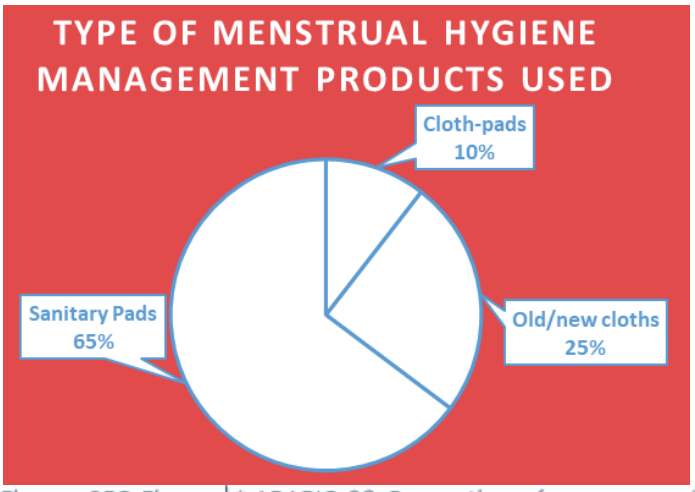

*Figure SEQ Figure * ARABIC 29: Proportion of women and girls used different menstural absorbant products*

Respondents who were using various type of cloths to absorb their menstrual blood also asked for its maintenance. Majority of them (64.9%) reported that they used to wash cloth product with soap, however, around 20% were washing only with water. Majority women and girls were drying the cloths under the sun, however, still over 5% used dry it hiddenly inside the room. Around 22% women and girls used to store the cloths in a hidden place for re-using (Table 32).

Table 32: Methods of maintenance of the menstrual absorbent products by the study participants

Characteristics	Values (%)
Methods of washing your clothes/cloths/cloth pad	**N=97**
Soap	63 (64.9)
Only water	19 (19.6)
Soap and hot water	13 (13.4)
Hot water	1 (1.0)
Throw out	1 (1.0)
Methods of drying menstrual cloths	**N=97**

With all other clothes in open air	66 (68.0)
In open air, but separately	25 (25.8)
Inside a room, hidden	5 (5.2)
Methods of storing reusable menstrual cloths?	**N=97**
With all other clothes	60 (61.9)
In a separate place within Almirah	12 (12.4)
In a hidden place	21 (21.6)

Mothers in the FGD sessions discussed that those who use cloths to absorb the menstrual blood, should wash the cloths well and have to dry under the sun. Participants also informed that longer time to change a cloth may cause infection. One of the participants reported she did not use any material to absorb her menstrual blood rather she took bath frequently during the menstruation periods.

Participants told about the responsibility of mothers in terms of educating the girls about how to manage menstruation. According to them, menstruation cannot be shared with fathers. However, participants reported that some mothers in their areas restricted their daughters from getting out of home during their menstruation periods, which is not right.

Adult male community members were also asked about the menstruation of women and girls. One participant said,

> "*Menstruation occurs when a girl turns from minor to adolescent. According to my knowledge girls get period when they reached 16 to 18 years. However, mothers may inform about this better than me.*" (FGD with adult male in Lakshmichari)

Male community members assured that they do not think menstruation as disease or sickness, however, they informed about a traditional cultural practice among the Marma community related to menstruation. In this indigenous group, a woman or girl under menstruation cycle is thought to be unclean, and so people do not eat any food cooked by her.

> "*There is a tradition in the Marma Community that no one eat the food cooked by a woman or girls under menstruation cycle. Someone else cook food at that time. In the Marma community consider a woman or girl under menstruation cycle as unclean.*" (FGD with adult male in Lakshmichari)

A male participant described in an FGD that he used to buy sanitary pads for his wife and he did not feel stigma to do this. Such type of awareness is increasing in the study areas because of the interventions from various development organization such as UNDP or UNICEF. Moreover, some meeting arranged by local

governments, meeting of the school management committee also convey awareness among the CHT population. FGD participants pointed out that the increased education among the population was also contributing to reduce the negative traditional practices among them.

Key findings and discussion: Majority households (70%) were using tube-well water (either deep or shallow), still a remarkable number of households drink from unsafe sources such as dug-well or other type of well and spring water (30%). An optimistic nutrition intervention should ensure that no household is drinking water from an unsafe source.

Unsafe sanitation and inadequate hand hygiene practices demonstrated negative impact on childhood nutrition status. Around two-third (64%) households used unsafe or non-sanitary latrine or defecate in open places. At the same time, more than two-third cases (69%) caregivers do not manage their child's feces safely. Mothers also reported very low practice of handwashing after handling child feces and before feeding a child (41%). A study in Bangladesh found more than one-third of the complementary food samples tested were contaminated with pathogenic bacteria causing diarrheal diseases among children. Therefore, nutritional status of the children and other family members can be determined by sanitation situation and hand hygiene practices, which should be taken into consideration while designing any health and nutrition interventions in the study areas. However, unavailability or inadequate running water found to be a big challenge in terms of ensuring safe sanitation and improved hygiene behaviour in the study areas.

3.10. Women's empowerment and household decision making

Pregnant and lactating mothers who participated in the study were asked if they had earned any money by any means during the last year. Among 244 respondents, two respondents did not want to share. Out of 242 pregnant and lactating mothers, 77 (31.8%) said yes. Then the respondents were asked a follow up question (irrespective of the respondents had earned money during last year or not) that who usually decide how the money earned by her will be used. Out of 244 women, only 174 women responded to this follow up question. Among them, 44.3% informed that decision was made together by the husband and wife, around 41% respondents said that they could take their own decision of spending the money they earned. Out of 174, 23 respondents informed that, though the money was earned by her, husband will be the sole decision maker for how the money would be spent. Respondents were also asked if they have any

participation in making decision how the money earned by her husband will be spent. Sixty-one percent (149/244) said it was the decision of both the husband and wife together, 34.4% husbands used to make their own decision, and 4 respondents also reported that they alone used to take decision to spend her husband's earnings. Besides these, for other indicators such as household purchase or sale, purchasing foods for the family, and healthcare of the children, majority of decision were made by husband and wife together. This was remarkable that only about half of the women (50.4%) women could take decision for their own healthcare (Table 33).

Table 33: Description of the indicators reflecting women empowerment

Characteristics	Values (%)
Earned any money during the last year [N = 242]	77 (31.8)
Decision maker: how money earned by women/wives will be used	**[N = 174]**
Husband & wife	77 (44.3)
Woman/wife herself	71 (40.8)
Husband	23 (13.2)
Seniors and other family members	3 (1.7)
Decision maker: how money earned by men/husbands will be used	**[N = 244]**
Husband & wife	149 (61.0)
Husband himself	84 (34.4)
Wife	4 (1.6)
Seniors and other family members	7 (2.9)
Decision maker: major household purchases/sales	**[N = 244]**
Husband & wife	164 (67.2)
Husband	48 (19.7)
All family members	14 (5.7)
Senior family member	13 (5.4)
Respondent	2 (0.8)
Decision maker: foods to be purchased for family	**[N = 244]**
Husband & wife	152 (62.3)
Husband	39 (16.0)
Respondent	24 (9.8)
All family members	21 (8.6)
Senior family member	8 (3.2)
Decision maker: health care of the children	**[N = 234]**
Husband & wife	189 (80.8)
Woman herself	17 (7.3)
Husband	13 (5.6)
Seniors or other family member	14 (6.0)
Decision maker: health care of the women	**[N = 244]**
Woman herself	123 (50.4)

Husband & wife	87 (35.6)
Husband	24 (9.8)
Seniors or other family member	10 (4.1)

3.11. Situation of the Community Clinics

Community clinic (CC) is established by the government of Bangladesh as an one-stop service point to provide the Essential Services Package (ESP) to meet the health and nutrition needs, especially the women and children in the rural areas.[10] The major function of a CC is to provide primary healthcare, health education, health promotion, and referral services to the grassroot level population. The Essential services included ANC, PNC, Integrated Management of Childhood Illness (IMCI), EPI, Nutritional services, Reproductive Health and Family Planning services, Social and behaviour change communication (SBCC), screening of NCDs, first aid and referral to higher level public health facilities.

The delivery of nutrition services in the CCs is under the supervision of the Medical Officer (Public Health and Nutrition) at the UHC, who would have been trained and assigned the responsibility of overseeing the implementation of nutrition activities through the Community Group (CG) in their designated area. HAs, FWAs, and Community Health Care Providers (CHCP) and other relevant personnel working at that CC are responsible to delivering the nutrition services. The main activities implemented in CC include

- **C**ounselling all women with children, on exclusive breast feeding until 6 months of age including positioning and attachment, supporting for trouble-shooting for any breastfeeding problem, proper complementary foods and advice on adequate nutrition after six months of age,
- **W**eight and height measurements.
- **N**utrition education and counselling will be provided to adolescents, pregnant and lactating women on topics such as, personal hygiene and cleanliness especially during preparation of food and feeding of infants and young children, general nutrition, health and nutritional importance of deworming and consumption of micronutrient supplements.
- **S**creening and Referral: Conduct screening for malnutrition (using MUAC and growth monitoring), provide nutrition advice for all children, referral for complicated cases to primary level care facility (ie UHC), and follow-up of referrals from the community and monitor follow up visits to children under treatment
- **M**icronutrients related advice and guidance to households on Iodine, iron, and vitamin A, advocacy and monitor follow-up and compliance of use of iron folic acid by pregnant women, provision of zinc in addition to ORS during treatment

of diarrhoea, de-worming medication, iron-folic acid supplements, post-partum vitamin A supplementation.[11]

Spot-check observations were conducted in the 16 selected CCs. All of the 16 CHCP in the study CCs were present in facility for the their on-job duties. However, some other healthcare workers were also found present in some CCs. Out of 16 CCs, a Health Assistant (HA) was observed present in 5 CCs, Family Welfare Assistant (FWA) was present in 7 CCs, Family Welfare Visitor (FWV) was present in 4 CCs, and in one (1) CC there was an NGO health worker (Table 33).

Out of 16 CCs, height scale for children was available only in 10 CCs, however, 3 of those height scales were not functional. On the other hand, height scale for the adults was available only in 5 CCs. Functionals weight machine for the children was available in 10 CCs while functional weight machine for the adults was available in 12 CCs. Among the 16 CCs, there was functional MUAC tape in 15 CCs. Almost all of the CCS (15/16) had a functional Blood Pressure measuring instrument. In one of the 16 CCs there was not a proper sitting arrangement for the service providers. During the observation periods, only in one CC a pregnant woman was found to seek service and in another one CC an under-5 child was found to seek service. Observers did not find any CC where there was remarkable long queue (10 persons or more) for service request. Three (3) out of 16 CCs observers did not find any specific register book to enter data related to nutrition services (Table 34).

Only in 43.8% (7/16) CCs there was electricity available. However, there was no internet connection in any of the CCs. Digital device for data entry was available in 4 of the 16 CCs. There was the availability of Well-furnished seating arrangement with benches and other seating facilities for service seekers in all the observed CCs. Latrine was available in 14 CCs of 16 CCs, and among those 14 CCs there was only one latrine cubicle in 9 CCs and two cubicles in 5 CCs. Separate latrine for male and female were available in two of the CCs observed. Out of 19 latrine cubicles observed in the 14 CCs this study, 15 cubicles were assessed as accessible for the service seekers, however, only 14 cubicles were functional during the observation periods. Out of those 14 functional latrine cubicles, there was water and soap for handwashing available inside the latrines for 13 cases, and 11 latrines found to be clean enough (Table 34).

Table 34: Observed situation of the community clinic

Characteristics	Values (%)
	N = 16
CHCP found present in the CC	16 (100)

Presence of other service providers	
Health Assistant (HA)	5 (31.2)
Family Welfare Assistant (FWA)	7 (43.8)
Family Welfare Visitors (FWV)	4 (25)
NGO health worker	1 (6.2)
Availability of a height scale for children	10 (62.5)
Available height scales were functional [N=10]	7 (70)
Availability of a height scale for adults	5 (31.2)
Available height scales were functional [N=5]	5 (100.0)
Availability of a weight machine for children	11 (68.8)
Available weight machines for children were functional [N=11]	10 (90.9)
Availability of a weight machine for adult	13 (81.2)
Available weight machines for adult were functional [N=13]	12 (92.3)
Availability of a MUAC tape	15 (93.8)
Available MUAC tapes were functional [N = 15]	15 (100)
Availability of a Blood Pressure instrument	15 (93.8)
Availability of sufficient chairs & tables for the service providers	15 (93.8)
Pregnant women were observed seeking services	1 (6.2)
Under-5 children were observed seeking services	1 (6.2)
A queue of more than 10 persons who are waiting for services	0 (0)
A register for entering nutrition-related information was found	13 (81.2)
Availability of electricity	7 (43.8)
Availability of any internet connection	0 (0)
Availability of any digital device for data entry	4 (25)
Availability of Well-furnished seating arrangement with benches and other seating facilities for service seekers	16 (100)
Availability of any latrine	14 (87.5)
Number of latrine cubicles in a CC [N=14]	
One (1)	9 (64.3)
Two (2)	5 (35.7)
Availability of any separate latrine for male and female [N=14]	2 (14.3)
The latrine cubicle was observed accessible for patients [N=19]	15 (78.9)
The latrine cubicle was observed functional [N=19]	14 (73.7)
Availability of water inside the latrine cubicles [N=14]	13 (68.4)
The latrine cubicle was observed clean [N=14]	11 (57.9)
Availability of any soap for handwashing inside the latrine [N=14]	13 (68.4)
	N=16
Availability of IFA tablets in stock	16 (100)
Are there calcium tablets in stock?	15 (93.8)
Number of rooms in the CC	
2 rooms	10 (62.5)
3 rooms	4 (25.0)
4 rooms	2 (12.5)

Availability of tube-well	10 (62.5)
Type of tube-well [N=10]	
Hand-pump	5 (50)
Motor-pump	5 (50)
Condition of tube-well [N=10]	
Functional	8 (80)
Non-functional	2 (20)
Manage water where there is no source [N=8]	
Collect from neighboring house/shop	7 (87.5)
From River or canal	1 (12.5)
Availability of safe drinking water for the service seekers	
Yes	11 (68.8)
No	3 (18.8)
Not sure/ Could not observe	2 (12.5)
Service providers providing consultation to a service seeker in front of other service seekers or anyone else who is not a service provider	
Yes	2 (12.5)
No	6 (37.5)
Could not observe	8 (50.0)
Service recipient was found visible to other service seekers while consulting with the service provider	
Yes	3 (18.8)
No	4 (25.0)
Could not observe	9 (56.2)
When the service recipient consulting with a service provider, other service seekers can hear him/her	
Yes	7 (43.8)
No	3 (18.8)
Could not observe	6 (37.5)
Availability of health promotional materials	15 (93.8)

Qualitative study revealed that the community people who live in the closes areas of the CCs are utilizing the facility well for their various types of health and nutrition needs. Besides receiving services coming to the CCs, community members also use to consult with the CHCP over phone. However, CHCP does not provide any services by visiting home of the patients.

CCs in the CHT regions require to be efficient to carry out child delivery. A separate delivery room would be essential in this regard. A pregnant woman can manage to reach in a CC with a moderate level effort, however, many of the pregnant women, especially those from remote hilly areas, face challenges to go to the Upazila or district hospital for the delivery of their child. Those, mothers mostly decide to deliver their child at home.

> *"I really need an extra room with child delivery facilities. This CC would be helpful for the pregnant women, specially from the distant neighborhood under the catchment area of this CC. Sometimes, it is very difficult for a pregnant woman to go directly to the hospital. When there will be a delivery facility, a pregnant woman from a remote neighborhood will be able visit the CC first for the delivery. Observing the situation, I will carry out the delivery or refer to the Upazila Hospital. However, this will be very supportive for them. This is very critical need of CCs in these regions."* (IDI with CHCP in Lakshchahari, Khagrachari).

During the FGD sessions participants were asked about their perception regarding the CC as a health facility. According to them, the CHCP is not a qualified doctor. The person does not know properly the appropriate medicine for various health problem. So, a qualified doctor should be there.

CC is an effective health facility as of other participants of the study. However, study participants also discussed about concept and protocol of stablishing CCs in CHT areas. According to them the concept of a CC per 6000 population may be appropriate for plain land but this is not contextual for the hilly areas of CHT.

> *"You calculate a community clinic for six thousand people, but we need a community clinic in a neighborhood. Because, you know, the distance. The nearest community clinic is in Pankho Para (another village). People of this village will not go there as it takes more than one hour to walk through the hilly paths. This will make the patient sicker."* (FGD with adult male community members in Thanchi, Bandarban)

Considering the roads and communication system, participants thought that a community clinic in the CHT regions should have sufficient capacity to deliver a child and manage pregnancy and delivery related complications.

Study participants were asked about the SBCC materials found in a CC such as poster or leaflets. According to a key informant education materials available in the CCs are not that much working. Villagers cannot read and understand those well, specially the pregnant and lactating mothers who visits the CC more frequently.

Field notes from the observers regarding community clinic

- We visited Guimara on Wednesday, May 1, 2024. It was a government holiday, so the nearby CC (Narayanpara community clinic) was not open. However, we informally talked to some community members regarding the opening schedule of the CC. The summary of the information was that "the responsible person does not open the CC every day. S/he usually opens it once in a week, which is Thursday. So, on next Thursday, we revisited the CC at 10 a.m. in the morning. However, we found the clinic closed. It was drizzling in that morning and we waited for an hour for CC to be open, but

nobody was coming. Then, we asked a nearby community member if there was any possibility to open the CC. The person gave his opinion that the CC will not be opened that day. He told us that, as there was little bit raining that day, the CHCP will not come, and he suggested us not to waste time waiting for the CC will be opened. So, we got back.

- ❑ It was Bashapara CC, Shindukchari. We reached there at around 12 p.m. in a day. When we reached there, it was closed. There was a tea stall near the clinic, so we went there and asked the owner of the tea stall why the community clinic was closed. Surprisingly, the CHCP was also sitting on a bench of that tea stall, and waiting for a bike to go back home. Upon hearing my query, she responded. She replied that 'no one comes here after 12, so I closed it.' After informing her about our intent to go there, she opened the clinic again. She added that the CC building was too old and was becoming harder to work while it rains due to leakages. So, as it was raining a little bit that day, she thought no one was going to come due to the rain and wanted to get back home.
- ❑ In the case of Rangamati, our observation was that every community clinic was closed by 12 p.m. But we have called them before going for our observation, so they have kept them open for us. But they kept asking, why aren't we there yet? They will go home. Only in one instance did we find a clinic closed. It was located in Jurachari, Samirapara. She was just closing. It was 11:20 in the morning. The reason they close those clinics within 12 is because, according to them, patients do not come here after 12. Locals know the rules too, so if they need to come to the community clinic, they come early in the morning. And if they need assistance from a community clinic in later hours, they just call the CHCP and ask her for help. Everyone knows everyone here, so they respond to the calls. Another observation in Samirapara was that the Upazila Health Complex was nearby, so locals go there most of the time instead of the community clinic.

Situation of Community clinic as an adolescent-friendly health facility

Around forty percent (54/140) adolescent visited community clinic for at least once in their lifetime for seeking health. They found the community clinics' open hours convenient for them. Very high proportion of them (96%) also satisfied with the environment of the community clinics as a friendly health facility for them to consult any health problem with the service provider easily and openly (Table 35).

Table 35: Assessment of Community Clinic as an adolescent friendly health facility

Characteristics	Values (%)
Ever visited a community clinic for any health services [N=140]	54 (38.6)
Opening hour of community clinic was convenient [N=54]	48 (88.9)
Environment of Community Clinic was adolescent friendly	**N=54**

Very satisfied	25 (46.3)
Somewhat Satisfied	27 (50.0)
Neither satisfied nor dissatisfied	1 (0.7)
Somewhat dissatisfied	1 (0.7)
Very dissatisfied	0 (0.0)

According to the study CHCPs, adolescent girls visit the CC sometimes, however, boys usually do not visit a community clinic for their health and nutrition problems.

Key findings and discussion: Spot-check observation of 16 Community Clinics (CCs) revealed that, 9 CCs do not have height scale or height scale for children were non-functional, 11 CCs do not have height scale for adults, 6 CCs do not have functional weight machine for children, and 4 CCs do not have functional weight machine for adults. This situation can be an example of the overall functionality of the CCs in the study areas.

For most of the qualitive study participants, including the community members, CHCP and key informants who were service providers, CC is a excellent opportunity for the rural village community people for availing primary healthcare and nutrition services. CHCPs are also available through phone call to provide essential suggestions. However, study revealed partial functionality of the CCs because of inadequate service delivery equipment and facilities, and also because of the inadequate monitoring of the CCs opening and closing hours. On the other hand, policy regarding CC establishment is similar for both the plan land and CHT regions, which is one CC per 6000 community members. According to both community members and service providers participated in this study, the specific protocol of one CC for 6000 people may be applicable for the plan land, however, is not realistic for hard-to-reach CHT areas. There should separate policy for CHT regions so that it becomes nearly convenient for them to utilize the CCs throughout the year.

Service providers recommended that the difficulty of transportation in this region is one of the main reasons behind high number home-based child deliveries. Enhancing all the CCs in the hard-to-reach areas for child delivery can be helpful to decrease the current rate of home-based delivery.

3.12. Source of health and nutrition information

The participants of the FGDs informed about source of information available to them through which they receive any health and nutrition related information. One of the credible sources was the NGO health workers (such as BRAC) who visit their house frequently. Among others source of health information, they talked about YouTube, Facebook and Television.

"Sometimes there are shows in the television on health nutrition issues from where we came to know this information. Moreover, healthcare workers visit the community to build awareness among us." (FGD with adult male community members in Bilaichari, Rangamati)

Participants said that the most effective way to provide them with health and nutrition information would be conducting courtyard meeting through health workers, and using audio-visual format would be more effective.

It was noticed from the findings that study participants trust more over development organizations or NGOs as their well-wishers and believed to be actually working for them.

3.13. Nutrition Governance in CHT

The nutrition services are delivered through the existing public health facilities under the two major wings of MoH&FW: DGHS and DGFP. Community Clinic is the first contact point with the health system. However, where Community Clinic is not available, and in hard-to-reach areas special intervention modality is implemented.

3.13.1. Mainstream nutrition services delivery mechanism

Primarily, various nutrition services are delivered upon the reporting of the target groups at the existing health facilities (Table 36).

Table 36: Facility-based nutrition service delivery mechanism in Bangladesh

Type of health facility	Type of Nutrition services
District Hospital/MCWC/ Medical College Hospital	• IYCF counselling for lactating mothers on exclusive breastfeeding, timely initiation of complementary foods, proper complementary foods, and weight and height measurements. • Treatment for malnutrition • Counselling for pregnant and lactating women on personal hygiene and cleanliness during preparation of food and feeding of infants and young children, general nutrition, importance of deworming and consumption of IFA.IYCF package • Facilitating nutrition activities at the upazila level and below
Upazila Health Complex/ UH&FWC	• IYCF counselling for lactating mothers on exclusive breastfeeding, timely initiation of complementary foods, proper complementary foods, and weight and height measurements. • Screening & Treatment for malnutrition

	• Counselling for adolescents, pregnant and lactating women on personal hygiene and cleanliness during preparation of food and feeding of infants and young children, general nutrition, importance of deworming and consumption of IFA. • Provide IFA to pregnant women with follow-up of compliance. • Provide guidance to intake iodine, iron, and vitamin A • Provide ORS and zinc during treatment of diarrhoea • Provide de-worming medication and post-partum vitamin A supplementation.
UH&FWC	• All the service in the previous row, including… • Provide advice and guidance to adolescent females, and mothers of under-5 children on iodine, iron, and vitamin A • Provide IFA to adolescent females • Refer complicated cases to upazila or district level hospital as appropriate with proper follow up.
Community Clinic	• HAs, FWAs, and Community Health Care Providers (CHCP) and other relevant personnel working at that CC will have the responsibility of delivering the nutrition services • Two or three female Community Health Volunteers will be selected for each community clinic area • Counsel all women with children on exclusive breast-feeding including positioning and attachment, supporting for trouble-shooting for any breastfeeding problem • Provide advice on timely initiation of complementary foods and proper complementary foods • Measurements weight and height of the children • Counselling for adolescents, pregnant and lactating women on personal hygiene and cleanliness during preparation of food and feeding of infants and young children, general nutrition, importance of deworming and consumption of IFA. • Conduct screening for malnutrition (MUAC, growth monitoring) • Provide nutrition advice for all children • Refer complicated cases to primary level care facility (ie UHC), and follow-up of referred children under treatment.[11]

3.13.2. Nutrition service delivery in CHT (hard-to-reach)

Administratively, the Chittagong Hill Tracts (CHT) region of Bangladesh is made up of both the Traditional Chieftainships and the Government of Bangladesh's (GOB) established Hill District Councils (HDCs). The traditional chieftainship Institutions comprised the village Karbari, mouza Headmen and Circle Chief. Though the principal organs is the HDC, the traditional administrative organs are still considered and plays a major role for implementation of development projects for ethnic minorities in the Chittagong Hill Tracts.[2] Therefore, while implementing any health and nutrition related activities in the CHT regions, government or non-government organization should consider engaging the traditional as well as local political leaders.

> *"If you want to work for improving the health and nutrition status of the people in the CHT regions, you should engage the local leaders such as headman, Karbari, UP Chairmen and also District Parishad (HDC). You will not be successful in implementing your planned activities without engaging them. To overcome the hard-to-reach characteristics, and also to overcome language and cultural barriers, you need their active support."* (KII with a Medical Officer at Bandarban)

Hard-to-reach is the characteristic of most of the areas of the hilly terrains or forested localities of the hill districts of Bangladesh. However, the SDGs were adopted by the GOB under the slogan of "Leave No-One-Behind". Therefore, to provide health and nutrition services among ethnic population living in hard-to-reach areas, the GoB is implementing monthly satellite clinic/mobile medical team services, and supporting with transportation cost of a seriously ill patient from a hard-to-reach area to a nearby physician/health facility.[12] However, the study participants at the service delivery level informed about institutional or infrastructural gaps in providing adequate health and nutrition service to the mothers, children and adolescents in the CHT regions. Inadequate buildings or rooms in the health facilities, hospital beds, doctors and nurses, supporting staffs, diagnostic facilities, medicines every sector is characterised by unavailability or inadequacy. There is no specified corner for the adolescents in the Upazila level facilities. The IMCI corner of the Upazila Health Complex is mostly inadequately functional because of necessary service provider.

> *"In this hospital (UHC) there are 27 positions for nurses while currently working only 5 nurses. There is no ambulance and every time when we have to refer a complicated delivery or other patients, even in the midnight, we cannot provide them with ambulance services."* (KII with a Medical Officer at Bilaichari, Rangamati)

According to a central level key informant, the policy and guidelines whatever developed to ensure the nutrition of the pregnant and lactating mothers, children and adolescents living in CHT region are good enough. Even Bangladesh is ahead compared to other neighbouring countries. All policies, while developing, CHT

people were considered as heard-to-reach, deprived and marginalized. Based on that, there are some special programs for CHT people, such as MNCH for CHT. However, the implementation of the planned activities is challenging and not up to the mark. One of the reasons behind this challenge because of the nature of the nutrition program. In Bangladesh, nutrition program is a multi-sectoral program. For example, the Directorate of Agricultural Extension (DAE) is promoting fruit tree plantation in the CHT regions as part of nutrition sensitive interventions. However, multi-sectoral collaboration is not easy. As of the key informant from IPHN,

> "*Multi-sectoral collaboration is itself a challenge. There are 22 ministries working together to ensure the nutrition of the country. Linking all these departments is important to ensure the effective implementation of the planned activities, which is still a challenge*." (KII with a Program Manager at IPHN, Dhaka)

The key informant also emphasized that among the 22 ministries 5 ministries are really important to implement nutrition specific as well as nutrition sensitive interventions,

> "*At least basic four to five ministries should work together, those are: MoH&FW, MoAgriculture, MoFood, MoWCA, and Fisheries & livestock. If these five ministries work together in a concrete way, then there is an opportunity to improve the nutrition sector in the CHT areas*."

There are also programs in collaboration with the development partners, such as the LEAN project. However, all these are said to be inadequate, and more initiative is needed.

As of another key informant, for nutrition policies and governance in CHT regions must consider the culture and language of the population. Besides these, the most important fact in these regions is the supply chain. Initiatives based on the MDGs and SDGs were/are there, and so there is some progress. But, to be successful in these regions required thinking and working out of box. As the key informant observed,

> "*I am here with the health sector in CHT for a long time. I see some progress definitely, however, those are very slow*." (KII with Civil Surgeon of Rangamati)

According to the various other key informants of this study, because of the limited budget to deal with the difficult field situation of CHT regions, developing CHT specific policies and implementation of the planned activities is challenging,

> *"Finance is not nutrition specific for the various ministries included in the multi-sectoral nutrition programs. They have to work within their own in-built budget. Preparing a nutrition plan (pusti porikalpana) and arranging various*

activities, and regular meetings of the DNCC and UNCC does not have a defined budget." (KII with a Deputy Director at BNNC, Dhaka)

"*This is a big challenge to adopt a policy here. The challenges are due to the field situation. Moving from one place to another is not easy, and makes the implementation challenging*." (KII with an NGO personnel of BRAC in Lakshmichari, Khagrachari)

Nutrition specific program such as IFA and Calcium supplement and other related service provision available like plain land. The Tribal Health Program have the initiative of "Tribal health mobile medical team" to cover the hard-to-reach areas. However, complying is not up to the mark which needs attention to change the behaviour.

The main challenge here is the "supply chain". Here supply chain is very week. Someone has money does not necessarily mean that s/he can buy nutritious foods. So, the nutrition governance needs to ensure diversified food supplies are sufficient and low cost.

Key findings and discussion: Nutrition governance for CHT regions is considered as important and crucial for the government of Bangladesh. Policies and guidelines always take into consideration the hard-to-reach, poverty prevalence and cultural difference of the population living in CHT regions. However, there is a huge gap in the policy phrases and implementation of the planned activities. The multi-sectoral nutrition program (the Health, Population and Nutrition Sector Program; HPNSP) is still did not achieve remarkable collaboration among the ministries included in this program. Still different ministries trying to do their part of their own rather than in collaboration with another department. There are also gaps in strategies to overcome the difficult topographical challenges, such as community clinic for 6000 population is not relevant for CHT, not following how the community-based healthcare workers are popular to the hilly people, etc. There are also institutional and infrastructure level gaps to provide appropriate health and nutrition services. Any health and nutrition intervention in these regions should carefully consider engaging local level stakeholders and recruiting health workers and volunteers from the community to overcome geographical, socio-cultural and language barrier. Advocacy to strengthen multi-sectoral collaboration and incentives to change initial level behaviour change would also be required.

3.14. Factors affecting health and nutrition interventions

Qualitative exploration through FGDs, IDIs and KIIs identified enormous contextual factors for developing education and learning strategies related to health and nutrition of people in the study areas. According to the participants, health related practice and health seeking behaviour are different and mediated by traditions. To implement the nutrition interventions in the CHT, the culture, food habits, belief these things are need to take into account. However, there was a changing trend among the people of CHT, though it was slow. A key informant said,

> *"There are some positive changes over time, but those changes are very slow. Their health service seeking behaviours are bit different. Once upon a time, they did not receive modern medicine. We used to go to the remote villages for medical campaign but we had to come back without providing services. Things are changing gradually that they now want to get the services, but these changes are coming very slowly. If you want to bring these changes rapidly, you have to take special step or initiatives."* (KII with Civil Surgeon of Rangamati)

For developing nutrition status through behaviour change in CHT only seminar, meetings, and counselling is not enough. There is the need to take some special initiative out of box. The key informant said again,

> *"(SBCC) will require steps like supplying legumes such as various type of dal through social safety net programs, then they will be habituated to consume this type of vegetable protein, as they do not consume dal other than Masur dal. You need to take holistic multisectoral approach for ensuring consumption of protein from animal sources. For example, supplying chicken for raring is a good decision, because it is easy to do. Household-based poultry raring has been decreased in an alarming rate in the CHT regions. This needs to revitalize. This is both the source of cash earnings, protein supply as well as women empowerment."* (KII with Civil Surgeon of Rangamati)

Study revealed that previous community-based interventions implemented by various national and international organization such as UNICEF, UNDP, BRAC etc., have profound impact on the beneficiaries when they received education and learning organized within their community. The reality of the hilly terrain in terms of roads and communication suggested that any intervention should be designed convenient to a specific village, especially in the heard-to-reach areas. Participants informed about their trust and expectation regarding a health worker to be in their villages for promoting health and nutrition.

> *"Healthcare worker is more important for us. If there is a public healthcare worker in our village, we can learn a lot about health and nutrition through her."* (KII with CC management committee member in Lakshmichari, Khagrachari)

SBCC interventions to be more effective, engagement of the specific community leaders (Headman, Karabari) and local political leaders is essential. Besides this, in terms of language and establishing trust, health workers should also come from the same community.

> *"I am not sure about the success and effect of the intervention through the people from outside the community. They will easily accept a health worker from their own community, and the health worker will be able to understand what is required to change behaviors in order to increase their nutrition status."* (IDI with CHCP in Lakshmichari, Khagrachari)

Miking or announcing can be used to inform any event or awareness messages in the study areas, as of a CCMC member. Another key informant talked about awareness building sessions in various neighbourhoods with visualization and including husband and wife in the same sessions. She said,

> *"To raise awareness, I think training session is more important. Visualization of the content through projection or television or street drama would be more effective. You have to include both the husbands and wives for any sessions to be effective."* (KII with a Female UP Member in Belaichari, Rangamati)

Existing schools in the study areas can be a target place to disseminate health and nutrition information among the community people. A teacher key informant expressed in this regard,

> *"I think that the teachers of the school, then the dignitaries of the area, and the parents should be invited in some occasions. Together they should focus on some health and nutrition issues. That would be helpful to deliver awareness messages properly to the community."* (KII with a School Teacher in Sadar Upazila, Bandarban)

Study participants also emphasized on the religious gatherings for disseminating health and nutrition information. According to them, a large number of community members can be reached through a religious gathering.

There are some extra-remote villages which are really hard-to-reach. Train up some volunteers from within those communities that would be helpful. In those villages, there are also some educated boys and girls. Those communities could be accessible for providing nutrition education through these educated boys and girls. Some selected boys and girls can be trained as volunteers. Nutrition information can be disseminated through them, as well as some sessions can be organized in those villages and then therefore implementers can also visit to participate directly.

Establishing a health facility or introducing a nutrition program is not enough. Study informants suggested that it is necessary to promote the facts first, sensitize and convert them from their traditional practices with respect. Being isolated and far away from the health facilities, usually remote hilly villagers are habituated with supernatural or herbal treatments. These people also do not want to travel long distance for a healthcare. Therefore, motivating these people to come to the health facilities for maternal and child health and nutrition care requires targeted strategies. A key informant from an NGO said,

> *"The people in the villages do not want to accept a new health facility or program easily. They have to be encouraged to take advantage of the facility or program first. Because, they are following some traditional ways for generations and sometimes have profound belief on those."* (KII with an NGO personnel of BRAC in Lakshmichari, Khagrachari)

Language is a barrier in the CHT areas. Sometimes the healthcare provider may not know local language which may demotivate a patient to seek service in a particular facility. Promotional materials should be developed considering the language differences.

> *"It is effective to educate them in their language. This is really difficult to make them understand without their own language."* (IDI with a CHCP in Lakshmichari, Khagrachari)

> *"Language is important. For example, previously we promoted Malaria related information through posters in Bangla, which was not working properly. Now we have translated the posters in language specific to the ethnic group, such as, in Tripura area posters are in Tripura language, and Marma area the posters are in Marma language."* (KII with an NGO personnel of BRAC in Lakshmichari, Khagrachari)

Key findings and discussion: The situation of accepting outworld people and modern medicines is changing among Hilly people but the progress is really slower. The study findings revealed that SBCC strategy in CHT regions requires to be specific to certain regions as well as various indigenous groups. Educationally under privilege villagers sometimes failed to communicate with mainstream Bangla language speakers, and do not understand the messages hanging in the health facilities. Findings suggested that, various NGO workers who visited the study population with health messages received acceptance and popularity, such as *Shasthyosebika* of BRAC and healthcare worker of *Parakendro*. Courtyard sessions informed to be a preferred way to deliver the health and nutrition information. Various story from the participants regarding health and nutrition identified that when mothers were accompanied by her

husband or other family members, while being counselled for a health and nutrition behaviours, then the needs of the mothers are prioritized. Previous experience of developing promotional materials suggested that specific community based local language should be applied. This is also true for the SBCC material available in the CCs in CHT. According to the participants, anything will be developed for these population should be well informed, community and household level promotion or awareness creation is necessary to get participation from the community.

4. Recommendations

The study recommends an integrated (including nutrition specific and nutrition sensitive activities) and CHT specific approach to ensure the maternal, newborn, child and adolescent health and nutrition in the study areas:

1. 22 ministries are included for multi-sectoral nutrition program of Bangladesh. Among those 22 ministries, five ministries [Ministry of Health and Family Welfare (MoH&FW), Ministry of Food (MoFood), Ministry of Agriculture (MoA), Ministry of Women and Children Affairs (MoWCA), and Ministry of Fisheries and Livestock (MoFL)] are very important to ensure the nutrition of the people in CHT regions. However, the study revealed that collaboration among the various ministries for the multisectoral program is not up to mark. Therefore, it is necessary to advocate to ensure that these 5 ministries are working in close collaboration to ensure the nutrition of CHT population.
2. The uptake of existing CCs, especially for the ANC and PNC services, found to be facing challenge because of the difficult transportation system due to topography of the region. The bumpy hilly walk ways are also affected in rainy season and/or dry season causing the low uptake of the CCs. There is a need for community clinic should be established in each village or for few closest neighbourhoods so that pregnant and lactating mothers found it convenient to visit the CC throughout the whole year.
3. The study found a very high prevalence of the home-based child delivery in the CHT regions. As per the study participants recommended/demanded, CCs should be further enhanced to deliver child along with a delivery room, manage pregnancy and child delivery related early complications, and newborn care.
4. Community clinic and other public health facilities should be fully functional with necessary staff regularly providing services with necessary equipment and medicines.

5. Because of the difficult transportation system as well as other barriers, home-based child delivery is prevalent. Along with continuous efforts to increase the facility-based child delivery, this is also necessary to ensure that home-based child delivery is attended by at least a Trained TBA. Therefore, the study recommends training program for TBAs, and ensure that in each neighbourhood there is at least one TTBA to attend the home-based deliveries.
6. Increased the awareness regarding essential health & nutrition services for pregnant women, lactating mothers, newborns, children & adolescents
7. Increase the awareness regarding available facilities & services related to health & nutrition of the target groups
8. Strengthen health system responsiveness to increase quality of health and nutrition services
9. Ensure that the pregnant and lactating mothers, and adolescents are informed about their health and nutrition together with their family members.
10. Need continuous effort to keep up early initiation of breastfeeding and increased rate of exclusive breastfeeding.
11. Ensure early initiation of complementary feeding as soon as the child age is 6 months
12. Promote locally available foods and achievable process to arrange complementary feeding that ensure minimum acceptable diet for a child aged 6 to 23 months of age. A separate program to promote 'preparation and serving of local food based complementary food' is recommended.
13. The study findings revealed that still there are some perceptions and practices regarding dietary intake during pregnancy (such as eating much makes the child bigger and delivery is complicated) and lactation periods (such as avoiding meats or other rich foods during first few weeks of delivery), those are harmful for both mother and child. Study recommends promotional and SBCC activities to ensure optimal dietary intake during pregnancy and lactation periods.
14. Adolescent group-based separate nutrition intervention needs to develop, along with parents' participation. Because of most of the CHCPs are female, adolescent boys do not feel encourage to go to the CCs for their health and nutrition problems. Both the girls and boys are also found to skip meals. Adolescent girls found to avoid certain foods during their menstruation. The adolescents need to be sensitized and break the various stigma related to be open up to share health problems with family

members and service providers, in terms of staying thin for looking beautiful etc.

15. Promote homestead gardening for nutritious vegetables and fruit trees appropriate for hilly terrain, and household poultry and livestock rearing to ensure household nutrition supply and to increase cash earnings.
16. (if needed) Bridge the poor farmer households with cash transfer during the interim period of crop production to ensure food security and nutrition.
17. Work for improved mechanism to increase water supply among beneficiaries.
18. Advocate for subsidized tube-well and sanitary latrine for the poor households.
19. Ensure that every mother/caregiver manage disposal of child feces safely into a sanitary latrine rather than in an environment.
20. Ensure mothers and other family members wash their hands with soap at least after defecation, after cleaning child anus, after disposal of child feces, during preparing complementary foods, before eating and before feeding a child.
21. Develop appropriate health promotion materials in the indigenous group specific language, and reach them by household visits by a community-based healthcare worker through courtyard meetings as well as interpersonal communication at the beneficiary level.
22. Utilize the available schools and other community-based centres to gather local level key stakeholders to sensitise regarding a health and nutrition program. Also utilize the religious gatherings to promote nutrition information and behaviours.

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