



World Food Programme

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INTEGRATED NUTRITION SMART SURVEY REPORT-2023

SYLHET, BANGLADESH



SMART



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LIST OF ACRONYMS:

ACF/AAH	Action Contre la Faim Action Against Hunger	IPHN	Institute of Public Health Nutrition
BDHS	Bangladesh Demography and Health Survey	IYCF	Infant and Young Child Feeding
BSU	Basic Sampling Unit	MAD	Minimum Acceptable Diet
BMI	Body Mass Index	MDD	Minimum Dietary Diversity
CDR	Crude Death Rate	MAM	Moderate Acute Malnutrition
cGAM	Combined Global Acute Malnutrition	MICS	Multiple Indicators Cluster Survey
CI	Confidence Interval	MNP	Micronutrient Powder
CDCS	Crisis and Support Center under French Ministry for Europe and Foreign Affairs	MoHFW	Ministry of Health and Family Welfare
CMAM	Community-based Management of Acute Malnutrition	MR	Measles Rubella
CNV	Community Nutrition Volunteer	MUAC	Mid-Upper Arm Circumference
cSAM	Combined Severe Acute Malnutrition	NNS	National Nutrition Service
cGAM	Combined Global Acute Malnutrition	NRR	Non-Responder Rate
DEFF	Design Effect	NC	Nutrition Cluster
ECHO	European Union Civil Protection and Humanitarian Aid Operations	OTP	Outpatient Therapeutic Programme
ENA	Emergency Nutrition Assessment	PLW	Pregnant and Lactating Women
GAM	Global Acute Malnutrition	PPS	Population Proportional to Size
GoB	Government of Bangladesh	PSU	Primary Sampling Unit
GPS	Global Positioning System	SAM	Severe Acute Malnutrition
HAZ	Height-for-Age z-score	SD	Standard Deviation
HH	Household	SMART	Standardized Monitoring and Assessment of Relief and Transitions
HQ	Headquarter	SRS	Simple Random Sampling
IPC	Integrated Phase Classification	TSFP	Targeted Supplementary Feeding Programme
		U5DR	Under 5 Death Rate
		UNICEF	United Nation Children's Fund
		WASH	Water, Sanitation and Hygiene
		WAZ	Weight-for-Age Z-score
		WFP	World Food Programme
		WHO	World Health Organization
		WHZ	Weight-for-Height Z-score

EXECUTIVE SUMMARY

BACKGROUND:

In 2023, a comprehensive SMART survey was conducted across the flood-affected districts of Sylhet Division, Bangladesh, due to a critical lack of recent, district-specific nutrition data. Existing sources like Bangladesh Health Demography Survey (BDHS) 2022 and Multiple Indicator Cluster Survey (MICS) 2019 only provide divisional insights, masking district-level disparities. Sylhet division, compared to national prevalence, shows persistent challenges in malnutrition. Wasting in the Sylhet division decreased from 12.1% in 2014 to 10.4% in 2017-18 but rose again to 12.2% in 2022, indicating ongoing acute malnutrition issues. Underweight prevalence in Sylhet dropped from 39.8% in 2014 to 31.7% in 2022, showing improvement but remaining above the WHO critical threshold (>30%). Stunting in Sylhet declined significantly from 49.6% in 2014 to 31.2% in 2022, reflecting positive progress, though still categorized as "very high" by WHO standards (>30%).¹ In addition, Sylhet Division is significantly impacted by recurrent floods, particularly from May to July. The devastating floods of June 2022 affected approximately 7.2 million people in Sylhet division, causing extensive destruction to infrastructure, homes, and livelihoods². Furthermore, 269,550 population are living in the division at IPC phase 4 categorized as emergency level of acute food insecurity³. The persistent challenges and lack of district-level nutrition data have highlighted the need for evidence to guide appropriate, context-specific nutrition programming. This survey recommended by the National Nutrition Service (NNS) and nutrition cluster partners, the survey aims to assess the nutritional status of children aged 6–59 months and pregnant lactating women, identify malnutrition situation, and reveal district-level disparities. This data-driven approach enables us to make decisions regarding the timely, effective implementation of life-saving interventions and guides post-recovery efforts. Therefore, WFP with the technical support of ACF, decided to carry out the survey to evidence-based programming and advocacy to address Sylhet's nutritional challenges and foster sustainable improvements.

OBJECTIVE:

The main objective of the SMART Survey is to conduct an integrated assessment of the nutritional situation in Sylhet division. The survey targets three key populations: children aged 6 to 59 months, pregnant women, and lactating women (PLW). The study focuses on these vulnerable groups to gain a deeper understanding of their nutritional status, along with their food security and Water, Sanitation, and Hygiene (WASH) conditions in the surveyed areas.

¹ Bangladesh Demography Health Survey 2022; <https://dhsprogram.com/pubs/pdf/PR148/PR148.pdf>

² <https://reliefweb.int/report/bangladesh/flash-flood-humanitarian-response-plan-2022-humanitarian-coordinator-task-team-hctt-monitoring-dashboard-20-october-2022>

³ https://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_Bangladesh_Acute_Food_Insecurity_Mar_Sep2023_Report.pdf

METHODOLOGY:

A cross-sectional two-stage cluster sampling approach following SMART methodology was adopted. The first stage involved selection of the clusters. The villages were considered as the smallest geographical unit (clusters). The second stage involved selection of households. The sample sizes were designed to achieve reasonable precision for estimates of Global Acute Malnutrition as well as crude mortality separately for the entire district covering all Upazila. All calculations were made using ENA for SMART software (version January 11th, 2020). The purpose of the sample calculation was to get a sample having the optimal units so that results are reliable; with reasonable precision. The point prevalence of Global Acute Malnutrition was used based on the BDHS 2022 divisional level data, as no other trusted recent data was available. A desired precision used based on SMART guideline considering the point prevalence and a design effect from the previous survey findings used in calculating the sample size. A total of 226 clusters were targeted, with 100% achieved, resulting in a 98.7% household coverage rate. The sample target for children was 1344, but the achievement surpassed this at 2114, coverage for children, therefore exceeding 100% of the target. The overall data quality was deemed excellent based on the plausibility report, meeting the recommended criteria outlined by SMART.

KEY FINDINGS:

Table 1: Summary of integrated nutrition survey Sylhet division

SURVEY AREA	SYLHET	SUNAMGANJ	MOULVI BAZAR	HABIGANJ	SYLHET DIVISION
Data Collection Period	16 th -30 th Oct 2023	1 st - 20 th Nov 2023	22 nd Nov-09 th Dec 2023	9 th -24 th Dec 2023	Oct-Dec 2023
DEMOGRAPHY %					
Average household size	5.4	5.5	5.2	5.3	5.4
% of children 6-59 months	10.1%	12.4%	12.9%	12.3%	11.9%
% of Children under 5	10.9%	13.1%	13.7%	13.1%	12.7%
% of pregnant women	1.3%	1.4%	1.2%	0.9%	1.2%
% of Lactating women with infant < 6 months	1.3%	1.0%	1.1%	1.2%	1.2%
CHILDREN 6-59 months % [95% CI]	N= 413	N= 555	N= 591	N= 550	
Global Acute Malnutrition (GAM)	18.2% (14.3-22.8)	14.1% (10.9-17.9)	10.8% (8.4-13.8)	7.1% (5.1-9.8)	12.9% (11.1-14.7)
Moderate Acute Malnutrition (MAM)	17.4% (13.5-22.1)	12.6% (9.9 - 16.0)	9.5% (7.4 - 12.1)	6.2% (4.2 - 8.4)	12.0% (10.2-13.8)
Severe Acute Malnutrition (SAM)	0.7% (0.2 - 2.2)	1.4% (0.7 - 2.8)	1.4% (0.6 - 3.0)	0.9% (0.4 - 2.2)	0.9% (0.5-1.3)
Oedema	0%	0%	0%	0%	0%

SURVEY AREA	SYLHET	SUNAMGANJ	MOULVI BAZAR	HABIGANJ	SYLHET DIVISION
Mid Upper Arm Circumference (MUAC) [95% Ci]	N=414	N=556	N=593	N=552	
MUAC <125 mm and/or oedema	1.4 % (0.6 - 3.6)	2.9 % (1.8 - 4.6)	2.9 % (1.8 - 4.4)	2.2 % (1.3 - 3.6)	2.2% (1.5-2.8)
MUAC 115-124 mm	1.4 % (0.6 - 3.6)	2.5 % (1.5 - 4.3)	2.5 % (1.6 - 4.1)	2.0 % (1.1 - 3.4)	2.0% (1.3-2.6)
MUAC <115 mm and/or oedema	0.0 % (0.0 - 0.0)	0.4 % (0.1 - 1.4)	0.3 % (0.1 - 1.4)	0.2 % (0.0 -1.3)	0.2% (0.0-0.4)
Combined Wasting (WHZ and MUAC)	N=414	N=556	N=593	N=552	
cGAM	18.4 % (14.4-23.1)	15.3 % (12.2 -19.0)	11.8 % (9.3 - 14.8)	7.8 % (5.6-10.7)	13.6% (11.7-15.5)
cSAM	0.7 % (0.2 - 2.2)	1.8 % (1.0 - 3.4)	1.3 % (0.6 - 3.0)	1.1 % (0.5 - 2.4)	1.0% (0.5-1.5)
UNDERWEIGHT (WHO 2006 growth standards)	N=411	N=554	N=593	N=550	
Prevalence of Underweight	41.1 % (36.2-46.3)	30.1 % (26.6-34.0)	22.8% (18.6-27.5)	20.5 % (16.4-25.4)	30.6% (28.1-33.0)
Severe Underweight	7.5 % (5.1 - 11.1)	6.0 % (4.3 - 8.3)	2.9 % (1.7 - 4.9)	2.7 % (1.4 - 5.1)	5.4% (4.2-6.6)
STUNTING (WHO 2006 growth standards)	N=411	N=552	N=593	N=551	
Prevalence of Stunting	37.0 % (31.1-43.3)	32.1 % (27.5-37.0)	22.9 % (18.5 -28.1)	31.0 % (26.8-35.6)	32.0% (29.2-34.8)
Severe Stunting	6.1 % (3.8 - 9.6)	6.6 % (4.6 - 9.2)	4.4 % (2.7-7.0)	5.6 % (3.7 - 8.4)	6.0% (4.7-7.3)
COVERAGE					
Measles vaccination with card or recall (9-59 months)-1 st Dose	91.9% (85.9-94.1)	88.3% (80.6- 93.8)	95.4% (89.1-98.9)	90.7% (87.9-92.8)	91.4% (85.9-94.1)
Measles vaccination with card or recall (15 th -59 months)-2 nd Dose	86.6% (80.6-91.8)	81.9% (78.0- 85.1)	93.1% (88.6-97.9)	89.0% (85.8-91.6)	87.1% (80.6-91.8)
Vitamin A supplementation within past the 6 months with card or recall	79.7% (75.6-83.2)	79.2% (75.6-82.3)	83.6% (80.4-86.3)	87.6% (84.6-90.1)	81.9% (75.6-83.2)
Deworming Among children aged 24-59m	54.5% (48.4-60.5)	62.8% (57.6-67.8)	62.3% (57.3-67.0)	64.6% (59.4-69.5)	60.1% (48.4-69.5)
KEY DISEASE PREVALENCE					
Diarrhoea in the last 2 weeks	10.6% (7.6 -14.6)	10.8% (8.2-14.1)	6.1% (4.2-9.0)	11.1% (8.1-15.)	9.9% (7.6-14.6)
Acute Respiratory Infection (ARI) in the last 2 weeks	3.9% (2.3-6.8)	2.0% (1.8-5.1)	3.6% (2.1-5.9)	1% (0.7-3.8)	2.8% (2.3-6.8)

SURVEY AREA	SYLHET	SUNAMGANJ	MOULVI BAZAR	HABIGANJ	SYLHET DIVISION
CHILDREN 0-23 months % [95% CI]					
IYCF indicators					
Early Initiation of Breastfeeding (EIBF)	77.6% (72.3-84.1)	79.2% (73.9-84.0)	75.0% (69.4-80.1)	76.3% (70.9-81.2)	
Exclusive breastfeeding under 6 months (EBF)	68.0% (62.3-74.5)	52.4% (46.0 -57.9)	84.3% (71.4-92.3)	75.9% (62.8 86.1)	
Continued breastfeeding 12-23 months	93.1% (86.4-97.2)	91.7% (87.3 -97.6)	98.0% (94.3-99.6)	97.5% (93.7-99.3)	
Bottle feeding 0-23 months	12.9% (8.63-18.4)	12.1% (8.4 - 16.6)	10.4% (07.6-14.4)	9.9% (06.7-14.0)	
Minimum meal frequency for breastfed children 6-23 months-Overall	53.6% (45.7-61.6)	29.1% (23.3-30.5)	84.8% (79.3-89.3)	48.4% (41.8-55.2)	
Minimum dietary diversity (MDD)	38.4% (30.6-46.7)	39.9% (33.4-46.6)	45.2% (38.4-52.0)	32.9% (26.8-39.4)	
Minimum acceptable diet (MAD)	24.5% (17.9-32.2)	28.3% (22.4-34.6)	43.3% (38.4-52.0)	25.3% (19.8-31.5)	
WOMEN 15-49 years % [95% CI]					
Nutritional Status among Pregnant and Lactating (PLW) with children <6 months [MUAC < 210 mm]	3.4% (1.5-6.7)	2.3% (1.1- 4.7)	3.8% (2.2 - 6.6)	2.3% (1.1- 4.6)	3.0% (1.6-5.8)
Women Minimum Dietary Diversity (15-49 years)					
Poor (0 to 4)	39.42% (35.9-43)	57.76% (54.2-61.2)	55.34% (52.0-58.7)	60.5% (57.1-63.8)	53.3% (49.8-56.7)
FOOD SECURITY % [95% CI]	N=781	N=819	N=881	N=863	
Food Insecurity Experience Scale-FIES over last 30 days					
Moderate	20.2%	14.3%	9.1%	9.6%	26.5%
Severe	0.3%	0.1%	0.0%	0.1%	1.4%
Moderate or Severe	20.5%	14.4%	9.1%	9.7%	27.9%
Food Insecurity, by Share of Household Expenditure on Food					
Food secure (Expenditure <50% on Food)	27.5% (24.5-30.8)	28% (25.1-31.3)	42.0% (38.9-45.4)	48.6% (45.2-51.9)	36.5% (33.4-39.9)
Mildly Food Insecure (Expenditure 50% to <65% on Food)	40.3% (37.0-43.9)	42% (39.2-46.0)	38.0% (35.1-41.5)	35.8% (32.7-39.1)	39.0% (36.0-42.6)

SURVEY AREA	SYLHET	SUNAMGANJ	MOULVI BAZAR	HABIGANJ	SYLHET DIVISION
Moderately food Insecure (Expenditure 65% to <75% on Food)	20.0% (17.3-23.0)	22% (19.6-25.3)	14.5% (12.4-17.1)	11.6% (9.6-13.9)	17.0% (14.7-19.8)
Severely food Insecure (Expenditure >75% on Food)	12.2% (10.1-14.6)	7% (5.5-9.1)	5.5% (3.9-6.8)	4.0% (2.9-5.6)	7.2% (5.6-9.0)
WASH [95 % CI]	N=781	819	881	863	
Water Sources					
Protected Drinking Water Sources	35.0% (31.8-38.5)	58.4% (55.0-61.7)	35.7% (32.7-39.0)	29.4% (26.5-32.2)	39.6% (36.6-42.3)
Unprotected Drinking Water Source	65.0% (61.5-68.2)	41.6% (38.3-45.0)	64.3% (61.0-67.3)	70.6% (68.1-74.3)	60.4% (58.1-65.7)
Toilet/Latrine use					
Improved Latrine	70.4% (67.1-73.5)	49.0% (45.6-52.4)	72.1% (69.0-75.0)	67.6% (64.4-70.6)	64.8% (61.3-70.5)
Unimproved Latrine	29.6% (26.5-32.9)	51.0% (47.6-54.5)	27.9% (25.1-31.0)	32.4% (29.4-35.6)	35.2% (31.8-38.9)

KEY HIGHLIGHTS:

- The Global Acute Malnutrition (GAM) rate among children aged 6-59 months in Sylhet Division is 12.9%, classified as "High and exceeding both the national average of 11% and the divisional average of 12.2% (BDHS 2022).
- Sylhet district shows the highest GAM rate among 6-59 months at 18.2%, which exceeded the WHO/UNICEF emergency threshold of $\geq 15\%$ categorized as very high.
- Underweight among 6-59 month children in Sylhet Division is alarming critical, with a rate of 30.6%, exceeding the "critical" WHO/UNICEF threshold of $\geq 30\%$ and surpassing the national average of 22% (BDHS 2022).
- Stunting remains very high, at 32% in the Sylhet division exceeded the WHO/UNICEF very high threshold of $\geq 30\%$, which is also higher than the national and divisional averages of 24% and 33.9%, respectively and Sylhet district found the highest 37%.
- Approximately 332,685 children are suffering from wasting, 789,161 children are underweight, and 825,266 children 6-59 months are stunted in the Sylhet Division.
- In the division, the prevalence of wasting, underweight, and stunting is significantly higher ($p < 0.05$) among older children compared to younger ones.
- The analysis highlights a critical issue in detecting acute malnutrition, revealing that relying on just one indicator, whether WHZ or MUAC, can lead to significant under detection, underscoring the necessity of using both indicators to ensure accurate identification and treatment of malnourished children.
- Diarrhoea prevalence (9.9%) and fever (62.3%) among children 6-59 months were relatively high compared to the national average rate of 4.8 % and 30.5% respectively.
- Exclusive breastfeeding rate is lowest in Sunamganj at 52.4%, the other three districts exceed the national average of 55% (BDHS 2022).
- The Minimum Acceptable Diet (MAD) and Minimum Dietary Diversity (MDD) levels are low across the district except Moulvi bazar, more than two-thirds of the children are not consuming the recommended diversified foods.
- Vitamin A supplementation coverage for children aged 6-59 months is 81.9%. Measles vaccination coverage is 91.4% for the first dose (MR1) and 87.1% for the second dose (MR2), both exceeding the national averages (MR1: 89.4%, MR2: 87.7%-Administrative data). However, deworming coverage for children aged 24-59 months is relatively low at 60.1%.
- 9.1% to 20.5% of the population experiences moderate or severe food insecurity based on Food Insecurity Experience Scale (FIES). The Sylhet district has the highest food insecurity, where 1 out of 5 households are food insecure.
- 60.4% of households across the division drink water from unprotected sources, and 86% do not purify the water before drinking.
- Only 64.8% of households have improved sanitation facilities, while 51.0% of households in Sunamganj district use un-improved sanitation. This indicates a substantial gap in sanitation facilities, particularly in Sunamganj.
- The handwashing practices during other critical times were very low. Nearly 4 out of 5 caregivers do not wash their hands with soap before feeding their child, and 3 out of 5 do not wash their hands with soap after disposing of or cleaning up the child's faeces.

Sylhet Division
(Stunting, Wasting, FIES)
(Sylhet SMART Survey 2023)

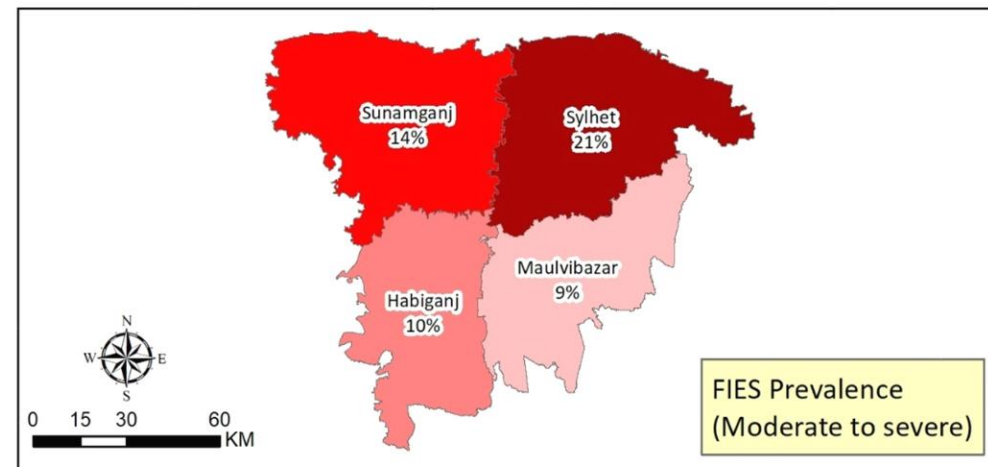
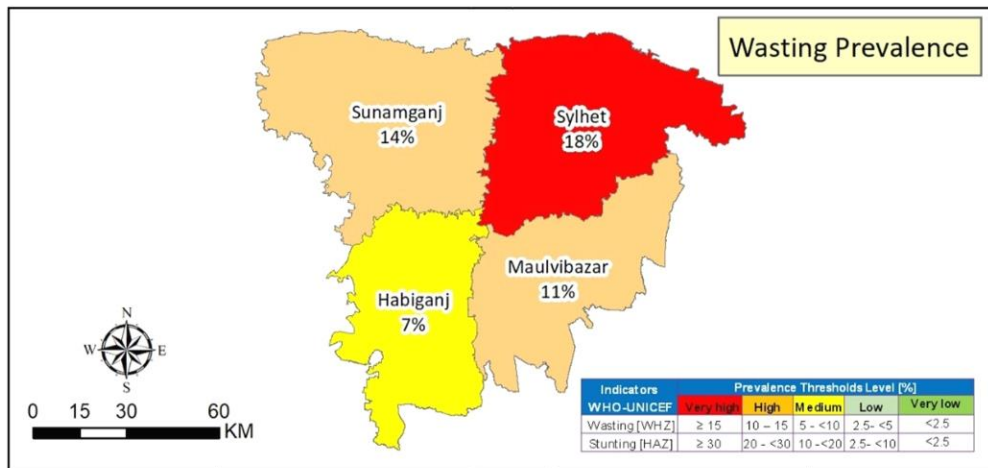
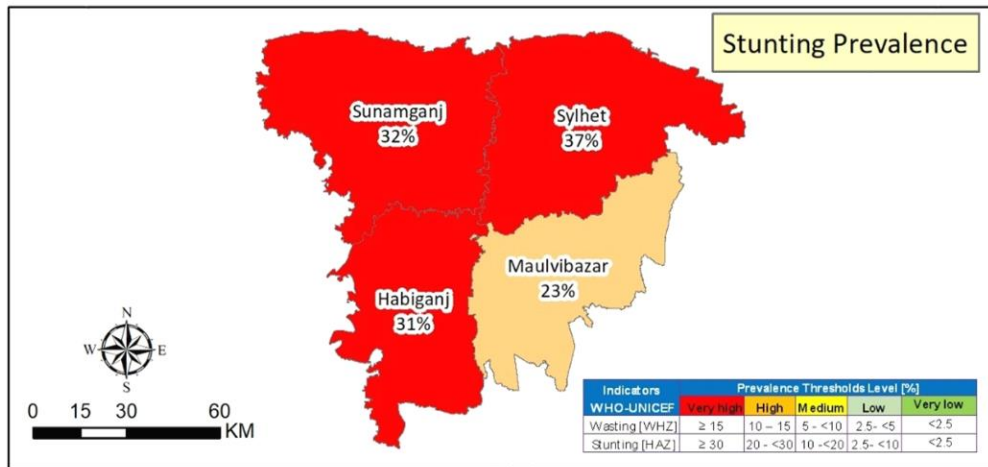


Figure 1: Mapping based on key findings.

SPECIFIC RECOMMENDATIONS:

Nutrition

1. Implement targeted interventions to address malnutrition among children under 5, focusing on child wasting. These interventions should include community-based management of acute malnutrition incorporating WHO's 2023 wasting management and prevention guideline recommendations tailored to the context.
2. Integrate wasting management into primary healthcare by adopting a point-of-care approach, while reinforcing all nutrition-specific and sensitive activities with a child health-centered focus and considering the mother-child dyad. Simultaneously, design and execute community-led interventions aimed to addressing all manifestations of malnutrition.

Child Care

1. Launch a community engagement approach to raise awareness about the importance of balanced diets, exclusive breastfeeding, and proper Infant and Young Child Feeding (IYCF) practices.
2. Empower local health workers and community leaders to disseminate key nutritional information and promote behavior change.
3. Promotion and support for early childhood care and development

Food Security

1. Integrate nutrition-sensitive agricultural programs to enhance food security and dietary diversity among households. Promote the cultivation of nutrient-rich crops, nutrition kitchen gardening, and small-scale livestock rearing to increase access to diverse and nutritious foods.
2. Empower women and farmers with knowledge and resources to produce, access, and consume a balanced diet, including linking up with social protection schemes.

Water, Sanitation, and Hygiene (WASH)

1. Prioritize efforts to improve access to safe drinking water sources and promote proper sanitation practices, especially in communities with limited access.
2. Implement infrastructure projects to provide clean water supply systems and sanitation facilities, coupled with hygiene education initiatives to prevent waterborne diseases and reduce the risk of diarrheal infections.

Cross-Cutting Approach

1. Develop a multi-sectoral malnutrition prevention strategy for Sylhet.
2. Implement a gender-transformative approach to address and challenge gender inequalities, ensuring that both men and women participate equally in program activities and benefit equitably from resources and support.

3. Implement a social safety net program that includes the most vulnerable households, providing essential support and resources to enhance their resilience and improve their overall well-being.
4. Advocate for policy support at national and local levels to prioritize nutrition-sensitive interventions, integrate nutrition objectives into broader development policies, and enforce regulations promoting food security, clean water access, and essential healthcare services.

1. INTRODUCTION AND SURVEY OBJECTIVES

1.1. Geographic and Demographic Information

Bangladesh is divided into 8 Divisions (Dhaka, Chattagram, Khulna, Sylhet, Rajshahi, Barisal, Rangpur, and Mymensingh) which are then divided into 64 Districts comprising 495 Sub districts/Upazilas.⁴ Sylhet division is located between 23°58'W latitude to 25°12'W latitude and 90°56'E to 92°30'E longitude. It is bordered by Meghalaya state of India to the north, Tripura state of India and Brahmanbaria district of Bangladesh to the south, Assam and Tripura states of India to the east, Netrakona and Kishoreganj districts to the west.

The total area of Sylhet division is 12,298.4⁵ square kilometers with a total population of 11,034,863⁶. The area of Sylhet district is 3,490.4 square kilometers, Sunamganj district is 3,669.5 square kilometers, Habiganj district is 2,536.6 square kilometers, Moulvibazar district is 2,601.8 square kilometers. In terms of area, the largest district of this division is Sunamganj and the smallest district is Habiganj.⁷ Furthermore around 19% population residing in urban areas whereas 81% lived in rural areas including 1.24% of ethnic population in the division⁸. The health system in Sylhet division aligns with the national structure, with district hospitals, Upazila Health Complexes, Community clinic and Union health and family welfare centers providing healthcare services. Additionally, community clinics at ward and village levels offer primary healthcare. In addition, there is a medical college hospital in the district and urban health care centre in the city corporation areas.

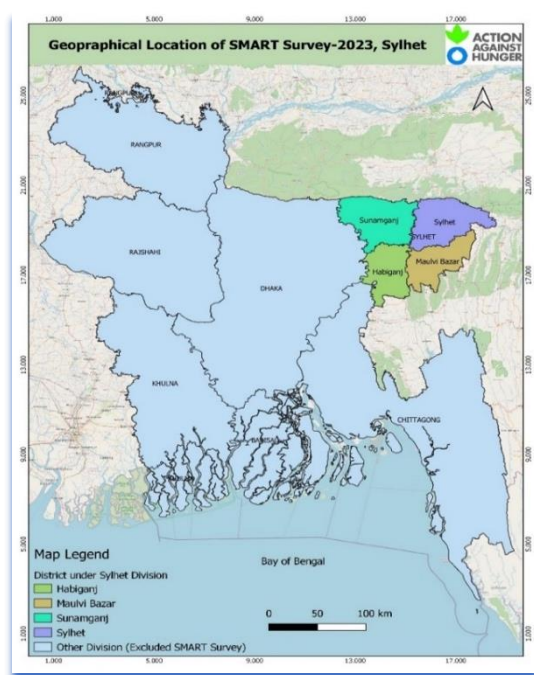


Figure 2: Geographical location of the surveys

⁴ <https://bangladesh.gov.bd/site/page/812d94a8-0376-4579-a8f1-a1f66fa5df5d/Know--Bangladesh>

⁵ [Sylhetdiv.gov.bd](https://www.sylhetdiv.gov.bd)

⁶ Preliminary Census report-2022

⁷ <https://www.sylhetdiv.gov.bd/>

⁸ Preliminary Census report-2022

The Sylhet Division in Bangladesh has been devastated by frequent and severe flood events, with the most recent flash floods in May- June 2022 causing widespread destruction. Heavy monsoon rains and water from upstream in the North-East of India inundated large areas of the region, leaving millions of people stranded and triggering a humanitarian crisis. Homes were swept away, farmlands were submerged, and families sought refuge on higher ground and temporary flood shelters. The flash floods exacerbated the population's vulnerability, as power cuts further added to their plight. Reports from the Flood Forecasting and Warning Centre (FFWC) indicated that around 94% of Sunamganj and over 84% of Sylhet were submerged. Experts considered this flood even worse than the catastrophic floods experienced in 1998 and 2004. To compound the crisis, it occurred at a time when the population was still recovering from unexpected floods that hit the Division in late May 2022. An estimated 4.3 million people, including 2.8 million women and 1.39 million girls, were severely impacted by June 2022 devastating flood in seven north-eastern districts, which include also Sylhet, Sunamganj, Moulivazar, and Habiganj⁹. Amid these already daunting challenges, nutrition indicators in the region paint a distressing picture. The proportion of children receiving a minimum acceptable diet is alarmingly low at 19%, while stunting among children is the highest in the country, affecting 34% of children¹⁰. Additionally, the Nutrition surveys conducted by ACF in 2017 (Full SMART) and 2022 (Rapid Nutritional Assessment) have provided valuable insights into the severe nutritional crisis in the region. However, there have been notable changes in key indicators: Based on BDHS findings of Sylhet division, wasting increase from 10.4% in 2017-18 to 12.2% in 2022, while underweight slightly decreased from 32.2% in 2017-18 to 31.7% in 2022, and stunting decreased from 42.7% in 2017-18 to 33.9% in 2022.¹¹ These statistics underscore the persistent critical issues in the region, especially among children aged 6 to 59 months. This emphasizes the need for a current assessment to inform urgent and targeted interventions aimed at preventing long-term health and developmental consequences. In addition, Sunamganj is at IPC Level 4, while Moulvibazar and Habiganj are at Level 3, and the Sylhet district is at Level 2 according to the IPC Chronic Food Insecurity Analysis 2022.

1.2. Humanitarian response and current presence in Sylhet

In 2022, the northeastern districts of Bangladesh suffered massive damage due to floods, with Sylhet and Sunamganj being the hardest hit, incurring economic losses of \$507.9 million and \$146.5 million, respectively. Initially, the humanitarian community, in support of the Government, appealed for \$58.4 million to address emergency needs through the HCTT Response Plan. Food security was identified as the top priority, with \$4.9 million mobilized for this sector. Shelter was the second priority, with a request for \$17 million but only \$0.9 million achieved, resulting in an overall funding gap of about 70%¹². The initial

⁹ Flash Flood 2022 Humanitarian Response Plan (HRP). June 2022.

¹⁰ Bangladesh Health and Demography Survey 2022

¹¹ Bangladesh Health and Demography Survey 2022

¹² <https://reliefweb.int/report/bangladesh/flash-flood-humanitarian-response-plan-2022-humanitarian-coordinator-task-team-hctt-monitoring-dashboard-20october2022#:~:text=A%20total%20of%20USD13.,protection%20of%20women%20and%20girls.>

response triggered led by the government, with coordination and support from all UNs, INGO, NGO and Private sector under the government's leadership.

WFP provided aid, distributing 85 metric tons of biscuits to 34,000 households and 1002 metric tons of food along with cash to 22,756 households. UNICEF collaborated on health, education, and child protection initiatives. ACF aided thousands via food and hygiene kits, WASH repairs, and awareness programs. UNFPA, UN Women, FAO and other UNs agency under UNCERF also provided immediate support. In addition, multiple sectoral responses were initiated by organizations such as World Vision, focusing on emergency response and disaster risk reduction (DRR), Islamic Relief, also emphasizing emergency response and DRR, BRAC, which concentrated on emergency response and climate change initiatives, along with other actors. In addition, ACF is implementing integrated health, nutrition, WASH, and food security in one sub-district. WFP is implementing maternal benefit program and school feeding program at select areas, CARE is implementing longer term program as community nutrition activities and SHOUHARDO in other sub-districts. CONCERN is implementing SUFAL-II, and UNICEF is working on health and education initiatives. PHD is tackling climate change concerns, and Pathfinder is involved in disaster risk reduction (DRR) and health interventions.

1.3. Survey Justification

The proposed SMART survey covered all four flood-affected and disaster-prone districts under Sylhet Division in Bangladesh. The lack of recent, district-specific nutrition data hindered effective interventions against malnutrition, necessitating district-specific data for more targeted interventions. Alarming high rates¹³ of stunting (33.9%) and wasting (12.2%) in Sylhet Division underscored the urgent need for localized data and targeted interventions. Additionally, the IPC report flagged severe food insecurity in Sunamganj, affecting over 2.5 million people, highlighting the necessity for detailed assessments. Integrated nutrition surveys in all four districts of Sylhet Division aimed to uncover current malnutrition rates among children (6-59 months) and pregnant/lactating women, as well as to assess feeding practices, morbidity status of under 5 children, household food security, and water, sanitation, and hygiene (WASH) practices.

Recognizing the urgency, the National Nutrition Service (NNS) and nutrition cluster partners were committed to conducting a comprehensive SMART survey. By generating data-driven insights, the survey empowered the government and partners to implement timely interventions during disasters and guide post-recovery efforts. The endorsement of an in-depth survey by the cabinet ministry underscored the crucial need for better understanding and effective interventions. Therefore, WFP, with support from ACF, carried out integrated nutrition surveys in Sylhet Division. This proactive response addressed complex nutritional challenges, promoting evidence-based programming and advocacy.

1.4. Survey Objectives

General Objectives:

The main objective of the SMART Surveys is to conduct an integrated assessment of the nutritional situation and food security situation within specific survey areas in Sylhet division. The surveys target three key populations: children aged 6 to 59 months, pregnant women, and lactating women (PLW). By focusing on these vulnerable groups, the studies aim to gain insights into their nutritional status and identify potential risk factors contributing to malnutrition in the surveyed regions. Four surveys were conducted representative for each district and weighted to provide representative results as well of the entire division.

Specific Objectivities:

- To estimate the prevalence of Acute Malnutrition in children aged 6-59 months.
- To estimate the prevalence of stunting and underweight in children aged 6-59 months.
- To estimate retrospective crude mortality and under five mortality rates.
- To assess the key IYCF practices among children 0-23 months
- To assess the prevalence of diarrhea, Acute Respiratory Infection and Fever among children 6-59 months based on two weeks recall period.
- To estimate the measles immunization coverage in children aged 9-59 months.
- To estimate the coverage of vitamin A supplementation in children aged 6-59 months.
- To asses child health seeking behavior and care practice knowledge among the caregiver of children 6-59 months.
- To estimate the nutrition status of women of reproductive age based on MUAC (<210mm).
- To assess the minimum dietary diversity for women of reproductive age (15-49 years).
- To assess Food Insecurity Experience Scale (FIES).
- To explore the livelihood options of the households.
- To assess household income and expenditure.
- To determine the access to water and sanitation facilities and evaluate the hygiene practices at household level.

2. METHODOLOGY

2.1. Study Design

A cross-sectional two-stage cluster sampling following SMART methodology was adopted. In the first stage, the clusters were selected, with villages considered as the smallest geographical unit (clusters). Households were then considered as the basic sampling unit in this stage. In the second stage, households were selected.

2.2. Sample Size

The sample sizes were designed to achieve reasonable precision for estimates of acute malnutrition as well as mortality separately for the entire district covering all Upazilas. All calculations were made using ENA for SMART software (version Jan 11th, 2020). The purpose of the sample calculation was to get a sample having the optimal units so that the results were reliable, with reasonable precision. The following assumptions (table 3, based on the given context) were used to calculate the sample size in the number of children, which were then converted into the number of households to survey (corresponding to the sample unit). In the absence of recent district-level data on Global Acute Malnutrition (GAM) prevalence, the GAM prevalence from BDHS 2022 at the divisional level was used to estimate the required sample size. A precision level of 4 and a design effect of 1.2 were employed in determining the sample size. It was calculated that a sample size of 1344 children would be statistically representative for anthropometric measurements in the district to division level.

Table 2: Sample Size Parameters-Anthropometry

Parameters for Anthropometry	Sylhet	Sunamganj	Moulvibazar	Habiganj
Estimated Prevalence of GAM (%)	12.2%	12.2%	12.2%	12.2%
± Desired precision	4 %	4 %	4 %	4 %
Design Effect	1.2	1.2	1.2	1.2
Children to be included	336	336	336	336
Average HH Size	5.16	5.10	4.76	4.80
% Children under-5	9.44%	9.44%	9.44%	9.44%
% Non-response Households	5%	5%	5%	5%
Households to be included	807	816	874	867

Table 3: Assumption based on Context of Parameters for Anthropometry

Parameters for Anthropometry	Assumptions based on context
Estimated Prevalence of GAM (%)	Considered the divisional-level point prevalence of 12.2% as per the recent Bangladesh Health and Demography Survey (BDHS 2022), and since there was no recent district-wise prevalence data available.
± Desired precision	The decision to use a precision level of 4% in the survey was justified since this was the first division-level SMART survey, and the primary focus of the survey was to estimate the prevalence of acute malnutrition. This level of precision was considered appropriate as it ensures the collection of reliable and accurate data for informed decision-making and intervention planning to address the issue of acute malnutrition. In this context, comparisons and trends were not the primary concern.
Design Effect	In the Rapid SMART survey conducted in 2022 in Sylhet and Sunamganj, the calculated design effect was 1.0. We used slightly higher design effect for all 4 districts assuming fair distributing of acute malnutrition across the clusters.
Average HH Size	Based on Census 2022 –Preliminary Report
% Children under-5	Considered the national level data as per Census 2022 –Preliminary Report due to no other recent district or division level data is available.
% Non-response Households	Based on ACF experience of previous different surveys in the district of the regions.

Table 4: Sample Size Parameters: Mortality

Parameters for Mortality	Sylhet	Sunamganj	Moulvibazar	Habiganj
Estimated Death Rate /10,000/day	0.5	0.5	0.5	0.5
± Desired precision /10,000/day	0.3	0.3	0.3	0.3
Design Effect	1.2	1.2	1.2	1.2
Recall Period in days	107	102	122	138
Population to be included	2606	2733	2285	2020
Average HH Size	5.16	5.10	4.76	4.80
% Non-response Households	5%	5%	5%	5%
Households to be included	532	564	506	443

Table 5: Assumption based on context of parameters for Mortality

Parameters for Mortality	Assumptions based on context
Estimated Death Rate /10,000/day	No recent data available, we considered the maximum as per SMART guideline
± Desired precision /10,000/day	A precision level of 0.3 was suitable for our study, taking into account our objectives, estimated prevalence, and available ACF resources. This aligns with past surveys and regional practices.
Design Effect	In the Rapid SMART survey conducted in 2022 in Sylhet and Sunamganj, the calculated design effect was 1.0. We slightly increased this design effect for all 4 districts assuming fair distributing of acute malnutrition across the clusters.
Recall Period in days	Eid ul Azha, which fell on the 29 th of June 2023, served as the starting point for the recall period, as it represented the most recent and memorable religious festival for Muslims. Data collection started on the 16 th of October and ended on the 30 th of October, with the midpoint being the 23 rd of October. Therefore, the recall period for Sylhet district was 107 days.
	Maharram Ashura, which falls on the 29 th of July 2023, served as the starting point for the recall period at Sunamganj district, as it represents the most recent and memorable religious festival for Muslims. Data collection started 1 st November and ended on 20 th November, mid-point was 10 th November; hence, the recall period is 102.
	Maharram Ashura, which falls on the 29 th of July 2023, was served as the starting point for the recall period at Moulvibazar, as it represents the most recent and memorable religious festival for Muslims. Data collection started 22 nd November and ended on 9 th December, mid-point was 1 st December; hence the recall period was 122.
	Maharram Ashura, which falls on the 29 th of July 2023, was served as the starting point for the recall period at Habiganj, as it represents the most recent and memorable religious festival for Muslims. Data collection started 9 th December and ended on 24 th December, mid-point was 17 th December, hence the recall period was 138.
Average HH Size	Based on Census 2022 –Preliminary Report
% Non-response Households	Based on ACF experience of previous different surveys in the district of the regions.

Sample size for additional indicators:

In SMART survey, anthropometry or mortality was used as the primary estimation of sampling for all the other additional indicators in an integrated cross-sectional survey, and therefore no additional sampling calculation was required for other indicators. The household questionnaire was administered within the same household sample. It was crucial to acknowledge that the Infant and Young Child Feeding (IYCF) indicators may not have provided adequate representativeness due to their smaller sample size as determined by SMART methodology, making them less suitable for this purpose.

Since anthropometry had the highest estimated sample, therefore the final sample size (BSU) for this survey was 1334 children to be measured in 3364 households.

2.3. Cluster Sampling Strategy

The SMART surveys were conducted with the use of two-stage cluster sampling procedure to select the targeted population. Villages were considered the Primary Sampling Unit (PSU) while household was Basic Sampling Unit (BSU). The first stage involved selection of clusters/villages from a total list of villages of entire upazila using the Probability Proportion to Size (PPS) method. The population estimate has been derived from the 2011 census,¹⁴ which had been projected for the year 2022. While a 2022 census had taken place, unfortunately, there was no available data at the upazila or community level to accurately represent the population in lowest unit of villages. This has been applied prior to the sampling. The second stage involved the random selection of households from a complete and updated list of households. This has been executed at the field level.

□ First Stage Sampling – Selection of Clusters:

At the first stage, the required number of clusters were assigned randomly using probability proportion to size (PPS) sampling where the clusters are defined as villages. A list of all updated villages were uploaded into the ENA for SMART (Jan 11th 2020 version) software where PPS was applied. The number of clusters were determined by the number of households a team could complete in a day. The number of clusters were selected to allow for one team to complete one cluster per day.

In many cases, villages selected randomly to contain a cluster might be very large or households very dispersed and sample selection became very tedious; teams had to walk for long distances and not enough time to complete one cluster per day. In those scenarios (approximately more than 250 households in the village), segmentation into smaller part (max 150-250 HH each) was used in order to reduce the areas that were covered by the survey teams. The objective of this procedure is to divide the village into smaller segments and choose one segment randomly to include the cluster.

This division was based on existing administrative units (neighborhoods, etc.), natural landmarks (river, road, mountains, etc.) or public places (market, schools, churches, mosques, temples, etc.) Segmentation has been done into equal or unequal parts.

¹⁴ Due to the fact that the information from the 2022 census has not been published at this level of detail yet.

Segmentation into equal parts: The village was divided into 2 or more approximately equal parts each, the survey team leader wrote the name of those parts on pieces of paper that he folds and put into a bag or hat and had the village leader or his representative choose one part randomly. Therefore, the team had to go to that part of the village to conduct the survey for that cluster.

Segmentation into unequal parts: In some cases, it was not impossible to divide the village into equal parts, as shown on. Therefore, the survey team tried to find some natural landmarks that helped to divide the village into separate clearly defined segments. Once those segments were defined with an approximate population size, one segment was selected randomly using PPS.

Table 6: Segmentation procedure

Segments	Number of HHs	Cumulative number of HHs	Intervals
A	70	70	1-70
B	100	170	71-170
C	30	200	171-200
D	190	390	201-390

Then the team used a random number table (here considering three digits numbers) to select a number between 001 and the cumulative total number of households (390) of all the segments. The segment containing this number was the one to be surveyed. In this example, a 3-digit number must be picked from 001- 390. E.g., we picked **167**. This number is within the segment B. Therefore, the survey has been conducted in segment B.

For the selection of more than one cluster in each village, the villages have been segmented and then simple random technique using PPS method was applied for the assigned number of clusters. Selection of number of household interviewed / per day: A calculation was done for each team to estimate the number of household to be surveyed per cluster per day at each district (Table7). Based on issues that impact on the total number of households that can be done in a day i.e. travel hours, introduction and household listing, lunch breaks and time taken to administer a questionnaire in a household, it was estimated that 15 households could be visited by one team per day.

Table 7: Calculation of HH per cluster

Calculation of HH coverage/day/team		
Event	Time to dedicate	Total time remaining a
Time per day for field work	7:00 am until 5:30 pm = 630 min	630 min
Travel time (including travel time, round trip)	40 min X 2 trip = 80 min	630-80=550 min
Time for household listing and selection of households		
One breaks of 10 min plus 20 min lunch break	10 min + 20 min = 30 min	550-30= 520 min
Time allocated for households interview (Interview + Travel time between HH+ consent)	30 min+ 3 min+2 min= 35 min	Interview - 30 min Travel time between HH-3 min Consent-2 min
Total number of HH's to be covered by each team per day	520/35 ≈ 15 HH	

Sampling frame of Sylhet division:**Table 8: Sampling frame of Sylhet division**

District	Population (Estimated)	Children 6- 59 months (Estimated)	Sample size (Childre n 6-59 month)	Househol d to be covered	Clusters (15HHs/Cluster)
Sylhet	4433445	418517	336	807	53.8 ≈54
Sunamganj	3074132	290198	336	816	54.4 ≈55
Moulvibaza r	2276970	214946	336	874	58.3 ≈59
Habiganj	2564120	242053	336	867	57.8 ≈58
Sylhet Division	12348667	2578957	1344	3364	226

Therefore 226 clusters (rounded up to achieve sufficient sample) for Sylhet division having 15 HHs/cluster. Clusters and reserve clusters (**Annex 1**) were assigned using ENA software. Reserve clusters were not used as the survey achieved minimum number of clusters ($\geq 90\%$) and children ($\geq 80\%$) as recommended by SMART methodology to get representative results.

□ Second Stage Sampling – Household Selection

Households were selected using simple random sampling. An updated household list was developed by survey teams 1-2 weeks prior to data collection with the assistance of local community leaders or community nutrition volunteers. On the day of data collection, verification was also conducted to amend any changes in the household list. Once updated, the team used a random number generator to select the required number of households from the list. A community nutrition volunteer or leader was accompanying to guide the survey teams to the selected households on the day of the interview. This approach of tracing each child and corresponding household, as well as revisiting other absent households, minimized the non-response rate.

All eligible children in the selected households were assessed for anthropometry (6-59 months), IYCF (0-23 months), diarrhea (6-59 months), and measles vaccination (9-59 months). All pregnant and lactating women (PLW) in the households were assessed for acute malnutrition using MUAC, while one woman of reproductive age (15-49 years) was randomly selected in each selected household to be assessed for minimum dietary diversity. All selected households were included in the mortality survey, food security, livelihood, and WASH assessment.

2.4. Overview of Indicators, Case Definition and Threshold:

Table 9: Survey Indicator

SL	Indicator	Target Population
Anthropometry and Morbidity		
1.	Acute Malnutrition by WHZ and/or Oedema	Children 6-59 months
2.	Chronic Malnutrition by HAZ	
3.	Underweight by WAZ	
4.	Overweight or obesity by WHZ	
5.	Acute Malnutrition by MUAC and/or Oedema	
6.	Nutritional status of PLWs based on MUAC (<210 mm)	Pregnant and Lactating Women
7.	Crude Mortality Rate (CDR)	Entire population
8.	Under 5 Children Death Rate (U5DR)	Children under 5 years
Additional indicators for Morbidity, Food security & WASH		
9.	Prevalence of common childhood illness (Diarrhoea, ARI, Fever)	Children 6-59 months
10.	Measles Vaccination Coverage (1st dose)	Children 9-59 months
11.	Measles Vaccination Coverage (2 nd dose)	Children 15-59 months
12.	Early Initiation of Breastfeeding	0-23 months
13.	Exclusive Breast feeding	Less than 6 months

SL	Indicator	Target Population
14.	Minimum acceptable diet	6-23 month children
15.	Minimum Dietary Diversity for Women [MDD-W]	Women in Reproductive Age: 15-49 years
16.	Food Insecurity Experience Scale (FIES)	Household level
17.	Water Sanitation and hygiene practices	Household level

Table 10: Cut-offs for the indices of WHZ, HAZ, WAZ, and MUAC

Malnutrition Status	Malnutrition Status Classification			
	Acute Malnutrition		Chronic Malnutrition	Underweight
	Weight/Height [WHZ]	MUAC (MM)	Height/Age [HAZ]	Weight/Age [WAZ]
Global Acute Malnutrition (GAM)	WHZ < -2 SD and/or Oedema	MUAC < 125 mm and /or Oedema	HAZ < -2 SD	WAZ < -2 SD
Moderate Acute Malnutrition (MAM)	WHZ < -2SD to ≥ -3 SD	≥115 mm M to < 125 mm	HAZ < -2SD to ≥ -3 SD	WAZ < -2SD to ≥ -3 SD
Severe Acute Malnutrition (SAM)	WHZ < -3 SD and/or Oedema	MUAC < 115 mm and /or Oedema	HAZ < -3 SD	WAZ < -3 SD

Table 11: WHO and/ UNICEF Classification for the Severity of Malnutrition by Prevalence among Children under Five

Indices	Prevalence Thresholds Level [%] ¹⁵				
	Very high	High	Medium	Low	Very low
Wasting [WHZ]	≥ 15	10 - <15	5 - <10	2.5- <5	<2.5
Overweight [WHZ]	≥ 15	10 - <15	5 - <10	2.5- <5	<2.5
Stunting [HAZ]	≥ 30	20 - <30	10 - <20	2.5- <10	<2.5

Indicator Definition:

Households (HH): A household is defined as a group of people who normally live together and eat from the same pot and resources.

¹⁵ WHO/UNICEF latest public health emergency thresholds for the prevalence of wasting, overweight and stunting in children under 5 years, August 2018

Acute Malnutrition: Acute malnutrition in children aged 6-59 months assessed using three indicators: Weight for Height (WHZ), Mid Upper Arm Circumference (MUAC), and nutritional edema, which is a severe acute malnutrition indicator.

Weight-for-height index (W/H): A child's nutritional status determined by comparing their measurements to the weight-for-height distribution curves from the 2006 WHO growth standards reference population¹⁶. The weight-for-height index is expressed as a Z-score (WHZ), which calculates how the child's observed weight (OW) compares to the mean weight (MW) of the reference population for a child of the same height. The Z-score signifies the number of standard deviations (SD) that separate the child's observed weight from the mean weight of the reference population: $WHZ = (OW - MW) / SD$. During data collection, the weight-for-height index in Z-score was computed in the field for each child 6-59 month children. This calculation allowed us to identify malnourished cases and refer them to appropriate centers if necessary.

Mid Upper Arm Circumference (MUAC): Mid Upper Arm Circumference is an independent anthropometric measurement that doesn't require a comparison to other measurements. Table 10 provides the MUAC cutoff criteria for classifying cases of acute malnutrition.

Nutritional bilateral "pitting" oedema: Nutritional bilateral "pitting" edema is a characteristic sign of Kwashiorkor, which is one of the major clinical forms of severe acute malnutrition. When this condition coexists with Marasmus (severe wasting), it is referred to as Marasmic-Kwashiorkor. Children presenting with bilateral edema are automatically classified as severely malnourished, regardless of their weight-for-height index or MUAC. Table 10 provides definitions of acute malnutrition based on the W/H index, MUAC, and the presence of edema.

Global Acute Malnutrition based on combined criteria (cGAM): The Combined Global Acute Malnutrition (cGAM) was calculated by considering W/H <-2SD and/or MUAC <125mm, and/or the presence of bilateral pitting edema. cGAM offers us a comprehensive estimate of acute malnutrition or wasting, as it combines children who are experiencing wasting based on WHZ or MUAC, or the presence of edema.

Overweight or Obesity among children: The prevalence of overweight or obesity among children aged 6-59 months was determined by evaluating the Weight-for-Height Z-Score (WHZ) for those exceeding 2 Standard Deviations (SD).

Underweight: The Weight-for-age index (W/A) Underweight is characterized by a low weight for a child's age compared to the World Health Organization reference median. In this survey, the latter reference was utilized. Children whose weight-for-age falls below -2 Standard Deviations (SD) in relation to a reference child are classified as underweight.

Stunting/Chronic Malnutrition: The height-for-age index (H/A) The height-for-age measure assesses whether a child of a specific age is stunted, also known as chronically malnourished. This index provides insights into the child's nutritional history rather than their current nutritional status and is primarily employed to identify chronic malnutrition. Similar to the principle used for weight-for-height, the child's chronic nutritional status is

¹⁶ <https://www.who.int/tools/child-growth-standards>

evaluated by comparing their height with the WHO standard height-for-age curves, as opposed to weight-for-height curves. The child's height-for-age index within the studied population is expressed as a Z-score (HAZ). Children whose weight-for-age falls below -2 Standard Deviations (SD) in relation to a reference child are classified as Stunting.

2.5. Indicator Measurement:

Age: Children 0-59 months from the selected households were considered eligible for the survey. Age was obtained from official written documents such as vaccination or birth registration cards. If documentation was unavailable, a local calendar (Annex-5) of events was used to estimate age.

Sex: This was recorded as either 'f' for female or 'm' for male.

Weight: Standardized SECA scales were used for weight measurement of children between 0 to 59 months. The weight was recorded to the nearest 100g (0.1 kg). Direct weighing option was used for older children who could easily stand while the double weighing option was applied for younger children or children who could not stand.

Height: Standard, height boards were used for taking length and height of children. Children less than 24 months were measured lying down, and children greater than or equal to 24 months were measured standing. The precision of the measurement is 0.1 cm

Mid Upper Arm Circumference (MUAC): Was measured using a flexible non-elastic tape, midway between the tip of the acromion process and the tip of the olecranon process of the left arm with the arm hanging freely by the child's/PLW side. MUAC measurements were recorded to the nearest 0.1 cm or 1.0 mm.

Bilateral Oedema: Was assessed by applying a gentle thumb pressure on both feet for three seconds (counting 1001,1002,1003). If oedema was present, a shallow pit remained after releasing pressure from the feet. Only children with bilateral oedema (oedema on both feet) were diagnosed positive for nutritional oedema. The team leader confirmed all cases of oedema and referred the cases for immediate inpatient care.

Crude and under 5 death rates:

The survey questionnaire included questions on deaths and demographic information during the recall period of approximately three months. Specifically, the survey collected the following data:

- Total number of people in the household
- Number of children under five years
- Number of people who left the household within the recall period (total and children under five years)
- Number of people who joined the household within the recall period (total and children under five years)
- Number of births in the household within the recall period
- Number of deaths in the household within the recall period (total and children under five years)
- Cause of deaths

Crude mortality rate [CDR]: It was defined as the number of deaths from all causes per 10,000 people per day over a specified period. It is calculated from the following formula:

$$\begin{aligned} * \text{CDR} &= \text{Number of deaths} / [\text{mid-interval population} / 10,000] \times \text{time interval} \\ &= \text{deaths} / 10,000 / \text{day} \end{aligned}$$

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

$$\begin{aligned} * \text{U5DR} &= \text{Number of under 5 deaths} / [\text{mid-interval population} / 10,000] \times \text{time interval} \\ &= \text{under 5 deaths} / 10,000 / \text{day} \end{aligned}$$

Morbidity:

- **Retrospective morbidity:** Mothers or caregivers were asked about illnesses that affected their children (6-59 months) in the past two weeks prior to the survey date.
- **Diarrhea:** This was assessed among children 6-59 months by a two-week recall. Diarrhea is defined as the passage of three or more loose or liquid stools in a day¹⁷.
- **Cough (with fast, short, rapid or difficulty breathing):** This was assessed among children 6-59 months by a two-week recall. This indicator was used as a proxy for suspected ARI or pneumonia.
- **Fever (without cough and rash):** This was assessed among children 6-59 months by a two-week recall, defined as fever in the absence of respiratory symptoms (cough).

Vitamin A supplementation, deworming, and measles vaccination

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

Vitamin A supplementation: This was assessed among children 6-59 months by checking the EPI card or health card if available or by asking the mother or caregiver to recall if no card is available. A vitamin A capsule image shown to the caregiver when asked to recall.

Deworming: This was assessed among children 24-59 months by asking the mother or caregiver to recall. A deworming tablet was shown to the mother or caregiver when asked to recall.

¹⁷ <https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease>

Infant and Young Child Feeding

Infant and young child feeding practices were assessed based on the standard WHO guidelines of 2021 as follows¹⁸:

- **Key Breastfeeding indicators**

- o **Early initiation of breastfeeding:**

Children born in the last 24 months who were put to the breast within one hour of birth

Children 0-23 months

- o **Exclusively breastfeeding under six months:**

Children 0-5 months who were fed exclusively with breastmilk during the previous day

Infants 0–5 months of age

- o **Continued breastfeeding 12-23 months:**

Children 12-23 months who were fed breastmilk during the previous day.

Children 12-23 months

- o **Bottle feeding 0-23 months:**

Children 0-23 months who were fed from a bottle with a nipple during the previous day

Children 0-23 months

- **Key Complementary feeding indicators:**

- o **Minimum dietary diversity 6-23 months:**

Children 6–23 months who consumed foods and beverages from ≥ 5 food groups during the previous day

Children 6–23 months of age

- o **Minimum meal frequency 6-23 months:**

Children 6–23 months who consumed solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more during the previous day

Children 6-23 months of age

¹⁸ Indicators for assessing infant and young child feeding practices: definitions and measurement methods –April 2021. <https://www.who.int/publications/i/item/9789240018389>

- **Minimum milk feeding frequency for non-breastfed children 6-23 months:**

Non-breastfed children 6–23 months who consumed at least two milk feeds during the previous day

Children 6–23 months of age

- **Minimum acceptable diet:**

Children 6–23 months who consumed a minimum acceptable diet during the previous day

Children 6-23 months

- **Egg and/or flesh food consumption 6-23 months:** Children 6–23 months who consumed egg and/or flesh food during the previous day

Children 6-23 months

- **Sweet beverage consumption 6-23 months:** Percentage of children 6–23 months who consumed a sweet beverage during the previous day.

Children 6–23 months who consumed a sweet beverage during the previous day

Children 6-23 months

- **Unhealthy food consumption 6-23 months:** Percentage of children 6–23 months who consumed selected sentinel unhealthy foods during the previous day.

Children 6–23 months who consumed selected sentinel unhealthy foods during the previous day

Children 6-23 months

- **Zero vegetable or fruit consumption 6-23 months:**

Children 6–23 months who did not consume any vegetables or fruits during the previous day

Children 6-23 months

Maternal Nutrition: The nutritional status of women of reproductive age was assessed using MUAC measurements. The MUAC measurements were recorded to the nearest 0.1 cm or 1.0 mm. MUAC <210 mm considered as malnourished as per national guideline

Food Security and Livelihood:

- **Monthly Income:** This was measured by asking the various sources of income and summing the earnings of all household members in cash or kind over the course of one year, and then considering the average monthly amount.
- **FIES :** The Food Insecurity Experience Scale (FIES) was measured based on eight questions that assess self-reported food-related behaviors and experiences associated with increasing difficulties in accessing food due to resource constraints experienced in the last 30 days recall period.

- **Household Expenditure:** This included household consumption and certain other outlays of the household during the reference period and monthly expenditure based on all HHs members.

Water Sanitation and Hygiene Practices:

- **Hand washing at critical by the household:** This was assessed by asking the respondents and also observing to see the kind of hand washing materials that was reported.
- **Availability of drinking water at the household:** This was assessed by asking the respondents
- **Purification of drinking water:** This was assessed by asking the respondents the process they follow.
- **Availability of water at the hand washing place:** This was assessed through observations.

2.6. Survey Equipment:

Weight had been measured by using SECA. These weight scales were calibrated daily using a 2 Kg standard weight. Height had been measured using UNICEF standard height boards. For measuring the Mid-Upper Arm Circumference (MUAC) of both children and women, SMART recommended MUAC tapes were employed. MUAC tapes were replaced every two days or more frequently if they showed signs of stretching or folding.

2.7. Team Composition:

The survey was implemented by 6 teams, each consisting of 3 members: one team leader as lead measurer, one measurer assistant and one interviewer. Each team member has the following designated roles:

- **Team leader:** Introduction of the team in the surveyed area with several key responsibilities. These included mapping the clusters, segmenting clusters when necessary, engaging with the village chief and local authorities, ensuring the listing of households (the basic sampling unit), overseeing the correct randomization of household selection during the second stage of cluster sampling, ensuring the proper selection of households according to the randomization technique, lead anthropometric measurements, supervising and monitoring anthropometric measurements and interviews conducted with questionnaires, and maintaining both the supervision checklist and cluster control form.
- **Interviewer:** Local Interviewers secured consent, conducted verbal interviews, inquired about mortality-related issues, and input additional indicators into the tablet. Considering the social and cultural sensitivity of gathering information from mother or caregivers or female members, it was advisable to recruit female interviewers.
- **Measurer assistant:** Assisted in taking anthropometric measurements and confirm household listing of family members by interviewer.

Additional enumerators (1 male & 1 female) were kept as reserve. As individual team member absence due to urgent personal issues he/she was replaced on those days. However, one additional volunteers/staff from nutrition cluster partner was added for assisting household listing at Sunamganj and Habiganj district.

Training:

All team members and reserve team (20 persons) participated in the training. The survey team received a 5 days training (8th October -12th October 2023) which includes classroom training and field test. The field enumerators were trained on survey objectives, household selection techniques, and demonstration of anthropometric measurements, mortality questionnaire and use of mobile data collection. Standardization test was included. A field test was conducted a day before the actual surveys in the nearest village. The questionnaire was translated into Bengali and administered in the local language, uploaded in kobo platform. Determination of the team composition was based on performance on a written evaluation (pre and post-test), standardization test (**Annex-2**) and field test.

2.8. Data Collection:

Table 12: Data Collection Time Frame

District	Data Collection Time Frame
Sylhet	16 th October-30 th October 2023
Sunamganj	1 st November-20 th November 2023
Moulvibazar	22 nd November -9 th December 2023
Habiganj	9 th December-24 th December 20203

2.9. Quality Assurance:

The survey's commitment to data quality was assured through careful oversight at every stage of the process. The protocol outlined various measures taken to ensure quality assurance during recruitment, sampling (such as maintaining an updated sampling frame), training (including field tests, standardization tests, and written exams), and fieldwork (including equipment calibration and a multi-agency supervision team). Standard SMART survey questionnaire (**Annex-3**) in ODK collect were used in tablets to collect data in all 4 districts. Furthermore, a daily data check was conducted by the ACF Head of Department and Deputy Head of department. ACF SMART regional advisor assessed the completeness and consistency of entered data weekly. To evaluate data quality, the ENA plausibility check for anthropometric data was employed, and additional variables reviewed in Excel/SPSS. Teams, supervisors, and the HoD/DHoD-Health, Nutrition & Surveillance held nightly meetings throughout the data collection process to address any issues observed in the field and those identified during data review. Furthermore, WFP supervised the standardization test, field testing, random field monitoring of data collection, and daily plausibility checks in close cooperation with ACF.

2.10. Data Management, Analysis and Report:

All anthropometric and mortality data underwent analysis using the ENA for SMART tool (version dated January 11, 2020). SMART flags were applied to exclude values falling outside the range of +/- 3 standard deviations from the observed WHZ mean. **Weighted analysis** was performed at the district level to derive **divisional-wise** results for nutritional status. Additional indicators were analysed in EPI info. Preliminary findings underwent validation by the AAH Canada SMART Team and ACF France. A consolidated PowerPoint presentation of the results, accompanied by datasets in ENA file format, was shared with nutrition cluster members. The NNS and Nutrition Cluster members conducted validation for the entire divisional dataset and findings.

2.11. Ethical Consideration:

All participants were verbally asked for **informed consent**, and no one was compelled to provide information for the study; participation was entirely voluntary. Before collecting data, the survey objectives were clearly explained to all participants including **confidentiality**. Enumerators were refrained from collecting data from individuals who declined or show any disinterest in participating which allow freedom of **withdraw** at any time. Enumerators were committed to maintaining the privacy of survey participants' information and data sources. They made every effort to collect data without bias and **do no harm**. Personally, identifiable information were not retained in the dataset.

Survey **approval** obtained from the National Nutrition Service (NNS) and acknowledged by the each Civil Surgeon of 4 district by sharing a detailed protocol, outlining health safety measures, and addressing other operational aspects of the survey (**Annex-4**).

2.12. Exclusion Criteria:

Severely ill children, or caregivers were excluded from anthropometric data; however, other additional household level information were added.

2.13. Referral:

In the national level, the programming is focused solely on Mid-Upper Arm Circumference (MUAC) measurement. As a result, all children identified as meeting the case definition for severe acute malnutrition (MUAC < 115 mm) and moderate acute malnutrition (MUAC \geq 115 mm and < 125 mm) were referred to the nearest Upazila/district hospital SAM corner as there was no OTP/TSFP. Additionally, pregnant and lactating women with MUAC measurements less than 210 mm were referred to the nearest community clinic.

2.14. Limitation:

This was a cross-sectional survey, which means that we examined a snapshot in time, and therefore, we won't have the capability to establish causal relationships. Our primary objective was to assess the prevalence of malnutrition and additional information gathered through the questionnaire. The same sample size as the anthropometric indicators that fall under 0-23 months were used for IYCF. It should be noted that IYCF indicators require a larger sample size, and therefore the results of the IYCF indicators in the Integrated SMART survey are only an indication or proxy and NOT representative for the whole population. For women dietary diversity, one women of reproductive age (15-49 years) was randomly selected (if more than one) from each household for assessing minimum dietary diversity for women (MDD-W). Moreover, the study's design inherently limits our ability to draw conclusions about causation.

3. SURVEY RESULTS

3.1. Anthropometric results (based on WHO standards 2006)

3.1.1. Survey Data Quality

The assessment rigorously ensured the quality of survey data through comprehensive plausibility checks using ENA, employing ten statistical tests to assess data integrity and identify any biases. The resulting overall data quality score was deemed **excellent***, affirming the credibility and reliability of the dataset. Details are in the table below (Table 13, 14, 15).

Table 13: Mean z-scores, Standard Deviation, Design Effects, Missing and Flagged Values for Z-scores, SMART survey

District	Indicator	(n1)	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Sylhet	Weight-for-Height	413	-1.10 \pm 0.95	1.26	0	1
	Weight-for-Age	411	-1.67 \pm 0.98	1.08	0	3
	Height-for-Age	411	-1.64 \pm 0.96	1.66	0	3
Sunamganj	Weight-for-Height	556	-1.13 \pm 0.79	1.32	0	0
	Weight-for-Age	554	-1.74 \pm 0.85	1.33	0	2
	Height-for-Age	554	-1.34 \pm 0.97	1.60	0	2
Moulvibazar	Weight-for-Height	591	-0.84 \pm 0.94	1.08	0	2
	Weight-for-Age	593	-1.31 \pm 0.93	1.69	0	0
	Height-for-Age	593	-1.33 \pm 0.92	1.95	0	0
Habiganj	Weight-for-Height	550	-0.57 \pm 0.94	1.13	0	2
	Weight-for-Age	550	-1.23 \pm 0.93	1.67	0	2
	Height-for-Age	551	-1.53 \pm 0.92	1.22	0	1

*contains for WHZ and WAZ the children with edema.

Table 14: Mean z-scores, Flagged, Sex-ratio, Age-ratio and Digit Pref. Weight

District	Criteria	SD WHZ	Flagged	Sex-ratio	Age-ratio	Digit Pref. Weight
Sylhet	Observed	0.95	0.2%	p=0.922	p=0.938	3
Sunamganj	Observed	0.89	0.2%	p=0.553	p=0.067	4
Moulvibazar	Observed	0.94	0.3%	p=0.774	p=0.107	3
Habiganj	Observed	0.94	0.4%	p=0.553	p=0.670	5
	Desired	0.8-1.2	< 5%	(p>0.05)	(p>0.05)	< 13

Excellent *	Good	Acceptable	Problematic

Table 15: Digit Pref. Height, Digit Pref. MUAC, Skewness, Kurtosis, Poisson Distribution & Overall Score

District	Criteria	Digit Pref. Height	Digit Pref. MUAC	Skewness	Kurtosis	Poisson Distribution	Overall Score*
Sylhet	Observed	5	3	0.22	-0.01	p=0.208	1%
Sunamganj	Observed	4	4	0.07	-0.05	p=0.106	7%
Moulvibazar	Observed	3	3	0.11	-0.06	p=0.356	0%
Habiganj	Observed	5	5	0.04	0.26	p=0.346	5%
	Desired	< 13	< 13	< ± 0.6	< ± 0.6	(p>0.01)	< 15%

Excellent*	Good	Acceptable	Problematic

3.1.2. Sample Achieved

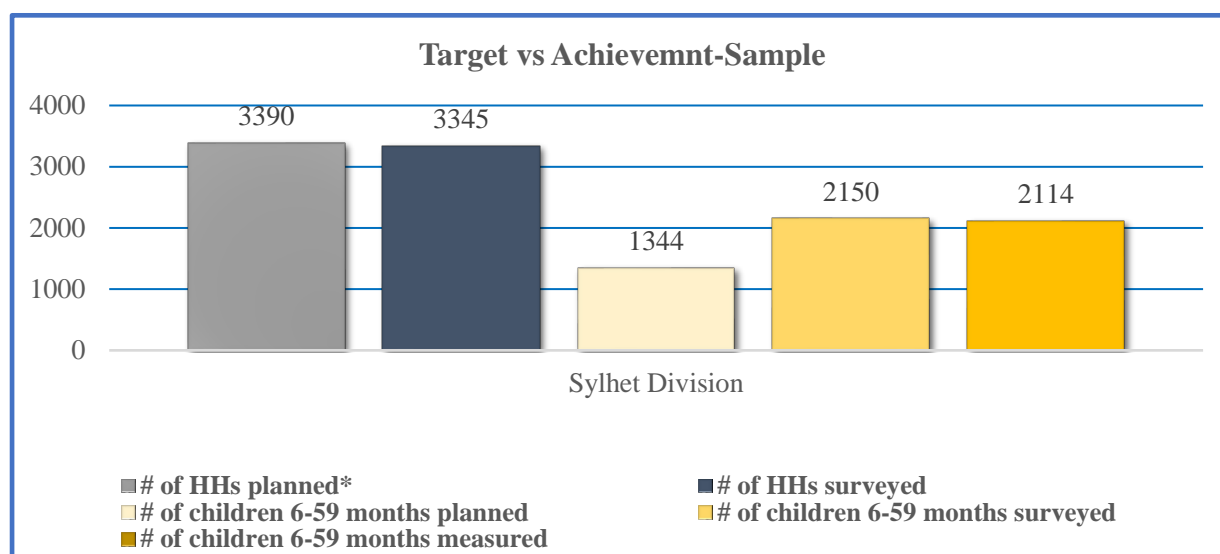


Figure 3: Target vs Achieved –Sample

*226 cluster x 15 HHs=3390 HHs rounded

The survey fulfils the minimum number of clusters ($\geq 90\%$) and children ($\geq 80\%$) as recommended by the SMART methodology to obtain representative results (Figure 3). It achieved 100 % (226) of clusters and $>100\%$ of children, with only 0.5 % absent household and 0.1% refusals

3.1.3. Demography

In the Sylhet Division, there's a nearly equal distribution between males and females at 50.5% to 49.5%. The percentage of children aged 6-59 months varies slightly across the district and overall, 11.9, 1.2% pregnant women, 1.2% lactating women with infants under 6 months, and 4.3% lactating women with infants 6 months or older (Table 17).

Table 16: Mean Household Size, Demography of under 5 and PLW (Special group)

District	Mean Family Size	% 6-59 months	Overall Sex Ratio		% of Pregnant women	% of Lactating women with infant < 6 months	% of Lactating women with infant 6-23 months
			M	F			
Sylhet	5.4	10.1%	50.3%	49.7%	1.3%	1.3%	4.0%
Sunamganj	5.5	12.4%	50.6%	49.4%	1.4%	1.0%	3.8%
Moulvibazar	5.2	12.9%	50.7%	49.3%	1.2%	1.1%	4.7%
Habiganj	5.3	12.3%	50.3%	49.7%	0.9%	1.2%	4.6%
Sylhet Division	5.4	11.9%	50.5%	49.5%	1.2%	1.2%	4.3%

The population distribution across age groups in Sylhet Division exhibits slight variations across districts. Overall, the division averages 12.7% for 0-4 years, 14.5% for 5-11 years, 12.1% for 12-17 years, 46.2% for 18-49 years, 9.53% for 50-64 years, and 5.0% for those aged 65 years and older. The highest percentage of the population falls in the age group of 18-49 years, accounting for 46.18%, followed by 5-17 years with 26.0% (Table 18).

Table 17: Demography of overall population

District	0-4 Years	5-11 Years	12-17 Years	18-49 Years	50-64 Years	>65 Years
Sylhet	10.9%	14.6%	13.1%	47.1%	9.7%	4.5%
Sunamganj	13.1%	16.1%	12.7%	44.4%	8.3%	5.3%
Moulvibazar	13.7%	12.7%	10.8%	47.3%	10.7%	4.9%
Habiganj	13.1%	14.6%	11.8%	45.9%	9.4%	5.2%
Division	12.70%	14.50%	12.10%	46.18%	9.53%	4.98%

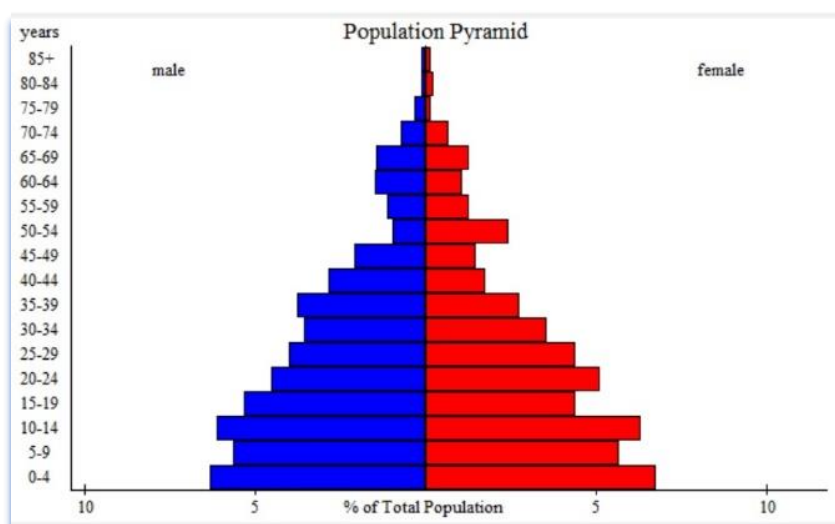


Figure 4: Population Pyramid Sylhet Division

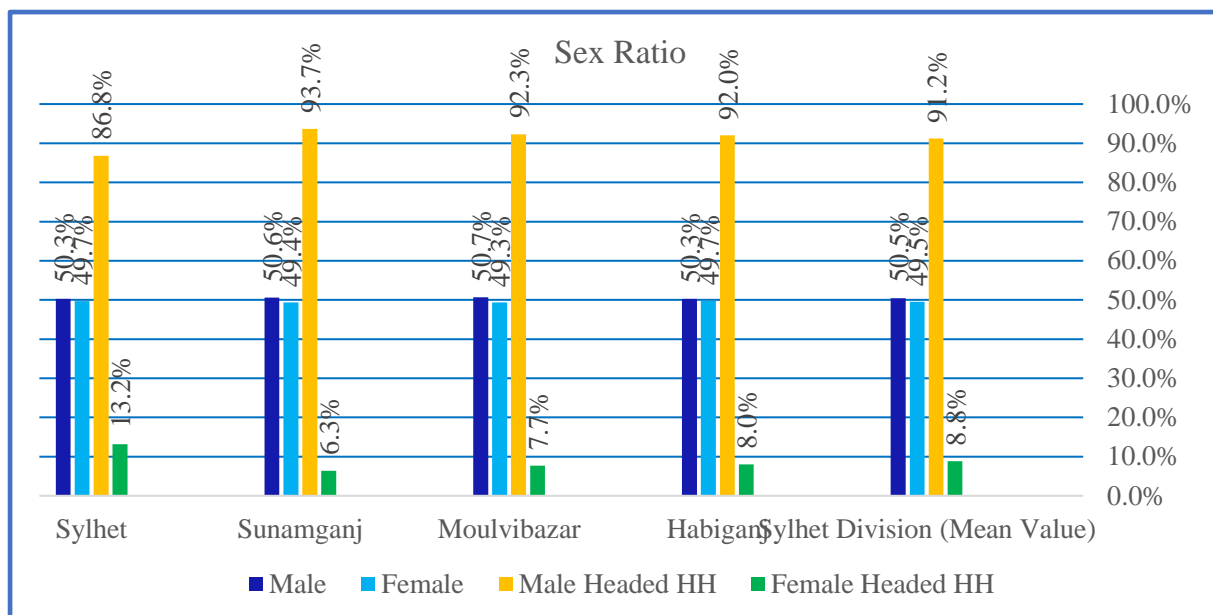


Figure 5: Sex Ratio

The male-headed households dominate across all districts, with a consistent male-to-female ratio observed (Figure 4). However, female-headed households reported highest at Sylhet district (13.2%) and the lowest in Sunamganj 6.3% (Figure 5).

3.1.4. Retrospective crude and under 5 death rates

The findings highlight differing mortality rates across districts in Sylhet Division. However, across all districts, both the crude and under-5 death rates remained below the WHO emergency threshold of 1 per 10,000 population per day and 2 per 10,000 under-5 population per day, respectively (Table 19).

Table 18: Retrospective crude and under 5 death rates

District	Mid-interval population	Crude death rate Deaths/10,000/day (95% C.I)	Mid-interval U 5 population	U 5 death rate Deaths/10,000/day (95% C.I)
Sylhet	4258	0.23 (0.12-0.41)	466	0.38 (0.09-1.52)
Sunamganj	4520	0.13 (0.06-0.28)	592	0.00
Moulvibazar	4610	0.15 (0.07-0.32)	630	0.14 (0.02-0.99)
Habiganj	4562	0.18 (0.09-0.35)	599	0.25 (0.06-1.01)
Sylhet Division		0.17 (0.08-0.27)		0.023 (0.002-0.083)

3.1.5. Prevalence of acute malnutrition based on weight-for-height z scores and/or oedema

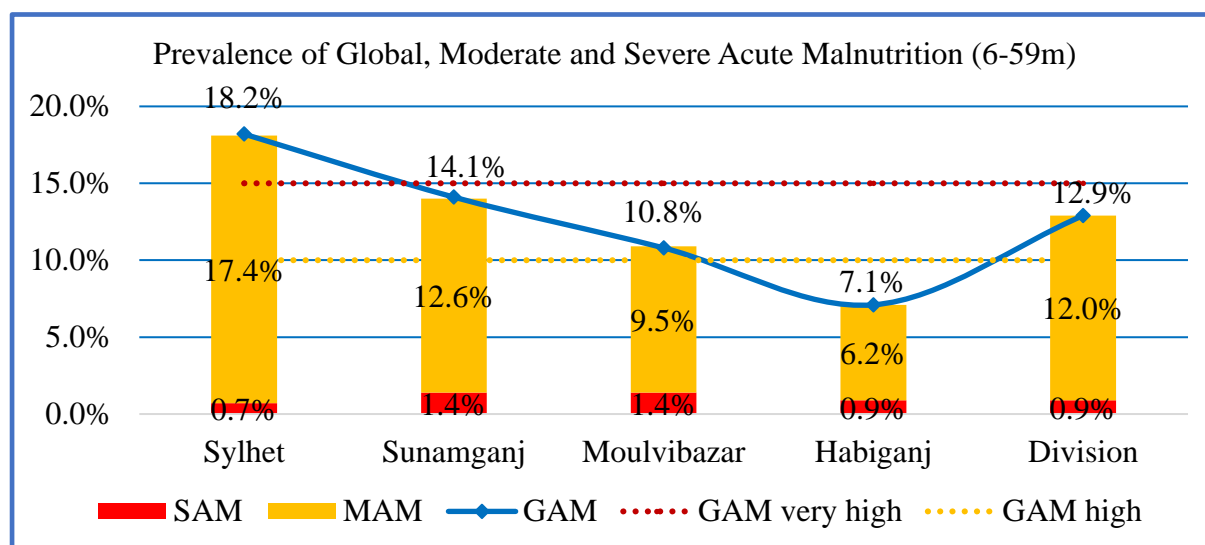


Figure 6: Prevalence of acute malnutrition based on weight-for-height z scores and/or oedema

The highest prevalence of Global Acute Wasting was recorded in Sylhet district at 18.2% (95% CI 14.3-22.8), while the lowest was observed in Habiganj at 7.1% (95% CI 5.1-9.8). Overall, the divisional status was categorized as high according to the WHO/UNICEF emergency threshold, with a prevalence of 12.9% (95% CI 11.1-14.7). Across the division, moderate acute malnutrition was observed at 12.0% (95% CI 10.2-13.8), while severe acute malnutrition was weighted at 0.9% (95% CI 0.5-1.3), underscoring the urgent need for targeted interventions to ensure critical nutrition services (Figure 6).

3.1.6. Prevalence of Wasting Based on MUAC:

Malnutrition prevalence based on Mid Upper Arm Circumference (MUAC) was low and showed varying prevalence across Sylhet Division. Sunamganj and Moulvibazar both found the highest rates of GAM 2.9%, MAM 2.5% and SAM 0.4% at Sunamganj (Table 20).

Table 19: Wasting based MUAC

MUAC	Sylhet	Sunamganj	Moulvibazar	Habiganj	Sylhet Division
Mid Upper Arm Circumference (MUAC)	N=414	N=556	N=593	N=552	
GAM MUAC <125 mm	1.4 % (0.6 - 3.6)	2.9 % (1.8 - 4.6)	2.9 % (1.8 - 4.4)	2.2 % (1.3 - 3.6)	2.2% (1.5-2.8)
MAM MUAC 115-124 mm	1.4 % (0.6 - 3.6)	2.5 % (1.5 - 4.3)	2.5 % (1.6 - 4.1)	2.0 % (1.1 - 3.4)	2.0% (1.3-2.6)
SAM	0.0 %	0.4 %	0.3 %	0.2 %	0.2%

MUAC <115 mm	(0.0 - 0.0)	(0.1 - 1.4)	(0.1 - 1.4)	(0.0 -1.3)	(0.0-0.4)
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3.1.7. Prevalence of combined Wasting (WHZ and MUAC)

Overall, the divisional weighted combined wasting rate indicates a high level of wasting prevalence according to WHO classification. Sylhet and Sunamganj districts exhibit a high combined wasting level as per the WHO/UNICEF emergency threshold, while Habiganj reports the lowest. Sunamganj district found the highest cSAM prevalence at 1.8% (Table 21).

Table 20: Prevalence of combined Wasting (WHZ and MUAC)

District	Combine Wasting		
	N	Global Acute Malnutrition (cGAM)	Severe Acute Malnutrition (cSAM)
		%, (95% CI)	%, (95% CI)
Sylhet	414	18.4 (14.4 - 21.1)	0.7 (0.2 - 2.2)
Sunamganj	556	15.3 (12.2 - 19.0)	1.8 (1 - 3.4)
Moulvibazar	593	11.8 (9.3 - 14.8)	1.3 (0.6 - 3.0)
Habiganj	552	7.8 (5.6 - 10.7)	1.0 (0.5 - 2.4)
Sylhet Division		13.6 (11.7 - 15.5)	1.0 (0.5-1.5)

3.1.8. Concordance between WHZ and MUAC

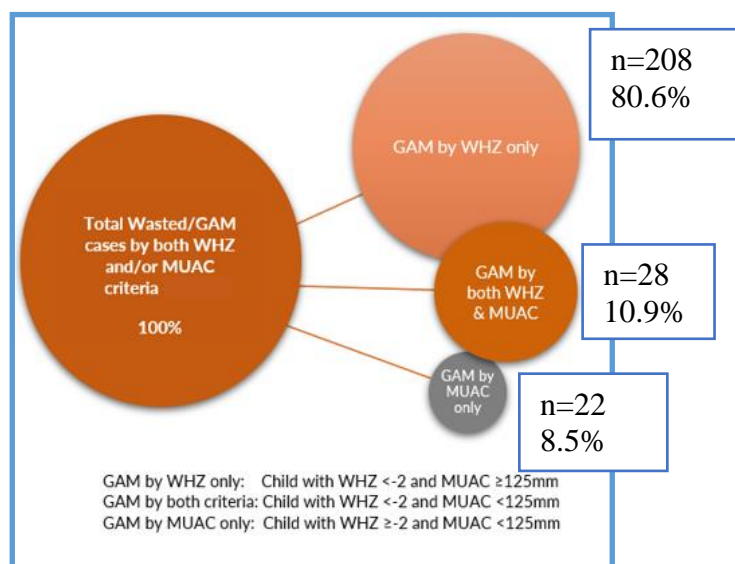


Figure 7: Concordance WHZ and MUAC

The analysis revealed a significant challenge in detecting acute malnutrition when relying on just one indicator. The concordance between Weight-for-Height Z-score (WHZ) and

Mid-Upper Arm Circumference (MUAC) was notably poor, highlighting a critical issue in current identification practices. When only WHZ used (e.g, a child with WHZ < -2 SD and MUAC ≥ 125 mm is not classified as acutely malnourished), the detection rate for Global Acute Malnutrition (GAM) is 80.6%. In contrast, when both WHZ and MUAC are combined (e.g., a child with WHZ < -2 SD and MUAC < 125 mm is classified as acutely malnourished according to both criteria), the detection rate drops to 10.9%. If MUAC alone (e.g. a child with WHZ ≥ -2 SD and MUAC < 125 mm, indicating malnutrition by MUAC identifies only 8.5% of cases (Figure 7). This discrepancy suggests that a significant number of acutely malnourished children may be missed if only one indicator is used. The findings underscore the necessity of employing both WHZ and MUAC for accurate detection, treatment, and follow-up of acute malnutrition. Relying on a single indicator could result in under diagnosis and leave many vulnerable children without the essential nutrition interventions they need.

3.1.9. Prevalence of Underweight based on Weight-for-Age Z-scores (WAZ):

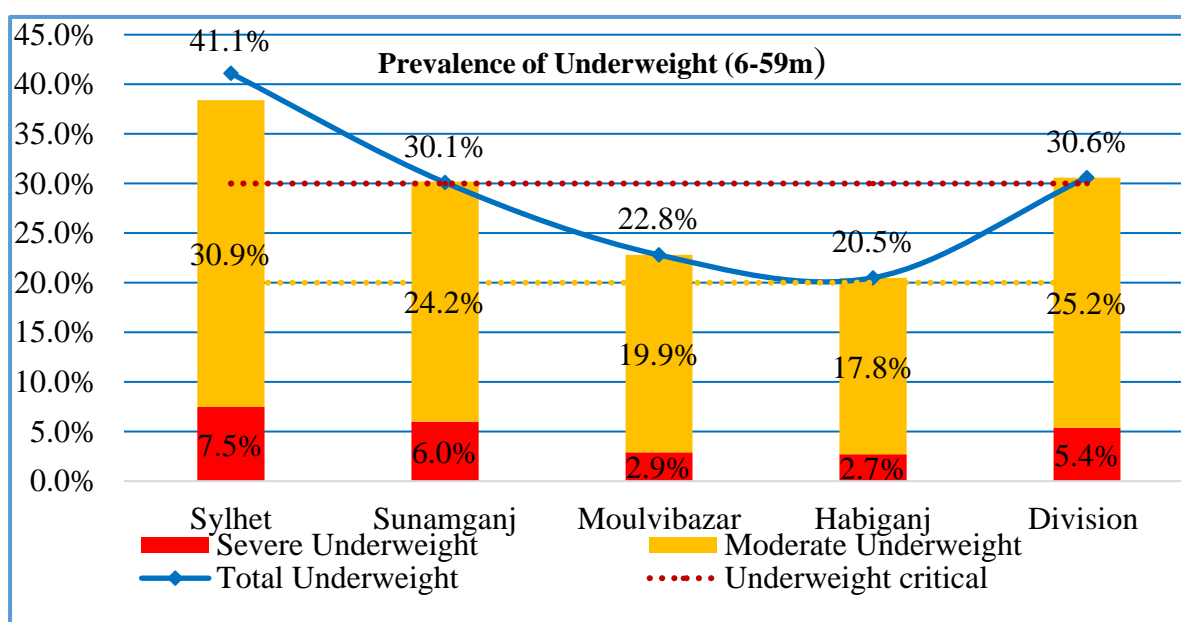


Figure 8: Prevalence of underweight based on Weight-for-Age-Z Score

In Sylhet Division the prevalence of underweight is 30.6% (95% CI: 28.1-33.0) that is categorized by WHO/UNICEF thresholds as critical as exceeding 30% of cut off. Specifically, Sylhet district exhibits the highest prevalence at 41.1% (95% CI: 36.2-46.3), followed closely by Sunamganj at 30.1% (95% CI: 26.6-34.0). These figures highlight the significant levels of underweight in these districts according to WHO standards (Figure 8).

3.1.10. Prevalence of Stunting based on Height for Age Z-scores (HAZ):

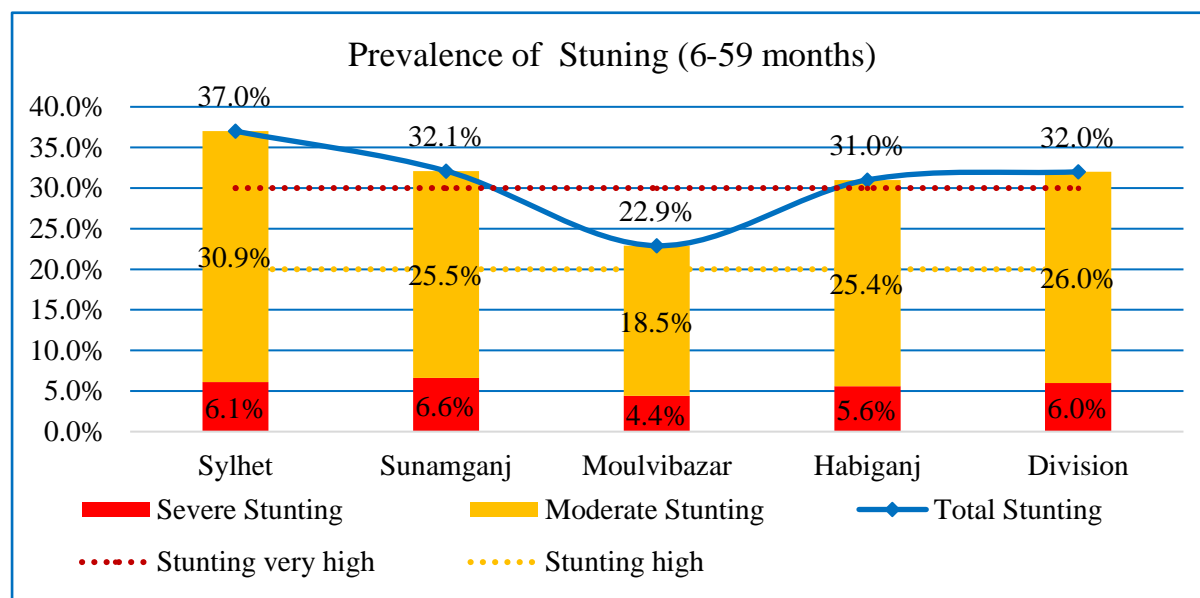


Figure 9: Prevalence of stunting based on Height-for-Age Z-scores

Stunting prevalence in Sylhet, Sunamganj, and Habiganj are classified at a very high level (≥ 30) based on UNICEF/WHO thresholds, while Moulvibazar is categorized at a high level ($20 < 30$). Overall, Sylhet Division exhibits a weighted average stunting prevalence of 32.0% (95% CI: 29.2–34.8), falling into the high category. Moderate stunting is observed at 25.2% (95% CI: 23.0–27.3), with severe stunting at 5.4% (95% CI: 4.2–6.6), underscoring a significant burden of stunting (Figure 9). This emphasizes the imperative for long-term intervention to address the issue effectively.

3.1.11. Prevalence of wasting, stunting and underweight by age group and by sex

Boy's vs Girls:

Underweight and stunting prevalence were found to be slightly higher in girls than boys, while wasting was more prevalent in boys. However, there was no statistically significant ($p > 0.05$) difference in the prevalence of wasting, underweight, and stunting between boys and girls across the four districts in Sylhet Division (Table 22).

Table 21: Prevalence of wasting (WHZ), underweight (WAZ) and stunting (HAZ) by Sex

District	Wasting (WHZ)			Underweight (WAZ)			Stunting (HAZ)		
	Boys	Girls	p Value	Boys	Girls	p Value	Boys	Girls	p Value
Sylhet	19.0 %	17.3 %	>0.05	37.7 %	44.4 %	>0.05 *	36.5 %	37.5 %	>0.05
Sunamganj	14.4 %	13.7 %	>0.05	27.9 %	32.3 %	>0.05 *	29.5 %	34.5 %	>0.05
Moulvibazar	10.4 %	11.3 %	>0.05	22.0 %	23.5 %	>0.05 *	25.7 %	20.1 %	>0.05
Habiganj	6.8 %	7.4 %	>0.05	19.7 %	21.4 %	>0.05 *	32.1 %	29.9 %	>0.05
Sylhet Division	13.3 %	12.5 %	>0.05	28.5 %	32.6 %	>0.05 *	31.8 %	32.2 %	>0.05

**p<0.05 is statistically significant and *p>0.05 is not statistically significant.

Younger (6-23 months) vs Older (24-59 months):

The prevalence of wasting between younger and older children was found to be statistically significant in Sylhet and Sunamganj districts, indicating a higher prevalence in older children (24-59 months). Similarly, underweight was also statistically significant in these two districts. Stunting was only significantly higher in Sunamganj, where older children exhibited a higher prevalence compared to other places. In all other districts, no significant association was found between wasting, underweight, and stunting in boy versus girl children. (Table 23).

Table 22: Prevalence of wasting, stunting and underweight by Age

District	Wasting (WHZ)			Underweight (WAZ)			Stunting (HAZ)		
	Younger [6-23m]	Older [24-59m]	p value	Younger [6-23m]	Older [24-59m]	p value	Younger [6-23m]	Older [24-59m]	p value
Sylhet	11.0 %	22.1 %	<0.05* *	25.0 %	41.6 %	<0.05* *	27.4 %	38.3 %	>0.05 *
Sunamganj	8.8 %	17.0 %	<0.05* *	20.2 %	35.9 %	<0.05* *	25.6 %	36.0 %	<0.05 **
Moulvibazar	10.1 %	11.2 %	>0.05* *	20.3 %	24.2 %	>0.05* *	23.5 %	22.6 %	>0.05 *
Habiganj	6.4 %	7.5 %	>0.05* *	19.3 %	21.4 %	>0.05* *	34.4 %	28.8 %	>0.05 *
Sylhet division	9.1 %	15.3 %	<0.05* *	21.4 %	36.1 %	<0.05* *	28.2 %	34.3 %	<0.05 **

**p<0.05 is statistically significant and *p>0.05 is not statistically significant.

Overall, in the division, the prevalence of Wasting, underweight and stunting is significantly ($p < 0.05$) higher among older children compared to younger ones.

3.2. Infant and Young Child Feeding Practices:

3.2.1. Key Breastfeeding Practices:

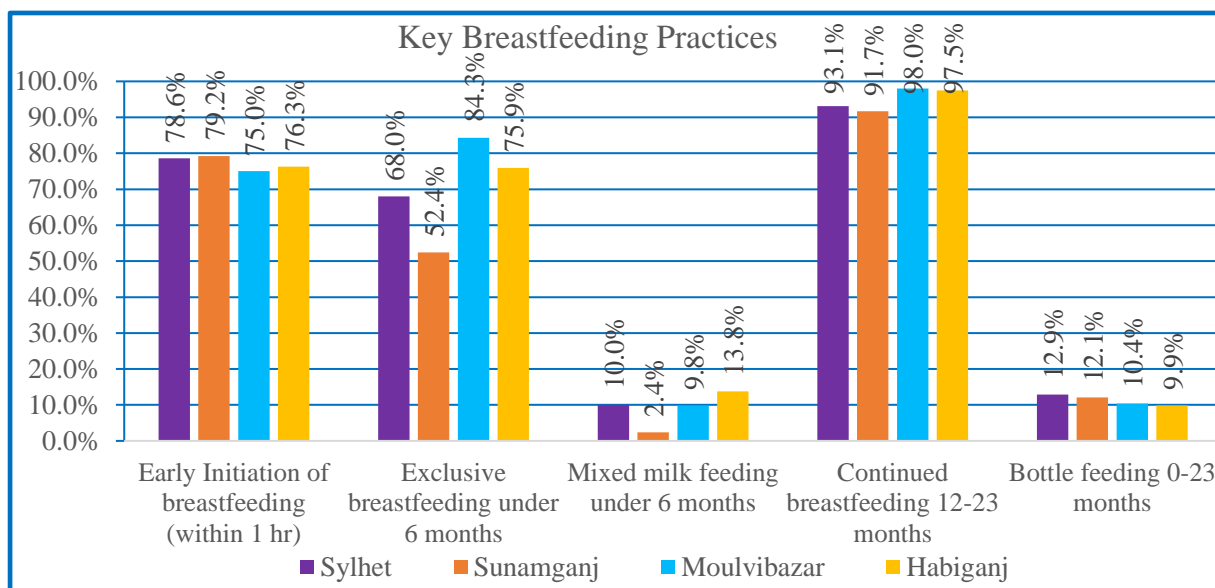


Figure 10: Key Breastfeeding practices among infant and young children

In the Sylhet Division, Early Initiation of Breastfeeding (EIBF) within one hour varied across districts, all falling below the WHO recommended of $\geq 80\%$. Moulvibazar boasted the highest rate of Exclusive Breastfeeding (EBF) under six months, exceeding the recommended threshold, at 84.3%, while Sunamganj fall below the threshold with very low percentage, being only at 52.4%. Habiganj stood out with notably higher mixed milk feeding under six months at 13.8% compared to other districts. Continued breastfeeding rates between 12-23 months remained consistently good across all districts, ranged from 91.7% to 98.0%. Bottle-feeding rates showed relatively similar patterns across districts, ranged from 9.9% to 12.9%. This is indicating to enhance exclusive breastfeeding practices, especially in districts like Sunamganj, to improve child health outcomes and strengthening the key breastfeeding promotion and support across the districts (Figure 10).

3.2.2. Key Complimentary feeding practices

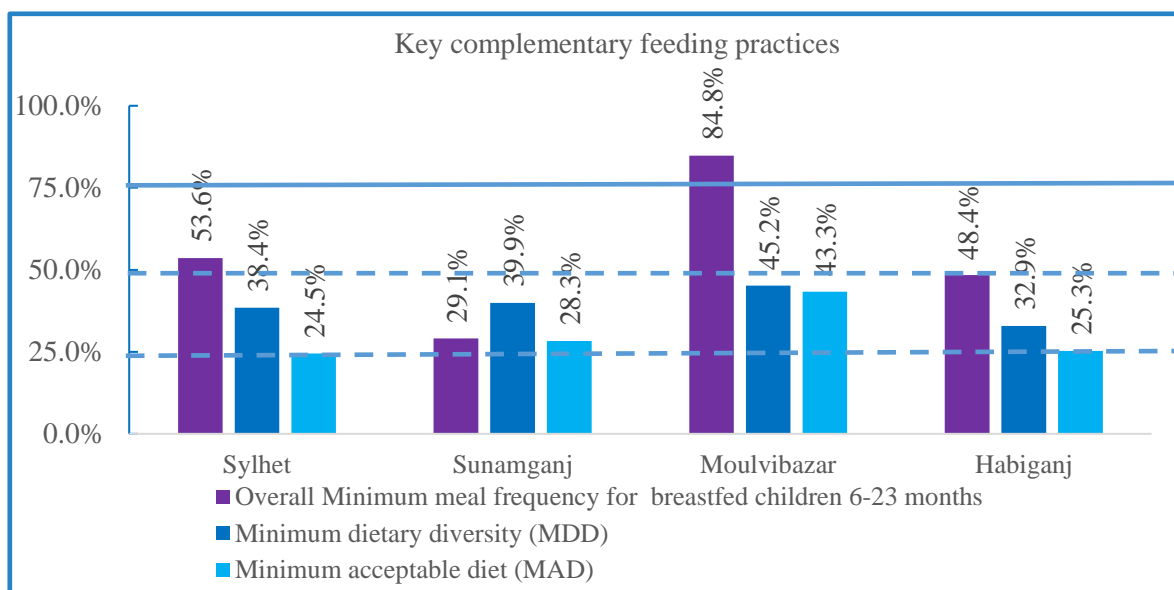


Figure 11: Complementary feeding practices among children 6-23 month

Feeding practices showed significant gaps, with Minimum Meal Frequency (MMF) alarmingly low, particularly in Sunamganj at just 29.1%, and overall rates falling below 75%.

Minimum Dietary Diversity (MDD) was also insufficient, and Habiganj at a concerning 32.9%. The Minimum Acceptable Diet (MAD) was equally inadequate, with less than 50% overall, and Sylhet district was the lowest at 24.5% (Figure 11). Grains, roots, and tubers consumption met acceptable standards across all districts, but the intake of pulses, legumes, nuts, milk, milk products, eggs, and vitamin A-rich fruits and vegetables was low, falling short of WHO thresholds. Milk and milk product consumption was severely low across all districts, and egg consumption was also severely deficient, except in Sylhet. The intake of vitamin A-rich fruits and vegetables was particularly low in Sylhet and Habiganj. Flesh food consumption showed moderate to mild deficiencies according to the WHO cut-off. Overall, Minimum Dietary Diversity (MDD) was moderately low, while Minimum Acceptable Diet (MAD) was severely low in Sylhet and moderately low in other districts (Table 23). These disparities highlighted the urgent need for action. Efforts should be focused on promoting optimal breastfeeding practices across all districts and implementing targeted interventions to enhance dietary diversity, ensuring children received an acceptable diet and addressing critical nutritional gaps.

Table 23: Dietary Diversity and consumption of various food groups 6-23 months by District

District	Grains, Roots, Tubers	Pulse, legumes and nuts	Milk and Milk product	Flesh foods	Eggs	Vitamin A rich fruits & vegetables	MDD	MAD
Sylhet	96.0%	65.6%	20.5%	50.3%	25.2%	21.2%	38.4%	24.5%
Sunamganj	98.2%	54.7%	21.1%	56.1%	23.8%	38.1%	39.9%	28.3%
Moulvibazar	98.2%	56.7%	24.4%	48.9%	27.2%	32.3%	45.2%	43.3%
Habiganj	95.1%	53.3%	19.1%	47.1%	21.8%	18.2%	32.9%	25.3%

Severe low	Moderate low	Mild low	Acceptable
0-24%	25-49%	50-74%	>75%

3.3. Morbidity and health seeking:

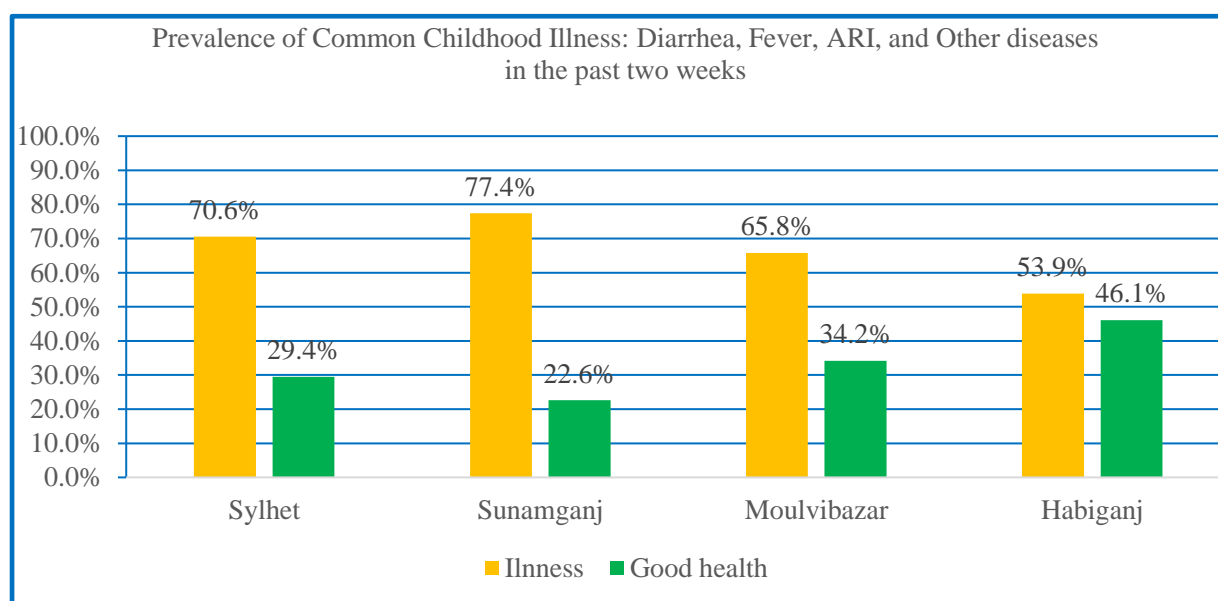


Figure 12: Prevalence of Common Childhood Illness: Diarrhea, Fever, ARI, and other diseases in the past two week

More than 50% of children across the districts were found to have suffered from illnesses such as fever, diarrhea, acute respiratory infections and others diseases in the past two weeks, with the highest prevalence reported in Sunamganj at 77.4%. This highlights an important health concern of 6-59 months across these regions (Figure 12).

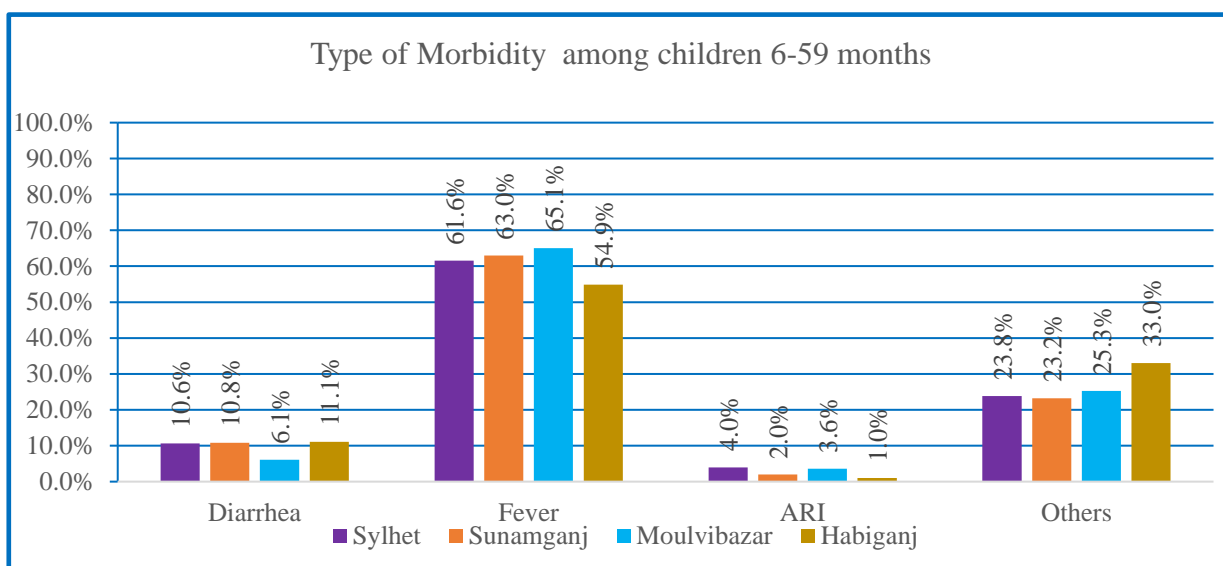


Figure 13: Type of Morbidity among children 6-59 months

Diarrhea prevalence in the three districts was found to be over 10%, except in Moulvibazar, where it stood at 6%. ARI was recorded at less than 5% across all districts. Fever, unlike malaria, affected over 50% of children aged 6-59 months in all districts during the past two weeks (Figure 13).

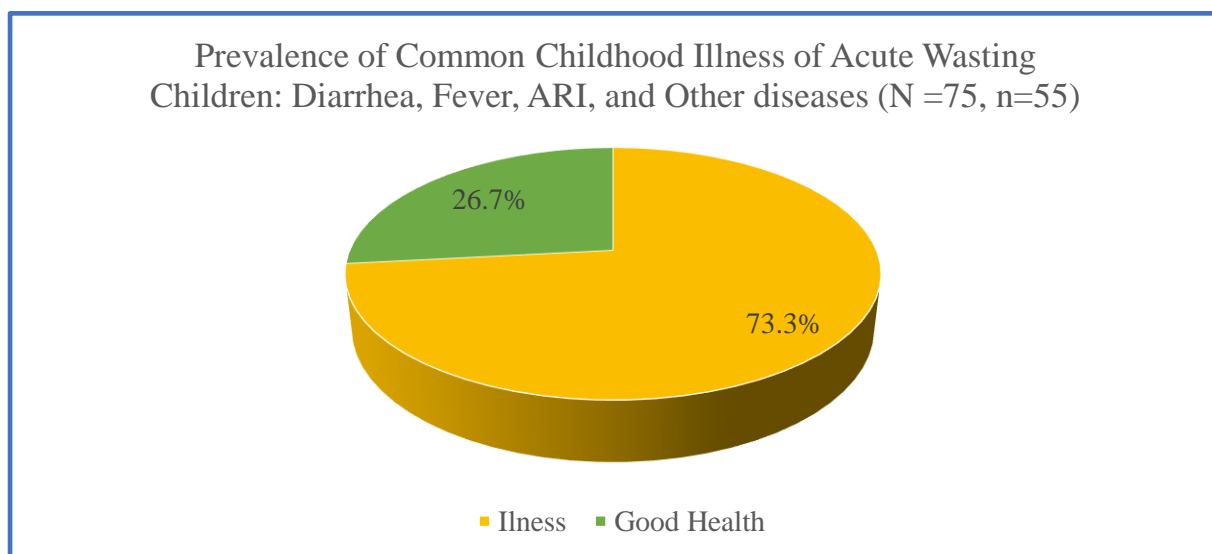


Figure 14: Prevalence of Common Childhood Illness among Acute Wasted Children: Diarrhea, Fever, ARI, and Other diseases

Among children experiencing acute wasting, a major portion, 73.3%, were found to be suffering from various diseases; indicating need to address healthcare access, educate caregivers, provide nutrition support, engage communities, and monitor prevalence to combat child diseases effectively while integrating child wasting management (Figure 14).

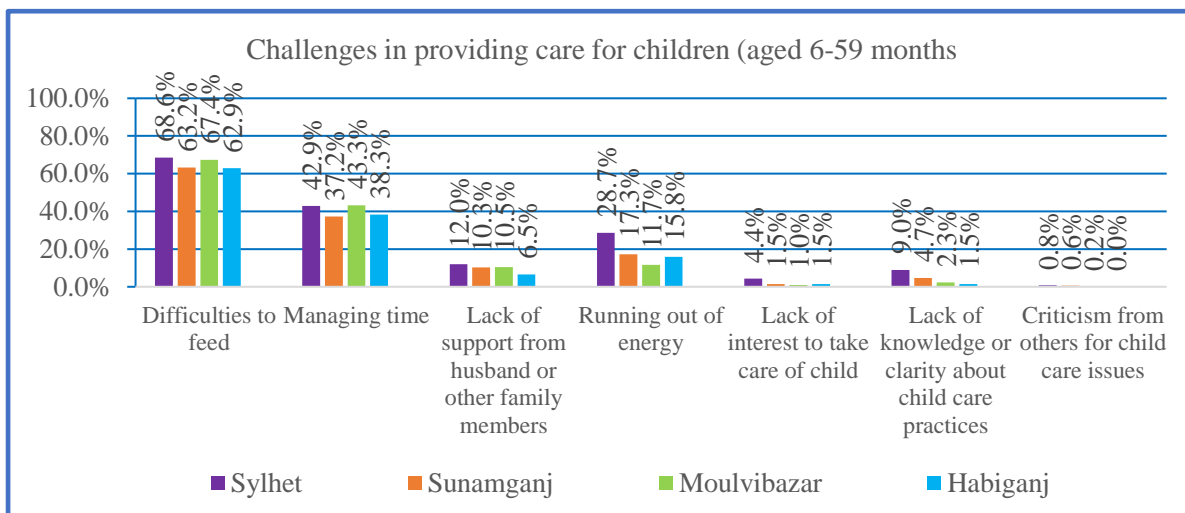


Figure 15: Challenges faced by caregiver of children 6-59 months during childcare

Caregivers across the districts, over 60%, struggled with feeding challenges, and more than 30% reported difficulties in managing time to care for their children. Effective interventions is needed to support caregivers in addressing feeding challenges, improving time management, enhancing family support, and increasing knowledge on child care, while also promoting caregiver self-care to ensure optimal child health and nutrition (Figure 15).

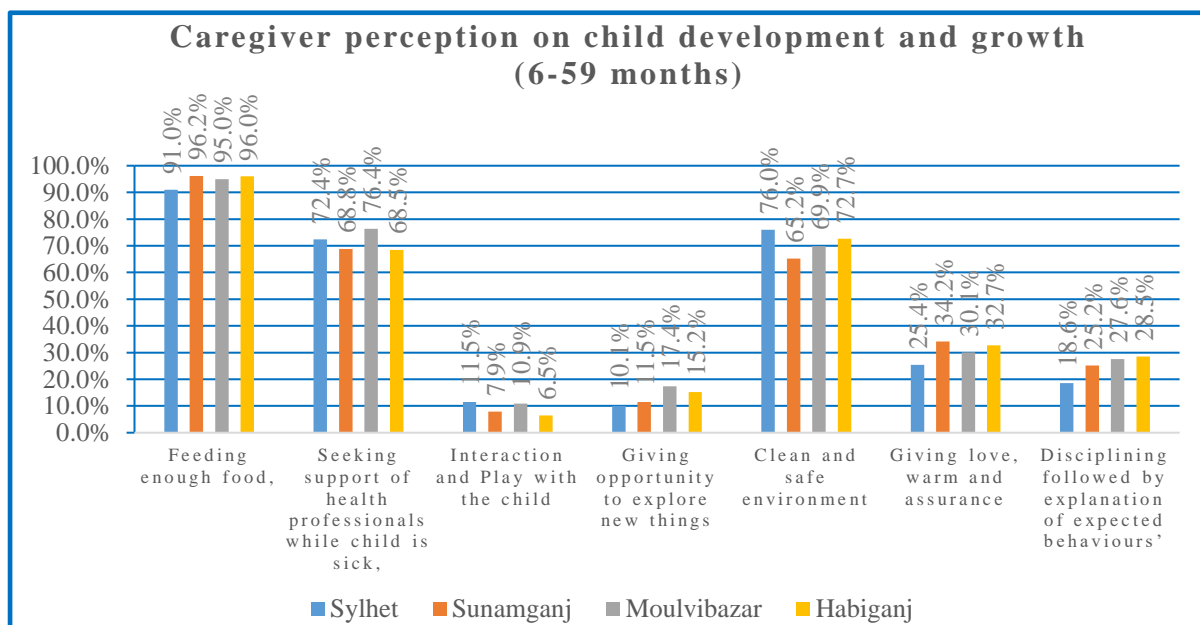


Figure 16: Caregiver perception on important action needed for child development

In the district, the majority of caregivers (over 90%) believed that providing sufficient food was crucial, and around 70% considered seeking healthcare during illness and maintaining a clean and safe environment important for child development. However, fewer than 40% recognized the importance of giving love, warmth, and assurance, and less than 15% valued interaction and play with the child. Additionally, around 30% mentioned that disciplining, along with explaining expected behaviours, was also important for child development (Figure 16).

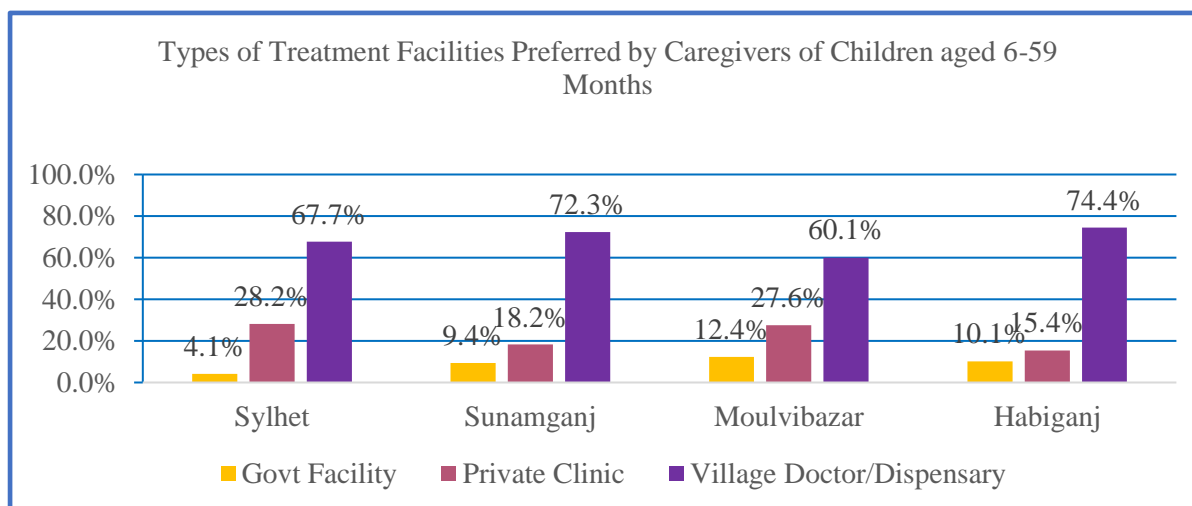


Figure 17: Types of Treatment Facilities Preferred by Caregivers of Children aged 6-59 Months

In the past two weeks, approximately 88.7% of caregivers in the district sought treatment when their child was sick. However, the majority, ranging from 60.1% to 74.4% across the district, preferred services from village doctors or dispensaries, followed by private clinics. Only a small portion < 15% preferred government facilities such as Community Clinics, Union Health and Family Welfare Centers, Upazila Health Complexes, and District Hospitals. Although the rate of seeking healthcare is high, there is a higher prevalence of non-medical or non-professional treatment-seeking behavior, indicating the need for better understanding causes of those practices and strengthening access, information, and care practices in healthcare provision (Figure 17).

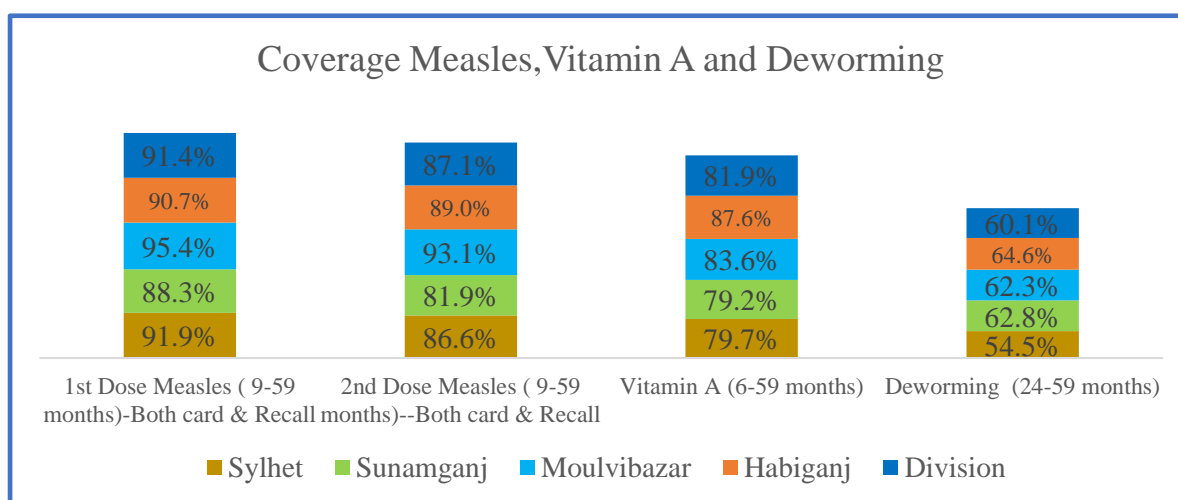


Figure 18: Vaccination (MEASLES), Vitamin A and deworming status 6-59

The first dose of measles vaccine coverage was 91.6%, while the second dose was 87.7%, both findings were promising but still falling below the recommended coverage of over 95%¹⁹. Vitamin A coverage was approximately 81.9% recalling the recent campaign, also below the recommended level of over 90%²⁰. Additionally, the deworming status for children aged 24-59 months was notably low at 61.1% (Figure 18).

3.4. Nutritional Status among Pregnant and Lactating women (PLW) with children <6 months [MUAC < 210 mm]:

3.4.1. Nutritional Status of PLW:

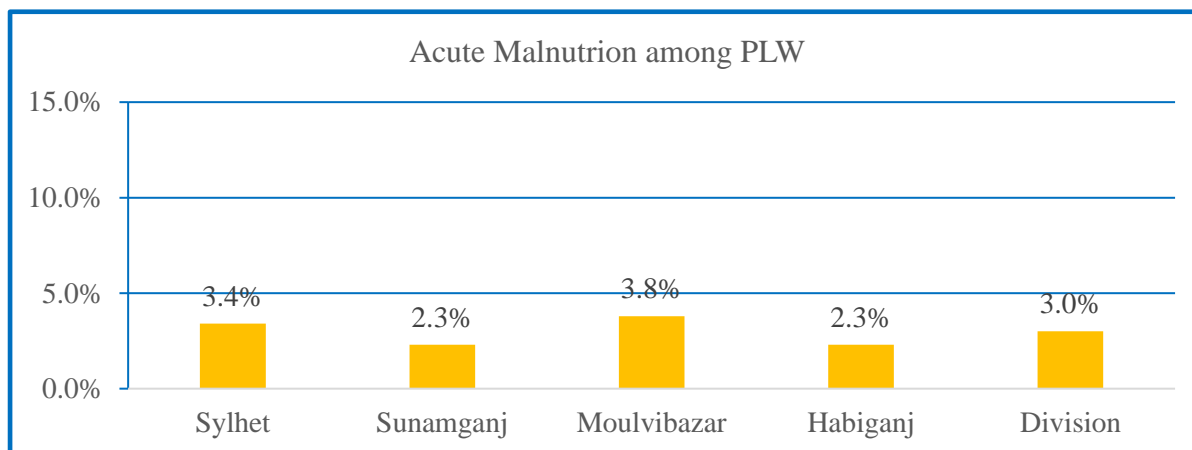


Figure 19: Nutritional Status among Pregnant and Lactating Women (PLW) with children <6 months (MUAC < 210 mm)

The overall division-weighted prevalence of Pregnant and Lactating Women based on MUAC < 210 mm stands at 3.0% (95% C.I 1.6-5.8) with highest prevalence in 3.8% (95% 2.2 - 6.6) at Moulvibazar (Figure 19)

¹⁹ WHO-recommended measles elimination strategies in SEAR countries achieving and maintaining $\geq 95\%$

²⁰ WHO's recommendation and the country's target of 90%

3.4.2. Minimum Dietary Diversity for Women (MDD-W):

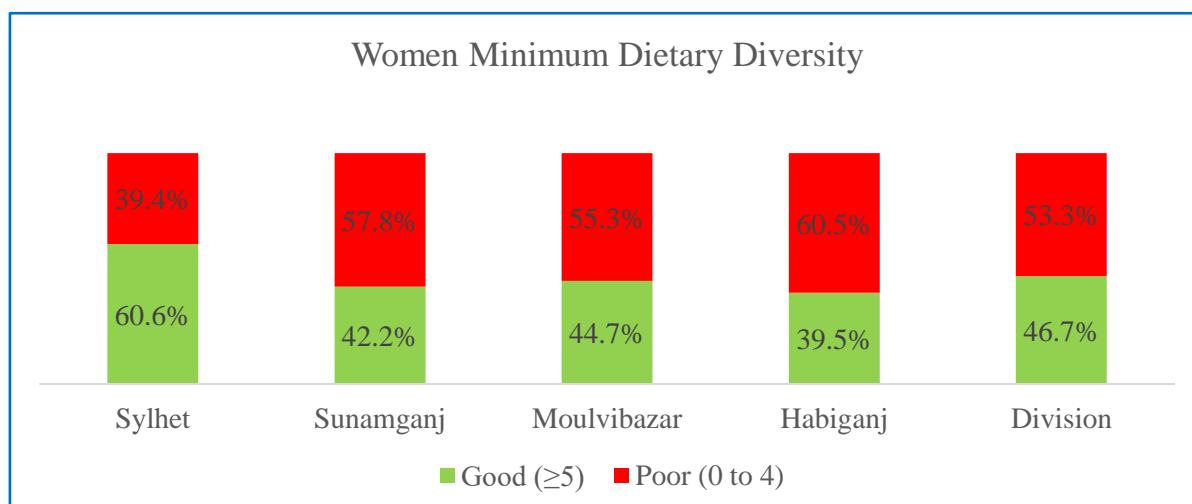


Figure 20: Minimum dietary diversity for women of reproductive age (15-49 years).

Disparities in minimum dietary diversity among women of reproductive age were stark across districts, as revealed by the 24-hour recall. In Sunamganj, Moulvibazar, and Habiganj, over 50% of women had inadequate dietary diversity, indicating poor nutritional intake. Sylhet district showed a slightly lower rate, but still, 39.4% of women did not meet the minimum dietary diversity requirement, highlighting substantial nutritional challenges of poor dietary diversity 53.3% in the division (Figure 20).

3.5. Food Security and Livelihood Status:

3.5.1. Main Sources of Income:

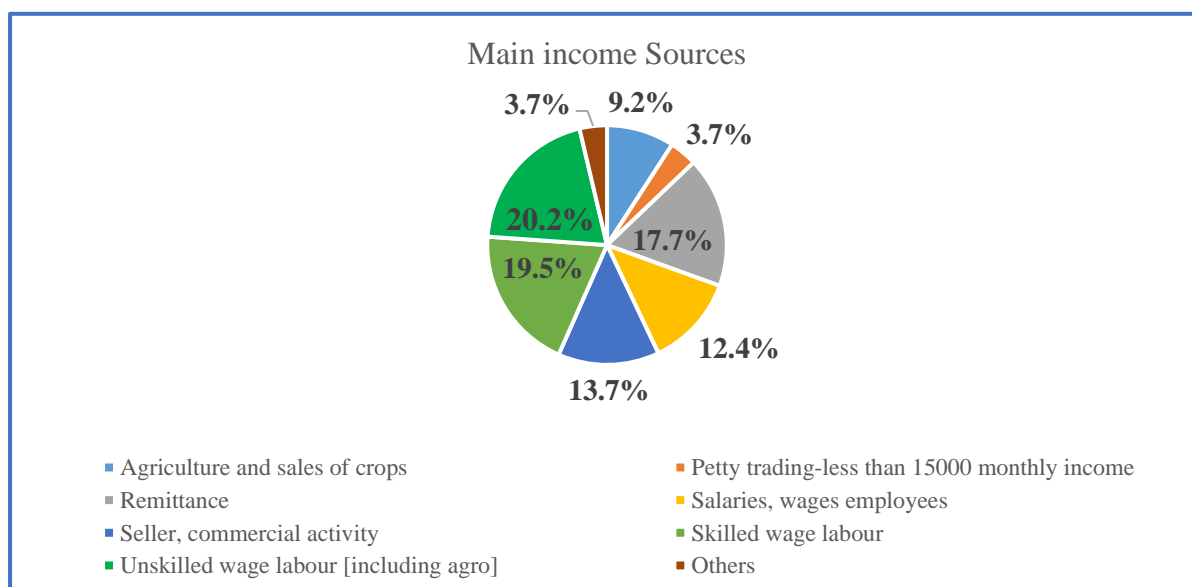


Figure 21: Main Household Income Sources

The main source of incomes in the Sylhet Division comes from unskilled wage labor at 20.2%, followed closely by skilled wage labor at 19.5%, remittance at 17.7%, seller or

commercial activity at 13.7%, and salaries and wages for employees at 12.4%. Agriculture, petty trading, and other sources like tea labor, fishing, etc., also contribute substantially to the overall income of the population. Petty trading and other sources represent smaller percentages of income (Figure 21).

3.5.2. Household Monthly Income Status:

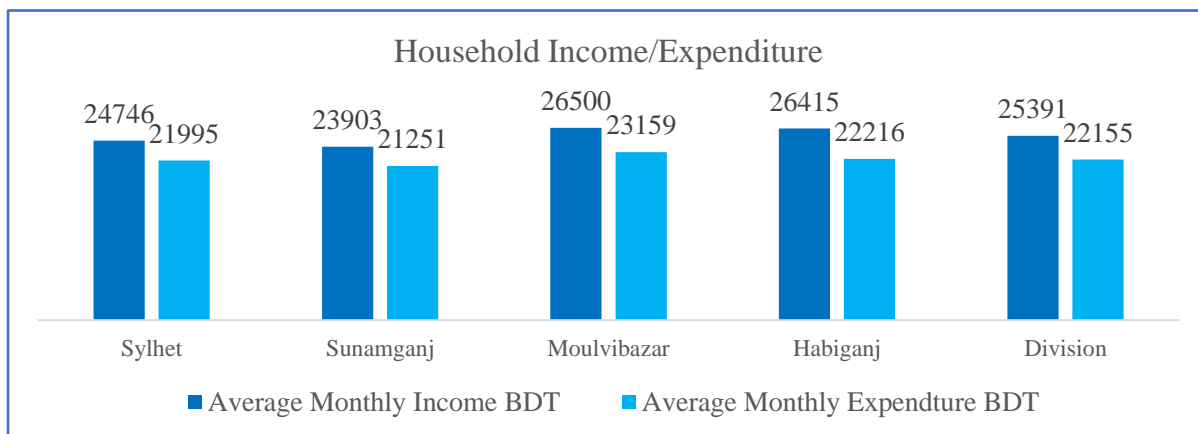


Figure 22: Household monthly Income/Expenditure (BDT)

The average monthly income in the division was at BDT 25,391, which is notably lower than the national average of BDT 32,422. It is, however, closer to the average income in rural areas, which is BDT 26,163²¹. Average household expenditure BDT 22155 (Figure 22).

3.5.3. Main Food Sources:

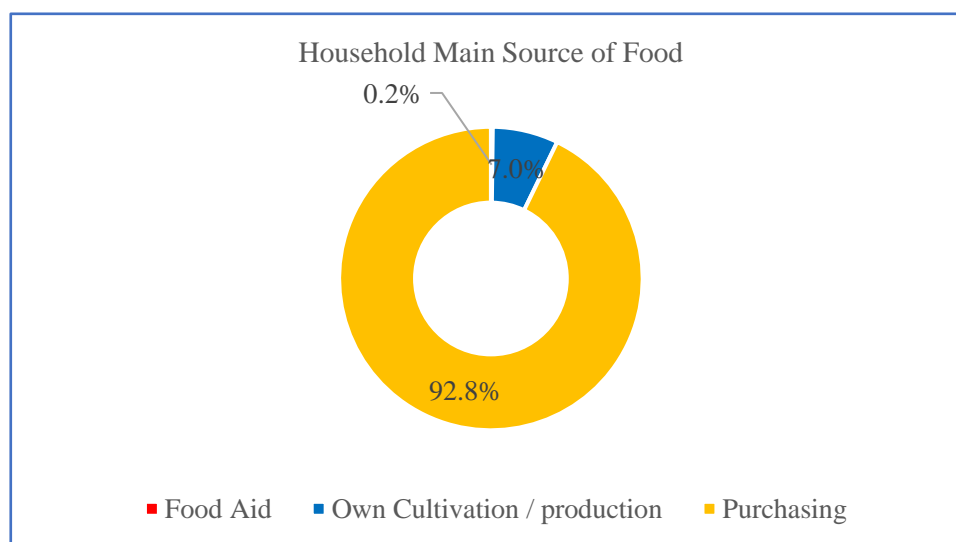


Figure 23: Household main food sources

The division relied heavily on purchasing food at 92.8%, supplemented by its own cultivation or production at 7%, showcasing a blend of market-based and self-sustaining food procurement practices (Figure 23).

²¹Household income and expenditure survey (HIES) 2022

3.5.4. Food Insecurity based on Household Expenditure on Food

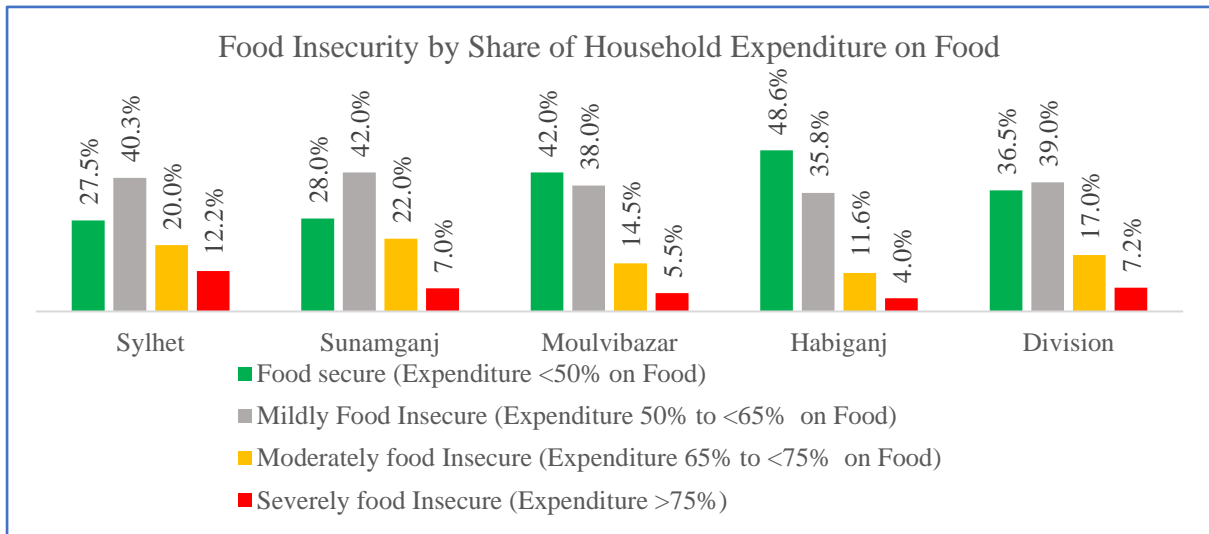


Figure 24: Food Insecurity, by Share of Household Expenditure on Food

Analyzing household expenditure on food reveals the vulnerability of districts. Approximately 39.9% experience mild food insecurity, 17% are moderately food insecure, and 7.2% are severely food insecure (Figure 24). Sylhet district exhibits higher insecurity, followed by Sunamganj district, highlighting the need for targeted interventions such as implementing subsidized food distribution programs, promoting community gardens for food self-sufficiency, and establishing vocational training initiatives to enhance income-generating opportunities.

3.5.5. Food Insecurity Experience Scale-FIES over last 30 days:

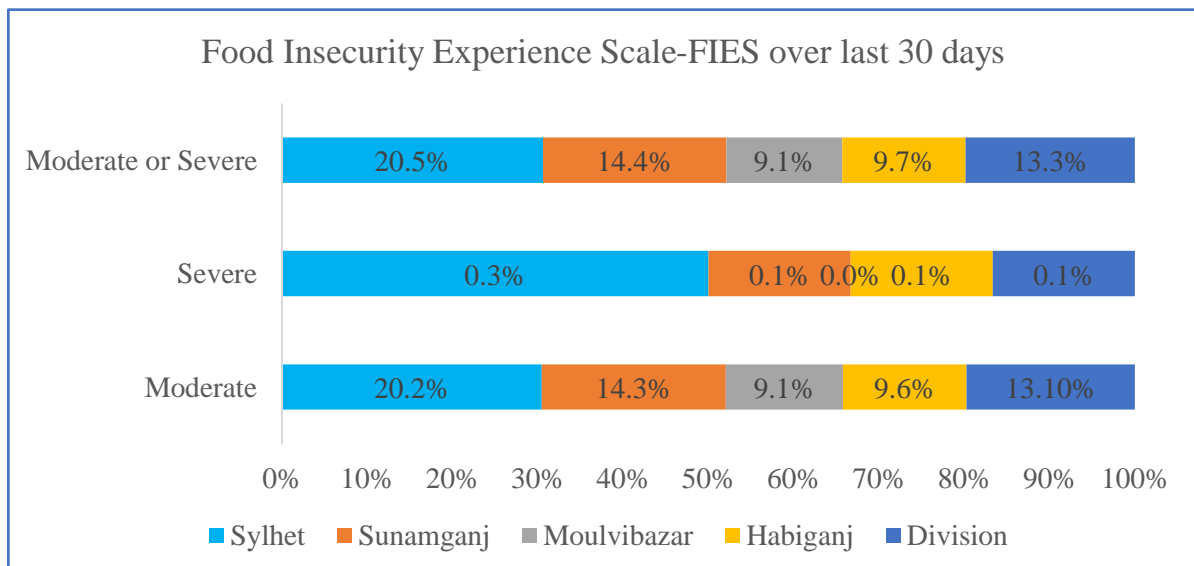


Figure 25: Food Insecurity Experience Scale-FIES

The data presented assesses food security across districts within Sylhet Division using the Food Insecurity Experience Scale (FIES). This scale measures the extent to which individuals face challenges in accessing sufficient and nutritious food due to economic

constraints or other limitations over the past 30 days. 9.1% to 20.5% of the population experiences moderate or severe food insecurity based on Food Insecurity Experience Scale (FIES). The Sylhet district has the highest food insecurity, where 1 out of 5 households are food insecure (Figure 25).

3.6. Water Sanitation and Hygiene Situation:

3.6.1. Drinking Water Availability:

Irrespective of whether the water sources were protected or unprotected, the vast majority of households, ranged from 89.5% to a peak of 96.6%, reported continuous access to water throughout the year. Moulvibazar stands out with the highest percentage, and overall, within the division, 93.7% of households reported having access to drinking water sources throughout the year.

3.6.2. Main Sources of Water:

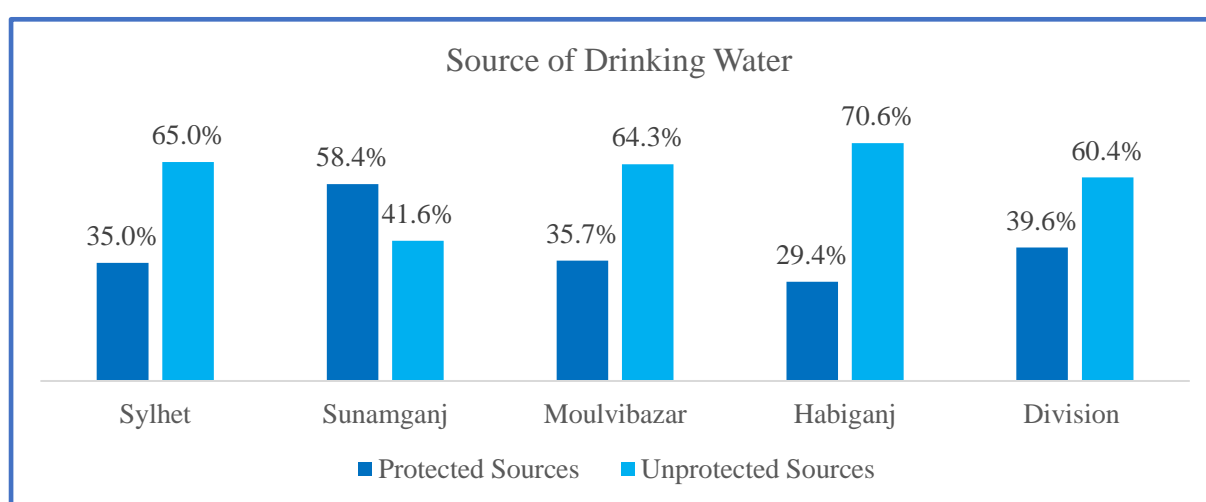


Figure 26: Source of Drinking Water

Access to protected drinking water sources varied across the surveyed areas, ranged from 29.4% to 58.4%. Overall, in the division, the mean value of protected²² drinking water sources is 39.6%. Where un-protected²³ drinking water sources accounted for 60.4%, comprising Shallow Tube wells at 57.1%, Surface Water at 2.1%, Unprotected Wells at 1.0%, and Others at 0.2%. These findings underscore the urgent need to prioritize initiatives aimed at improving water infrastructure and promoting safe water practices, particularly in areas heavily reliant on unprotected sources (Figure 26).

²² Protected water sources include deep or shallow tube wells with platforms and proper drainage, protected wells, piped water systems, and rainwater collection systems.

²³ Unprotected water sources consist of deep or shallow tube wells without platforms and proper drainage, unprotected wells, and open sources.

3.6.3. Water Purification practices:

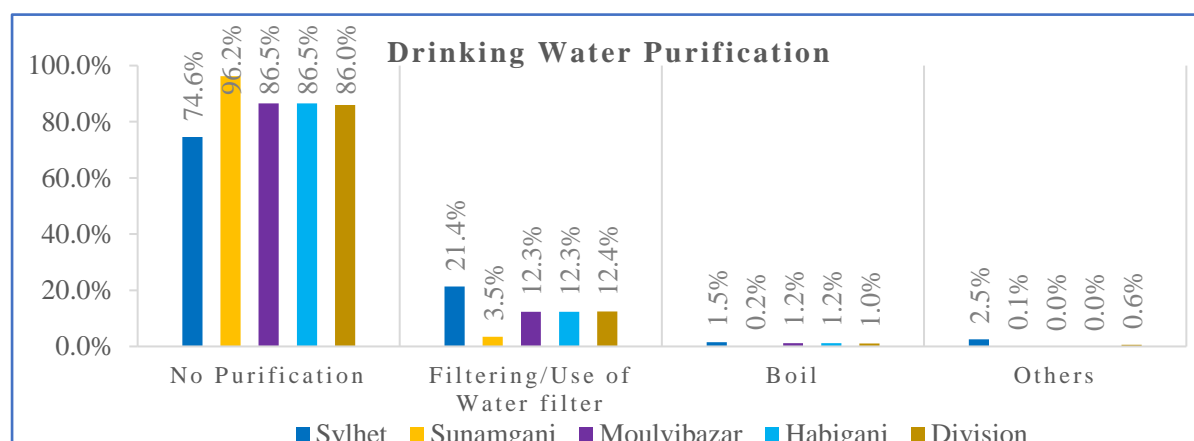


Figure 27: Drinking water purification process

Despite over 60% of households relying on unprotected water sources, a staggering 86.0% of the population did not take any steps to purify their drinking water. Only 12.4% used filters for purification, while approximately 1% boiled their water, and just 0.6% used other methods (Figure 27). This highlights a critical gap in safe water practices, with the vast majority at risk of waterborne illnesses.

3.6.4. Household Sanitation Status:

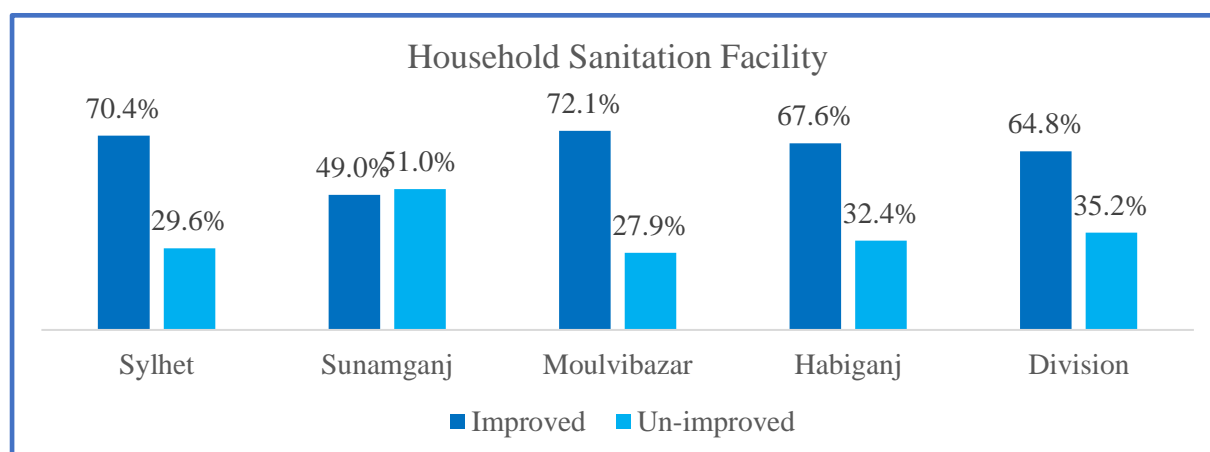


Figure 28: Type of toilet/latrine used by household members

Usage of improved²⁴ and unimproved²⁵ sanitation facilities across the district exhibited variations. The utilization of improved sanitation was higher at 70.4% in Sylhet district and lower at 49% in Sunamganj district. However, the overall average value of improved sanitation within the division stood at 64.8%. This includes 0.2% for Bio Fill Latrine, 15.8% for Latrine with water seal, and 48.7% for Latrine with Septic Tank. Conversely, approximately 35.2% or roughly 1 in 3 households lacked improved sanitation. This category includes 0.3% for Hanging Latrine, 16.3% for Latrine with a broken or mixed pit near a water body, 17.7% for Latrine without water seal, and 0.7% for Open defecation

²⁴ Improved sanitation facilities include Bio Fill Latrine, Latrine with water seal, Latrine with Septic Tank, and Others such as public toilets or shared options.

²⁵ Unimproved sanitation facilities consist of Hanging Latrine, Latrine with broken or unmanaged pits mixed with nearby water bodies, Latrine without water seal, and Open defecation.

(Figure 28). These findings underscore the pressing need for promotion and support for improved sanitation facilities to mitigate various health consequences.

3.6.5. Hand Washing Practices at Critical Times:

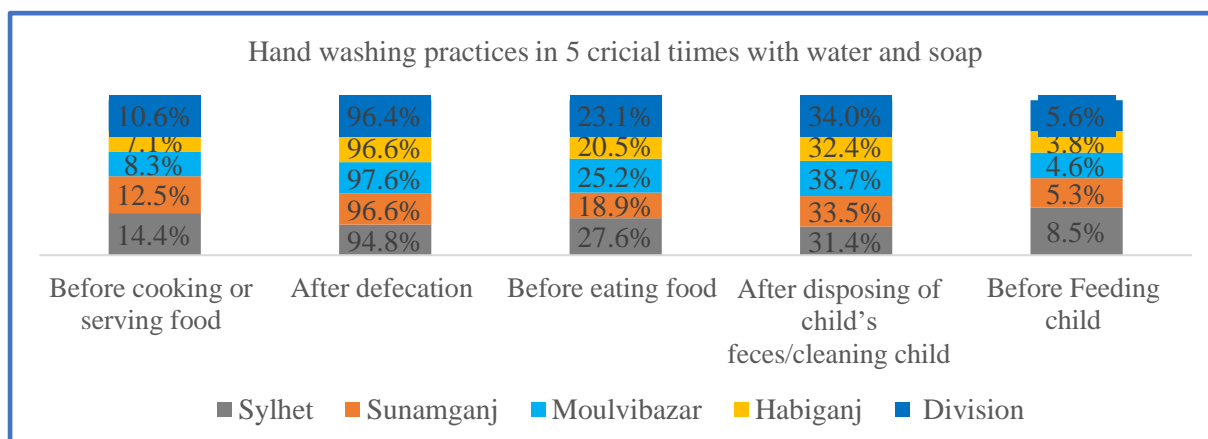


Figure 29: Handwashing Practice during Critical Time with Water and Soap/Hand washing liquid

Handwashing practices in the Sylhet division revealed satisfactory results for handwashing with soap and water after defecation, with 96.4% of individuals following this practice. However, handwashing at other critical times was alarmingly low. Nearly 4 out of 5 caregivers did not wash their hands with soap before feeding their children, and 3 out of 5 failed to do so after cleaning or disposing of the child's feces. Only 10.6% of individuals washed their hands with soap before cooking or serving food, and a mere 5.6% practiced handwashing before feeding a child (Figure 29). These findings highlighted serious gaps in hygiene practices, posing significant risks to health and well-being.

4. FAMILY IMPACT OF 2022 MASSIVE FLOOD

4.1. Status of household directly affected

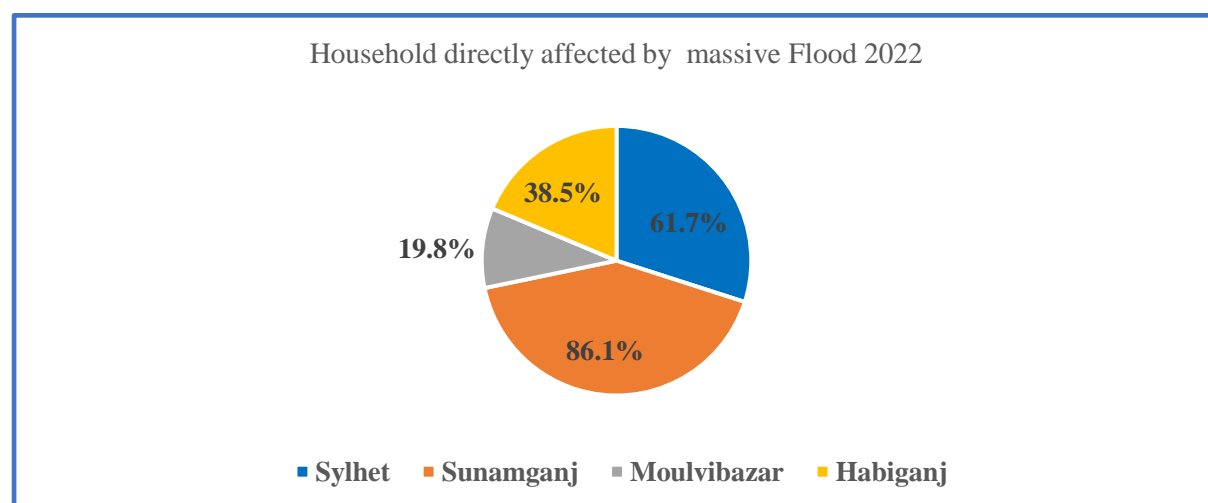


Figure 30: Household directly affected by massive Flood 2022

Based on a one-year recall, the direct impacts of floods were most severe in Sunamganj district, where 86.17% of households experienced damage to infrastructure and water intrusion into their homes and surrounding areas. Sylhet district was next, with 61.7% of households affected, while Habiganj and Moulvibazar had lower percentages, at 38.5% and 19.8%, respectively (Figure 30).

4.2. Household experiences on health issues during flood-affected time

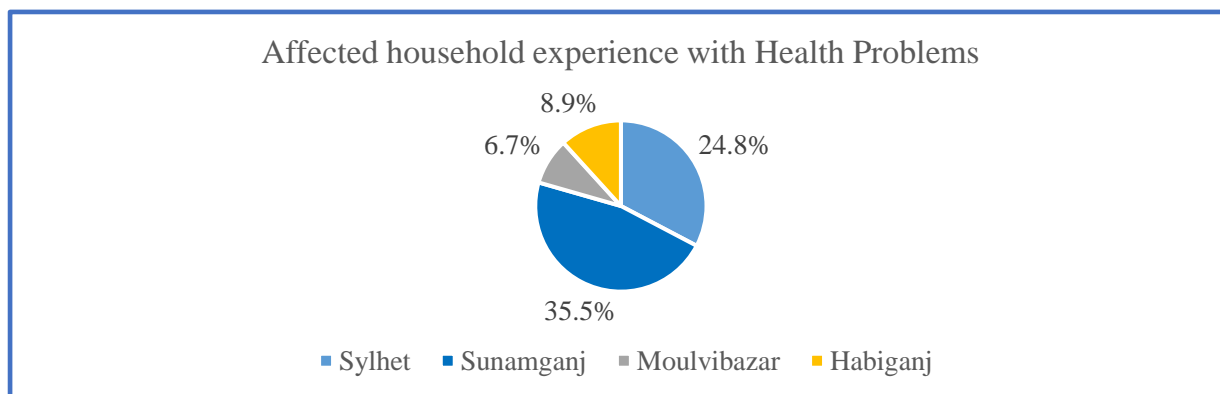


Figure 31: household experience with Health Problems during flood

Among the households affected by floods, the highest percentage reported health concerns in Sunamganj, at 35.5%. Sylhet followed with 24.8%, while Moulvibazar recorded the lowest at 6.7% (Figure 31). In Sunamganj, the most common health issues included Acute Watery Diarrhea, impacting 33.7% of families, and chronic conditions such as diabetes, hypertension, asthma, and cancer, which affected 34.7% of households. Additionally, 7.2% of families required injury-related services, while smaller percentages needed Antenatal Care (2.7%), Child Immunization (0.7%), and Postnatal Care (0.3%). Furthermore, 19.9% of families sought other types of health services.

4.3. Sources of health service access information during flood

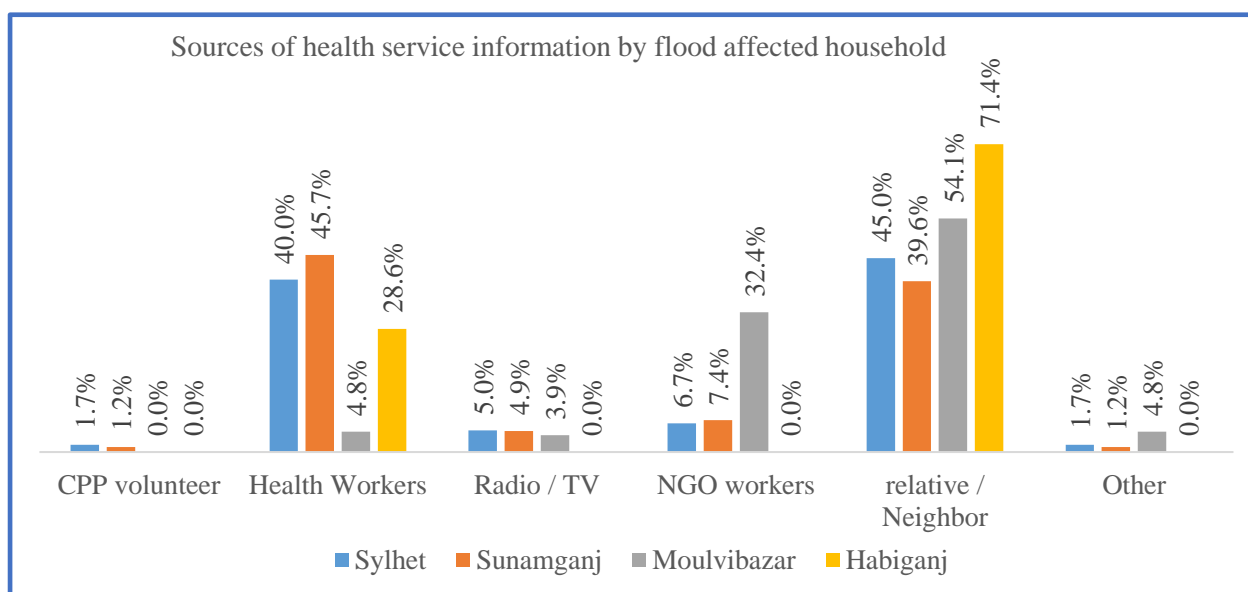


Figure 32: Sources of health service information by flood-affected household

Across the district, the majority of affected households, according to their recall, reported receiving information on accessing health services primarily from relatives or neighbors, followed by government health workers (Figure 32). However, this underscores a gap in essential health service information that seems to have been disrupted.

5. DISCUSSION

5.1. Quality of the Survey

The nutrition assessment achieved a remarkable response rate, with coverage of 100% of clusters and participation from over 100% of sampled children. The overall quality of anthropometric data was excellent, reflecting rigorous data collection practices and a commitment to accuracy across all clusters. This high standard indicates the reliability and robustness of the data gathered, reinforcing the credibility of the assessment findings.

5.2. Acute Wasting:

Acute malnutrition, particularly wasting, poses a severe and urgent health crisis for children in the Sylhet Division, with alarming rates that far exceed national and regional averages. The Global Acute Malnutrition (GAM) prevalence in Sylhet division stands at 12.9% (95% CI: 11.1-14.7), surpassing both the divisional figure reported in BDHS 2022 (12.2%) and the national average (11%). Notably, Sylhet District alone records a staggering 18.2% (95% CI: 14.3-22.8) GAM prevalence, breaching the WHO emergency threshold and categorizing it as "Very High." Sunamganj follows closely with a GAM rate of 14.1% (95% CI: 10.9-17.9), further emphasizing the critical situation. These figures paint a dire picture, especially considering that both Sylhet (18.4 %, 95 % C.I 14.4-23.1) and Sunamganj (15.3 %, 95% C.I 12.2 -19.0) fall under the WHO/UNICEF "very high level" emergency threshold for combined Global Acute Malnutrition (cGAM), based on both MUAC and WHZ indicators.

The scale of this crisis is reflected in the number of 6-59 months affected children, 332,685 are suffering from wasting. Without the use of both MUAC and WHZ criteria, a staggering 90% of children in need of life-saving interventions would be missed. This highlights the necessity for a robust and comprehensive identification strategy, as reliance on MUAC alone would result in gross underestimation. Additionally, the significantly higher prevalence of wasting ($p < 0.05$) among older children indicates that age is a critical factor, emphasizing the need for tailored interventions targeting these vulnerable groups. Failure to address this growing wasting crisis will not only deepen the health emergency but also jeopardize the future of an entire generation in the Sylhet Division.

5.3. Underweight:

The prevalence of underweight children in Sylhet Division has reached a critical level, far exceeding national and international thresholds. With an alarming rate of 30.6% (95% CI: 28.1-33.0), Sylhet surpasses the WHO/UNICEF "critical" threshold of 30% and the national

average of 22% (BDHS 2022). Sylhet District is particularly dire, reporting an underweight prevalence of 41.1% (95% CI: 36.2-46.3), followed by Sunamganj at 30.1% (95% CI: 26.6-34.0). In the division approximately 789,161 children suffering from underweight and 825,266 children aged 6-59 months stunted in the Sylhet Division. The statistically significant difference in underweight prevalence between younger and older children in Sylhet and Sunamganj underscores the urgent need for targeted interventions in these high-burden districts. To combat underweight effectively, nutrition programs must prioritize these areas, focusing on comprehensive solutions that address not only immediate nutritional deficits but also systemic issues such as healthcare access and socio-economic disparities. Sustained and intensified interventions, in tandem with broader socio-economic development initiatives, are crucial to tackling the root causes of undernutrition and improving the overall nutritional status of the population in Sylhet.

5.4. Stunting:

Stunting remains a severe public health crisis in the Sylhet Division, with an alarming prevalence of 32% (95% CI: 29.2-34.8), exceeding the WHO/UNICEF "very high" threshold of $\geq 30\%$. This rate surpasses both the national average of 24% and the divisional average of 33.9% (BDHS 2022), highlighting a dire situation, particularly in Sylhet District, where stunting reaches a critical 37% (95% CI: 31.1-43). Approximately 825,266 children aged 6-59 months are stunted in the division, signifying a substantial burden, especially at the moderate level. The findings are even more concerning in Sunamganj also, where statistically significant gender disparities were noted, with older children showing a higher prevalence of stunting. These indicators underscore the deep-rooted and complex nature of the crisis, requiring urgent, sustained interventions to reverse this trend.

A comprehensive, multi-sectoral approach is essential to addressing the underlying causes of stunting. This strategy must integrate nutrition-specific interventions with broader development efforts in healthcare, education, sanitation, and livelihoods. Without a coordinated, long-term response, the cycle of stunting will persist, trapping future generations in poor health and limiting their potential. Immediate and decisive action is required to improve the nutritional status and long-term well-being of the children in Sylhet Division.

5.5. Infant and Young Child Feeding Practices (0-23 months):

The infant and young child feeding (IYCF) practices in Sylhet Division show mixed progress, with significant challenges that demand urgent attention. Early initiation of breastfeeding within one hour remains below the recommended threshold of $>80\%$ across all districts, highlighting a critical gap in optimal feeding practices. While Moulvibazar has made notable progress with an exclusive breastfeeding rate of 84.3% (95% C.I 71.4-92.3) for children under six months, Sunamganj lags behind at a concerning 52.4% (95% C.I 46.0 - 57), which is even lower than the national average of 55% (BDHS 2022). In Habiganj, the high prevalence of mixed milk feeding under six months further complicates efforts to promote exclusive breastfeeding, despite consistently strong continued breastfeeding rates $>90\%$ across districts between 12-23 months. Bottle feeding patterns similarly persist, pointing to the need for more robust interventions. Feeding adequacy also

remains a serious issue, with the Minimum Meal Frequency in Sylhet at 48.4% (95% CI: 41.8-55.2), significantly lower than the national rate of 61%. More alarming are the low rates of Minimum Dietary Diversity (MDD) at 32.9% (95% CI: 26.8-39.4) and Minimum Acceptable Diet (MAD) at 25.3% (95% CI: 19.8-31.5), both falling well below national averages of 39% and 29%, respectively (BDHS 2022). These deficits reflect a serious gap in ensuring that infants and young children receive a diverse and nutritionally adequate diet, which is crucial for their growth and development.

5.6. Morbidity and Health seeking behavior among 6-59 month's children:

The morbidity rates among children aged 6 to 59 months in Sunamganj, Sylhet, Moulvibazar, and Habiganj present a significant public health challenge, with many children suffering from diarrhea, fever, acute respiratory infections (ARI), and other illnesses within the past two weeks. Diarrhea rates range from 6.1% to 10.6%, fever from 54.9% to 65.1%, ARI from 1% to 4%, and other diseases from 23.2% to 33% across these districts. Sylhet Division particularly concerning is the higher prevalence of diarrhea (9.9%) and fever (62.3%) compared to the national averages of 4.8% and 30.5%, respectively. These alarming morbidity rates are closely associated with acute wasting, poor health-seeking behaviors, and limited access to proper healthcare services, revealing the urgent need for comprehensive interventions. The reliance on untrained village doctors or pharmacies by over 60% of caregivers exposes a critical gap in access to professional medical treatment for childhood illnesses. This inadequacy highlights the necessity for improving healthcare access and ensuring children receive timely and appropriate care. Compounding these health challenges, caregivers face difficulties such as managing feeding, balancing time, personal fatigue, and insufficient family support, all of which hinder effective child health management.

To address these interconnected issues, interventions must focus on empowering caregivers by fostering community engagement, improving time management, involving family members in caregiving, and promoting caregiver self-care. Beyond meeting the physical health needs of children, emotional support is equally important, underscoring the value of love, warmth, interaction and reassurance for healthy child development. Strengthening immunization coverage, particularly for measles and Vitamin A to reach > 95% and >90% respectively, is essential to bolstering child health initiatives in these districts including deworming for 24-49 months. A holistic approach, addressing both healthcare gaps and caregiver support, is critical to improving the well-being of children in Sylhet Division.

5.7. Nutritional Status among Pregnant and Lactating Women (PLW):

The nutritional status among pregnant and lactating women (PLW) in the districts reveals concerning disparities in dietary diversity, particularly evident in Sunamganj, Moulvibazar, and Habiganj. With over 50% of women demonstrating inadequate consumption of minimum dietary diversity, there's a pressing need for targeted interventions. Addressing these disparities requires multifaceted approaches, including enhancing nutritional knowledge among women, implementing food supplementation programs, and fortifying foods to ensure adequate nutrient intake as well targeted intervention considering the overall malnutrition prevalence at 3.0% (95% C.I 1.6-5.8). Furthermore, initiatives focusing

on promoting diverse and balanced diets during pregnancy and lactation are essential for ensuring optimal maternal and child health outcomes.

5.8. Food Security and Livelihood:

The findings on food security and livelihoods in Sylhet Division reveal both strengths and critical areas for improvement. The region benefits from diverse income sources, including unskilled and skilled wage labor, remittances, and commercial activities, reflecting a broad economic base. However, household income and expenditure patterns expose vulnerabilities. With an average monthly income of BDT 25,391, Sylhet lags behind the national average of BDT 32,422, though it aligns more closely with rural areas, where the average is BDT 26,163 (HIES 2022). Household expenditure, averaging BDT 22,155, shows significant allocation towards food, underscoring economic strain. Food insecurity remains a pressing issue, with 39.9% of households experiencing mild food insecurity, 17% moderate, and 7.2% severe. Sylhet district, followed by Sunamganj, faces the highest levels of food insecurity. The Food Insecurity Experience Scale (FIES) highlights that between 9.1% and 20.5% of the population endures moderate to severe food insecurity, with Sylhet district showing the highest rates, where 1 in 5 households struggles to access sufficient and nutritious food.

To address these challenges, targeted interventions are essential. These should include subsidized food distribution, the promotion of community gardens to boost food self-sufficiency, and vocational training programs to expand income-generating opportunities. By tackling both the economic and food security issues, such initiatives can create sustainable improvements for vulnerable populations across Sylhet Division

5.9. Water, Sanitation, and Hygiene (WASH) Situation:

Water, sanitation, and hygiene (WASH) are critical determinants of undernutrition, as the relationship between infectious diseases and gut health directly affects the nutritional status of infants and young children. Therefore, addressing WASH factors is essential for preventing and managing undernutrition and its associated consequences. The current WASH situation in Sylhet Division presents a mixed picture, revealing both strengths and urgent areas for improvement. Alarmingly, 60% of households rely on unprotected water sources, with an overwhelming 86% of the population taking no measures to purify their drinking water. This poses significant health risks. While 64.8% of households have access to improved sanitation facilities, Sunamganj district notably lags, with 51% of households using unimproved sanitation, highlighting a critical gap in sanitation access. Handwashing practices in Sylhet Division show some positive results, with 96.4% of individuals washing their hands with soap and water after defecation. However, compliance during other critical moments is alarmingly low: nearly 80% of caregivers do not wash their hands with soap before feeding their children, and 60% fail to do so after cleaning or disposing of feces. Only 10.6% of individuals wash their hands before cooking or serving food, and a mere 5.6% practice handwashing before feeding a child. These findings underscore the urgent need for comprehensive strategies to enhance WASH outcomes, thereby reducing the prevalence of waterborne diseases in the region. Implementing targeted interventions, such as promoting safe water practices, improving sanitation facilities, and

encouraging proper handwashing at critical times, is essential to safeguard the health and nutritional status of children and the broader community in Sylhet Division.

6. CONCLUSION

The integrated nutrition survey conducted in the Sylhet Division provides valuable insights into critical issues on malnutrition, infant and young child feeding practices, childhood illness, early childhood care and development, as well as food security, livelihoods, and WASH situation.

In the face of an escalating malnutrition crisis, poor infant young child feeding practices, economic hardships and dependence on purchased food further complicate access to nutritious meals. The prevalence of unprotected water sources, suboptimal health-seeking behaviors, and the burden of childhood illnesses amplify this vulnerability. Additionally, inadequate sanitation practices and a lack of nutritional knowledge significantly hinder informed dietary choices, particularly for children and women. Environmental challenges, such as flooding, threaten to destabilize food security, underscoring the urgent need for a holistic nutritional strategy that integrates livelihood support, healthcare access, and nutritional education. Adopting a tailored, multi-faceted approach specific to each district will be vital in achieving sustainable improvements in health outcomes and nutrition security. By emphasizing evidence-based interventions, fostering collaboration among stakeholders, and actively engaging communities, the Sylhet Division can turn the tide on these daunting challenges and significantly enhance the well-being of its residents. Continuous monitoring, rigorous evaluation, and adaptive management will be essential to guide future initiatives and ensure meaningful progress toward comprehensive development goals in the region.

7. RECOMMENDATION

RECOMMENDATIONS FROM NUTRITION CLUSTER MEMBERS BASED ON FINDINGS:

- 1 A nutritional causal analysis should be undertaken to identify the causes of the high prevalence of undernutrition in the Sylhet division.
- 2 Develop an integrated multi-sectorial malnutrition prevention programme to address the high levels of acute and chronic malnutrition among U5 children in the area.
- 3 Scale up severe wasting treatment and provide comprehensive care for moderate wasting using a child-centered and caregiver-infant approach to ensure holistic care and sustainable outcomes.
- 4 Support high-quality Infant and Young Child Feeding (IYCF) counseling through point-of-care approaches by health providers and community workers.
- 5 Enhance basic health and nutrition service delivery, particularly in high-burden areas, through community outreach and capacity building of local health facility staff.
- 6 Develop and implement a comprehensive SBCC program aimed at improving hygiene practices, promoting positive health-seeking behaviors, and encouraging diversified food consumption.
- 7 Expand the coverage of Nutrition Sensitive Social Safety Net Programs in the region.
- 8 Adapt and implement WHO's 2023 guidelines for wasting management and prevention in Bangladesh, tailored to local needs for effective impact.
- 9 Expand access to safe water, sanitation, and hygiene facilities through infrastructure development and community health education, alongside promoting hygiene practices with soap distribution and handwashing campaigns.

8. ANNEXES

1. CLUSTER LIST; [ANNEX-1](#)
2. STANDARDIZATION TEST RESULT; [ANNEX-2](#)
3. SURVEY QUESTIONNAIRE; [ANNEX-3](#)
4. SURVEY APPROVAL; [ANNEX-4](#)
5. LOCAL EVENT CALENDER; [ANNEX-5](#)

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