

Prevalence and Determinants of Malnutrition among Poor Women and Children in the South-West Region of Bangladesh

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Abstract: The objective was to describe the prevalence and determinants of malnutrition and identify the associated factors among the women of ultra poor households targeted by SPRING Bangladesh. SPRING Bangladesh always emphasis of why, 1000 days and women empowerment are critical for nutrition in Bangladesh, high level of stunting at birth, young mother and child marriage, undernutrition among pregnant and lactating women, implementation for nutrition-sensitive social protection in Bangladesh. It was a cross-sectional survey. A total of 170 households were covered in the survey. Adult female aged 18-49 years who were selected for program intervention in households were covered and Pregnant & Lactating women were excluded. Nutritional status was assessed by measurement of body mass index (BMI), eating complementary feeding, diversify food such as vegetable, protein, carbohydrate and vitamin & minerals. Although child and maternal malnutrition has been continuously reduced in Monirampur Upazila of Bangladesh, the prevalence of underweight (weight-for-age z-score <-2) among children aged less than two years is still high (39%). Nearly one-third of women are undernourished with body mass index of <18.5 kg/m². The prevalence of anemia among young infants, adolescent girls, and pregnant women is still at unacceptable levels. Despite the successes in specific government programs, such as the Expanded Program on Immunization and vitamin A supplementation and SPRING Bangladesh implementation of programs for nutrition interventions are yet to be implemented at scale for reaching the entire population. Given the low annual rate of reduction in child undernutrition of 1.27 percentage points per year, it is unlikely that Bangladesh would be able to achieve the United Nations' Millennium Development Goal to address undernutrition.

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I. Introduction

Women and under two year of child are more likely to suffer from malnutrition than men are, for some potential reasons, which involve women's reproductive biology, low social status, poverty and lack of knowledge. Moreover, socio-cultural tradition and disparities of household work pattern can also make the women more susceptible to malnutrition (Ransom, E. and L. Elder 2003). Additionally menstruation, pregnancy and lactation can lead to nutritional deficiency, which is the most widespread and disabling health related problem among women (WHO 2000). The women work longer hours to attain the same level of welfare as men do, and that poverty is more likely to be chronic in women, thus they are more prone to poor health, malnutrition, and lack of education (Lipton, M. and M. Ravallion 1995).

Malnutrition poses a variety of threats to women and children. It weakens women's ability to survive childbirth, makes them more susceptible to infections, and leaves them with fewer reserves to recover from illness. Poor women are likely to be poorly nourished and this has serious implications for the nutrition status of their yet-to-be-born children (Haddad, L., et al.1996). Every year, more than 500,000 women worldwide die from complications arising from pregnancy and childbirth (WHO 2000). Maternal under nutrition is directly associated with ill health through the malnutrition infection complex, and places both the mother and her fetus at risk (King et al. 2003). The relationship between low birth weight and intrauterine growth retardation to maternal under nutrition is documented (Fishman, S., L. Caulfield, and M. de Onis 2004).

Maternal stunting is a known risk factor of small birth canal and obstructed labour, leading to injury or mortality for mothers and their newborns. It is also associated with reduced work capacity (Konje, J. and O. Ladipo 2000), illness and mortality. Obstructive blood loss is another factor that contributes significantly to anemia in women with low iron reserve (WHO 2000).

Micronutrient deficiencies are also associated with pregnancy complications and maternal mortality. Iron deficiency anemia among pregnant women has been suggested to cause about an estimated 111,000 maternal deaths each year (Stoltzfus, R., L. Mullany, and R. Black 2003). Though anemia is not specific for iron deficiency (UNICEF 1999), it is recognized as most common and important causes of nutritional anemia worldwide (Ahmed et al. 2000 and Skikne et al. 1988), especially in developing countries like Bangladesh. A report on the economic consequences of iron deficiency anemia reveals that the annual per capita productivity loss due to iron deficiency is 4.19 US dollar or 1.9% of the gross domestic product for Bangladesh (Ross, J. and S. Horton 1998). Severe anemia places women at higher risk of death during delivery and the period following childbirth (Fernando et al. 1994). Recent research suggests that even mild anemia puts women at greater risk of death (Majid et al. 2002). Anemia is responsible for about 35 percent of preventable low birth weight (Nokes et al. 1998) and this intrauterine iron deficiency, caused by iron deficiency in the mother, is known to cause irreversible alterations in brain development (Tiwari et al. 1997). Iron deficiency anemia is also known to be associated with reduced reproductive capacity (WHO 1997). Maternal anemia aggravates the effects of hemorrhage and sepsis during childbirth and is a major contributing cause of maternal mortality. In almost one-fifth of maternal deaths (19.3%) in rural India, anemia is reported to be an indirect cause (WHO 1997). Iron deficiency and anemia cause fatigue, reduce work capacity, impairs immune function and make people more susceptible to infection (WHO 1997). At age 15-44 years, the burden on iron deficiency anemia in developing countries in terms of DALYs per year is 7135 for women as against 4898 for men (WHO 1998).

Rates of malnutrition in Bangladesh remain among the highest in the world, with an estimated six million children chronically undernourished (DHS 2011). As Bangladesh's National Social Security Strategy undergoes significant reform, harnessing the potential of social protection for nutrition is vital. Social protection is a human right and a means for states to protect their most vulnerable citizens. This is confirmed in the Universal Declaration of Human Rights, the United Nations Convention on the Rights of the Child, the International Labour Organization's constitution, and legal instruments on social security. However, social protection is far from the norm for most of the world's population: 73% of the world's populations are covered partially or not at all. In Bangladesh in 2010 the social protection system reached just 35% of those living below the poverty line (Measured by stunting, defined as height for age below international growth standards).

Bangladesh's malnutrition burden is significant, with 41% stunting, 16% wasting, 22% with low birth weight, and 2% overweight. Bangladesh's population at last count was 156.5 million, making the number of people affected staggering (UN 2013). Despite a decline in the prevalence of chronic malnutrition among children under five from 60% in 1997 to 41% in 2011, that trend is now slowing.

Prevalence of chronic malnutrition remains well above World Health Organization (WHO) 'very high' severity thresholds. Undernutrition in Bangladesh is a national multi-sector development problem. It is reducing Bangladesh's chances of reaching its goal of achieving Middle Income Country status by 2021, and is preventing millions of children from reaching their potential.

The malnutrition status of Monirampur Upazila is very much burdened of significant. The child health status of this upazila are under 5 Mortality Rate: 45.268 (Per 1,000 live births), Infant Mortality Rate: 35.698 (Per 1,000 live births), Neonatal Mortality Rate: 25.520 (Per 1,000 live births), Still Birth Rate: 1.975 (Per 1,000 live births), Total No. of Children Treated under IMCI Program 24,592, Fully Vaccinated Children (<= 12 months): 91.00 %, Fully Vaccinated Children (<= 23 months): 92%. The maternal health status of this upazila is No. of Maternal Deaths: 12, Total No. of Recipients Who Took at least one ANC: 4,728 Total Number of Deliveries: 6,596, Valid TT Coverage: 88.00 %, Maternal Mortality Ratio (MMR) is: 182.29 per 100,000 live births.

Finally, coverage of households having access to safe drinking water is 63% and Coverage of households having access to sanitary latrines is 92%.

II. Methods of the Study

Study Design: The present study is quantitative in nature and social survey method was applied. It was a descriptive cross sectional study.

Geographical Status of Study Area: The Manirampur Upazila is the second largest upazila in Bangladesh and areas is 444.72 sq km, located in between 22°55' and 23°06' north latitudes and in between 89°09' and 89°22' east longitudes. It is bounded by Jessore sadar Upazila on the north, Kalaroa, Keshabpur and Dumuria upazilas on the south, Abhaynagar upazila on the east, Jhikargachha upazila on the

west. The populations of this Upazila are 382465; male 195338, female 187127; Muslim 310252, Hindu 71748, Buddhist 150 and others 315. The average literacy rate is 50.76%; male 55.90%, and female 45.40%. Main sources of income Agriculture 68%, non-agricultural labourer 2.54%, industry 1.49%, commerce

12.64%, transport and communication 3.04%, service 5.67%, construction 1%, religious service 0.13%, rent and remittance 0.52% and others 4.97%.

The Manirampur Upazila is the most vulnerable upazila for pregnant and lactating and under two years' children. Muslim Religious of household is the most important factor for decreasing health status or nutritional status in both mother and childhood. The SPRING Bangladesh were implemented nutrition based project in Manirampur Upazila for especially pregnant, lactating mother and under two years of children from 2012 to till now. Now, increasing nutritional status, stunting rate, wasting are gradually changes for mother and under two years children.

The survey was conducted in 17 Union of SPRING Project working areas in Manirampur Upazila under Jessore District in Bangladesh.

Data Collection Method:

Three types of methods are use in this process:

- Questionnaire
- Household Visit
- Observation

The questionnaire, household visit and observation administered to women participating in the SPRING Project, their participation and getting information and implementation of activities from the project.

Sources of data: The data for this study will be collected from different sources of primary and secondary data. As, primary source of data was collected through survey and the secondary sources of the facts and data drawn from the existing literatures like reports on the project and analysis of current documents, evaluations and other reports.

Time Frame: Based on the sample size, the field survey was carried out by the researcher himself. Following the plan, the researcher had to take interview five households per day and the survey was completed in 17 days. It was in the last week of March 2016. However, the researcher took the opportunity to take in depth interview from the beneficiary as per questionnaire.

Study design and Respondents of the study: The design for the study was cross sectional in nature. A cross sectional study measures the prevalence of nutritional related outcomes or determinants of the nutritional outcomes or both in a population at a point in time over a short period (Coggon, Rose, & Barker, 2003). A survey approach was the main method used for collecting quantitative data. Information from the study area was collected over a period of approximately 4 weeks. Eight researcher assistants (SPRING Union Facilitator) were employed to assist the researcher in quantitative data collection. One research assistant worked with the researcher while the other two worked together. Qualitative data was obtained through interviews through questionnaire, observations, household visit and content analysis as will be discussed in data collection methods. The respondents of the study were categorized into the pregnant and lactating mothers. The study limited itself to the female members in households (both pregnant and lactating mothers) and children below two years of age. The both mothers were presumed to be responsible for the basic nutritional needs of the child as well as the general wellbeing of the child.

Sampling Procedure and Determination of Sample size: The 170 numbers of samples from 170 numbers of pregnant and lactating mothers household of Farmers Nutrition School (FNS) out of 208 from 17 numbers of unions under Manirampur Upazila in SPRING project beneficiaries. The 10 numbers of samples collect from each union and all are randomly selected. The selected of each pregnant and lactating mother's household from each Farmers Nutrition School (FNS).

Nutrition related health and sanitation aspects: Looking at the conceptual framework of UNICEF for the analysis of nutritional problems nutrition-related diseases are caused either directly by inadequate dietary intake, or indirectly through disease conditioning undernutrition as Oshaug (1994) also observes. Numerous underlying factors will determine both. However, this section of the study limits its scope to look at one other group of underlying causes at household level namely accessibility to health services and hygiene facilities, as diarrhea and malaria together with other infections play a crucial role in the etiology of undernutrition, and furthermore are important causes of death among young children. This is also supported by Ruel et al. (1998). This may therefore jeopardise the fulfillment of the RtF and affects the nutritional status and growth of children. Aspects accessed here involved looking at:

- Accessibility of the health services to women and children
- Access to clean, and safe drinking water

- Sanitation facilities like latrines and garbage collection point

Poor health facilities, lack of access to clean and safe drinking water and good sanitation facilities are factors that may influence the nutritional status outcome of women and children.

Interviews: The data collection involves often direct contact between the respondents and the researcher or staff trained by the researcher (Ary, Jacobs, & Sorensen, 2010). This study involved using personal interviews in which the researcher or research assistants read questions to right holders [pregnant and lactating mothers] in a face to face setting and recorded the responses. During these interviews, questionnaires were used as the main tools for collecting data. The questionnaires for right holders had closed ended questions (see appendix A), mainly had open ended questions. The interviews with key informants were carried out by the researcher himself. Interviews with key informants were also carried out on appointment and these came after interviewing right holders.

Household visit or Field observation: Household visit or field observation techniques were also used during the study involving simple observations like vegetable cultivation, fish culture and poultry rearing through food availability in the house, also getting some information on hygiene and sanitation facilities including water sources. This was conducted by a walk through the community and also concurrently with the interviews. Some filed notes and photographs were taken while walking through the study area.

Document analysis and report writing: As a method of data collection involves a careful, detailed, systematic examination and interpretation of a body of material in an effort to identify patterns, themes, biases and meanings (Berg, 2009). This method involved an assessment of documents relying on published and unpublished materials which were considered vital for the realization of study objectives.

Data will collect through structured questionnaires base line information on the basis of objective methodology and finally recommendations of a research project to others. Report will summary of findings and written document.

Validity and Reliability: The authenticity of the data collected and study results is influenced by the situation; it is assessed by validity and reliability. Validity refers to the extent to which scores on a test enable one to make meaningful and appropriate interpretations. That is how well a test or rating scale measures what it is supposed to measure (Ary, et al., 2010). During the study, the researcher tried to ensure validity of data by using the appropriate instruments to collect the required data.

Reliability is defined as the consistency of measurements or the degree to which an instrument measures the same way each time it is used (Boslaugh & Watters, 2008). Reliability of data collected during the study was enhanced through for example calibration of instruments prior and during the survey especially. This focused on how questions can be phrased to capture data and how to take and record keeping as per instruction.

Data Analysis and Presentation of results: Analyzing quantitative data was carried out using the statistical package for social sciences (SPSS) software. Various statistical analyses, such as correlation, were carried in order to examine relationships between selected variables in the study. Non-parametric correlation spearman's rho was carried out as Pallant (2007) also suggests for data not normally distributed. Chi-square test was also performed. Anthropometric data was analyzed at individual level as the unit of analysis. Data collected on children was analyzed using WHO Nutrition software Anthro version 3.2.2 (WHO, 2011a) and was interpreted based on 2006 WHO child growth standards. Weight and height of mothers or caretakers was used to compute BMI using SPSS. Qualitative data such as recorded interviews from duty bearers was transcribed and used in discussion of some indicators to strengthen the discussion. Data from document reviews was interpreted based the criteria used such as authenticity of documents, credibility and meaning (Berg, 2009). Presentation of results was done in table form and discussed concurrently.

Ethical Consideration: For smooth conduction of the study, the respondents were informed about the purpose of the study. There was no loss of working hours of the respondents; about minimum 2 hours time was required for each interview. Before the interview, the respondents were briefed about the objectives of the study and their voluntary participation was sought. Before interviewing, a written informed consent was obtained from the respondents and they were assured that the collected data would be kept confidential. No identification as per respondents was disclosed in the final report.

III. Result

ASSESS OF ANEMIA, VITAMIN AND IODINE

Household Characteristics

Table No. 1: Food habit from different sources in preliminary stages

# of Survey Members	# of Practice Level of target members			% of Practice level		
	Homestead Gardening	Poultry Rearing	Fish Culture	Homestead Gardening	poultry Rearing	Fish Culture
160	66	120	27	47	75	17

Maternal and Child Caring Practices

Table No. 2: Overall maternal and child care practices

# of Survey Members	# of Overall Practices of EBF (0-23 months of child) & CF (7-23 months of child)					% of practices of EBF & CF (0-23 months of child) & CF (7-23 months of child)				
	EBF	< 6 Months	7-23 Months	CF	7-23 Months	EBF	< 6 months	7-23 Months	CF	7-23 Months
160	53	93	77	64	104	33	58	48	40	65

Table No. 3: Weight measurement status of maternal health

# of Survey Members	# of pregnant women measurement weight, iron supplementation & take appropriate iodine				% of pregnant women measurement weight, iron supplementation & take appropriate iodine			
	Not weight	Not take Iron Supplementation	Not take appropriate Iodine		% Not weight	% Not take Iron Supplementation	% Not take appropriate Iodine	
160	83	91	126		52	57	79	

Child Nutritional Status

Table No. 4: Child nutrition status of target population

# of Survey Members	# of Child Nutrition Status				% of Child Nutrition Status			
	Under Weight	Stunted	Wasted	Over weight	Under Weight	Stunted	Wasted	Over weight
160	67	74	24	2	42	46	15	1.4

Mother's Nutritional Status

Table No. 5: Nutrition status of maternal health in target population

# of Survey Members	# of Nutrition Status of Maternal Child health			% of Nutrition Status of Maternal Child health		
	Married before 18 Years	First Pregnancy before 20 years	Mother were illiterate	Married before 18 Years	First Pregnancy before 20 years	Mother were illiterate
160	110	115	75	69	72	47

INTAKE, UTILIZATION AND DIVERSIFY OF FOOD CONSUMPTION

Homestead Food Production

Table No. 6: Nutrition from different sources at present status

# of Survey Members	# of women Practiced by different sources			% of women Practiced by different sources		
	Homestead Gardening	Poultry Rearing	Fish Culture	Homestead Gardening	Poultry Rearing	Fish Culture
160	146	152	34	91	95	21

Women nutrition during pregnancy and lactation

Table No. 7: Ensured Food from different sources

# of Survey Members	# of mother ensured food from different sources		% of mother ensured food from different sources	
	Pregnant Mother	Lactating Mother	Pregnant Mother	Lactating Mother
160	154	149	96	93

Infant and young child feeding (IYCF)

Table No. 8: Complementary Feeding status at Target population

# of Survey Members	# of child CF status			% of child CF status		
	7-8 month child	9-11 month child	12-23 month child	7-8 month child	9-11 month child	12-23 month child
160	159	152	149	99	95	93

Exclusive Breast Feeding Practices

Table No. 9: Exclusive Breastfeeding status of Target Population

# of Survey Members	# of women ensure EBF		% of women ensure EBF	
	Colostrums	Ensured EBF	Colostrums	EBF
160	136	139	85	87

DETERMINANTS OF MALNUTRITION AMONG WOMEN AND CHILDHOODS

Prevention and control of anemia

Table No. 10: Iron Folic acid consumption status of target population

# of Survey Members	# of women consumption of folic acid		% of women consumption of folic acid	
	Pregnant Mother	Lactating Mother	Pregnant Mother	Lactating Mother
160	154	150	94	96

Prevention and control of vitamin A deficiency

Table No. 11: Status of Controlled of vitamin A deficiency in target population

# of Survey Members	# of child & Lactating mothers controlled vitamin A deficiency			% of child & Lactating mothers controlled vitamin A deficiency		
	7-11 months	12-23 months	Lactating Mothers	7-11 months	12-23 months	Lactating Mothers
160	160	160	160	100	100	100

Prevention and control of iodine deficiency

Table No. 12: Status of Iodine consumption of Target Population

# of Survey Members	# of Family consumption from Iodine			% of Family consumption from Iodine		
	Salt	Fish	Other	Salt	Fish	Other
160	139	18	3	87	11	2

Hygiene Practices and other Domestic Behaviors

Table No. 13: Status of Sanitary information of target population

# of Survey Members	# of Family & family members used in sanitary latrine					% of Family & family members used in sanitary latrine				
	Sanitary Latrine Used	Clean Latrine	Knowledge	Children Used	Use water & soap	Sanitary Latrine Used	Clean Latrine	Knowledge	Children Used	Use water & soap
160	160	144	157	155	146	100	90	98	97	91

IV. Discussion

A well-designed social protection system has great potential to improve malnutrition in Monirampur Upazila. The international and domestic evidence presented in this report clearly demonstrates the importance of an integrated approach to tackling malnutrition in this Upazila. Severe wasting may be reduced by simply improving food intake but tackling chronic malnutrition requires integrated social protection programs. Programs that have effectively reduced stunting and wasting have also addressed many of the underlying causes of malnutrition, including improving household food security and the health environment. Effects are greater when efforts are accompanied by infrastructural improvements that enable participants to access safe water and use sanitary latrines. This upazila has made great progress in this area.

Demonstrating the importance of caring practices for women and children, behavior change communication (BCC) and the education of caretakers (male and female) about proper child feeding practices, nutrition and hygiene has also been linked to substantial improvements in child nutrition.

The stark underlying causes of malnutrition in Bangladesh related to undernourished pregnant women, child marriage and stunting at birth highlight the importance of BCC and education as part of an integrated approach for nutrition-sensitive social protection. Specific focus should be given to changing eating practices during pregnancy, to delaying pregnancy and to BCC for the whole family (particularly men).

The pathways approach taken in this report demonstrates the potential of social protection for nutrition, yet issues arose on a number of occasions in relation to limited data. This is a result of ineffective monitoring and evaluation of nutrition-sensitive social protection programs. Well-designed programs with clear indicators are required.

Stunting in Monirampur Upazila is 'bad for everyone' and closely linked to widespread poverty. Therefore, a narrowly targeted poverty program, as is currently proposed in the National Social Protection Strategy, is not going to sufficiently address chronic malnutrition. Policy and decision-makers in Bangladesh should recognize the value of integrating nutrition into social protection. Immediate opportunities are available with the vulnerable group development (VGD) programs. Strengthening the 'hand up, not a hand out' approach can help prevent the intergenerational transmission of poverty, inequality and undernutrition.

V. Conclusion

Bangladesh has a large number of social protection programs that have the potential to be strengthened for nutrition, with little additional expenditure. Gains can be made through changing selection criteria and ensuring that awareness-raising and income-generating activities are as nutrition sensitive as possible.

High-level political commitment and leadership is essential. Nutrition must be integrated across all ministries, not just those responsible for health and nutrition. A useful first step would be to integrate SMART356 nutrition indicators, informed by the common results framework being developed by the UN Food and Agriculture Organization (FAO), the World Food Program and others to inform the Government of Bangladesh's next (7th) Five Year plan. There must be continued development of multi-sector mechanisms to allow civil society to provide effective technical assistance to support the strengthening and expansion of social protection for nutrition.

Increase investment and adopt a universal approach It is recognized that this approach will increase the costs of the social protection system but, given the social and economic value of social protection, this is considered to be an investment in future generations. Nutrition and poverty are widespread – therefore the ultimate aim should be universal coverage. Furthermore, the increased support of the middle class for a universal approach will be essential to maintain adequate financing in the long term.

Elaborate the link between social care services and the National Social Security Strategy at present, a range of social care services are implemented across government under different policies – including some within the current safety nets budget framework. A coherent system for social care services is an essential complement to social protection interventions.

Strengthen the role of NGOs The strategy has limited information on the anticipated role of NGOs in supporting government with implementation. This is a missed opportunity given that the strategy acknowledges that multiple complementary elements are required, beyond income transfers, to achieve significant improvements in many aspects of child welfare (eg, nutrition, child labour, education).

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