



Nutritional Status of Women Living at South-west Coastal Belt of Satkhira Bangladesh

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Abstract

Malnutrition has long been regarded as a widespread public health problem especially in the poorest part of Bangladesh. For determining nutritional status of women living in South-West coastal belt of Bangladesh, in this regard, Shyamnagar Upazilla of Satkhira district was selected. A random questionnaire survey was conducted by pre scheduled structured questionnaire among the 6 villages from Gabura and Munshiganj union of the Shyamnagar Upazilla during November, 2012 to January, 2013. A total of 120 households (preferably women) were randomly selected from the six study villages based on mainly livelihood pattern of the households such as crop production, shrimp culture and Sunderbans depended activities. In the study area, about 54.17% women had BMI of 18.5-24.9 and mean body weight of 49.75 ± 8.36 kg. About 79.16% families had vegetable gardens around their houses and they were gardening mainly for consumption and additional income of the family. Most of the families could not afford to enough eat more egg, fish or meat after Aila occurred because of low availability due to soil salinity. Salinity caused many diseases; skin disease was one of them. About 28% families bought food in credit and 20.14% respondents in Gabura and 31.59% in Munshiganj paid their loan at Pohela Boishakh. They received treatment facilities for their health hazards from village doctors and public health centre during the period of disease occurred. This study concluded that salinity affect the livelihood and nutrition on the community of the coastal belt.

Key words: Bangladesh, Coastal belt, Nutrition, South-west, Women

Introduction

Malnutrition is a complex condition that could be influenced by multiple causes. Women became malnourished due to illness combined with inadequate dietary intake. Household's food insecurity, inadequate knowledge due to lack of education, lack of safe water and sanitation and poor health service could be considered as potential underlying causes that could lead to malnutrition (UNICEF, 1998). Access to safe water remains an extremely important global health issue. More than 2 billion people lived in the dry regions of the world and suffer disproportionately from malnutrition, infant mortality and diseases related to contaminated or insufficient water (WHO, 2000). Climate change was considered as one of the most serious threats to human health, food security, agriculture, fisheries, biodiversity, water, economic activities and other natural resources in coastal region (NCSA, 2007). Islam *et al.*, (2006) discussed the issues of the coastal area had been adversely affected by the combination of natural hazards, man-made hazards and socio-economic activities, such as tropical cyclones and associated storm surge floods, river erosion, sea beach erosion, lack of adequate domestic water supply, arsenic contamination of groundwater, drainage congestion and water logging, saline water intrusion, soil salinity, conflict between shrimp farming and rice cultivation, scarcity of freshwater due to reduction of inflow to the rivers, degradation of ecosystems, deterioration of waterways, risk of sea level rise, remoteness of the area and inadequate infrastructural facility. Pena and Bacallao (2002) stated that poverty and nutrition were closely related, poverty leads to hunger, ill health and malnutrition. Nutritional status depended on food and nonfood items such as education and hygiene, practice. Low food security and food intake was one of the direct consequences of poverty;

Intra-household allocation was the final step in the chain of events that determines food availability to individuals, ultimately influencing the health and nutritional status (Esterik *et al.*, 1997). Cooper (1991) stated that diarrhea spread most readily in environments of poor sanitation, poor socio-economic condition, deficiency in sanitary facilities, and improper disposal of human faces, insufficient supplies of potable water, poor personal hygiene, substandard housing and lack of health education. This study was a modest effect to examine the nutritional status, food consumption pattern of the women living in coastal community of South-West part of Bangladesh.

Materials and Methods

This study was conducted to Munshiganj and Gaburaunion in Shyamnagar Upazila (located between 21°36' and 22°24' north latitudes and between 89°00' and 89°19' east longitudes) of Satkhira district and total of 120 households (preferably women) who had above 18 years old were randomly selected during November, 2012 to January, 2013 from the six study villages by flowing livelihood pattern (Table 1).

Data collection and analysis

Primary data were collected through questionnaire survey. Anthropometric measurement such as height and weight were measured by steel scale and weight machine respectively. The units of height and weight were taken as feet and kilogram. Questionnaire survey found to socio-economic status, food habit, food consumption pattern, and food source and many more. BMI (Body Mass Index) could be estimated by the following equation:

$$BMI = \frac{\text{Bodyweight (kg)}}{\text{Height (m}^2\text{)}}$$

The nutritional status states an category of BMI as below 18.5 was underweight, 18.5–24.9 was normal

weight, 25.0–29.9 was overweight and 30.0 and above was Obese (WHO, 2000). The survey data had been edited and coded manually and processed by MS EXCEL and SPSS version 16. Statistical methods such

as frequency count, percentage, bar diagram, pie chart, box plot, one way ANOVA, cross table etc. were used for analysis.

Table 1. Selection of households from six villages on the basis livelihood pattern

Sl. No.	Union	Village	Livelihood pattern	Sample Size
1	Munshiganj	Harinarar	Crop (rice) dominated area	20
		Munshiganj	Shrimp farming area	20
		Chunkari	Area of Sunderbans depended livelihood pattern	20
2	Gabura	10 No. Sora	Crop (rice) dominated area	20
		Dumuria	Shrimp farming area	20
		Chadnimukha	Area of Sunderbans depended livelihood pattern	20
Total households				120

Results and Discussion

General information

From the following table, it was observed that maximum (33.33%) women were found less than 30 years. Only 4.17 % women were aged above 70 years. Second highest about 28.33% women were in 30-39 years. Table 2 represented that most of the women (35%) had no formal education, about 20% women were five passed. On other side 20% women were

above S.S.C passed. Education influenced access to knowledge, increased opportunities of income, development of nutritional status, and to benefits and resources (WHO/SEARO, 2000). Among the total respondents about 84% women were Muslim and 16% women were Hindu.

Table 2. General information of the women in the study area

Variable	Number of Respondents	Percentage	Mean ± SD
Age distribution (year)			
< 30	40	33.33	
30-39	34	28.33	
40-49	27	22.5	
50-59	14	11.67	35.83 ± 11.00 years
60-69	3	2.5	
> 70	2	1.67	
Total	120	100	
Educational Status			
No formal education	42	35	
Signature	24	20	
Five pass	24	20	
Eight pass	6	5	
Above S.S.C pass	24	20	
Total	120	100	
Religious Status			
Muslim	101	84.17	
Hindu	19	16.83	
Total	120	100	

Monthly income

From the survey result it was found that about 69.2% (n=83) households were earned five to ten thousand TK per month. The mean monthly income of the households was 6987 TK. per month with standard deviation (± 3290.20) (Fig. 1 and 2).

Income respondents Stem-and-Leaf Plot

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Frequency Stem and Leaf
1.00 2. 5
6.00 3. 000005
15.00 4. 000000000000555
32.00 5. 000000000000000000000000000000000005555
13.00 6. 00000000000000
16.00 7. 0000000000000005
10.00 8. 0000000005
9.00 9. 000000005
1.00 10. 0
2.00 11. 00
6.00 12. 000000
9.00 Extremes (>=13000)
Stem width: 1000
Each leaf: 1 case(s)
    
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Fig. 1. Income respondents Stem-and-Leaf Plot

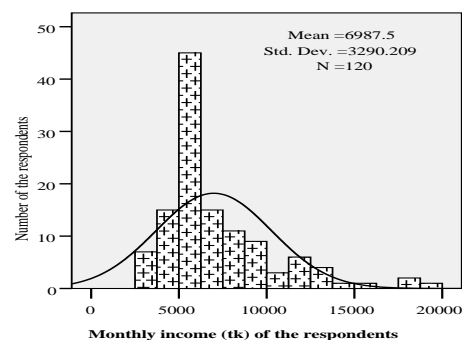


Fig. 2. Histogram of monthly income of households

Nutritional status

Height and weight of women

The minimum and maximum height of the women were 123 years old and 177 years old respectively with mean±SD of height in cm was 142.46 (±10.41). The maximum, minimum and mean weight of the women was 77 kg, 32 kg and 49.75 kg respectively. The Box-plot shows that the weight of the respondents was

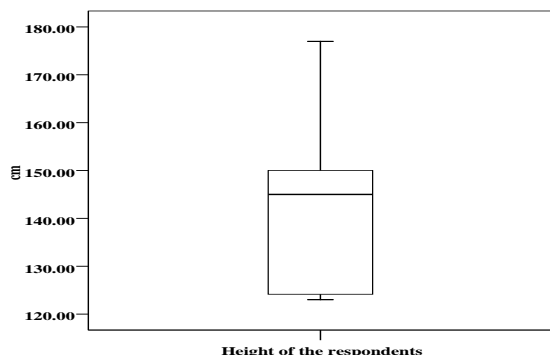


Fig. 3. Boxplot (height) of the women

BMI of women

The mean BMI of women was 23.52 ± 4.37 (SD) and it was indicated that about 12.50 % of women in this area had a body mass index lower than 18.5. About 54.17% women had normal BMI category where 21.67%

BMI Stem-and-Leaf Plot

Frequency	Stem	Leaf
2.00	15.	25
4.00	16.	0589
6.00	17.	226778
6.00	18.	013779
10.00	19.	1223333577
6.00	20.	078899
15.00	21.	023444455677799
10.00	22.	2224457899
13.00	23.	0112256678888
8.00	24.	02258899
11.00	25.	12233444588
4.00	26.	2666
6.00	27.	111555
2.00	28.	44
3.00	29.	007
6.00	30.	033399
4.00	31.	6668
1.00	32.	2
1.00	33.	1
2.00	Extremes	(>=33.7)
Stem width: 1.00000		
Each leaf: 1 case(s)		

Fig. 5. BMI Stem-and-Leaf Plot

positively skewed and median weight of the women were 49.5 kg (Fig. 3 and 4). The average height of these women was 144.45 cm in Gabura and 141.54 cm in Munshiganj, respectively.

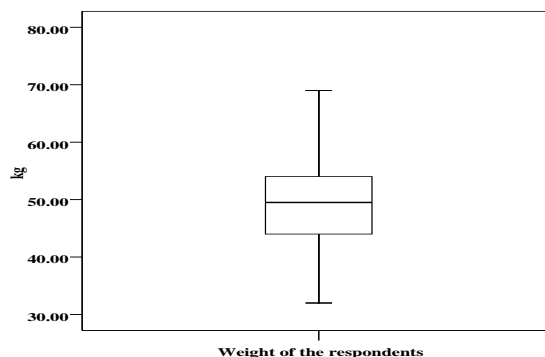


Fig. 4. Box plot (weight) of the women
women were over weighted. The maximum and minimum BMI were 15.06 and 33.67 (Fig. 5 and 6). In Bangladesh nearly half of women were suffering from chronic malnutrition and BMI <18.5(NIPORT, 2009).

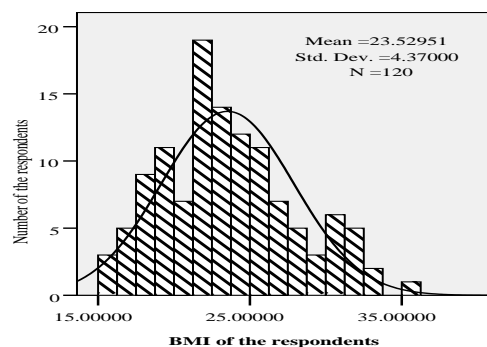


Fig. 6. Histogram of BMI of the women

Relation with BMI and age of the respondents

Table 3 showed one way ANOVA of BMI with the age of the respondents. BMI was categorized into four groups as less than 18.5, 18.5 to 24.9 and 25 to 29.9 and above 30. Group 1 had a mean age of 35.8 (±11.97) years, group 2 had a mean age of 35.59 (±11.55) years and group 3 had a mean age of 37.19 (±10.17) years and 4 had a mean age of 34 (±8.9) years. So, mean ages were not positively related with BMI groups. BMI of group 2 was insignificantly different from group 1 and group 3 was also insignificantly different from groups 4 at the level of 0.05 (F=.26, p=0.854).

Table 3. One way ANOVA between BMI and age of the respondents

BMI category	Age of respondents			Source	Sum of Squares	df	Mean Square	F	Sig.
	N	Mean	SD						
less than 18.5	15	35.8	11.97	Between Groups	96.38	3	32.12	0.26	0.85
18.5 to 24.9	65	35.69	11.55	Within Groups	14322.28	116	123.46		
25 to 29.9	26	37.19	10.76	Total	14418.66	119			
Above 30	14	34	8.19						
Total	120	35.83	11.007						

*df=Degree of freedom

Sources of food

Fig. 7 indicated that most families in Gabura (42.85%) and Munshiganj (52.22%) depended on market for fish while household ponds provided 32.77% and 23.33% at Gabura and Munshiganj, respectively. Market provided the major vegetables in the study area and it was significant in Gabura (41.12%) and Munshiganj (59.40%). Supply of vegetable from homestead garden was 35.45% and 37.62% in Gabura and Munshiganj respectively for food security (Fig. 8). Hundred percent respondents had taken three meals a day. Most of the families did not eat more fish and meat after Aila because of low availability that was indirectly affected

by soil salinity. Availability of food at the household level varied considerably according to seasons, from place to place and from year to year that was related to socioeconomic. About 17% households bought food by cash and 28% respondents bought food by credit and 55% families bought food by both cash and credit (Fig. 9). They paid their due loan (money) weekly, monthly, yearly and in Pohela Boishakh. About 20.14% respondents in Gabura and 31.59% in Munshiganj paid their loan at Pohela Boishakh that means people paid full money in Pohela Boishakh (Fig. 10).

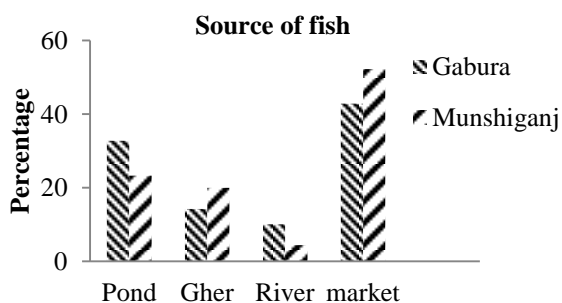


Fig. 7. Sources of fish for the households

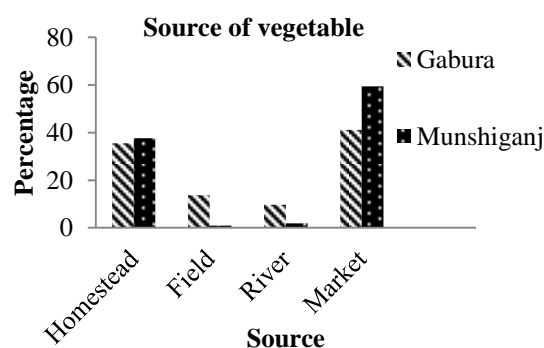


Fig. 8. Source of vegetable for the household

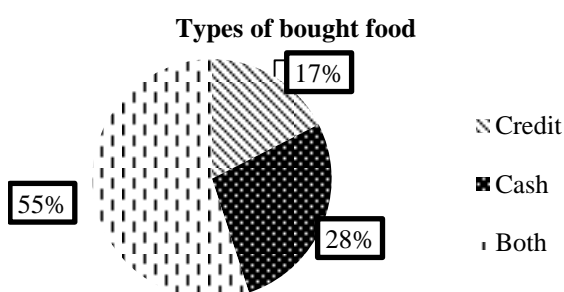


Fig. 9. Types of bought food of the households

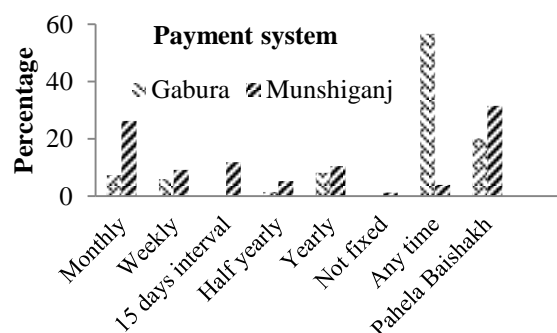


Fig. 10. Paid time to the shopkeeper

Consumption of food

Table 4 represented that the respondents of this locality eat rice every day. They ate rice and vegetables in the morning. They ate vegetable 1-2 day in a week. They ate fish almost every day because fish was available here. Most of the households had own or leased gher for fish and shrimp cultivation. Because of fewer domestic animals, the problem of milk was being acute. They did not eat bread, milk every day but in special occasions

some families took it. Rice, fish and vegetables were the main food in the study area but meat, milk and egg were rare because domestic animals did not survive for their natural food due to indirectly effect of soil salinity. It was observed that most of the households (31.67%) ate rice and fish only at breakfast, other sides, 45.83% ate rice, fish and vegetable at lunch (Table 5).

Table 4. Food consumption pattern of women opinion by percentage in the study area

Food item	Number of women (N=120)					Row percentage
	Daily	Weekly	Monthly	Special occasion	Never	
Rice	100%	0%	0%	0%	0%	100%
Vegetable	79.2%	19.8%	0%	0%	0%	100%
Fish	78.33%	8.33%	8.33%	3.33%	0%	100%
Bread	1.67%	5%	9.17%	36.67%	47.5%	100%
Egg	0.83%	49.17%	35.83%	11.67%	2.5%	100%
Milk	0.83%	0%	6.67%	13.33%	79.17%	100%
Meat	0%	13.33%	71.67%	13.33%	1.67%	100%

Table 5. Food habit pattern of women by percentage in the study area

Food item	Breakfast (%)	Lunch (%)	Supper (%)
Rice + Pulse	20.83	29.17	16.67
Rice + Fish + Vegetable	23.33	45.83	40.00
Stale Rice + Onion	10.00	0.00	1.67
Rice + Fish only	31.67	25.00	34.17
Bread vegetable	14.17	0.00	7.50
Total	100.00	100.00	100.00

Cause of low food intake

It was showed that causes of low in taking food by the respondents were unavailability of food (14%), salinity (13%), high price (13%) and others associated problems (50%), respectively (Fig. 11). Salinity intrusion due to reduction of freshwater flow from upstream, salinisation of groundwater and fluctuation of soil salinity were major concern of Bangladesh. Tidal surge bring in saline water inside the polders in the coastal area. Due to drainage congestion, the area remained waterlogged, increasing the salinity and its impact on vegetation, plants and overall agriculture (Abedin, 2010).

Food scarcity

From the field survey, it was observed that food insecurity was occurred in the month of Ashin, Kartik and Agrahayan. Fig. 12 indicated the causes of food insecurity by the respondents such as soil salinity (20%), lack of storage of foods (32%), market is so far away (12%), no homestead fruits and vegetables (5%) and lack of open space for cultivation (4%), respectively. About 17% household said that they were not found enough fish in river and increased price was the another cause.

Disease of women

Fig. 13 focused that at present time, 33.81% respondents were affected by diarrhea, dysentery (20.50%), skin disease (36%), warms (2%) and Jandis (3%) respectively. Kangalawe (2012) observed in coastal region that diarrheal disease and respiratory infection were the most frequently climate-related diseases among the community.

Treatment methods of disease

From the survey result, it was found that about 59.01% respondents went to village doctor for their health treatment; another side 8.19% people went to clinic (Govt. + NGO). About 1.63 percent respondents did not receive any treatment (Fig. 14). Hygiene behavior and the prevention of water and sanitation-related disease were influenced by socio-economic factors, such as proper housing, nutrition, clothing and education. Better nutrition provided a barrier against disease transmission. Education may help to develop hygienic behaviors (Ahmed and Rahman, 2000). The government institutions included one Upazila Health Complex and four family Planning center in the study area.

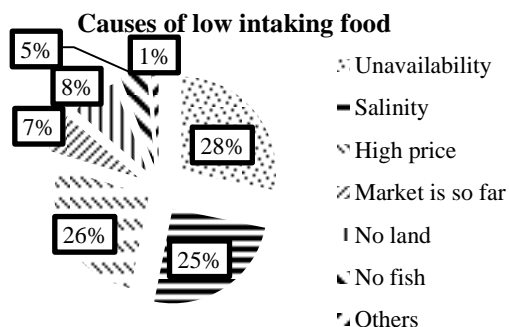


Fig. 11. Causes of low in taking food of women

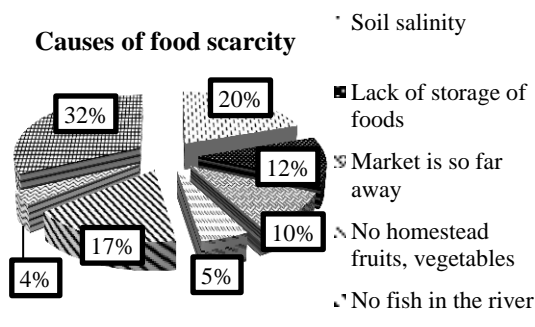


Fig. 12. food scarcity of the household

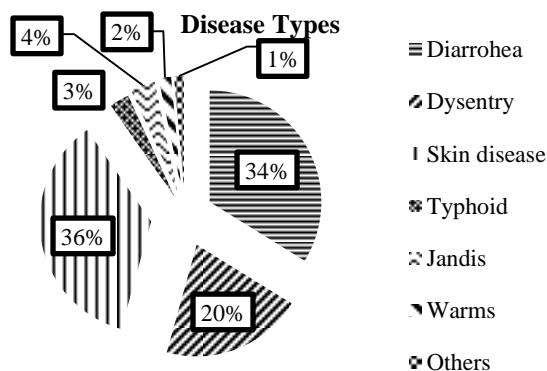


Fig. 13. Diseases of the women

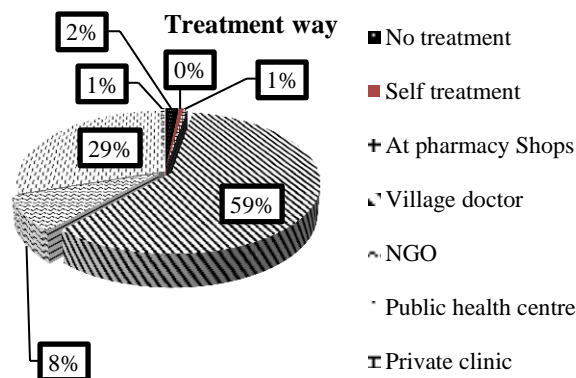


Fig. 14. Treatment way of the women

Conclusions

Salinity was the principal source of food insecurity in the coastal region of Bangladesh indirectly affecting the nutritional status of the coastal people. The mean height of the respondents was 142.46 cm and about 54.17% women had BMI 18.5-24.9 that means normal BMI category. It was evident that malnutrition status which decreases with increasing educational status among the women in the study area. About 79.16% families had vegetable gardens around their houses and they were gardening for feeding of the family and selling for additional money. They paid their due loan (money) in Pohela Boishakh Skin disease (36%) and diarrhea was most of the frequently disease in the study area. About

59.01% respondents went to village doctor for their health treatment but 1.63 percent respondents did not receive any treatment. People ate less amount of food than before because of unavailability of foods due to salinity problem. Most of the women were malnourished due to appropriate food availability. They were spending a lot of money for their health treatment of various diseases. Findings of this study will help the policy makers, local government officials and community leaders to combat existing and future threat of climatic and human induced impacts. So it will need more time to recover the associated problems of Aila in the study area.

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