

Food Habit and Nutritional Status of Rural Women in Bangladesh

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Abstract The study aims to understand the food habit and dietary nutritional status of rural women in Bangladesh. The research is based on both primary and secondary data. Primary data collected from a structured questionnaire survey through interview and observation when some secondary data also collected from different sources. 384 respondents have been interviewed from nine villages of *Ishwardi*, Pabna; a North-Western district of Bangladesh. According to primary survey, 90% of our respondents are literate and 43% households earn less than monthly 16 thousand local currencies equivalent to around 200 USD. Every four out of five women are housewife or work in home and rest of them work outside. Rice is the staple food where 38.06% respondents took rice three times per day and 54.72% women have rice twice. Around 64% respondents took fruits daily but around 80% respondents have chicken on weekly basis. Even, 17.9% people took chicken monthly basis. Less than 2% women drink milk daily and 50.3% women drink on weekly basis. 50.52% respondents have normal body mass index (BMI) condition. The women from Hindu religious background are vegetarian in general. So they don't consume animal beef, meat or chicken. 63.3% women ate egg once in a week and 3.67% consume it daily. Though the overall dietary condition of women is improving in developing country like Bangladesh, but it is still not sufficient for many.

Keywords: food habit, nutritional status, rural women, Bangladesh

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1. Introduction

Rural women in Bangladesh having dietary problem along with nutritional deficiency due to socio-economic conditions. Education or nutritional awareness is crucial factor determining dietary status. Studies have found that, nutritional knowledge differs with various socio-economic status [1,2,3].

Besides, social deprivation, economic status is also responsible for determining dietary status. In Bangladesh, 26% people live below national poverty line of USD \$2 per day where half of them are women [4]. Despite their significant, yet largely unappreciated economic contribution towards society, they had to face various social deprivations [5]. Improper diet is one of the essential issue.

In developing countries, a large portion of income goes only for food supply only. Dietary deficiencies and imbalance in dietary choices caused problems [6]. Studies repeatedly find that nutritional food intakes and dietary patterns of low socio economics status (SES) people possess high risk of dietary diseases and overall health inequalities [7].

Dietary problems may be primarily quantitative in the most underprivileged areas. Such as, rural areas during seasonal food shortages or urban areas under acute poverty. Rural people have shorter life expectancies, higher rates of disability, experience more accidents, poisonings and incidents of violence than their urban counterparts [8]. As a result, women are disproportionately affected by their lack of access to a range of health care services close to home. Not only they tend to be the main users of health care services but also they are "traditionally responsible for maintaining life at home if a family member needs to travel elsewhere for care" [8].

Recently, increasing number of women are participating in the labor market. But still, women are at large responsible for household food preparation [9] as most of the women are housewife in the rural areas. However, even in these conditions, problems of dietary diversity are crucial and essential to measure the dietary qualities [10].

It is also important to study the association between proxies of overall dietary qualities and nutritional outcomes. In developing countries, this has been emphasized subject to many studies on children [11].

The present study is an effort to determine the food habit and nutritional status of the rural women in Bangladesh

concentrating the environmental and Socio-economic status of the rural women by the interpretation of a descriptive study related with food habit and nutritional status of the rural women.

2. Materials and Methods

The study is mainly based on primary data and adopt mixed approach with qualitative and quantitative information. We also took help from some secondary sources. The primary data were collected from a structured questionnaire, interviews, focus group discussion and observations. The secondary data were collected from different sources.

Sample size from this unknown population, a statistical formula given by Cochran (1963) has been used.

$$n = \frac{Z^2 pq}{e^2}$$

where, n= sample size

Z= confidence level at $(1-\alpha)$,

P=estimated population proportion (0.5, this maximizes the sample size),

q= $(1-p)$,

e= error limit α ,

$$\text{Therefore, } n = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2} = 384.$$

So, 384 sample has been used as per the formula suggest.

The questionnaire survey has been done with purposive sampling from nine villages of *Ishwardi* sub-district under Pabna District. Most of the people of Pabna live in the rural areas. *Ishwardi* sub-district has 250.89 sq. km. of area and 3,13,932 populations. The survey works took over a month to complete.

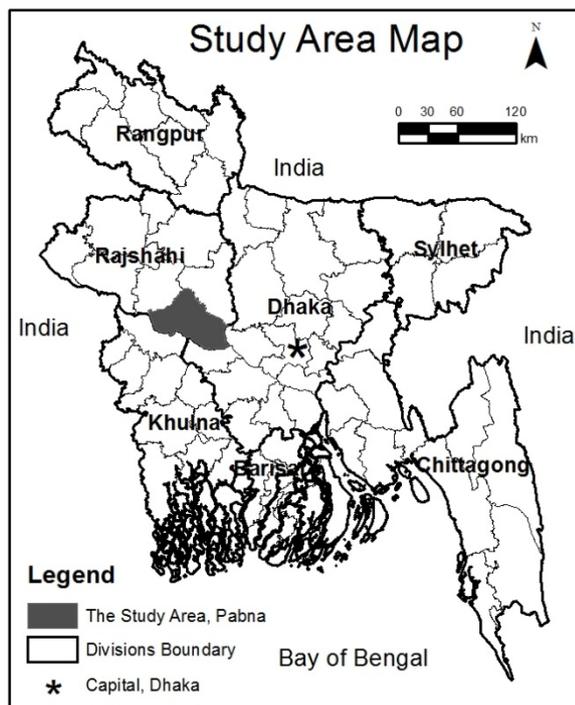


Figure 1. Location of the Study Area

Collecting dietary information was a tricky task. To deal with the problem we choose to make questionnaire survey. We also and try to keep dietary questions answer numeric data as much as possible as they are easy to analyze and correlate. All our questionnaire survey done via personal interview.

To verify the collected data and any vagueness we conduct focused group data (FGD) with female participants. We use observation as a technique to collect justify socio economic data. We also observe what sort of food they consuming or cooking during questionnaire interview.

Arranging variety of food item in a single questionnaire structure was very challenging, because of difference in food habit. Some food items are consuming daily; some are consumed maybe only once in a week. So the arrangement of the questionnaire was complicated. We use weekly count as for this problem. This is how we solve the problem. But still the food items not even consumed in weekly basis are remain a problem. So we use a qualitative approach to collect those sort of data. Food habit on chicken, milk and fruits are collected in this way.

The questionnaire also cover a range of area form socioeconomic status to environmental perspectives etc. This questionnaire has separate segment on dietary information and health status.

Food items those are rich in animal proteins are mention as rich food in our local culture. Such as, some local food items *biryani*, *teheri* etc. are made with special rice and red meat. We also use the term in this paper.

Body mass index (BMI) was calculated by dividing weight expressed in kilograms by square of height in meters.

$$BMI = \frac{\text{Body weight in kg}}{(\text{Height in metre})^2}$$

The collected data was processed and analyzed by SPSS software and furnished in MS Excel for further presentation. To process questionnaire data, first we input all the data through necessary coding with additional type of the data. Because not all the data were numeric. For correlation between BMI and income status we use Pearson's co-relation techniques two tails of significance.

The study purpose and objectives the study were clearly explained to the respondents before data collection. We also informed them, that their participation were not obligatory and they can withdraw their answer and consent at any time. Only those who ready to participate willingly were interviewed.

3. Result and Discussion

3.1. Socio-Economic Condition of Rural Women in the Study Area

Diverse socio-economic, cultural, traditional and demographic factors affect dietary consumption pattern. In our study are, large number of people were Muslim and only 14.3% people were Hindu's. These religious diversity has a great influence on dietary preferences. Such as in almost every cases, Hindu's are vegetarian.

Table 1. Socio-economic Condition of Rural Women

Variables		Frequency	Percent (%)
Religion	Muslim	329	85.7
	Hindu	55	14.3
Education	No Education	34	8.9
	Non-formal Education	15	3.9
	Primary	53	13.8
	Class VI to X	105	27.3
	S.S.C (Secondary School Certificate)	72	18.8
	H.S.C (Higher Secondary Certificate)	48	12.5
	Degree	31	8.1
	Others	26	6.8
Occupation	Service holder	18	4.7
	Day labor	34	8.9
	Small business	3	.8
	Farmer	1	.3
	Garments workers	8	2.1
	Housewife	303	78.9
	Maid	10	2.6
	Others	7	1.8
Income (in BDT)	0 – 8000	22	5.9
	8001 – 16000	138	36.9
	16001 – 24000	52	13.9
	24001+	162	43.3

Source: Primary data (questionnaire survey).

Table 1 shows, day laboring is the 2nd largest participatory occupation among rural women as their education level is still not so high. We found only 8.1% of women are in higher studies. On the other hand, less than 5% women are service holder.

Most of the people are literate but participation in higher education is very low, only 8.1%. Education also determine dietary patterns. Lack of education force women not to go outside for work. As we see around 4 out of 5 women are housewife or homemaker. They have a significant role in dietary preferences as traditionally women are responsible to prepare food for family member.

3.2. Food Habit

Dietary patterns have predominantly changed in composition, with traditional high-carbohydrate diets

being replaced by diets of higher in fat.

Compared with those of low socioeconomic status (SES), individuals of high SES tend to follow a diet that is more in line with dietary guidelines for health. For example, lower SES individuals are more likely to consume diets high in fat, low in micronutrient density and to have lower intakes of fruit and vegetables [12].

Past research indicates, when people eat alone, levels of food consumption tend to be lower than when people eat in a group setting [13]. Table 3 shows that most of the women consume food with their family member.

Table 2 below shows the detail food consumption patterns of the women in the study area. The table prepared by measuring weekly and daily food consumption data. Rice is the staple food for Bangladesh. So most of the people had rice on daily basis. Besides, 42.26% of respondents took local bread at least once a day.

Table 2. Consumption of Difference Food Items as Per Week (%) in the Rural Women

Food items	Four times a day	Thrice a day	Twice a day	Once a Day	6 times per week	5 times per week	4 times per week	3 times per week	2 times per week	Once per week
Rice	0.28	37.80	54.70	5.83			0.56	0.83		
Hotchpotch			2.16	0.31				0.31	2.78	92.00
Biriany/Tehari								0.76	4.17	87.90
Ruti			0.56	41.70			4.48	10.90	13.20	27.70
Bread				3.04			6.69	52.90	21.00	15.80
Parota							0.38	17.00	21.90	54.70
Nun									8.11	29.70
Dal				2.54		0.85	11.60	57.30	25.40	2.26
Egg				3.67		0.85	1.98	10.20	18.90	63.30
Fish					3.94	3.94	27.00	45.40	17.20	2.54
Beef					0.66		9.87	11.20	21.70	52.00
Biscuit	17.20		0.60	70.40	0.60	1.21	2.11	4.53	1.51	1.21
Cake				0.75		1.12	3.36	40.70	29.10	22.80

Source: Primary data (questionnaire survey).

Biscuit is also popular among the respondent as 88.2% respondents took biscuit daily. *Dal* and egg (locally made soup curry) are the common curry for the study people. Hotchpotch is another common and popular dish for the respondents. 92% of respondent have at least once in a week.

Rich food is consumed in weakly basis. Some popular food items (*Biriany, Tehari*) is consumed weekly basis. Besides, Eggs are the most common protein for the study people. Fish and beef 2nd and 3rd popular protein. But Fish is cheaper than beef and available. So fish consumption exceeds beef consumption.

People are shifting form rice based diet to wheat based diet slowly. There is more wheat based food than rice based food items we found during our study.

Biriany made with rice mixed with meat, specially beef. *Tehari* is also similar food but use smaller pieces of meat. *Ruti* is the local bread made with wheat and fried in dry, oil less condition where *Parota* use extra oil in making and frying. Nun is another kind of soft bread, also made with wheat. *Dal* is very popular local soup made with pulses.

3.3. Food Consumption and Shopping Habit

Women are usually more consistent with dietary guidelines than men and they are more likely to report their purchasing, preparation, cooking and consumption of healthier food [14]. There are some other studies done on pregnant women from lower SES suffering from dietary deficiency [15,16].

Table 3 shows, when a women used to take her meal. Almost all the respondents usually have their meal with other family members, except 3.2% respondent took it last of all and only 1.5% took it first of all. Especially she who cooks are one who supposed to eat last of all in local culture. Even, if it is necessary to sit more than once for meal, almost in every case the group of women used to sit later. Earlier this cultural practice was dominant and common in practice. But, now people likes to eat together.

The Table 4 shows the shopper information. It shows, almost all the time husband of the respondents were involved in shopping for their family.

Rice was the main food of the study area. Most of the people Consumed rice twice or thrice a daily. Fruits were popular among the respondents. Most of the respondents BMI was normal.

People who had more income were more likely to have better BMI. Respondents with different BMI condition were not suffering from any diseases and almost all the respondents depended on MBBS (Bachelor of Medicine and Bachelor of Surgery) degree holder doctor for medical advice.

3.4. Rich Food Consumption of Rural Women

Primarily because of poor economic condition rural women are not getting enough protein in their diets. Chicken curry, Roast, Kabab and milk are some of the food items rich in animal protein. Information on these food items are collected as qualitative form.

Table 5 shows the consumption of chicken, roast, kabab, milk, fruits etc. The 79.6% of respondents said, they consume chicken, roast or *kabab* on weekly basis. 50.3% respondents said they drank milk or food prepared from

milk on weekly basis. 34.9% respondent said they had milk monthly basis. 64.4% of respondents consume fruits daily. 24% said they had fruits occasionally. Fruits were popular among the respondents.

Within families, women's own food intakes may be negatively influenced as they often sacrifice their own food preferences for those of other family members, particularly for their children and men [17,18].

3.5. Body Mass Index (BMI) and Income Relation

Around half of the women in our study were under normal BMI and only 8.59% are from underweight. Only 9 respondents we found obese. 38.54% women are overweight. Overweight is too a problem for the women in the study area.

The Table 6 shows that only 8.59% of respondents were in under nutrition category. 89.06% respondents had BMI in between 18 to 28. Most of the respondents BMI was normal. 26% of Bangladeshi people live below the national poverty line of US \$2 per day [4].

Cost is a strong influence on food purchases and given that persons of low SES often have more limited budgets, healthier foods such as fruit and vegetables may be overlooked in favor of less healthy, more energy-dense options [19].

Table 3. Eating Pattern in the Rural Women

Variables	Percent (%)
Last of all	3.2
First of all	1.5
With family member	95.3

Source: Primary data (questionnaire survey).

Table 4. Food Shopping Status of the Rural Women

Variables	Percent (%)
Husband	95.2
Father	3.5
Own self	1.3

Source: Primary data (questionnaire survey).

Table 5. Fruits and Rich Food Items Consumption in the Rural Women

Frequency	Chicken/Roast/Kabab (%)	Milk (%)	Fruits (%)
Daily	0.8	1.4	64.4
Weekly	79.6	50.3	2.2
Monthly	17.9	34.9	3.8
Occasionally	1.4	11.6	24.0
Seldom	0.3	1.7	5.4

Source: Primary data (questionnaire survey).

Table 6. BMI of the Rural Women

BMI	Category	Frequency	Percent (%)
13 to 18	Underweight	33	8.59
18 to 23	Normal	194	50.52
23 to 28	Overweight	148	38.54
28 to above	Obese	9	2.34

Source: Primary data (questionnaire survey).

Table 7. Correlation Between Body Mass Index (BMI) and Income of the Rural Women

Variables		Total income	BMI
Total income	Pearson Correlation	1	.101*
	Sig. (2-tailed)		.050
BMI	Pearson Correlation	.101*	1
	Sig. (2-tailed)	.050	

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Correlation based on primary data.

The **Table 7** above shown that, body mass index (BMI) had statistically significant low positive correlation with income at 0.05 level which mean with more income people were more likely to have better BMI. Though it's a low correlation but still significant. Many other studies have found similar results.

The **Table 8** shows the correlation of income and food items. All these food items show positive correlation with more income except rice and hotchpotch. These correlation data show that when income increase people like to have other food than rice and hotchpotch, such as, bread, *Parota*, fish, *biriany* etc. Number of major meals also had low positive correlation with income. Similar results found in other studies too [20,21].

3.6. Body Mass Index (BMI) and Diseases

People with low social economic status intake insufficient diet that increase the risk of dietary diseases and overall health inequalities [7].

Table 9 shows that those who were suffering, congenital heart defect was higher in 18 to 23 BMI group. Most of the respondent's despite of their BMI condition were not suffering from any diseases.

3.7. Education and Health Seeking Behavior

Dietary status is relevant for improving our understanding of the role of nutrition in preventing certain diseases, for identifying causes of public health problems and

cost-effective interventions aimed at reducing potential health risks. It is increasingly recognized that choices in relation to food and eating behaviors are not solely individual matters, unconstrained by social and environmental influences. The general social circumstances of peoples' lives are likely to influence their eating behaviors [22].

Table 10 shows that almost all the respondents relied on MBBS doctor (who have a MBBS degree) despite any exception. Besides this, some respondents go to homeopathy and indigenous physician too. Very few people go to quack doctors. This is a because of the growing awareness.

4. Conclusion

This study provided a wide range of information on the food habit, nutritional status and disease pattern of the rural women in Bangladesh. This study had made attempt to find out the real picture of the rural women.

We collected data from only female respondents because of the research demand. Around 91% of them were literate and 78.91% of them were housewife in occupations. 87.2% of the respondent had less than 30000 BDT of family income.

Around 64% respondents took fruits regularly. Besides this, around 80% respondents took chicken meat weekly and 17.9% people took it on monthly basis. In case of milk, only below 2% people drank milk daily. Most of the respondent in the study area took rice twice 54.72% and thrice 38.06%.per day. That's mean that most of the people preferred rice rather than other food. Among the respondent they took egg once per week which was around 63%.

In case of health, the BMI condition is so good. Surprisingly, around 50% had good BMI condition. Most of the respondents like to eat with their family member and they also prefer to visit MBBS doctor any type of medical problem.

Table 8. Correlation among Income, Food Items and Number of Major Meal of the Rural Women

Variables		Total income	Major meal per day	Rice per week	Bread per week	Parota per week	Fish per week	Hotchpotch per week	Biriany/Tehari per week
Total income	Pearson Correlation	1	.170**	-.253**	.121*	.132*	.138*	-.114*	.245**
	Sig. (2-tailed)		.001	.000	.024	.033	.010	.043	.000
Major meal per day	Pearson Correlation	.170**	1	.105*	.044	-.089	-.016	-.119*	-.090
	Sig. (2-tailed)	.001		.046	.409	.148	.764	.033	.147
Rice per week	Pearson Correlation	-.253**	.105*	1	-.457**	-.067	-.081	-.016	-.344**
	Sig. (2-tailed)	.000	.046		.000	.276	.129	.781	.000
Bread per week	Pearson Correlation	.121*	.044	-.457**	1	.033	.081	-.165**	.017
	Sig. (2-tailed)	.024	.409	.000		.599	.128	.003	.783
Parota per week	Pearson Correlation	.132*	-.089	-.067	.033	1	.219**	.189**	.237**
	Sig. (2-tailed)	.033	.148	.276	.599		.000	.003	.000
Fish per week	Pearson Correlation	.138*	-.016	-.081	.081	.219**	1	-.013	.273**
	Sig. (2-tailed)	.010	.764	.129	.128	.000		.812	.000
Hotchpotch per week	Pearson Correlation	-.114*	-.119*	-.016	-.165**	.189**	-.013	1	.585**
	Sig. (2-tailed)	.043	.033	.781	.003	.003	.812		.000
Biriany / Tehari per week	Pearson Correlation	.245**	-.090	-.344**	.017	.237**	.273**	.585**	1
	Sig. (2-tailed)	.000	.147	.000	.783	.000	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 9. Body Mass Index (BMI) Relation Concern Suffering Diseases of the Rural Women

Variables	Suffering disease					
	No	Hypertension	Diabetes mellitus	Vision defect	Cong. heart defect	Others
13 to 18	12	0	0	1	0	0
18 to 23	73	1	0	0	7	1
23 to 28	56	0	5	1	1	1
28 to above	3	0	0	0	0	0

Source: Primary data (questionnaire survey).

Table 10. Relation between Education and Health Seeking Behavior of the Rural Women

Variables	First contacted during diseases				
	No	MBBS Doctor	Homeopathy	Indigenous Physician	Quack doctor
No Education	1	16	1	1	0
Non-Formal Education	0	3	0	1	0
Primary	1	16	1	1	0
Class VI to X	0	42	5	1	1
S.S.C.	1	34	1	3	0
H.S.C.	0	27	2	1	0
Degree	0	21	1	1	0
Others	0	17	0	1	0
Total	3	176	11	10	1

Source: Primary data (questionnaire survey).

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