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Dietary Diversity of Pregnant Women of Rajshahi District in Bangladesh: A Cross-Sectional Study

Eyad Ahmed[1], Fardib Mahbub[1], Israt Jahan[2], Shimul Islam[1], Fatema-Tuj-Zohra[1], Shireen Nigar[1*]

[1]Department of Nutrition and Food Technology, Jashore University of Science and Technology, Bangladesh

[2]Department of Public Health Nutrition, Primeasia University, Banani, Dhaka, Bangladesh

[*]**Corresponding author:** Shireen Nigar, Department of Nutrition and Food Technology, Jashore University of Science and Technology, Jashore-7408, Bangladesh. Tel: +880-1873029043; Email: shireen_nigar@yahoo.com

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Abstract

Purpose: The purpose of the current study was to explore the dietary diversity of pregnant women of Rajshahi district in Bangladesh.

Methodology: A cross-sectional study was conducted among 150 pregnant women who were randomly selected from four different sub-districts of Rajshahi district: Godagari, Rajshahi Sadar, Shardah and Tanor. Dietary diversity was measured by Dietary Diversity Score (DDS). All statistical analysis was conducted using IBM SPSS 20.0.

Findings: The mean age of the respondents was 29±3 years. The mean Dietary Diversity Score (DDS) of the respondents was found 5.5±0.88, minimum and maximum DDS were 4 and 7, respectively. The study exposed that majority of the respondents (about 91%) had a medium dietary diversity and about 9% had dietary diversity of high level. Low dietary diversity was not found among the pregnant women of the study area. About all of the respondents had consumed cereals during the previous twenty-four hour of the dietary survey, about 97% had consumed vitamin A rich fruits and vegetables, about 91% had eaten other fruits and vegetables and meat, fish. The percent consumption of milk and milk products among the pregnant women were about 78% and about 35% had consumed legumes, nuts, seeds and dark green leafy vegetables. Organ meat consumption was negligible (only 1%) among the respondents and egg consumption was found to be only 21%.

Conclusion: Dietary pattern of pregnant women of Rajshahi district has been found to be diversified enough reflecting probable adequacy of micronutrients.

Keywords: Dietary pattern; Diet quality; Dietary diversity; Pregnant women

Introduction

Pregnancy is a vital phase of human life cycle. Nutritional requirements increase during pregnancy due to the growth of the fetus along with the progression of maternal tissues which upkeep the fetal growth. Maternal diet plays the role of nutrient supplier for these fast growth and development [1]. A monotonous diet hinders the supply of multiple micronutrients leading to undernourishment and micronutrient deficits [2]. A diversified diet hence increases the supply of nutrients for healthy growth and development.

The dietary diversity can be assessed at individual and household level. Household Dietary Diversity (HDD) is a proxy measure for household food access, whereas Individual Dietary Diversity (IDD) mirrors nutrient adequacy of the diet [3]. Individual dietary diversity score has been validated by several studies [4-6], for its viability to function as an indicator of nutrient (macro and micro) adequacy of diet [3,7,8]. It has also been seen that pregnant women diet quality is associated with weight gain during pregnancy [9] and pregnancy outcome [10]. The current study aimed to explore the dietary diversity of pregnant women of Rajshahi district in Bangladesh. There have been very few studies conducted on dietary diversity of pregnant women in Bangladesh, and no study steered on the investigation of the dietary diversity of Rajshahi district women.

Materials and Methods

Description of the Study Area, Study Design and Study Period: The study was conducted in four sub-districts of Rajshahi district: Godagari, Rajshahi Sadar, Shardah and Tanor. It was a cross-sectional study which was held during October, 2018 to January, 2019.

Sampling Technique and Sample Size: 150 pregnant women were selected by random sampling method. Only adult pregnant women were selected for the study excluding the adolescent pregnant mothers. Besides, mothers who reported to have severe diseases such as HIV, Tuberculosis were excluded from the study. Written consent form was used to obtain their consent prior to start the interview.

Data Collection: A structured questionnaire was used comprising of socio-demographic and socio-economic data. Dietary diversity was calculated by using the 24- hours dietary diversity questionnaire by FAO1. The questionnaire was consisted of sixteen food groups. To calculate the individual dietary diversity, an extra question was used to collect information regarding the foods (meals/ snacks) taken away from home. Any special day (festive, fasting, holidays) was avoided for collecting the dietary data since these do not represent usual food intake. Nine food groups were constructed from the sixteen food groups to calculate dietary diversity of the pregnant women: starchy staples (cereals, white roots and tubers); dark green leafy vegetables; vitamin A rich fruits and vegetables (vitamin A rich vegetable, vitamin A rich fruits); other fruits and vegetables (other fruits, other vegetables); organ meat; meat and fish; eggs; legumes, nuts and seeds; milk and milk products.

Data Analysis: All statistical analysis was conducted with IBM SPSS Statistics version 20.0. The dietary diversity data was analyzed from different perspectives to explore the actual diversification of the diet of the pregnant women of the study area.

Results

Socio-demographic characteristics: Table 1 shows the socio-demographic characteristics of the respondents. About 74% of the respondents were of rural settings and only about 26% of the respondents were urban pregnant women. Mean age of the respondents was 29±3 years. The respondents were divided in three equal groups for convenience of further analysis. About 83% of the respondents were on their second trimester and about 15% of respondents were on their third trimester of pregnancy. Only about 8% were found to be married at an adolescent period, about 63% of respondents got married between 20-23 years of age and 29% got married at the age of 24 years or above. About 62% of the households had family size of four members, about 29% of households had a family size of five or greater than five. About 72% of the respondents were in their second pregnancy or above and about 28% respondents were found to be pregnant for the first time.

Socio-demographic characteristics	Frequency	Percent
Area		
Rural	39	26
Urban	111	74
Age (in years)		
23-28	54	36.1
29-31	56	37.4
≥32	40	26.5
Trimester		
First Trimester	3	2
Second Trimester	125	83.3
Third Trimester	22	14.7
Age at marriage (in years)		
18-19	11	8
20-23	105	63.3
≥24	34	28.7
Household size		
3	14	9.3
4	93	62
≥5	41	28.7
Number of pregnancy		
1	42	28
≥2	107	72

Table 1: Socio-demographic characteristics of the respondents.

Socio-economic and educational status: Table 2 illustrates the socio-economic and educational status of the respondents. About 50% of the respondents had obtained Honors degree, about 35% completed their higher secondary level, about 14% had completed SSC and only about 1% had obtained Masters degree. On the other hand, about 58% of the husbands had completed Honors, about 18% had completed HSC and about 24% had obtained Masters degree. No husbands were found as only SSC completed. All of the respondents was found to be housewife. About 80% of the husbands were wage earner, about 19%

Socio-economic characteristics	Frequency	Percent
Educational status of respondents		
SSC	21	14
HSC	53	35.3
Hons.	75	50
Masters	1	0.7
Educational status of respondents' husband		
HSC	27	18
Hons.	87	58
Masters	36	24

Occupation of respondents' husband		
Business	1	0.7
Wage earner	119	79.3
Agriculture	28	18.7
Others	2	1.3
Monthly household income (in BDT)		
14000-25000	24	16
25001-30000	64	42.7
>30000	62	41.3
Earning member		
One	108	72
Two	42	28
Household Ownership		
Own House	105	70
Rent	45	30
N.B: SSC= Secondary School Certificate, HSC= Higher Secondary Certificate, Hons= Honors, BDT= Bangladeshi taka (Bangladeshi currency).		

Table 2: Socio-economic and educational status of the respondents.

were related to agricultural work. It can be seen from the table above that only about 17% households had monthly household income of 14,000 to 25,000 taka. Most of the families had an income greater than twenty-five thousand takas and only 16% of the families had monthly household income of fourteen thousand to twenty-five thousand taka. About 72% of the households have only one earning member and about 28% had two earning members in their family. About 70% of the respondents said that they had their own house and about 30% of the respondents replied that they lived in a rented house.

Dietary Diversity of pregnant women: The mean Dietary Diversity Score (DDS) of the respondents was found 5.5±0.88, minimum and maximum DDS were 4 and 7, respectively. Figure 1 demonstrates that all of the respondents had eaten cereals during the previous day, about 97% of the respondents had eaten vitamin A rich fruits and vegetables, about 35% had eaten dark green leafy vegetables, about 91% said that they had eaten other fruits and vegetables. Only 1% replied that they had eaten organ meat, about 91% of the respondents said that they had eaten meat and fish during the previous day and about 21% of the pregnant women replied that they had eaten eggs. About 35% of the respondents answered that they had eaten pluses, nuts, seeds and about 78% of the respondents said that they had milk or milk products during the previous day of the survey.

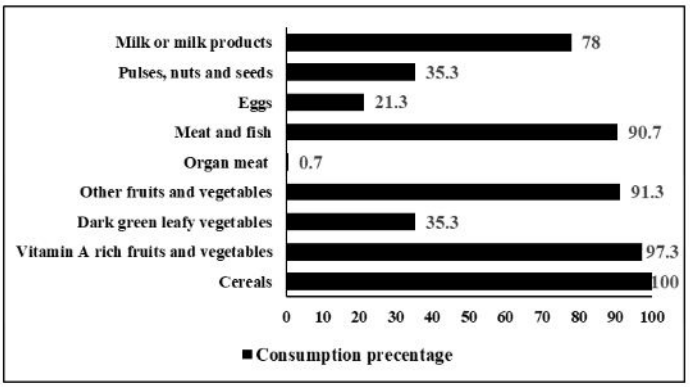

Figure 1: Consumption percentage of nine food groups of the respondents.

Figure 2 below shows the percentage of respondents with medium and high dietary diversity. No respondents were found with low dietary diversity (DDS first tertile) in the study area. About 91% of the respondents were found to have medium dietary diversity (DDS second tertile) and about 9% had high dietary diversity (DDS third tertile).

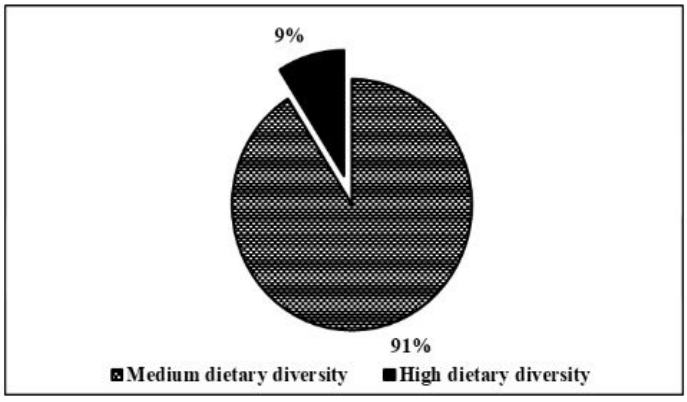

Figure 2: Dietary diversity of the respondents.

Assessing dietary pattern: By assessing the overall dietary pattern of the respondents by their residential area type (urban and rural), it may be observed from the following table 3 that the foods consumed by ≥50% of the pregnant women considered to highlight the dietary pattern of the respondents in urban and rural area. The two food groups- DGLV and pulses were not found to be highly consumed in the urban respondents. About 54% of the rural respondents were found to eat DGLV and about 67% of the respondents were found to have pulses, whereas the percentages

were negligible among the urban counterparts.

Dietary pattern in urban area (foods consumed by ≥50% of the pregnant women)	Dietary pattern in rural area (foods consumed by ≥50% of the pregnant women)
Starchy staples (100%)	Starchy staples (100%)
Vitamin A rich vegetables (91%)	Vitamin A rich vegetables (100%)
Other vegetables (89%)	Other vegetables (97%)
Vitamin A rich fruits (91%)	Vitamin A rich fruits (94%)
Beef/ mutton/ poultry (70%)	Dark green leafy vegetables (54%)
Milk or milk products (89%)	Pulses (67%)
Spices (100%)	Beef/ mutton/ poultry (64%)
	Milk or milk products (64%)
	Spices (100%)

Table 3: Dietary pattern of the respondents in urban and rural area.

Table 4 depicts the food groups consumed by ≥50% of respondents by medium and high dietary diversity in Rajshahi District. In medium dietary diversity group, the major food groups which had been eaten by ≥50% of respondents were Cereals, Vitamin A rich fruits and vegetables, Other fruits and vegetables, Meat (poultry, beef or mutton) / fish, Milk or milk products. On the other hand, respondents with high dietary diversity were found to eat Cereals, Vitamin A rich fruits and vegetables, Other fruits and vegetables, Meat (poultry, beef or mutton) / fish, Milk or milk products, Pulses and Eggs. The two groups pulses and eggs were not considered in the medium dietary diversity group as major food groups since their consumption percentages were 31% and 17% respectively.

Medium Dietary Diversity (4 and 5 food groups)	High Dietary Diversity (≥6 food groups)
Cereals	Cereals
Vitamin A rich fruits and vegetables	Vitamin A rich fruits and vegetables
Other fruits and vegetables	Other fruits and vegetables
Meat / fish	Meat / fish
Milk or milk products	Milk or milk products
	Pulses
	Egg

Table 4: Food groups consumed by ≥50% of respondents by dietary diversity tertile in Rajshahi District.

Discussion

According to Bangladesh Demographic Health Survey (2014), about 16% women were found to get married for the first time at the age of 15-19 years, and in the current study, only about 8% women were found to get married by this age. In this study, dietary diversity was calculated by food groups that respondents had taken over the previous 24-hour. Women Dietary Diversity Score (WDDS) has been used to explore the diet quality of pregnant women. One of the leading causes of micronutrient deficiencies is low diversification of diet. The WDDS was used to find out the probable micronutrient adequacy of the diet. The mean Dietary Diversity Score (DDS) of the respondents was found 5.5±0.88, on the other hand, a study found that the mother's dietary diversity score was 4.02±1.28 in Bangladesh (Tiwari et al., 2013) [11]. The minimum and maximum DDS were 4 and 7 respectively in our study, but in the study mentioned above, minimum DDS was found 1 and maximum DDS was 9. No respondent was found to have DDS greater than 7 in our study but most of them had a DDS score of medium level.

A study conducted on women's dietary diversity in Bangladesh (Arimond et al., 2009) [8], revealed that most commonly consumed food groups by Bangladeshi women were starchy staples; meat, poultry, fish; vitamin A rich fruits and vegetables; and dark green leafy vegetables. Our study also found similar result in case of the respondents of medium dietary diversity group. Dark green leafy vegetables were not commonly consumed in this group, rather milk and milk products were found to be eaten more commonly amongst this group. On the other hand, the high dietary diversity group represents consumption of pulses and eggs along with other food groups mentioned earlier. But it can be seen that consumption of dark green leafy vegetables in both groups was not found to be commonly eaten. However, it can be concluded that, dietary pattern of pregnant women of Rajshahi district is diversified enough reflecting probable adequacy of micronutrients and intake of dark green leafy vegetables might be promoted among the pregnant women since they are naturally occurring rich sources of micronutrients.

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