

Factors Associated with Food Intake during Pregnancy: A Community Based Cross Sectional Study

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ABSTRACT

Background: The dietary requirement of pregnant women is as important for the mother as it is for the fetus. It is increased by 350 extra calories in a day. Demographic, social and economic factors directly or indirectly influence pregnant women's food intake. The aim of this study was to identify the factors associated with food intake during pregnancy.

Materials and methods: This cross-sectional study was conducted among 150 pregnant women in the villages of Savarupazila in Dhaka District. Data were collected from January to March 2020 by face-to-face interview with a semi-structured questionnaire. Sample women were selected purposively.

Results: In this study, 49.3% respondents were between the age of 21 and 25 years. The mean age was 23.59 ± 4.36 years. Majority (69.3%) had primary level education, mean monthly family income (\pm SD) income was BDT 26,533.33 (± 1434.8). Only 18.7% respondents and 78% of their husband earned in the family, 63.5% mother-in-law (n=85) and 77.3% husband had good caring attitude towards the respondents. Most of the sample women (86%) knew that they should eat 4 to 5 times daily, but only 54.7% took meal in this way. A significant proportion (47.3%) of pregnant women did not believe in avoiding any kind of food. Pregnant women's food intake had significant association with income ($p < 0.001$), respondent's earning status ($p = 0.025$), antenatal care ($p < 0.001$), mother-in-law's caring attitude ($p < 0.001$) and husband caring attitude ($p < 0.001$).

Conclusion: In this study, a little more than half of the respondents mentioned to eat more than usual need. Household income, respondents earning status, antenatal care, mother-in-law's caring attitude and husband caring attitude had associated with food intake during pregnancy.

KEY WORDS

Attitude of mother-in-law and husband; Community; Education; Food intake; Income; Pregnant women.

INTRODUCTION

The dietary requirement is increased during pregnancy. To maintain a healthy pregnancy, approximately 350 extra calories are needed each day.¹ These calories

should come from balanced diet with protein, fruits, vegetables and whole grains. The requirement of vitamins and minerals is also increased by pregnancy. The extra food is beneficial to maternal health as well as fetal development. The balanced diet also reduces the risk of anemia, pregnancy malnutrition and other unexpected symptoms like fatigue, generalized weakness. Failure to receive adequate nutrition would adversely affects the pregnancy outcome.^{2,3}

In the world in 2010, maternal and child under nutrition was responsible for 1.5 million death.⁴ The adverse effects of maternal under nutrition is widely evident in most countries of sub-Saharan Africa, South-central and Southeastern Asia.⁵ In Bangladesh, maternal malnutrition and low birth weight infants are also a major health problem.⁶ Maternal under nutrition peaks at 38% among women 15–19 years of age which underlies high levels of low birth weight (22%).⁷ Malnutrition during pregnancy causes maternal depletion and underweight of the fetus. Any improvement of maternal malnutrition during pregnancy has dual benefits-it prevents maternal depletion and reduces the incidence of low-birth-weight babies.⁸ The need for improving nutrition in pregnancy

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is being increasingly recognized by national, international and non-governmental organizations. To address the problem, a number of nutrition intervention programs have been introduced. The program providers operate with the assumption that nutrition education given at food supplementation phase would improve the nutritional status of women which did not happen.⁹

The well-known factors of low food intake during pregnancy are poverty, discrimination against women in intra-household food distribution and lack of antenatal care. In pregnancy, food intake is also attributed to cultural factors. Traditionally, all societies have beliefs on harmful and beneficiary effects of foods during pregnancy. Several studies on pregnancy food beliefs have reported that rural women in Bangladesh reduce their food intake.¹⁰ Dietary restriction in pregnancy is believed to stem from the belief that eating less will keep the baby small which in turn will make it easier for the mother to deliver the baby.

A healthy mother will give a healthy baby and today's baby is the asset of tomorrow. Whatever the cause, a pregnant woman must have the good nutritional status. The aim of this study was to identify the determinants of food intake during pregnancy. The findings of this study would initiate to design further large-scale study as well as to promote good nutrition intervention program among the pregnant women.

MATERIALS AND METHODS

This cross-sectional study was conducted in the villages of Savar Upazila of Dhaka district. Sample size was 150 pregnant women whose gestational period was within second and third trimester. The sample women were identified purposively. A semi-structured, interviewer administered questionnaire was used in this study. Data were collected by face-to-face interview during the period from January to March 2020. Data were analyzed by SPSS software (Version 23.0, IBM statistical product). Chi-square test was used in inferential statistics. Level of significance was defined as $p < .05$. Ethical issues were maintained in different stages of the study.

RESULTS

Table 1 showed that 49.3% women were in 21-25 years age group, 69.3% had primary level education, 58.7% had household monthly income TK. 10,000-25,000 and 81.3% respondents did not earn.

Table I Socio-demographic characteristics

Age in years	Frequency	Percentage
15-20	39	26.0
21-25	74	49.3
26-30	24	16.0
31-36	13	8.7
		Mean (\pm SD): 23.59 \pm 4.36 years
Educational status	16	
No formal education	16	10.7
Primary	104	69.3
SSC or higher	30	20.0
Monthly family income		
TK. 10,000-25,000	88	58.7
TK. 26,000-50,000	52	34.7
TK. 51,000-75,000	10	6.7
		Mean (\pm SD): 26533.33 (\pm 1434.8)
Respondents earning status		
Earning	28	18.7
Not earning	122	81.3
Husband's earning status		
Earning	117	78.0
Not earning	33	22.0

Table II showed among the respondents, 86.0% knew that they should eat more than usual amount of food

Table II Frequency of food intake during pregnancy

Food intake	Frequency	Percentage
At least 3 times	16	10.7
4 to 5 times	129	86.0
Don't know	5	3.3

Table III showed among the respondents mentioned that egg (94.7%) should be taken during pregnancy.

Table III Food should eat during pregnancy (Multiple answer), n=150

Types of Food	Frequency	Percentage
Fish	85	56.6
Meat	72	48.0
Egg	142	94.7
Vegetables	119	79.3
Fruits	86	57.3
Rice	48	32.0
Milk and milk products	120	80.0
Don't know	13	8.7

Table IV showed 47.3% of respondents knew that nothing should avoid during pregnancy.

Table IV Food should avoid during pregnancy (Multiple answer), n=150

Food should avoid	Frequency	Percentage
Nothing should avoid	71	47.3
Should avoid duck meat	40	26.6
Should avoid duck egg	43	28.6
Should avoid Mrigal fish	34	22.7
Should avoid pineapple	12	8.0

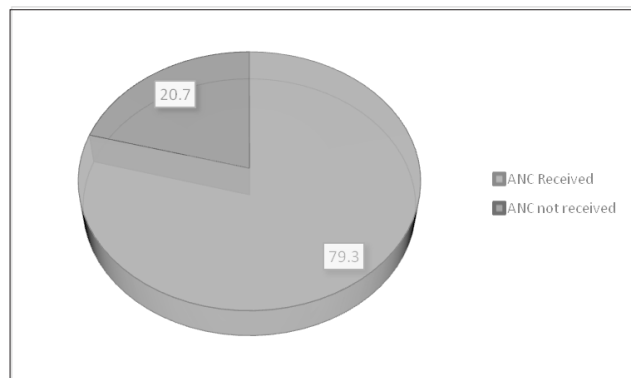
**Figure 1** Receiving Antenatal Care (ANC)

Figure 1 showed that 79.3% of women received antenatal care and 20.7% did not receive antenatal care.

**Figure 2** Caring attitude of mother-in-law and husband

Figure 2 showed that 63.5% (n=85) of mother-in-laws and 77.3% (n=150) of husbands had good caring attitude towards the pregnant women.

Table V showed that 54.7% of women ate more food than usual, 28% ate additional number of vegetables and 50.7% ate additional number of fruits.

Table V Total food intake during pregnancy

Total food intake during pregnancy	Frequency	Percentage
3 times daily	68	45.3
4 to 5 times daily	82	54.7
Additional vegetable intake		
Yes	42	28.0
No	108	72.0
Additional fruits intake		
Yes	76	50.7
No	74	49.3

Table VI showed that food intake was significantly associated with income ($p<0.001$), respondent's earning status ($p=0.025$), antenatal care ($p<0.001$), caring attitude of mother-in-law ($p<0.001$) and caring attitude of respondent's husband ($p<0.001$)

Table VI Association of food intake with demographic, social and economic factors

Factors	Total food intake		Significance
	3 times daily (%)	4 to 5 times daily (%)	
Education			
No formal education	62.5	37.5	$p=0.243$
Primary	41.3	58.7	
SSC and higher	50.0	50.0	
Income			
10,000-25,000	67.0	33.0	$p<0.001$
26,000-50,000	15.4	84.6	
51,000-75,000	10.0	90.0	
Respondents earning status			
Earning	27.6	72.4	$p=0.025$
Not earning	49.6	50.4	
Husband's earning status			
Earning	41.9	58.1	$p=0.08$
Not earning	57.6	42.4	
Antenatal Care			
Received	35.3	64.7	$p<0.001$
Not received	83.9	16.1	
Mother in law's caring attitude			
Good	16.7	83.3	$p<0.001$
Not good	87.1	12.9	
Husband's caring attitude			
Good	33.6	66.4	$p<0.001$
Not good	85.3	14.7	

DISCUSSION

This study was conducted to identify the factors associated with food intake of pregnant women. Among 150 sample pregnant women, most of them (49.3%) were between the age of 21 and 25 years. The mean age was 23.59 ± 4.36 years. Overwhelming majority (69.3%) had primary level education, only 20.0% had SSC or higher education, 58.7% had monthly household income of BDT 10,000-25,000. Among the respondents, 18.7% earned and 78.0% husband earned in the family. Most of the sample women (86.0%) knew that they should eat 4 to 5 times daily. Nana et al. found that concerning dietary knowledge, 61.4% of the study participants had good dietary knowledge.¹¹ Another study explored that 54.8% of pregnant women had poor dietary practice.¹²

The respondents mentioned that the foods that should eat during pregnancy were, fish (56.6%), meat (48.0%), egg (94.7%), vegetables (79.3%), fruits (57.3%), rice (32.0%) and milk & milk products (80.0%). Since rice the staple is considered the medium to enjoy other foods, it was not specifically mentioned as a food women should eat. The low percentage figure for rice (32.0%) does not reflect the reality. A similar study found that 45% (95% CI: 39.6–50.4) of the participants did not consume a diverse diet during pregnancy.¹³ This study found that, 47.3% of sample women did not believe in avoiding any kind of food during pregnancy. The lists of foods to avoid include duck meat (26.6%), duck egg (28.6%), mrigal fish (*Cirrhinus cirrhosus*) (22.7%) and pineapple (8.0%) and these foods generally do not come to the household. As on the recent guidelines, mothers should not restrict food during pregnancy.¹⁴ Another study explored that mother should not avoid pea-nut as it is a good source of protein.¹⁵ A study on nutritional beliefs reported that 28% had adverse beliefs about duck meat, 78% pineapple and 8% had about coconut.¹⁶ Among the respondents, 79.3% received antenatal care, 63.5% mother in law (n=85) had good caring attitude towards their son's wife, 77.3% husband had good caring attitude towards their wife. 54.7% ate 4 to 5 times daily, 50.7% ate fruits and only 20% ate vegetables. A study conducted in Bangladesh reported 25% of the women consumed vegetables and 64% reported an intake of fruit.¹⁷ A common custom in developing countries is reduction of food intake during pregnancy, especially in the last trimester.¹⁸

Seemingly, majority (62.5%) of respondents with no formal education had less frequency of food intake (3 times) than the respondents with primary level education where majority (58.7%) had more frequency of food intake (4 to 5 times). Yet, statistically this was not significant ($p=0.243$). A study conducted in Bangladesh, Vietnam and Ethiopia also reported the association between maternal education and dietary intake.¹⁹ On the flip side, household income, respondents earning status in the family, antenatal care, mother-in-law's caring attitude and husband caring attitude had significant association with frequency of food intake. Respectively, 33%, 84% and 90% respondents with monthly household income of BDT 10,000-25,000, 26,000-50,000 and 51,000-75,000 had more frequency (4 to 5 times) of food intake ($p<0.001$). Similarly, 72.4% respondents who had earned in the family, 58.1% whose husband earned in the family and 64.7% who had received antenatal care had more frequency (4 to 5 times) of food intake ($p=0.025$, $p=0.08$, $p<0.001$ respectively). A review article identified

barriers to adequate nutrition during pregnancy included lack of knowledge of frequency and quantity of food to eat during pregnancy, low income, and "eating down" during pregnancy for fear of delivering a large baby.²⁰ This study found no significant association between husband's incomes and frequency of food intake. Nana et al. found significant association between husband income and food intake.¹¹ Another study found that husbands' unemployment was associated with food insecurity.²¹ It was evident that, 83.3% respondents whose mother-in-law had good caring attitude and 66.4% respondents whose husband had good caring attitude had more frequency (4 to 5 times) of food intake ($p<0.001$).

LIMITATION

It was a cross sectional study conducted at a single centre, the findings of the study cannot be extrapolated to a large population.

CONCLUSION

Pregnancy is a nutritionally demanding period of every woman's life. Most pregnant women know they need to eat more often. But a little more than half of them practice it. A number of demographic, social and economic factors influenced food intake during pregnancy. Household income, respondents earning status in the family, antenatal care, mother-in-law's caring attitude and husband caring attitude had significantly associated with pregnant women's food intake.

RECOMMENDATION

Further studies with large samples size in multicentred are recommended for proper picture.

DISCLOSURE

All the authors declared no competing interest.

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