KNOWLEDGE ON NUTRITION DURING PREGNANCY AMONG MOTHERS ATTENDING ANTENATAL CARE AT A SECONDARY LEVEL HOSPITAL IN COX'S BAZAR, BANGLADESH

Md. Abdul Mazid Azad[1], Iffat Ara Begum[2], Mohammad Shamsul Huda[3], A. B. M. Mokbul Hossen Roby[3], Afsana Anwar[3], Nusrat Jahan[3] and Abu Ansar Md. Rizwan[3,4]*

[1]Save the Children, Dhaka, Bangladesh.

[2]Friendship, Dhaka, Bangladesh.

[3]Social Assistance & Rehabilitation for the Physically Vulnerable (SARPV), Dhaka, Bangladesh.

[4]W A N Research and Consultancy, Dhaka, Bangladesh.

*Corresponding Author

Abu Ansar Md. Rizwan

Social Assistance & Rehabilitation for the Physically Vulnerable (SARPV), Dhaka, Bangladesh.

ABSTRACT

Background: Pregnancy is a crucial period of a woman's life when the nutritional needs are increased for the growth and development of the expecting mother and her upcoming child. In this vital period, to ensure appropriate nutrition for the mothers, knowledge on maternal nutrition is very much important. **Objective:** The objective of this study was to assess the level of knowledge on nutrition during pregnancy among mothers attending antenatal care at a secondary level hospital in Cox's Bazar, Bangladesh. **Methodology:** A descriptive type of cross-sectional study was conducted among the pregnant women admitted to the wards of the Gynecology Department of a secondary level hospital at Cox's Bazar. The calculated sample size was 356. Pregnant women aged more than 18 years admitted to the gynecology department were included in the study and the women were selected by following simple random sampling method. A semi-structured questionnaire was used for data collection. **Results:** About two-fifth of the respondent's knowledge level was found excellent, more than one-fourth of the respondent's knowledge level was good on nutrition during pregnancy. Respondent's age, level of education, and numbers of pregnancies were found significantly associated (P<0.05) with their level of knowledge. **Conclusion:** The findings from this study indicate the

knowledge gap among the respondents. Therefore, it can be recommended to intensively educate antenatal mothers to understand the importance of nutrition during pregnancy.

KEYWORDS: Nutritional knowledge, pregnancy, antenatal mothers, Cox's Bazar, Bangladesh.

INTRODUCTION

Nutrition is a basic pillar of human life related to the provision of essential nutrients from the diet necessary for survival, physical growth, mental development, function and productivity, health, and well-being (Abdella, 2010). However, the nutritional requirement varies concerning age, gender, and the timing of physical changes such as pregnancy. Pregnancy is a normal process that leads to a series of changes both physically and psychologically in pregnant mothers. Research on the nutritional status of mothers during pregnancy is important for improving the health of the mother, baby, and infant (Jans et al, 2015). The need for energy and nutrients increases during pregnancy. There is an important relationship between the diet of the expectant mother and the health of the baby. As the developing fetus receives all the nutrients its mother needs in the umbilical cord, the expectant mother will need about 285 Kcal as much as she needs. Pregnant women should be given adequate and nutritious food throughout pregnancy to provide the energy and nutrients needed to gain full weight during pregnancy, fetal growth, and breast milk production. This will allow for normal physical and mental growth and development of the child by reducing the risk of developing chronic diseases, such as diabetes, cardiovascular disease, obesity, and high blood pressure during puberty (Irge et al, 2005). Failure to supplement daily nutrition according to the growing need, lack of health awareness and nutrition, poor food choices due to culture and habits, reduced nutrition due to economic deficits, poor diet and storage, and medical problems are the main causes of malnutrition problems. during pregnancy (Baysal, 2009). This situation is often associated with a lack of knowledge of their healthy eating habits, especially among middle- and middle-income economic groups (Khoramabadi et al, 2016). Information about healthy eating choices can be a precursor to the acceptance of healthy eating (Haslam et al, 2000). Knowledge, attitudes, and actions are fundamental factors in communicating behavior change (Khajvy et al, 2001). Maternal malnutrition causes an increased risk of short-term consequences such as; Intra Uterine Growth Restriction (IUGR), low birth weight, premature birth, prenatal and infant mortality, and morbidity (Collins, 2007). The mother is severely malnourished and has complications of pregnancy such as

preeclampsia and gestational diabetes, macrosomia, dystocia, and a high prevalence of the surgical phase. Each year, more than half a million women die as a result of pregnancy-related causes. About 4 million newborns die within 28 days of birth (UNICEF, 2009). Providing nutrition education can improve levels of healthy eating knowledge, promote healthy eating habits, and correct unhealthy eating habits (Girard & Olude, 2012). Studies have found that nutritional education during pregnancy is associated with positive pregnancy outcomes and nutritional awareness (Streulina et al, 2010). Maternal nutrition during pregnancy is important in reducing maternal mortality and infant mortality which is a goal aimed at achieving the millennium development goal. Knowledge of healthy eating habits, behaviors, and habits of pregnant women varies according to educational level, age, and social characteristics. Studies have shown that pregnant women choose pregnant relatives and friends as their main source of information but the information provided by health professionals, especially on nutritional changes, works better than that found in other sources (Bianchi et al, 2016). Books on pregnant women 's habits, nutrition, and information awareness support a woman to achieve a significant level of awareness during pregnancy, but they do not have reliable and accurate sources of information (Bookari et al, 2016). Women's knowledge about prenatal care is influenced by women's age, race, occupation, educational status, the purpose of pregnancy, previous abortion history, monthly income, previous birth history, equity, and family planning (Yawson et al, 2017). A study in Ghana highlighted the importance of nutritional advice for health workers. Previous studies have also shown that women who receive an intervention in antenatal care have more experience in prenatal care and that even short-term counseling can improve their knowledge of general and personal health risks (20). Although there are many studies on the nutritional status of mothers, projects, and research that focus primarily on healthy eating knowledge is rare in the study area (Simkhada et al, 2008). The current study had two objectives: (1) to determine the level of nutritional information during pregnancy among mothers attending maternity care at Cox's Bazar Hospital and (2) to investigate the relationship between social factors and health information status. One of the main objectives of the current study was to address the information gap about factors related to healthy eating knowledge among women of the reproductive age group.

METHODOLOGY

Study design

It was a cross-sectional descriptive type of study.

Target population

The target population was all the pregnant women admitted to the wards of the Gynecology Department of a secondary level hospital at Cox's Bazar.

Study period

The study was conducted during the period from January 2021 to April 2021.

Sample size

The sample size was calculated by using the formula $n = z^2pq/d^2$, where p=0.636. The sample size was calculated in a 95% confidence interval and 5% degree of accuracy. The calculated sample size was 356.

Inclusion & exclusion criteria

Pregnant women aged more than 18 years admitted to the gynecology department were included in the study. Seriously sick pregnant women were excluded.

Sampling technique

Simple random sampling method was followed to select the sample respondent for the study.

Data collection

A semi-structured questionnaire was used for data collection. The questionnaires were pre-tested with other participants. The pre-test was done on 5% of the total sample size. The questionnaire was assessed for its clarity, length, and completeness, and the researcher administered the questionnaire for the interview.

Data management & analysis

Data from the study were analyzed using computer-based Microsoft excel program, SPSS, and a simple frequency distribution table. Data was entered into the database using Microsoft excel and converted into SPSS. Then the data was cleaned and finally, analysis was done. Respondents' knowledge was assessed by asking fifteen knowledge-related questions. One point was assigned for correct answers for all questions of knowledge and then the sum of correct answers was obtained (the sum of total scores for these questions was ranged from zero to fifteen points maximum score). The knowledge level was categorized as: <6 = Poor, 6-9 = Moderate, 10-12 = Good and $\geq$13 = Excellent.

Quality control & quality assurance

For quality assurance, data was checked regularly.

Ethical considerations

Verbal consent was taken after adequate counseling of the patients about the study. Ethical clearance was taken from the Ethics Review Committee of Faculty of Allied Health Sciences of Daffodil International University, Dhaka, Bangladesh. All data were kept confidential and anonymity was maintained throughout the whole study.

RESULTS

Among all the respondents, the majority (51.27%) were aged between 20 to 30 years, more than one-fourth of the respondents (26.37%) had completed secondary level education and 23.92% had completed HSC level of education. Most of the respondent's (33.37%) monthly household income was between BDT 35000 to 45000 and 96.17% of respondents were Muslim. Nearly three-fourths (74.28%) of the respondents were housewives and about sixty percent of the respondents were from joint families. (Table 01)

Table 01: Socio-demographic characteristics of the respondents.

Socio-demographic characteristics	Frequency (n)	Percentage (%)
Age group		
<20 years	58	16.35
20-30 years	184	51.72
30-40 years	98	27.49
>40 years	16	4.44
Level of education		
Illiterate	11	3.17
Primary	76	21.40
Secondary	94	26.37
HSC	85	23.92
Graduate	71	19.81
Masters & above	19	5.33
Household's monthly income		
<25000	33	9.19
25000-35000	84	23.56
35000-45000	119	33.37
45000-55000	58	16.24
>55000	63	17.64
Religion		
Islam	342	96.17
Hinduism	14	3.83
Occupation		

Housewife	264	74.28
Govt. job	46	12.91
Private job	34	9.67
Business	11	3.14
Family type		
Nuclear	146	41.14
Joint	210	58.86

More than half (58.76%) of the respondent's parity was in between 0 to 2. A total of 46.81% of respondents were in their second trimester followed by 40.51% of respondents who were in their third trimester. More than two-thirds 66.16%) of the respondents were multigravida. The pre-pregnancy nutritional status of the respondents showed that most of the respondents (39.72%) were normal, about thirty percent were overweight, 13.72% were obese and the rest of the respondents were underweight. (Table 02)

Table 02: Obstetrics characteristics of the respondents.

Obstetrics characteristics	Frequency (n)	Percentage (%)
Parity		
0 to 2	209	58.76
≥2	147	41.24
Gestational week		
First trimester (1-12 weeks)	45	12.68
Second trimester (13-27 weeks)	167	46.81
Third trimester (28-40 weeks)	144	40.51
Number of pregnancies		
Primigravida	120	33.84
Multigravida	236	66.16
Pre-pregnancy nutritional status		
Underweight (<18.5)	62	17.53
Normal weight (18.5-24.9)	141	39.72
Overweight (25.0-29.9)	103	29.03
Obese (≥30.0)	49	13.72

Table 03 is showing the respondent's knowledge of maternal nutrition during pregnancy. The responses of the respondents on fifteen knowledge-related questions are presented here.

Table 03: Distribution of respondent's knowledge on maternal nutrition during pregnancy (n=356).

No.	Statement	Yes		No	
		n	%	n	%
1	A balanced diet is important during pregnancy	325	91.37	31	8.63
2	Women nutrition during pregnancy is different from others	328	92.19	28	7.81
3	Iron is a source of vitamin	310	87.13	46	12.87
4	The daily recommended intake of iron for a woman during pregnancy is 27 mg	234	65.73	122	34.27
5	The daily recommended intake of protein for a woman during pregnancy is 25g	264	74.10	92	25.90
6	During pregnancy, a woman needs more folic acid and iron than a woman who is not pregnant	321	90.24	35	9.76
7	A pregnant woman must have at least 600 µg of folic acid from a daily diet	248	69.68	108	30.32
8	Women should get 1000 mg of calcium daily during pregnancy	219	61.39	137	38.61
9	Omega-3 and Omega-6 fatty acids are essential for the brain and retina development of the fetus	325	91.26	31	8.74
10	Nutrient deficiency during pregnancy could affect the health status of mothers and baby	338	94.81	18	5.19
11	If the woman was a normal weight before pregnancy, she should gain weight between 11.5 kg and 16.0 kg during pregnancy	207	58.23	149	41.77
12	A body mass index (BMI) of less than 18.5 kg/m^2 is a suitable weight during pregnancy	137	38.56	219	61.44
13	Additional energy needs should be tailored based on the woman's BMI before pregnancy	292	82.02	64	17.98
14	Underweight mother can affect fetal well-being and growth	326	91.49	30	8.51
15	Obese women are at an increased risk of several pregnancy problems	307	86.14	49	13.86

According to the scoring, 40.73% of respondent's knowledge level was found excellent, more than one-fourth of the respondent's (26.67%) level of knowledge was good, 20.16% of respondent's knowledge level was moderate and the rest of the respondent's level of knowledge was found poor (Table 04).

Table 04: Knowledge level on maternal nutrition during pregnancy of participants (n=356).

Knowledge level	Frequency	Percentage
Excellent	145	40.73
Good	95	26.67
Moderate	72	20.16

Poor	44	12.44
Total	**356**	**100.00**

DISCUSSION

The study findings reveal that there is a significant association (P<0.05) of the level of knowledge on maternal nutrition with the age and level of education of the respondents (Table 05). Age plays an important role in the knowledge level of mothers during pregnancy. The findings from the study show concordance with a study conducted in Pune, Maharashtra (Barun et al., 2016). Education is one of the key determinants for nutritional knowledge among mothers during antenatal care and a higher education level implies a higher level of knowledge. Similar study findings were found in a cross-sectional study conducted in Malaysia in tertiary hospital although there is a dissimilarity between the association of monthly household income and nutritional knowledge among the mothers during pregnancy (Barun et al., 2016, Lim et al., 2018). Also, the study findings are not similar to the study in Pune, Maharashtra (Barun et al., 2016) where the working mothers during pregnancy show better nutritional knowledge than nonworking mothers. The different socioeconomic conditions might play role in this case.

Table 05: Association of the level of knowledge on maternal nutrition with socio-demographic characteristics of the respondents.

Variables	Frequency	Level of knowledge				P-value
		Excellent (145)	Good (95)	Moderate (72)	Poor (44)	
Age group						
<20 years	58	23	15	12	8	0.021
20-30 years	184	78	53	39	14	
30-40 years	98	36	26	20	16	
>40 years	16	8	1	1	6	
Level of education						
Illiterate	11	6	3	2	0	0.032
Primary	76	37	21	12	6	
Secondary	94	45	26	15	8	
HSC	85	29	24	23	9	
Graduate	71	24	18	11	18	
Masters & above	19	4	3	9	3	
Monthly HH income						
<25000	33	14	8	7	4	0.162
25000-35000	84	29	22	19	14	
35000-45000	119	41	35	25	18	
45000-55000	58	28	18	8	4	
>55000	63	33	12	13	5	

Religion						
Islam	342	138	91	70	43	0.122
Hinduism	14	7	4	2	1	
Occupation						
Housewife	264	108	69	48	39	
Govt. job	46	19	13	11	3	0.061
Private job	34	13	10	10	1	
Business	11	5	3	3	0	
Family type						
Nuclear	146	61	38	29	18	0.073
Joint	210	84	57	43	26	

The findings also reveal that there is a significant association ($P<0.05$) of the level of knowledge on maternal nutrition with the respondent's number of pregnancies (Table 06). The study shows that there is no association between the gestational week and nutritional knowledge which is similar to the findings of a study conducted in West Kenya (Nandita et al., 2013). The study also shows that there is no association of nutritional status of pregnant mothers with their nutritional knowledge. A study conducted in the United Kingdom shows that obese mothers tend to gain less weight than lean mothers and they had lower knowledge which supports our study findings (Mohd- Shukri et al., 2011). Our study shows that there is an association between the number of pregnancies and nutritional knowledge. Several studies have assessed the number of pregnancies and nutritional knowledge status as an indicator and we have found a strong association. Their arena can be further explored. This study findings also revealed that respondents' level of education, age, and the number of pregnancies play crucial roles that affect the knowledge level of mothers during pregnancy about nutrition.

Table 06: Association of the level of knowledge on maternal nutrition with obstetrics characteristics of the respondents.

Variables	Frequency	Level of knowledge				P-value
		Excellent (145)	Good (95)	Moderate (72)	Poor (44)	
Parity						
0 to 2	209	98	52	35	24	0.058
≥2	147	47	43	37	20	
Gestational week						
First trimester (1-12 weeks)	45	18	14	8	5	
Second trimester (13-27 weeks)	167	65	41	38	23	0.068
Third trimester (28-40 weeks)	144	62	40	26	16	
Number of pregnancies						
Primigravida	120	43	31	27	19	0.039

Multigravida	236	102	64	45	25	
Nutritional status						
Underweight (<18.5)	62	23	18	15	6	
Normal weight (18.5-24.9)	141	54	37	29	21	0.120
Overweight (25.0-29.9)	103	48	27	17	11	
Obese (≥30.0)	49	20	13	11	5	

CONCLUSION

It can be concluded that the whole level of antenatal mothers' knowledge about nutrition during pregnancy is inadequate. Therefore, it can be recommended to educate antenatal mothers to understand the importance of nutrition during pregnancy. The study findings also reveal that there is a significant association ($P<0.05$) of the respondent's level of knowledge on maternal nutrition with their age, level of education, and numbers of pregnancies which are important factors that significantly influence the nutritional knowledge of antenatal mothers. Considering this, further research with a similar population in larger sample size may help the policymakers to identify the impact these factors have on the behavior of pregnant mothers.

CONFLICT OF INTEREST

The authors declared no conflict of interest for this study.

CONSENT FOR PUBLICATION

All authors have given their consent to publish this article.

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