IOSR Journal Of Pharmacy And Biological Sciences (IOSR-JPBS)
e-ISSN:2278-3008, p-ISSN:2319-7676. Volume 20, Issue 2 Ser. 1 (Mar. – Apr. 2025), PP 06-12
www.Iosrjournals.Org

Knowledge, Attitude And Practices Regarding Maternal Diet And Nutrition Among Different Pregnant Women Admitted In Selected Hospitals, Chattogram, Bangladesh.

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Abstract:
Nutritional deficiency is responsible for 1.5 million deaths in women and children worldwide. The World Health Organization (WHO) endorsed antenatal nutrition education for women to reduce the birth of underweight infants and prevent maternal complications. In a cross-sectional survey in rural Bangladesh, only one-third of women surveyed reported increasing their food intake during pregnancy. Such practices fail to meet the increased nutritional demands necessary to maintain optimal health during pregnancy and undermine public health efforts targeted to improve maternal and perinatal health. The main aim of this study was to describe maternal diet and nutrition, and knowledge, attitudes, and practices of pregnant women who attended in Chattogram Medical College Hospital, Bangladesh. The study assesses a cross sectional study design consisting of data collection by questionnaire and presentation of data with statistical analysis. A total of 140 samples have been taken for this survey. The findings of the study shows that participants have good knowledge, positive attitude and practice towards maternal nutrition and balanced diet. Hence, it might be logical to pay special attention to prospering knowledge on how to prevent the occurrence of pregnancy complications related to food habits and diet.

Key Words: *Maternal Diet, Nutrition, Pregnant Women, Nutritional Deficiency, Malnutrition.*

Date of Submission: 05-03-2025 Date of Acceptance: 15-03-2025

I. Introduction:

All human beings need a balanced amount of nutrients for proper functioning of the body system. Nutrition is a fundamental pillar of human life, health and development throughout the entire lifespan [1, 2]. There are approximately 40 different nutrients that are essential for health. If any one of these is deficient in the diet, the person will not be fully healthy and able to resist the agents of disease [3]. Malnutrition is an umbrella term for poor nutrition, whether that is excess consumption of nutrients (overnutrition) or inadequate consumption or absorption of one or more nutrients undernutrition) while undernutrition includes being underweight for one's age, too short for one's age (stunted), dangerously thin (wasted) and deficient in vitamins and minerals (micronutrient malnutrition). Malnutrition is now a problem in both poor and rich countries. In developing countries, while widespread nutrition and micronutrient deficiencies persist, obesity is also fast emerging as a problem [4].

In the antenatal period, the nutritional demand of women upsurges to compensate for physiological and psychological changes and nutritional computations by the growing fetus for energy, macro and micro nutrients [5, 6]. Nevertheless, many women, whether in preconception or even during pregnancy, do not get enough nutrients in their diets, a problem that is particularly prevalent in the world's poorest regions, including sub-Saharan Africa [7]. Women's malnutrition (of any kind) not only affects their health but also has the potential to harm the health of their infants [8, 9]. Nutritional deficiency was responsible for 1.5 million deaths in women and children worldwide.7,8 Despite the fact that maternal undernutrition has decreased over the last 16 years, from 30% in 2000 to 22% in 2016, Ethiopia remains one of the countries with the highest burden of maternal malnutrition [10].

The World Health Organization (WHO) endorsed antenatal nutrition education for women to reduce the birth of underweight infants and prevent maternal complications.The recommendation was context-specific and focused on populations affected by malnutrition, especially in low- and middle-income countries [11]. The fifth Millennium Development Goal outlines the International commitment to measurably reduce maternal mortality by the year 2015 [12, 13]. Antenatal care (ANC) is a critical strategy in reducing maternal mortality as

it facilitates the identification and mitigation of risk factors early in pregnancy. Timely and frequent use of ANC enables delivery of essential services, including malaria treatment, immunizations, and health counseling [14, 15, 16].

The previous study employs data from a community-based cross-sectional baseline survey undertaken between April-May, 2011, prior to the implementation of an innovative intervention that integrates orange-fleshed sweet potato (OFSP) promotion and production with nutrition education at ANC services in rural Kenya [17]. The average household dietary diversity score for women in this survey was less than five, a level previously demonstrated to correlate with micro nutrient inadequacy [18]. They researchers reported lack of adequate food consumption during pregnancy, although not unique to the Kenyan context, is concerning.

In a cross-sectional survey in rural Bangladesh, only one-third of women surveyed reported increasing their food intake during pregnancy [19], and in a focus-group analysis in Bali, women reported restricting the amount of food consumed during pregnancy to prevent having a large infant and a difficult delivery. Such practices fail to meet the increased nutritional demands necessary to maintain optimal health during pregnancy and undermine public health efforts targeted to improve maternal and perinatal health [20, 21]. Anemia during pregnancy is a public health problem that affects both developed and developing countries and has an impact not only on health providers, but also on the socio-economic environment [22, 23].

Prevention strategies for iron deficiency and maternal anemia include nutritional education, promoting the intake of iron and folic acid supplements, and food fortification [24]. Several studies emphasize the importance of the relationship between iron, folic acid or multivitamin intake and socio-demographic factors such as age, level of education, area of residence, marital status, parity, economical status and characteristics of prenatal care including gestational age at the beginning of prenatal care and the number of prenatal consultations [25, 26]. The general objective of this study was to describe maternal diet and nutrition, and knowledge, attitudes, and practices of pregnant women who attended in Chattogram Medical College Hospital, Bangladesh.

II. Research Methodology:

Study Design: A study to assess the Knowledge, Attitude and Practices of Maternal Diet and Nutrition among Different Pregnant Women. A Cross Sectional Study design consisted of data collection by questionnaire and presentation of data with statistical analysis.

Study Population & Area: Admitted Pregnant Women who attended for antenatal check-up at selected Hospitals were the populations and area of the study.

Study Period: This study started from July 2023 and continued till December 2023.

Sample Size: The researchers took study samples 140, according to the guide's decision because of limited time and budget constraints.

Inclusion criteria:

1. The participants who attended in selected hospitals at Gynae department.
2. The participants who were 20 and 40 years by age.

Exclusion criteria:

1. The participants who did MR.
2. The participants, who had miscarriage.

Data Collection Tools: A pre-tested, semi structured and modified questionnaire was administered to collect data properly.

Sampling Technique: The purposive sampling method was followed.

Data Collection Technique: By following a face to face interview of the participants/respondents.

Data Analysis & Management Plan: All interview questionnaires were checked for its completeness, accuracy and consistency to exclude missing or incomplete data. Then data was checked, cleaned and edited again before analysis. Descriptive statistics was used for the interpretation of the findings.

Ethical Consideration: For conducting the study, Ethical approval was obtained from the ethical board of University. The personal identification, information of the subjects involved in the research were replaced by

codes in the protected archived computer data files. The paper forms with the personal identification information were stored in a high security procedure. Data files for statistical analysis were prepared to ensure the confidentiality of any information about the study participants and did not include any personal identification.

Quality Control & Quality Assurance: Regular assistance and guidance from the supervisor was taken for conducting interviews. Data collection and analysis was performed by the researcher himself. Report were made with the respondents before data collection. Data was checked and rechecked for reliability. A semi-structured questionnaire was used. Questionnaire was explained in local languages for better understanding.

III. Result:

Table 1: Socio-demographic Characteristics:

In this study the majority of the respondents (69.50%) were above 21-30 years of age groups. 45.50% participant's education level is up-to SSC and 84.50% are housewives. Majority (38%) of the respondents' monthly family income was 20K-30K in BDT. 84.50% were muslim. 83.5% live in urban areas and belong to nuclear families (66%). Most of them (30.05%) are visiting ANC for the third time.

Sl. No.	Variables	Categories	Frequency	Percentage
1.	Age in years	a) ~ 20 years b) 21-30 years c) 31-40 years d) 41-50 years	a) 33 b) 139 c) 28 d) 0	a) 16.50% b) 69.50% c) 14% d) 0%
2.	Educational Status	a) Illiterate b) Primary c) SSC d) HSC e) Graduate f) Post graduate	a) 6 b) 91 c) 71 d) 17 e) 15 f) 0	a) 3% b) 45.50% c) 35.50% d) 8.50% e) 7.50% f) 0%
3.	Occupation	a) Government employee b) Private employee c) Housewife d) Garment worker	a) 4 b) 6 c) 169 d) 21	a) 2% b) 3% c) 84.50% d) 10.50%
4.	Monthly family income in BDT	a) ~10k b) 10k-20k c) 20k-30k d) 30k-40k e) > 40k	a) 19 b) 105 c) 59 d) 10 e) 7	a) 9.50% b) 52.50% c) 29.50% d) 5% e) 3.50%
5.	Types of Family	a) Nuclear b) Joint	a) 132 b) 68	a) 66% b) 34%
6.	Number of Family Members	a) 2-4 b) 5-7 c) 8-10	a) 141 b) 53 c) 06	a) 70.5% b) 26.5% c) 3%
7.	Where do you live?	a) Urban b) Rural c) Semi urban	a) 167 b) 33 c) 0	a) 83.5% b) 16.5% c) 0%
8.	No. Of Pregnancies?	a) 1 b) 2 c) 3 d) >3	a) 58 b) 76 c) 42 d) 24	a) 29% b) 38% c) 21% d) 12%
9.	Number of ANC visits (1-4)?	a) First time	a) 31	a) 15.50%

Table 2: Knowledge based variables on maternal nutrition:

Majority replied that they know about a balanced diet during pregnancy (84%) and nutrition (85%). Almost all of them (99%) know that women's nutrition during pregnancy is different from other individuals. 84.50% know that pregnant mother need more Calcium, Zinc & Potassium.Majority agreed that it is good to take take extra food (93%), have different types of food (96%), have leafy vegetables daily in meal (99%), have folic acid supplementation (96%) and calcium supplementation (91.50%) during pregnancy.

Sl. No.	Variables	Categories	Frequency	Percentage
1.	Do you know that, balanced diet is important during pregnancy?	a) Yes b) No c) Not sure	a) 168 b) 22 c) 10	a) 84% b) 11% c) 5%
2.	Women's nutrition during pregnancy different from other individuals?	a) Yes b) No c) Not sure	a) 91 b) 1 c) 0	a) 99% b) 1% c) 0%
3.	Do you know about Nutrients?	a) Yes b) No c) Not Sure	a) 170 b) 13 c) 17	a) 85% b) 7% c) 8.50%
4	Do you know, pregnant mothers should consume more protein, vitamin and mineral rich foods in their daily diet?	a) Yes b) No c) Not Sure	a) 171 b) 11 c) 18	a) 85.50% b) 5.50% c) 9%
5.	Do you know, pregnant mothers need more folic acid?	a) Yes b) No c) Not Sure	a) 162 b) 17 c) 21	a) 81% b) 8.50% c) 10.50%
6	Do you know, pregnant mothers need more Calcium, Zinc & Potassium?	a) Yes b) No c) Not Sure	a) 169 b) 9 c) 22	a) 84.50% b) 4.50% c) 11%
7	Do you know, nutrient deficiency during pregnancy could affect the health status of mothers and baby?	a) Yes b) No c) Not Sure	a) 193 b) 4 c) 3	a) 96.50% b) 2% c) 1.50%
8	Do you know a regular meal with some extra portion in time is essential for pregnant mothers?	a) Yes b) No c) Not Sure	a) 180 b) 14 c) 6	a) 90% b) 7% c) 3%

Chart 1: Participants knowledge on different sources of carbohydrate, protein, vitamin, mineral, fiber and fats/lipid:

Majority has given correct while asking about the foods that are rich with carbohydrate (Rice, bread, noodles- 75.29%), Protein (Meat, fish, egg- 68.82%), fats/lipids (Oil, ghee, butter- 62.35%), vitamin (Pulses, vegetable, fruit- 95.29%), mineral (Pulses, vegetable, fruit- 91.17%) and fiber (Pulses, vegetables, fruit- 84.11%).

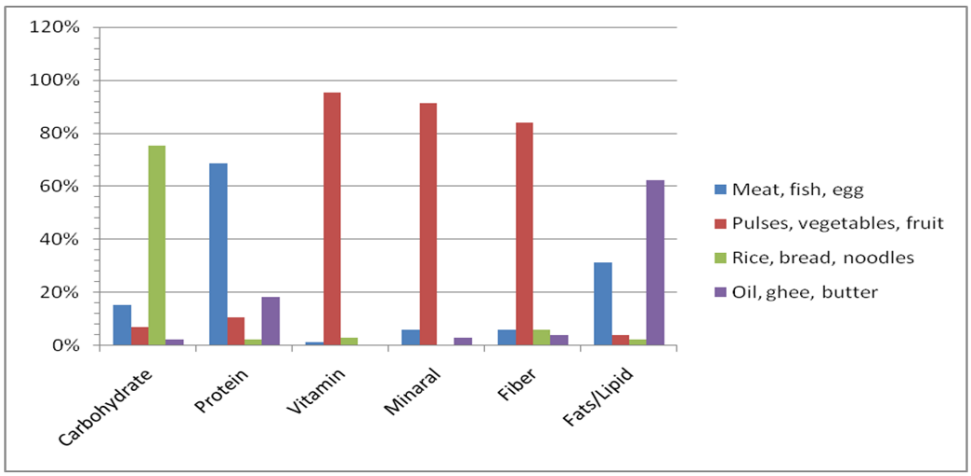


Chart 2: Awareness based variables:

The below chart shows that majority of the participants agreed that it is good to take take extra food (93%), have different types of food (96%), have leafy vegetables daily in meal (99%), have folic acid supplementation (96%) and calcium supplementation (91.50%), prepare food using iodized salt (97%), drink 3-5 liter of water daily during pregnancy.

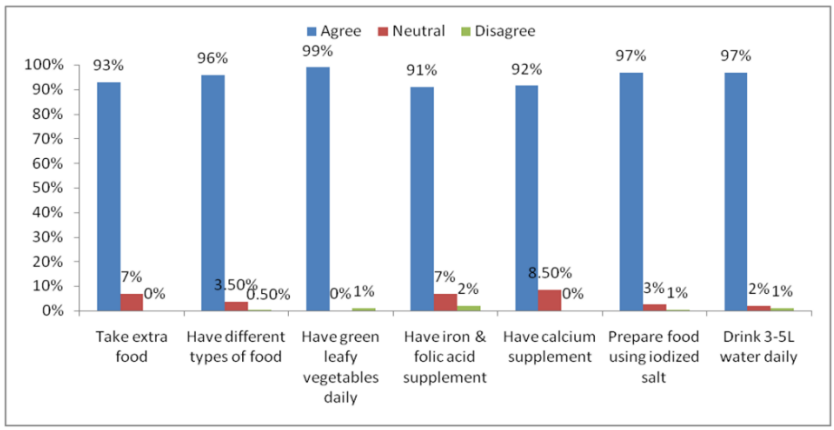
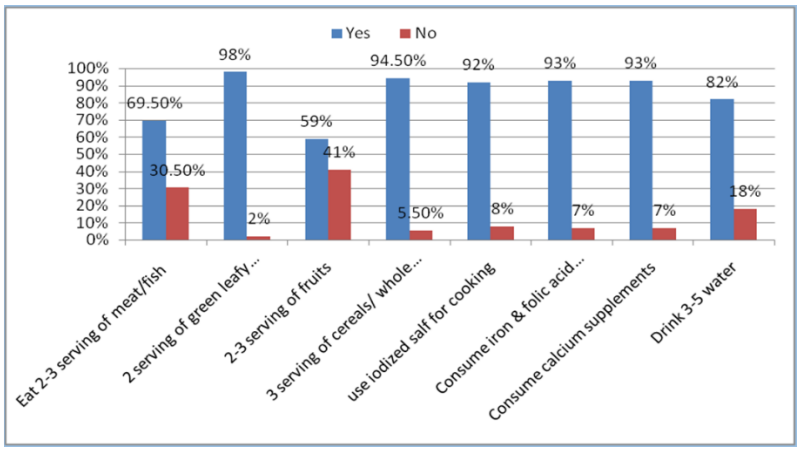


Chart 3: Practice based variables:

The below chart shows that majority of the participants eat 2-3 servings of meat or fish per day (84%), eat 2 servings of green leafy vegetables per day (98%), eat 2-3 servings of fruits per day (59%), eat 3 servings of cereals, whole grain or other complex carbohydrates per day (94%), drink 3-5 liter of water daily (82%), consume iron and folic acid supplementation and calcium supplementation daily (93%). etc. No one consumes tobacco in your current pregnancy.



IV. Discussions:

This study aimed to assess the knowledge, attitude, practice and determinant factors of nutrition during pregnancy. The results of the study could be used as input for health and nutrition policymakers in order to build evidence-based and effective intervention strategies to improve nutrition and health behaviors and, therefore, nutritional status and birth outcomes. Otherwise malnutrition and its adverse impact on both maternal and fetal outcomes are said to have as their immediate source a lack of knowledge about appropriate nutrition and health [27].

Overall, 85% of the pregnant women in this study were knowledgeable about nutrition and health. This result was higher than the study done in Addis Ababa, Ethiopia (27%) and southern Ethiopia (61.0%) [28, 29]. This might be because the outcome variables were different—this study focused on the composite variable maternal nutrition and regular diet, whereas the other two studies concentrated on nutritional knowledge—or because the study designs were different—ours was a community-based study, whereas the Addis Abeba study was facility-based.

Study reveals that more than the three fourth mothers 90% had knowledge about the need for extra amount of food during pregnancy that is similar with the findings of study done by Sanyogita et al. [30]. It also shows that almost all participants (99%) know women's nutrition during pregnancy is different from other

individuals. The participants have good knowledge about different sources of macronutrients like carbohydrates (75.29%), proteins (68.82%), vitamins (95.29%), minerals (91.17%), fiber (84.11%) and fats (62.35%). Study done by Zelalem et al showed a similar finding where (43.8%) believe to eat a variety of food during pregnancy but knowledge level was less comparative to our study (66.5%) regarding necessity to eat more during pregnancy than their non-pregnant state.

The study shows a favorable attitude of the participants regarding maternal nutrition and healthy diet. Majority of the participants agreed that it is good to take take extra food (93%), have different types of food (96%), have leafy vegetables daily in meal (99%), have folic acid supplementation (96%) and calcium supplementation (91.50%), prepare food using iodized salt (97%), drink 3-5 liter of water daily during pregnancy. This shows a high positive attitude regarding the need and importance of extra food during pregnancy as comparative to the study done by Dana et al. In this study, 75% of the studied population had a positive attitude towards the importance of maternal and infant nutrition whereas 25% had a negative attitude [31].

Practice level among pregnant females regarding maternal nutrition is good. Majority of the participants eat 2-3 servings of meat or fish per day (84%), eat 2 servings of green leafy vegetables per day (98%), eat 3 servings of cereals, whole grain or other complex carbohydrates per day (94%), drink 3-5 liter of water daily (82%), consume iron and folic acid supplementation and calcium supplementation daily (93%). etc. No one consumes tobacco in your current pregnancy.

The WHO recommendations on the daily consumption of five portions of fruit and vegetables were not respected by the pregnant women surveyed in the present study. Nearly half (41%) did not consume 2-3 portions of fruit a day. Some studies have shown higher prevalence of fruit and vegetable consumption, such as those by Kérékou et al. in Benin in 2015 [32] and the national survey in Togo in 2011 [33] , where the prevalence rates were 82.9% and 90% respectively. In contrast, in Guinea-Conakry the prevalence of fruit and vegetable consumption was 79.3% [34] . This variation in the prevalence of fruit consumption could be justified by the difference in the study populations. The present study focused on pregnant women in a health facility, whereas the other studies were conducted among the general population.

V. Conclusion:

Proper knowledge about maternal nutrition, a balanced and adequate diet is of utmost importance during pregnancy to meet the increased needs of the mother and to prevent nutritional stress. The study aimed to assess the knowledge, attitude and practice about maternal nutrition and balanced diet among pregnant women. The findings of the study shows that participants have good knowledge, positive attitude and practice towards maternal nutrition and balanced diet. Hence, it might be logical to pay special attention to prospering knowledge on how to prevent the occurrence of pregnancy complications related to food habits and diet.

The results of this study are beneficial for the authorities to take appropriate steps in the direction of enhancing the nutritive value of food by fortification, creating awareness and implementing supplementation schemes.

VI. Recommendation:

- Nutrition education to pregnant women during their ANC visit can improve the nutrition knowledge of pregnant women.
- Awareness generation is required regarding importance of nutrition during pregnancy
- Specific interventions programmes should be initiated to broaden the current focus of iron supplementation during pregnancy to audience specific practical nutrition education to improve nutrition knowledge of pregnant women.
- Targeted nutrition education programs should be developed and implemented and evaluated for women to improve nutritional knowledge and behaviors or practices that subsequently lead to healthier material diets and improved infant outcomes.

Acknowledgments:

All of the authors have equal contribution to this research. The research was done under the direct supervision of Dr. Md Jahedul Islam.

Financial Support:
There was no financial support for conducting the research.

Conflicts Of Interest:
There are no conflicts of interest among authors.

Ethical Approval:
The ethical approval had been issued and the recommendations had been followed accordingly.

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