

Assessment of Nutritional Practices of Pregnant Mothers on Maternal Nutrition and Associated Factors in Guto Gida Woreda, East Wollega Zone, Ethiopia

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Abstract

Nutrition is a fundamental pillar of human life, health and development throughout the entire life span. The nutrition requirement varies with respect to age, gender and during physiological changes such as pregnancy. Pregnancy is a critical phase in a woman's life, when the expectant mother needs optimal nutrients of superior food qualities to support the developing fetus. The aim of this study was to assess the practices of pregnant mothers on maternal nutrition and associated factors in Guto Gida Woreda, East Wollega Zone, Ethiopia. The study was conducted during January to June of the year 2013, using quantitative cross-sectional descriptive study on a sample of 422 pregnant women and supplemented by qualitative study (focus group discussion). The quantitative data were analyzed using SPSS for windows version (16.0). Multiple logistic regression was run to assess factors that were associated with the dependent variable at $P < 0.05$ and to control the confounders. Finally, the result of the study was presented using narratives and tables. This research showed only 33.9% of the respondents were found to have good nutritional practices during their pregnancy. There was a positive significant relation between information about nutrition and family size and nutritional practices of mothers during pregnancy ($P < 0.001$). The practices of pregnant mothers about maternal nutrition were relatively low in this study. Information about nutrition and family size of mothers had a positive significant relation with mothers' nutrition practices in the study area. Hence, the government in collaboration with concerned bodies should focus on nutritional education and information about nutrition to increase the practices of pregnant mothers on maternal nutrition during pregnancy in the study area.

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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 life span (World Bank, 2006). Proper food and good nutrition are essential for survival, physical growth, mental development, performance and productivity, health and wellbeing. However, the nutrition requirement varies with respect to age, gender and during physiological changes such as pregnancy. Pregnancy is such a critical phase in a woman's life, when the expecting mother needs optimal nutrients of superior qualities to support the developing fetus.

Naturally, the urge to eat more is experienced by nearly all pregnant women (World Bank, 2006).

Nutrition throughout life has a major effect on health. This is true for pregnant women as adequate maternal nutrition is one of the best ways to ensure maternal and fetal wellbeing in developed and developing countries. A mother's nutritional status at conception, during pregnancy and lactation, plays a key role in determining her health and well-being, as well as that of her child. So does the quality and quantity of her diet. Providing a nourishing diet for pregnant and lactating women therefore results in

significantly better infant health outcomes. Recent evidence suggests that it may also reduce the risk of chronic diseases later in life. During pregnancy and breast-feeding, the recommended intakes for most nutrients increase (Barker *et al.*, 1993).

Pregnancy is considered to be a delightful experience for the expectant mother. However, feeling of well being and quality of life outcomes, as significant determinate of health, were shown to decline in some dimensions during pregnancy (Nicholson *et al.*, 2006). Studies demonstrated that emotional, physical functioning, vitality and social functioning as dimensions of life quality were inconsistent in different phases of pregnancy (Otchet *et al.*, 1999).

Furthermore, evidences manifested that adequate intake of nutrition is a key component for individual's health and well-being, particularly during pregnancy. It is well documented that inadequate maternal nutrition results in increased risks of short term consequences such as; Intra Uterine Growth Restriction(IUGR), low birth weight, preterm birth, prenatal and infant mortality and morbidity. Moreover, excessive intake of nutrients during pregnancy can lead to some pregnancy complications (such as, preeclampsia and gestational diabetes, macrosomia, distocia and higher prevalence of cesarean section) (Luigi *et al.*, 2005). On the other hand, as the long run outcomes, inadequate intake of nutrients were found to have pathophysiologic or metabolic depict that will appear as disorders of child growth and development as well as adult chronic disease after a long period of quiescence (Luigi *et al.*, 2005).

Eating well during pregnancy means do more than simply increase how much the mother eats. The mother must also consider what she eats. The ability of mother to provide nutrients and oxygen for her baby is a critical factor for fetal health and its survival. Failure in supplying the adequate amount of nutrients to meet fetal demand can lead to fetal malnutrition. The fetus responds and adapts to under nutrition but by doing so it permanently alters the structure and function of the body. Maternal over nutrition also has long-lasting and detrimental effects on the health of the offspring (Maynord *et al.*, 2003).

Malnutrition is one of the most serious health problems affecting children and their mothers in Ethiopia. Undernourished mothers face greater risks during pregnancy and childbirth, and their children set off on a weaker developmental path, both physically and mentally. Undernourished children have lower resistance to infection and are more likely to die from common childhood ailments as

diarrheal diseases and respiratory infections. Those who survive may be locked into a vicious cycle of recurring sickness and faltering growth, often with irreversible damage to their cognitive and social development. Malnutrition prevents individuals and even the whole country from achieving full potential, and is closely related with survival, poverty and development (YCN, 2011).

Several study including Villar *et al.*, (2003) has indicated that the correlation between poor maternal nutritional status and adverse birth outcomes is complex and are influenced by many biologic, socioeconomic, and demographic factors, which vary widely in different populations (Villar *et al.*, 2003).

It is therefore, the promotion of women's health and other preventive health care practice should start before birth, during intrauterine life and extends throughout different phases of their lives in order to sustain their reproductive health in general. The importance of maternal nutrition during pregnancy has long been recognized. The National Academy of Science in America issued a report that reviewed studies of reproductive experience concluded that adequate prenatal nutrition was one of the most important environmental factors affecting the health of pregnant women and their babies (Nagiebs, 2003).

According to UNICEF (2009), each year, more than half a million women die from causes related to pregnancy and childbirth. Nearly 4 million newborns die within 28 days of birth. The lifetime risk of maternal death for a woman in a least developed country is more than 300 times greater than for a woman living in an industrialized country (UNICEF, 2009).

More than 40% of pregnancies in developing countries result in complications, illness, or permanent disability for the mother or child (Tinker *et al.*, 1994). More than 7 million newborn deaths are associated with maternal health- and nutrition related problems resulting from poorly managed pregnancies and deliveries or inadequate care of the neonate soon after birth (WHO, 1997).

Many of the 200 million women who become pregnant each year, most of them in developing countries (WHO, 1997), suffer from ongoing nutritional deficiencies (Mora and Nestel, 2000), repeated infections (Wu *et al.*, 2004) and the long term cumulative consequences of under nutrition during their own childhood (Mora and Nestel, 2000).

Maternal under-nutrition affects the health of both mothers and children and, as a result, has broad

impacts on economic and social development. Undernourished pregnant women have higher reproductive risks, including death during or following child birth. Many women suffer from a combination of chronic energy deficiency, poor weight gain in pregnancy, anemia, and other micronutrient deficiencies, as well as infections like HIV and malaria. These along with inadequate obstetric care, contribute to high rates of maternal mortality and poor birth outcomes (Huffman *et al.*, 2001 and AED LINKAGES, 2004).

Under-nutrition in pregnant women is directly linked to intrauterine growth retardation (IUGR), which results in low birth weight, pre-maturity, and low nutrient stores in infants. Maternal under-nutrition also diminishes a woman's productivity, causing repercussions for herself, her family, her community, and the broader society. Maternal malnutrition is influenced not only by lack of adequate nutrition but also influenced by factors like socio demographic factors, knowledge of mothers, attitude and practice of mothers during pregnancies (AED LINKAGES, 2004).

Although, researches and projects focused on maternal health are common, projects and researches focused specifically on maternal nutrition are rare (Huffman *et al.*, 2001) in the study area. Research, program reports, and other materials specifically related to maternal nutrition principles, practices, and programs are not abundant either (Huffman *et al.*, 2001). This lack of attention to maternal nutrition may in part reflect a focus on mortality reduction rather than on growth and development.

Even though maternal nutrition during pregnancy is crucial in reducing maternal mortality and infant mortality which are the target area in achieving millennium development goal, no study has been conducted the assessment of practices of mothers on nutrition and factors affecting it during pregnancy in the study area. As a result, there is lack of comprehensive information regarding practices and the factors associated with them in the study area. So, of the study was to assess the practices of pregnant mothers on maternal nutrition and associated factors in Guto Gida Woreda, East Wollega Zone, Ethiopia.

MATERIALS AND METHODS

Study Setting

A cross-sectional descriptive institutional based study was conducted to assess practices of pregnant women about maternal nutrition and associated factors that employed both quantitative and qualitative data collection method during

January to June of the year 2013 in Guto Gida Woreda, East Wollega zone, Ethiopia. Guto Gida Woreda has a total area of 901.80 km² and crude population density of 115.43 persons per km² as the 2004 E.C.data record indicated and divided in to 21 farmers associations and one urban center.

According to the information from Guto Gida Woreda health office (population and housing census conducted in 2007 G.C), the total population in the woreda was 105,332 in 2005 E.C out of which 97.22% of the total populations were living in rural area directly engaged their life agriculture and the total numbers of pregnant women were about 3897(3.7%) in the same year.

Furthermore, according to the information from Guto Gida Woreda health office during data collection there were two health centers and 24 health posts under government ownership providing health services for the community in the woreda.

Source Population

All Pregnant women who visited Guto Gida health centers and health posts antenatal care fellow up during January to June of the year 2013.

Study Population

Sampled pregnant women who visited Guto Gida health centers and health posts for antenatal care during January to June of the year 2013.

Sample Size Determination

Quantitative Method

The sample size was determined by the assumption that 50% of the pregnant mothers had bad practices on maternal nutrition during pregnancy with 5% marginal error and 95%CI and a none response rate of 10%. Based on this assumption, the actual sample size for the study was determined using the formula for single population proportion.

$$n = \frac{(Z_{\alpha/2})^2 p q}{d^2}$$

Where n = Sample size

$Z_{\alpha/2}$ = Z value corresponding to a 95% level of significance = 1.96

p = expected proportion of practices of mothers on nutrition during pregnancy = 50% = 0.5

q = (1 - p) = (1 - 0.5) = 0.5

d = absolute precision (5%)

None response rate = 10%

Therefore, from the above sample size is:

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05 \times 0.05} \quad n = 384 + 38 = 422$$

Qualitative Method

For the qualitative study focus group discussion (FGD) was carried out by purposively selected

groups of pregnant women that were not participated in the quantitative study from the same areas.

Sampling Procedure

The calculated sample size was proportionally allocated to the randomly selected health center and health posts from Guto Gida Woreda based on the average number of client prior to the study period in the respective antenatal care fellow units. Then to select study subjects from each antenatal care unit, systematic sampling was applied by referring client's registration book for a month prior to data collection. It was from these numbers that every k^{th} person as they registered was included in the sample at each antenatal care unit until the desired sample size was obtained.

Data Collection Procedures

Semi-structured questionnaires prepared in English language were translated in to Afan Oromo and then translated back to English to check for consistency. In addition, focus group discussions were used for the qualitative study.

Pre-testing Questionnaire

The semi-structured questionnaires were pre-tested in Nekemte health center antenatal care unit. The pre-test were done on 5% of the total sample size. The questionnaire was then assessed for its clarity, length and completeness. Some skip patterns were then corrected; questions difficult to ask were rephrased.

Data Collection

Quantitative Data

For administering the semi-structured questionnaire, four health professionals who had diploma were recruited to conduct an interview. Training was given for two days (including half day of pretest) on the objective, relevance of the study, confidentiality of information, respondent's right, informed consent and techniques of interview. Moreover, class room practical demonstration of the interview was also carried out. One supervisor who has first degree was assigned to supervise the data collection.

Qualitative Data

To compliment the quantitative study, focus group discussions at two sites were carried out with each participating six members of pregnant women along with principal investigator. Finally, the information was tape recorded to support the field notes used during discussion.

Variables

Dependent Variable

practices of pregnant mothers about maternal nutrition

Practices of Pregnant Mothers about Nutrition

Under the construct of nutritional practices of pregnant mothers, there were seven questions for quantitative study. Nutrition practices questions aimed in assessing nutrition practices of pregnant women towards the nutrition required and dietary practices during pregnancy. Pregnant women were asked about their dietary practices.

- The habit of eating more carbohydrates between meals
- If they experience any problems that are interfering with their day to day food intake
- If they avoid any food or diet in the current pregnancy
- The current diet frequency of meal per day
- The habit of eating more snacks between meals during pregnancy
- If they follow their weight during pregnancy
- If they face any cravings for items that you would normally not consume

The respondents had asked to choose yes or no answers by indicating whether a given statement was their dietary practices or not by allowing them to list or state how they practiced for those correctly answered respondents to explore how much they practiced about what they responded correctly with open ended questions. To determine nutrition practice level of the respondents, scores were computed for the nutrition practices variables. One point was allocated to a correct response for each question of nutrition practices in which the correct answers summed together (the sum of the total scores for nutrition practices varied from (0 up to 7) points maximum score) and converted out of 100.

Independent (determinant) Variable

- Socio-demographic characteristics
- Nutrition information and residence of the respondents
- Pre pregnancy nutritional status, health conditions, number of pregnancies before the current pregnancy and the space/gap between pregnancies

Data Quality Assurance

To ensure the quality of data, training of data collectors and supervisors were undertaken and administration of pre-test among 5% of the total sample size to assess its clarity, length, completeness and consistency. The questionnaires were also translated in to local language to facilitate understanding of the respondents.

Supervisors and principal investigator closely followed the data collection process. Filed questionnaires were checked daily for completeness and errors were corrected. In addition to written documentation of responses from study participants, tape recording were done after obtaining verbal consent to ensure that all feedback are captured for analysis.

Data Analysis

The data were checked, cleared and entered into SPSS data sheet software and analysis was done by using SPSS version (16.0). The descriptive analysis such as proportions, percentages, frequency distribution and measures of central tendency were used.

Initially, bivariable analysis was performed between practices of mothers on maternal nutrition during pregnancy (dependent variable) and each of the potential factors associated with practices of mothers on nutrition during pregnancy (independent variables), one at a time. Their odds ratios (OR) at 95% confidence intervals (CI) and p-values was obtained. The findings at this stage helped us to identify important associations.

Then multivariable analysis was performed using the logistic regression model. Factors that are significantly associated with practices of mothers on nutrition during pregnancy at bivariate analysis and those not significant but with previous evidence from literature review indicating possible association with practices of mothers on nutrition during pregnancy was considered in multivariate logistic regression model.

Ethical Considerations

Ethical clearance and permission were obtained from Wollega University Ethical Review Committee and permission was secured from Guto Gida Woreda health office. The nature of the study was fully explained to the study participants to obtain their oral informed consent prior to participation in the study and data was kept confidential.

RESULTS

Socio-demographic characteristics

Out of the 422 sampled pregnant women to be included in this study 419 responded to the questionnaires making a response rate of 99.3%. Different questions were asked to assess practices of pregnant mothers on maternal nutrition and determinant factors in the study area. The mean age (+/-SD) of the participants was 24.7 (+/- 5.12) years, while the age range was 16-38. However, considerably high proportions of the respondents (48.2%) were in the age range of 15-24 years.

Besides, most study respondents were married (97.1%).

Regarding the ethnic composition and religion of the respondents about greater than three quarter of them were Oromo and the majority of respondents' religion was protestant followed by Orthodox as shown in the table 1.

As far as education level of study population is concerned, almost two third (65.4%) of the respondents were illiterate. Concerning the occupation of respondents, the majority (85.7%) were house wives. Greater than three quarter (89.8%) of the respondents husbands occupation were farmer, whom above half (52%) of their educational status were illiterate as described in table 1.

On the other way regarding women's estimated monthly income majority of women(79.0%) earned less than 1000 birr per month, (10.0%) of them earned 1000-2000 birr per month and only (11.0%) of the respondents had monthly income greater than 2000birr.

As far as residence and nutrition information during pregnancy are concerned, about (95.7%) of the respondents were living in rural and only less than half of the respondents (42.2%) had no nutritional information during their pregnancy as here presented in table 1.

On the other hand, twelve pregnant women participated in focus group discussion for qualitative study. Their age ranges from 20-35 years. Most respondents were married while ten of them were house wife. Eight of the respondents were illiterate while four of them had attended at least primary education.

Practice of Mothers On Nutrition During Pregnancy

Out of 419 study participants responded to the questions assessing nutritional practices, less than half (47%) of respondents had experienced any craving for items that they would not normally consume but most (53%) of the study participants had not experienced any craving for items that they would not normally consume as indicated in table.

Regarding avoidance of any food during pregnancy, only (35.8%) of the respondents had practiced avoiding food during their pregnancy. Out of those who avoided food during their pregnancy, (46.7%) reported makes the baby big, (36.0%) reported cultures, (14.7%) reported makes delivery difficult and (2.6%) reported religions as the reason for avoidance of the food respectively. But (64.2%) of the respondents had not avoided any food item during their pregnancy.

Table 1: Socio-demographic characteristics of study participants.

Characteristics (n=419)	Number (%)
Age	
15-24	202 (48.2)
25-34	188 (44.9)
35-44	29 (6.9)
44+	0 (0.0)
Marital status	
Married	407 (97.1)
Divorced	3 (0.7)
Widowed	9 (2.2)
Ethnicity	
Oromo	348 (83.1)
Amahara	55 (13.1)
Tigre	16 (3.8)
Religion	
Orthodox	156 (37.2)
Catholic	0 (0.0)
Muslim	39 (9.3)
Protestant	224 (53.5)
Educational Status	
Illiterate	274 (65.4)
Primary(1-8)	105 (25.1)
Secondary(9-12)	39 (9.3)
Diploma and above	1 (0.2)
Occupational Status	
Employed	8 (1.9)
House wife	359 (85.7)
Daily laborers	22 (5.3)
Business	30 (7.2)
Estimated monthly respondents income (in Eth. Birr)	
< 1000	42 (10.0)
1000-2000	46 (11.0)
>2000	
Respondents Husband Occupation	
Employed	6 (1.4)
Business	37 (8.8)
Farmer	376 (89.8)
Respondents access to information about nutrition during pregnancy	
Yes	242 (57.8)
No	177 (42.2)

As indicated in the table 2, (59.9%) and (70.9%) of the respondents did not practiced the habit of eating snacks and carbohydrates between meals during their pregnancy respectively. But (40.1%) and (29.1%) of the respondents had the practice of eating snacks and carbohydrate respectively between meals during their pregnancy for the nutritional practice assessing question.

Concerning the diet frequency of meal per day, most of the respondents (66.1%) had diet frequency of meal 1-2 per day during their pregnancy. The rest (20.3%) and (13.6%) had diet frequency of meals 3-

4 and ≥ 5 per day respectively during their pregnancy for the nutritional practice assessing question.

Most of the respondent (76.6%) had practiced in following their weight during pregnancy where as the rest (23.4%) of the respondent had not practiced in weight fellow during their pregnancy as shown in the table 2 below.

Table 2: Practice characteristics of study participants of pregnant women on maternal nutrition

Characteristics	Number (%)
Facing any cravings for items that you would normally not consume (n=419)	
yes	197 (47.0)
no	222 (53.0)
Do you avoid any food or diet in the current pregnancy? (n=419)	
yes	150 (35.8)
no	269 (64.2)
Reason of avoidance of any food or diet in the current pregnancy? (n=150)	
Religion	4 (2.6)
Culture	54 (36.0)
Make the baby big	70 (46.7)
Makes delivery difficult	22 (14.7)
What is your current diet frequency of meal per day? (n=419)	
1-2	277 (66.1)
3-4	85 (20.3)
≥ 5	57 (13.6)
The habits of eating snacks between meals during pregnancy (n=419)	
yes	168 (40.1)
no	251 (59.9)
Do you have the habit of eating more carbohydrate between meals during pregnancy? (n=419)	
Yes	122 (29.1)
No	297 (70.9)
Do you follow your weight during pregnancy? (n=419)	
Yes	321 (76.6%)
No	98 (23.8%)

In general, 33.9% of the respondents were found to have good practice depending up on questions offered to them to assess practices of mothers' maternal nutrition during their pregnancy.

Factors Affecting Mothers' Nutrition Practices During Pregnancy

Previous number of pregnancy, mothers occupation and residence of the respondent have significant association with practices of mothers on nutrition during their pregnancy ($P < 0.05$). Moreover, in bivariate analysis, information about nutrition and family size of the respondents have strong statistical

association with good practices of mothers on nutrition during their pregnancy ($P < 0.001$). whereas, age, educational level of mothers, income, husbands educational level and pregnancy health problems have no association with practices of mothers on nutrition ($P > 0.05$).

In a multivariable analysis residence of the respondent and mothers occupation were displayed significant positive relationships with a woman's odds of nutrition practices during pregnancy ($P < 0.01$). Relative to employed women, daily laborer women had significantly less odds of practices on nutrition during pregnancy (AOR= 0.009, 95% CI: 0.001-0.170) as here presented in the table 3 below.

From further multivariable analysis, the finding of the study identified that family size have strong statistical association with nutrition practices of mothers during pregnancy ($P < 0.001$). Relative to the pregnant women with family size of 1-2, women with family size of ≥ 5 had 0.04 less likely nutrition practices during pregnancy (AOR=0.04, 95%CI: 0.01-0.15). In addition the finding revealed that information about nutrition during pregnancy have strong statistical association with practices of mothers on nutrition ($P < 0.001$). Women who had information about nutrition during pregnancy had 6.3 more likely good nutrition practice than women who had no information during pregnancy (AOR= 6.26, 95% CI: 3.49-11.25) as shown in table 3.

Table 3: Multivariable of nutrition practices by socio-demographic of study participants.

Variables	Practice		95% CI	
	Good	Poor	COR	AOR
Family size				
≤ 2	94(43.7)	121(56.3)	1	1
3-4	31(22.8)	105(77.2)	0.380(0.234-0.616)***	0.107(0.046-0.251)***
≥ 5	17(25.0)	51(75.0)	0.429(0.233-0.791)**	0.039(0.010-0.151)***
Information about Nutrition				
No	38(21.5)	139(78.5)	1	1
Yes	104(43.0)	138(57.0)	2.757(1.776-4.280)***	6.264(3.487-11.254)***
No of pregnancy before the current pregnancy				
≤ 2	85(36.0)	151(64.0)	1	1
3-4	26(22.4)	90(77.6)	0.513(0.308-0.855)*	3.537(1.492-8.386)
≥ 5	31(46.3)	36(53.7)	1.530(0.844-2.648)	26.238(7.015-98.138)
Residence				
Urban	1(5.6)	17(94.4)	1	1
Rural	141(35.2)	260(64.8)	9.219(1.214-69.998)*	49.730(4.668-529.825)**
Mothers Occupation				
Employed	7(87.5)	1(12.5)	1	1
Business	12(40.0)	18(60.0)	0.095(0.010-0.876)*	0.040(0.002-0.692)*
Housewife	117(32.6)	242(67.4)	0.069(0.008-0.568)*	0.037(0.003-0.531)*
Daily laborer	6(27.3)	16(72.7)	0.054(0.005-0.532)*	0.009(0.001-0.170)**

*** = $P < 0.001$ (strong statistical association), ** = $P < 0.01$ (statistical association),

* = $P < 0.05$ (Statistically significant), COR=Crude odds ratio, AOR= Adjusted odds ratio

DISCUSSIONS

This study has documented the level of practice of mothers during pregnancy on maternal nutrition and associated factors in Guto Gida Woreda, East Wollega zone, Ethiopia. The incidence of dietary inadequacies as a result of dietary habits and patterns in pregnancy is higher during pregnancy than at any other stage of the life cycle (Rao *et al.*, 2006).

This study showed that (35.8%) of the respondents had practiced avoiding food during their pregnancy. Out of those who avoided food during their pregnancy, (46.7%) reported that it makes the baby big; type of food they mentioned were fat, banana, (36.0%) reported cultures: type of food they mentioned were porridge, red meat etc. (14.7%) reported makes delivery difficult and (2.6%)

reported religions as the reason for avoidance of the food respectively. This figure is lower than the study conducted in Accra, Ghana by Alice *et al.*, (2012) in which nearly half (44.8%) of the pregnant women in the study avoided at least one kind of food. This discrepancy may be due to difference in the culture, religion and socio economic background of study participants of the studies.

This study revealed that (47%) respondents had experienced any craving for items that they would not normally consume which is much lower than the one studied in southern Ethiopia by Tsegaye Demissie *et al.* (1996) in which slightly fewer than three-quarters (71%) of the women craved one or more foods during pregnancy. This difference may be due to the difference agricultural products as food staffs availability in the study areas.

This study showed that more than half (59.9%) of the respondents did not practice the habit of eating snacks between meals during their pregnancy which is different from the study conducted in Accra, Ghana, that revealed the frequency of snack consumption per day increased during pregnancy. Different types of snacks were consumed before and during pregnancy. Snacks consumed included pastries, fruits, fruit juices or fizzy drinks, roasted plantain and groundnut and ice cream (Alice *et al.*, 2012).

This study showed that the diet frequency of meal per day: most of the respondents (66.1%) had diet frequency of meal 1-2 per day during their pregnancy. The rest (20.3%) and (13.6%) had diet frequency of meals 3-4 and ≥ 5 per day respectively during their pregnancy. The figure resulted by this study about frequency meal consumption of greater than three per day is lower than the study conducted in Accra, Ghana, that a greater proportion (37.7%) of the women are more than three times during pregnancy as compared to only 11.5% before pregnancy (Alice *et al.*, 2012). This discrepancy may be the difference in economic background of the study participants in the studies.

In general, 33.9% of the respondents were found to have good practice depending up on questions offered to them to assess practice of mothers' nutrition during their pregnancy. This figure is lower than the study conducted in Malawi that (57%) of the pregnant women had good practices on nutrition and food groups in pregnancy (Naomi, 2010). This low nutritional practice may be due to low nutritional knowledge of the pregnant mother and family member during pregnancy, low income, relatively high family size, lack of information about nutrition during pregnancy and low educational status of the study participants in this study.

Factors Affecting Practices of Mothers On Maternal Nutrition During Pregnancy

The finding of this study identified that family size have strong statistical association with nutrition practices of mothers during pregnancy ($P < 0.001$). Relative to the pregnant women with family size 1-2, women with family size of ≥ 5 had 0.039 less likely nutrition practice during pregnancy (AOR=0.039, 95%CI: 0.010-0.151) which is similar to the study conducted in Accra, Ghana in household size was predictor of nutrient intake practice in pregnant women (Alice *et al.*, 2012).

In addition the finding of this study revealed that information about nutrition during pregnancy have strong statistical association with practices of mothers on nutrition ($P < 0.001$). Women who had information about nutrition during pregnancy had 6.3

more likely good nutrition practice than women who had no information during pregnancy (AOR= 6.264, 95% CI: 3.487-11.254).

The most significant predictor for good nutritional practices was information about nutrition, women occupation and family size. This result supported by the fact that good knowledge about basic nutrients and adequate well balanced diet usually resulting in positive dietary practices which are important determinants of optimum health from conception until death (Painter *et al.*, 2003).

CONCLUSION

Based on the findings of the present study, it can be concluded that most pregnant mothers in the study area were illiterate, had low income, house wife and their husband engaged in farming. The pregnant mothers' access to nutritional information in the study area was also relatively low.

This finding also showed only less than half of the respondents 33.9% were found to have good nutritional practices during their pregnancy. Some pregnant mothers in the study (35.8%) had practiced avoiding food during their pregnancy due to religion, culture and thinking that the food items make the baby big and more than half of the respondent had diet frequency of meal one to two per day. There was also significant positive relation between family size, nutrition information during pregnancy and mothers' occupation and nutrition practices of mother during pregnancy that this research identified. Hence, nutrition intervention such as nutrition education in different villages, health centers, health posts and women organizations should be given for the community particularly for the pregnant mothers concerning nutrition during pregnancy in the study area.

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