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Research Article

DIETARY PRACTICES AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN IN WONDO GENET DISTRICT, SOUTHERN ETHIOPIA: A CROSS-SECTIONAL STUDY

Kuche Desalegn [1], Singh Pragya *[2], Moges Debebe [3]

[1]Food Sciences and Nutrition Research Directorate, Ethiopian Public Health Institute, Addis Ababa, Ethiopia

[2]Pragya Singh, Associate Professor (Dietetics and Nutrition), Department of Public Health and Primary Care, College of Medicine, Nursing & Health Sciences, Fiji National University, Fiji

[3]Debebe Moges, School of Nutrition, Food Science and Technology, Department of Applied Human Nutrition, Hawassa University, Hawassa, Ethiopia

*Corresponding Author Email: pragyasingh85@yahoo.co.in

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ABSTRACT

Diet is one of the prime determinants of health and nutritional status. An inadequate diet, poor in both quality and quantity, is one of the major reasons for high levels of malnutrition in women. A cross-sectional survey was conducted to assess dietary practices and to identify factors associated with sub-optimal dietary practices of pregnant women in Wondo Genet District, Southern Ethiopiain. A two-stage cluster sampling technique was used to select a representative sample of 153 pregnant women aged 19-49 years from three rural villages ("Kebeles"). About 43.8% of study participants commonly skipped lunch and 24.2% skipped breakfast. About 21% of the pregnant mothers restricted their food intake. Majority (75.2 %) of study participants did not take any additional meal during pregnancy. Factors like not growing enset, eating no legumes and no additional meal have a significant association with food restriction habit of the respondents. Taking no additional meal was significantly associated with family size, growing khat, not growing vegetables and fruits, and no consumption of white vegetables and roots. Skipping meal was significantly associated with family size and number of pregnancy**.** The dietary practice of the pregnant women in study area was suboptimal. Pregnant women in the study area suffered from suboptimal dietary practices such as taking no additional meal during pregnancy, skipping meals, food restriction and taking less diversified diet.

Keywords: Dietary practices, pregnant women, meal, suboptimal, southern Ethiopia

INTRODUCTION

Malnutrition, defined as being underweight, is a serious public health problem linked to a substantial increase in the risk of mortality and morbidity[1]. Women and young children are most affected by malnutrition. Diets that place people at risk for malnutrition are those deficient in macronutrients and/or micronutrient[2,3]. Adequate nutritional status of pregnant mothers is essential for their health and pregnancy outcomes. Due to increased nutritional requirements, pregnancy is a critical period for meeting the body's demand for macro- and micronutrients. Thus, anemia and vitamin A deficiency (VAD) are highly prevalent nutrient deficiencies encountered in pregnant women, affecting 53.8 million (55.8 %) and 7.2 million (6.8 %) on a global scale, respectively[4,5]. Both the deficiencies have been shown to result in serious health consequences including increased morbidity and mortality of both mother and child[6]. Malnutrition is globally the most important risk factor for illness and death with hundreds of millions of pregnant women and young children particularly affected[7, 8]. Poor nutrition in pregnancy in combination with infections is a common cause of maternal and infant mortality and morbidity, low birth weight and intrauterine growth retardation[9].

The combination of chronic energy deficiency, poor weight gain in pregnancy, anemia, other micronutrient deficiencies, infections such as HIV and malaria, and inadequate obstetric care contribute to high rates of maternal mortality throughout most countries in Africa[10].

A common custom in developing countries is reduction of food intake during pregnancy. This practice, known as "eating down" often stems from a belief that a larger fetus will cause a more difficult delivery, particularly when the woman herself is small[11]. Researchers have found that changes in food-related behaviors take place more often during pregnancy than at any other stage of life[12]. Numerous studies have demonstrated that pregnant women need to increase food intake during pregnancy to fulfill increased energy needs associated with the growth of the fetus. Women decreasing their energy intake have a higher risk of preterm delivery[13]. Evidence from many countries also demonstrates a correlation between caloric intake and both pregnancy weight gain and birth weight of the infant. Low birth weight (LBW) in turn, has been closely associated with growth retardation, poor mental performance, morbidity and mortality during childhood. LBW also may increase susceptibility to chronic disease including cardiovascular disease, diabetes mellitus, and hypertension, which in turn affect adult productivity[14]. In the developing world as a whole, one in five newborns is LBW. South Asia contributes the highest number of LBW infant; the figure is one in two. If attention is given to importance of pregnancy food consumption to pregnancy outcomes, the factors that influence pregnancy food consumption levels deserves explicit attention in the formulation of health and nutrition policies and programs[11]. Another factor which contributes to the prevalence of malnutrition in infants is the time of introduction of complementary foods and the quality of complementary foods[15].

Hunger and malnutrition are devastating problems, particularly for the poor and unprivileged. According to the study by the Ethiopian Ministry of Economic Development and Cooperation, 50 percent of the Ethiopian population are living below the food poverty line and cannot meet their daily minimum nutritional requirement of 2200 calories[16]. A woman's nutritional status has important implications for her health as well as the health of her children. Malnutrition in

women results in reduced productivity, an increased susceptibility to infections, retarded recovery from illness, and heightened risk of adverse pregnancy outcomes. A woman who has poor nutritional status as indicated by a low body mass index (BMI), short stature, anaemia, or other micronutrient deficiency, has a greater risk of obstructed labor, having a baby with a low birth weight, producing lower quality breast milk, death due to postpartum hemorrhage, and illness for herself and her baby[17]. The maternal mortality indicators show that there were 871 and 673 maternal deaths per 100,000 live births in 2000 and 2005, respectively, in Ethiopia which are consistent with the estimates made by central statistical agency. Maternal deaths constituted about a quarter in 2000 and a fifth in 2005 of all adult female deaths aged 15-49, respectively[18]. This study is important in filling the gap in knowledge of dietary practices in pregnant women in rural community in Ethiopia. Its aim was to assess dietary practices and associated factors among pregnant in study area.

METHODS

The study was carried out in Wondo Genet District located south east of Shashemene in Sidama Zone of SNNPR, Ethiopia. There are 13 rural and 1 urban kebeles in the district. Total population of Wondo Genet District was estimated to be 137,010 of which 114,716 were rural and 22,294 were urban population. The number of women of reproductive age in rural areas was 26,729. Out of these women in the reproductive age; 5010 women were estimated to be pregnant.

A cross sectional community based survey was carried out in rural community of Wondo Genet District. The source population for this study was pregnant women aged 19 - 49 years residing in rural community of the district. The study population was all pregnant women in the second and third trimester who were identified and included in the study with the help of health professionals and having information from their Antenatal care (ANC) document in health center. Based on an assessment of fundal height performed by nurses, the pregnant women were classified into second and third trimester of pregnancy and their dietary practices were assessed. The sample size was calculated based on the previous research that showed the prevalence of inadequate dietary iron intake (4%) among pregnant women in Sidama population[19]. Based on statistical formula, the total sample size calculated for this study was 153. Design effect and default was considered in the sample size calculation. Two-stage cluster sampling technique was used to select a representative sample. On the first stage, the list of existing kebeles of the district was obtained from the Wondo Genet district health office. Then, out of the total 13 kebeles, three kebeles were selected using probability proportional to size. Selection of individuals in the selected clusters was done in the second stage. In this stage, the sample size was assigned to each of the three kebeles selected and individuals included in the study were selected from the list of pregnant mothers in the respective kebeles. Individual women were randomly selected and stratified according to their gestational age for dietary practices assessment. They were interviewed at their respective homes.

A structured and pre-tested questionnaire was used to gather data related to the objectives of the study. A food frequency questionnaire was used to assess dietary consumption during the last one month before the survey. Women were interviewed about their meal to understand that at least one additional meal had been consumed by the subjects as it is recommended in essential nutrition action. Dietary diversity was calculated by summing the number of food groups. The women were also interviewed about food taboo during pregnancy and the reason why they prohibited.

All statistical analyses were carried out using SPSS version 20. The logistic regression was carried out to identify factors associated with dietary practices of the pregnant women. Then, the variables were checked for statistical significance. Multivariable logistic regression analysis was performed to examine the net effect of each independent variable while controlling for the other independent variables.

Prior to starting the work, the ethical review committee of the Hawassa University approved the study. The study design was also explained to officials of health and administrative office of Wondo Genet District for their permission and support. The nature of the study was fully explained to all pregnant women subjects included in the study to obtain verbal consent. Information was collected after getting consent from study participants. Data obtained from each study participant was kept confidential and all who participated in the study was acknowledged

RESULTS

The median age was 25 years for the study participants. The median family size was 5 persons, while more than half (54.9 %) of the households had more than 5 family members. More than half (52%) of the study participants were with no formal education while only 39.1% husbands did not receive any formal education. Majority of the study participants (90.2%) were housewives, with about three fourth (74.5%) husbands were farmers. All of the study participants were married on average for 8.5 (±5.6) years and 43.1 % were in the age range of 25 - 29 years. Access to safe water (protected spring or public/private tape water) was reported by 90.8 % of the respondents. Almost all of them (98.7 %) lived in male-headed households (Table 1).

Out of the total subjects, 37.3 % were pregnant for the first time and second time, 26.8 % for third and fourth time and 10.5 % for more than 7 times. More than one-third (39.9 %) of age of the last child of the respondents lie between 24 and 35 months, whereas 20.9 % were below 24 months. More than half (56.9 %) of the study participants were following antenatal care during the study period. About 40 % of the respondents reported that they had an experience of using family planning methods (Table 1).

Dietary practices of the study population

Table 2 shows dietary practices of the study population. The majority (94%) of the study participants consumed foods cooked with oil or fat. More than three fourth (76.5%) of the study participants reported that they consumed cereal based crops (maize, sorghum, millet, wheat, barley and teff) prior to the survey and about three fourth (74.5%) of the study subjects consumed legumes in the previous 24 hour recall. Other vegetables (tomato, onion) and dark green vegetables (kale, swiss chard, and green pepper) were consumed by 71.2% and 66.7% of the subjects respectively one day prior to the survey. Other white vegetables and tubers (yam, cassava, enset and white sweet potato) and vitamin A rich vegetables (pumpkin, carrot and orange fleshed sweet potato) were consumed by 41.8% and 20.9% of the study subjects, respectively. Nearly half (49%) of the study groups reported that they consumed other fruits (avocado, banana, lemon and orange) while 27.5% reported that they consumed vitamin A rich fruits (ripe mango, papaya and grape). Among animal products milk and milk products were consumed largely (40.5%) by the study group whereas flesh meat, egg, organ meat and fish were consumed by 12.4%, 11.1%, 7.2% and 2.6%, respectively.

From Table 3 it can be concluded that majority (41.8 %) of the respondents consumed cereal based foods more than once per day and also 39.9 % consumed enset and its products more than once a day. More than half (56.9 %) of the respondents consumed food prepared with oil and butter more than once per day. Majority (37.3 %) of the participants consumed beans and peas once per day followed by roots and tubers (28.8 %) and cereal (28.1 %). Majority (60.1 %) of the

participants consumed meat twice per month and 38.6 % of study participants consumed egg only twice per month. Almost all (98 %) of the participants never consumed fish with in the month period prior to survey and 30.7 % of them never consumed egg in the time frame mentioned.

Table 4 indicates the dietary practices of the study participants and other related characteristics. Accordingly, majority (92.8 %) of pregnant mothers reported that they mostly consumed meals three times per day whereas only 4.6 % of them reported less than or equal to two times per day. Regarding their perception about the amount of serving, 66.0 % of them considered it as adequate. Even though, the majority (92.8 %) of the subjects had a usual frequency of meals i.e. three times per day, about three fourth (75.2 %) of the respondents had no additional meal during pregnancy. Only 21.6 %of the subjects reported that they eat at least one additional meal during pregnancy. About 43.8 % commonly skipped lunch and 24.2 % reported that they skip breakfast. About 20.9 % of the pregnant mothers restricted their food intake mainly because of their personal dislike (18.3%) and cultural reasons (2.6 %). Nearly all (98%) of the study participants used rock salt for food preparation. Majority (73.2%) of the subjects used both clay and iron utensils for cooking food.

Factors associated with the dietary practices of the study population

Table 5 shows food restriction habit of pregnant mothers in the study area. Accordingly, food restriction was higher because of personal dislike (18.3%) than because of cultural reason (2.6%). Factors like not growing enset, eating no legumes and no additional meal have a significant association with food restriction habit of the respondents [AOR (95% CI) =4.59(1.20-17.48)], [AOR (95% CI) =6.42(1.89-21.79)] and [AOR (95% CI) = 0.19(0.04-0.94), respectively. Month of pregnancy, farm land size, growing khat and having dark green vegetables were not significantly associated with food restriction habit after adjusting for covariates.

Table 6 and 7 indicate the frequency of meal among the pregnant women in the study area. Accordingly, taking no additional meal was significantly associated with family size, growing khat, not growing vegetables and fruits, and no consumption of white vegetables and roots [AOR (95% CI) = 18.54(1.24-58.78)], [AOR (95% CI) = 5.36(1.87-15.38)], [AOR (95% CI) = 4.06(1.46-11.26)] , [AOR (95% CI) = 3.06(1.12-8.44)], respectively. Skipping meal was reported by the study participants, and it was significantly associated with family size and number of pregnancy with [AOR (95% CI) = 1.54(1.15-2.06)] and [AOR (95% CI) = 3.46(1.32-9.09)], respectively (Table 8).

DISCUSSION

The current study revealed that food restriction is due to personal dislike (food aversion) and cultural reasons (food taboos) that prohibit consumption of a particular food during pregnancy. Reported food aversion of the mothers during pregnancy was relatively higher (18.3%) than the reported cultural prohibition (food taboo) of a particular food (2.6%). One study conducted in Shashemene, Ethiopia near to this study area reported higher percentage (49.8%) of total pregnant mothers encountered food taboos at least for one food item[20]. Similarly, another study in Hadiya, Southern Ethiopia also reported higher percentage (27%) of pregnant mother avoided some foods due to food taboos[21]. Another study in Nigeria also reported higher percentage (16.1%) of food taboo among rural pregnant women[22]. The possible reason for low percentage reported in the current study might be lower sample size than those studies. Factors like not growing false banana-enset (local name), not eating legumes and additional meal were significantly associated with food restriction habit. For example, a pregnant woman in a household that does not grow enset was 4.59 times more likely to have food restriction habit during pregnancy compared with those who grow enset. This might be related to the consumption frequency of the enset and its product as a staple food in the study area. Similarly, a pregnant woman who did not eat legumes in the previous 24 hr recall of survey period compared to those who ate was 6.42 times more likely to have food restriction habit during pregnancy. Different studies reported different factors that have been associated with adherence to food taboos including primi gravidity, teenage pregnancy, lack of formal education, low household income, previous ANC, fasting during pregnancy, monthly income, signifying low socioeconomic status and a low body mass index[23,20]. Three fourth (75.2%) of the study participants was taking no addition meal and nearly the same percent (69.3 %) was skipping regular meal during pregnancy. This finding is similar with study by in Nigeria that revealed very few respondents had a daily snacking habit, with rural women having a higher proportion (10%) than their urban counterparts (8.3%)[22]. More than 15.0% of respondents did not take any form of snacks, with more rural women (19.2%) reporting avoidance of snacks than their urban counterparts (15.8%). This is also consistent with findings of poor food habits among pregnant women in developing countries, especially in South Asia and sub-Saharan Africa[24,25,26,17]. Taking additional meal during pregnancy was significantly associated with large household size, growing khat, growing vegetables and fruits. A pregnant woman with household size ≥ 4 persons was 18.54 times more likely to have no additional meal during pregnancy compared to their counterpart household with < 4 household size. This might be related to large family size and sharing the amount of serving among themselves and leaving nothing for the mother to take additional food. A pregnant woman who lived in a household growing khat compared to who lived in a household that does not grow khat was 5.36 times more likely to have no additional meal during pregnancy. This might be related to land utilization of the community that gives priority to cash crops and the income controlling and sharing capacity of the women in the household. A pregnant woman who lived in a household that do not grow vegetables and fruits was 4.06 times more likely to have no additional meal during pregnancy compared to a pregnant woman who lived in a household that grows vegetables and fruits. This might be related to easy accessibility of fruits and vegetables from the farm land if the household grows them. Skipping meals was observed in the study participants and it was significantly associated with household size and number of pregnancy. As the number of a household size increases, the likely hood of a pregnant woman to skip meals is increased by a factor of 1.54. This might also be related with the increased family size and sharing the food available to the household. Similarly, women who were pregnant for second and more times were 3.46 times more likely to skip their regular meal during pregnancy compared to those who were pregnant for the first time.

CONCLUSION

Majority (75.2 %) of pregnant women who participated in current study reported that they did not take additional meal during pregnancy. About 44 % of the study subjects reported that they were commonly skipping their lunch and also about 24 % of the subjects reported that they were commonly skipping breakfast. Overall, about 69.3 % of the subjects were skipping one or more of their regular meals. Food restriction habit of the study subjects was significantly associated with not growing enset, no consumption of legumes and taking no additional meal during pregnancy. Taking no additional meal during pregnancy was significantly associated with family size, growing khat, not growing vegetables and fruits. Skipping meal was observed in the study participants and it was significantly associated with family size and number of pregnancy. Therefore, these implied that the dietary practices of the study subjects were suboptimal.

Table 1 Socio-demographic characteristics of the study participants (n=153)

Family characteristics	Frequency	Percent
Median age in years	25 years	
Maternal education		
No formal education	81	53
Formal education	72	47
Occupation of mother		
House wife	138	90.2
Petty trade	11	7.2
Daily laborer	4	2.6
Family size		
2-4 family member	69	45.1
5-7 family member	63	41.2
>7 family member	21	13.7

Table 2 Maternal characteristic of the study participants (n = 153)

Maternal characteristics	Frequency	Percent (%)
Number of pregnancy		
1-2	57	37.3
3-4	41	26.8
5-6	39	25.5
≥7	16	10.5
Antenatal care	87	56.9
Family planning	61	39.9
Parity (Gravida)		
No parity	35	22.9
Less than four	83	54.2
Four and more	35	22.9

Table 3: Reported food groups consumed by participants in the previous 24 hour recall (n=153)

Food groups	(n=153)	Percent (%)
Cereals	117	76.5
Vitamin A rich vegetables and tubers	32	20.9
White vegetables and tubers	64	41.8
Dark green vegetables	102	66.7
Other vegetables	109	71.2
Vitamin-A rich fruits	42	27.5
Other fruits	75	49
Organ meat	11	7.2
Flesh meat	19	12.4
Egg	17	11.1
Fish	4	2.6
Legumes and nuts	114	74.5
Milk and milk products	62	40.5
Foods cooked with oil, fat or butter	144	94.1
Median maternal dietary diversity score	6	

Table 4 Consumption in percentage of food groups of pregnant women a month prior to the study period

Food groups	once /day	Once/ day	3-6 / week	1-2 / week	Twice/month	Never
Cereal	41.8	28.1	19	8.5	2.6	-
Roots & tubers	13.7	28.8	25.5	22.9	7.8	1.3
Enset	39.9	18.3	11.8	17.6	9.8	2.6
Dark green veg.	32	23.5	20.9	13.1	5.2	5.2
Any fruits	13.1	14.4	20.9	40.5	9.2	2.0
Meat	0.7	5.2	10.5	17	60.1	6.5
Egg	-	0.7	10.5	19.6	38.6	30.7
Fish	-	-	-	0.7	1.3	98
Beans and peas	21.6	37.3	26.1	12.4	2	0.7
Milk & its products	17	15	20.9	26.8	12.4	7.8
Oil and/ or butter	56.9	22.9	10.5	5.9	3.3	0.7
Sugar & soft drinks	6.5	17.6	26.8	19.6	25.5	3.9
Tea and coffee	95.4	2.6	-	-	0.7	-

Table 5 Reported dietary practices of the study participants and other related characteristics (n=153)

Dietary practices and other characteristics		Frequency	Percentage
Household evaluation of amount of serving			
	Not enough	47	30.7
	Enough	101	66.0
	More than enough	5	3.3
Type of salt usually consumed in household			
	Rock salt	150	98
	Iodized salt	3	2
Number of meals per day			
	Once	1	0.7
	Twice	6	3.9
	Three times	142	92.8
	Four and above	4	2.6
Number of additional meal			
	No additional meal	115	75.2
	One additional meal	33	21.6
	Two additional meal and more	5	3.3
Skipping meal			
	Break fast	37	24.2
	Lunch	67	43.8
	Dinner	2	1.3
Food restriction		32	20.9
Reason for food restriction			
	Cultural reason	4	2.6
	Personal dislike (food aversion)	28	18.3

Table 6 Association between some variables with food restriction of the study participants (n=153)

	Food restriction			
Variables	Yes n (%)	No n (%)	Crude OR(CI)	Adjusted OR (CI)
Growing enset				
Yes	20(13.1)	101(66)	1	1
No	12(7.8)	20(13.1)	3.03(1.28-7.17)*	4.59(1.20-17.48)*
Having beans or peas				
Yes	18(11.3)	96(62.7)	1	1
No	14(9.2)	25(16.3)	2.99(1.31-6.82)**	6.42(1.89-21.79)**
Having additional meal				
Yes	11(7.2)	27(17.6)	1	1
No	21(13.7)	94(61.4)	0.55(0.24-1.28)	0.19(0.04-0.94)*

*p value< 0.05 **p value< 0.001

Table 7 Association between some variables with taking no additional meal during pregnancy (n=153)

	Taking additional meal			
Variables	Yes n(%)	No n(%)	Crude OR(CI)	Adjusted OR (CI)
Family size				
<4	23(15)	46(30.1)	1	1
≥4	15(9.8)	69(45.1)	2.3(1.09-4.87)	18.54(1.24-58.8)*
Growing khat				
Yes	24(15.7)	97(63.4)	3.14(1.37-7.20)*	5.36(1.87-15.38)**
No	14(9.2)	18(11.8)	1	1
Consumption white vegetables & roots*				
Yes				
No	22(14.4)	42(27.5)	1	1
	16(10.5)	73(47.7)	2.39(1.13-5.05)*	3.06(1.12-8.44)*
Growing veg. and fruits				
Yes	25(16.3)	55(35.9)	1	1
No	13(8.5)	60(39.2)	2.10(098-4.50)	4.06(1.46-11.26)**

*white vegetables = cassava, yam, sweet potato (not orange one). *p value< 0.05**p value< 0.001

Table 8 Association between some variables with skipping meals of the study participants (n =153)

	Skipping meal			
Variables	Yes	No	Crude OR(CI)	Adjusted OR (CI)
Household size	106(69.3)	47(30.7)	1.22(1.03-1.44)*	1.54(1.15-2.06)**
Number of pregnancy				
First pregnancy	15(9.8)	18(11.8)	1	1
Second and more pregnancy	91(59.5)	29(19)	3.77(1.69-8.40)**	3.46(1.32-9.09)*

*p value< 0.05 **p value< 0.001

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