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Comparison of Food Insecurity and Nutritional status in Planned with Unplanned Pregnancy in Falavarjan, Isfahan, Iran 2014

Razieh Rasty [1], Hamed Pouraram[2], Ahmadreza Dorosty Motlagh[3], Ramin Heshmat[4]

1. Master Degree, Department of Community Nutrition, School of Nutrition and diet, Tehran University of Medical Sciences, Tehran, Iran
2. Assistant Professor, Department of Community Nutrition, School of Nutrition and diet, Tehran University of Medical Sciences, Tehran, Iran
3. Associate Professor, Department of Community Nutrition, School of Nutrition and diet, Tehran University of Medical Sciences, Tehran, Iran
4. Assistant Professor, Chronic Diseases Research Center, Tehran, Iran

Corresponding Author email: h-pouraram@tums.ac.ir

ABSTRACT: The objective of this study was to compare food insecurity and Nutritional status based on BMI and anemia of pregnant women between unplanned & planned pregnancy**.**This case- control study was done on 200 pregnant women without planning (case group) and 200 pregnant women with planning (control group) in Falavarjan, that were selected the systematic random. Data were collected by medical records for prenatal care, height and weight before pregnancy, plasma hemoglobin in the first tests of pregnancy, food security questionnaires (USDA), FFQ questionnaires and interview with mothers. Data were analyzed using Spss version 16.0 and N4 software. The prevalence of food insecurity in case group (51%) was significantly greater from control group (37%). Median weight of mothers in the case group was significantly higher compared with the control group but quartile values for height, BMI, and anemia in the two groups had no significant difference. Height of mothers in the case group had significant inverse association with food insecurity and weight of mothers before pregnancy had close to meaningful association () with food insecurity only in the control group.Abnormal BMI before pregnancy had no significant association with planned pregnancy but by rising food insecurity increased abnormally BMI and anemia.

Keywords: Abnormal BMI, Food insecurity, Planned pregnancy, Anemia

INTRODUCTION

Food insecurity can be defined “limited or unreliable access nutritional to adequate and safe foods or limited or unreliable ability to acceptable foods in socially acceptable ways.”(1).food insecurity domain is variable from anxiety about access to food at the household level up to severe hunger among the children who do not have food to eat (2).food insecurity in adults as a risk factor increases malnutrition, nutritional deficiencies, chronic diseases and obesity, can be due high intake of cheap foods (which have high calorie but low nutritional) (1). Results several recent studies which used a USDA questionnaire (department of agriculture, United States of America), suggests relatively high prevalence of food insecurity in the country (3-8).but none of these studies, until this study, had not reviewed food insecurity in pregnant women.

Unplanned pregnancy have adverse consequences on physical and mental health of mother and fetus such as failure to control potential diseases before pregnancy, lack of control mother weight, delay in cares during pregnancy, inadequate intake of food, poor intrauterine growth,….(9). several studies in Iran suggest 26/7% of pregnancies are unwanted, and type of delivery, newborn health, weight birth in unwanted pregnancy are similar planned pregnancy and percentage of abortions have been in unwanted pregnancy and planned pregnancy 9/31% and 5/3% ,respectively(10).

Due to the impact of nutritional statue, food security and effect of planning to get pregnancy on health of mother and fetus as well as promoting healthy childbearing including policies of reproductive health programs in the

country, it was necessary to study the condition of food insecurity and nutritional status based on BMI and anemia of pregnant women with unplanned & planned pregnancy

METHODS AND MATERIALS

This case- control study was conducted on 400 pregnant women in 2014.

The studied community, pregnant mothers were under the guise of health centers in Falavarjan city, Isfahan province, that were selected with systematic random sampling.

Based on the pilot study , mean and standard deviation (SD) food security scores in unplanned and planned pregnancy groups was ۳/۲±۴/۲ and ۲/۲±۲/۶, respectively, and variance was 17/64,6/76 respectively. Thus sample size with confidence 95% and power test 80%, ratio case to control equal 1, Using the following formula were determined 200 female with unplanned pregnancy as case group and 200 female with planned pregnancy as control group.

$$N = \frac{(z1 - \frac{\alpha}{2} + z1 - \beta)\text{^}2(SD1^2 + SD2^2)}{(\mu 1 - \mu 0)\text{^}2}$$

Inclusion criteria, gestational age 24 weeks, no disease have been proved by doctor (such as diabetes, gestational diabetes, hypertension before or during pregnancy, digestive disease, etc), tend to be interviewed, and cooperation to end interview and criteria for exclusion was lack of cooperation by the end of the interviewed. based on controll questions asked of mothers (such as the decision to pregnancy, medical services and health care before pregnancy, the time interval between discontinuation of contraception to get pregnant, intake medicinal supplements before pregnancy), mothers who were not planning to get pregnant, as the case group and mothers who were planning to get pregnant were studied as a control group.

Data about Features the demographic, social, economic and data related to Pregnancy were collected by interview (self-made ,interview form) and to determine the statue food security using 18 item, household food security questionnaire (USDA) (11) , that in recent studies in the country had been used to determine the statue of household food insecurity(3-8). Mothers based on score of questionnaire divided into four groups: food security, food insecurity without hunger, food insecurity with moderate hunger and food insecurity with severe hunger. anthropometric data was obtained using height and weight in the three months before or early pregnancy ,as well as plasma hemoglobin in the first step of tests as a indicator of anemia were obtained from past medical records for prenatal care. Using 147-item ,food frequency questionnaire that has been validated reliability and validity, nutrition condition and calorie intake, micronutrients and macronutrients were measured in pregnant women.

Demographic, social, economic data were analysed statistically using SPSS in version 16 computer software. Food frequency data using Excel software and Table household measures (12) conversion to grams per day ,then arrived in N4, After determining the caloric and nutritional value, these data were arrived in the SPSS software. Using the Tables RDA (Recommended Dietary Allowences) (13) the relative abundance of nutrients was obtained of the RDA values. Intake food groups by pregnant women were grouped based on recommended daily amounts in food pyramid (14). Anthropometric status was obtained using height (standing position without shoes with an accuracy of 5.0 cm with a tape measure) and weight mothers (in the morning with light clothing and without shoes with an accuracy of 100 g with scale) in three months before pregnancy or in early pregnancy as nutritional status based on BMI (less than 18/5= underweight, 18/5-25 = normal, 25-29/9 = overweight and above 30 =obese), as well as the hemoglobin in the first stage of pregnancy tests as an indicator of anemia (Hb>11g/dl= have not anemia, Hb=10-11 g/d = mild anemia, Hb=7-10 g/dl = moderate anemia, Hb<7g/dl = severe anemia) from past records of prenatal care in health centers .

Before the interview, the mothers completed the informed consent form to participate in the study. Be sure to keep them confidential household data. Food recommendations were provided at the end of the interviewthanked from mothers to participate in the interview. And a number of practical instructional DVD about cooking baby food was given to them. Pregnant mother with food insecurity (optional) secretly were introduced to local donors. Thus, the observance of ethical considerations that were approved by the Research committee of Tehran University of Medical Sciences.

RESULTS

Age, family size, number of pregnancies and the number of children born of mothers with unplanned pregnancies higher than the pregnancy was planned, according to Mann-Whitney U test and 95% confidence level was significantly (Table 1).

The economic situation had a significant difference (based on chi-square test) was low in case and control groups, respectively 5/38% and 5/21% and the average level was respectively 5/55% and 5/67% (p<0/05). Diploma or less education in the mother's case and control groups was respectively 5/90% and 5/73%. Pregnant women housekeeping job in both case and control groups by 5/93% and 87%, with no significant difference (p> 0/05).

Mothers in the case group had greater weight compared with the control group significantly but quartile values for height and BMI in these two groups showed no significant differences according to Mann-Whitney U test (Table 1).

In our study, 48% of pregnant women had a normal body mass status (BMI=18/5-424/9). 53/8% of women with unplanned pregnancies in the case group and the control group 50% of women with planned pregnancies, had a pre-pregnancy body mass of abnormal status. The chi-square test, there was no significant difference between body mass before pregnancy in women with planned and unplanned pregnancy (Table 2).

Moderate amounts of hemoglobin in the first period of pregnancy tests in two case and control groups was not significantly different from according to the test, Mann-Whitney U. In The case of 4% and 6% of pregnant women have anemia control group (based on the amount of hemoglobin) with mild to moderate. Anemia prevalence rates between the two case and control groups showed no significant differences based on Chi-square test (Table 2).

Quartiles of food security score between planned and unplanned pregnancy, according to Mann-Whitney U test was a significant difference (Table 1).

The relative abundance of food insecurity at different levels in the study population was 44%, in women with unplanned pregnancies (case) 51%, and planned pregnancy group (control) of 37%, a statistically significant difference (P-value =0/001) (Table 2).

Mothers in the case group had a significant negative relation with food insecurity. The control group was only about weight before pregnancy food insecurity nearly meaningful. In both case and control groups, the mother's BMI before pregnancy or early in pregnancy were significantly correlated with food insecurity. In the control group, women with a higher degree of food insecurity, overweight and obesity had a higher degree of food insecurity was increasing with maternal nutritional status based on BMI (overweight and obese mother) significant correlation (Table 3)

DISCUSS

In this study, 51% of pregnant women with unplanned pregnancies and 37% of pregnant women with pregnancies were planned in mild to severe food insecurity. And an increase in food insecurity had increased fully significantly the chances of unplanned pregnancy. Relative frequency of food insecurity without hunger was one of the mothers in both case and control groups (27 percent), but Relative frequency of moderate to severe food insecurity with hunger was greater in the case group (24% vs 10% control).

This was the first study on food security, women in Iranian society. And was not found written in the previous study in this regard. Numerous other studies on women (other than pregnancy) was relatively widespread prevalence of food insecurity in the country. And aligned with the spread of food insecurity in the population under study (3-8).

In this study, median weight of pregnant women with pregnancy were significantly more likely than women with unplanned pregnancies planned. However, no significant maternal height and BMI, as well as the frequency of overweight and obese groups, respectively, 47/9 and 43/8 respectively, without significant difference. In a study in Birjand that maternal pre-pregnancy weight and height mean and standard deviation in unwanted pregnancies and wanted pregnancies were significantly different (15).

Iron deficiency and anemia in pregnant women causes of physical weakness, and increases the risk of maternal death in childbirth, and the risk of low birth weight and prematurity.

In our study group, about 4% and 6% of pregnant women in the control group were mild to moderate anemia based on hemoglobin levels during the first pregnancy test. In our study group, The case of 4% and 6% of pregnant women in the control group were mild to moderate anemia based on hemoglobin levels during the first pregnancy test. Pura study in 2000, 4/21% of pregnant women 5 months and more, in Iran, and in Isfahan, 9% (16) and in a study in Shahroud, 6/9% last trimester of pregnancy (17) had anemia or hemoglobin less than normal. Gestational age of the pregnant women studied could be the difference in this study with other studies.

CONCLUSION

BMI before pregnancy had no significant association with abnormal pregnancy is planned. But with the increase in food insecurity was more unusual degree of body mass and anemia.

Limitations

The limitations of this study was to collect data at the time of registration for the second phase of the country's cash subsidies. To eliminate this concern by explaining the objectives of the study were measured and not recorded in the reluctance of mothers. The limitations of this study was not done a study on the food security situation of pregnant women in other parts of the country until this study.

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Table 1 Comparison quartile of variable quantity (with non-normal distribution) in women with unplanned pregnancies and pregnancy-planned city of Falavarjan, Isfahan, Iran, 2014

*P-value	planned pregnancy (control) Quartile 2 (quartile 1 and 4)	unplanned pregnancy (case) Quartile 2 (quartile 1 and 4)	Group Quantitative variables (With non-normal distribution)
0/008	26/0(23/25-29/0)	27/024/0-32/0)	The gestational age (years)
<0/0001	2/0(2/0-3/0)	3/0(2/0-4/0)	Family size (n)
<0/0001	1/0(1/0-2/0)	2/0(1/0-3/0)	The total number of pregnancy (times)
<0/0001	0/0(0/0-1/0)	1/0(0/0-1/0)	The number of children born alive (People)
0/036	610/0(156/0-163/0)	63/5(56/5-72/0)	Weight (kg)
0/45	160/0(156/0-163/0)	160/0(156/0-163/0)	Maternal height (cm)
0/61	24/4(21/3-27/4)	24/9(223-27/9)	Pregnancy BMI (kg square Brmtr)
0/445	12/8(12/1-13/4)	12/8(12/2-13/5)	In the first test in pregnancy the mother's blood hemoglobin levels (grams per deciliter)
<0/0001	1/0(0/0-4/0)	3/0(0/0-7/0)	Food safety score

Type of test: Mann-Whitney U & 1-sided *

Table 2. Comparison relative frequency of nutritional status and food security in women with planned and unplanned pregnancy, Falavarjan, Isfahan, 2014

*P-value	Pregnancy planned (control) n=200		Unplanned pregnancy (case) n=200		Group Variable	
	Percent	Number	Percent	Number		
0/2	6/3	12	5/9	11	Underweight	Nutritional status According to BMI
	50/0	96	46/2	86	Normal	
	34/4	66	32/8	61	Overweight	
	9/4	18	15/1	28	Obese	
0/315	94/0	188	96/0	192	Without anemia	Anemia status
	5/0	10	3/5	7	Mild anemia	
	1/0	2	0/5	1	Moderate anemia	
0/001	63/0	126	49/0	98	Food safety	Food security
	27/0	54	27/0	54	Food insecure without hunger	
	9/5	19	19/5	39	Food insecure with moderate hunger	
	0/5	1	4/5	9	Food insecure with severe hunger	

* Type of test: Chi-Squared &1-sided

Table 3. Correlation rated sided household food insecurity with nutrition status of pregnant women with unplanned and planned, Falavarjan, Isfahan,Iran 2014

planned pregnancy (control)		Unplanned pregnancy (case)		Group and the values of r and p *** Variable	
p	r	p	r		
0/178	-0/066	0/41	0/016	The amount of hemoglobin in the first period of pregnancy tests *	Nutritional status
0/099	0/091	0/34	-0/023	Anemia**	
0/055	0/115	0/16	0/073	Weight before pregnancy *	
0/41	-0/16	0/049	-0/118	Pre-pregnancy height **	
0/025	0/141	0/045	0/123	BMI value at the beginning of pregnancy *	
0/081	0/101	0/158	0/074	Nutritional status based on BMI **	
0/038	0/129	0/183	0/067	Nutritional status based on BMI **	NS/DFS

Spearman correlation coefficient r= ** Pearson correlation coefficient r = *
p < 0/05 meaningful ، = ***

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