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Food insecurity in postmenopausal women

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ABSTRACT: Menopause age, an important step in women's life, is affected by environmental and physiological factors. In the other hand, the food insecurity as a major public health problem has physical, social and psychological impact. Understanding the factors affecting food security situation in each age group is the first step toward improving food security. The aim of this study was to investigatethe situation of food insecurity, itsassociated factors, and the impactoffood insecurity on the menopause age in premenopausal women of Qazvin city.Population of this study consists of 250 postmenopausal women. Through interviews and filling questionnaire, some individual and demographical characteristics were determined.Results have shown that the prevalence of food insecurity was %60.4 and was significantly associated to family socio-economical status, individual education and occupation; However, no significant association was found between food insecurity and monopause age and food insecurity.
Key words:food insecurity, menopause age, economic status, postmenopausal women

INTRODUCTION

Food and nutrition are generally believed as the basic needs of human being, and their supply is rooted in the field of food security [1]. The range of food insecurity varies from the concern to reach sufficient food up to sever hunger among children who have no access to food recourses [2]. Job loss, lack of fixed-term employment, large family size, and are factor affecting the nutritional diet (such as local eating habits) as well as age, parental education are influencing factors in food insecurity [3]. In 1995, the ten-year review committee of the population determined the rate of food insecurity in USAfor the first time. This review showed a downward trend of food insecurity during the years up to 2000. However, this trend was ascending then after. 13 million U.S. households (11/1 % of all households) are reported as experiencing some extent of food insecurity in 2007, among which 8/2 millions are adults and 3/7 are children who live in families with low levels of food security [5]. The prevalence of food insecurity was reported 14 % in 2009[6]. Food insecurity assessment in Iran based on household costs in 1998 revealed that 20 % of individuals in the society do not have the sufficient financial power to abdominal satiety and half of the population had difficulties in cell satiety. In the other word, a quarter of Iranian population had energy deficiency, and half of them were reported as having Micronutrient deficiency[7].

Some evidences have been observed in Shahr-e- ray[9], Shiraz[11],and Asadaabad[1] reporting the rate of food insecurity as 50/5%, 44%, and 36/3% ,respectively. These results are yield using a direct method of food insecurity assessment. Since no study had investigated the association of food insecurity and eating habits and its effect on menopause age yet, the current study is the first research in this field with the objective of determining the prevalence offood insecurity and its impact on the menopausal age.

MATERIALS AND METHODS

This studyisacross-sectional studyon 250post-menopausal women referring to health care centers of Qazvin city.After coordinating with the Qazvin University of Medical Sciences and affiliated health centers, the participants were provided with the objectives of the study. Table 1 demonstrates demographic characteristics of participants.Following by filling out the consent form by the participants; the researcher made socio-economic questionnaire. 18-item household food security scale developed by the U.S. Department of Agriculture were used respectively to extract general information as well as the food security status of the participants.

It should be noted that the reliability of questionnaire assessing food security status has been approved in previous studies [10]. A pilot study on 57 women who randomly referred to healthcare centers was performed prior to the study in order to become familiar with the geographical and environmental characteristics of the samples, as well as the sample size required and ultimately to remove any potential problems in completing the questionnaire .

Information on socioeconomic questionnaire were completed by asking the participants for their educational level, occupational status, menopause age, their mother's or sister's age at menopause, history of pregnancies and abortions, smoking, number of child under 18 years, number of menopause symptoms, family size and home ownership.

Also providing information on the economic status of the participants, they were asked whether particular household items present in their houses. Hence, the existence of nine household items were considered in this study, which included, dishwasher, own car, washing machine, LCD, television, side by side refrigerator, handmade carpet, laptop computer, desktop computer, microwave. Doing so, having 3 items or less was considered as weak economic conditions, 4-6 items as the moderate, and 7-9 items was taken as a good indicator of household economic status.

Food security status of households was assessed through the 18-item food security scale of U.S Food and Agriculture organization. The answers were rated so that each "often true ", "sometimes true ", "almost every month ", "Some months but not every month " and "yes" received one positive point; and "never true ", "don't know or refused ", "only one month ", and "no " were given no points. Applying such rating procedure, those having 0-2 scores were rated as food secure, 3-7 as food insecure without hunger, 8-12 food insecure with moderate hunger, and 13 or more as food insecure with sever hunger.

Height and weight of women were measured using the stadiometerSeca with a precision of 0/1 cm. The participant stood straight and upright; shoes off and feet together; knees straight with back, buttocks and heels touching the back and with minimal clothing.

Body mass index (BMI) was calculated by dividing weight in kilograms by the square of height in meter. Body mass index of less than 18/5 was classified as thin, 18/5-24/9 as natural and more than 25 as overweight and obese.

SPSS (V 16/0) statistical software was used for data entry, and bidirectional tests were practiced following data collection for determining the relationship between the qualitative independent variables and food insecurity. In addition, the mean and standard deviation of these variables and/or one way ANOVA was calculated to determine the association between quantitative variables and food security status of households.

To investigate the association between quantitative variables and food security score,univariate regression analysis was conducted individually. Finally, those variables being significant statistically wereenteredinto a forward logistic regression to determine the ultimate independent variables following removing confounding variables.

Table 1. Demographic characteristic of participants in study

Variable	Values (n= 250)
Age (year)	53/83 ± 3/91
Weight (kg)	72/32 ± 11/58
Height (cm)	157/01± 8/43
Waist (cm)	98/34 ± 10/79
BMI(Kg/m2)	30/05 ± 1/46
WHR(waist/ hip)	0/88 ± 0/07
Age at menopause (year)	50/02 ± 3/85
Mother's age at menopause (year)	47/42 ± 5/29

Data are means±SD, BMI: Body Mass Index, WHR: waist- hip ratio

RESULTS

The study population consisted of 250 postmenopausal women who were referred to health care centers in Qazvin. The rate of food insecurity among postmenopausal women was reported 60/4 % in this study. The most insecure groups were food insecurity without hunger (25/2%), with moderate hunger (24/8%), and severe hunger (10/4%), respectively.

A correlation was observed betweenfood insecurityand thelevel of educationinpost-menopausal women. Education levels lower than diplomain both insecure and secure groups were reported as having the greatest proportion and percentage(66/5% and 33/5%, respectively). But, this percentage was about twice in food insecure groups in comparison with secure ones. However, a larger proportion of participants having higher education than diploma were observed to belong to the food secure group(57/1% rather 42/9%).

In terms of the occupational status, the study populations were divided into two groups of housewives and employed women (workers, domestic jobs, management and non-management jobs). The percentage of housewives in food secure and insecure groups were reported as 36/9 and 63/1, respectively. Whereas, the shares of employed women in the food secure group was 60/7%, and in food insecure one was 39/3 %.

The financial situations of participants were assessed by the number ofhousehold items, so that owning less than three household items was considered as weak, 4-6 items as moderate, and more than 7 was inferred as good economic situation.

The poor financial situation was reported as being significantly higher in the food insecure group compared to food secure ones (67/5 % vs. 32/5%). Those having moderate and good economic situations were observed belonging to food secure group.

Comparing the mean of quantitative variables through the t-test, a significant association was observed between food insecurity and the economic situation (p= 0/001). Also, according to the table below, there exists a significant association between fat intake and food insecurity in postmenopausal women (p =0/01). In addition, the number of pregnancies and having children under age 18 showed a significant relationship with food insecurity (p=0/048 and 0/041, respectively). (Table 2)

Table 2. Mean and standard errors of quantitative variables, and t-test results to comparewithfoodinsecurityin postmenopausal womenin Qazvin

Food insecurity	Food Insecure		Food Secure		
	Mean	SEM	Mean	SEM	ValueP
Weight	72/53	0/99	72	1/06	0/098
Height	157/72	0/46	155/92	1/14	0/335
Waist	98/69	0/89	97/81	1/06	0/293
Mother'sage at menopause	47/91	0/69	46/76	0/73	0/925
Number of pregnancies	4/24	0/157	3/86	0/167	0/048
Number of abortion	0/91	0/078	0/73	0/125	0/599
Number ofmenopausal symptoms	1/85	0/097	0/85	0/122	0/912
Family size	3/26	0/101	3/28	0/140	0/533
Number ofchildren under 18	0/16	0/031	0/22	0/044	0/041
Householditems	2/09	0/128	3/06	0/209	0/001
BMI	29/17	0/40	31/39	2/25	0/320
WHR	0/88	0/005	0/89	0/006	0/459

Variables correlated with food insecurity included: the levels of education, occupation, economic status, number of pregnancies, and the number of children under 18 years. However, no significant association was observed among the food insecurity and other variables, includingmenopause age, mother's age at menopause, being sayyidah, marital status, smoking as well as family size, waist circumference and WHR, weight and body mass index, and also the number of pregnancies and abortions.

After exclusion of confounding variables, the variable of economic situation was identified as an independent factor affecting food insecurity.

DISCUSSION

The results of this study revealed that 60/4 % of the postmenopausal women suffered different degrees of food insecurity (from mild to severe).

In Iran, Ghasemi et al stated for the first time that 20% of society populations do not have the economic access to abdominal satiety, and around half of them face problem to supply cell satiety.

The prevalence of food insecurity in Asadabad, Shahr-e-Ray, and Shiraz has been recorded as 59/6%, 50/5%, and 44%, respectively. The higher prevalence of food insecurity in this study compared to previous ones may be influenced by differences in the study population (all subjects were women), and due to agingof subject, lack of jobs and a fix income as well as the recent changes in the economic situation in the community.

In our study the educational levels of participants showed a significant association with the food insecurity (p=0/006). Low levels of education in Weigel et al study[١٨] were also associated with food insecurity. In a study byZerafati-Shoaet al the educationlevelof fathers was also associated with food insecurity [17]

The relationship between food insecurity and education level was also confirmed in studies conducted by Dastgiri et al ,andAlihosseini, Tabatabaei et al. It seems that low levels of education influence the socioeconomic situation of individuals on one hand, and further study have raised awareness among educated people have proper choice of food and strongmanaging food supply in the household on the other one. Hence, according to the findings of previous studies and those of ours education level is considered as an important and effective factor in food security.

In the present study, the employment status was significantly associated with food insecurity. In the studyofZerafati-Shoa[١٧], the income level and fathers' occupational level were significantly associated with food insecurity. In the study of Hosseini, Tabatabai et al [19], the total food security of households was affected by the occupationalstatus of the father. In the study of Safarpour [12], which was conducted among primary school girls, the relationship between food insecurity and occupational situation of parents were significant. The results of our study are consistent with those of previous ones. With regard to the outcomes of the majority of studies, and given that the occupational situation partly reflects the socio-economic status of the individual; therefore it can play an important role in the food security of households.

A quite significant relationship was observed between the economic situation and food insecurity in our study (p<0/00). In the majority of studies, these variables had a significant relationship with food insecurity.

In the study of cutler-triggs et al [15], food insecurity was more pronounced in low-income households compared to those enjoying higher incomes. Moreover, In studies of Hakim [11], Ghasemi [7] and Dastgiri[1] food insecurity had a positive significant adverse correlation with income levels and economic situation. Due to the fact that the income is a decisive factor in the availability of food in the community, the financial situation is expected to be associated with food insecurity, which is consistent with the results of this study.

The results of our study revealed that there is no significant association between food insecurity and the family size, which is in contrast with the studies conducted by Dastgiri in Asadabad, Payab in Shahr-e-Rey, and Ali Hosseiniin District 20 Tehran. However, it seems that the variable of family size showed no significant association with food insecurity due to the old age of the participants, marriage of children and the low number of family members.

In this study, home ownership showed no meaningful association with food insecurity, so that the majority of individuals in both groups were home owner. Also Hakim et al [11] found no significant association between home ownership and food insecurity of household, which was consistent with the results of this study. Safarpuret al [12] also reported that food insecurity is significantly associated with home ownership. Daneshi-Maskooni[13] also revealed a positive significant inverse association between food insecurity and home ownership. On the grounds that thehome ownership is generally considered a property and reduce the running household costs (i.e. hiring or mortgaging a house), and therefore more money may be spent on food costs.

In our study, the average number of children under 18 years was notably different in food secure and insecure groups (p=0/04). Daneshi-Maskooni et al reported a significant relationship between food insecurity and having childrenless than 18 years of age. In the study of Najibi in Shiraz, the relationship between foodinsecurity and having childrenless than 18 years was reported as significant. Evaluation of the status of children under 18 in food security questionnaire provides a strong notion for its importance in the food insecurity. On the other hand, the increasing number of children reduces the access to food, particularly in families with moderate and low economic level, and as a result its relationship with food insecurity seems quite logical.

In the current study no significant association was found between BMI and food insecurity. Likewise, the majority of women in both groups were reported as being overweight or obese. In the study of Lion et al [١٤] conducted in Canada, food insecure women experiencing mild hunger were at greater risk of obesity thanfood secure ones.

Ramesh et al [10] reported a significant association between the mean BMI and the status of food insecurity. According to Laraia[16] food insecurity is followed by dependence on inexpensive foodswhich have higher energy density. This dependence and the cycle of having adequate food at the beginning and food shortages at the end of the month had contributed to an increase in weight in the short term.

Hakim et al[11] showed in their study that there exists a significant positive association between body mass index and food insecurity. Considering the study population (postmenopausal women), hormone interactions during the menopause and reduced physical activity hascausedoverweight and obesity in many women. Hence no significant difference was observed.

Waist circumference and WHR Variables in postmenopausal women showed no significant association with food insecurity.Mohammadi et al [20] reported a significant association between abdominal obesity and food insecurity in their study in Tehran, so that abdominal obesity was in food insecure women was 2/8times more than secure ones.

The results of this study are in line with the theory of inexpensive foods with higher energy density suggested by Laraia [16].Moreover, Larry [16] has pointed out the factorsassociated with food insecurity such as the accumulation of visceral fat and chronic diseases, particularly among women.

According to the results of these studies, we expected to find a similar significant relationship in our study; but given that the majority of subjects in both groups had waist circumferences of more than 88 cm and WHR of more than 0/85 , no significant differences were reported.

One of the Strong points of the current study is that it revealed a strong influence of occupation, level of education, and incomes on food insecurity.

Hence, The results of this study can pave the way for effective steps to increase the awareness of women as managers of family planning programs regarding nutritional requirements and to make healthier food choices, which leads to a more food secure household.

Finally, the researchers suggest that futurestudies cover a larger sample size. In addition, the design of prospective or case –control studies will result in certainly more accurate results.

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REFERENCES

Alihosseini J, Ghazi Tabatabaei M. 2006. Survey of populational and social influencing on food insecurity: Households with support of KomitehEmdadin district 20 of Tehran. Thesis of MSc, School of social sciences, Tehran University. [InPersian].

Coleman-Jensen A, Nord M, Andrews M, Carlson S. 2010. Household Food Security in the United States. Economic Research Report No.(ERR-125). September; 2011.

Cutler-triggs C,Fryer GE, Miyoshi TJ, Weitzman M. 2008. Increased rates and severity of child and adult food insecurity in household with adult smokers. Archives of Pediatrics & Adolescent Medicine 162(11):1056-9.

Daneshi-Maskooni M, Dorosty-Motlagh AR, Hosseini SM, Zendehdel K, Kashani A, Safarpour M, Jafari H. 2013. Food insecurity and some associated socioeconomic factors among upper gastrointestinal cancer patients. International Research Journal of Applied and Basic Scirnces 4(2): 482-486.

Dastgiri S, Mahboob S, Totonchi H, Ostadrahimi AR. 2006. Infeluencing factors on food insecurity: a cross sectional study in tabriz years 2004-2005. Journal of Ardabil University of Medical Sciences3: 233-9.[In Persian].

Frongillo AE, Nanama S. 2006. Development and validation of an experience-based measure of household food insecurity within and across seasons in northern burkina faso. Journal of Nnutrition 136: 1409S-1419S.

Ghassemi H. 1998. Food and nutrition security in Iran: a national study on planning and administration Tehran: Plan and Budget Organization.[In Persian].

Hakim S, Dorosty AR, Eshraghian MR. 2011. Relationship Between Food Insecurity and Some of Socioeconomic Factors with BMI among Women in Dezfoul. Iranian Journal of School of Public Health 2: 55-66.[InPersian].

Jayna M, Dave, Alexandra E, Evans Ruth P, Saunders Ken W, Watkins Karin A, Pfeiffe. 2009. Associations among Food Insecurity, Acculturation, Demographic Factors, and Fruit and Vegetable Intake at Home in Hispanic Children. American Journal Dietetic Nutriition 109: 697-701.

Kendal A, Olson CM, Frongillo EA Jr. 1996. Relationship of hunger and food insecurity to food availability and consumption. Journal of the American Dietetic Association 96(10):1019-24.

Laraia BA. 2013. Food insecurity and chronic disease. Advance in Nutrition 4(2): 203-212.

Lyons A, Park J, Nelson CH. 2007. Food Insecurity and Obesity: A Comparison of Self-Reported and Measured Height and weight. American Journal of Public Health 97: 751-757.

Mahboobeh Safarpour, Ahmadreza Dorosty Motlagh, Seyyed Mostafa Hosseini, Farzaneh Ranjbar Noshari, Milad Daneshi Maskooni, Samaneh Azizi1, Arvin Kashani.2014. Prevalenceand Outcomes of Food Insecurity and Its Relationship with Some Socioeconomic Factors; Knowledge & Health 8(4): 193-198.[In Persian].

Mohammadi F, Omidvar N, Harrison GG, Ghazi- Tabatabaei M, Abdollahi M, Houshiar-Rad A, et al. 2013. Is household food insecurity associated with overweight/obesity in women? Iranian journal of public health42(4):380

Najibi N, Dorosty-Motlagh AR, Sadrzadeh-Yeganeh H, Eshraghian MR, Daneshi-Maskoni M, Azizi S. 2013. Food insecurity status and some associated socioeconomic factors among newly diagnosed patients with type 2 diabetes in Shiraz, 2012. Arak Medical University Journal 16(70): 98-106.[In Persian].

Nord M, Andrews MS, Carlson S, Assistance F. 2004. Household food security in the United States. US Department of Agriculture, Economic Research Service Washington, DC 2002.

Payab M, Dorosty AR, Eshraghian MR, Siassi F, Karimi T. 2012. Association of Food Insecurity with Some of Socioeconomic and Nutritional Factors in Mothers with Primary School Child in Rey City. Iranian Journal of Nutrition Sciences and Food Technology 7(1): 75-84.[In Persian].

Ramesh T, Dorosty AR, Abdollahi M. 2010. Prevalence of Food Insecurity in Household of Shiraz and Association with Some of Socioeconomic and Population Factors. Iranian Journal of Nutrition Sciences and Food Technology 4(4): 53-64.

Weigel MM, et al. 2007. The Householdd Food Insecurity and Health Outcomes of U.S.Mexico Border Migrant and seasonal Farmworkers. Journal of Immigrant Minority Health 9: 157-169.

Zerafati-Shoa N. 2003. Validity assessment of Radimer-cernel modified questionnaire by assessing households food security in district 20 of Tehran. Thesis of MSc in Nutrition Sciences, School of nutrition Sciences and food technology, ShahidBeheshti University of Medical Sciences [InPersian].