

Comparative Study of Dietary Habits and Physical Activities of Women Aged Under and Over 40 Years with Breast Cancer

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ABSTRACT

It has shown that the number of patients with breast cancer is increasing in Iran. So, identifying its possible risk factors and their roles in developing this type of cancer is very important in our society. Present study aimed to determine the amount of physical activities and dietary risk factors involved in breast cancer at different ages in Ardabil city in 2013-14. Present study is descriptive-analytical and cross-sectional research. 113 female patients with breast cancer who were hospitalized at Imam Khomeini Hospital in Ardabil Town in 2013-14 were studied. After recording anthropometric factors, the information on dietary habits and physical activity of patients was gathered by food frequency questionnaires (FFQ) and the International Physical Activity Questionnaire (IPAQ). Chi-square and T-test were used to analyze the data. The results showed that in the group of younger than 40 years old, mean and standard deviation of age was 36.6 ± 2.9 and the group aged over 40 years, mean and standard deviation of age was 52.4 ± 2.5 . In the group of younger than 40 years old, the weight at the time of diagnosis, body mass index and its variations and the consumption of sausages and burgers in women with breast cancer were significantly higher compared to women with breast cancer in the group aged over 40 years ($p < 0.05$). Physical activities levels and consumption of fruit in women with breast cancer in the group aged over 40 years is higher compared to the group aged under 40 years ($p < 0.05$). The result showed that consuming some foods may affect the age of developing breast cancer among women. Low physical activity, overweight and high BMI at the time of diagnosis are the factors for the risk of developing breast cancer before the age of 40 years.

Keywords: Breast cancer, Dietary habits, Physical activity, Women aged under and over 40 years.

INTRODUCTION

Today, cancer is one of the major health issues in Iran and the entire world. In Western countries, after cardiovascular disease, it is the second cause of death. In developing countries, cancer is one of the main health care issues and its trend is on the rise. In Iran, after cardiovascular diseases and accidents, cancer is the third cause of death. Among all types of cancer, the most common cancer among the most vulnerable group in the society is breast cancer¹. Breast cancer is the

most common cancer and the fifth cause of death in Iranian women². With age, the incidence of breast cancer increases and after the age of 40 years old, it occurs more³. Some studies showed that the trend of breast cancer is increasing in Iran⁴. In Iranian women, breast cancer has the first place among the cancers⁵. It was reported that in the years 2000-2005, 7% of breast cancer was diagnosed among 40 years old women⁶. Risk factors for this disease can be divided into two categories. First category includes the risk factors which are unchangeable or changed difficultly, such as family history, menstrual history,

age, less pregnancies, older age at first pregnancy, reduced lactation period and decreased adult height. The role of these factors in the incidence of breast cancer is generally proven. Second category can be potentially modified and changed. Some of these factors are diet, obesity, physical activity, alcohol consumption, smoking and hormone treatment. The role of these factors in the incidence of breast cancer is less well-known⁷⁻¹⁰. Breast cancer risk factors and clinical outcomes are somewhat different in women younger than 40 years¹¹⁻¹³. According to the articles on women, in the field of breast oncology, a young woman is 35-40 years old. Age is the most important factor of cancer so that with aging, the risk of breast cancer increases¹⁴. It has been shown that in Iran, the age of onset of breast cancer is less than other countries as much as 10-15 years and it is associated with more severe clinical protests¹⁵, in some studies, average age of onset of cancer among women in Ardabil Town, was reported 44 years old¹⁶. Healthy lifestyle and physical activity play an important role in the prevention of breast cancer¹⁷, in some studies, changes in dietary habits have been reported as the risk factors for breast cancer¹⁸. There are relationships between the consumption of processed meat¹⁶, animal protein¹⁹ and overweight²⁰ and an increased risk of breast cancer. Given the prevalence of breast cancer and physical, mental and social impact emerged with it, recognition of predisposing risk factors such as nutritional status is considered as a health priority²¹. This study aimed to determine the amount of physical activity and dietary risk factors involved in breast cancer for women aged under and over 40 years in Ardabil Town.

METHOD

Present study is cross-sectional, descriptive-analytical research, it was performed on two groups of women with breast cancer who are hospitalized in surgery ward at Imam Khomeini Hospital in Ardabil Town. First group includes younger than 40 years old women with breast cancer and second group includes women aged over 40 years with breast cancer. The 40 years old women were placed in first group and as young women. Firstly, 60 women aged under 40 years with breast cancer and 60 women aged over 40 years with breast cancer, were considered for study but during the study, 3 of former group and 4 of later

group were excluded from the study due to lack of cooperation. Inclusion criteria were being female, having breast cancer with the clinical diagnosis and confirmation of the disease by a pathologist being male and not having breast cancer and exclusion criteria were lack of cooperation. In order to uphold the principles of medical ethics, information was kept confidential and anonymous results were reported. After obtaining informed consent from patients, at the time of diagnosis of breast cancer, their weight and height were measured and finally their Body Mass Index (BMI) was calculated based on weight (kg) divided by squared height (cm). Patients' weights were measured with at least wear by a portable digital scale by 0.1kg precision and their heights were measured with a meter by 0.1 cm precision. $25 \leq \text{BMI} < 30$ and $\text{BMI} \geq 30$ are considered as overweight and obese, respectively (22). In order to collect the data, three general questionnaire, the International Physical Activity Questionnaire (IPAQ) and food frequency questionnaires (FFQ) were used. General questionnaire includes the items such as the age of onset of breast cancer, the weight of 5 years ago, intake or non-use of drugs such as aspirin or different types of antibiotics. The International Physical Activity Questionnaire was translated mutually by two translators and it was used approval²³. These questionnaires were filled out by trained interviewers and interviewing with patients with breast cancer. It should be noted that in the International Physical Activity Questionnaire, moderate physical activity means an activity in which a person averagely consumes metabolic energy 4 times more than the basal metabolic energy. For example, the activities such as dish washing, cooking and the sports such as jogging, volleyball and so on are considered as moderate-intensity activities. In intense physical activity, an individual's metabolism is averagely 8 times more than his basal metabolism. The doings such as plowing the garden with a shovel, lifting and moving heavy objects and accessories are considered as intense physical activity. An individual's metabolism in walking is 3 times more than his basal metabolism²³. The information on usual dietary intakes was gathered by FFQ²⁴. The questionnaires were filled out by trained interviewer. These questionnaires included a list of common foods that would normally be familiar to the people studied. The patients were asked to report their consumption frequency of each of 30 items during

last month (daily (such as bread), weekly (such as rice and meat) and monthly and or annually). Reported frequency was converted to weekly intake in gram according to serving size for each food item. In order to convert the serving size of food consumed to gram, metric cup was used. Chi-square, T-test and SPSS v21 were used to analyze the data. In all the tests, significance level was considered 0.05.

RESULTS

In the group aged under 40 years, average age was 36.6 ± 2.9 years and in the group aged over 40 years, average age was 52.4 ± 5.2 . Average height, weight and BMI at the time of diagnosis in patients aged under 40 years, were higher than ones of patients aged over 40 years and this difference was significant ($p < 0.05$) [Table 1]. The results showed that average consumption of fruit based on serving per week in the younger than 40 years age group was statistically less ($p = 0.049$) but average consumption of fast food (sausages and hamburgers) in terms of servings per week was more than the group aged over 40 years ($p = 0.045$). Although the average consumption of vegetables in patients aged over 40 years was more than the one of patients aged under 40 years, this difference is not significant [Table 2]. In investigating the physical activity levels, after measuring the time of walking out of the house and the times of moderate and intensive physical activities, the results showed that in the group aged under 40 years and in the group aged over 40 years, average physical activity was 5574.84 ± 1439.1 and 6185.28 ± 1264.62 MET-min/week. This difference is statistically significant ($p = 0.016$) [Table 3]. In examining the relationship between the intake of aspirin and breast cancer, the results showed that in the group aged under 40 years, 13 patients used aspirin regularly before cancer diagnosis (22.8%) while in the group aged over 40 years, 19 patients used aspirin before cancer diagnosis and this difference is not significant. In examining the relationship between the intake of antibiotics and breast cancer, the results showed that 40 patients of the group aged under 40 years (35.4%) and 37 patients of the group aged over 40 years (32.7%), have used antibiotics more than a week regularly. In terms of intake of antibiotics, there was no significant difference between them.

DISCUSSION

In [Table 4] the results of present study showed that average height, weight and BMI at the time of diagnosis in patients aged under 40 years, were higher than ones of patients aged over 40 years, in some studies, the relationship between some body sizes and breast cancer has been shown²⁵. In some studies, obesity is known as a risk factor for breast cancer²⁶. The results of present study were consistent with the studies by Tertli *et al.*²⁷, Cleri *et al.*²⁸ and Tian *et al.*²⁹. They also have been noted to obesity as a risk factor for breast cancer. But Brant *et al.* (2000) showed a significant inverse relationship between BMI before menopause and the risk of breast cancer²⁵. It is not consistent with present study. The reason for this can be the difference between individuals' age. The results of present study showed that the weight and BMI of younger than 40 years women with breast cancer was significantly higher compared to women aged over 40 years with breast cancer. And high BMI at the time of diagnosis is considered as an important risk factor for breast cancer. Also, changes in BMI compared to 5 years prior to diagnosis has been known as an effective risk factor. It was shown that with aging, body mass index increases³⁰. In present study, increased weight in the group aged under 40 years may play a role in prevalence of the cancer in younger age group. Possible mechanisms of obesity on cancer may be related to adipocytokines. There is empirical evidence to suggest that some adipocytokines can directly effect on breast cancer cells to stimulate their proliferation³¹.

In the present study, the average consumption of fruit in the younger than 40 years group was statistically significantly lower than the average consumption of sausages and burgers was higher compared to the group aged over 40 years. About the relationship between nutrition and breast cancer, many studies have been conducted. The results of present study are consistent with the study by Gadet *et al.* (2004) that shown inverse relationship between fruit consumption and breast cancer in postmenopausal age³². Present study is not consistent with the study by Smith and Varner (2001). They didn't report the relationship between food consumption and reduced risk of cancer³³. The

reason for possible difference is type and length of study and or age. The results showed that there is a significant difference between two mentioned groups in terms of consumption of fruits. Also the results showed that the group aged over 40 years obviously used more fruits than the group aged under 40 years. The possible mechanism of the difference is the use of more antioxidants found in fruits in terms of eating habits of patients aged over 40 years. So, they experienced breast cancer later. In some studies, antioxidants found in fruits were reported as anti-cancer³⁴. The results of present study is consistent with the studies by Goodman *et al.*³⁵, Ormila *et al.* (2014)³⁶ and Reihani *et al.*³⁷ that showed significant relationship between the consumption of fast food and the risk of breast cancer. Over the past thirty years, consumption of food prepared out of home, especially fast food has been significantly increased in the world^{38, 39} in recent years, along with global growth of fast food consumption in the world, fast food consumption in Ardabil has been become more common. Most fast food consumption is related to young age groups⁴⁰. Fast foods, in terms of nutrients and antioxidants, are poor and they are rich in saturated trans fats and sugar⁴¹, on the other hand it has been shown that consumption of fatty foods is associated with breast cancer³⁷. In this study, significant differences was observed between the values of consumption of sausages and burgers in women with breast cancer in the two age groups,

so fast food consumption can probably considered as a risk factor of breast cancer for patients aged under 40 years.

The results of present study showed that the younger patients with breast cancer did less physical activities than older patients with breast cancer. In many studies, doing sports and its duration have been introduced as deterrent factors of breast cancer^{42, 43}. The results of present study are consistent with the results of the studies by Frendrick *ET AL.* (2010) who clearly showed the effects of sports in preventing breast cancer in postmenopausal women⁴⁴. The results of present study is inconsistent with the study by Fathi *et al.* (2003). In their study no significant relationship was observed between doing sport and its duration and breast cancer⁴⁵. The difference between the results of different studies is that in some studies, total daily physical activities levels were investigated but in some others, just the duration of sport physical activities was investigated. In present study, a significant relationship was observed between the amount of physical activity and the age group with breast cancer. The main reason for the effect of physical activity on reduced risk of breast cancer may be related to the control of body weight. Weight is one of the most important factors causing breast cancer¹³ and maintaining normal weight has play a key role in preventing cancer⁴⁶. In this study,

Table1: Comparison of average anthropometric factors in the two group

Variable		Mean	Standard deviation	p	
Height (cm)	Under 40 yeas	159.79	5.05	0.005	
	Over 40 years	158.82	3.22		
Weight (kg)	At the time of diagnosis	Under 40 yeas	76.54	0.014*	
		Over 40 years	71.82		7.68
	5 years prior to diagnosis	Under 40 yeas	71.56	9.4	0.091
		Over 40 years	68.88	7.17	
BMI (Kg/m ²)	At the time of diagnosis	Under 40 yeas	29.95	0.032*	
		Over 40 years	28.47		2.88
	5 years prior to diagnosis	Under 40 yeas	28.01	3.3	0.705
		Over 40 years	27.3	2.7	
	Difference	Under 40 yeas	1.94	1.74	0.008*
		Over 40 years	1.16	1.29	

*significant statistical difference between two studied groups based on T-test

Table 2: Comparison of dietary habits between the two groups based on different units of foods

Dietary habits based on different units of foods per week	Studied group	Mean and standard deviation	Sig.	dietary habits based on different units of foods per week	Studied group	Mean and standard deviation	Sig.
Fruit (units per week)	Under 40 years Over 40 years	4.42±2.32 5.37±2.75	0.049*	Tea (units per week)	Under 40 years Over 40 years	20.75±2.26 20.84±2.36	0.27
vegetables (units per week)	Under 40 years Over 40 years	4.3±1.25 4.69±1.10	0.082	potato (units per week)	Under 40 years Over 40 years	3.93±1.82 4.33±2.00	0.82
Pickles and salad (units per week)	Under 40 years Over 40 years	3.90±1.47 3.76±1.20	0.99	beans (units per week)	Under 40 years Over 40 years	4.97±1.37 4.85±1	0.6
Milk and dairy and yogurt (units per week)	Under 40 years Over 40 years	2.36±1.39 2.37±0.99	0.97	Sausages and burgers (units per week)	Under 40 years Over 40 years	5.82±2.31 4.87±2.18	0.04*
Cakes, cookies and sweets (units per week)	Under 40 years Over 40 years	2.89±1.36 2.83±1.00	0.77	Fried meat (units per week)	Under 40 years Over 40 years	4.82±2.00 4.25±2.14	0.14
Chicken (units per week)	Under 40 years Over 40 years	3.88±2.34 3.89±2.00	0.97	Rice (units per week)	Under 40 years Over 40 years	40±8.18 38.71±12.53	0.51

*significant statistical difference between two studied groups based on T-test

Table 3: Comparison of average physical activity between two groups age over and under 40 years

	Average time of jogging (min per week)	Standard deviation	Average time of moderate physical activity (min per day)	Standard deviation	Average physical activity (MET-min /week)	Standard deviation	p
Under 40 years	31.67	27.24	77.37	39.26	2270.82	1087.06	
Over 40 years	30.63	21.45	96.43	43.46	2801.06	1208.68	0.016

*significant statistical difference between two studied groups based on T-test

Table 4: The information on intake of aspirin and antibiotics

Variable		Under 40 years	Over 40 years	Total	P	OR			
Intake of aspirin	Yes	13	11.5	19	16.8	32	28.3	0.190	0.575
	No	44	38.9	37	32.7	81	71.7		
Intake of antibiotics	Yes	40	35.4	37	32.7	77	68.1	0.640	1.208
	No	17	15	19	16.8	36	31.9		

the weights of patients aged under 40 years were higher than patients aged over 40 years. The lack of cooperation from some patients and their spouses due to lack of trust in the researcher can be noted as research limitation.

CONCLUSION

In present study, significant relationships were observed between variables of weight and BMI at the time of diagnosis, 5-year changes in BMI, intake of fruits and consumption of sausages and

hamburgers and physical activities levels of patients and the risk of breast cancer. Among them, intake of fruits and high physical activity were identified as protective factors, and others were identified as risk factors. Given the results, it is recommended to perform a broader study with larger sample size in the area. Due to the poor nutritional status of women in this study and the prevalence of obesity among patients, it is recommended to provide necessary training on correct nutrition methods and enough physical activity to control body weight.

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