Medical Science

Factors related with breast self-examination in women: A cross-sectional study in Tehran Province, Iran

Seyed Fahim Irandoost[1], Sina Ahmadi[2], Homeira Sajjadi[3], Hassan Rafiey[4], Farhad Nosrati Nejad[3], Mohammad Ali Mohammadi Gharehghani[4], Neda Soleimanvandiazar[5,6], Sayede Mahboobeh Hosseini[7], Salah Eddin Karimi[8✉]

[1]PhD in Health Education and Health Promotion, Department of Public Health, School of Health, Urmia University of Medical Sciences, Urmia, Iran
[2]Department of Social Welfare Management, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[3]Department of Social Welfare Management, Social Welfare Management Research Centre, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[4]Social Welfare Management Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[5]Department of Social Welfare Management, Social Welfare Management Research Centre, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[6]Preventive Medicine and Public Health Research Center, Psychosocial Health Research Institute, Iran University of Medical Sciences, Tehran, Iran
[7]Educational Assistant of Kashani hospital, Educational specialist, Shahrekord University of Medical Science, Shahrekord, Iran
[8]Social Determinants of Health Research Center, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran.

✉Corresponding author
Social Determinants of Health Research Center, Health Management and Safety Promotion Research Institute,
Tabriz University of Medical Sciences, Tabriz,
Iran

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General Note

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ABSTRACT

Background: Breast self-examination is one of the primitive methods to diagnosis of breast cancer as one of the health problems in the world. Breast self-examination as a low costs and simple method that can be performed without the need for health personnel, can increase patient's survival chance through primitive diagnose of disease with more accurate diagnostic follow up. Considering the importance of breast self-examination, this study was conducted to determine an effective factor on breast self-examination among Tehranian women in 2018. *Methods:* In this Cross-sectional Study We surveyed a total of 859 women from Tehran that were participated in the study during the autumn 2018 about factors associated with Breast self-examination. Participant ages ranged from 30 to 65 years. Binary Logistic regression model was used to examine the relationship between Breast self-examination and a set of predictive variables. *Result:* Study result showed that 42.1% of participant performed breast self- examination at least once in their lifetime. associated with self-examination Multivariable model shows that age (OR=1.816; 95%CI=1.084-3.044), home status (OR=.430; 95%CI=.289-.640), ethnicity (OR=.638; 95%CI=.448-.90),birth place (OR=.502; 95%CI=.247-.968), marital status (OR=4.321; 95%CI=1.478-12.629), job status (OR=3.894; 95%CI=1.464-10.363), income (OR=2.023; 95%CI=1.066-3.840), Problem in breast (OR=.161; 95%CI=.110-.237), Preventive behaviors of breast cancer (OR=5.864; 95%CI=2.445-14.062) were predictive behaviors of breast self- examination. *Conclusion:* Findings suggested the requirement of increasing self - examination and enforcing Preventive behaviors of breast cancer with society-based education. Efforts to enhance literacy level and awareness of breast self-examination through educational interventions, media plans, and academic environments such as school and university should be one of the priorities in the field of breast cancer prevention in metropolitans and societies.

Keywords: Breast Cancer, Screening, Breast Self-Examination, Breast Health Behavior

1. INTRODUCTION

Cancer is one of the non-contagious diseases that leads to large number mortality in human societies. Of all 6 deaths, 1 is due to cancer (WHO, 2019). Breast cancer as one of the major public health problems in the world (Aghamolaei et al., 2011) accounts for 12% of all cancers in the world and about one third of all cancers in women (Rosenberg et al., 2001; Mamounas et al., 2015). In Iran, the incidence of breast cancer is 22.6 per 100,000 women (Jazayeri et al., 2015). Breast cancer is one of the first Iranian women's cancers and recent studies have shown that the highest incidence of breast cancer between the ages of 40 and 49 occurs in Iranian women.

Various factors such as age (Arvold et al., 2011), background of breast cancer (Nik-Zainal et al., 2012), family background (Phipps et al., 2011; Augustinsson et al., 2015), specific changes in the breast (Rasmussen et al., 2014), changes in the gene (Greenup et al., 2013; Antoniou et al., 2014), the history of pregnancy and menopause (Augustinsson et al., 2015; Azim Jr et al., 2012; Azim Jr et al., 2013), race (Amadou et al., 2013), chest radiotherapy (Mamounas et al., 2015; Group, 2011), Breast congestion (Gierach et al., 2012), overweight or obesity (Antoniou et al., 2014), especially after menopause (Amadou et al., 2013; Ewertz et al., 2010; Anderson and Neuhouser, 2012), contribute to breast cancer. With accurate diagnosis of breast cancer in primitive stages and appropriate medical advice, the chances of early prophylaxis, recovery, and longevity of those with breast cancer will increase (Didarloo et al., 2017). There are many screening methods for preventing breast cancer. Self - examination as one of these screening methods is easy to do, it does not have the financial cost to the individual and does not require the equipment and the presence of trained personnel (Dahlui et al., 2011) and, moreover, the self-examination diagnostic power is about 20 to 30 percent (Hosseini et al., 2016), and 50 percent reduce women's mortality (Shiraly et al., 2010).

Accordingly, the American Cancer Society has recommended increasing the awareness of disease symptoms and monthly self-examination after 20 years of age (Dündar et al., 2006). The regular, right, and accurate self-examination of the breast, lead to more than 65% of the masses detection in the breast by patient (Khalili et al., 2014). During the first monthly checkup, women will be able

to get acquainted with their natural breast characteristics, and by performing an examination in the coming months, they will be aware of their natural state of breast, if any changes occur in the early stages, and act for clinical examinations and mammography (Avci, 2008; Kashfi et al., 2012).

Research has shown positive effects of self-examination in detecting breast cancer, but the incidence of self- examination performance is not very high by women (Gençtürk et al., 2017). Hacihasanoglu (2008) showed that about 25-30% of Turkish women regularly perform breast self-examination every month (Hacihasanogˇlu and Gözüm, 2008). This rate was in Kuwait 12% (Al-Azmy et al., 2013), Nigeria 18.1% (Adebusoye et al., 2013) and Ethiopia 28.1% (Birhane et al., 2017). The level of awareness and self-examination of breast cancer by Iranian women is lower than expected, and if the self-examination is carried out, their methods are not correct.

In Iran, the incidence of self-examination performance is reported about 3-17%. Different factors such as cultural, social, and economical, emotional and practical factors are effective in screening test performance and recurrence in standard periods. Race, culture, education, age, family background, insurance status, income, employment is mentioned as related factors to breast cancer self – examination (Thomas et al., 2011; Goodwin et al., 2006; Karimi et al., 2018). In khalili and shahnazi (2010) study significant relationship was seen between breast self – examination and education, income, employment, child number, history of breast feeding and family background of breast cancer too (Khalili and Shahnazi, 2010).

In sum, the results of the research indicate a low level of regular and routine breast self-examination. According to importance of breast self-examination in early diagnosis and prevention of disease progression, it is necessary to investigate the factors relevant of performance of breast self-examination. Accordingly, this study was conducted to recognize the effective factors related to self-examination of breast cancer among Tehranian women in 2018.

2. METHODS

This descriptive analysis cross-sectional study was conducted among 859 women over 30 years old in Tehran with a probabilistic multistage sampling from five areas of Tehran based on the socioeconomic development level in 2018 (Karimi et al., 2018).

The sample size was calculated using a pilot study and with regard to 12% of women regularly and monthly performance of breast self-examination in Tehran, 162 sample were calculated using the following formula and with Cochran sampling with 95% confidence level (Cochran et al., 1977) from five regions of Tehran, the calculated sample size was multiplied by five, with a predicted drop of 10%. The final sample size was 892; the response rate was 96%. Sample size: $z^2 * p * q / d^2$

Z: 1.96 for 95%CI

p: proportion of monthly BSE in pilot study: %12

q: 1−p

d: absolute error=accepted value: %5

Sample size: 162*5+%10:892

This study was approved at the University of Social Welfare and Rehabilitation Sciences in Tehran, Iran with the ethical code IR. USWR.AC.IR.1396.274. After explain the purpose of study for participant and Willingness to participate in it, awareness written consent signed was taken out and were told to them that can leave study at any time. The entrance criteria were age above 30, Tehran residency, ability to answer questions and not having surgery history or breast cancer, non-pregnancy and breast feeding.

The questionnaires included two parts of the demographic variables (age, housing status, education, ethnicity, birth location, marital status, employment status, smoking, income level, and having breast problem) and structured questionnaire responsive to breast cancer prevention behaviors (Khazaee-Pool et al., 2016), The questionnaire has 33 questions and seven dimensions (attitude, supportive systems, self-efficacy, information seeking, stress management, stimulant and self-care). These dimensions explain the 60.62% of the total variance of the questionnaire, The Cronbach's alpha coefficient for the subscales ranged from 0.68 to 0.85, and the Interclass Correlation Coefficient (ICC) ranged from 0.71 to 0.98; which is well above acceptable thresholds. For investigate the BSE, we asked the following: do you check your breasts at least once a month and during their life-time? Responses were measured using the nominal scale of yes and no.

The results of the study were analyzed using SPSS version 21 software. The descriptive analysis with chi-square test was performed to determine the sample's profile according to the performance of breast self-examination. We verified the association between the performance of breast self-examination and variables. These associations were initially analyzed by bivariate regression, with the purpose of determining the crude prevalence ratio. The next process of analysis was the multivariate analysis to detect the prevalence ratio adjusted through logistic regression the variables for adjustment were selected from bivariate regression models with all variables relevant to these objectives; those that showed significance 0.05 < p <0.20 were maintained in the multivariate

model for adjustment purposes. The variables were inserted by the forward method, in which variables are entered all at once in the model and are removed one by one. OR with its P-value of 0.05% and 95% CI was used or reported in each logistic regression analysis.

3. RESULTS

Descriptive results of the study showed that 40% of respondents were 41 to 50 years old, 48.8% had personal home, 53.3% were non-Persian ethnicity and 46.7% were Persian, 88% of the respondents were born in the city and 96.7% were married, 47.5% were employers and 42.5% were housewives. Most respondents %36.9 earned between $ 180 and $ 250 a monthly (chart 1). About 47% of respondents had academic education (chart 2), 69.5% of the respondents said they had no problems in the breast and 88% of them were smoker. Breast cancer preventive behaviors in 42.5% of participants were as high level (Table 1).
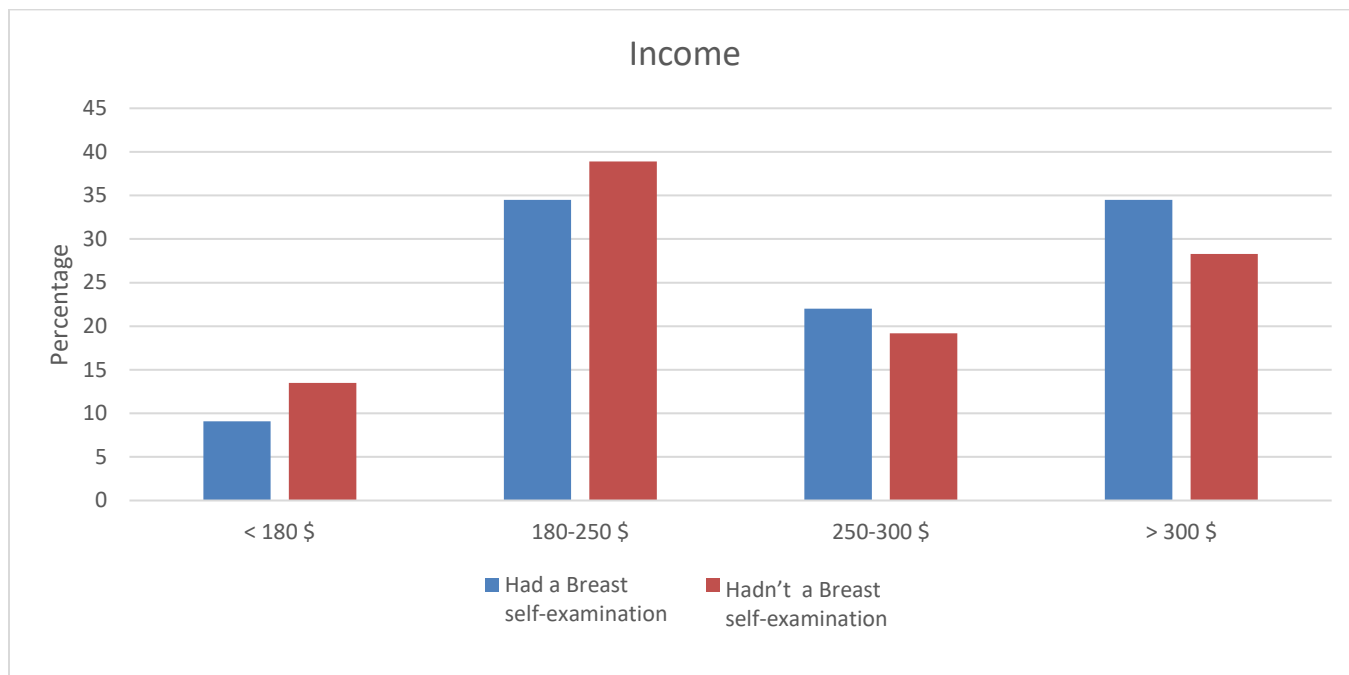
Chart 1 income level of patient with had a breast self-examination and hadn't a breast self-examination
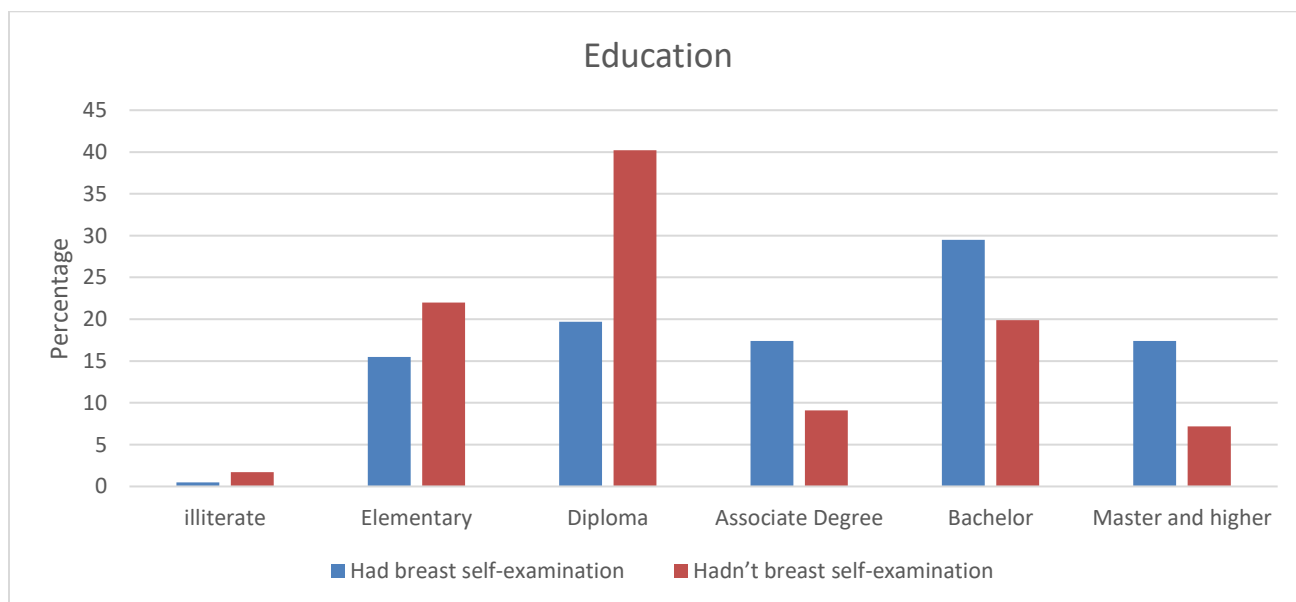
Chart 2 education level of patient with had a breast self-examination and hadn't a breast self-examination

Table 1 Descriptive characteristics of the study participants

characteristics		N	percent	Characteristics		N	percent
Age	30- 35	128	14.9	Income	< 180 $	99	11.5
	35 - 40	274	31.9		180-250	317	36.9
	41 – 50	344	40.0		250-300	176	20.5
	51 and over	113	13.2		> 300	267	31.1
House status	Personal home	419	48.8	Education status	Illiterate	10	1.2
	Rental house	277	32.2		Elementary	164	19.1
	Organizational home	43	5.0		Diploma	266	31.0
	Father's home	120	14.0		Associate Degree	110	12.8
					Bachelor	208	24.2
					Master's degree and higher	101	11.8
Ethnicity	Persian	401	46.7	problem in the breast	Yes	262	30.5
	Other, Iranian	458	53.3		No	597	69.5
Birth location	urban	756	88.0	Smoking	Yes	756	88.0
	rural	103	12.0		No	103	12.0
Marital status	married	830	96.6	Location area	High	413	48.1
	single	29	3.4		Medium	200	23.3
					Low	246	28.6
Employment status	housewife	365	42.5	Breast prevention behavior	Low	341	39.7
	Employed	408	47.5		Medium	153	17.8
	Unemployed	54	6.3		High	365	42.5
	Retired	32	3.7				

Table 2 shows the results of the binary correlation (independent variables with the outcome variable, self-examination of breast cancer). Based on the results, the significant relationship between age, housing status, place of birth, employment status, income, education, having breast problems, and breast cancer prevention behaviors, ethnicity, marital status, and smoking with breast self-examination were also observed P value<0.05. There was no significant correlation between birth place and breast self-examination P value> 0.05.

Table 2 The bivariate analyses of variables associated with Breast self-examination among women

characteristics		Ever had a Breast self-examination		P. value	characteristics		Ever had a Breast self-examination		P. value
		No(n=473) N (55%)	Yes(n=386) N (45%)				No(n=473) N (55%)	Yes(n=386) N (45%)	
Age	Lower 35	91(19.2)	37(9.6)	0.001	Income	< 180 $	64(13.5)	35(9.1)	0.001
	35 – 40	177(37.4)	97(25.1)			180-250	184(38.9)	133(34.5)	
	41 – 50	161(34)	183(47.4)			250-300	91(19.2)	85(22)	
	51 and over	44(9.3)	69(17.9)			> 300	134(28.3)	133(34.5)	
House status	Personal home	189(40)	230(59.6)	0.001	Education status	illiterate	8(1.7)	2(0.5)	0.001
	Rental house	187(39.5)	90(23.3)			Elementary	104(22)	60(15.5)	
	Organizational home	21(4.4)	22(5.7)			Diploma	190(40.2)	76(19.7)	
	Father's home	76(16.1)	44(11.4)			Associate Degree	43(9.1)	67(17.4)	
						Bachelor	94(19.9)	114(29.5)	
						Master's degree and higher	34(7.2)	67(17.4)	

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Ethnicity	Persian	204(44.6)	197(52.1)	0.05	problem in the breast	Yes	404(85.)	193(50)	0.001
	Other, Iranian	253(55.4)	181(47.9)			No	69(14.6)	193(50)	
Birth location	Urban	413(87.3)	343(88.9)	0.001	Smoking	Yes	423(89.4)	333(86.3)	0.05
	Rural	60(12.7)	43(11.1)			no	50(10.6)	53(13.7)	
Marital status	married	413(87.3)	343(88.9)	0.05	Location area	High	236(49.9)	177(45.9)	0.221
	single	60(12.7)	43(11.1)			Medium	113(23.9)	87(22.5)	
						low	124(26.2)	122(31.6)	
Employ ment status	housewife	202(42.7)	163(42.2)	0.001	Breast health literacy	Low	245(51.8)	96(24.9)	0.001
	Employed	222(46.9)	186(48.2)			Medium	89(18.8)	64(16.6)	
	Unemployed	40(8.5)	14(3.6)			High	139(29.4)	226(58.5)	
	Retired	9(1.9)	23(6.0)						

Logistic regression results showed that individuals 41 to 50 years old performed 1.81 times self- examination more than those under 35 years old (OR = 1.816; 95% CI = 1.084-3.044), women who living in rented housing are 57% less likely to had self-examination than those who have personal home (OR = .430; 95% CI = .289-.640), Non-Persian ethnicities also have 47% self-examination less than Persian (OR = .638; 95% CI = .448- .908). Respondents who born in the urban are 50% more likely to have breast self-examination than rural resident (OR = .502; 95% CI = .247- .968), Married women also perform self-examination four times more than single women (OR = 4.321; 95% CI = 1.478-12.629). The results also showed that retired people are nearly four times more likely to self-examination than Housewife (OR = 3.894; 95% CI = 1.464-10.363). Individuals who have income more than $ 300, perform self –examination more than twice as likely to who earn $ 180 (OR = 2.023; 95% CI = 1.066-3.840). Women's who have problems in the breast perform 84% less likely than who had no problem (OR = .161; 95% CI = .110-237). Women with preventive behaviors of breast cancer have 1.97 (OR = 1.975; 95% CI = 1.079-3.614) and those with high prevalence of breast cancer have 5.86 times more than those with low health literacy (OR = 5.864; 95% CI = 2.445-14.062). (Table 3)

Table 3 Multiple binary logistic regression model results for determining the effect of provoking factors for Breast self-examination

characteristics		AOR	95% CI		P. value	characteristics		AOR	95% CI		P. value
			Lower	Upper					Lower	Upper	
Age	Lower 35	REF			.001	Income	< 180 $	REF			.05
	35 – 40	.777	.453	1.332			180-250	1.588	.872	2.891	
	41 – 50	1.816	1.084	3.044			250-300	1.827	.947	3.526	
	51 and over	1.543	.781	3.047			> 300	2.023	1.066	3.840	
House status	Personal home	REF			.001	Education status	illiterate	REF			
	Rental house	.430	.289	.640			Elementary	1.563	.264	9.270	
	Organizational home	2.144	.964	4.768			Diploma	.946	.162	5.533	
	Father's home	.699	.403	1.211			Associate Degree	1.197	.183	7.826	
							Bachelor	.698	.101	4.822	
							Master's degree and higher	1.231	.175	8.687	
Ethnicity	Persian	REF			.013	problem in the breast	Yes	REF			.000
	Other, Iranian	.638	.448	.908			No	.161	.110	.237	
Birth location	Urban	REF			.049	Smoking	Yes	REF			
	Rural	.502	.247	.968			no	1.124	.598	2.114	
Marital status	married	REF			.007	Location area	High	REF			
	single	4.321	1.478	12.629			Medium	.740	.474	1.155	
							low	.739	.474	1.152	
Employment status	housewife	REF				Breast health literacy	Low	REF			.001
	Employed	1.051	.708	1.561			Medium	1.975	1.079	3.614	.000
	Unemployed	.556	.245	1.264			High	5.864	2.445	14.062	
	Retired	3.894	1.464	10.363	.019						

4. DISCUSSION

The purpose of this study was to determine the effective factors on self-examination behavior among Tehranian women. The results of the study showed that 55% of participants never perform breast self-examination during their lifetime. Also the age of respondents, marital status, housing status, income, employment status, ethnicity, and birth location were also breast self-examination predictors.

According to the results of study, only 45% of the participants performed breast self-examination at least once in their lifetime. In the (Okobia et al., 2006) study about 35% of women and in (Tastan et al., 2011) study nearly 54% of nurses in their lifetime perform self-examination, which is confirmed with our results, but in the study of Parsa et al. (2008) (Parsa et al., 2008) 10.2% and in Abay et al. (2018) (Abay et al., 2018) study about 6.5% of women perform regular and monthly self-examination. One of the reasons for this difference in our results with other research is measurement method; in other researches, it has often been asked for a regular and monthly self-examination, but in our research we had asked to do self-examination in life-time.

But perhaps the main reason is that a large proportion of women in Iran don't perform self-examination for early diagnosis of breast cancer, and another part of them (even in the health workers) is skeptical and unbelievable about its function and effectiveness of breast self-examination. Therefore, it is necessary to take appropriate measures and politics to inform and elucidate the positive outcome of self-examination and to promote a regular and monthly performing in the country.

In this study, one of the predictors of breast self-examination was age. Participant between 41 to 50 years had self-examination about twice as participants as under 35 years old. In other studies, which confirmed with our research, age was an effective variable in breast self-examination (Goodwin et al., 2006).

However, in the (Okobia et al., 2006) study, there was no significant relationship between age and self-test, which is probably related to the difference of sample types and sampling. Older people had more understand about breast cancer risk than younger people and therefore they perform more self-examination. In sum, due to younger age of breast cancer in Iran, educational and preventive programs should be focused on younger, so they will perform more self-examination and have more favorable results. Similar to Haji-Mahmoodi et al., (2002) and Avci (2008) studies in which the marital status was predictive of breast self-examination, the results of the present study also indicated that married women more than four times perform breast self-examination than single. This difference is due to the fact that married women have been informed about breast cancer and breast screening methods special breast self – examination and have been encouraged to perform it when they look up for marriage and pregnancy program and they have more attention to fitness and taking care for sexual relationship. They are familiar with their breast structure, due to breast feeding and will be more sensitive to disease in their breast, while this condition is less than in single women. Emotional support and the accompaniment of the spouses and their advice may also be the reason for the married persons to perform the breast self-examination.

In housing statues variable, those women who live in rented home perform breast self -examination less than who live in personal home, its due to maybe having more information and awareness about self –examination. The other reason is that women with rented house due to economic and job pressure has less time and perform less self-examination or maybe they think this has cost for them, it should be noted that this method does not require cost. In fact, breast self-examination has return and due to person's awareness and knowledge of breast disease rather than being related to the economic situation.

In this study, significant relationship between ethnicity and self- examination had been gain. So women from non- Persian ethnicity as economic–social minority perform less self- examination than Persian. Its reason can be justified as this group are economic–social minority, usually have less health literacy and their access and awareness to health service and importance of accurate self-examination is less than other. However, this is against the results of other studies that showed no significant relationship between ethnicity and self-examination (Albeshan et al., 2018; Birhane et al., 2015). The reason for this discrepancy is likely to the study type, sampling and at the macro level, probably due to lack of significant difference between minority and majority in terms of social and economic discrimination in the society in previous studies. Urban-born participant are more likely to have breast self-examination than the rural women. This may be due to a higher level of awareness of urban dweller than screening methods. In (Duport and Ancelle-Park, 2006) survey, urban women with a higher economic status were performed more breast screening. But in the (Getu et al., 2019) study there was no significant relationship between past born of a person and breast self-examination. There was no significant relationship between birth location and self-examination in the (Yuan et al., 2016) study. One of the reasons for the discrepancy between the results of the present research and other studies may be due to the small number of rural-born residents in this study compared with those born in the city.

In the study, employment was associated with breast self-examination, so retired women nearly four times more likely to have breast self-examinations than housewives. In other studies, the type of occupation was associated with breast self-examination

performance (Haji-Mahmoodi et al., 2002; Okobia et al., 2006; Abay et al., 2018; Khalili and Shahnazi, 2010). Retired people in this study due to having more time and independent income spend more time than housewife's women to check their health and increase their breast knowledge and awareness, ultimately doing more Brest self-examination. Of course, this situation is also conceivable for housewives which not found in this research.

Income also was predicted breast self-examination; women with an income of more than $ 300 have twice as likely breast self-examination more than who had income less than $ 180. Although this finding is inconsistent with the results of the (Getu et al., 2019) study, but it is consistent with (Yücel et al., 2005) study, that showed that higher income levels were associated with breast cancer screening. One of the reasons for this finding may be that women with higher-income more likely have higher educated, have more relationship with other women with high health literacy in workplace and social that leads to increase their breast disease knowledge and screening methods. But in (Getu et al., 2019) research, there was no significant relationship between income and breast self-examination. Despite the controversy in the research, it should be told that, breast self-examination is cost-free, and it is hoped that low-income individuals will be more likely to perform self-examination if they are trained and grows knowledge about the importance and method of breast screening.

In our study, women with a problem in the breast were more likely to have breast self-examination than those had no problem. In various studies, individuals with a history of problems in the breast, performed more self-examination (Avci, 2008; Doganer et al., 2014; Bebis et al., 2013). In the (Getu et al., 2019) study, the results showed that women who do not perform self-examination said have no problem in their breast. People with breast problems tend to be sensitive to pain and changes in their breast and perform self-examination more and more frequent than others. Women with moderate breast cancer preventive behavior, were have twice chance and who have high preventive behaviors perform have nearly six times chance to perform self–examination than who have low breast cancer prevention behavior. This finding is probable Due to low awareness and health literacy of participant in this study.

In (LaPorta et al., 2017), the majority of respondents believed that breast self-examination is sufficient to find problems in the breast, although this indicates awareness and health literacy, but it is necessary to use other diagnostic methods such as mammography, along with breast self-examination. Participants in (Ghodsi and Hojjatoleslami, 2014) did not have any knowledge about the self-examination of breast cancer. In the (Al-Azmy, 2013) research, there was a significant relationship between breast cancer advice and self-examination (Al-Azmy et al., 2013). But in (Radi's, 2013) research the knowledge and person's literacy were high for breast cancer and self-examination (Radi, 2013). In (Chong et al, 2000) study which was carried out among nurses, their knowledge was relatively high in breast cancer and self-examination, and performed self-examination on a regular basis (Chong et al., 2002). This difference is due to the fact that the sample of the (Radi 2013) research was nurses who are aware of breast cancer and its diagnostic methods because of university education (Radi, 2013). Efforts to raise the level of literacy and awareness of breast self-examination through educational interventions, media plans, scientific environments such as school and university should be one of the priorities of prevention field.

5. CONCLUSION

Considering the importance of early diagnose in the survival of patients with breast cancer and inexpensive and availability of self – examination, educating and informing women, raising their awareness about the importance of breast self-examination and be familiar with the correct method to perform self – examination is very important.

The role of various health personnel, such as midwives, nurses and doctors, is very significant in this regard. At the same time, the use of media potential power such as television and social networks, along with educational interventions at schools and government and family level, can be beneficial.

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