



Evaluation of breast cancer awareness in female patients diagnosed with schizophrenia

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ABSTRACT

Objective: In this study, it was aimed to investigate the awareness of female patients diagnosed with schizophrenia about breast cancer and to evaluate whether there was a difference in this awareness between the control group and individuals diagnosed with schizophrenia. Secondly, the frequency of breast cancer screenings of patients diagnosed with schizophrenia and the control group was compared.

Material and Methods: Individuals between 18 and 65 years of age who were literate and voluntarily gave informed consent to participate after being informed about the study were included. The research study group comprised of 82 individuals, 35 patients with schizophrenia and 47 healthy individuals. Patients with schizophrenia were required to have no clinically severe disease picture (CGI-S score of 3 or below). Individuals were given the Breast Cancer Awareness Scale (B-CAS) to fill in.

Results: The patient group had less awareness of breast cancer than the control group; conversely, they faced more barriers in breast cancer screening. The number of those who stated that they did not know about breast cancer early diagnosis methods was higher in the patient group than in the control group. In the evaluation of health attitudes toward breast cancer, it was found that the healthy control group was better than the patient group in performing regular breast self-exam.

Conclusion: Educating individuals with schizophrenia about the signs and symptoms of cancer and adapting healthcare systems to facilitate rapid and early cancer diagnosis may result in cost-effective and applicable cancer control strategies for curable cancers.

Keywords: Breast cancer, schizophrenia, awareness

INTRODUCTION

Evidence from epidemiological studies suggests that compared to the general population, mental illness is associated with a higher risk of and worse outcomes for cancer (1-4). Although an increased risk of cancer-related mortality has been found especially in individuals with severe mental illnesses such as schizophrenia, this group has been relatively neglected in cancer-related healthcare research (1,3,5,6). Moreover, to reduce mortality rates in schizophrenia patients, many treatment guidelines in recent years recommend monitoring cardiovascular and metabolic health, while there is no clear recommendation for cancer screening (2).

It has been suggested in the literature that several factors play a role in the increased risk of cancer in mental illnesses and the detection of more negative consequences: genetic factors, less use of preventive care in individuals with mental illnesses (e.g., cancer screening), behavioral factors (e.g., higher smoking rates, unhealthy lifestyle behaviors), postponing or not adhering to cancer treatment as a result of impaired compliance due to disease-related characteristics, side effects of antipsychotic drugs, high prolactin levels, both the risks associated with mental illness and high obesity caused by antipsychotic drug side effects, diabetes mellitus, cardiovascular comorbidity prevalence, nulliparity, low breastfeeding incidence, insufficient patient-physician interaction (1,7).

At this point, the increased risk of cancer in mental illnesses and the scarcity of cancer screening; one of the factors associated with more negative outcomes, are important issues to be considered. Screening is one of the best public health policies as it effectively reduces cancer incidence and mortality and creates early diagnosis-treatment options. Patients diagnosed with schizophrenia and other psychotic disorders are less likely to participate in cancer screenings, and studies

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show that the likelihood of screening for breast cancer is about half of the general population (4,8). The limited participation of patients diagnosed with schizophrenia in screening for breast cancer may cause the disease to be undetected in the early stages (9). The fact that women with a psychiatric diagnosis generally receive breast cancer diagnosis and treatment at a later stage than breast cancer patients without a psychiatric diagnosis also shows that this group is not screened to the same extent as other women (3,10). Whatever the reason, 15% of cancer deaths can be attributed to the interaction between breast cancer and serious mental illness (11).

Identifying the factors that affect the low participation of patients with schizophrenia in cancer screening can increase the benefit of these patients from screening services.

Numerous barriers to participation in cancer screening have been identified in this group. Among these factors are loss of interest and motivation specific to patients with schizophrenia, lack of a primary care physician that they follow up regularly, lack of general knowledge of the patient about screening programs, appointments given for a long time, absence of annual reminders, lack of optimal cooperation between the patient and healthcare professionals, diagnostic overshadowing, against patients with schizophrenia prejudiced attitude of health personnel (12,13). Among the reasons for the lower rates of cancer screening in patients with schizophrenia are the problems in predicting health risks in these patients or their cognitive symptoms (for example, impaired attention and executive function) that make it difficult to plan effectively forward, and the lack of awareness of the benefits of screening due to their lack of awareness of cancer (6,12). Increasing awareness of cancer is considered the first step in the fight against cancer. Low awareness of breast cancer and barriers to accessing health services are considered to be important causes of delay in screening/treatment (4,14). Because beliefs about cancer and cancer screenings are directly related to the behavior of participating in cancer screenings, physicians should improve their knowledge about cancer and cancer screening, especially in patients with schizophrenia, and eliminate misunderstandings (12,15).

This study, considering the high prevalence of breast cancer and its promising prognosis when diagnosed early, aimed to investigate the awareness of female patients diagnosed with schizophrenia about breast cancer and to evaluate whether there is a difference in this awareness between the control group and individuals diagnosed with schizophrenia (3,8). Secondly, in our study, the frequency of breast cancer screenings of schizophrenia patients and the control group is compared. We hypothesize that individuals diagnosed with schizophrenia have less awareness about and fewer breast cancer screenings. It is believed that evaluating the awareness of

patients will contribute to the literature in understanding the current situation and developing the necessary interventions.

MATERIAL and METHODS

This research was conducted in the Ankara Dışkapı Yıldırım Beyazıt Training and Research Hospital, Psychiatry Clinic and Community Mental Health Center (CMHC), and the Family Medicine Clinic of Ankara Training and Research Hospital. Patients diagnosed with schizophrenia from the Psychiatry Clinic and the control group (women with no history of mental illness) from the Family Medicine Clinic of Ankara Training and Research Hospital were included in the research. Individuals between the ages of 18 and 65 who were literate and voluntarily gave informed consent to participate after being informed about the study were included in the research. To fill out the forms appropriately, patients diagnosed with schizophrenia were required to have no clinically severe disease picture (CGI-S score of 3 or below) and having no psychiatric diagnosis or treatment was the criterion for inclusion in the control group. Schizophrenia patients with comorbid psychiatric disorders were not included in the research. Furthermore, individuals with cognitive and physical disabilities, which would prevent them from filling out the forms, for both groups were not included in the research.

Ethical approval was obtained from the Ethics Committee of Ankara Dışkapı Yıldırım Beyazıt Training and Research Hospital (Date: 18.04.2022 Number: 135/10). This study was carried out in accordance with the Helsinki Declaration.

Patients diagnosed with schizophrenia who met the inclusion criteria and volunteered to participate in the research were examined in the psychiatry clinic. Patients who met the inclusion criteria of the research constituting the control group were also examined in the family medicine clinic. Afterward, individuals were given the Breast Cancer Awareness Scale (B-CAS) to fill in.

Scales

Breast Cancer Awareness Scale (B-CAS)

The breast cancer awareness scale was developed by Rakkapao et al (2016) (16). It is a scale designed as a self-report tool for early detection and prevention of breast cancer that allows women to understand their level of awareness about breast cancer. It consists of 35 items. The scale consists of five subscales: 1) Knowledge of Risk Factors, 2) Knowledge of Signs and Symptoms, 3) Attitude to Breast Cancer Prevention, 4) Barrier of Breast Scanning, 5) Health Behavior Related to Breast Cancer Awareness. The Turkish reliability validity study of the scale was conducted by Altuntug et al (2021) (14). Six items were removed due to the analysis made in this research. Since the Turkish form of the scale was used in our study, the analysis was carried out on 29 items.

Clinical Global Impression Scale (CGI)

The Clinical Global Impression Scale is a three-dimensional scale devised by Guy (1976) to evaluate the clinical course of psychiatric disorders (17). The severity of the disease is evaluated in the first dimension, recovery in the second dimension and the severity of the drug side effects in the third dimension. The first part (Clinical Global Impression-Disease Severity) is evaluated between 1 and 7 points according to the severity of the disease at the time of filling the scale.

Statistical Analysis

In data analysis, descriptive statistical measures (frequency and percentages) and Cronbach's alpha coefficient were used to provide evidence for the reliability of the measurements obtained from the measurement tools. Parametric tests (independent samples t-test) were used in the difference analysis since there was a sufficient sample size. SPSS (version 25) package program was used in data analysis. For statistical significance, 0.05 alpha level was taken into account.

RESULTS

The research study group consisted of 82 individuals, 35 patients with psychotic disorders and 47 individuals in the control group, who were selected by the convenient sampling method. Descriptive statistics on the socio-demographic information of both groups that participated in the research are shown in Table 1.

Descriptive statistics of the participants' knowledge about cancer and their attitudes to health are given in Table 2. While it was determined that both groups were similar regarding doing regular sports, having an HPV vaccination, getting a mammogram, having a family history of breast cancer, and the COVID-19 epidemic as an obstacle to breast cancer screening, other variables showed a statistically significant difference.

Finally, it was examined whether there was a difference between the groups regarding the answers to the breast cancer awareness scale (Table 3). In the examination of Table 3, it is seen that F3 and F5 factors and the total score do not have a statistically significant difference. In contrast, other sub-factors have a statistically significant difference in the groups. In the examination of the mean values for both groups, it was determined that the control group had higher values than the patient group in F1 and F2 sub-factors. The effect size was calculated for the practical significance of these differences, and it was determined that it had a great effect for F1 and F2 (18). For the F4 sub-factor, it was determined that the patient group was higher than the control group, and this difference was statistically significant. In the examination of the calculated effect size, it was seen that there was a difference with a large effect.

DISCUSSION

In this study, we aimed to compare the individuals diagnosed with schizophrenia and the control group in terms of their awareness levels about breast cancer and their health attitudes towards breast cancer (such as self-examination, going for a check-up, and having mammography). Our data demonstrated that the patient group had less awareness of breast cancer (about breast cancer risk factors and symptoms) than the control group; on the other hand, they faced more barriers in breast cancer screening. The number of those who stated that they did not know about breast cancer early diagnosis methods was higher in the patient group compared to the control group. In the evaluation of the health attitudes toward breast cancer, it was found that the healthy control group was better than the patient group in terms of performing regular breast self-exam.

Many people with early-stage breast cancer can be treated with surgery alone without any systemic treatment. For this reason, "early diagnosis" is vital to reduce deaths from cancer (19). Knowledge and awareness of breast cancer, the ability to perform breast self-exams, detecting physical changes in the breast, and immediate consulting an expert are critical factors in the early breast cancer diagnosis (20,21).

The number of studies investigating breast cancer awareness is limited, and studies have different results (22). In studies conducted on this subject, the level of awareness about breast cancer symptoms was 51% (95% CI= 37-66%), and this rate was only 40% (95% CI= 24-56%) for risk factors (23). In a recent meta-analysis, it has been reported that the general awareness of breast cancer is 53% (95% CI= 42-64); in some countries it is as low as 16%, and general information about breast cancer symptoms, risk factors and awareness levels are low (23,24). The reasons related to the difference in awareness levels include the difference in the questionnaires applied, different ethnic origins in the study samples, religions, settlements, socioeconomic level differences, and lifestyle habits (23). Factors such as living in urban areas instead of rural areas, high socioeconomic and income levels, and having a job demonstrated a tendency to have higher awareness levels about breast cancer (23). Factors such as age, education, income level, and family history of cancer were also associated with knowledge and awareness levels about cancer (23,25). Education level seems to be an important determinant for the increase of cancer awareness, regardless of the development level of countries (23). Although older women have a higher risk of developing breast cancer, some studies have shown that younger women tend to have more awareness and knowledge about breast cancer. However, there are also study results showing that older women tend to have more information about breast cancer (23). Many studies have reported that married women have lower levels of breast cancer awareness than single women (23,26).

Table 1. Frequency and percentages of socio-demographic information of the control and patient groups

Categorical variables						
Variables	Variable levels	Patient		Control		χ^2 (Difference)
		f	%	f	%	
Marital status	Single	19	54.3	4	8.5	29.13*
	Married	9	25.7	36	76.6	
	Divorced	3	8.6	3	6.4	
	Widowed	3	8.6	2	4.3	
	Missing data	1	2.9	2	4.3	
Cohabitants	Spouse and children	8	22.9	37	78.7	32.54*
	Parents	15	42.9	4	8.5	
	Living alone	3	8.6	2	4.3	
	Extended family	7	20.0	1	2.1	
	Missing data	2	5.7	3	6.4	
Having a child	Yes	13	37.1	40	85.1	22.80* (p= .000)
	No	22	62.9	7	14.9	
Education level	Literate	--	--	3	6.4	7.08 (p= .132)
	Primary school	8	22.9	14	29.8	
	Secondary school	5	14.3	8	17.0	
	High school	13	37.1	17	36.2	
	University/College degree	9	25.7	5	10.6	
Occupation	Student	1	2.9	1	2.1	18.30 ¹ *
	Housewife	27	73.2	27	57.4	
	Worker/Civil servant	1	2.9	16	34.0	
	Retiree	4	11.4	--	--	
	Self-employed	1	2.9	--	--	
	Missing data	1	2.9	3	6.4	
Level of income	Low	10	28.6	9	19.1	1.04
	Average	18	51.4	30	63.8	
	High	5	14.3	6	12.8	
	Missing data	2	5.7	2	4.3	
Menopause status	Yes	5	14.3	13	27.7	2.74
	No	30	85.7	34	72.3	
Smoking	Yes	26	74.3	15	31.9	0.42
	No	9	25.7	32	68.1	
Alcohol usage	No	29	82.9	46	97.8	10.55*
	Yes	1	2.9	--	--	
	Missing data	5	14.2	1	2.1	
Total		35	100	47	100	
Continuous variables						
		Mean	SD	Mean	SD	t-values (difference)
Age (years)		41.26	9.25	44.02	11.65	1.14
Disease onset (year)		26.35	9.40	--	--	--
Height (cm)		160.86	6.55	162.24	5.54	0.95
Weight (kg)		75.31	17.23	69.93	14.08	1.49
Age of first menstruation (years)		13.65	1.34	13.30	1.15	1.19

*p< .05.

¹Fisher's exact test.

Table 2. Frequencies and percentages related to knowledge about cancer and attitudes toward the health of both groups

Variables	Variable levels	Patient		Control		χ^2 (Difference)
		f	%	f	%	
Doing sports regularly	Yes	11	31.4	13	27.7	0.30
	No	22	62.9	34	72.3	
	Missing data	2	5.7	--	--	
Healthy diet	Yes	28	80.0	28	59.6	3.87*
	No	7	20.0	19	40.4	
Do you know anything about breast cancer	I have enough information	5	14.3	12	25.5	24.25*
	I have some information	12	34.3	33	70.2	
	I have no information	18	51.4	2	4.3	
Information sources about breast cancer	Visual-print media	11	31.4	32	68.1	8.31 ¹ *
	Physician	6	17.1	4	8.5	
	Nurse/Midwife	3	8.6	4	8.5	
	Friend-neighbor	--	--	3	6.4	
	Seminar/Meeting	4	11.4	2	4.3	
	Missing data	11	31.4	2	4.3	
Having knowledge about early diagnosis methods of breast cancer	No	27	77.1	5	10.6	41.59 ¹ *
	Yes	8	22.9	42	89.4	
Performing regular breast self-examination	Yes	6	17.1	36	76.6	29.74*
	No	29	82.9	10	21.3	
	Missing data	--	--	1	2.1	
Mammography	Yes	9	25.7	21	44.7	3.39 ¹
	No	26	74.3	26	55.3	
Having regular mammography	Yes	5	14.3	16	34.0	4.24 ¹
	No	30	85.7	31	66.0	
Has COVID-19 prevented you from getting breast cancer screening?	No	30	85.7	42	89.4	0.95 ¹
	Yes	4	11.4	4	8.5	
	Missing data	1	2.9	1	2.1	
Family history of breast cancer	Yes	4	11.4	2	4.3	2.13 ¹
	No	31	88.6	45	95.7	
Total		35	100	47	100	

*p< .05.
¹Fisher's exact test.

In our study, breast cancer awareness levels of the control group were found to be higher than the patient group in terms of breast cancer symptoms and risk factors dimensions. The similarity between the two groups regarding education, income level, mean age and family history of breast cancer suggests that these factors do not affect the difference we found between the groups.

On the other hand, the rate of having a job and being married in the control group was higher compared to the patient group. In the literature, having a profession has been found to be associated with higher awareness levels; and being married, on the contrary, has been associated with lower awareness levels (23,26). Therefore; the impact of these factors should be considered in interpreting our data.

Table 3. Independent samples t-test results of comparison of breast cancer awareness levels of the patient and control group

Subdimenstions/Total	Group	n	\bar{X}	SD	SD	t	η^2
F1	Patient	35	9.25	2.58	80	3.59*	.14**
	Control	47	11.22	2.37			
F2	Patient	35	13.00	3.28	54.19 ¹	3.05*	.14**
	Control	47	14.94	2.10			
F3	Patient	35	23.79	4.89	47.29 ¹	1.96	--
	Control	47	25.56	2.51			
F4	Patient	35	10.56	3.87	80	4.50*	.20**
	Control	47	7.15	3.00			
F5	Patient	35	9.69	2.81	80	0.83	--
	Control	47	9.22	2.26			
Total	Patient	35	66.29	8.52	80	1.12	--
	Control	47	68.09	5.98			

p< .05; d= small effect. d**= great effect.
¹Equal variances not assumed.
 F1: Knowledge of risk factors, F2: Knowledge of signs and symptoms, F3: Attitude to breast cancer prevention, F4: Barrier of breast scanning, F5: Health behavior related to breast cancer awareness.

It is necessary to raise awareness about breast cancer symptoms and risk factors in women. In this context, to increase knowledge and awareness about breast cancer, it is necessary to clearly understand the insufficient information and the factors associated with knowledge and awareness (23,27). In addition, standards are needed to assess awareness and knowledge about breast cancer. In our study, the rate of individuals reporting that they had knowledge of breast cancer early diagnosis methods was lower in the patient group compared to the control group. In addition, there was a difference between the two groups in terms of information sources on this subject. The rate of obtaining information through visual print media is higher in the control group compared to the patient group. In both groups, it is seen that obtaining information in this way has the highest rates compared to other information sources (physicians, nurses, friends, seminars, etc.). Our data provide information on ways to reach the target audience in awareness studies.

In addition to the lack of awareness, many women do not have appropriate health-related attitudes toward this disease, and it is reported that women do not participate in screening programs, especially in developing countries (28). Breast cancer is seen in one of every eight women in the general population, and this risk can be reduced by up to 20% with mammography screenings (29). Our study found that the rate of self-examination of patients diagnosed with schizophrenia was lower than that of the healthy control group. However, although the rates in the control group were higher than the patient group in terms of participation in mammography and regular mammography screenings, no statistically significant difference was

found between the groups. Similarly, in our study, no difference was found between the groups regarding the Attitude to Breast Cancer Prevention dimension in the breast cancer awareness scale. In this dimension, individuals were also asked about their thoughts on early cancer diagnosis through regular examinations by health personnel and mammography examinations. Contrary to our data in the literature, women with a past or present diagnosis of mental illness seem to be less likely to have mammography compared to the general population, and it is noteworthy that participation in screening studies is less than half of the control group (8,30). Although there is no significant difference between the groups in terms of mammography, it is observed that the patient group in our study reported more difficulties in terms of breast screening barriers compared to the control group. In this dimension, individuals are asked whether they know how to self-exam, whether they have time to go to a physician for cancer screening, whether they wait a long time to see a physician, and whether it is convenient for them to go to a physician. The fact that the majority of the patient group in our sample consisted of individuals followed in the CMHC may have been effective in the absence of differences in mammography scans between the two groups in our study. CMHCs provide holistic health services to individuals with severe mental illness and apply healing-oriented case treatment plans. The consultations of the individuals followed here to the required departments are planned by the consultant doctors. For this reason, individuals may be able to have the necessary examinations done even if they feel barriers to screening. However, in the light of our study data, it was thought that the group with the disease should receive training

on self-examination. The fact that our study sample consisted of a relatively young patient group may have provided limited data in terms of evaluating the attitude of having regular mammography, and it is recommended to conduct studies that include the older age group.

Due to the design of our study, the effect of cancer awareness could not be evaluated on the fact that the patients' self-examination rate is lower than that of the control group. Literature data indicate that the low level of awareness about cancer may have an effect on low breast cancer screenings in general (6). It was determined that the clinicians evaluated the difficulties in accessing care, social support, prioritization of psychiatric complaints, communication difficulties, and patients' concerns as effective factors in this group's low number of cancer screenings (31). The relative failure of individuals with serious mental illness to seek cancer screening is attributed to transportation problems, lack of reminders, and unfamiliarity with the process by patients or healthcare providers (12). It is also possible that physicians may underestimate the clinical significance of complaints from patients with psychotic disorders or attribute such complaints to psychotic phenomena (e.g., diagnostic overshadowing). This situation may result from the patients' communication difficulties and cognitive challenges or stigmatization, which is common among physicians. It has also been reported that patients diagnosed with schizophrenia have a high pain threshold, so they may not complain until the late stages of the disease. Patients may have a little family incentive to visit their physician even when symptoms occur (32,33). As a result of reduced screening and examinations, cancers come to medical attention at relatively late stages, are less amenable to treatment, and are more likely to lead to treatment-refractory and premature death (33).

Our study is important in terms of reflecting the data of Türkiye, but the single-center study and the low sample size are the limitations of our study. In our study, the difficulties individuals face in participating in self-examination and screening programs were not discussed in detail, and it is recommended to be investigated in further studies. Finally, although there was no difference in terms of age between the two groups, the fact that the evaluation of mammography screening was not limited to individuals over 40 in our study can be considered a limitation.

CONCLUSION

Early diagnosis plays a crucial role in patient survival. Therefore, interventions should be implemented to increasing knowledge and awareness about breast cancer (34). Educating individuals about the signs and symptoms of cancer and adapting health-care systems to facilitate rapid and early cancer diagnosis may be cost-effective and applicable cancer control strategies for curable cancers (22). For the prevention of breast cancer, an

initial assessment should be made to classify the risk of breast cancer in women with schizophrenia, and antipsychotics that may increase prolactin levels and breast cancer risk should be avoided in high-risk women. Regular screening should be done, including imaging or biomarker testing. Awareness of cancer risk, more accurate risk detection, stronger connection with primary care, regular monitoring and screening, appropriate drug selection and low-dose antipsychotic treatment, use of cognitive and psychosocial therapies in addition to psychopharmacotherapy, recommending diet and exercise programs to individuals are very important in the fight against cancer (7). It is important for psychiatrists to be in contact with primary care physicians and help their patients be screened in order to maintain good patient care (10). In addition, every effort should be made to increase patient compliance with treatment and follow-up processes as well as prevention (35).

Ethics Committee Approval: This study was approved by T.C. Ministry of Health SBU Dışkapı Yıldırım Beyazıt Training and Research Hospital Clinical Research Ethics Committee (Decision no: 135/10, Date: 18.04.2022).

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**ORİJİNAL ÇALIŞMA-ÖZET**

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Şizofreni tanılı kadın hastalarda meme kanseri farkındalığının araştırılması

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ÖZET

Giriş ve Amaç: Bu çalışmanın amacı şizofreni tanılı kadın hastaların meme kanseri farkındalığını araştırmak ve kontrol grubu ile şizofreni tanılı bireyler arasında bu farkındalık açısından fark olup olmadığını değerlendirmektir. İkinci olarak şizofreni tanılı hastalar ile kontrol grubunun meme kanseri tarama sıklığı karşılaştırılacaktır.

Gereç ve Yöntem: On sekiz-65 yaş arası okuma yazma bilen ve araştırmaya gönüllü olarak bilgilendirilmiş onay beyanı vererek katılmayı kabul eden bireyler çalışmaya dahil edildi. Araştırmanın çalışma grubunu 35 şizofreni hastası ve 47 sağlıklı birey olmak üzere 82 kişi oluşturmuştur. Şizofreni hastalarının klinik olarak ciddi bir hastalık tablosuna sahip olmaması (CGI-S skoru 3 veya altında) istendi. Bireylere doldurmaları için Meme Kanseri Farkındalık Ölçeği (B-CAS) verildi.

Bulgular: Hasta grubu meme kanseri konusunda kontrol grubuna göre daha az farkındalığa sahiptir ve diğer taraftan meme kanseri taramasında daha fazla engelle karşılaşmaktadır. Meme kanseri erken tanı yöntemlerini bilmediğini belirtenlerin sayısı hasta grubunda kontrol grubuna göre daha fazlaydı. Meme kanserine yönelik sağlık tutumları değerlendirildiğinde, sağlıklı kontrol grubunun kendi kendine düzenli meme muayenesi yapma konusunda hasta grubuna göre daha iyi olduğu saptanmıştır.

Sonuç: Şizofreni tanısı olan bireyleri kanserin belirti ve semptomları konusunda eğitmek ve sağlık sistemlerini hızlı ve erken kanser teşhisini kolaylaştıracak şekilde düzenlemek, tedavi edilebilir kanserler için uygun maliyetli ve uygulanabilir kanser kontrol stratejileri olabilir.

Anahtar Kelimeler: Meme kanseri, şizofreni, farkındalık

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