

RESEARCH ARTICLE

Changes in the Attitudes and Behavior of Relatives of Breast Cancer Patients Concerning Cancer Prevention and Screening

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Abstract

Background: Changes in the attitudes and behavior of relatives of breast cancer patients concerning cancer prevention and screening after diagnosis in a loved one were evaluated. **Materials and Methods:** Forty-three questions were used to collect data from the relatives of the breast cancer patients who had been living with their relatives for at least one year. **Results:** The study group was composed of 171 female relatives (median age: 43, range: 17-82 yr). After the patients were diagnosed with breast cancer, changes in the attitudes and behavior of their relatives toward the prevention and screening of cancer were evident in 78 (45.6%) of the study participants (e.g. eating habits, quit or reduced smoking, exercise habits). In addition, it was noted that some characteristics of the relatives had different effects on different attitudes and behavior. **Conclusions:** Awareness on breast cancer among the relatives of breast cancer patients is useful for the management of health and social problems that can be seen in these individuals. At the same time, this information could help countries determine whether their actual level of healthcare for early cancer diagnosis, prevention, and screening are adequate.

Keywords: Breast cancer - awareness - patient relatives - behavioral changes

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Introduction

Breast cancer is an important healthcare issue for women and is one of the most commonly encountered cancers in the United States. It is also the second leading cause of cancer-related deaths with a 15% mortality rate, and it makes up 26% of all cancers (Harold et al., 2008). One out of every nine females has a risk of getting breast cancer at some point in their lives (Goss et al., 1998). Genetic causes are responsible for approximately 5-10% of all breast cancer and more than half of these are thought to be caused by mutations in the genes BRCA-1 and BRCA-2 (Calzone et al., 2005). In addition, it is thought that breast cancer has multifactorial origins, including advanced age, family history, increased exposure to female hormones, diet, benign breast diseases, and environmental factors. These carry a different potential in each individual and have a different risk load [Harold JB, et al., 2008]. It is reported that familial breast cancer occurs earlier than sporadic breast cancer; thus, screening tests should be administered starting from between the ages of 25 to 30 (Kuhl et al., 2010). Individuals with first-degree relatives diagnosed with breast cancer have a 5.5% risk of having breast cancer while this risk increases to 13.3% if there are two first-degree relatives with the disease (Collaborative

Group on Hormonal Factors in Breast Cancer, 2001).

Breast cancer is a phenomenon that results from both familial and environmental factors, and, as a result, it can potentially affect all members of a family. However, it is not yet clear whether there is a change in the attitudes and behaviors of family members toward cancer after one individual in the family has been diagnosed with breast cancer (Goss et al., 1998; Collaborative Group on Hormonal Factors in Breast Cancer, 2001; Calzone et al., 2005; Harold et al., 2008; Kuhl et al., 2010).

Relatives who quit smoking, change their diet, exercise habits, and lifestyles, start using vitamin supplements or alternative medicines, visit a doctor due to suspicion of cancer, or undergo cancer screening are possible behavioral changes that can be encountered. These changes can vary according to the awareness level of the individual and can lead to early cancer diagnosis. Perception of the patient and the disease is important for the relatives living with those stricken with breast cancer, and studies have shown that there is no distinct level in this perception. It differs from person to person (Kagawa-Singer et al., 2003). Some studies have shown that the most important health problem seen in the relatives of the cancer patients was psychological stress (Couper et al., 2006), followed by general body symptoms and deterioration in

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brain functions (Wagner et al., 2006).

Promoting public awareness on breast cancer is an important public issue. Thus, determination of behavioral and attitudinal changes in the relatives of breast cancer patients would be an interesting and effective way of enabling public awareness on the disease. On the other hand, it is also important for managing possible cancer-related health issues and for early diagnosis of this disease. Moreover, it can be used as a subjective indicator for countries to examine their progress in evaluating relatives of cancer patients regarding cancer prevention and screening as well as for the implementation of related programs.

Therefore, we examined the changes in the attitudes and behaviors of the relatives of breast cancer patients and kept the psychological problems of the relatives out of the equation.

Materials and Methods

The relatives of the breast cancer patients who were treated in the Department of Medical Oncology, Dokuz Eylül University between July 2010 and January 2011

were asked forty-three questions, and the data was then collected. Relatives of the patients were asked questions about general characteristics and the changes in the attitudes and behaviors toward cancer prevention and screening after the patients diagnosed breast cancer. Questions were directed to the first-degree relatives of the patients (mothers, sisters, and daughters) and to those who shared a home with the patient at least one year.

The statistical analysis of the data obtained was carried out using the Statistical Package for Social Sciences for Windows (SPSS) Version 15.0 software, and the chi-square test was used for comparing the independent groups. A value of $p < 0.05$ was accepted as statistically significant.

Results

General characteristics of the relatives of the patients: A total of 171 first-degree relatives of 156 breast cancer patients being treated were enrolled in the study group. Of these, 141 patients had one relative in the study while 15 patients had two relatives who participated. Twenty-three patients (13.5%) had stage I cancer while 28 (16.4%) had

Table 1. General Characteristics of the Patients' Relatives

Characteristic	Median (range)	n (%)	Characteristic	Median (range)	n (%)
Place of residence of the relatives (with the patient and the time interval)			Relative with history of benign breast disease		27 (15.8)
The same city (years)	21 (17-68)	73 (42.7)	Non-tumoral disease		19 (11.1)
A different city (years)	18 (1-69)	98 (57.3)	Benign breast tumor		8 (4.6)
Relationship to the patient			Breast self-examination		
Mother		48 (28.1)	Those who know how to do it		116 (67.8)
Daughter		59 (34.5)	Those who have done it		94 (55.0)
Sister		64 (37.4)	Those who do it regularly—once a month		74 (43.2)
Moment relative found out about breast cancer diagnosis			Previous breast ultrasonography		
At diagnosis		148 (85.5)	For routine controls		47 (27.4)
Following diagnosis (no. of days)	90 (30-600)	23 (13.5)	For clinical suspicion		24 (14.1)
Other relative with a diagnosis of breast cancer			Previous mammography		45 (26.3)
Mother with breast cancer		12 (7.0)	For routine controls		18 (10.5)
Daughter with breast cancer		11 (6.4)	For clinical suspicion		
Sister with breast cancer		6 (3.5)	Relatives who have undergone regular testing		
Maternal aunt with breast cancer		5 (2.9)	Mammography+Hemogram+Biochemical assay		14 (8.2)
Mother and daughter with breast cancer		4 (2.3)	Breast ultrasonography+Hemogram+Biochemical assay		10 (5.8)
Mother and sister with breast cancer		3 (1.7)	Hemogram+Biochemical assay		6 (3.5)
Paternal aunt with breast cancer		3 (1.7)	Hemogram+Biochemical+Hormonal assay		5 (2.9)
Maternal grandmother with breast cancer		3 (1.7)	Mammography+Breast ultrasonography		2 (1.2)
Paternal grandmother with breast cancer		2 (1.2)	Daily physical activity level		
Maternal grandmother and mother with breast cancer		2 (1.2)	Very active		60 (35.1)
Educational levels of the relatives			Active		95 (55.6)
Illiterate		6 (3.5)	Not so active		16 (9.4)
Literate		2 (1.2)	Regular exercise		40 (23.4)
Elementary school		53 (31.0)	Period of regular exercise (years)	6 (1-60)	
Junior high		12 (7.0)	Weekly exercise (days)	3 (2-7)	
High school		44 (25.7)	Daily exercise (hours)	1 (1-6)	
Two year college (Pre-college)		23 (13.5)	Using alternative medicines for cancer prevention		5 (2.9)
College		31 (18.1)	Using vitamin supplements for cancer prevention		7 (4.0)
Professions of the relatives			Dietary habits		
Stay-at-home mom		65 (38.0)	Rich in fruit and vegetables		127 (74.2)
Teacher		18 (10.5)	Rich in meat		14 (8.2)
Unemployed		14 (8.2)	Rich in grains		5 (2.9)
Tradesmen		12 (7.0)	Rich in vegetables and meat		9 (5.3)
Student		10 (5.8)	Rich in vegetables and grain		6 (4.9)
Retired		9 (5.3)	Rich in vegetables, grain, and meat		5 (2.9)
Banker		9 (5.3)	Rich in vegetable, grain, and fat		5 (2.9)
Secretary		8 (4.7)	Cigarette smoking		
Lawyer		8 (4.7)	Smokers		117 (68.4)
Other		18 (10.5)	Cigarettes per day	20 (2-25)	
Economic status of the relatives			No. of years smoking	15 (3-50)	
Good		61 (35.7)	Ex-smokers		25 (14.6)
Intermediate		105 (61.4)	Cigarettes per day	10 (5-20)	
Poor		5 (2.9)	No. of years since quitting smoking	2 (1-26)	
Very poor		0 (0.0)	Age started smoking	19 (14-53)	
			Non-smokers		29 (17.0)

Table 2. Changes of Attitudes and Behaviors in Relatives of the Patients

Characteristics	n (%)
Relatives with behavioral changes	78 (45.6)
Changes in eating habits	42 (24.6)
Increased fruit and vegetable consumption	36 (21.0)
Increased dairy consumption	21 (12.2)
Increased honey consumption	8 (4.7)
Increased fresh fruit juice consumption	9 (5.3)
Increased white meat consumption	10 (5.8)
Increased olive oil consumption	4 (2.3)
Increased red meat consumption	12 (7.0)
Decreased fried food consumption	10 (5.8)
Decreased salty food consumption	8 (4.7)
Changes in smoking	30 (17.5)
Decreased smoking	10 (5.8)
Quit smoking	12 (7.0)
Increased smoking	8 (4.7)
Changes in exercise habits	25 (14.6)
Started exercising	17 (9.9)
Less exercise	4 (2.3)
Quit exercising*	4 (2.3)
Seeking doctor for suspicion of cancer	24 (14.0)
Changes in lifestyle	19 (11.1)
Stress-free living	12 (7.0)
More organized life	9 (5.2)
Decreasing alcohol consumption	5 (2.9)
Losing weight	5 (2.9)
Staying away from city noises	4 (2.3)
Retiring	2 (1.2)
Tests for cancer screening	18 (10.5)
Mammography	12 (7.0)
Breast ultrasonography	8 (4.7)
Hemogram	8 (4.7)
Starting vitamin supplements for cancer prevention	18 (10.5)
Starting alternative medicines for cancer prevention	10 (5.8)

*Three of them confessed that they could not find the time to exercise since they were taking care of their sick relative, and one admitted that caring for the patient with the accompanying psychological stress made exercising impossible

stage II, 22 (12.9%) had stage III, and 98 (57.3%) had stage IV.

The relatives, who were all female, had a median age of 43 (range: 17-82 yr) years old. Most of the patients' relatives were their sisters. The patients had been living together with their relatives for an average of 21 (range: 1-59 yr) years. Most of the relatives found out about the cancer shortly after their relative was diagnosed but 23 of them (13.5%) learned it at a later date. The median duration for this time was 90 (30-600) days. All general characteristics of the relatives of the patients are given in the Table 1.

Changes in the attitudes and behaviors of the relatives of the patients after they learned of the breast cancer diagnosis: After they found out about their family member having breast cancer, 78 of the relatives (45.6%) had changes in their attitudes and behaviors toward cancer prevention and screening. All information regarding changes in the attitudes and behaviors of the relatives is given in Table 2.

When the changes in attitudes and behaviors of the relatives were examined, it was noticed that some characteristics of the relatives had different effects on different attitudes and behaviors. The significant statistical

Table 3. Changes of Attitudes and Behaviors in Relatives of the Patients

Characteristics	p
Relatives with little change in behavior	
Daughters of the patients	0.04
Relatives with much change in their behavior	
Those with a stage IV family member	0.001
Those who have lived with their patients for 36 years or more	0.001
College graduates	0.012
Mothers of the patients	0.04
Sisters of the patients	0.04
Those with other breast cancer patients in the family	0.042
Relative groups with less people who quit smoking	
Daughters of the patients	0.005
Those who learned of their family member's illness after a period of time	0.02
Relative groups with more people who quit smoking	
Those who have lived with their patients for 36 years or more	0.001
Those with a stage IV family member	0.001
Those with other breast cancer patients in the family	0.03
College graduates	0.036
Relatives with a change in eating habits	
Mothers of the patients	0.015
Stay-at-home moms	0.021
Pre- college graduates	0.032
Relatives with a change in exercise habits	
Those with a stage IV family member	0.001
Sisters of the patients	0.016
Stay-at-home moms	0.042
Relatives who started exercising	
High school graduates	0.014
Mothers of the patients	0.036
Sisters of the patients	0.048
Relatives who went to see a doctor	
Those with a stage IV family member	0.001
Mothers of the patient	0.001
College graduates	0.022
Relatives with a change in lifestyle	
Mothers of the patients	0.015
Those with stage IV family member	0.034
Pre- college graduates	0.05
Relatives who got tested for cancer	
Sisters of the patients	0.001
College graduates	0.020
Those who learned of their family member's disease after a period of time	0.028
Relatives who started taking vitamin supplements	
Mothers of the patients	0.001
Those with a stage IV family member	0.024
Stay-at-home moms	0.041
Relatives who started taking alternative medicines	
Mothers of the patients	0.001
Those who learned of their family member's disease after a period of time	0.03

data can be found in Table 3.

Discussion

Breast cancer is one of the most common and lethal cancers; therefore, changes in the attitudes and behaviors of relatives of breast cancer patients regarding cancer prevention and screening are important issues. Awareness of these changes is vital due to the sheer numbers of relatives affected and because this research on 171 relatives of breast cancer patients is beneficial as an evaluative tool for countries when examining their cancer prevention and screening programs.

After the patients were diagnosed with breast cancer, we found that an important part of their relatives had

attitudinal and behavioral changes toward cancer prevention and screening. These changes were changing eating habits, changing smoking status, changing exercise habits, going to a specialist due to suspicion of cancer, changing the lifestyle, underwent cancer screening tests, beginning to use vitamins or using alternative medicines for cancer prevention. Moreover, it was observed that different factors such as whether the relative was the mother, daughter, or sister of the patient, whether they had graduated from high school or college, whether the patients had stage IV cancer, whether they were a stay-at-home mom, whether they had been living with the patient for a prolonged period of time, and whether they had another relative with breast cancer greatly affected the changes in attitudes and behaviors.

Cancer patients being followed up and treated at home need help in many areas (Given et al., 2001). The relatives who take part in the management of their treatment carry huge burdens and may face various social and emotional problems (Sjovall et al., 2009; Siminoff et al., 2010). For example, it has been shown that all family members of the cancer patient, including spouses, children, and parents, are under psychological stress and even the lifestyles of the caretakers were deeply affected. This often results in frequent interfamilial conflicts between the patients and their families (Baider et al., 2008; Rhee et al., 2008; Sjovall et al., 2010).

In one of the studies that examined behavioral changes in relatives of cancer patients, it was shown that after finding out about the cancer diagnosis, there was a serious increase in the relative's healthcare expenses, especially for money spent on psychological needs (Sjovall et al., 2009). It has also been shown that the degree to which the attitudinal and behavioral changes take place depends on the stage of cancer (Butler et al., 2005; Braun et al., 2007).

A review of the literature shows that studies conducted on the relatives of cancer patients primarily have dealt only with their psychological problems (Given et al., 2001; Couper et al., 2006; Wagner et al., 2006; Baider et al., 2008; Rhee et al., 2008; Sjovall et al., 2009; Siminoff et al., 2010; Rodríguez et al., 2011; Svetina et al., 2012). No study exists for any kind of cancer that examines the changes in attitudes and behaviors of the relatives of cancer victims. From our study, we know firsthand that these changes occur to varying degrees, and finding out how some personal characteristics can affect the changes in attitudes and behaviors is an important area for further research.

Another important issue is providing adequate support for the relatives that are caring for the cancer patient, a challenging task under the best of circumstances. It has been shown that proper care facilitates fighting the disease for both the patient and the relative in question (Salminen et al., 2004; Sjovall et al., 2009), and this is true for breast cancer as well (Schmid-Buchi et al., 2008). Not only is supporting the relatives vital, but also training them on how to communicate with the patient better helps decrease the psychological stress felt by both the relatives and the patient (Shields et al., 2004). In order to encourage the breast cancer patient and their relatives, the authors think that it is important to get to know the relatives as much as

possible and be aware of the behavioral changes that will take place to some degree.

In our study, our aim was to focus on the changes in the attitudes and behaviors toward cancer prevention and screening by the relatives of breast cancer patients rather than on their possible psychological problems and to show beneficial ways to deal with these problems. The authors think that early diagnosis of the health problems that these individuals are likely to have and the subsequent interventions are important for both individual and societal health. This kind of approach can nudge governments to give more attention to practices involving cancer prevention and screening, which is an indefinite but important indicator of the efficiency of a country's overall healthcare system.

In conclusion, it can be deduced that after finding out about a family member who has breast cancer, most relatives show changes in their attitudes and behaviors toward cancer prevention and screening. Physicians have to be aware of these changes and, if needed, the relatives should be guided by the related medical units. Moreover, by keeping in mind that these attitudinal and behavioral changes in the relatives vary widely, healthcare professionals should try to provide individually-planned guidance as much as possible.

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