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Health Beliefs and Breast Cancer Screening Behavior among a Group of Female Health Professionals in Turkey

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ABSTRACT

Objective: The purpose of this study was to identify the health beliefs and breast cancer (BC) screening behavior of a group of female health professionals (FHPs) [physicians, nurses and midwives] in Turkey.

Materials and Methods: This descriptive study was conducted at primary and secondary level healthcare institutions in Central Anatolia, Turkey. The study group included 720 FHPs. Data was collected by a questionnaire and the Turkish version of Champion's Health Belief Model Scales (CHBMS).

Results: The mean age of the FHPs was 30.2 years (±6.12 range; 20-50), 8.9 % of them were ≥40 years. The majority (93.9%) of FHPs did not have annual mammography (MMG) or clinical breast examination (CBE) (95.1%); and 42.9% reported to perform breast self-examinations (BSE). None of the physicians reported having a CBE or MMG. The physicians' perception of susceptibility, severity and barriers to screening was lower than the nurses and midwives; however, their perception of benefits, self-efficacy and health motivation was higher. The perception of benefit among nurses, and self-efficacy and perception of health motivation among midwives were lower than those of the physicians. The perception of barriers to screening was highest among nurses.

Conclusion: The compliance rate with early detection practices for BC screening was low among FHPs. Health beliefs influenced their behavior on BC screening.

Keywords: Breast cancer, screening, health behavior, community health workers

Introduction

Breast cancer (BC) is the most common type of cancer in women in both the world and Turkey, with more than 1.2 million new cases being diagnosed each year (1). BC is a growing problem in developing countries. About half of all BC cases as well as 60% of those leading to death are estimated to occur in economically developing countries (2). The BC mortality rate in developed countries is reported as 30% [190,00 deaths/636,000 cases], while this figure is 43% [221,000 deaths/514,000 cases] in less developed countries (3).

According to the Ministry of Health's cancer statistics data, the incidence of BC in Turkish women was 35.0% in 2005, while this rate raised upto 45.1% by 2011 (4). These figures suggest that the prevention of BC is very important, not only in Turkey, but throughout the world. The primary prevention of BC is complicated. However, BC-related deaths are preventable if the disease is detected at early stages. Early detection of BC can be achieved by following the guidelines on secondary prevention methods; breast self-examination (BSE), clinical breast examination (CBE), and mammography (MMG). Using two or three of these screening methods in combination increases their effectiveness.

Breast cancer -related mortality had been rising in western countries until the mid-1980s. However, this trend has changed and this rate has decreased by over 20% in these countries beginning from 1989, which reflected the importance of early detection, screening MMG and introduction of novel therapies (5).

There is a tendency of diagnosing advanced stage BC in Turkey. The BC-related mortality rate has increased due to lack of organized, comprehensive screening programs. Nonetheless, Turkish health priorities have begun to focus on early detection of BC in recent years. The Ministry of Health Cancer Control Department (2004) developed a national screening program for BC early diagnosis in Turkey (3). However, the implementation of such projects in Turkey is very challenging due to issues related to bureaucracy, authority, co-operation, ignorance etc. Currently, the University Cancer Departments, the National Cancer Advisory Board, and scientific and social organizations

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are working collectively to identify and implement a national cancer policy. In this context, the Ministry of Health Cancer Control Department began establishing early cancer diagnosis, screening and education centers (KETEM) in 81 provinces in 2005. The most important goals of KETEM are to create awareness on cancer, to propagate prevention strategies, and to establish face-to-face screening in an effort to contact the Turkish population. The law endorsing these goals was put into action in 2008 and is supported by social institutions that offer early detection methods for BC screening. However, previous studies have clearly shown that BC screening practices are under-used among Turkish women. It was reported that only 27% to 39% of Turkish women performed BSE at least once (6); 23.4% had no knowledge on BC; 27.9% had no concept of BSE; 89.3% never had a MMG; and 75.0% never had a CBE (7). The Turkish Ministry of Health reported that 65.1% of Turkish women never performed BSE, and 80.4% had MMG (2012).

Female health personnel (FHPs) [physicians, nurses and midwives] are expected to play an important role in creating an environment that supports screening behaviors for BC. In countries such as Turkey, they can achieve this goal by acting as positive role models, and by gaining more knowledge on early detection methods (8, 9).

Therefore, it is imperative that FHP comply with BSE, CBE and MMG testing. Previous studies showed that BC screening practices of FHPs was low in Turkey (10-12). Studies from other countries (13, 14) have also reported that engagement of FHPs in screening behaviors was relatively low.

There are limited studies on the beliefs and behaviors of FHPs with regard to BC screening in Turkey (9-12, 15) and in the world (13, 14). In addition to these, the results of several studies carried out in Turkey showed that FHPs may have a low sensitivity with regard to screening behavior. The aim of the present study was to investigate the health beliefs and BC screening behavior in a group of FHPs in our country.

Materials and Methods

Study design

The study was conducted as a descriptive survey of FHPs. The study was conducted at a public hospital, a state hospital, and a private hospital in Sivas, Turkey. Nineteen primary health centers were included in the study.

The population of the study included all FHPs who were employed in three hospitals and nineteen primary health centers [physicians (n=125); nurse (n=674); midwives (n=200); total n=1006). Some FHPs were excluded for reasons such as refusal to participate [nurses (n=87); physicians (n=53); midwives (n=52)], and absence due to illness or maternity [nurses (n=34); physicians (n=34); midwives (n=21)]. Overall, 720 interviews were completed (71.6% response rate). Thirty-eight (5.3%) participants were physicians, 555 (77.1%) were nurses and 127 (17.6%) were midwives. None of the participants was formerly diagnosed with BC, and they were between the ages of 20 and 50 years.

In this study, a questionnaire and Champion's Health Belief Model Scale (CHBMS) were used for data collection.

The questionnaire was composed of three sections: The first section included socio-demographic characteristics such as age, education level, marital status, and profession; the second section included hormonal features such as age at menarche, number of births, and age at first pregnancy; the third section included factors that affect BC such as presence of benign breast disease, a family history of BC, and attitudes and practices related to BSE, CBE and MMG.

Health beliefs were assessed by using Champion's (1984, 1994) revised CHBMS. This model was developed by Rosenstock and colleagues in 1966, and was revised by Victoria Champion (1993), and has been adapted for BC screening. CHBMS gained international acceptance, and has been used to determine health beliefs related to BC screening behaviors in different populations. The CHBMS incorporates six basic concepts contained in the health belief model; i.e. susceptibility, severity, general health motivation, perceived benefits, barriers, and self-efficacy in oneself as they relate to BC, BSE, and MMG (16). All items from the subscales were scored by a five-point scale. Each individual received six separate scores. In this study, the Turkish version of CHBMS translated by Karayurt and Dramalı was used (17). The reliability coefficient for the Turkish version of CHBMS was calculated using Cronbach's alpha, and it ranged from 0.58 to 0.89 for each subscale.

Data was simultaneously collected at each study site between March 16 and April 17, 2010. The purpose of the study was explained to the FHPs who had agreed to participate. The researchers filled out the data collection forms during face-to-face interviews with the FHPs. The researchers interviewed each FHP in their own room. Each interview continued for approximately 20-25 minutes.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences 14.0 (SPSS Inc.; Chicago, IL, USA). Descriptive statistics were used to evaluate the socio-demographic characteristics and early detection practices (BSE, CBE and mammography). The median, mean, and standard deviation (SD) were calculated for HBM scores. Variance analyses (ANOVA) were used for comparisons of HBM scores among groups. Statistical significance was set at 0.05.

Results

Demographic data were presented in detail in Table 1. Seven hundred twenty (71.57%) FHPs participated in the study. Thirty-eight (5.3%) of the participants were physicians, 555 (77.1%) were nurses, and 127 (17.6%) were midwives. The participant's M_{age}=30.22 years, with an age range of 20-50 years. The majority of the respondents (656; 91.1%) were younger than 40 years of age. Most of them (448; 62.2%) were married. The nurses were younger than the midwives and physicians. 43.5% of the total study subjects, 43.4% of the nurses, 41.7% of the midwives, and 50% of the physicians had a bachelor's degree. The onset of menarche in 98.1% of the women was ≥12 years of age, the age at menarche was M_{age}=13.42 years. The mean age at first pregnancy was higher in physicians as compared to the other two occupational groups, and there was no family history of BC or benign breast disease reported among physicians.

Table 2 displays the rate of FHPs who complied with BC screening methods. As shown in the table, 42.9% of the FHPs reported that they performed BSE, 4.9% underwent CBE and 6.1% had a MMG. None of the physicians reported having a CBE or MMG.

A comparison of participants' average scores for the CHBMS sub-scales were presented in Table 3. The physicians' sensitivity and perception of severity and barriers to screening were lower than those observed in the nurses and midwives; however, their perceptions of benefits, self-

Table 1. Participant characteristicst

	Nurse (n=555)		Midwife (n=127)		Physician (n=38)		Total (n=720)	
Variables*	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Age (years)								
<40	510	91.9	110	86.6	36	94.7	656	91.1
≥40	45	8.1	17	13.4	2	5.4	64	8.9
Age, years [mean ± SD]	29.7	(6.01)	31.6	(6.30)	31.7	(6.01)	30.2	(6.12)
Education degree								
Nursing school graduate	108	19.5	66	52.0	0	0	174	24.2
Associate degree	186	33.5	8	6.3	0	0	194	26.9
Undergraduate degree	241	43.4	53	41.7	19	50.0	313	43.5
Master's and doctoral graduates	20	3.6	0	0	19	50.0	39	5.4
Age at menarche (years)								
<12	10	1.8	2	1.6	2	5.3	14	1.9
≥12	545	98.2	125	98.4	36	94.7	706	98.1
Age at menarche, years [mean±SD]	13.37	(1.17)	13.52	(1.35)	13.71	(1.21)	13.42	(1.21)
Parity								
Parous	277	49.9	84	66.1	27	71.1	388	53.9
Nulliparous	278	50.1	43	33.9	11	28.9	332	46.1
Age at first pregnancy, years [mean ± SD]	24.5	(1.73)	22.7	(2.41)	27.0	(0.92)	24.3	(2.13)
Family history of BC								
Yes	12	2.2	2	1.6	0	0	14	1.9
No	543	97.8	125	98.4	0	0	706	98.1
Benign breast disease								
Yes	7	1.3	1	0.8	0	0	8	1.1
No	548	98.7	126	99.2	0	0	712	98.9

*All associations were statistically significant at p<0.000

SD: standard deviation; BC: breast cancer

efficacy and health motivation were higher. The perception of benefit among nurses**,** as well as self-efficacy and perception of health motivation among midwives were lower than those of the physicians. The perception of barriers to screening was higher among nurses. The difference among groups was statistically significant (p=0.001).

Table 4 demonstrates BC screening behaviors according to age group, and presence of family history or benign breast disease in FHPs. Among FHPs who were 40 years or older, only 5 (0.7%) had MMG and 2 (3.1%) had CBE. MMG rate was also low among FHPs with a family history of BC and benign breast disease.

Table 5 presents the correlation of CHBMS subscales with BSE, CBE and MMG performance rates among FHPs. The FHPs who performed BSE had low sub-scale scores on perceived susceptibility, severity, perceived barriers along with a high score on self- efficacy. The only significant difference was detected between those who performed BSE and those who did not in terms of all CHBMS sub-scales. The FHPs with MMG had higher perceived susceptibility and severity scores, and those without any MMG had a high self- efficacy score. There was a significant difference between these two groups in perceived susceptibility sub-scale scores. The FHPs who had a CBE showed higher susceptibility, severity, perceived barriers and health motivation scores on CHBMS than those who did not have a CBE; however, the differences were not statistically significant.

Discussion and Conclusions

The present study showed that compliance with BC screening methods was extremely low among FHPs. Reports from similar studies on FHPs in Turkey (10, 11, 15, 18) and other countries (13, 14, 19-21) are consistent with the results of this study. As is already known, FHPs are given theoretical information about BC and screening behaviors as part of their training. Prior studies suggested that knowledge leads to improved attitudes and practice due to increased awareness (20, 22). However, information is not always sufficient to increase compliance. The transformation from information to behavior depends on social influences as well as personal emotions such as sensitivity and belief in

Table 2. BC Screening behaviors among FHPs (n=720)

	Profession			
Screening behaviors	**Nurse (n=555) n (%)**	**Midwife (n=127) n (%)**	**Physician (n=38) n (%)**	**Total (n=720) n (%)**
Performing BSE				
Yes	223 (40.2)	62 (48.8)	24 (63.2)	309 (42.9)
No	332 (59.8)	65 (51.2)	14 (36.8)	411 (57.1)
Having a CBE				
Yes	29 (5.2)	6 (4.7)	0	35 (4.9)
No	526 (94.8)	121 (95.3)	38 (100.0)	685 (95.1)
Having a mammogram				
Yes	33 (6.0)	11 (8.7)	0	44 (6.1)
No	522 (94.0)	116 (91.3)	38 (100.0)	676 (93.9)

BC: breast cancer; FHPs: female health professionals; BSE: breast self-examination; CBE: clinical breast examination

Table 3. Comparison of health beliefs among FHPs

CHBM sub-scales	**Nurse (n=555) Mean ± SD**	**Midwife (n=127) Mean ± SD**	**Physician (n=38) Mean ± SD**	**F**	**p**
Perceived Susceptibility	5.28±1.98	5.73±2.16	4.08±1.42	10.176	0.001
Perceived severity	21.83±5.09	21.15±5.70	15.94±4.75	23.142	0.001
Perceived benefits	16.04±2.93	16.24±2.45	17.08±2.95	2.475	0.085
Perceived barriers	21.33±6.95	19.32±6.16	14.08±4.50	23.579	0.001
Self-efficacy	42.43±5.21	41.65±5.42	46.37±4.74	12.103	0.001
Health motivation	27.23±3.99	25.78±3.88	31.79±3.73	33.609	0.001

FHPs: Female Health Professionals; CHBM: Champion's Health Belief Model; SD: standard deviation

Table 4. Screening behaviors according to age group and presence of family history and benign breast disease among FHPs

Screening behaviors	**<40 yr (n=656) n (%)**	**≥40 yr (n=64) n (%)**	**Family history* (n=14) n (%)**	**Benign breast disease* (n=8) n (%)**
Performing BSE	276 (42.1)	33 (51.6)	4 (36.5)	6 (75.0)
Having a CBE	33 (5.0)	2 (3.1)	6 (42.9)	6 (75.0)
Having a MMG	39 (5.9)	5 (7.8)	5 (35.7)	3 (37.5)

*There are multiple answers

BSE: breast self-examinations; CBE: clinical breast examination; MMG: mammography; FHPs: female health professionals

preventive behaviors. Cultural and psychosocial factors are also important for behavior change (23). In addition to information, protective health behaviors such as screening are related to perceptions of risk, benefit and barriers associated with personal and social attitudes and influences. Champion (24) stressed that health beliefs play an important role in an individual's interest in protective health behaviors that lead to action. Karayurt and Dramalı (17) reported that BC screening behavior was associated with health beliefs among Turkish women. In the current study, most of the FHPs were relatively young, did not have a history of benign breast problems or a family history of BC. Based on their scores on perception of risk and benefits of screening, it may be concluded that they do not perceive themselves as an at-risk group. This factor might have caused the low scores regarding BC screening behavior. Nevertheless, the presence of risk factors is not diagnostic per se, i.e. most women with one or more BC risk factors never develop the disease while many women without any apparent risk factor have

Table 5. Correlation of health beliefs and BC screening behaviors among FHPs

	Screening behaviors			CHBM sub-scales		
	Susceptibility	Severity	Benefits	Barriers	Self-efficacy	Health Motivation
BSE performance						
Yes (n=309)	4.96±1.95	20.64 ±5.68	16.86±3.33	16.01±5.26	45.13±4.90	28.09±4.88
No (n=411)	5.55±2.03	21.97±5.00	15.59±2.32	23.99±5.98	40.56±4.73	27.17±4.10
t	-3.895	-3.331	6.037	-18.631	12.617	11.194
p	0.001	0.001	0.001	0.001	0.001	0.001
CBE performance						
Yes (n=35)	8.00±3.31	22.20±6.36	15.11±3.80	23.06±7.03	41.41±5.03	28.1±4.9
No (n=685)	5.17±1.83	21.37±5.29	16.18±2.80	20.47±6.89	42.56±5.32	27.2±4.1
t	8.384	0.895	-2.119	2.133	-1.231	1.256
p	0.001	0.371	0.034	0.033	0.219	0.210
Mammography						
Yes (n=44)	7.64±2.64	22.18±3.93	15.18±1.77	24.57±6.07	38.52±3.61	26.61±4.46
No (n=676)	5.15±1.87	21.36±5.42	16.19±2.91	20.33±6.90	42.77±5.3	27.26±4.12
t	8.307	0.995	-2.275	3.972	5.23	-0.999
p	0.001	0.320	0.023	0.001	0.001	0.318

BSE: breast self-examinations; CBE: clinical breast examination; FHPs: female health professionals; BC: breast cancer; CHBMS: Champion's Health Belief Model Scales

BC. The 10-year follow-up data from randomized controlled trials showed a modest benefit of screening in the younger age groups (25). Nevertheless, it was reported that 75% of patients who were diagnosed with stage I disease at KETEM were under 50 years of age (26).

The "guarding against cancer" theory describes and explains the conditions, actions, and consequences involved when a woman 55 years of age or older, with a family history of BC makes decisions about whether or not to undergo screening MMG. The process of guarding against cancer is usually the result of a triggering event that causes participants to become aware of their BC risk. These events include having a friend or family member diagnosed with BC, and discovering a breast change by themselves or their healthcare provider. Risk awareness often leads to BC screening. The actions that women take in guarding against cancer include taking charge of their health status and keeping faith. Therefore, women with a first-degree relative with BC reacts by having a MMG, getting health check-ups, developing healthy behaviors, and being optimistic (27).

Our study revealed that the rate of obtaining MMG and CBE was low among nurses and midwives. None of the physicians reported having a CBE or MMG. In concordance with our study, Ibrahim and Odusanya (14) reported a low rate of obtaining CBE and MMG in the majority of FHPs. Uncu and Bilgin (28) determined rates of BSE performance as 56.1%, CBE as 40.3%, and MMG as only 25.4% among nurses and midwives. Al-Naggar and colleagues (29) reported that only 25.7% of physicians underwent screening MMG. In a study by Akpınar et al. (12), the rate of having a MMG was reported as 10.1% and the rate of CBE as 24.8%. The low rates of obtaining CBE and MMG may be related to the fact that these procedures require hospital visits, specialized equipment, expertise and cost.

Both diagnostic and screening MMG are funded by national health insurance and are free of charge in Turkey. However, studies have shown that BC screening practices are underused among Turkish women, of whom 89.3% never had a MMG, and 75.0% never had a CBE (7). In a previous Turkish study (30), it was found that having a CBE was strongly associated with the use of MMG. In the literature, undergoing regular CBE and MMG have been associated with the concepts of HBM including perceived susceptibility and severity of BC, benefits and barriers to CBE and MMG, and health motivation (24, 31).

The current study indicated that self-efficacy had the lowest score in health beliefs among midwives. Self-efficacy is associated with increased confidence in executing a behavior and with an increase in compliance with a given behavior (31). Health motivation, perceived benefits and self-efficacy had the highest scores whereas perceived barriers had the lowest score in health beliefs among physicians. A previous Turkish study (10) found that physicians' health motivation and self-efficacy scores were higher than those of the nurses and midwives. In another similar study (21), it was found that the physicians' health motivation, self-efficacy, perceived benefits scores were higher than those of the nurses, midwives and other participants. According to the HBM, the rate of compliance with regular screening methods is higher in women with higher scores of health motivation and self-efficacy. The concept of self-efficacy is based on Bandura's (32) social cognitive theory. It refers to the belief that one can successfully execute a particular behavior in order to achieve a given outcome. The concept of self-efficacy is associated with perceived behavioral control. According to Bandura, expectations such as motivation, performance, and feelings of frustration associated with repeated failures determine affect and behavioral reactions (33). The high rate of BSE performance among physicians was thought to be associated with high self-efficacy and health motiva-

tion along with low perceived barriers. Perceived barrier is a significant factor influencing BC screening behavior. Perceived barriers refer to the perceived disadvantages of adopting a recommended action as well as perceived obstacles that may prevent or delay its successful performance. Thus, lower perceived barriers are assumed to lead to a high probability of adopting the recommended screening behaviors (31). It is reported that lack of confidence was the most frequent barrier to adopting early-detection methods (34).

In the present study, scores of perceived susceptibility, severity and perceived barriers were low among those who performed BSE. There was a statistically significant difference between those who performed BSE and those who did not in all sub-scale scores of CHBMS. High susceptibility and severity scores along with low perceived barriers are commonly assumed to combine additively to influence the likelihood of performing a behavior (33).

Our results revealed that perceived barriers and susceptibility were higher in FHPs who had a CBE and MMG. This result indicates that BC is sensitive to. However, the high perception of barriers may be due to barriers such as physical discomfort or inconvenience, fear of radiation and fear of detection of cancer that were significant predictors associated with whether or not women would obtain a MMG. Another study (35) reported that FHP's awareness on MMG as a diagnostic method was very high (80.7%); however, the actual rate of obtaining MMG was only 3.1%. Recently, in the study of Shiryazdi (21) [2014], it was found that only 10.6% of the study population underwent MMG, and that perceived barriers were low among those who had performed BSE and MMG.

The social psychological model suggests that behavior is determined by the intention to perform a behavior. This intention, in general, is determined by three important factors: Attitudes, social influences, and self-efficacy (36). Any given behavior reflects the attitudes and innate emotions of an individual. Behavior is also influenced by the belief that a certain action will benefit the individual. With regard to health related beliefs, the associated behaviors imply an individual's interest in actions that are potentially protective (31). Perceived susceptibility, perceived benefits of and perceived barriers to the action are central components of the HBM. Perceived benefits refer to the perception of positive outcomes thought to result from a behavior, while perceived barriers pertain to negative attributes related to the health action. Clarification of the relationships between susceptibility, benefits, barriers and compliance with MMG recommendations is critical in determining their influence on screening behavior (24).

In addition to these, studies have shown that physicians can play a significant role in motivating women to participate in initial and subsequent BC screening (37). It was reported (22) that there was an improvement in physicians' attitudes and practice after an educational program on BC, which suggests that continued and repeated educational courses are necessary for improved compliance with BC screening. It is well known that physicians, nurses and midwives are a direct source of health information for patients.

Female health professionals personal perceptions of their own BC risk and the benefits of screening may influence whether they recommend BC screening to their patients or not. Moreover, providers who do not themselves adhere to screening guidelines may be less likely to promote these behaviors among patients and are likely to be less effective when they do make such recommendations.

The results of this study suggested that the compliance rate with early detection practices for BC screening were low among FHPs, and that health beliefs influenced their behavior on BC screening. These findings provide important information on the level of BC awareness and practice among FHPs. Change in the attitudes and behaviors of FHPs with regard to BC screening would likely influence the information provided for their patients and their BC screening behavior. Therefore, targeted interventions should be developed to improve awareness in FHPs. Undergraduate and continuing education programs are required to achieve improvements in BC screening behavior.

The use of MMG, a breast imaging technique, is the most common secondary preventive method that can detect BC undetectable by BSE at an early stage. MMG has been widely used for screening of asymptomatic women over 40 years of age, for diagnostic purposes, and for monitoring high-risk individuals since it decreases BC-related mortality. However in this study, the rate of applying BC screening methods was lower in FHPs who were accepted as high-risk individuals; those over 40 years of age, with a familial history of BC and benign breast disease (Table 4). Results of this study indicate that the compliance rate with early detection practices for BC screening was low among FHPs, and that their health beliefs influenced their behavior towards BC screening.

Ethics Committee Approval: An ethical committee on non-invasive clinical research was not in action in Cumhuriyet University during the study period. Written consents were obtained from all participating institutions. All procedures adhered to the ethical principles of the Helsinki Declaration. FHPs were invited to participate in the study and were informed on all aspects of the study.

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

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