RESEARCH ARTICLE

Determination of the Breast Cancer Risk Levels and Health Beliefs of Women With and Without Previous Mammography in the Eastern Part of Turkey

Hasret Yalcinoz Baysal[1], Hatice Polat[2]*

Abstract

Objective: This research was conducted to determine the breast cancer risk levels of women with and without previous mammography and their beliefs on breast cancer and mammography. **Methods:** The sample for this descriptive research consisted of women aged 50 years or older who were registered at the Family Health Center in the city center of Erzurum. The research was conducted with a total of 420 women with at least one mammography (210) and without mammography (210) who presented to the center on Wednesdays and Thursdays for any reason between 1 January 2010 and 1 January 2011. Research data were collected using the personal information "Breast Cancer Risk Assessment Form" accepted and recommended by the Turkish Ministry of Health, and the Champion's Health Belief Model Scale for Breast Cancer and Screening (CHBMS). Data were evaluated using percentages and means with the t-test. **Results:** According to the research data, 89.8% of the women were found to be in the low risk group, 87.6% with and 91.9% without mammography. When the health beliefs of women with and without mammography were compared, it was found that susceptibility, seriouness, motivation, mammography benefit scores were higher among those with mammography (p<0.01). The mammography barrier score average was higher in the group without mammography (p<0.01). **Conclusion:** Knowing women's health beliefs, which have positive and negative effects on participating in mammography screening, may increase the rate of mammography uptake among women. Moreover, women with high breast cancer risk may be determined by increasing society's level of knowledge on breast cancer and risk factors.

Keywords: Breast cancer - mammography - health beliefs model - risk - Turkey

Introduction

Breast cancer is the most common cancer type leading to death (Ministry of Health, 2005). Breast cancer is a curable disease provided that it is diagnosed early. Mammography is the most important diagnosis method in reducing breast cancer mortality (Tuncer, 2007). It is reported that mammography screenings performed at regular intervals reduce breast cancer-related deaths by 30-40% (Lerman et al., 1990; White et al., 1993).

Having mammography at regular intervals affects women's health beliefs and attitudes (Taylor et al., 1995). The health belief model is used by many researchers to understand health beliefs and to apply screening programs (Lee and Vogel, 1995; Mikhail and Petro, 2001; Karayurt and Dramali, 2003; Wu and Yu, 2003; Gozum and Aydin, 2004; Seckinli and Nahcivan, 2004). The Health Belief Model explains the relationship between an individual's belief and behavior. The model defines the factors that motivate or demotivate an individual to do certain health-related actions, and the conditions that are effective in displaying health behaviors in particular (Ay, 2007). The concepts related to belief and behaviors in the model include susceptibility, seriousness, motivation, perceived benefit and barrier. In the studies conducted abroad; seriousness, susceptibility and beliefs about the benefit of mammography were found to be important factors effective on having or not having mammography (Champion, 1994; Rutten and Iannotti, 2003; Russel et al., 2006). In the study carried out by Rutten and Iannotti (2006), perceived benefit, susceptibility and barrier were found to be important factors in having mammography on regular basis. In the study by Lee et al. (2009), perceived susceptibility and benefit of women with mammography were found to be higher than those without mammography. In our country, Baysal and Gozum (2011) reported that health beliefs about susceptibility, seriousness and benefits of mammography increased women's desire to participate in mammography screenings and reduced their perception of barrier.

Determining breast cancer risk groups in a society, monitoring these risk groups and making screening programs widespread is important for early diagnosis and treatment. Reported risk factors in breast cancer include advanced age, being a woman, presence of breast cancer in family history, early menarche and menopause, nulliparity,

[1]*Public Health Nursing,* [2]*Internal Medicine Nursing, Faculty of Health Science, Ataturk University, Erzurum, Turkey* *For correspondence: haticeduyar@mynet.com*

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>30 years of age at first labor, alcohol consumption more than one glass a day, and fatty diet (Gross, 2000). The Turkish Ministry of Health recommends the use of the Breast Cancer Risk Assessment Form to determine the breast cancer risk in Turkey (National Family Planning, 2000; Spence, 2000; Aslan and Gurkan, 2007). It is believed that breast cancer risk assessment studies will increase women's level of awareness and thus increase their participation in screening programs. In Taylor's study (1995), it was emphasized that higher levels of perceived risk and the presence of breast cancer in family history affected women's tendency to have mammography by 1.8 fold and 1.1 fold, respectively. It was also reported in some studies that women with the presence of breast cancer in family history had mammography at regular intervals compared to women without breast cancer history in the family (Lee and Vogel, 1995; Taylor et al., 1995; Carney et al., 2002; Rakowski et al., 2004).

Although breast cancer risk was found to be low in the risk assessment studies carried out in our country (Aslan and Gurkan, 2007; Tumer and Baybek, 2010), breast cancer continues to be a life-threatening condition (Ministry of Health, 2005). Therefore, it is important to conduct studies to determine the risk level.

Although participating in screening programs is important for reducing death by breast cancer in society, most of the women in our country who are in their fifties never have mammography or they do not have mammography at recommended intervals (Horton et al., 1996; Zincir, 1999). Regional studies in our country reveal that the rate of having mammography is lower in our society compared to Western countries (Canbulat and Uzun, 2008; Cam and Gumus, 2009; Nur, 2010). Protection from breast cancer, early diagnosis and treatment may become possible by determining women's health beliefs about breast cancer and mammography screenings, developing these beliefs, and performing mammography in risky age groups.

This research was conducted to determine the health beliefs about breast cancer and mammography and the levels of breast cancer risk in women with at least one mammography and without mammography.

Materials and Methods

Design and Sample

The sample of this descriptive research consisted of women aged 50 years or older who were registered at Sukrupasa Family Health Center in the province of Erzurum, Turkey, who had at least one mammography and who never had mammography. In the groups with a known population (1396), the formula used in determining sample size was applied. The sample size was calculated as 209. The research was conducted with a total of 420 women with at least one mammography (210) and without mammography (210).

The sample of the research consisted of women aged 50 years or older who applied to Sukrupasa Family Health Center, who had no communication problems, who accepted to participate in the research, and who were included in the sample by randomization method.

Data collection tools

Research data were collected by using the descriptive form, the breast cancer risk assessment form, and the Health Belief Model Scale for Breast Cancer and Screening.

The descriptive form included 8 questions. The first 5 questions were about the socio-demographic characteristics of women (age, marital status, education status, occupation, income), and the other questions were about the presence of cancer in family history, the presence of a cancer patient in one's environment, and the status of having mammography.

Breast Cancer Risk Assessment Form

The "Breast Cancer Risk Assessment Form", which was developed by the American Cancer Society and accepted and recommended by the Turkish Ministry of Health, was used (National Family Planning, 2000; Spence, 2000; Aslan and Gurkan, 2007). The Breast Cancer Risk Assessment Form consisted of six parts and 20 items. The parts were divided as age, breast cancer history in the family, individual breast cancer history, child bearing age, menstrual history, and body structure. The scores below 200 indicated "low risk", the scores between 201-300 indicated "moderate risk", the scores between 301-400 indicated "high risk", and scores of 400 and above indicated "the highest risk".

Champion's Health Belief Model for Breast Cancer and Screening (CHBMS)

The Health Belief Model for Breast Cancer and Screening was developed by Champion (1984), based on the health belief model for beliefs about the early diagnosis of breast cancer. In this study, the validity and reliability of the scale was established by Gozum and Aydın (2004). The Cronbach's Alpha value of the scale was found to be between 69 and 83. A total of 5 sub-domains (30 items) were used in the scale, including "susceptibility", "seriousness" "health motivation" regarding breast cancer, and "benefits" and "barriers" about mammography. It was a likert-type scale with scores ranging from 1 to 5. The answers were evaluated as follows: totally disagree: 1, disagree: 2, undecided: 3, agree: 4, and totally agree: 5. The maximum values to be obtained from the scale were 3-15 for susceptibility, 6-30 for seriousness, 5-25 for health motivation, 2-25 for benefits of mammography,
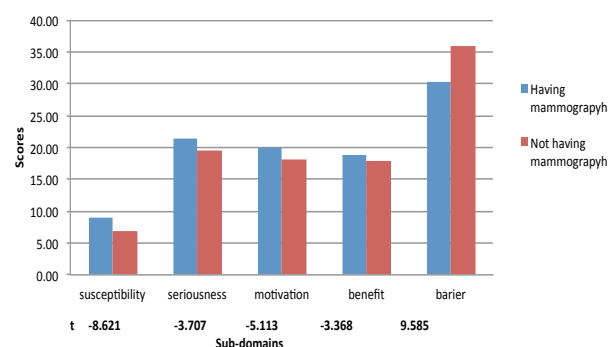
Figure 1. The effect of Woman's Health Beliefs of Breast Cancer and Mammography on Their Participation in Mammography Screening

Table 1. Comparison of the Risk Levels of Woman with and Without Mammography

Risk Levels	Having Mammography		Not Having Mammography		Test
	n	%	n	%	
Low	184	87.6	193	91.9	$X^2=0.003$
Moderate	15	7.1	17	8.1	SD=2.00
Hight-the highest	11	5.2	0	0	P<0.05

and 11-55 for barriers of mammography. Higher scores indicated higher levels of susceptibility and seriousness and higher levels of perceived benefit and barrier.

Data analysis

The statistical analysis of data was made in computer environment, using the X^2, t- test. The women who participated in the research were informed about the objective of the study and it was ensured that their participation was voluntary. Written approval was obtained from Erzurum Provincial Directorate of Health for conducting the research.

Results

Descriptive characteristics of the women determined that 83.3% of the women were in the age group of 50-64 years, 81.2% were married, 49% were literate, 83.6% did not work, 58.6% had income equal to their expense, 46.9% had breast cancer history in the family, 36% had breast cancer history in their environment, and 89.9% were in the low risk group.

Table 1 presents the data for the comparison of the women's status of having mammography according to their breast cancer risk levels. It was observed that all the women who were at the high and highest risk for breast cancer were those with previous mammography, and the difference between the groups was statistically significant (p<0.05).

The comparison of women with and without mammography regarding their beliefs about breast cancer and mammography is also presented (Graphic 1). It was found that women with mammography had higher levels of health belief compared to women without mammography as measured in the sub-domains of susceptibility, seriousness, health motivation and benefit of mammography in the CHBMS scale, and that the perceived barrier for having mammography was lower in women with mammography; and the difference between the groups was statistically significant (p<0.001).

Discussion

In this study 89.9% of the women were found to be in the low risk group for breast cancer. In our country there are only a few studies conducted to determine the risk level of breast cancer (Aslan and Gurkan, 2007; Tumer and Baybek, 2010). The rate of women in the low risk group for breast cancer was found to be 91.8% in the study by Kocadağ et al. (2009), 94.4% in the study by Eroğlu et al. (2009), and 98.5% in the study by Aslan et al. (2007). Our research data show similarities with the data in literature.

Although the breast cancer risk level was found to be low in these studies, breast cancer remains to be at the top of the list of cancer types among women (Ministry of Health, 2005). Determining the individuals with high risk of breast cancer is important for early diagnosis and treatment. As the high level of awareness of individuals has a positive effect on participation in screening programs, healthcare professions should determine women's risk levels in individual education sessions and share these results with them.

When the groups with and without mammography were compared in terms of breast cancer risk level (Table 1), it was found that all women with mammography were at high and highest risk for breast cancer (p<0.05). In the study conducted by Baysal and Gozum (2011), it was determined that women with high risk of breast cancer had 11 times more mammography compared to women with low and moderate risk. Our literature review did not reveal any studies on the comparison of the risk levels of women with and without mammography.

When the groups with and without mammography were compared in terms of their belief about breast cancer and mammography, it was found that perceived health for susceptibility, seriousness, motivation and mammography was higher and perceived barrier was lower in the group with mammography compared to that without mammography (t=-8.521, P<0.000; t=-3.717, P<0.000; t=-5.113, P<0.000; t=-3.868, P<0.001; t=9.585, P<0.000). In the study of Yılmaz et al. (2010) which compared the health beliefs of academics and housewives regarding breast cancer, it was observed that health beliefs of susceptibility, seriousness and perceived benefit of mammography were higher among women with mammography than those without mammography; yet the difference was not statistically significant. In the study conducted by Lee et al. (2009) with Korean-American women, health beliefs of susceptibility and perceived benefit were found to be higher among women with mammography. Similar results were reported in the studies conducted abroad, showing the rate of women who accepted that breast cancer was as a serious problem (perceived seriousness) and they had the risk of having breast cancer (perceived susceptibility) and who considered mammography an effective factor in determining breast cancer in early stage (perceived benefit of mammography) was an important factor affecting women's desire of having mammography at regular intervals (Rutten and Iannotti, 2003; Russell et al, 2006). Rutten and Iannotti (2003) also reported the perceived benefit of mammography (OR=1.51), susceptibility (OR=1.41) and barrier (OR=0.79) as important factors in commitment to having mammography. In Champion's study (1994), perceived seriousness increased the rate of having mammography by 1-fold.

It was determined in previous studies that women without mammography had higher level of perceived barrier (Miller and Champion, 1996; Holm et al., 1999; Secginli and Nahcivan, 2006) and the education and guidance given to women reduced their level of perceived barrier (Carney et al., 2002; Aydın, 2004; Akcay et al., 2005; Gozum et al., 2007). Russell et al. (2006) reported that perceived susceptibility and benefit were not

important factors in routine mammography screenings and that only the high level of perceived barrier reduced the rate of mammography screenings. According to the Health Belief Model, high level of perceived barrier has a negative effect on individuals' behaviors (Health Belief Model, 2011). A few studies conducted in Turkey demonstrated that certain interventions reduced women's perceived barrier regarding mammography (Akcay et al., 2005; Aydın and Gozum, 2009; Gozum et al., 2010). Gozum et al. (2010) observed that peer education reduced women's perceived barrier for mammography. Aydın and Gozum (2009) and Akcay et al. (2005) also reported the effect of education on reducing perceived barrier for mammography.

Knowing women's health beliefs that are effective in their participation in mammography screenings may help nurses improve the education programs on screening methods, as well as their behaviors towards women. Participation in mammography screenings may be increased by determining women's perceived barriers for having mammography and by reducing these barriers via education and guidance. Perceived susceptibility, seriousness, health motivation and benefit of mammography, which have a positive effect on women's participation in mammography screenings, should be supported and increased by healthcare professionals. Furthermore, performing breast cancer screenings, and educating and monitoring women are important for protection from cancer, early diagnosis and treatment.

Acknowledgements

References

Akçay D, Gözüm S, Küçükodacı B, et al (2005). Effect of education given in different methods on the health-related beliefs and knowledge levels of women about breast cancer and screenings. 2nd National/International T.S.K. Congress of Nursing, 25-27 May Harbiye military museum and culture center, İstanbul, (Awarded 3rd place among verbal proclamations).

Aslan FE, Gürkan A (2007). Risk level of breast cancer in women. *J Breast Hlth*, **3**, 63-8.

Ay F (2007). Fundamental concepts, principles and applications of nursing. Medical Yayıncılık, Istanbul.

Aydın I, Gözüm S (2009). Comparison of two different educational methods on teachers' knowledge, beliefs and behaviors regarding breast cancer screening, *Eur J Oncol Nursing*, **13** 94-101.

Baysal HY, Gözüm S (2011). Effects of health beliefs about mammography and breast cancer and telephone reminders on re-screening in Turkey. *Asian Pac J Cancer Prev*, **12**, 1445-50.

Cam O, Gümüş AB (2009). Breast cancer screening behavior in Turkish women: relationships with health beliefs and self-esteem, body perception and hopelessness. *Asian Pac J Cancer Prev*, **10**, 49-54.

Canbulat N, Uzun Ö (2008). Health beliefs and breast cancer screening behaviors among female health workers in Turkey. *Eur J Oncol Nurs*, **12**, 148-56.

Carney PA, Harwood BG, Weiss JE et al (2002). Factors associated with interval adherence to mammography screening in a population-based sample of new hampshire women. *Cancer*, **95**, 219-27.

Champion V (1994). Relationship of age to mammography compliance. *Cancer Supplements*, **1**, 329-35.

Eroğlu C, Eryılmaz MA, Civcik S, et al (2009). Breast Cancer Risk Assessment 5000 Cases. "National Cancer Week Symposium" Ankara Swiss Hotel, 1–2 April.

Gözüm S, Aydın İ (2004). Validation evidence for Turkish adaptation of champion's health belief model scales. *Cancer Nur*, **27**, 1-8.

Gözüm S, Karayurt Ö, Kav S et al (2010). Effectiveness of peer education for breast cancer screening and health beliefs in Eastern Turkey. *Cancer Nur*, **33**, 213-20.

Gross RE (2000). Breast cancer: risk factors, screening, and prevention. *Seminars in Oncol Nur*, **16**, 176-84.

Health Belief Model (2011). Accessed on 15/03/2011 Available from http://hsc.usf.edu/~kmbrown/ Health_ Belief_ Model_ Overview.htm

Holm CJ, Frank DI, Curtin J (1999). Health beliefs, health locus of control, and women's mamography behavior. *Cancer Nur*, **22**, 149-56.

Horton J, Cruess D, Romans M (1996). Compliance with mammography screening guidelines: 1995 mammography attitudes and usage study report. *Women's Hlth*, **6**, 239-45.

Karayurt Ö, Dramalı A (2003). Adaptation of champion's health belief model scale to Turkish women and examination of the factors ınfluencing the frequency of breast self examination. The first regional meeting. *Asian Pac Organization for Cancer Pre Congress (APOPCP)*, 154-55.

Kocadağ S, Ocaktan ME, Akdur R (2009). Assessment of the Breast Cancer Risk Levels and the Knowledge and Application of Breast Self-Examination in Women Aged 20 years and Older in the Region of Park Health Center. Paper Abstract. 6th National Congress on Reproductive Health and Family Planning, 23–25 April, Sheraton Hotel - Ankara.

Lee H, Kım J, Han HR (2009). Do cultural factors predict mammography behaviour among Korean immigrants in the USA? *J Adv Nurs*, **65**, 2574-84.

Lee JRJ, Vogel VG (1995). Who uses screening mammography regularly? Cancer Epidemiology, *Biomarkers & Prev*, **4**, 901-6.

Lerman C, Rimer BK, Trock B, et al (1990). Factors associated with repeat adherence to breast cancer screening. *Prev Med*, **19**, 279-90.

Mikhail BI, Petro-Nustas WI (2001). Transcultural Adaptation of Champion's Health Belief Model Scales. *J Nur Scholarship*, **33**, 159-65.

Miller AM, Champion VL (1996). Mammography in older women: one-time and three-year adherence to guidelines. *Nur Res*, **45**, 239-45.

Nur N (2010). Breast cancer knowledge and screening behaviors of the female teachers. *Women and Hlth*, **50**, 37-52.

Rakowski W, Breen N, Meissner H, et al (2004). Prevalence and correlates of repeat mammography among women aged 55-79 in the Year 2000. National Health İnterview Survey. *Prev Med* , **39**, 1-10.

Russell KM, Champion VL, Skinner CS (2006). Psychosocial factors related to repeat mammography screening over 5 years in african american women. *Cancer Nur*, **29**, 236-43.

Rutten LJF, Iannotti RJ (2003). Health beliefs, salience of breast cancer family history, and involvement with breast cancer issues: adherence to annual mammography screening recommendations. *Cancer Detection and Prev*, **27**, 353.

Seçginli S, Nahcivan NÖ (2006). Factors associated with breast cancer screening behaviours in a sample of Turkish women: a questionnaire survey. *Sci Direct*, **43**, 161-71.

Seçkinli S, Nahçivan NÖ (2004). Reliability and Validity of the breast cancer screening belief scale among Turkish Women. *Cancer Nur*, **7**, 1-8.

Spence WR (2000). Health EDCO. A division of WRS Group, Inc, Waco, Texas.

Taylor VM, Taplin SH, Urban N, et al (1995). Repeat mammography use women ages 50-75. *Cancer Epidemiol Biomarkers Prev*, **4**, 409-13.

The Turkish Ministry of Health, The most prevalent cancer type observed in women, 2005. Department of Fight against Cancer. Health Statistics 2005. http://www.saglik.gov.tr. Access date: 01.06. 2011

Tuncer M (2007). Cancer Control in Turkey. Onur Matbaacılık Ltd, *Ministry Hlth Dep Cancer Prev*, Ankara.

Tümer A, Baybek H (2010). Çalışan kadınlarda meme kanseri risk düzeyi. *Meme Sağlığı Dergisi*, **6**, 17-21.

National Family Planning Services Guide (2000). 3rd Edition, Damla matbaası, Ankara, Volume 1.

White E, Urban N, Taylor V (1993). Mammography utilization, public health impact, and cost-effectiveness in the United States In: Omenn GS, Fielding JE, Lave LB, eds The Annual Review of Public Health vol 14 Palo Alto, Calif: Annual Reviews, 605-34.

Wu TY, Yu MY (2003). Reliability And Validity Of The Mammography Screening Beliefs Questionnaire Among Chinese American Women. *Cancer Nur*, **26**, 131-42.

Yilmaz M, Guler G, Bekar M, et al (2010). Risk of breast cancer, health beliefs and screening behaviour among Turkish academic women and housewives. *Asian Pac J Cancer Prev*, **12**, 817-22.

Zincir H (1999). Knowledge, attitudes and behaviors of women aged over 40 years in the city of Malatya regarding breast cancer and protection. Inonu University, Graduate School of Health Sciences, Master's Thesis, Malatya.