ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/nurses.2022-89359

Health Beliefs and Breast Self-Examination Behaviors of Nursing Students and Their Mothers: A Comparative Cross-Sectional Study

Hemşirelik Öğrencileri ve Annelerinin Sağlık İnançları ve Kendi Kendine Meme Muayene Davranışları: Karşılaştırmalı Kesitsel Bir Araştırma

Kübra ERTURHAN TÜRK[a], Meryem YILMAZ[b]

[a]Department of Nursing, Sivas Cumhuriyet University Faculty of Health Sciences, Sivas, Türkiye
[b]Department of Nursing, Division of Surgical Diseases Nursing, Sivas Cumhuriyet University Faculty of Health Sciences, Sivas, Türkiye

ABSTRACT Objective: This study was carried out to determine the effect of undergraduate education on nursing students and their mothers' health beliefs and breast self-examination (BSE) behaviors. **Material and Methods:** In this comparative and cross-sectional survey, the population of the study consisted of a total of 438 participants; including 219 volunteer students studying at the third and senior-year nursing students, and 219 their mothers. The data was collected using a questionnaire and Champion's Health Belief Model Scale. The data was collected by face-to-face interviews with the students in the classroom and by talking to the mothers on the phone. **Results:** It is the effective mothers' on performing BSE, students' BSE is 2.34-fold, and mothers' self-efficacy is 4.16-times, and mothers' perform regular BSE is 3.31-fold on students' perform BSE. The students' perception of barriers to performing the BSE was lower and their self-efficacy and health motivation were higher, and their mothers' levels of perceived susceptibility and perceived barriers scores were significantly higher. **Conclusion:** It was determined that students did not inform their mothers about breast cancer and BSE at the expected level, and students and their mothers mostly did not practice BSE and BSE was affected by their health beliefs.

Keywords: Breast self-examination; early diagnosis; nursing education; nursing student

ÖZET Amaç: Bu araştırma, lisans eğitiminin hemşirelik öğrencisi ve annelerinin sağlık inançları ve kendi kendine meme muayene davranışları üzerindeki etkisinin belirlenmesi amacıyla yapıldı. **Gereç ve Yöntemler:** Karşılaştırmalı ve kesitsel türde bir araştırmadır. Araştırmanın evrenini hemşirelik üçüncü ve son sınıfta okuyan, gönüllü 219 öğrenci ve 219 anne olarak toplam 438 katılımcı oluşturdu. Veriler anket formu ve Champion'un Sağlık İnanç Modeli Ölçeği kullanılarak, sınıf ortamında öğrencilerle yüz yüze, annelerle telefonda görüşülerek toplandı. **Bulgular:** Annelerin düzenli kendi kendine meme muayenesi yapmalarının, öğrencilerin düzenli kendi kendine meme muayenesi yapmalarından 2,34 kat ve annelerin öz yeterliklerinden 4,16 kat etkili iken, öğrencilerin düzenli kendi kendine meme muayenesi yapmalarında annelerin düzenli kendi kendine meme muayenesi yapmaları 3,31 kat etkili olduğu görüldü. Öğrencilerin kendi kendine meme muayenesi uygulamaları üzerinde engel algıları düşük, öz yeterlikleri ve sağlık motivasyonları annelere göre anlamlı şekilde daha yüksek iken; annelerin algılanan duyarlılık ve algılanan engel puanları öğrencilere göre anlamlı şekilde daha yüksek olduğu görüldü. **Sonuç:** Öğrencilerin meme kanseri ve kendi kendine meme muayenesi konusunda annelerini beklenen düzeyde bilgilendirmedikleri, öğrencilerin ve annelerinin çoğunlukla kendi kendine meme muayenesi yapmadıkları ve kendi kendine meme muayenesinin sağlık inançlarından etkilendiği belirlendi.

Anahtar Kelimeler: Kendi kendine meme muayenesi; erken teşhis; hemşirelik eğitimi; hemşirelik öğrencisi

Breast cancer (BC) early detection is important. Breast self-examination (BSE), is a reliable and important early detection strategy of BC, systematic BSE reduces deaths from breast carcinoma in low and middle-income countries. The main purpose of performing BSE regularly is for women to recognize the normal structure of their breast tissue and to become aware.[1] This concept is known as breast awareness. It is a no-cost, low-risk tool and can be used regularly at any age in a safe way in terms of breast awareness. It should be made once a month in the first week (5-7 days) after the menstrual period in

Correspondence: Kübra ERTURHAN TÜRK
Department of Nursing, Sivas Cumhuriyet University Faculty of Health Sciences, Sivas, Türkiye
E-mail: kubraerturhan@cumhuriyet.edu.tr

Peer review under responsibility of Turkiye Klinikleri Journal of Nursing Sciences.

Received: 01 Mar 2022 ***Received in revised form:*** 09 Sep 2022 ***Accepted:*** 17 Oct 2022 ***Available online:*** 31 Oct 2022

their early 20s to easily identify suspicious changes and abnormalities in breast tissue.[2] With BSE, symptoms of breast carcinoma such as any lumps in the breast, skin irritation or dimpling, nipple retraction and discharge, nipple or breast skin appear red, scaly, or thickened.[3] Many breast diseases are first noticed by women.[4] Therefore, if performed regularly and correctly, it has an important role in the early detection of BC where mammography may not be feasible.[5]

Today, BSE is still underutilized. Numerous barriers have been reported to the low number of BSE practices among females.[6] One of the important factors preventing regular BSE practice is health beliefs.[7] Beliefs play a powerful role in understanding diseases such as BC and behavior (e.g. BSE) associated with methods used to diagnose the disease early.[8] Champion and Scott emphasize that an individual's health beliefs play a role in their interest in health-protective behaviors, which in turn leads to action.[7] Correcting the barriers and false beliefs and increasing the level of knowledge about BSE can increase BSE practice. Nurses play an effective role in teaching health-protective behavior. For this reason, nursing education focuses on students gaining the right knowledge and skills for health protection behaviors such as BSE, perceived benefits of BSE, increasing self-efficacy and health motivation, overcoming perceived obstacles, as well as disease information. Nursing students are expected to teach especially health-protective behaviors such as BSE to their mothers. This study was conducted to determine the health beliefs and BSE behaviors of nursing students and their mothers.

MATERIAL AND METHODS

DESIGN AND PARTICIPANTS

This is a comparative cross-sectional survey. The sample size was determined by using the power analysis technique with the G*Power software (G*Power V 3.1.3 Franz Faul, Universität Kiel, Germany).[9] For the sample size, it were used Kara and Acikel study data.[10] Since the sample size was 438 in the study group, the Type I error will be taken as 0.05, a significant difference will be calculated between the scores in the tests, the power analysis result was calculated as 0.995 power. Inclusion criteria were (1) ones who could speak the Turkish language, (2) willing to participate in the study voluntarily. The population of the study consisted of a total of 438 participants; including 219 volunteer students studying at the third and senior-year and 219 their mothers, with no BC diagnosis. If the mother or the student did not agree to participate in the study, pairs were excluded from the study. The students were similar in terms of gender, age, beliefs and culture. All the participants were female.

DATA COLLECTION TOOLS

Data were collected using two approaches; (1) questionnaires, (2) the Champion's Health Belief Model Scale (CHBMS).

The questionnaire form is composed of 15 items including age, marital status, educational status, working status, health insurance, place of residence, city of income, level of chronic disease, family type, family history of BC, history of fibroadenoma, status of mammography, first birth age and number of births. In the second part, there were three questions related to BSE behaviors; information about BSE, BSE performance status and how often did you perform BSE in the previous year?

In this study, the version of CHBMS that was adapted to Turkish by Gözüm and Aydin was used.[11] The Turkish version of the CHBMS consists of 6 concepts and 36 items: perceived seriousness, perceived susceptibility, perceived benefits, health motivation, perceived barriers and self-efficacy. Each participant had six separate scores. Females who had low scores in the barrier subscale and high scores in the other subscales also held positive health beliefs about BC and BSE practice. Each sub-dimension of the scale is calculated separately and the total score is not calculated. Gözüm and Aydin found the Cronbach-α subscales ranged from 0.69 to 0.83.[11] In this study, Cronbach-α subscales ranged from 0.77 to 0.93.

DATA COLLECTION

The students acquire their knowledge and skills related to BC and BSE in the class of surgical diseases nursing course in the second year. In the surgery nursing course, researchers gave a 4-h theoretical lec-

ture to the students on BC and BSE and other sceening methods using PowerPoint presentations. Then BSE skill is taught using the breast model. Students then reinforce their knowledge and skills by teaching and applying them to female patients in the clinical internship program of the course. Also, students then use their knowledge and skills intensively in other courses, especially in nursing courses.

Before starting to implement the details about the mothers were obtained from the students. Then, the aim of the study was explained to the mothers on the phone. The data were collected by face-to-face interviews with the students in the classroom and by talking to the mothers on the phone. All of the students and mothers completed the forms in about 30 minutes.

ANALYSIS

The data was analyzed using SPSS (IBM Corp., Armonk, NY, USA) version 22.0. Kolmogorov-Smirnov test was performed to evaluate whether the data were normally distributed. The parametric chi-squared test was used for the two independent groups, and the Mann-Whitney U test. Tamhane's T2 non-parametric test was used to determine which group was different. The quantitative data collected from the questionnaire were reported with descriptive statistics. Logistic regression analysis was used to evaluate the effect of the variables of the mothers and the students on regular BSE and health belief. Statistical significance of the tests was reported at $p<0.05$.

ETHICAL CONSIDERATIONS

The study was approved by the Cumhuriyet University Non-Invasive Clinical Research Ethics Committees at the university (date: October 4, 2017, no: 2017-10/20) and the nursing school management teams. The study complied to the standards in the Declaration of Helsinki. The participants were obtained informed written consent in this study. The participants were informed that they could withdraw from the research at any time during the research.

RESULTS

The demographic characteristics of the participants were shown in Table 1. As shown in Table 2, 85.8% of the mothers and all the students were informed about BSE. Comparison of participants' scores for knowledge about BSE were significantly higher in students (χ^2=33.361, p=0.000). Findings indicated that 59.8% of the mothers and 76.3% of the students performed BSE, 20.5% the mothers and 33.3% of the students performed regular BSE every month in the previous year. BSE (χ^2=13.606, p=0.001) and students' frequency of performing BSE (χ^2=17.544, p=0.004) was found significantly higher than their mothers (Table 2).

Perceived of susceptibility (p=0.045) and perceived barriers (p=0.000) were significantly higher in mothers, and the self-efficacy (p=0.000) and health motivation (p=0.000) were significantly higher in students. There was no significant difference between the 2 groups in the perceived benefits and perceived seriousness subscales (Table 3).

Age, educational status, marital status, employment status, health insurance, place of residence, income rate, history of chronic diseases, family structure, family history of BC, presence of benign breast disease, knowledge of BSE and health beliefs performance of regular monthly BSE were not statistically significant as risk factors affecting the regular BSE performance of the mothers, whereas self-efficacy was. It was determined that the students who had regular BSE had a 2.34 times effect on the regular BSE of their mothers [confidence interval (CI)=1.18-4.67, p=0.016]. Moreover, the self-efficacy of the mothers was found to have a 4.16 times effect on their performance of regular BSE (CI=1.63-10.59, p=0.003) (Table 4).

Age, educational status, marital status, employment status, health insurance, place of residence, income rate, history of chronic diseases, family structure, family history of BC, presence of benign breast disease, knowledge of BSE and health beliefs were not found to be statistically significant as factors affecting the regular BSE performance of students. It was determined that the mothers who had regular BSE had a 3.31 times effect on the regular BSE of their children (CI=1.18-4.50, p=0.010) (Table 4).

TABLE 1: Characteristics of students and their mothers.

	Mothers		Students	
Age				
<50	161	73.5	-	-
≥50	58	26.5	-	-
Marital status				
Married	213	97.3	6	2.7
Single	6	2.7	213	97.3
Education status				
Illiterate	30	13.7	-	-
Primary education	149	68	-	-
High school	30	13.7	219	100
University	10	4.6	-	-
Employment status				
Employed	23	10.5	8	3.7
Unemployed	196	89.5	211	96.3
Health insurance				
Yes	213	97.3	213	97.3
No	6	2.7	6	2.7
Living area				
Rural	46	21	21	9.6
Urban	173	79	198	90.4
Income rate				
Lower	36	16.4	13	5.9
Modarate	180	82.2	198	90.4
Upper	3	1.4	8	3.7
Chronic disease				
Yes	73	33.3	10	4.6
No	146	66.7	209	95.4
Family structure				
Nuclear family	197	90	199	90.9
Large family	22	10	20	9.1
Family history of BC				
Yes	32	14.6	32	14.6
No	187	85.4	187	85.4
Benign breast disease				
Yes	23	10.5	10	99.1
No	196	89.5	209	0.9

BC: Breast cancer.

TABLE 2: Comparison of BSE knowledge and application level of students and mothers.

	Mothers		Students			
Characteristics	**n**	**%**	**n**	**%**	**χ^2**	**p value**
Information about BSE						
Yes	188	85.8	219	100	33.361	0.000
No	31	14.2	-	-		
BSE						
Yes	131	59.8	167	76.3	13.606	0.001
No	88	40.2	52	23.7		
How often did you perform BSE in the previous year?						
Once a month (routinely)	45	20.5	73	33.3	17.544	0.004
Once every two to three months	37	16.9	43	19.7		
Once four to six months	28	12.8	34	15.5		
Annually	26	11.9	20	9.1		
Never	83	37.9	49	22.4		

BSE: Breast self-examination.

TABLE 3: HBM scores of mothers and students.

HBM Sub-dimensions	Score Minimum-maximum	Mother Minimum-maximum	Student Minimum-maximum	Mother X±SD	Student X±SD	z value	p value
Perceived susceptibility	3-15	3-15	3-15	8.41±2.97	7.73±2.38	-2.001	0.045
Perceived seriousness	6-30	6-30	6-30	20.38±5.79	19.95±4.70	-1.009	0.313
Perceived benefits	4-20	4-20	4-20	17.05±3.06	17.47±2.87	-1.687	0.092
Perceived barriers	8-40	8-38	8-29	17.67±5.54	14.67±4.15	-5.942	0.000
Self-efficacy	10-50	10-50	10-50	33.66±8.89	39.42±6.63	-7.375	0.000
Health motivation	5-25	9-25	6-25	20.49±3.52	21.52±3.28	-3.512	0.000

HBM: Health belief model; SD: Standard deviation.

DISCUSSION

This study showed that all the nursing students and most of the mothers had information about BSE, but most did not perform it regularly. It was observed that the majority of students and mothers performed BSE, but the rate of those who performed BSE once a month was quite low. The students performed regular BSE once a month compared to their mothers. Similarly, previous studies have shown that both women, and nursing students have knowledge about BSE, but the practice rate was low, students performed BSE regularly compared to their mothers.[10,12-17] Parallel to this study, in the study conducted with midwifery students, it was stated that almost all of the students had knowledge about BC and BSE, but the rate of students who regularly performed BSE was low.[18] In other study conducted with students studying in nursing and clinical nutrition departments, it was determined that BSE knowledge and awareness were present, but regular practice was insufficient.[19] Women's knowledge of BC and BSE is simply not enough to implement BSE. Academic knowledge gained during university education leads to improving better attitudes and practices due to increased awareness of health-protecting behaviors. The fact that nursing students have higher knowledge than mothers can be explained by the fact that they have access to information about BC and BSE during their education. However, even academic knowledge is not always sufficient for behaviour change and development. The transformation from knowledge to behavioural change in health-protecting behaviors depends on factors such as sensitivity and belief. Champion's Health Belief Model suggests that a focus on perceived barriers, benefits, self-efficacy, and threat is required to encourage participation in health-promoting behaviour.[20] Therefore, to increase BSE practice in the early diagnosis of BC for nurses, it is necessary to determine the perceived benefit, the barrier and the severity of BSE.

This study showed that the self-efficacy and health motivation of the students were higher than the mothers. Similar results were found in the study of Kara and Acikel.[10] In other studies, it was determined that higher health motivation and self-efficacy help students show BSE behavior.[21,22] Self-efficacy refers to an individual's perception of individuals competence to perform a behavior.[23] The result of this study can be interpreted as self-efficacy and health motivation provided by education by increasing the knowledge levels of students. In preventive health behaviors, on nursing students studies showed that perceived seriousness, perceived susceptibility, self-efficacy were associated with the desired BSE behavior.[17,24,25]

In the current study, the perceived susceptibility of the mothers was found to be higher than the students. Similarly, Gonzales et al. found the perceived susceptibility sub-dimension of women to be significant in regular BSE practices.[13] The perceived susceptibility refers to a person's subjective perception of disease and is an important factor in the indi-

TABLE 4: The effects of various factors on the practice of regular BSE every month.

Risk factors (reference)	B	Wald	Adjusted odds ratio	95% CI	p value
Mothers					
Students practice regular BSE every month (irregular)	0.851	5.843	**2.34**	1.18-4.67	**0.016**
Self-efficacy	1.424	8.887	**4.16**	1.63-10.59	**0.003**
Students					
Mothers practice regular BSE every month (irregular)	0.836	5.989	**3.31**	1.18-4.50	**0.010**

CI: Confidence interval; BSE: Breast self-examination.

vidual's health-related behaviour such as BSE.[26] This result may be interpreted to arise from mothers' thinking that they are more riskier for BC due to age.

In this study, the perceived barriers, which may prevent BSE behavior of the mothers were found to be higher than the students. Other studies found that women who had fewer perceived barriers had higher BSE practice rates.[11,13,27] Perceived barriers refers to an individual's subjective evaluation of the difficulties of the hindrances associated with the target behavior.[26] In a study, it was reported that women did not perform BSE due to barriers such as embarrassment, discomfort, and discovery of breast symptoms.[28] High perceived barriers may be interpreted as fear of having cancer and finding a mass. It has been determined that increasing the knowledge levels of women on BC's early diagnosis and BSE positively affects their health beliefs, attitudes, and behaviors.[12] Gürsoy et al. reported that BSE training given to mothers by nursing students increased their knowledge levels; as a result, reduced perceived barriers scores and increased self-efficacy scores.[29]

The logistic regression analysis showed that students who had regular BSE had a 2.34 times effect on the regular BSE of their mothers. Also, the self-efficacy of the mothers was found to have a 4.15 times effect on their own regular BSE. It was determined that mothers who had regular BSE had a 3.30 times effect on the regular BSE of their daughters. Similarly, other studies found self-efficacy of women to be significant in regular BSE practices.[1,13] In previous a study, women who had more perceived benefits and self-efficacy and low perceived barriers had higher BSE practice rates.[27] The fact that the self-efficacy of the mothers on BSE practice was significantly lower shows that they have a negative attitude towards monthly BSE. Self-efficacy is the confidence of a person in her ability to carry out accurate BSE and diagnose the suspected tumor.[27] Studies emphasize that education is important in terms of increasing individual's self-efficacy and ability to perform BSE.[24,27] Additionally, scholars suggested that self-efficacy can successfully complete the behavior despite considered barriers.[20]

CONCLUSION

It was determined that students did not inform their mothers about BC and BSE at the expected level, and students and their mothers mostly did not practice BSE and that BSE was affected by their health beliefs. Nursing students should firstly teach their mothers the issues such as how to perform BSE, "breast awareness", the changes caused by cancer. Thus, they can reinforce their positive health beliefs and change their perceived barriers. To promote perform BSE and to prevent BC, the importance of informing the student's immediate environment and the society about BSE and BC should be emphasized more during the undergraduate courses.

Acknowledgements

We thank all the women who participated in this study.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the

potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Kübra Erturhan Türk, Meryem Yılmaz;* ***Design:*** *Kübra Erturhan Türk, Meryem Yılmaz;* ***Control/Supervision:*** *Meryem Yılmaz;* ***Data Collection and/or Processing:*** *Kübra Erturhan Türk, Meryem Yılmaz;* ***Analysis and/or Interpretation:*** *Kübra Erturhan Türk, Meryem Yılmaz;* ***Literature Review:*** *Kübra Erturhan Türk;* ***Writing the Article:*** *Kübra Erturhan Türk, Meryem Yılmaz;* ***Critical Review:*** *Meryem Yılmaz, Kübra Erturhan Türk.*

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