RESEARCH ARTICLE

Determining Nursing Student Knowledge, Behavior and Beliefs for Breast Cancer and Breast Self-examination Receiving Courses with Two Different Approaches

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Abstract

Background: This study aimed to determine nursing student knowledge, behavior and beliefs for breast cancer and breast self-examination receiving courses with a traditional lecturing method (TLM) and the Six Thinking Hats method (STHM). Materials and Methods: The population of the study included a total of 69 second year nursing students, 34 of whom received courses with traditional lecturing and 35 of whom received training with the STHM, an active learning approach. The data of the study were collected pre-training and 15 days and 3 months post-training. The data collection tools were a questionnaire form questioning socio-demographic features, and breast cancer and breast self-examination (BSE) knowledge and the Champion's Health Belief Model Scale. The tests used in data analysis were chi-square, independent samples t-test and paired t-test. Results: The mean knowledge score following traditional lecturing method increased from 9.32±1.82 to 14.41±1.94 (P<0.001) and it increased from 9.20±2.33 to 14.73±2.91 after training with the Six Thinking Hats Method (P<0.001). It was determined that there was a significant increase in pre and post-training perceptions of perceived confidence in both groups. There was a statistically significant difference between pre-training, and 15 days and 3 months post-training frequency of BSE in the students trained according to STHM (p<0.05). On the other hand, there was a statistically significant difference between pre-training and 3 months post-training frequency of BSE in the students trained according to TLM. Conclusions: In both training groups, the knowledge of breast cancer and BSE, and the perception of confidence increased similarly. In order to raise nursing student awareness in breast cancer, either of the traditional lecturing method or the Six Thinking Hats Method can be chosen according to the suitability of the teaching material and resources.

Keywords: Nursing students knowledge - behaviors and beliefs - breast cancer - breast self-examination

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Introduction

Today cancer is one of the most serious diseases threatening human life, and therefore global burnout is gradually growing (Jemal et al., 2011; Yousuf et al., 2012). Breast cancer (BC) is the most common cancer type and cause of mortality among women (Jemal et al., 2011; Yousuf et al., 2012). 230,480 new BC cases were identified in 2011 and in 2009, 39,520 women died for this reason (American Cancer Society, 2011). According to the results of the population-based cancer registry system of the Ministry of Health in 8 provinces in Turkey, a total of 6597 new BC cases were identified between 2004 and 2006 (Ozmen, 2008). Breast cancer causes serious concerns even in healthy women as it is both a frequently encountered incidence and a fatal disease. Visiting a physician and having mammography for breast examination within the scope of BSE screening programs have an important place in reducing this threat (Kilic et al., 2009; Erkoc, et al., 2011). Although the value of BSE in the early diagnosis of breast cancer is controversial, the number of women identifying a mass in their breast while in bath or dressing is quite high (Vetto, 2006; Karayurt et al., 2009; Elsabour et al., 2013). In developing countries with lower-middle income including Turkey, lack of health insurance and low rate of having regular mammography, a costly method due to poor economy, still places an importance in costless BSE in the early diagnosis of breast cancer high (Vetto, 2006; Karayurt et al., 2009; Akyolcu ve Ugras, 2011; Elsabour et al., 2013).

The nurses involved in the health care team are constantly in touch with patients. Midwives and nurses play a major role in women education on breast cancer in many parts of the world (Kumar et al., 2009). Due to their educational and supportive roles and knowledge, they bear the responsibility of sick and healthy individuals, in addition to their own health care. A part of this responsibility is that nurses should perform BSE, important

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for early diagnosis of cancer, on a regular basis every month and that they should teach women around them how to perform it (McCready et al., 2005; Karayurt et al., 2008; Moshfes and Mohammadbeigi, 2010; Yousuf et al., 2012). For this reason, it is of great significance that midwives and nurses should be knowledgeable and skilled in BSE in reducing the mortality of breast cancer. In addition, the beliefs of midwives and nurses about the importance of performing BSE will make a difference in training women on BSE, and encouraging and supporting them to perform it on a regular base (Ozer and Karamanoğlu 2006). However, in studies conducted in between 2008 and 2012, midwives and nurses were determined to be inadequate in performing these applications (Memis et al., 2009; Akpinar et al., 2012; Yousuf et al., 2012).

Studies revealed that teenagers did not have enough knowledge about breast cancer, and their BSE beliefs and practices were not found adequate, either (Aydin and Gözüm, 2009).

It is emphasized in the literature that the traditional models of nursing education do not encourage critical thinking, and that theoretical background can not be transferred to clinical practice (Fasnacht, 2003; Mangena and Chabelli, 2005). Therefore, it has become necessary to create educational environments where students can progress emotionally and socially as a whole, as well as mentally and physically, clinical practices are organized regarding the same progress, and students can exhibit their own thoughts and creativity (Seymour et al., 2003; Mangena and Chabelli, 2005). Thus, in nursing education programs, student-centered education models, which build up such skills in students as creativity, synthesis, design and problem-solving, need developing, instead of teacher-centered traditional methods based on information transfer (Fasnacht, 2003).

This study is significant in that it reveals students' knowledge, behavior and beliefs about breast cancer and BSE, and shows how two different training methods changed students' knowledge, behavior and beliefs. In addition, the subject in question has not been studied before, therefore this reveals its original value, and the results of the study are assumed to have a guiding quality.

Materials and Methods

The Objective and Type of the Study: The aim of this study is to evaluate differences among nursing students knowledge, behavior and beliefs of BC and BSE, taught by traditional lecturing method (TLM) and the Six Thinking Hats Method (STHM). The study was carried out semi-empirical.

The Universe of the Study and Sample Selection: The population of the study consisted of nursing students in a health college in the Middle Black Sea Region in 2011-2012 academic year. The sample group included students enrolled in a second-year Surgical Nursing course (n=70). The class was divided into two groups of 35 by assigning each student in the study group a number and using a random number table. The groups were selected by drawing lots. While the first group received training on breast cancer and BSE with question and answer method, the traditional lecturing method (TLM), the other group carried out the course with the Six Thinking Hats Method (STHM), an active teaching method.

STHM was developed by De Bono in 1985. It is a creative problem solving activity in developing student cognitive skills. The hats are a symbol used for the separation of thoughts. As the color of the hats change, the thoughts symbolized by the color are expected to be transferred in a certain order respectively. The six hats used in the application symbolize the following systems of thought.

White Hat: this hat includes information, data and facts. It aims to assess the available information, present the necessary information and direct the relevant questions.

Yellow Hat: yellow hat calls for discovering the value, benefits and positives of the proposals made while brain-storming. In this phase, the thinking is constructive and productive. Concrete proposals and recommendations can be produced.

Black Hat: this draws attention to dangers. It reveals the risks and shows why something does not work. This is the criticism hat, and it is an objective evaluation and judgment phase to avoid negatives.

Red Hat: it gives an emotional perspective. When using this hat, one gets the chance to express feelings and intuition without any rationale.

Green Hat: when thinking with this hat, one puts forward proposals, new concepts and choices. The green hat gives the opportunity to capture various possibilities. Anyone who uses the green hat makes an effort to be creative.

Blue Hat: this hat is directly used to manage the thinking process itself. It can be used to sequence the hats used and summarize the obtained results, too. The blue hat also helps observe the thinking process and ensure the rules of the game. In addition, it can be used to stop the discussion and establish the discipline (Karadag et al., 2009).

The Characteristics of the Sample Group: the mean age score of the students in the Six Thinking Hats group was determined as 20.57±1.17, and it was 20.67±1.80 in the traditional lecturing method group. As a result 53 female and 16 male students out of 75 students were included in the research. The comparison between the study groups in terms of age, marital status, cancer history in the family did not result in a statistically significant difference ($p>0.05$).

Data collection tools

Questionnaire Form: this form consisted of 14 questions related to socio-demographic characteristics, and a survey involving 20 questions about breast cancer and BSE, which was prepared in line with literature (Karayurt et al., 2007; Gürsoy et al., 2009; Beydag and Karaoglan, 2010; Erkoç et al., 2011; Elbasour et al., 2013). The items in the survey were multiple-choice questions and each correct answer was assigned 1 point. The minimum possible score from the questionnaire was 0 and the maximum was 20. The pilot study of the questionnaire was previously conducted in third year students enrolled in Surgical Nursing course. Following the pilot study,

necessary corrections were made in the form and the study started. The students taken to pre-training were not involved in the study group.

Champion's Health Belief Model Scale (CHBMS): this was used to determine the BSE beliefs of the students. The scale was developed by Champion in 1984 and it was reorganized in 1993, 1997 and 1999. CHBSM was also adapted to Turkish by three separate studies in Turkey, unaware of each other and almost simultaneously (Secginli and Nahcivan, 2004; Karayurt and Dramali, 2007). This self-completed scale consisted of 8 parts and a total of 52 items. These were susceptibility (3 items); care/seriousness (6 items); health motivation (5 items); benefits of BSE (4 items); barriers to BSE (8 items); self-efficacy of BSE (10 items); benefits of mammography (5 items); and barriers of mammography (11 items). In the assessment of the scale, Likert-Type five-point response scale was used ranging from Strongly disagree (1), to Disagree (2), Neutral (3), Agree (4), and Strongly Disagree (5). Each dimension of the scale was evaluated separately, and cannot be combined in a single score. Table 1 presents the Cronbach's alpha internal coefficients of the study group. The Cronbach's alpha values for our study group ranged between 0.76-0.87.

Data collection

The course was carried out by the first researcher and the second one helped collect the data of the study. The questionnaire was conducted three times in both groups, one as pre-test and the other two as post-tests, 2 and 12 weeks after the students were given the course. The application duration of the questionnaire form and scale was determined to take approximately 10-15 min.

Data analysis and evaluation

The open ended questions in the questionnaire were assessed at computer after they were classified manually by the researchers. SPSS software package (SPSS Inc. Chicago 16) was used in the assessment of the data. The data were evaluated using percentages and chi-square test, independent samples t-test, paired t-test and the McNemar test. The results were considered statistically significant if $p<0.05$.

Ethical issues

At the outset of the study, related authors were asked for permission for the use of CHBSM.

The ethical consent that is required for the performance of the research was obtained from the Ethics Committee of the Faculty of Medicine of Gaziosmanpasa University (Number: 12-BADK-023, Date: 21.02.2012). As the use of human cases in researches requires the protection of individual rights, "informed consent" requirement was fulfilled as an ethical principle. Another ethical principle considered in the study was "respect for human dignity". The individuals participating in the study were informed in black and white in such issues as being free to decide whether or not to participate in the study, having right to end their participation at any time, receiving no reward or punishment due to participation in the study, having right to refuse to supply information and be informed about the study. In addition, the students were informed that their responses would be kept confidential.

Results

Both participants of STHM and TLM groups were similar in terms of general features like age, gender, and so on, and the presence of breast cancer within the family, and breast cancer history. The scores of pre-training knowledge on breast cancer and BSE, the mean scores of Health Belief Scale, and the level of performing BSE were similar in both groups. There wasn't a significant difference between the groups regarding these titles ($p>0.05$). When the mean scores of the students' pre-training and 15 days and 3 months post-training knowledge levels on breast cancer and BSE were compared, it was determined that there was a statically significant difference between the mean scores of pre-training and post-training knowledge level of STHM and TLM groups ($p<0.05$). When the mean scores of 15 days and 3 months post-training knowledge were compared, both groups were determined to have an increase in their mean scores of knowledge 3 months post-training, and this increase was determined to be statistically significant only in TLM group (Table 1).

When pre-training and 15 days and 3 months post-training intra-group comparison of CHBMS subgroups for STHM group was examined, it was determined that the mean scores for perception of confidence increased significantly 15 days and 3 months post-training ($p<0.05$), and that there was not a significant change in the mean scores of other subgroups (Table 2). When pre-training and post-training intra-group comparison of CHBMS subgroups for TLM group was examined, it was similarly determined that the mean scores for perception of confidence increased significantly 15 days and 3 months post-training ($p<0.05$), and that there was not a significant change in the mean scores of other subgroups (Table 2). When the intergroup comparison of pre-training and 15 and 30 days post-training mean scores of CHBMS subgroups was examined in table 3, there was not a statistically significant difference between pre-training and 15 days and 3 months post-training mean scores of CHBMS subgroups for STHM and TLM groups ($p>0.05$) (Table3).

It was determined that there was a statistically significant difference between the frequency of pre-

Table 1. Comparison of Students' Pre-training and 15 Days and 3 Months Post-training Mean Scores of Breast Cancer and BSE Knowledge

	STHM X ±SD	TLM X±SD	t*	p*
Pre-training	9.20±2.33	9.32±1.82	0.244	0.800
15 days post-training	15.05±3.44	14.41±1.94	0.955	0.343
3 months post-training	16.00±2.11	16.05±1.59	0.130	0.897
t**	-9.56	-13,614		
t***	-1,703	-4,092		
p**	0.001	0.001		
p***	0.092	0.001		

*Intergroup differences; **Intra-group pre-training and 15 days post-training differences; ***Intra-group pre-training and 15 days and 30 days post-training differences

Table 2. Distribution of Pre-training and 15 Days and 3 Months Post-training Intra-group Comparison of CHBMS Subgroup Mean Scores

Subgroups	The six thinking hats method						Traditional lecturing method					
	Pre-training	Post-training		t**	p**	t***	p***	Pre-training	Post-training		t**	p**	t***	p***
		15 days	3 months						15 days	3 months				
	X±SD	X±SD	X±SD					X±SD	X±SD	X±SD				
Susceptibility	7.82±2.66	7.74±2.36	7.03±2.64	0.161	0.873	1.220	0.23	7.64±2.43	7.29±2.93	6.67±2.37	0.941	0.35	1.636	0.11
Seriousness	20.82±5.28	22.11±5.88	20.28±6.95	-1.048	0.302	0.369	0.71	22.64±6.28	21.85±6.28	21.58±6.93	0.688	0.49	0.650	0.52
Benefit	15.65±3.88	16.85±4.18	17.08±4.05	-1.307	0.200	-1.560	0.12	17.38±3.10	17.05±3.82	16.91±2.97	0.372	0.71	0.694	0.49
Barrier	23.00±5.24	24.17±7.14	21.85±5.62	-0.820	0.418	-0.761	0.45	21.44±4.82	22.76±5.37	23.11±5.79	-1.761	0.08	-1.369	0.18
Confidence	33.60±5.15	37.25±6.17	37.31±6.96	-2.924	0.006*	-3.294	0.01*	33.08±5.55	38.14±6.60	38.52±5.70	-4.296	0.01*	-3.954	0.01*
Health motivation	26.62±4.29	27.74±10.17	26.02±4.38	-0.617	0.541	-0.469	0.64	25.88±4.37	25.85±4.67	26.73±3.78	0.028	0.97	-1.010	0.32

*p<0.05; CHBMS: Champion's Health Belief Model Scale; **Intra-group pre-training and 15 days post-training differences; ***Intra-group pre-training and 30 days post-training differences

training and 15 days and 3 months post-training BSE performance of STHM student group (p<0.05) (Table 4). It was found that there was not a statistically significant difference between the frequency of pre-training and 15 days post-training BSE performance of TLM student group (p>0.05). However, there was a statistically significant difference between the frequency of pre-training and 3 months post-training BSE performance (p<0.05) (Table 4).

Discussion

In the present study, carried out to determine nursing students' knowledge, behaviors and beliefs in breast cancer and breast self-examination receiving courses with Traditional Lecturing Method (TLM) and Six Thinking Hats Method (STHM), both STHM and TLM students were similar in terms of general features like age, gender, and so on, and the presence of breast cancer within the family, and breast cancer history. The scores of pre-training knowledge on breast cancer and BSE, the mean scores of Health Belief Scale, and the level of performing BSE were similar in both groups. There wasn't a significant difference between the groups regarding these titles (p>0.05). Participants' individual characteristics affect the beliefs and individual perceptions of performing BSE. Both groups in the study had similar characteristics, and this is thought to make a contribution in assessing the effect of the training methods accurately.

In the current study, it was proved that both STHM and TLM were effective in increasing the students' knowledge on breast cancer and BSE. In a study conducted to compare peer-education and group education by Karayurt et al. (2009), it was observed that there was an increase in both groups' pre-training and post-training knowledge scores, but there was not a difference between the groups. On the other hand, it was determined in a study by Gürsoy et al. (2009) that there was more increase in the BSE knowledge of students peer-trained as a group than that of students trained individually. A knowledge increase was observed in another study conducted by Thomas et al. (2002) comparing brochure and class education. There are similiarities between our findings and those from the studies in literature. When pre-training and 15 days and 3 months post-training intra-group comparison of CHBMS subgroups was examined, it was determined that the mean scores for perception of confidence for both groups increased significantly 15 days and 3 months post-training (p<0.05), and that there was not a significant change in the mean scores of other subgroups (Table 3 and Table 4). Similar to the findings obtained in our study, Gürsoy et al. (2009) determined in their study that peer-education increased the perception of confidence. Similarly, Karayurt et al. (2009) found in their study that peer and group education increased the benefit of BSE and perception of confidence. High perception of confidence results from high perceived competence in BSE performance skill. The findings of the studies show that there is a positive correlation between perception of confidence and BSE practice (Karayurt and Dramali, 2007; Karayurt et al., 2008). In most of the studies conducted so far, it has been indicated that, following training programs on breast cancer and BSE, there was a significant increase in students' knowledge levels and BSE performance behaviors (Karayurt et al., 2008; Aydin and Gözüm, 2009;Elsabour et al, 2013).

In our study, there was a statistically significant difference between pre-training, and 15 days and 3 months post-training frequency of BSE performance in the students trained according to STHM (p<0.05). On the other hand, there was not a statistically significant difference between pre-training and 15 days post-training frequency of BSE performance in the students trained according to TLM (p>0.05). However, there was a statistically significant difference between pre-training and 3 months post-training frequency of BSE performance. The increase in 15 days and 3 months post-training frequency of BSE performance in STHM group showed that this training method was effective in raising the student awareness in BSE. While there was not a statistically significant difference between pre-training and 15 days post-training frequency of BSE performance in TLM group (p>0.05), there was a statistically significant difference between

Table 3. Distribution of Pre-training and 15 Days and 3 Months Post-training Intra-group Comparison of CHBMS Subgroup Mean Scores

	Pre-training				Post-training							
					15 days				3 months			
	STHM X±SD	TLM X±SD	t	p	STHM X±SD	TLM X±SD	t	p	STHM X±SD	TLM X±SD	t	p
Sensitivity	7.82±2.66	7.64±2.43	0.295	0.769	7.74±2.36	7.29±2.93	0.699	0.487	7.03±2.64	6.67±2.37	0.582	0.562
Seriousness	20.82±5.28	22.64±6.28	-1.302	0.197	22.11±5.88	21.85±6.28	-0.156	0.877	20.28±6.95	21.58±6.93	0.779	0.439
Benefit	15.65±3.88	17.38±3.10	-2.033	0.046	16.85±4.18	17.05±3.82	-0.209	0.835	17.08±4.05	16.91±2.97	0.203	0.840
Barrier	23.00±5.24	21.44±4.82	1.284	0.203	24.17±7.14	22.76±5.37	0.922	0.360	21.85±5.62	23.11±5.79	-0.917	0.362
Confidence	33.60±5.15	33.08±5.55	0.397	0.693	37.25±6.17	38.14±6.60	0.578	0.565	37.31±6.96	38.52±5.70	-0.791	0.432
Health motivation	26.62±4.29	25.88±4.37	0.715	0.477	27.74±10.17	25.85±4.67	0.987	0.327	26.02±4.38	26.73±3.78	-0.715	0.477

*p<0.05; CHBMS: Champion's Health Belief Model Scale

Table 4. Distribution of Pre-training and 15 Days and 3 Months Post-training BSE Performance in STHM Group and TLM Group

BSE	The six thinking hats method						Traditional lecturing method					
	Pre-training	Post-training		p*	p**	p***	Pre-training	Post-training		p*	p**	p***
		15 days	3 months					15 days	3 months			
	No. %	No. %	No. %				No. %	No. %	No. %			
Not performing	17 48.6	9 25.7	7 20.0	0.008	0.774	0.031	14 41.2	12 35.3	7 25.6	0.687	0.227	0.039
Performing	18 51.4	26 74.3	28 80.0				20 58.8	22 64.3	27 79.4			

*Intra-group pre-training and 15 days post-training differences; **Intra-group 15 days and 3 months post-training differences; ***Intra-group pre-training and 3 months post-training differences McNemar test

pre-training and 3 months post-training frequency of BSE performance in the same group. This was thought to have stemmed from the fact that students went clinical practices 4 weeks after the study was conducted, and teachers expected the students to give information about the subject to sick and healthy individuals during clinical practice. Accordingly, the BSE knowledge of fourth year students in the study by Beydag and Karaoglan (2010) was determined to be higher than that of first year students. The authors of this study concluded that the awareness in BSE could be obtained through intensive education, as students receive theoretical knowledge about BSE in every school term, they practice it, and they inform sick or healthy individuals during their internship until they graduate (Beydag and Karaoglan, 2010).

Using simple random sampling method for the selection of the sample and determining the groups by drawing lots are the strengths of the study. But there are a few limitations in this study. Lacking a control group in the study and doing the post-training assessments 15 days and 3 months later can be thought as the limitation of the study. In addition, another limitation is the assessment of students' BSE performance based on self-report. Involving second year nursing students in the population does not represent the whole teenagers. Carrying out a study with a large sample group where all young people are represented will make it easier to understand which method is effective in encouraging BSE. Determining longer screening periods is recommended to establish the permanence of knowledge and behavior.

In conclusion, although BSE is a definite method in diagnosing breast cancer, it is also important in terms of raising women awareness in their own body and helping them be more sensitive to breast cancer (Akyolcu and Ugras, 2011). The training on the subject at early ages will be an important step in drawing women's attention to the issue and making them more conscious, and encouraging them to take responsibility in health care (Dozier and Mahon, 2002; Aydin and Gozum, 2009).

It is important that effective methods should be selected to develop breast cancer knowledge, BSE performance and perceived health beliefs of the nursing students, who will play major roles in training women in the future. Both methods used in this study similarly increased breast cancer and BSE knowledge and the perception of health belief confidence. However, STHM seems effective in raising students' awareness in BSE, due to the increase in 15 days and 3 months post-training frequency of performing BSE. Either of the traditional lecturing method or the Six Thinking Hats Method can be chosen according to the suitability of the teaching material and resources in order to raise nursing students' awareness in breast cancer.

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