The Effect of Training and Monitoring at Home on the Knowledge Level and Practices of Married Women Regarding Breast and Cervical Cancer

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ABSTRACT

Objective: This study was performed as a semi-experimental study to determine the effects of training and monitoring at home on the knowledge level and practices of married women regarding breast and cervical cancer.

Materials and Methods: The research sample consisted of 153 women. Data was collected by the “Introductory Questionnaire” and “Breast Cancer and Cervical Cancer symptoms, prevention, early diagnosis information and application form.” After the data was collected, women received training. After training, to monitor changes, phone calls were made along with home visits for 6 months. After the end of the visits, forms were re-administered. For statistical analysis, the Shapiro–Wilk test, Friedman analysis, and Student–Newman–Keuls test were performed.

Results: According to the findings, women increased their score from the information form after planned monitoring at home, and the difference between the first and last measurement points was statistically significant ($p < 0.001$). Similarly, it was found that women increased their score from the information form about cervical cancer, and the difference between the first and last measurement points was statistically significant ($p < 0.001$).

Conclusion: At the end of the study, 84% of women were found to begin the application of breast self-examination (BSE). As a result, women’s knowledge concerning breast and cervical cancer has changed in a positive manner with planned monitoring and training.

Keywords: Breast cancer, cervical cancer, monitoring at home, training

Introduction

The increase in the incidence of cancer is a major public health problem for both the world and Turkey. If the rate of increase in cancer remains constant, 27 million new cancer cases will be diagnosed each year in 2030, each year 17 million people will die due to cancer, and the number of people living with cancer will increase up to 75 million (1-3). According to International Cancer Agency (GLOBOCAN) data, a total of 14.1 million new cancer cases and 8.2 million deaths have occurred throughout the world due to cancer. According to the data from the World Cancer Report and Ministry of Health, cancer related deaths are the second leading cause of mortality in Turkey (21.32%) (4).

Breast cancer in women continues to be an international problem affecting both Turkey and countries from all economic levels. Cervical cancer is the second most common cancer after breast cancer in the world, and ranks 9th in Turkey. The Ministry of Health, Health Statistics Yearbook 2012 data reported that breast cancer incidence increased from 35 per hundred thousand in 2007 to 45 per hundred thousand in 2011. The incidence of cervical cancer increased from four per hundred thousand in 2007 to 7 per hundred thousand in 2011 (4, 5).

Prolongation of life expectancy in the future, stress, the increase in obesity prevalence, delayed age at first birth, and reduced fertility are expected to increase breast cancer incidence even further (6-12).

Knowledge of women on breast and cervical cancer is very important in the early diagnosis and treatment of these diseases. One of the factors affecting the implementation of women’s cancer early detection methods is the lack of knowledge about cancer (13-18). The application rate of BSE in our country is very low. Only 10% of women declare to perform regular, monthly breast self-examination. In ad-

This study was presented at the 1st National Public Health Nursing Congress, 18-20 June 2015, İzmir, Turkey.

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Received: 25.05.2015

Accepted: 01.07.2015

dition, rates of obtaining mammography, clinical breast examination and Pap smear test are also very low. The rate of women who never had a Pap smear is reported as 78% (4).

Alpteker and Avcı detected that 71.3% of women did not know BSE. In other studies, it was reported that women were not informed enough on breast and cervical cancer (19-24).

Home visits made by nurses have an important role in protecting and improving health and determining risk groups on healthy subjects. An individual's health status is influenced by various factors such as education, cultural-social factors, and family relationships (25). Therefore, when providing screening services for early diagnosis of cancer, women's physical, economic, cultural and psychosocial needs must be taken into account, and they should be evaluated according to their place of habitation (26-30).

Although early diagnosis and screening services are accessible and free of charge within the National Cancer screening program, the rates of participation in breast and cervical cancer screening are quite low. Education of women on these types of cancers and participation in screening will reduce cervical cancer incidence and breast cancer mortality rates; therefore, will contribute to increasing life expectancy (21, 24, 27, 31).

Study Aim:

This study was performed to determine the effects of training and follow-up at home on the knowledge level and practices of married women regarding breast and cervical cancer.

Study Hypothesis:

1. Home follow-up and education of women influence the level of knowledge on breast cancer.
2. Home follow-up and education of women influence the level of knowledge on cervical cancer.
3. Home follow-up and education influence women's BSE performance status.

Material and Methods

Study type: This research study was conducted according to semi-experimental research model to determine the effects of training and follow-up at home on the knowledge level and practices of married women regarding breast and cervical cancer.

Study universe: The study universe consisted of 3859 women within Nevşehir province, who were registered to the Municipality's Family Health Centers (FHC) No. 2 and No. 3, who were 40 years and older, and were either married or lived with a partner.

Study sample: The sample was calculated as 103 using power analysis. Considering the fact that some individuals may dropout the study, 50 women were added as substitutes with a final number of 153. None of the subjects left the study throughout the study period. The power of the study at the end was found to be 100%.

In order to obtain a sample that represents the universe homogenously, the number of women to be included from the two FHCs was determined by stratified random sampling method. There were 77 women from FHC No. 2 and 76 women from FHC No.3 in the study.

A simple random sampling method was used for the selection of women to be followed up at home. A random numbers table was used by registering 3859 married women who were registered to the FHCs.

Data collection tools; The research data were collected with "Descriptive Information Questionnaire" and "Breast Cancer and Cervical Cancer Symptoms, Prevention, Early Diagnosis Methods and Performance Information Form" in the study population's own homes.

Descriptive Information Questionnaire: This form that was prepared by the researchers based on literature review included 23 questions that identify features such as women's age, education and income level, profession, and social security status, as well as items on their information on breast and cervical cancer and presence of cancer within the family.

Breast Cancer and Cervical Cancer Symptoms, Prevention, Early Diagnosis Methods and Performance Information Form (pre-test, control test and post-test data sheets): There are phrases that assess women's knowledge and behavior on breast and cervical cancer. These statements include all the parameters related to knowledge of women's on signs, early detection, protection related to breast and cervical cancer and BSE performance; and the subject's responses were recorded as either "informed" or "not informed" by the investigators. The total score was used in the evaluation of information tests. A total score was used for each information subset and the change in this information was assessed with re-evaluations. Those who responded correctly to all parameters were considered as "informed" on signs, prevention and early diagnosis. For example, there were 11 statements related to knowing the symptoms of breast cancer. The assessment was based on a woman's score of knowing these symptoms.

The following schedule was used in training women.

Breast cancer, breast self-examination and cervical cancer education program

Subjects:

Home visits and explaining the aim of education
The importance of breast and cervix for women's life
The definition, symptoms, causes, risk factors, prevention of breast cancer.
Breast cancer early detection methods, techniques of BSE
The definition, symptoms, causes, risks, prevention of cervical cancer.
Cervical cancer early detection methods
Summary and obtaining answers

Training environment: Women's own residence

Methods used: Lecture, discussion, demonstration, question and answer

Tools and materials used: Breast model, written materials, Power Point presentation

Time: 40-50 minutes

Data collection: The data were collected by forms, with face-to-face visits, at subject's residence between September 2012 - March 2013.

Home visits

First month - September 1 2012-30 September 2012, Meeting in FHC

The 153 women in the sample were separated into groups of 25, and a meeting was requested with the registered telephone numbers. Each group was met on separate days within a month in FHCs.

First, the researchers have introduced themselves and explained the purpose of the study. Then, women were asked to introduce themselves. Informed consent forms were obtained. Contact information of the researchers were provided to facilitate communication. Meeting dates and addresses were set for home visits.

Second month - 1 October 2012-31 October 2012, first home visit

Introductory information surveys and data sheets were used. Data collection was conducted with face-to-face interviews. The data collection forms were filled in at approximately 20-30 minutes. An average of 5 women were interviewed per day (minimum 3, maximum 8). Women were informed that they will receive training in the next home visit and appointments were scheduled.

Third month - 1 November 2012-30 November 2012, Second home visit

Educational presentations were made on breast and cervical cancer and screening. These power point presentations included information regarding causes of breast and cervical cancer in women, risk factors, symptoms, prevention, and methods of early diagnosis. Expression, demonstration and question and answer techniques were used as part of training. Women were shown breast examination on breast models and they have been asked to perform breast examination on themselves. The training was given by researchers in women's own home environment. The average duration of the training was 30-50 minutes. An average of 5 women (minimum 3, maximum 8 female) were interviewed per day. In addition, "Breast and cervical cancer screening education booklets" and calendar reminders entitled "Take 10 minutes every month to protect yourself from cancer" were handed. Women were asked to mark the calendar when they perform BSE. Questions were answered at the end of women's education and an appointment for the next visit was scheduled.

Fourth month - 1 December 2012-31 December 2012, third home visit

In this visit, "Breast Cancer and Cervical Cancer Symptoms, Prevention, Early Diagnosis Methods and Performance Information Form" was re-applied. BSE performance status was evaluated. It took approximately 20-30 minutes per visit.

Telephone Reminder - 1 January 2013-28 February 2013

Women were contacted by telephone in the 5th and 6th months and they were asked whether they performed BSE or not and if they marked the date of inspection on the calendar. Women were encouraged to contact the researchers by telephone if they needed consult or advice, or if they experience any problems and concerns.

Last home visit - 1 March 2013-31 March 2013

The last home visits were made at the seventh month. In the last visit, "Breast Cancer and Cervical Cancer Symptoms, Prevention, Early Diagnosis Methods and Performance Information Form" was re-applied. BSE performance status was evaluated. Thus, the data were collected and home follow-ups were completed.

Study Ethics

Ethical board review was obtained from Erciyes University Faculty of Medicine Ethics Committee. Written permissions were obtained from Nevşehir Provincial Health Directorate and Nevşehir University Semra and Vefa Küçük SYO. The aim of the study was explained to women participating in the survey, and verbal and written voluntary consents were obtained with the Informed Consent Form.

Statistical analysis

IBM SPSS Statistics 21.0 statistical software package (IBM SPSS Statistics 22.0 package program (IBM Corp., Armonk, New York, USA) was used for analysis. Descriptive statistics were presented as number (n), percentage (%), median (M), 25th percentile (Q1) and 75th percentile (Q3). The normal distributions of numerical variables were analyzed with the Shapiro-Wilk test. Friedman analysis was used for comparison of repeated measurements, and non-parametric Student-Newman-Keuls test was used as multiple comparison tests. Correlation between categorical variables was analyzed with McNemar test. $P < 0.05$ was considered as statistically significant.

Results

57.5% of women were between 40-49 years of age (mean age of 49.3 ± 7.0 minimum 40, maximum 68 years); 57.5% of them were primary school graduates; 96.7% had health insurance; 94.8% were housewives; and 83.7% had equal expenses to their income. 10.5% had a family history of breast cancer, 6.5% had a family history of cervical cancer, and never performed BSE. When asked for detailed information on gynecological diseases, it was found that 26.8% of women (41 people) had been previously diagnosed with a gynecological disease by a physician; 63.4% of these women (26 people) were diagnosed with ovarian cysts or myoma. 19% of women (29 people) stated that they previously had breast problems. 86.2% of these women (25 people) had benign nodular or fibrocystic lesions, and lipomas.

Table 1 depicts the distribution of resources that women obtained information on breast and cervical cancer. As seen in the table, 71.2% stated lack of knowledge on breast cancer, and 85.6% on cervical cancer. 41% of those who had received information on breast cancer (28.8%) and on cervical cancer (14.4%) obtained this information from the television-radio.

Table 2 shows the distribution of median scores on women's knowledge on symptoms, prevention and early diagnosis methods for breast cancer, before and after training according to the first, third and final visits. It was determined that information scores increased with education and home visits. Education on breast cancer and home visits seem to affect women's information status positively. The differences between median first, third and last visit scores on breast cancer information were found to be statistically significant ($p < 0.001$).

Table 3 shows the distribution of median scores on women's knowledge on symptoms, prevention and early diagnosis methods for cervix cancer, before and after training according to the first, third and final visits. It was determined that information scores increased in the third and final visits from a score of "0" prior to training. The differences between median first, third and last visit scores on cervix cancer information were found to be statistically significant ($p < 0.001$). Home follow-up and nursing education affected women's knowledge regarding cervical cancer screening positively.

Table 4 shows the distribution of women before and after the training according to obtaining pap smear and BSE application. The proportion of women performing BSE and obtaining Pap smear was found to be 84.3% at the last visit. The differences between first, third and

last visit on performing BSE and obtaining pap smear were found to be statistically significant ($p < 0.001$).

Discussion and Conclusions

In order to assess an individual's health behaviors, the culture they are in should be considered. Public health nurses can evaluate individuals by making regular home visits to their homes, which is the environment where individual cultural characteristics are most exhibited (11, 26). It has been determined that training and follow-up visits at home improve the quality of life (32). In the literature, fear from cancer, lack of access, and insufficient knowledge on cancer and early detection methods have been reported as obstacles for women's practice of breast and cervical cancer early detection and screening methods (24, 33, 34).

In this study, 28.8% of women stated that they had information on breast cancer and 14.4% on cervical cancer. 40.9% of women who had information on breast cancer (28.8%) and cervical cancer (14.4%) received this information from the television-radio (Table 1). Özyayın et al. (35) determined that 98.4% of women have heard of breast cancer and that their main information source was television (60.3%). Pınar et al. (31) reported that 53.5% of the study participants received information about cervical cancer, and 42.9% of them gained this information through press release, while 72.6% classified this information as insufficient. Various studies have reported that women widely use various media sources such as magazines, television, and newspapers to improve their knowledge on breast cancer and early diagnosis methods (24, 35-37). Today, the extent of newspapers and television in satisfying women's needs related to cancer information is debated. The fact that television is the main source of information in studies can be related to presence of at least one television in every house and women's watching the television an average of 4.5 hours a day (38, 39).

In this study, the pretest median scores, prior to nursing interventions (follow up at home, education, telephone reminders, educational booklet, use of reminder calendar), of all the surveyed women were zero (Table 2, 3). It is evident that even women who stated to have information on breast and cervical cancer prior to the planned education had no knowledge (Table 1-3). These results implicate that although many national programs have been implemented related to breast and cervical cancer on television and the media, sufficient awareness could not be created. It has been suggested that the Ministry of Health should control health programs in the printable and visual

Table 1. Distribution of women in the pre-training period according to having information on breast and cervical cancer and source of information based on their statements.

Breast cancer related information (n=153)	Number	%
Yes	44	28.8
No	109	71.2
Total	153	100
Sources of information on breast cancer *(n=44)		
Family-friends	7	15.9
Television-Radio	18	40.9
Magazines	4	9.1
Health personnel	14	31.8
More than one source	1	2.3
Total	44	100
Cervical cancer related information (n=153)		
Yes	22	14.4
No	131	85.6
Total	153	100
Sources of information on cervical cancer **(n=22)		
Family-friends	1	4.5
Television-Radio	9	41.0
Magazines	4	18.2
Health personnel	7	31.8
More than one source	1	4.5
Total	22	100

*Number and percentages are according to women who had information on breast cancer.

**Number and percentages are according to women who had information on cervical cancer.

Table 2. Distribution of women according to median scores on knowing early diagnostic symptoms, prevention and early diagnosis methods of breast cancer at the initial, third and final visits (n=153)

	Pre-training Initial Visit (pre test)	Post-Training Third Visit (control test)	Post-Training Final Visit (last test)	
	M (Q1-Q3)	M (Q1-Q3)	M (Q1-Q3)	p
Knowing symptoms of breast cancer	0 (0-3)a	11 (10-11)b	11 (11-11)c	<0.001
Knowing protection from breast cancer	0 (0-4.25)a	12 (10-12)b	12 (12-12)c	<0.001
Knowing BSE, clinical breast examination and mammography	0 (0-2)a	11 (9-13)b	13 (12-13)c	<0.001
Knowing how to perform BSE	0 (0-0)a	13 (10.75-16)b	14 (12-16)c	<0.001

*Friedman Analysis was used.

a, b, c; There are differences between analysis including different letters.

M: Median; Q1: 25. percentile; Q3: 75. percentile

Table 3. Distribution of women according to median scores on knowing early diagnostic symptoms, prevention and early diagnosis methods of cervical cancer at the initial, third and final visits (n=153)

	Pre-training Initial Visit (pre test)	Post-Training Third Visit (control test)	Post-Training Final Visit (last test)	
	M (Q1-Q3)	M (Q1-Q3)	M (Q1-Q3)	p
Knowing symptoms of cervical cancer	0 (0-0)a	5 (3-7)b	7 (6-7)c	<0.001
Knowing protection from cervical cancer	0 (0-0.25)a	4 (3-5)b	5 (4-5)c	<0.001
Knowing early diagnostic methods of cervical cancer	0 (0-1)a	10 (8-11.25)b	12 (10-12)c	<0.001

*Friedman Analysis was used.
^{a, b, c}: There are differences between analysis including different letters.
M: Median; Q1: 25. percentile; Q3: 75. percentile

Table 4. Distribution of women according to obtaining Pap smear and breast self-examination (n=153)

	First visit Pre-training	Third visit Post-training	Last visit Post-training	
	Yes n (%)	Yes n (%)	Yes n (%)	p
Pap smear	-	93 (60.8)	129 (84.3)	<0.001
Performing breast self examination (BSE)	-	93 (60.8)	129 (84.3)	<0.001

Mc Nemar analysis

media, ensuring transfer of accurate information. It is also emphasized that nurses should actively participate in the organization of programs on informing women about cancer and protective measures, and that these trained women should spread this knowledge to the entire community (13, 20-22, 29, 36, 37, 40, 41).

Based on the finding that women received information on breast and cervical cancer mainly from the media, it may be suggested that continuous reminder education seminars should be organized on breast and cervical cancer by using the media.

In this study, it was found that women did not know the signs, early diagnosis of methods, and protection from breast and cervical cancer, and that training with home visits increased their level of knowledge. The differences between median first, third and last visit scores on breast cancer information were found to be statistically significant ($p < 0.001$). The significant increase in knowledge on breast cancer with training as compared to pre-training period confirms the hypothesis "1-Home follow-up and education of women influence the level of knowledge on breast cancer."

In several studies, the rate of participation in breast cancer early detection and screening programs was determined to be higher in informed women as compared to women with no knowledge (13, 21, 42-45). In this study, the rate of BSE performance increased to 84.3% in the post-training visit (Table 4). Güçlü and Tabak (46) identified significant increase with training in their study on the impact of health education, as well as improvement of women's knowledge and awareness on breast cancer and breast self-examination. Gölbaşı et al. (16) reported that while only 4.3% of women performed regular BSE prior to training, this rate increased to 51.6% after education. In the study of Parlar and friends, a significant increase in knowledge on breast

cancer and BSE behavior was identified following BSE-oriented training programs (47).

Although the results were compatible with each other, the knowledge level and BSE performance rates were higher in this study. The reasons for the difference may be due to obtaining knowledge on breast cancer, taking their level of cooperation into consideration in home visits, providing education at their own environment, and giving advice over the telephone when required. The significant increase in BSE performance with training as compared to pre-training period confirms the hypothesis "3- Home follow-up and education influence women's BSE performance status."

The positive changes in the knowledge level with home monitoring and education on breast cancer and early diagnosis indicate that women were positively affected by follow-up at home. Therefore, follow-up visits at home can be interpreted as a requirement for popularization of BSE, an extremely important breast cancer early detection method, which is simple, economical and does not require any tools. It is also known that 80% of women find a lump in their breast by themselves first, which can be regarded as a supporting finding for BSE (42, 48).

The surveyed women were assessed on their level of knowledge on cervix cancer and early diagnosis methods with a pre-test and then the education was implemented. After the training, manuals were given and regular home visits were carried out for 6 months. After training, their improvement was examined with control and final tests. It was determined that median information scores on symptoms, prevention and early diagnosis methods for cervix cancer and Pap smear increased after the education. The differences between median first, third and last visit scores were found to be statistically significant ($p < 0.001$) (Table 3). Significantly, higher scores obtained after the training on

cervical cancer as compared to pre-training levels confirm the hypothesis “2-Home follow-up and education of women influence the level of knowledge about cervical cancer”.

Yücel (49) identified a significant difference on women’s knowledge related to cervical cancer before and after training. In the same study, women with high knowledge scores were found to obtain Pap smear more. Akyüz et al. (50) indicated that the rate of those undertaking early diagnostic tests is higher in women who have information on cervical cancer and Pap smear. The same study suggested that education of women about early detection and screening would be useful in participation of women in early diagnosis and screening methods (50). In the study by Temel (51), women were informed about cervical cancer and Pap test before being asked “Would you like a Pap test?”. About half of the women expressed a desire to have the test indicating that it is important to make every effort in this regard. Nevertheless, it is thought that a change in the entire population can only be achieved with continuous and multilayered efforts.

In this study, pap smear rate was found to be 84.3% after women’s education by home visits (Table 4). Kaya (52) identified that 36.3% of women receiving information about cervical cancer received pap smear, and that 81% of women who did not take information about cervical cancer did not have pap smear test. Training of women has a positive influence on obtaining a pap smear test.

Women’s behavior on pap smear is related to knowledge on cervical cancer and pap smear, in addition to psychosocial and cultural factors (24, 30). Nurses’ reaching out to women is easier than other occupational groups, especially in women’s home environment, where training is thought to be more effective. The importance of cervical cancer and Pap smear tests, which are being perceived as private issues, can be discussed and women can address questions more comfortably in their home environment. The Organization for Cervical Cancer Prevention also stated that all health workers should provide training on the prevention of cervical cancer where ever and whenever women are available (27).

The high rates of knowledge after nursing interventions is an expected result, as it demonstrates the effectiveness of nursing interventions (home monitoring, training, telephone reminders, booklets, use of calendar reminders). The reasons for obtaining better results in this study may include giving the training at the home environment, constantly reminding information with home visits, making regular home visits during six months, having feedback, using reminder calendars, distributing training manuals, and having women practice BSE on breast models and themselves.

The results of the study can be summarized as follows:

Women’s knowledge level median scores on breast and cervical cancer have increased after home visits and health education, and the difference between the scores were significant.

The following recommendations were developed based on study results:

- It is suggested that
- Planned home visits where women feel most comfortable; due to reasons such as fear from breast and cervical cancer, igno-

rance, hesitation to ask questions outside the home environment, and shame should be performed,

- Calendar reminders that constantly remind women of their breast examination should be used and this calendar should be controlled as part of the regular home visits,
- Women need to be educated at an earlier age so that BSE will become a habit. Planned training should be given in a home environment for this purpose,
- The results of this study can be used as a model, and similar studies can be performed in different societies and different cultures to evaluate the impact of home visits on women’s knowledge of breast and cervical cancer.

Ethics Committee Approval: Ethics committee approval was received for this study.

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

Peer-review: Externally peer-reviewed.

Author Contributions: Design - R.K., İ.A.A.; Data Collection and/or Processing - R.K., İ.A.A.; Analysis and/or Interpretation - R.K., İ.A.A.; Literature Search - R.K., İ.A.A.; Writing Manuscript - R.K., İ.A.A.

Acknowledgements: We thank all participants who agreed to participate in the study.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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