

Use of Repeated Telephone Reminder Based Training to Improve Participation of Breast Cancer Screenings Behaviors

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Abstract

Background: This research aims to evaluate the effect of repeated reminder-supported education on the use of breast cancer early diagnosis methods. Breast cancer early diagnosis methods are known worldwide, but screening behavior is not at the desired level.

Materials and Methods: The semi-experimental study was completed with 153 women. Women were divided into three groups after training on early diagnosis methods. The first group was reminded by phone every month, and the second group was intermittent. The third group was not reminded and all women were re-interviewed in both the sixth month and the first year.

Results: There was a significant increase in the number of women using early diagnosis methods in both regular and intermittent reminders. In both groups of reminders, an increase in the application to mammography was increased. It was determined that there was a significant change in the scale scores of the Champion health belief model in both regular and intermittent reminders, and the level after training remained constant in the non-reminded group.

Conclusion: Even for one-year, intermittent reminder does not seem to be partially effective in the use of early diagnostic methods, and regular reminder has a positive effect. In this context, it is recommended that products containing regular reminders are needed for the management of similar problems of the society and the use of these products is extended.

Keywords: Breast cancer; Early diagnosis; Reminder; Telephone; Tele-health

Introduction

Although the incidence of breast cancer is higher in developed countries, the mortality rate from developing countries is higher (324,000 deaths) in developing countries (World Cancer Research Fund, 2018). This situation is thought to be caused by difficulties in developing countries' access to breast cancer diagnosis, screening and treatment services. Early stage treatment and good prognosis options of breast cancer gain importance in early diagnosis studies. Breast cancer can be diagnosed early using mammography, clinical breast examination, and self-breast examination methods. In addition, breast cancer is one of the types of cancer that offers successful results when diagnosed early. Early diagnosis methods; prolonging life, increasing the quality of life, contributing to the reduction of mortality and morbidity [1].

Women who do not have any symptoms in the breast of the American Cancer Association and the American Cancer Institute; he recommends having mammography every year after the age of 40. Also; recommends a clinical breast examination (KMM) for women to be applied every 20 years between the ages of 20-40 and once a year after the age of 40, by healthcare professionals trained in this field. The health ministry, unlike women between 20 years-40 years of age in Turkey; monthly

breast examination, clinical breast examination every two years; between the ages of 40-69, a monthly self-breast examination, a clinical breast examination once a year, and a mammography every two years [2].

Informed about their diagnosis in early October in Turkey is made by each hospital located in addition to their awareness posters and information brochures work. Researches also provide comparison data of similar methods with control groups. According to the results of the research, the desired implementation scheme of early diagnosis methods was not achieved in our country as in many countries. Informing women about early diagnosis is provided by verbal, brochure or social messages. As a result of all these methods, it is seen that the rate of knowledge about early diagnosis methods in our country is 50% and regular application cases are 20%. Failure to provide the desired level of early diagnosis leads to delay, treatment options and negative consequences. Research results point out

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that new methods and behavioral changes are needed to raise awareness of breast cancer [3].

This study aims to identify the effect of reminder aided education on women’s health beliefs and behaviors concerning breast cancer screenings. In recent years, the importance of individual cancer screening behaviors for early diagnosis has been understood. For this reason, this method was preferred in order to evaluate both the effect of reminder on this situation and whether there is a change in the frequency of reminder [4].

Materials and Methods

The study was conducted using the three groups, pre-test/post-test, and experimental study designs. The population of the study consisted of 3859 women aged 40 and over, registered in three Family Health Centers (FHC) in three different cities in Turkey. The sample size was calculated to be 121 using the statistical power analysis (power 90%, alpha 0.05, prevalence 50%). Considering the fact that some women are thought to leave the study during the follow-up, 10 women were kept in reserve for each group and the sample was set as 153. During the study, none of the women withdrew from the study. Inclusion criteria were defined as follows: being aged 40 years and above, and being literate. Having history of breast cancer and take any training about breast cancer early diagnosis methods were considered exclusion criteria in this research [5].

Data collection tools

Data were collected using a questionnaire forms, and the Champion’s Health Belief Model Scale for Breast Cancer Screening between October 2017 to October 2018 [6].

Questionnaire form which was designed by the researcher consists of two parts after reviewing the literature. The first part consists of 6 questions, including age, education level, income status and occupation, which contain the introductory features of women. The second part consists of 10 questions including breast cancer application frequencies and correct application methods [7].

Champion’s Health Belief Model Scale for Breast Cancer Screening scale was developed by Champion based on the “Health Belief Model” and has been used to evaluate women’s health beliefs that may affect early diagnosis behavior. The Champion’s Health Belief Model Scale for Breast Cancer Screening was adapted to Turkish through three different studies in Turkey. The current study used the version adapted by Gozum and Aydin. Higher scores indicated increased susceptibility and seriousness as well as increased perceived benefits, perceived barriers, perceived self-efficacy, and health motivation. There was no total score for the scale; the scores of each subscale were taken into consideration and cronbach alpha value ranges from 0.69 to 0.83. In this research, Cronbach alphas were 0.71 for susceptibility, 0.72 for seriousness, 0.78 for health motivation, 0.77 for BSE benefits, 0.55 for BSE barriers, 0.74 for BSE self-efficacy, 0.78 for mammography benefits, and 0.83 for mammography barriers [8].

Interventions

Women in research were contacted through the phone numbers

registered in the relevant FHCs for interview. The researcher met all women by gathering them in FCH. The researchers conducted a suitability scan and explained the purpose of the study than did interview. This interview was held at FHCs. Baseline questionnaire form and the scale was applied. The data were collected by interviewing women face to face [9].

Training

In the same met of baseline, training for breast cancer and screenings were provided by the researchers who had educator or trainer certificates for breast cancer. During the presentations, the women were trained about the causes of breast cancer, risk factors, symptoms, prevention, and early diagnosis methods. The content of presentation was created with cognitive, affective and psychomotor behavior goals regarding. The animations used in the presentation of the information were expected to be created according to their being informative, supportive, summative and evaluative. Each group was trained separately and the training took 35 minutes-45 minutes [10].

Reminder

Each woman was called by the researcher based on the frequency of the interviews in the groups they were involved in. In this meeting, women were questioned about applying their early diagnosis methods and were reminded for the application. The reminder includes questioning the time of mammography and the last application of BSE. The frequency of reminders was important to enable them to gain health behavior. The reason for this is to be able to detect behavior change according to the frequency of reminders. The women in each training group were divided into different groups according to their frequency of reminder. Reminders were made to the first group every month and to the second group intermittently (every two months), and the third group was not reminded. All phone calls were successful and the connection rate was 100% (Figure 1).

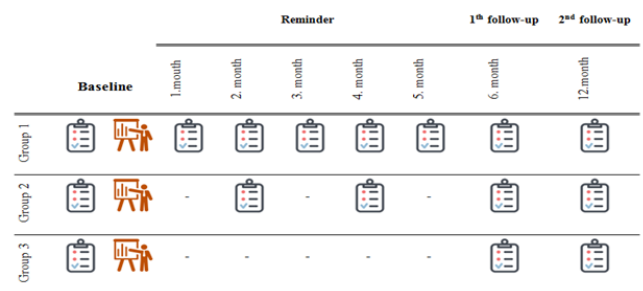


Figure 1. Measurement application scheme.

Six months after the first meeting with all women, they were again contacted by phone. In this interview, the second part of the introductory features form and the scale were repeated. After this stage, no reminders were made and a year after the first meeting, all women were re-accessed and the second part of the early introductory features form and the scale were reapplied [11].

Statistical analysis

The study data were processed using the SPSS (Statistical Package for Social Sciences) 20.0. Data assessment was

conducted using percentages, Pearson Chi-Square test, One-Way Analysis of Variance, and t test to determine whether or not data followed a normal distribution. Results were considered significant at $p < 0.05$ and confidence interval was set at 95%. In addition, the comparison of the mean CHBM-T scores before and after the training was analyzed by paired samples test. Statistical significance was accepted as $p < 0.05$ [12].

Results

Women are on average 56.2 ± 9.9 (min: 40, max: 82) years old. 90.8% of the women in the study are married, 70.6% are primary school graduates and 96.8% are housewives. 70.2% of 37.3% of women who knew about BSE stated that they obtained this information from the print media. It was determined that the implementation behaviors of women were not regular and 37.3% of them practiced. It was determined that the application rates of CBE were 13.1%, and mammography was 14.4%. It was found that women in the study did not practice regularly and did not know the frequency of regular application. It was determined that there was no difference between the descriptive characteristics, age, education level, breast cancer early diagnosis methods knowledge levels and the sub-dimensions of the scale used among the pre-intervention research groups (Table 1).

It was found that breast cancer application status was 19.2% BSE in the first measurement and those who performed regular application were 9.6%. It was determined that the ages of women who performed BSE ranged between 40-44 and had

a level of education above secondary school. Women with knowledge of early diagnosis methods stated that they obtained this information from the print media and had problems in translating the information into practice [13].

In the first group, it is seen that there is a significant change in all Breast Cancer Early Diagnosis Methods (BCEDM) after regular reminder ($p < 0.0001$). It was found that intermittent reminder was not as effective as BSEDM regular reminder in the second group, but the change was significant compared to the first follow-up ($p < 0.05$). In the third group, compared to the first measurement, the use of early diagnosis method increased in number but the change was not significant ($p > 0.05$, Table 2).

It is seen that the subscale means scores of the champion health belief model scale have different mean scores between groups. It was determined that all sub-dimensions of the first group mean scores except for the perception of disability were higher than the other groups and this height was significant ($p < 0.001$). Except for the third group, the change between the last follow-up and the first follow-up was seen to be significant in all sub-dimensions ($p < 0.05$) (Table 3).

It was determined that there was a higher difference in severity in the first group and self-efficacy sub-dimension in the second group than in the others. In the third group, it was seen that there was no significant difference for all sub-dimensions, but there was a high change in the self-efficacy sub-dimension in the last follow-up.

Table 1: Characterization and diagnostic pathology faced by subjects.

Characteristic	Group 1 (n=52)	Group 2 (n=51)	Group 3 (n=50)	p value
Age (years)*	58.8 (10.1)	52.3 (6.9)	57.8 (11.1)	0.82
Education level**				
Primary school	37 (71.2)	37 (72.5)	34 (68.0)	35
Secondary school and up	15 (28.8)	14 (27.5)	16 (32.0)	35
BSE knowledge**				
Know	19 (36.5)	19 (37.3)	19 (38.0)	35
Not know	33 (63.5)	32 (62.7)	31 (62.0)	35
Mammography knowledge**				
Know	11 (21.2)	11 (21.6)	11 (22.0)	35
Not know	41 (78.8)	40 (78.4)	39 (78.0)	35
CSE Knowledge**				
Know	7 (13.5)	7 (13.7)	7 (13.7)	35
Not know	45 (86.5)	44 (86.3)	43 (86.0)	35
Baseline CHBM subgroup scale*				
Susceptibility	7.1 ± 1.8	6.8 ± 2.4	6.9 ± 2.7	35
Severity	20.9 ± 5.0	21.2 ± 7.0	21.3 ± 4.4	35
Benefits	14.8 ± 1.7	14.7 ± 3.0	14.8 ± 2.2	35
Barriers	29.0 ± 4.9	29.5 ± 6.0	29.5 ± 3.9	35
Self-efficacy	31.0 ± 5.7	31.3 ± 7.9	31.1 ± 5.0	35
Health motivation	19.2 ± 2.6	19.0 ± 4.2	19.3 ± 2.6	35

Table 2. Status of women to apply early diagnosis methods according to the follow-up process; Note: * n (%)

	Baseline	1 st follow-up	2 nd follow-up	p value
Group 1*				
BSE	19 (36.5)	50 (96.1)	50 (96.1)	<000.1
CSE	7 (13.5)	31 (50.6)	36 (70.5)	<000.1
Mammography	11 (21.2)	49 (94.2)	51 (98.0)	<000.1
Group 2*				
BSE	19 (37.3)	28 (54.9)	34 (66.6)	0.001
CSE	7 (13.7)	10 (19.6)	14 (27.4)	0.02
Mammography	11 (21.6)	12 (23.5)	22 (43.1)	0.01
Group 3*				
BSE	19 (38.0)	25 (50.0)	22 (44.0)	0.06
CSE	7 (13.7)	10 (20.0)	10 (20.0)	0.1
Mammography	11 (22.0)	14 (28.0)	11 (22.0)	0.05
p value				
BSE	0.98	0.001	<000.1	
CSE	0.89	0.01	<000.1	-
Mammography	0.78	0.01	<000.1	

Table 3. Comparison of CHBM-T scale sub-dimensions according to follow-up process, Note: *: Mean (SD); *: Last follow up-baseline differences**

Subgroup scale	Possible range	Baseline	1 th follow-up	2 nd follow-up	Difference**	p value
Group 1*						
Susceptibility	Mar-15	7.1 ± 1.8	11.9 ± 2.2	14.4 ± 2.1	7.3	0.001
Severity	Jun-30	20.9 ± 5.0	25.1 ± 6.3	29.1 ± 6.2	8.2	<0.0001
Benefits	Apr-20	14.8 ± 1.7	18.8 ± 2.1	20.0 ± 0.0	5.2	<0.0001
Barriers	Aug-40	29.0 ± 4.9	29.3 ± 4.2	19.1 ± 4.4	5.1↓	<0.0001
Self-efficacy	Oct-50	31.0 ± 5.7	47.0 ± 4.3	49.3 ± 5.7	4.1	<0.0001
Health motivation	May-25	19.2 ± 2.6	29.3 ± 3.0	29.7 ± 3.5	5.2	<0.0001
Group 2*						
Susceptibility	Mar-15	6.8 ± 2.4	8.4 ± 1.9	9.1±3.1	1.1	0.002
Severity	Jun-30	21.2 ± 7.0	27.3 ± 5.7	23.4 ± 7.1	1.2	0.002
Benefits	Apr-20	14.7 ± 3.0	17.9 ± 1.4	18.9 ± 1.5	2.3	0.04
Barriers	Aug-40	29.5 ± 6.0	21.1 ± 4.2	30.5 ± 5.2	1.1	0.03
Self-efficacy	Oct-50	31.3 ± 7.9	42.1 ± 4.6	41.7 ± 5.1	5.2	0.002
Health motivation	May-25	19.0 ± 4.2	24.8 ± 2.4	24.4 ± 3.2	2.7	0.007
Group 3*						
Susceptibility	Mar-15	6.9 ± 2.7	7.9 ± 2.6	6.6 ± 2.7	0.3↓	0.21
Severity	Jun-30	21.3 ± 4.4	27.2 ± 5.8	21.5 ± 5.1	0.1	0.06
Benefits	Apr-20	14.8 ± 2.2	16.4 ± 2.7	16.5 ± 3.6	0.8	0.08
Barriers	Aug-40	29.5 ± 3.9	30.0 ± 3.2	31.6 ± 5.0	1.1	0.53
Self-efficacy	Oct-50	31.1 ± 5.0	41.2 ± 5.8	37.6 ± 5.5	3.3	0.72
Health motivation	May-25	19.3 ± 2.6	20.5 ± 2.0	20.6 ± 2.7	0.6	0.81

Discussion

Although programs that encourage the use of early diagnosis methods vary between countries, it is seen that their continuity cannot be achieved. In our country, as in the whole world, there are similar messages in every October in hospitals, billboards, radio and television to draw attention to the subject. In this study, the effect of reminding women on changing the behaviors of breast cancer early diagnosis methods was examined comparatively. In the first measurement, the groups were similar in terms of age, education level, breast cancer early diagnosis methods knowledge levels and champion health belief model sub-dimensions [14].

In the group with regular reminders, a significant increase was found in the rates of using the diagnosis of early diagnosis methods. It shows that the reminders made in the first six months are effective in creating the behavior change and this behavior is maintained for six months. It was determined that the rate of use of early diagnosis methods was lower in the second group that was given intermittent reminders compared to the first group. This indicates that regular reminder is effective in lasting change. In the group without reminder, it was found that there was no change in the use of all early diagnosis methods even six months after the training. In our country, there are studies evaluating the effectiveness of education on early diagnosis methods and expressing a significant change. Since there was no early follow-up after the training, it was thought that no data on behavioral changes were found in these individuals. Our research provides new information regarding the frequency and time of reminders in gaining behavior change.

Follow-up in the first year after the reminder was carried out to determine the continuity of the behavior change. In this context, it was observed that regular and intermittent reminding was improved according to the group without reminder. It has been determined that the change in the application behavior of women who have been subjected to adjustment at the end of one year, but intermittent reminder behaviors are similar to the sixth month. In the study, which was reminded of mammography appointments on the phone, it was shown that women had increased rates of mammography. In the other study, which provides support to remind the level of knowledge in early diagnosis methods, it is pointed out that reminding is an effective method in increasing the level of knowledge. Since there is no study examining the interval or number of reminders, the data in this scope are limited to the research data. Research results suggest that education is an effective method to increase the knowledge about breast cancer early diagnosis methods. He advocates that reminder should be used in situations where changes are required both at the level of knowledge and at the level of implementation.

It was determined that the subscales of the champion health belief model scale had different mean scores depending on the frequency of reminder, and this difference was significant. It was determined that there was a decrease in perception of disability in the regular recall group and an increase in other sub-dimensions and these differences were highly significant. In the interim reminder group, there was a significant increase

in all sub-dimensions. In the group without reminder, it was determined that the sensitivity perception decreased and other sub-dimension mean scores increased but the difference was not significant. In a study evaluating with the same measurement tool before and after the training, it was stated that the mean scores after training increased significantly. In the same study, it was found that the scale mean scores after the measurement were similar to the group mean scores without reminders. Since the study was both an education and a reminder attempt, it was accepted that the difference was higher. In a study with a sample of different countries where regular interviews were conducted, it was found that the scale mean scores after the interviews were significantly higher than the others. It was pointed out that monthly meetings are significantly effective in increasing the level of knowledge. It is seen that the methods that are effective in increasing the level of knowledge about early diagnosis methods are insufficient in creating behavior change. It was concluded that intermittent or regular reminder could be effective in providing this change. It was determined that perception of disability decreased and other sub-dimension scores increased in the group that was reminded regularly. It was determined that the difference in the first year was at the highest severity sub-dimension and the sensitivity sub-dimension was second. In a study followed up for seven months, it was found that sensitivity and disability subscale scores decreased and all other subscale scores increased. It was stated that this change was due to home monitoring, and planned home visits and telephone reminding were effective. Different from our research, it is thought that the sensitivity result obtained was an increase that was desired to increase at the end of the first year. The fact that the lower mean size of the obstacles for early diagnosis methods is similar, while the difference after the second follow-up is similar to the intermittent group and the higher level of change obtained in the regular group makes us think that it is effective in providing the desired behavioral change. It was determined that the self-efficacy sub-dimension mean scores made a high difference in the intermittent reminder group, followed by health motivation. In a study evaluated with the same measurement tool before and after the training, it was found that there was a significant increase in sensitivity and health motivation. It is seen that all the groups of the research are similar to the result of the study mentioned after the training. After the intermittent reminder, it suggests that this change also creates a significant change for self-efficacy and improves the person's early diagnosis and behavior. In addition, it is seen that there is an increase in the self-efficacy sub-dimension score at the end of the first year in the non-reminder group. The fact that this increase is not significant suggests that self-efficacy is not achieved in gaining behavioral change [15].

Conclusion

In conclusion, depending on the frequency of reminders, the behaviors of using breast cancer early diagnosis methods change in the first year. It was determined that there were changes in the first year follow-up of the groups with similar mean scores before the training. It was determined that this change was mostly in the group that was reminded at regular intervals, the change was lower in the group that was reminded intermittently,

but it was significant compared to the first follow-up. It was determined that there was no difference in the use of early diagnosis methods in the sixth month and the first year only in the training group. It is suggested that education is not sufficient for application-based problems aiming to gain behavior change such as early diagnosis, and the desired result can be achieved with reminder-based interventions.

Recommendations

It is recommended that the information to be given about using early diagnosis methods or behavior in the community should be supported with post-training reminder. Utilizing technological products for reminder planning and developing more systemic products may be a more permanent solution in the planning of such research, as this will allow the institutional use of reminder.

Financial Disclosure

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Conflict of Interest

The author would like to thank all the participants in this study.

Ethical Approval

Before the implementation of the study, the ethics committee approval and written permission from the hospital were obtained from the Karadeniz Technical University Faculty of Medicine Ethical Council on 04.12.2015 (No. 636). In collecting the data, the researcher informed the patients about the purpose, method and scope of the scientific research, and their consent was obtained. Necessary permissions were taken for using this scale.

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