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A Brief Intervention Designed to Increase Breast Cancer Self-Screening

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Abstract

Purpose—To assess the efficacy of an intervention designed to increase appropriate use of breast self-examination (BSE).

Method—Two-armed randomized clinical trial of cancer control interventions in women comparing a BSE intervention program to dietary intervention, which served as the control group. The study was conducted at a large Health Maintenance Organization (HMO) in Portland, Oregon. Participants were 616 female HMO members, aged 40–70 years. The intervention consisted of a 30–45 minute individual counseling session featuring BSE instruction, training and practice with silicon models, identification of barriers to BSE, and problem-solving. This intervention was followed by two brief follow-up telephone calls. The study outcome measure was self-reported BSE practice, including duration, frequency, and the specific elements of exam.

Results—The study had a 90% response rate. At one-year follow-up Chi square analyses showed that significantly more individuals in the BSE intervention (59%) reported performing adequate BSE than did those in the control group (12.2%, $p < .001$).

Conclusions—This brief intervention was successful in encouraging women to perform adequate BSE. While the role of BSE in patient care remains controversial, these results show that even brief intervention programs can be effective at encouraging self-screening for cancer. This intervention could easily be modified to target other screening practices (e.g., skin or testicular cancer screening) shown to be associated with reduced cancer morbidity and mortality.

Keywords

Research; intervention testing; randomized trial; behavior change; medical self-care; women

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Purpose

The role of breast self examination (BSE) in the early detection of breast cancer remains controversial. While some studies have found that patient training in the use of BSE does not reduce mortality rates for women who are also receiving regular mammography screening, (Hacksaw & Paul, 2003) other studies indicate a benefit for regular practice of BSE. The Breast Health Global Initiative has included BSE in its recommendations for early detection in countries with only basic resources (Anderson et al., 2006).

This study was designed to test the hypothesis that a simple and practical intervention program would significantly increase the appropriate use of BSE in a population of middle-aged women. The intervention strategy tested in this study could be easily modified for other self-examination objectives. Regardless of the ongoing debate about the value of BSE, self-screening can play an important role in the early diagnosis and treatment of many conditions, including melanoma (Weinstock, 2006) and testicular cancer, as thus warrants further study (Ward et al., 2005).

Methods

Design

This study stems from a two-armed randomized clinical trial testing two interventions to help women control and prevent cancer. One of the interventions involved dietary change, including increase fruits and vegetables and decreasing fats. The other intervention tested the effects of a Breast Self Exam counseling program. For the current study, half of the participants received a BSE intervention. A control group received a dietary change intervention with no mention of BSE. This design simultaneously tested the efficacy of these interventions using each as a control for the other. The recruitment, screening, consent, and follow-up data collection methods were identical for both groups. This report focuses exclusively on the BSE intervention. Participants were assessed pre-randomization and at 12 months post randomization. Data collection was conducted by staff members blind to treatment assignment. The results of the dietary change intervention are published elsewhere.³⁰

Sample

This study was conducted in Kaiser Permanente Northwest, a non-profit, group-practice Health Maintenance Organization (HMO) in Portland, Oregon. A randomly selected sample of women HMO members aged 40 to 70 years, with negative screening mammograms in the previous two months (n = 5599), was sent a recruitment letter asking the recipients to indicate their interest by return mail or telephone. Eligibility criteria included a total cholesterol > 200 mg/dL and willingness to consider regularly practicing BSE and change dietary habits. As a pilot study showed low baseline rates of BSE in the target population, potential participants were not screened based on their BSE habits. Participants were not charged for services and did not receive compensation for participation.

Women initially found to be eligible were invited to participate in two screening visits. Three hundred of the 1548 women eligible for the first screening visit were found to be ineligible, 173 declined participation, 320 did not attend the session, and 30 did not complete a required food recall, which was required for possible randomization to the dietary change arm. Of the remaining 725 women eligible for the second screening visit, 109 did not attend the session, and 616 participants were randomly assigned to the study conditions.

Measures

The primary outcome was adequate BSE practice which, based on accepted medical recommendations,³¹ was defined as performing BSE at least once per month, with a duration of 5 minutes or longer. Self-reported BSE practice not meeting these criteria was not considered adequate.

Potential participants completed questionnaires and provided a fasting blood sample at the first screening visit. Questionnaire items included frequency of BSE (“several times a month,” “once a month,” “every 2–3 months,” “every 6 months,” and “not at all”), duration of examination (“less than 5 minutes,” “5–10 minutes,” “10–15 minutes,” and “more than 15 minutes”), and performance of exam elements (visual inspection, placing hands above head, placing hands on hips, palpation, axillae, follow a set routine). Participants were asked to rate their likelihood of developing breast cancer (“a lot greater,” “somewhat greater,” “about the same,” “somewhat less,” and “a lot less than other women”). This measure is commonly used in breast cancer research as a proxy for feelings of vulnerability to the disease scale. Trial participants (n = 616) were immediately informed of their assignment and provided the first intervention session.

Intervention

The intervention consisted of a 30–45 minute individual BSE-counseling session, along with two follow-up telephone calls one and two months following randomization. Counseling session goals were to encourage participants to practice adequate BSE at least monthly, with duration of least 5 minutes. Instruction included a 9-minute videotape³² demonstrating the recommended self-examination technique and supervised practice with silicone models. Participants were encouraged to discuss potential barriers to their regular practice of self examination, with counselors helping participants to develop individually-tailored problem-solving strategies for each barrier. At least half of the counseling sessions focused on this problem-solving work, as many women did not know what to do when they found a suspicious lump, which presented a significant barrier. To address this issue, participants were provided with specific instructions on how to contact the HMO’s breast health clinic, where they could receive professional advice about suspicious lumps and other symptoms.

Participants were given information on the warning signs of breast cancer and calendar stickers and monthly report sheets on which to record the size, shape, and locations of lumps they might find. If participants reported low confidence in their ability to detect lumps, a second appointment was offered with a nurse for a clinical breast exam and further personalized training. Fewer than 10% of participants requested a second appointment. At the end of the counseling session, participants wrote their own personal plan for practicing self-examination. The counselor and participants then scheduled two follow-up telephone calls to check on participant progress at one and two months, prompt problem-solving to any barriers to BSE practice, and provide accountability for action plans made at the counseling session.

The format of the control condition was nearly identical. Participants attended two 45-minute individual counseling sessions and received two brief follow-up telephone calls. The counseling sessions provided participants with nutrition orientation, dietary information, and feedback on their self-reported dietary practices. Counselors helped participants formulate personal dietary goals and plan ways to achieve them. Participants received printed nutrition education materials, including recipes and hints on shopping, eating out, and snacking.

Analyses

Demographic characteristics and baseline values were analyzed through 2-way analyses of variance. For study outcomes, Chi square analyses were conducted.

Results

As shown in Table 1, the sociodemographic characteristics of participants did not differ significantly between intervention and control groups, including their baseline rates of adequate BSE ($X^2 = 0.183$, $p = .67$).

Follow-up data collection rates were high, with 88% of BSE intervention participants and 91% of the comparison group returning for 12-month data collection. Two-way analyses of variance on participant characteristics and baseline values on dependent variables did not show significant main or interaction effects of group assignment, attrition; or interaction of group assignment by attrition. We therefore conducted analyses on all participants with follow-up data ($n = 552$).

At 12-month follow-up, substantially more individuals in the BSE intervention group (59%, $n = 161/273$) reported adequate BSE practice than in the control group (12.2%, $n = 34/279$), $X^2 = 121.02$, $p < .0001$; Figure 1). There was a small but significant increase in the number of participants in the control group reporting adequate BSE practice ($z = 3.86$, $p < .05$), and a significantly larger increase in the number of participants reporting adequate BSE practice in the intervention group ($z = 13.04$, $p < .05$). Comparing participants who reported adequate BSE to those who did not, there were no significant differences by age, ethnicity, education, marital status, or a family history of breast cancer. The relationship between subjective estimation of breast cancer risk and adequate BSE practice was examined using analyses of covariance, controlling for family history of breast cancer. While the overall model failed to reach statistical significance, a trend emerged suggesting that not experiencing feelings of great risk to develop breast cancer was associated with adequate practice of BSE, while feelings of great risk to develop the disease were associated with inadequate BSE practice ($X^2 = 13.41$, $p = .06$).

Discussion

Summary

The present study tested the efficacy of a behavior change intervention of BSE instruction. The study outcome measure was adequate BSE practice, which was self-reported. Adequate BSE practice was defined according to accepted medical recommendations as performing the examination at least monthly, with a duration of five minutes or longer.³¹ At follow-up, there was a significant increase in the number of participants reporting adequate BSE practice in the intervention group. A small significant increase was also observed in the control group. The latter finding is likely the result of instrument reactivity or increased general health-awareness among study participants in both groups. The percentage of participants reporting adequate BSE practice at follow up was significantly higher in the intervention group, indicating that a brief, 30–45 minute behavioral intervention, followed by two brief telephone contacts, helped women to substantially improve adequate BSE practice.

Significance

This intervention yielded generally better results than previous interventions targeting breast self-care. For example, a large community breast-health program using a group training intervention was not found to be effective in increasing BSE.³³ Another previous BSE

intervention study compared the effectiveness of a culturally sensitive two-hour BSE education program targeting African-American women with a standard BSE program developed by the American Cancer Society. At follow-up, both groups reported improved BSE frequency and proficiency, with no differences between the two interventions.³⁴ While these results are encouraging, lack of no-treatment control conditions precludes a precise assessment of the effectiveness of the intervention.

Past studies examining the association between perceived risk of breast cancer and BSE performance have found positive associations,^{35,36} negative associations,³⁷ and no association.³⁸ In this context, our finding of a non-significant negative trend between perceived risk to breast cancer and BSE practice underscores the complexity of the relation between self-care behaviors and feelings of risk of developing breast cancer.

The results from the present study suggest that this brief intervention is a potential general model that may be used to encourage patients' participation in their own health care. This model may be used effectively to encourage self-screening for numerous other condition, including BSE, which represents an important adjuvant health-care practice.

Limitations

Our study is limited by reliance on self-report data, a concern that is hard to avoid in a self-examination study. Study participants had health insurance, so the generalizability of these results to other populations is not known. All participants in this study had recent negative results from screening mammograms, and the effect of this on the intervention is not known. Strengths of the study include the relatively large sample size, the randomized design, high follow-up rates, and the practical nature of the intervention.

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Indexing Key Words

Manuscript format	research
Research purpose	intervention testing
Study design	randomized trial
Outcome measure	behavioral
Setting	clinical/health care
Health focus	medical self care
Strategy	behavior change
Target population	adults
Target population circumstances	geographic location

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Figure 1.

Percentage of Randomized Study Participants Performing Adequate BSE

Note:

Comparison Group

At baseline: 5.4% (n=15/279). At one-year follow-up: 12.2% (n=34/279)

Intervention Group

At baseline: 6.2% (n=17/273). At one-year follow-up: 59% (n=161/273)

Table 1

Participant Demographic Characteristics at Baseline*

	BSE Intervention (n = 308)		Dietary Intervention (n = 308)	
	Mean	SD	Mean	SD
Adequate BSE Practice (%)	6.2		5.4	
Age	54.4	6.8	53.1	7.0
Weight	177.4	45.6	176.3	43.7
Ethnic Minority (%)	8.8		5.5	
Living with a Partner (%)	76.9		81.2	
Children in Household (%)	33.8		41.2	
Employed Full Time (%)	51.3		49.0	
Employed Part Time (%)	19.2		18.2	
Education Beyond High School (%)	98.4		98.4	
Education Beyond College (%)	37.3		43.2	

* There were no significant differences between the two intervention groups for any of these baseline measures ($p > 0.05$). Continuous measures were tested with t tests and dichotomous measures with χ^2 tests.