

## Effects of a telephone counseling intervention on sisters of young women with breast cancer

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### Abstract

**Objective.** Women that have a first-degree relative diagnosed with breast cancer at an early age are at increased risk of the disease, yet they often lack information about their personal risk of breast cancer and early detection measures. An intervention to provide objective risk information, reduce worries, and promote screening and healthy behaviors was developed.

**Method.** In 1999–2002, a randomized pre–post design was used to test a tailored telephone counseling intervention with a sample of 163 women whose sisters were diagnosed with breast cancer at age 50 or younger in the San Francisco Bay Area. Participants were interviewed by telephone regarding their breast cancer risk factors, perceived risk, worries, lifestyle factors, and screening behavior. A modified Gail model was used to compute an objective measure of individualized lifetime risk.

**Results.** Risk overestimates averaged 25 percentage points. The intervention was effective in reducing overestimates in women age 50 and over but not in those under 50. The intervention was effective in increasing physical activity and reinforcing the conviction to maintain good breast health, but not in decreasing worries or increasing screening.

**Conclusion.** Telephone counseling appears to be a viable tool for reducing risk overestimates and promoting healthy behaviors among sisters of women with breast cancer.

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**Keywords:** Risk; Risk factors; Health behavior; Prevention and control; Mammography; Risk reduction behavior; Health knowledge, attitudes, practice

### Introduction

Women that have a first-degree relative with breast cancer have at least a two-fold increased risk of developing the disease, and earlier age at diagnosis confers greater risk (Slattery and Kerber, 1993; Pharoah et al., 1997). Nevertheless, the sisters and daughters of women with breast cancer often lack information about their personal risk of breast cancer, risk factors, and early detection measures (Chalmers et al., 2003). Women who are aware of their heightened risk for breast cancer may overestimate their risk (Katapodi et al., 2004) yet be no more likely than average risk women to adhere to mammography guidelines (Houts et al., 1991; Taplin et al., 1990). Recent studies indicate that heightened

perceptions of breast cancer risks and moderate worries are strong predictors of breast cancer screening (Katapodi et al., 2004; Andersen et al., 2003; Gross et al., 2006). However, the relationship between perceived susceptibility and use of early detection measures is complex (Calvocoressi et al., 2004; Neise et al., 2001), and a substantial proportion of high-risk women have not had recent mammography (Sabatino et al., 2004).

Health professionals have developed interventions to motivate women at high risk to be screened. An intervention using tailored print materials to promote mammography among first-degree relatives of women with breast cancer was successful among participants age 50 and over (Bastani et al., 1999). Telephone counseling (TC) has been used to provide health information and promote cancer screening in a number of settings (Rimer et al., 1992; Miller et al., 1997; Lerman et al., 1992; King et al., 1994).

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TC is cost-effective and provides some of the personalization of face-to-face counseling, yet overcomes barriers, e.g., travel expenses, care giving responsibilities, and time off work, and is time-efficient for both counselors and recipients (Bertera and Bertera, 1981). A key function of TC is to assist women in forming a realistic perception of their breast cancer risk by providing appropriate information. Tailored TC not only focuses on their objective risk of getting breast cancer, but also the emotional content of the message (Levanthal and Cameron, 1989).

Based on this literature, a TC intervention for women at higher than average risk was designed to provide objective risk information and to counsel women on how they could potentially lower their risk by adopting healthy behaviors and increase the early detection of breast cancer by obtaining annual mammograms beginning at age 40 and clinical breast examinations (Smith et al., 2006). We hypothesized that compared to controls, women in the TC intervention would report:

**Hypothesis 1.** Perceived risk more consistent with their objective risk.

**Hypothesis 2.** Reduction in breast cancer worries.

**Hypothesis 3.** Improvement in health protective behaviors.

**Hypothesis 4.** Increased breast cancer screening.

## Methods

The intervention (Fig. 1) was based on the Health Belief Model (HBM), Self-Regulation Theory, and the Transtheoretical Model (TTM). The HBM indicates that people will take action if they believe themselves to be susceptible to what they perceive to be a serious threat to their health. The action(s) also must be perceived as feasible and efficacious (Rosenstock, 1974). Self Regulation Theory (Levanthal and Cameron, 1989; Levanthal, 1989) focuses on the reduction of feelings of anxiety that become activated in processing health relevant information in order to move from the formation of intentions to the execution of health protective behaviors.

The TTM concerns the stages of behavior change from pre-contemplation to maintenance involved in adopting a new behavior (Prochaska and DiClemente, 1982, 1983, 1984). Interventions are more effective if tailored to the stage of

change. Reinforcing positive attitudes and reducing negative attitudes facilitates movement from one stage to the next (Prochaska and DiClemente, 1983). Barriers counseling has been shown to facilitate this change process (Rimer et al., 1992).

## Study design

In 1999–2002, a randomized pre–post, intention-to-treat design was used to evaluate an intervention for sisters of women diagnosed with breast cancer at a young age (50 or younger). After eligibility was determined through a screening interview administered by the study coordinator and informed consent was obtained, the telephone pre-test occurred. After the pre-test, women were randomized to TC and received counseling by a master's level counselor (within two weeks) or to a control group. The post-test occurred 6 months later. The institutional review boards of the participating institutions approved the protocol.

A sample of 220 women that were diagnosed with breast cancer at age 50 or younger in the San Francisco Bay Area in 1994–1997 and participated in a population-based study (Bloom et al., 1998) provided the names of potentially eligible sisters (at most one sister was enrolled in the study); in one case, the next of kin provided the referral. The sisters of 35 women could not be reached, five were excluded due to prior breast cancer, and the sisters of 17 women declined to participate. Of 163 participants randomized (76% response), 80 were assigned to the intervention group (76 received the intervention) and 83 to the control group with delayed TC; 149 completed the post-test interview (91% retention) (Fig. 2).

## Measures

Breast cancer worries were measured by three items (four-point Likert scale) from Lerman et al. (1991) regarding how often in the past month a participant had thought about her own chances of getting breast cancer, and how often such thoughts had affected her mood and her ability to perform daily activities. Responses were summed to create a breast cancer worries scale.

Perceived risk of breast cancer was a comparison to other women of the same age on a five-point scale ranging from “much lower” to “much higher” (Lerman et al., 1991). Participants were also asked, “Given your family history, how would you rate your chances of getting breast cancer? For example, zero would be no chance at all; or 100%, for sure will get it” (Lipkus et al., 2000).

Health behaviors—The daily number of servings of fruits and vegetables eaten, the frequency of eating low fat foods, and the number of days per week during the past month that participants had engaged in 30 min of physical exercise were reported. At post-test, participants were also asked if they had changed their exercise pattern or their diet in the past six months.

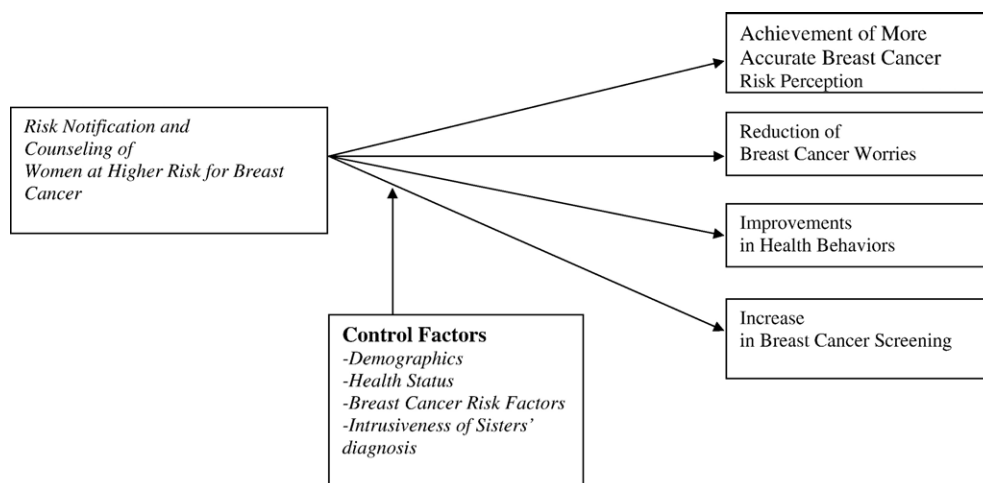


Fig. 1. Theoretical framework.

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