Increasing Mammography and Cervical Cancer Knowledge and Screening Behaviors With an Educational Program

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Purpose/Objectives: To evaluate the effectiveness of using an educational program based on self-efficacy to increase knowledge and create behavior change regarding recommended mammography and Papanicolaou (Pap) test screening guidelines.

Design: Pretest and post-test, prospective.

Setting: An urban county in northern Indiana.

Sample: 56 women who attended one of four educational programs and 47 women who responded 15 months later.

Methods: The one-hour educational programs based on self-efficacy included vicarious experiences and verbal persuasion regarding breast and cervical screening practices. Two programs were offered to local church groups as part of a health fair, and two were offered through health promotion initiatives sponsored by private businesses.

Main Research Variables: Demographics, knowledge of breast and cervical cancer, and screening behaviors.

Findings: Knowledge of risk and screening guidelines increased significantly immediately following the educational program ($p < 0.001$) and did not decrease significantly 15 months later ($p = 0.57$). Family history and history of human papillomavirus and sexually transmitted diseases were the top known risk factors for breast and cervical cancers, respectively. Participant-reported rates of screening behaviors increased 15 months later for mammography (100%) and Pap test (84%).

Conclusions: Educational interventions based on self-efficacy increased knowledge of breast and cervical health and helped increase the rate of mammography and Pap tests.

Implications for Nursing: Preparing women with strategies to complete a mammogram and Pap test is an important approach to enhancing self-efficacy and increasing screening behaviors.

Women in the United States have more than a one in three lifetime risk of developing cancer (American Cancer Society [ACS], 2011b). For breast cancer, a woman's risk is closely linked to a variety of modifiable and nonmodifiable factors such as age, race or ethnicity, family history, postmenopausal obesity, physical inactivity, and alcohol consumption (ACS, 2011a). For cervical cancer, risk is closely linked to infection with certain types of human papillomavirus (HPV) and to sexual practices (ACS, 2011b). However, research has indicated that knowledge of risk factors (Pearlman, Clark, Rakowski, & Ehrich, 1999) and screening practices for breast (George, 2000; Grindel, Brown, Caplan, & Blumenthal, 2004; Hall, Hall, Pfriemer, Wimberley, & Jones, 2007; Han, Lee, Kim, & Kim, 2009; Pearlman et al., 1999; Steven et al., 2004) and cervical cancer (Centers for Disease Control and Prevention [CDC], 2009; Lee, Fogg, & Menon, 2008; Pearlman et al., 1999; Steven et al., 2004) is low in women. Educational interventions designed to increase a woman's knowledge about cancer risk and strategies to increase screening practices for early detection are vital. Therefore, the purpose of the current study was to evaluate the impact of using an educational program based on self-efficacy to increase knowledge and create behavior change regarding recommended mammography and Papanicolaou (Pap) test screening guidelines.

Studies on the etiology of breast cancer have failed to find methods of primary prevention suitable for use in the general population (Lawson, Henson, Bobo, & Kaeser, 2000). Early detection or screening through mammography offers women the best chance for survival in the absence of established primary prevention strategies (ACS, 2011a; Valdez, Banerjee, Ackerson, & Fernandez, 2002). For cervical cancer, primary prevention strategies are available for the general population. Incidence and mortality have decreased substantially from the 1950s due, in part, to the widespread use of the Pap test (ACS, 2011b; Lawson et al., 2000). The Pap test is perhaps the most successful screening test developed to detect cervical cancer (Markowitz et al., 2007). In addition, an estimated 70% of cervical cancers can be prevented with the use of the HPV vaccine (Saraiya et al., 2007). Lack of knowledge about primary and secondary prevention strategies remains a barrier to following screening guidelines.

In addition, comprehensive screening for both breast and cervical cancer is uncommon (Nash, Chan, Horowitz, & Vlahov, 2007; Pearlman et al., 1999). Women may engage in one screening behavior, but are not as likely to engage in both behaviors. According to the National Center for Health Statistics (2010), 53% of

women aged 40 and older reported getting a mammogram in the past year, 67% of women aged 40 and older reported having a mammogram in the past two years, and 78% of women aged 18 and older reported having a Pap test in the past three years (National Center for Health Statistics, 2010). Research on what influences women to practice those screening guidelines has yielded a variety of findings.

Knowledge of cancer risk factors has been linked to increased screening behaviors for breast and cervical diseases in multiple studies (Hall et al., 2007; Lagerlund, Hedin, Sparen, Thurfjell, & Lambe, 2000; Nelson, Moser, Gaffey, & Waldron, 2009; Pearlman et al. 1999; Rutledge, Barsevick, Knobf, & Bookbinder, 2001; Steven et al., 2004; Valdez et al., 2002). Presenting information in a faith-based education program also led to increased awareness of early detection strategies for breast cancer (Darnell, Chang, & Calhoun, 2006). In contrast, knowledge of breast cancer risk did not influence mammogram use in a multiracial, multiethnic sample of women aged 65 and older by Thomas, Fox, Leake, and Roetzheim (1996). Similarly, others have found that mammography screening behaviors among African American women did not increase following a breast health educational session that included cancer risk factors (Grindel et al., 2004; Kim & Sarna, 2004). In a residential group of low-income women, perceived risk was not significantly associated with mammography (Bryant, Forthofer, McCormack-Brown, Alfonso, & Quinn, 2000). Therefore, knowledge of risk factors may not be enough to influence mammography screening behaviors consistently. The link between knowledge of risk factors and cervical screening behaviors has not been examined as extensively, but the findings have been more consistent. Knowledge was related to increased screening behaviors (Juon, Seung-Lee, & Klassen, 2003; Lee et al., 2008), and knowledge of HPV infection and current cervical cancer screening guidelines increased a woman's likelihood of maintaining screening behaviors (Nelson et al., 2009).

A variety of models have been used to predict mammography and Pap test screening behaviors. Most frequently, models that focus on intrapersonal and interpersonal perspectives have guided research. Intrapersonal models have included the Health Belief Model (HBM) and the Transtheoretical Model of Health Behavior Change (TTM), whereas interpersonal models often included Social Cognitive Theory (SCT) (National Center for Health Statistics, 2010). What those models share in common is that knowledge is necessary but not sufficient to produce behavior change. Behavior is mediated by cognitions and factors such as perceptions, motivation, and skills that are key to influencing behavior change. Extensive research has shown that variables from the HBM were shown to predict mammography use; however, the application of the HBM in those studies has been inconsistent, and the predictive power low (Yarbrough & Braden, 2001). In contrast, the HBM has not been used frequently to explain cervical cancer screening. A few studies have demonstrated that knowledge was related to increased cervical screening behaviors (Juon et al., 2003; Lee et al., 2008). The TTM has been used to explain health behavior change through a series of stages (Prochaska, DiClemente, & Norcross, 1993); however, studies on whether the TTM increases screening behavior have been inconsistent (Tung, 2010; Vernon et al., 2008).

A premise of the HBM and the TTM is the need to use education as an initial intervention. The models initially failed to address the need to help individuals perform the behavior or focus on ways to increase the belief or confidence so that they could be successful. Self-efficacy is a belief by a person that he or she can overcome barriers and execute behaviors successfully. Self-efficacy, therefore, is an integral concept within SCT (Bandura, 1986). In studies, women with increased self-efficacy demonstrated increased mammography and cervical screening behaviors (Burak & Meyer, 1998; Dassow, 2005; Ham, 2006) and identified an increased intention to have a mammogram (Allen, Sorensen, Stoddard, Colditz, & Peterson, 1998; Tolma, Reininger, Evans, & Ureda, 2006). However, women with low self-efficacy reported a low rate of previous mammography (Jennings-Sanders, 2009). Therefore, the purpose of the current study was to test whether educational interventions based on self-efficacy would increase knowledge and frequency of mammography and Pap test screening behaviors in women initially and over time.

Theoretic Framework

Self-efficacy draws on both cognitive and behavior concepts. According to Bandura (1986), cognitive processes can mediate behavior change, but the cognitive events are altered most readily by the experience of mastery gained from effective performance of a task. Individuals must be convinced that they can successfully execute the behavior required to produce the expected outcome, or efficacy expectation. Efficacy expectation affects an individual's choice of setting, behavior, and continual performance of a behavior (Strauser, 1995). Expectations can be increased by performance of the task, vicarious experiences, verbal persuasion, and emotional arousal. Personal success in performing the task is the most influential source of efficacy expectation. A weaker set of cues arises from vicarious experiences. Vicarious learning occurs when an individual observes others performing the behavior successfully and believes that he or she also can succeed. Verbal persuasion is weaker still, but can be increased if the individual is in an environment that supports successful performance of the behavior. The weakest form is emotional

arousal. Anxiety or stress related to a specific behavior can reduce self-efficacy and lead to failure. Relaxation, desensitization, and symbolic exposure can decrease emotional arousal to increase efficacy expectations.

Methods

A pretest and post-test prospective design was used to evaluate the effectiveness of a self-efficacy–based educational intervention on breast and cervical cancer screening behaviors. Following approval from the institutional review board at Valparaiso University, a convenience sample of 58 women who chose to attend a program on breast and cervical health were recruited. Inclusion criteria included being older than age 18 years, having the ability to read and communicate in English, and having the ability to give informed consent. The educational intervention was offered at various sites throughout an urban county in northern Indiana as part of a breast and cervical health awareness effort. Two of the educational programs were offered to local church groups as part of a health fair, and two programs were offered through health promotion initiatives sponsored by private businesses.

Instruments

A **self-report questionnaire** was used to collect demographic data, knowledge of risk factors, and screening behaviors for breast and cervical health. Specific demographic data included age, race, education, marital status, and breast and cervical health history. Questions related to screening behaviors assessed the frequency of those behaviors. The **Breast and Cervical Health (BACH) survey** was a researcher-developed instrument to assess knowledge of breast and cervical health and screening guidelines. Items from the **Indiana State Department of Breast Health and Cervical Cancer Early Detection (ISDBHCCED) pre- and post-test** were incorporated into the BACH. The ISDBHCCED initially was made available through the ACS, Indiana Division (n.d.) for use with cancer education initiatives throughout the state and had received support for content validity. The BACH contains 10 items with three response formats: true, false, or not sure. Four questions assess knowledge of breast health and screening practices, such as when regular screening should begin; three questions assess knowledge of cervical health and screening practices, such as whether the Pap test can detect precancerous changes; and three questions assess general cancer knowledge, such as knowledge that a better chance for a cure exists if the cancer is found early. Scores range from 0–10. Correct responses receive one point and incorrect or "not sure" responses receive zero points. Higher scores represent greater knowledge. Face validity was obtained through review by two advanced practice nurses with expertise in cancer screening. The third instrument assessed breast and cervical screening practices 15 months after the educational programs, whether the participants changed health behaviors as a result of the program, and whether the program provided any information that was helpful to participants.

Procedures

Before each educational program, the participants were informed of the research component. Women willing to participate in the research portion of the program completed the informed consent process and received coded instruments. Those who did not agree to participate also received the same instruments; however, their responses were not used for data analysis. That process allowed all women the opportunity to learn about breast and cervical health without having to participate in the research. Two participants elected not to participate. Following informed consent, all of the women were given the self-report questionnaire and the BACH as a pretest.

Each program contained the same self-efficacy interventions and lasted one hour. During the program, the women were provided information about breast and cervical cancer facts and risk factors. Fitting with Bandura's (1986) conceptualization of self-efficacy, the women watched videos on mammograms and Pap tests that demonstrated the success of those procedures through vicarious experiences. Verbal persuasion to practice the screening behaviors was used throughout the program. Discussions focused on making informed decisions and following prevention and screening behaviors that lead to better health. At the end of each educational session, the women were given another copy of the BACH as a post-test to reassess their knowledge.

About 15 months after the educational program, the women who initially agreed to participate in the research received a follow-up mailing. The 15-month time frame was consistent with the reporting of "recent" cancer screening activities (Breen, Wagener, Brown, Davis, & Ballard-Barbash, 2001) and allowed for variations in expected screening behaviors that fit with ACS guidelines. Mammograms reported within 12–15 months are considered on time to allow for scheduling and insurance coverage constraints (Vernon et al., 2008). The mailing contained another letter of informed consent, the follow-up questionnaire regarding current screening behaviors, the BACH, and a stamped envelope for return mailing. Return of the questionnaires indicated consent to participate.

Results

General Characteristics

The 56 participants ranged in age from 21–60 years ($\bar{X}$ = 39.9, SD = 9.92) (see Table 1). The majority were Caucasian, married, and had more than a high school

Table 1. Sample Characteristics

Characteristic	n
Age (years)	
20–29	13
30–39	11
40–49	22
50 and older	10
Race	
Caucasian	55
Hispanic	1
Marital status	
Single	18
Married	28
Divorced	10
Education	
Less than a high school diploma	1
High school diploma	12
More than a high school diploma	43

N = 56

education. When asked about a personal or family history, 13 (24%) of the participants had been diagnosed with fibrocystic changes, 8 (15%) had a family history of breast cancer in a mother or aunt, and 8 (15%) had been diagnosed with cervical changes necessitating regular Pap tests and pelvic examinations. The only significant difference in demographic and personal characteristics among the four groups of participants was age. Two groups contained women in their twenties and thirties, and two groups contained women in their thirties through sixties. For the longitudinal data, 47 (84%) participants returned the completed questionnaires, thus decreasing bias from differences in responders and nonresponders. Using t tests, the author ascertained that the 47 participants did not differ significantly on demographic characteristics as compared to the 56 who attended the educational programs.

Knowledge and Screening Behaviors

The mean pretest BACH score was 7.94 (SD = 1.41, range = 5–10), and the mean post-test score was 8.89 (SD = 0.6, range = 7–10) (see Table 2). Using a t test to determine the effectiveness of the educational interventions, the author found that the participants had significantly higher scores after the educational interventions ($t = [55] = -4.49$, $p < 0.001$). Fifty-four (96%) participants knew the importance of having a mammogram. Thirty-six (65%) believed regular mammography screening began at age 50. The remaining 20 (35%) believed regular mammography began at age 40. Fifteen (27%) participants knew that the mammogram was the best screening method for finding a lump. For Pap test and pelvic examinations, 21 (38%) knew recommended rates and when to begin regular screenings. Thirty-two (57%) participants knew the Pap test could detect precancerous changes in the cervix.

On the pretest, knowledge of multiple risk factors for breast and cervical cancer was low. All 56 participants could name one risk factor for either breast or cervical cancer. Eighteen (32%) could name a combination of two risk factors, one for breast and one for cervical cancer. The top known risk factors were family history for breast cancer (n = 34, 61%) and history of HPV or sexually transmitted diseases (STDs) for cervical cancer (n = 18, 32%). Seven (12%) participants were unable to identify any risk factors for breast or cervical cancer. To determine whether an association exists between knowledge of ACS guidelines for mammography and Pap test screening, a contingency table was created. Thirty (44%) of the participants knew the recommended guidelines for both breast and cervical screening, 20 (35%) knew the guideline for mammography screening but not the Pap test and pelvic examination, and only one (2%) knew the recommended screening guideline for the Pap test and pelvic examination but not mammography. Five (9%) participants knew neither screening guideline.

Age was compared with test scores. That variable was examined because of the varied ages of the participants. Age did not relate to performance on the pretest scores ($r = -0.08$, $p = 0.61$), but was negatively related to post-test scores ($r = -0.3$, $p = 0.04$). Personal or family history of breast or cervical cancer could not be included in the analysis because of the low numbers of participants for each of those variables.

The longitudinal survey was mailed about 15 months following the educational intervention; a total of 47 participants completed the instruments. The follow-up BACH test scores ($\bar{X} = 8.74$, SD = 0.79) did not differ significantly from the educational post-test scores ($\bar{X} = 8.89$, SD = 0.6) ($t = [46] = -0.83$, $p = 0.57$). When asked about current screening behaviors, all 28 (100%) participants older than age 40 completed a mammogram compared to 14 (50%) of the participants prior to the educational program. Forty (85%) of the participants

Table 2. Screening Behaviors Pre- and Post-Educational Program

	Pretest		Post-Test	
Screening Behavior	**n**	**%**	**n**	**%**
Mammography[a]				
Yearly	14	50	28	100
Every two to three years	14	50	–	–
Pap test[b]				
Yearly	39	70	40	85
Every two to three years	12	21	5	11
Never	2	4	2	4
No answer	3	5	–	–

[a] The sample consisted of 28 women age 40 or older.

[b] The sample consisted of 56 women at pretest and 47 women at post-test, all age 20 or older.

older than age 20 indicated they had a Pap test and pelvic examination compared to 39 (70%) of the participants prior to the educational program. When asked if their screening behaviors changed as a result of the educational interventions, 33 (61%) indicated that they changed their screening behaviors. Twenty (43%) of the participants indicated that they became more aware of the importance of mammograms rather than changing the frequency. For cervical screening behaviors, 10 (21%) participants indicated the program contributed to a change in behavior by increasing their knowledge of what the Pap test could detect. Two participants (4%) indicated that the Pap test procedure did not look like something they wanted to start, and they were not looking forward to beginning the examinations. The last question asked the participants to rate the overall helpfulness of the educational program. Thirty-three (70%) reported that the program was very helpful, 12 (26%) rated the program as helpful, and 2 (4%) did not respond.

Discussion

Morbidity and mortality from breast and cervical cancer can be prevented by early screening with mammography and the Pap test. The current study was designed to assess knowledge of breast and cervical health, the effectiveness of an educational program based on self-efficacy, and whether the educational interventions had an impact on future knowledge and screening behaviors. Knowledge of risk factors for breast and cervical cancers varied in the sample. Family history and history of HPV and STDs were the top known risk factors for breast and cervical cancers, respectively. In the literature, knowledge of family history for breast cancer (Pearlman et al., 1999; Rutledge et al., 2001) and cervical cancer (Lee et al., 2008; Pearlman et al., 1999) also has been reported. For cervical cancer, previous researchers found women to have increased knowledge of the risks related to multiple sex partners (Pearlman et al., 1999), HPV infection, and effective detection methods (Nelson et al., 2009). The knowledge of risk factors for women in the current study may be due, in part, to the fact that the women were interested in the topic and chose to attend the program. However, when looking at overall knowledge, the participants could name very few risks for both breast and cervical cancer. Rather, the participants tended to know more about one form of cancer. Those findings were consistent with previous researchers; women tended to have poor overall breast and cervical risk factor knowledge (Pearlman et al., 1999).

The participants had some knowledge of ACS screening guidelines. Fifty-four percent knew guidelines for both breast and cervical cancer. The participants were familiar with the need to have mammograms, which was similar to the literature (Farmer, Reddick, D'Agostino, & Jackson, 2007). Sixty-five percent of the participants identified that yearly mammograms should begin at age 50, and the remaining 35% believed yearly mammograms should begin at age 40. That finding was not surprising. During the time of the study, the ACS recommended that yearly mammography begin at age 40, whereas the National Cancer Institute (NCI) and the U.S. Preventive Services Task Force (USPSTF) recommended mammography every one to two years for women older than age 40. Seventy-three percent of the participants were not aware that a mammogram was the recommended screening method for finding a breast lump early. Thirty-eight percent of the participants knew when to begin Pap tests and the recommended frequency. That rate was similar to knowledge of screening for cervical cancer in the literature (Lee et al., 2008; Montgomery, Bloch, Bhattacharya, & Montgomery, 2010). Fifty-seven percent of participants knew the Pap test could detect precancerous changes. Other researchers also found that women did not fully understand the purpose of the Pap test (Eggleston, Coker, Das, Cordray, & Luchok, 2007). Therefore, although the participants in the current study had some knowledge of breast and cervical screening guidelines, they had misconceptions about the efficacy and timing of the screening tests.

Knowledge of breast and cervical health 15 months after the educational interventions did not change significantly. Therefore, the educational intervention was successful as an initial strategy to increase knowledge of risks and screening guidelines in a 15-month period. That finding was inconsistent with one study in the literature—Grindel et al. (2004) found that knowledge scores one year after a breast health education session dropped significantly; however, the framework for that study focused mostly on affective appeals related to cognitive processing in African American women in the rural southern United States. The differences in design and sample characteristics may account for the inconsistent findings between the work of Grindel et al. (2004) and the current study.

Findings provided support for the use of self-efficacy from the SCT. The rates for mammography and Pap test were higher than reported in previous literature. The use of vicarious experiences and verbal persuasion resulted in the participants adopting screening behaviors within the appropriate time frame. All of the participants older than age 40 had a mammogram within the ACS recommended time frame after the educational intervention compared to only 50% of the participants prior to the program. That rate was higher than what was found in the National Center for Health Statistics (2010) data, where only 53% of women aged 40 and older had a mammogram in the past year. Recent Pap test and pelvic examinations increased from 70% to 84% in the study sample. That rate was higher than the rate reported in National Center for Health Statistics

(2010), where 78% of women aged 18 and older had a Pap test in the past three years. In addition, the rate for mammography in the current study was above the Healthy People 2010 target goal of 70%; however, for the Pap test, the rate was still below the Healthy People 2010 target goal of 90% (U.S. Department of Health and Human Services, 2000).

When asked, the participants believed that the educational interventions were helpful and improved their knowledge of screening guidelines more than their practice of screening behaviors. If the participants only perceived a change in knowledge, whether or not those who increased screening frequency one year after the intervention will continue to sustain the behavior is unknown. The use of self-efficacy interventions increased behaviors related to breast health more than those for cervical health. The participants in the current study who reported that they were not looking forward to completing the Pap test may have held similar beliefs as those reported in the literature. Women have reported low comfort associated with the test (Harokopos & McDermott, 1996; Steven et al., 2004) and fear of the invasiveness of the examination (Steven et al., 2004). Therefore, preparing women with strategies to complete a Pap test may be an important approach to enhance self-efficacy.

Limitations

The findings from this study should be viewed in relation to its limitations. The small, self-selected sample limits generalizability. However, providing educational programs in small groups supports self-efficacy, and the participants in the current study were representative of the community where the educational programs took place. The participants may have selected the program because they already were interested in changing their behaviors and getting updated information. Although the participants had knowledge prior to the program, many were not practicing behaviors that matched their knowledge. Therefore, their self-efficacy was low for screening behaviors. The difference between pretest and post-test scores on the BACH was statistically significant, yet clinically small. Because the pretest scores were higher, the participants did not have a need to learn many new facts. However, the education program helped the participants learn, on average, one additional fact; all new information holds the potential for being clinically helpful in improving screening behaviors. The participants also learned the effectiveness of mammography and when to begin regular mammography and Pap tests. When assessing longitudinal screening practices, the participants reported increased screening behaviors. Because those behaviors were self-reported, rates of engaging in the behaviors may be biased toward providing socially desirable responses. However, without having access to clinical data to confirm actual rates of screening, relying on self-report is a standard method for reporting screening rates and provides more relevant data than reports of intention to complete a screening behavior.

Recommendations

A more comprehensive approach to self-efficacy and behavior change should be studied. Continued use of vicarious experiences and verbal persuasion is needed to evaluate their effect on expectations of personal success with behavior change. Researchers must look beyond a 12–15 month follow-up assessment for screening behaviors. In addition, prevalence of consecutive mammograms is lower than recent mammography (Vernon et al., 2008). Although the use of an educational intervention based on self-efficacy may have contributed to increased frequency of mammograms and Pap tests 15 months following the program for the current study, how those same participants continued with screening behaviors after that time is unknown. Examining breast and cervical screening behaviors jointly, rather than focusing on them separately, is important (Nash et al., 2007). Multiple strategies have been shown to have an impact on knowledge and screening behaviors; however, creating interventions that simultaneously meet the needs of breast and cervical health are warranted.

The educational intervention in the current study was better suited to younger women, as demonstrated by the inverse relationship between age and post-test scores. In the future, the type of education offered to women older than age 50 should be reviewed. Women may learn better in less-structured situations. Teaching may need to be repeated and provided in both verbal and written form (Koren & Hertz, 2007). Vicarious persuasion may be a less effective strategy for increasing self-efficacy in women older than age 50 because that population may have had poor experiences with screening behaviors in the past; therefore, their self-efficacy to repeat the behaviors may be lower and difficult to alter. In addition, older women receive fewer messages to continue cancer screenings. Messages for cervical cancer screening typically suggest stopping at age 65 (USPSTF, 2006) or 70 (ACS, 2011c) after three consecutive negative Pap tests during the preceding 10 years. For mammography, older women also receive fewer messages to complete screenings, although breast cancer risk is highest for women older than age 70 (Sharp, Michielutte, Spangler, Cunningham, & Freimanis, 2005; Susan G. Komen for the Cure, 2008).

Implications for Practice

Educational programs hold the potential as an effective method of helping some women learn about

breast and cervical health and can create an expectation of success or self-efficacy with screening guidelines. Although women cognitively know about breast and cervical health and screening behaviors, not all women follow screening guidelines. Knowledge alone does not promote behavior change. Rather, women need to believe they can execute screening behaviors successfully. The use of vicarious experiences and verbal persuasion increased the rate of mammography and Pap test screening at least 15 months beyond the intervention in the sample. Knowing how to increase a woman's self-efficacy may contribute to increased identification of breast and cervical cancers in early stages and potentially increase health promotion behaviors that can prevent cancer.

Motivating women to continue a regular schedule of screening practices is a challenge. Not only do women need encouragement to obtain screening, they also need assistance understanding the various recommendations regarding screening guidelines. Having conflicting messages about appropriate screening initiation and intervals from various organizations, such as the ACS, the American College of Obstetricians and Gynecologists, the NCI, and the USPSTF may lead to greater confusion and a decrease in actual screening behaviors. The most commonly cited reason for obtaining a screening test is a physician or provider recommendation (Breen et al., 2001; Bryant et al., 2000; Dolan, Lee, & McDermott, 1997; George, 2000; Rutten, Nelson, & Meissner, 2004) or having a regular medical doctor or source of health care (Lee et al., 2008; Nelson et al., 2009; Selvin & Brett, 2003). Receiving clear messages about best actions for screening behaviors is critical. Encouraging women to obtain screening is a form of verbal persuasion consistent with self-efficacy and making informed decisions. Unfortunately, some providers have failed to recommend screening guidelines, particularly mammography in older women (Levy-Storms, Bastani, & Reuben, 2004). In addition, some women are being encouraged to have Pap tests when they are not medically necessary (Solomon, Breen, & McNeel, 2007). Providers must help women understand when Pap test screening is necessary and assist women to appropriately follow national guidelines. All healthcare providers must intervene and use verbal persuasion to support self-efficacy and advocate that women follow recommended screening behaviors. Preparing women with strategies to complete a mammogram and Pap test is an important approach to enhance self-efficacy.

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