

CHAPTER 2

LITERATURE REVIEW

The literature review related to factors influencing breast cancer screening practices (BCSP) in healthy women is presented as follows:

1. Breast cancer prevention and its importance.
2. Breast cancer screening practices (BCSP).
3. Concept of Health Belief Model in BCSP.
4. Factors related to BCSP.

1. Breast Cancer Prevention and Its Importance

Breast cancer is one of the major killer cancers of women between the ages of 40 and 55 in both developing and developed countries (World Health Organization, 1998). In 2000 we have 175,000 women, accounting for approximately 30% of all newly diagnosed cancers, received a diagnosis of breast cancer and 41,500 died from this disease (Moore, 2001). Epidemiologic data indicate that approximately 77% of new breast cancers occurs in women older than 50 years; range, 50-80⁺ years, and 23% of new cases occur in women younger than 50 years; range, <30-49 years (Sammarco, 2001). Estimates indicate that cancer patients in the year 2015 will increase from 9,000,000 to 15,000,000. And 52% of these patients will be in developing countries because the people in these areas have increased their life-

expectancy because of changes in lifestyle stemming from socioeconomic development, and changes in environment (American Cancer Society, 2001). It has been shown that the incidence rate of breast cancer is very high among women in countries such as in Thailand, where the incidence rate of breast cancer is 28 per 100,000. It is the third leading cause of death (National Cancer Research Institute, 2001). Breast cancer has the second highest incidence rate, second only to cervical cancer in Thai women (Maipang, 2001). In Songkhla, in the Southern part of Thailand, breast cancer is the second most common type of cancer (Report of Non-communicable Diseases Public Health Office of Songkhla, 2000).

Many risk factors and multiple causative agents and components can lead to breast cancer. Different cancers have different risk factors such as age and race, or an inherited or genetic predisposition. It is important to remember, however, that these factors increase a person's risk, but do not always "cause" the disease. Many people with one or more risk factors have never developed cancer, while others, who have unknown risk factors, do. But it is nonetheless important to understand risk factors in order to take appropriate actions, such as changing a health behavior or being monitored closely for a potential cancer.

Recently, many people with no controllable risk factors have been developing cancer, and researchers are more actively studying ways to lower a person's risk of cancer. Chemoprevention is one method to reduce cancer risk by using vitamins or medications, for example tamoxifen (a hormonal drug also used in breast cancer treatment) that can reduce the likelihood of breast cancer developing between women at increased risk for that disease (American Cancer Society, 2001). However, such interventions are less utilized in developing countries.

Although the causes of breast cancer are unknown, its related risks are various. These include: 1) age, 2) sex, 3) race, 4) previous history of breast cancer, 5) genetics (hereditary predisposition or mutations), 6) lifestyle, including diet/weight control, alcohol consumption, smoking, and exercise, 7) reproductive history, 8) hormonal balance, 9) chemical/ drug exposure, 10) radiation, 11) not breast feeding, and 12) occupation (Breast Cancer Resource Center, 1999).

There is no definite way to prevent breast cancer. A recent study suggests that lifestyle changes may reduce a women's risk of breast cancer. In addition, to prevent breast cancer one must understand the reasons for disease prevention and the measures that can be taken. The body of knowledge regarding the association between personal behavior and cancer control has spurred activity in both the public and the private sectors. Major initiatives are the National Cancer Institute of the United States of America (NCI) objectives for 1985-2000 (Greenwald & Sondik, 1996); the NCI's goal of reducing cancer mortality by 50% in the year 2000. American Cancer Society (ACS) priorities for the 1990s; focus in cancer prevention (American Cancer Society, 1990), the U.S. Department of Health and Human Services (USDHHS) objectives for health promotion, disease prevention, and cancer control (Groenwald, Frogge, Goodman, & Yarbrow, 1993). National Breast Cancer Awareness Month (NBCAM) in the United States of America objectives for increase awareness of the importance of early detection and to encourage women to have more breast cancer screening practices and more regularly. In addition, a "Peer Education Model" for teaching breast self-examination (BSE) to undergraduate college women in the University of Nebraska plan to increase knowledge of breast cancer and the benefits of BSE to early detection and demonstrate a change in behavior by implementing the practice of BSE on monthly basis (Maurer, 1997). All these

programs focus strongly on efforts to influence people's health behavior. The behavior of people who are disadvantaged and/or at high-risk of cancer are a major target of these efforts (Groenwald et al., 1993).

During the past 20 years, the number of cases of breast cancer detected has been increasing, due primarily to increase screening using such methods as BSE and mammography (Moore, 2001). The long latency period for most cancers underlines the importance of early detection (World Health Organization, 1998). Late diagnosis is a major factor affecting the mortality rates, as a significant proportion of patients are still diagnosed at clinical stages II and III (Schwartzmann, 2001). Screening tests are recommended for women, especially high-risk women, by standard tests including BSE and mammograms (Maipang, 2001). Regular screening can help detect early stages of breast cancer and reduce the disease mortality (Jirojwong & Manderson, 2001).

Reviewing available evidence on breast cancer prevention is important because of the new choices available to healthy women (Vogel, 2000). Treatment is sometimes unsuccessful or may be started too late, and so preventing cancer is preferable. Preventive behavior can be categorized into three levels, primary, secondary, and tertiary prevention (Pender, 1996).

Early detection is one of the most important and effective strategies for cancer prevention. Preventative action may then take one of two forms, either reducing exposure to a cause or providing protection against the effects of exposure in order to forestall complications (Gerlach, 1993). Screening practices or secondary prevention interventions may serve as antipromoters after initiation of the cancerous process (Gerlach, 1993). Secondary prevention involves tests designed to diagnose breast cancer early, in the hope that early treatment will lead to better outcomes. The three

screening maneuvers currently in favor for breast cancer prevention include mammography, breast examination by the clinician, and breast self-examination (BSE). Unfortunately training of health professionals in cancer prevention remains largely indirect or outside the mainstream of academic curricula (Gerlach, 1993).

Public education to promote BSE and familiarity with cancer danger signals are all directed toward identification of signs of possible illness, by individuals, in order to promote prompt use of health services for early detection. Screening programs for breast cancer (examination and mammography) are continuing public health efforts for secondary prevention. Where primary prevention is not available, secondary prevention (early diagnosis and treatment) represents the first line of defense against disease (Pender, 1996).

One of the best breast cancer screening practices is BSE because it can lead to early intervention in breast cancer treatment. BSE may reduce breast cancer mortality by an estimated 18% (Salazar, 1992 cited in Maurer, 1997), as breast cancer can be cured if the victim detects it early and receive treatment in the early stages. Breast cancer patients who practiced BSE were diagnosed at a significantly earlier stage of disease than women who did not practice it. So, BSE is an important method of breast cancer screening (Frank-Stromborg & Rohan, 1992).

2. Breast Cancer-Screening Practices (BCSP)

Breast cancer screening practices (BCSP) or secondary prevention interventions may serve as anti-promoters after initiation of the cancerous process (Gerlach, 1993). BCSP involves tests designed to diagnose breast cancer early, in the

hope that early treatment will lead to better outcomes. The two screening maneuvers currently in favor for breast cancer prevention are BSE and mammography.

The factors influencing BCSP in healthy women are not clearly understood. One previous study showed that women at higher risk for breast cancer engaged in more screening behaviors than those at lower risk. In contrast, another study indicated that there was no relationship between high risk and screening behavior, which meant that there were less screening practices in high risk women compared to lower risk women (Hailey, 1991). In addition, women who had a family history of breast cancer had higher anxiety, which was directly related to poor attendance at a clinical breast examination (CBE) and poor adherence to monthly BSE (Kash, Holland, Halper, & Miller, 1992). The analysis also revealed that increased cancer anxiety decreased regular clinical examinations (coefficient = - .65). Only 40% of 217 women enrolled in a breast protection program performed BSE monthly, 10% never performed BSE, and 50% did not perform BSE regularly (Kash et al., 1992).

Studies about screening behavior are very interesting. There are many methods that can detect potential breast cancer but the most popular methods are BSE and mammography.

2.1 Breast Self-Examination (BSE) is a self-care practice that is easy, convenient, private, safe, involves no cost, and requires no specific equipment (Han, Baumann & Cimprich, 1996; Love, 1991 cited in Maurer, 1997). BSE should be performed once a month. The best time to examine the breast is one week or 10 days after the menstrual period (White et al., 1988), because at this time breasts have the least pain and edema. If the women are not always regular, it should be done on the same day every month. The breast should be examined systematically. BSE should

start at age 20. BSE has an impact on breast cancer patient survival. A previous study found the mean diameter of presenting breast cancers to be 2.5 cm. in women doing monthly BSE and 3.2 cm. in those not doing BSE. Survival at 5 years was 75% in BSE performers and 57% in non-performers (Foster & Costanza, 2000) and Tiivel (1994) estimated that women could discover 80-90% of all breast cancer by using BSE. Although the role of BSE in reducing breast cancer mortality rates has not been established, it is strongly recommended as part of the process of early detection, because an estimated 90% of breast cancers are found through BSE (Scanton, 1991; Pool & Judkins, 1990 cited in Maurer, 1997; Kaewpam, 1998).

BSE is easy to teach and perform. Personal decisions about learning and performing routine self-examinations, participating in cancer screening activities, and seeking appropriate help at cancer signs and symptoms, are pivotal to the early detection and potential cure of cancer. To increase awareness and adherence to BSE in asymptomatic persons, the prevention program must be emphasized.

There are many studies related to BSE. For example in western countries, previous research has found that 35% of black women performed BSE less than once every 6 months, 33% practiced BSE at least once a month, while 32% practiced BSE between every other and every 5 months (Nemcek, 1989). Also, Patistea, Chliaoutakis, Darviri, and Tselika (1992), who studied 268 Greek women, reported that only 11.9% of working women performed BSE more than once a month, 22.8% performed BSE every month, 42.8% performed BSE less than once a month, and 22.4% did not perform BSE during the last year. Nichols, Misra, and Alexy (1996) who studied 89 females, found that 47% of the respondents stated that they performed BSE once a month. Chalmers, Luker, Leinster, Ellis, and Booth (2001) found that 36% of women reported carrying out BSE monthly.

In Asian countries, Lu (1995), who studied in 174 Chinese women age 18-70 years old, found that 14.9% practiced BSE monthly, 46.8% had ever practiced BSE at some time, and 48.3% of them had never performed BSE; the mean frequency for BSE performance was 0.3 times per month. In Thailand, breast cancer prevention programs have not been extensively reviewed. There is a limited availability of the mammography and clinical breast examination program (Deerasanee et al., 1999). However, following the American Cancer Society (ACS) guidelines, Thai physicians suggest that women should start BSE at age 20, and high-risk women should be aware of breast cancer at an earlier age than women who are at low risk (Prueksapong, 2001). Patients from the general unit in Siriraj Hospital performed BSE every month at about 14%, less than once a month about 24%, and not performing BSE at all about 52% (Kengkhetkit, Rabieb, & Aemruksa, 1999). Also Jirojwong and Manderson (2001), who studied 145 first-generation Thai immigrant women aged 20 years or older, found that, among 138 women with complete data on BSE, 25% had palpated their breasts once a month during the past two years, 62% had conducted BSE at least once, or not on a monthly interval, in the past two years, and 13% had never performed BSE in the past two years. In addition, Chaiphibalsarisdi and Salyer (2000) studied 18 Thai women who worked as janitors at Chulalongkorn University age 23-54 years, and found that 100% of them reported doing BSE with varying degrees of self-reported proficiency, although only 33% stated they performed BSE monthly and regularly.

2.2 Mammography is the process of X-raying the breast, and can detect occult tumors before they become palpable. Mammography is one of the best methods available for diagnosing breast cancer at a stage when it can be most effectively

treated, since it can identify cancer up to several years before physical symptoms develop (American Cancer Society, 2001). It is used with a clinical examination both as a screening tool for breast cancer and as a diagnostic tool to gain more information when suspicion for breast cancer is high.

The benefits of mammography are well established. Modern mammography may detect 95% of all breast cancers and, when used as a screening tool, may reduce mortality rates by 40%, especially in women greater than 50 years old (Blamey et al., 1994 cited in Page & Dupont, 1991). The relationship between mammography and reduction of mortality rates in younger women between the ages of 40 and 49 has not been established (Harris et al., 1992).

This study focused on the intention to check mammography in the current year in healthy women because regular mammography is not routinely advised for women under age 40 (Champion, 1995) and is not part of a routine check for all women aged 40 years old and older in Thailand. Hence, the number of women who have a mammography in Thailand is too low to identify any association between selected factors and mammography. Kimpee, Kengkhetkit, Rabieb, and Aemruksa (2000) studied 100 nurses, 100 outpatients in a breast clinic, and 100 outpatients in a general clinic in Siriraj Hospital, and found that the majority of Thai women did not undergo mammography. Ninety-five percent of nurses had never had a mammography, 3% had had a examined by mammography once time in their life, and 1% were regularly have a mammography every 1-2 years. Most outpatients (87%) in the breast clinic did not have a mammograph, 8% have a mammography once time in their life, and 2% have a mammography every 1-2 year. Most of outpatients (95%) in general clinic did not have a mammography, and 4% have a mammography routinely

every 1-2 year. Furthermore, in developed country found that only one half of women reported having had a mammogram (Chalmers et al., 2001).

3. Concept of Health Belief Model (HBM) in BCSP

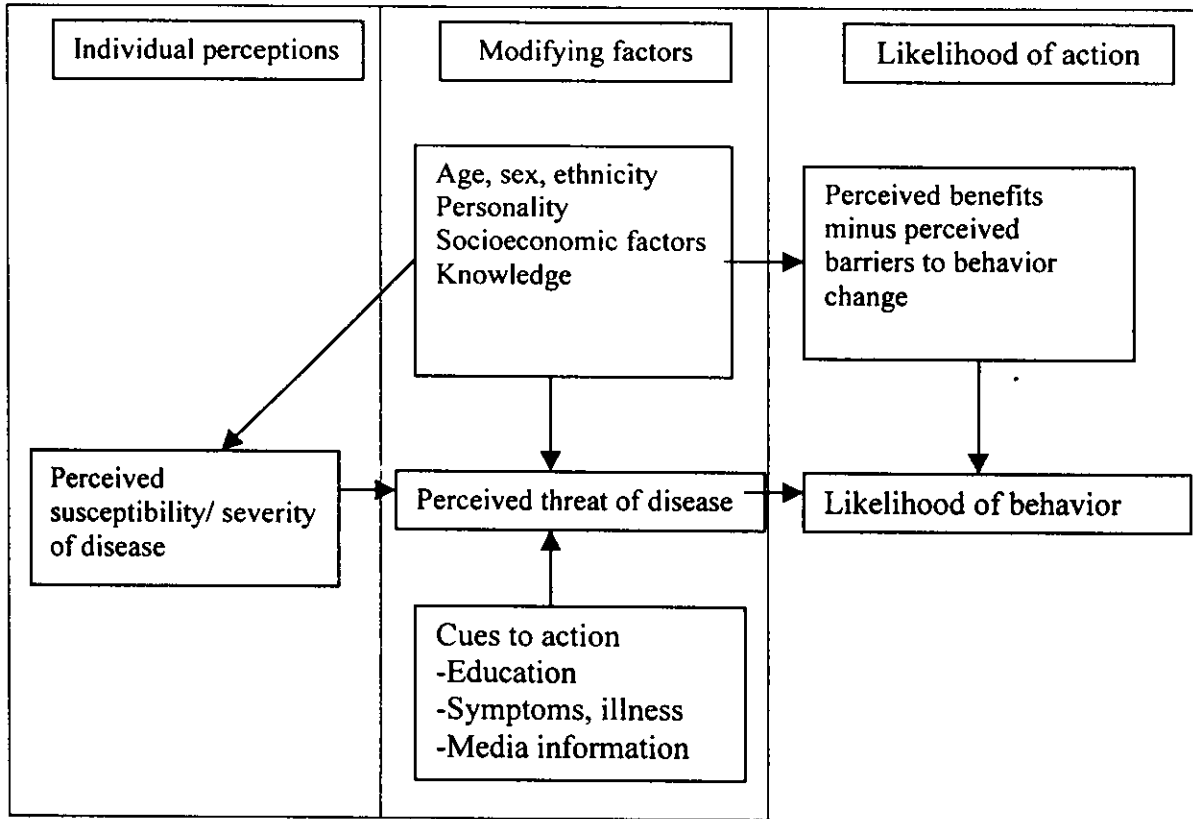
The Health Belief Model (HBM) was first developed in the 1950s by social psychologists Godfrey Hochbaum, Irwin Rosenstock, and Stephen Kegels working in the U.S. Public Health Service. The model was developed in an effort to explain the failure of a free tuberculosis (TB) health-screening program (Hochbaum, 1958; Rosenstock, 1974; Brown, 1999) and to explain patient behavior in response to diagnosed illness, particularly their compliance with medical regimens (Becker, 1974).

HBM has been one of the most widely used conceptual frameworks in health behavior for over four decades. It has been used both to explain change and maintenance of health behavior and as a guiding framework for health behavior interventions (Strecher & Rosenstock, 1997). It focuses on the relationship of health behaviors, practices and utilization of health services (Brown, 1999)

Components of the HBM. There are five components of HBM (Strecher & Rosenstock, 1997), as Figure 2 shows;

Figure 2. Health Belief Model components and linkages (Strecher &

Rosenstock, 1997).



1. Perceived threat

1.1 "Perceived susceptibility" means an individual's subjective perception of his/her risk of contracting a health condition, or their opinion of the chance of getting a condition. This includes the individual's acceptance of a diagnosis, personal estimates of resusceptibility, and susceptibility to illness in general.

1.2 "Perceived severity" addresses feelings concerning the seriousness of contracting an illness or leaving it untreated or one's opinion of how serious a condition and its consequences are. This includes evaluation of both medical and clinical consequences (such as death, disability, and pain) and possible social consequences (such as effects of the condition on work, family life, and social relations).

2. Perceived benefits

“Perceived benefits of taking action toward the prevention of disease or toward dealing with an illness” mean one’s opinion of the efficacy of the advised action to reduce risk or seriousness of impact. The direction of action that person chooses will be influenced by the beliefs regarding the action.

3. Perceived barriers

“Barriers to taking action” mean the potentially negative aspects of a particular health action or one’s opinion of the tangible and psychological costs of the advised action. A barrier may act as an impediment to undertaking the recommended behavior. The individual undertakes a cost-benefit analysis. The negative aspects are the perceptions that it may be expensive, dangerous (having negative side effects or estrogenic outcomes), unpleasant (pain, difficulty, or upsetting), inconvenient, time consuming, and so forth.

4. Cues to action

“Cues to action” means an individual’s perception of the levels of susceptibility and seriousness provide the force to act or strategies to activate “readiness”. Benefits (minus barriers) provide the path of action. However, it may require a “cue to action” for the desired behavior to occur. (Brown, 1999). These cues can be either internal or external. Examples of internal cues include uncomfortable symptoms, feelings of fatigue, or recall of the condition of affected individuals to whom the individual is close. External cues include, for example, mass media, advice from others, posters, billboards, newspaper or magazine articles, or a reminder postcard from health professionals who have previously provided services.

5. Modifying factors

Modifying factors are other variables that can indirectly influence health-related behavior. For example, diverse demographic, socio-psychological, and structural variables, and socio-demographic factors, particularly educational attainment, are believed to have an indirect effect on behavior by influencing the perception of susceptibility, severity, benefits, and barriers.

According to Champion (1995), who studied 541 women age 35-88 years, living in a large metropolitan area and its surrounding countries, the HBM theory can improve women's BSE behaviors. Women who feel personally susceptible and believe the condition is serious may be more likely to practice BSE, and women who recognize BSE's benefits and experience few barriers to performing BSE may increase practice (Champion & Scott, 1993). Women's beliefs about BSE must be addressed and indicate that providing guided BSE instruction as well as the opportunity to practice a return demonstration is extremely important. Nurses are trusted sources of health information and should initiate the teaching of BSE behavior (Champion, 1995).

In this study the researcher used The Health Belief Model (HBM) as a conceptual framework by modifying it in some parts to use in determining factors associating breast cancer screening practices in southern Thai women. The researcher believed that individual perceptions (perceived risk, perceived severity, perceived benefits, and perceived barriers), modifying factors (age, religion, educational level, income, and knowledge about breast cancer and breast cancer screening practices), and cues to action (physician's recommendation, family history of cancer or breast cancer, receiving information resources, family encouragement, and social encouragement) were related to breast cancer screening practices.

4. Factors Related to BCSP

The literature review, based on the Cumulative Index of Nursing and Allied Health Literature (CINAHL), the MEDLINE database covering the period from 1982 to 2001, and other documents available in Thailand as shown in appendix G, found 30 studies on this issue. The results show several factors associated with breast cancer screening practices in different ethnic groups of women. These are as follows:

- 1) Perceived risk. A previous study showed that an important factor influencing practice and frequency of BSE among nurses, outpatients from a breast unit, and outpatients from a general unit who were aged between 30-39 years, was perceived susceptibility to breast cancer (Kengkhetkit, Rabieb, & Aemruksa, 1999). Perceived risk was associated with BSE performance. Remennick (1999) found that women who believe in their own cancer risk, can influence the practices of BSE. Also, Champion and Menon (1997) studied low-income African-American women between the ages of 45 and 64 years and found that perceived susceptibility was significantly predicted for both frequency and proficiency of BSE. Women who viewed their risk for getting breast cancer as greater (although they underestimated the actual risk) were more likely to engage in appropriate screening behavior (Hailey, Carter, & Burnett, 2000). Previous research has shown that breast cancer screening in breast cancer patients or in high risk groups is higher than in lower risk women (Roetzheim, Fox, & Leake, 1994), and that beliefs about one's own cancer risk can influence the practice of breast self-examination, and higher awareness. The recognition of personal cancer risks was positively related to the history of mammography (Remennick, 1999). Nemcek (1989) found that women without prior exposure to breast disease tended to practice BSE least frequently ($\chi^2 = 12.04, p < 0.01$). However, other studies have found no relationship between high risk and screening behavior, and found the opposite

effect, less screening in high risk women as compared to lower risk women (Hailey, 1991).

2) Perceived severity. A previous study found no significant relationship between frequency of BSE and perceived severity of breast cancer (Rutledge, 1987). Recent screening for both breast and cervical cancers was associated with perceptions of surviving cancer (Pearlman et al., 1999). Jirojwong and Manderson (2001) found that 97% of women perceived that breast cancer is severe because it can cause suffering, pain, anxiety, and unhappiness, 94% of them thought that it requires costly treatments, 31% believed that mastectomy was the treatment for breast cancer, and 77.9% of them believed that various aspects of the individual's daily activities would be affected by breast cancer.

3) Perceived benefits. Chatchaisucha and Pongthawornkamol (2001) found being a practitioner of BSE was positively correlated with perceived benefits ($r = .16, p < .01$). Women who realized the benefit of early detection and knew that breast cancer strikes women as no other malignancy were more likely to perform monthly BSE (Remennick, 1999). Another study found that perceived benefits could significantly predict either frequency or proficiency of BSE (Champion & Menon, 1997). High perceived benefits of BSE were significantly associated with higher frequency of BSE practice (Rutledge, 1987).

4) Perceived barriers. Perceived barriers of BSE was one factor influencing the practice and frequency of BSE among nurses, outpatients from a breast unit, and outpatients from a general unit who were aged between 30-39 years (Kengkhetkit, Rabieb, & Aemruksa, 1999). Perceived barriers to clinical breast examination are significant predictors of ever having had a clinical breast examination (Yi & Prows, 1996). Also, Leirman et al. (1990) reported that lack of time and the opinion that BSE

performance is unnecessary were related to BSE performance. Chatchaisucha and Pongthawornkamol (2001) found that women who practiced BSE were negatively correlated with perceived barriers to BSE ($r = -.02, p < .01$). Champion and Menon (1997) studied 93 low-income African-American women aged 45 to 64 years, and found that perceived barriers are significantly correlated with either frequency or proficiency of BSE. Some studies found discomfort as one of the barriers to BSE, also mammography and CBE (Kurtz, Given, Given, & Kurtz, 1993). Jirojwong and Manderson (2001) reported that a barrier for BSE was women's preference to have female general practitioners (GPs) examine their breasts rather than palpate their own (79%), and 23% said that they did not know how BSE was done. Barriers to undertaken practices related to lack of preventive resources, lack of information about preventive strategies, family financial concerns, specific attitudes toward cancer (Ali & Khalil, 1996), translation and transportation (Singer, 1997), lack of time and energy, fear of bad diagnosis, and male sex of most gynecologists (Remennick, 1999). Low perceived barriers were significantly related to frequency of BSE practice (Rutledge, 1987). BSE behavior was predicted by decreased barriers to BSE (Rutledge, Barsevick, Knobf, & Bookbinder, 2001). In addition, Jirojwong and Manderson (2001) found that information relating to perceived barriers to undertake regular cervical and breast cancer screening could be applied by health care personnel to increase Thai immigrant women's preventive health behaviors.

5) Age. Younger women were more aware of breast cancer's dominance among female cancers; 61% of 620 women in the age group < 40 years versus 37% of those aged 60⁺ gave correct answers about knowledge of breast cancer facts (Remennick, 1999). Mammography behavior was predicted by older age (Rutledge et al., 2001). Nemcek (1989) found the frequency of BSE practice was found to be

related to age, with older women practicing BSE more frequently than younger women ($\chi^2_{4df} = 12.81, p < 0.01$). Takakuwa, Ernst, Weiss, and Nick (2000) found breast self-examination was more likely to be done by older women, those with a history of breast lumps.

6) Religion. Religion is related to both health promotion and illness prevention. Islamic tenets that facilitate breast cancer prevention include cleanliness, individual responsibility in health promotion, diet and eating habits and exercise (Rajaram & Rashidi, 1999). Jirojwong and Manderson (2001) stated that cultural and traditional beliefs can influence cervical and breast cancer screening.

7) Educational level. Philips and Wilbur (1995) said that one factor that can influence monthly BSE is level of education. Yi and Prows (1996) found that written-language acculturation and education in the United States are significant predictors of ever having had a clinical breast examination. Other studies have showed that the most consistent predictor of participation in cancer screening examinations across all cancer-screening tests is education; higher education is a predictor of having each kind of cancer screening test (Bostick, Sprafka, Virnig, & Potter, 1994). Level of education was positively related to scores on attitudes toward BSE, mammography, Pap smear, and rectal examination in women aged 18-80 years who were able to read and understand English (Nichols, Misra, & Alexy, 1996). Scores of knowledge were higher among those professionals who had received more years of health education (Patistea et al., 1992).

8) Income. Breast cancer screening practices were correlated with income (Krischer, Cook, & Weiner, 1988). Preventive behaviors were significantly more likely to be performed by higher-income and privately insured women. Women with lower income and without private insurance were less likely to be knowledgeable and

practice preventive measures for detecting breast disease (Takakuwa et al., 2000). Yi and Prows (1996) found that income was a significant predictor of ever having had a clinical breast examination. A predictor of mammography use is higher income (Bostick et al., 1994). Philips and Wilbur (1995) who studied 154 African-American women found that annual household income was significantly related to scores on mammography, Pap smear, rectal examination, testicular self-examination (TSE), and beliefs about the Cancer Detection Scale (Nichols, Misra, & Alexy, 1996).

9) Knowledge about breast cancer and BCSP. Knowledge is one of the factors that can change behavior because knowledge is an important part of behavior (Suwan, 1992 cited in Thangthong, 1998), and knowledge is related to performing BSE (Kengkhetkit, Rabieb, & Aemruksa, 1999). Increased knowledge and encouragement can increase the number of women who do BSE (De-Grasse, Conor, Perrault, Aitken, & Joaniss, 1996). Recent screening for both breast and cervical cancers in women was associated with knowledge of cancer risk factors (Pearlman, Clark, Rakowski, & Erich, 1999). Remennick (1999), who studied 620 Russian immigrant women in Israel, found that 63% of women believed that early detection of breast lesions was crucial for effective treatment, while the rest (37%) were less sure or had no opinion. Remennick (1999) also found that knowledge and attitudes towards cancer showed weak association with BSE. Southern Asian women with minimal knowledge of breast cancer did not engage in breast cancer detection practices (Chouhry, Srivastava, & Fitch, 1998). Because knowledge is related to increased awareness of breast cancer, a common predictor of breast cancer screening behaviors is knowledge. Clinical breast examination (CBE) and BSE were predicted by greater knowledge (Rutledge et al., 2001). Chatchaisucha and Pongthawornkamol (2001) found that knowledge of breast cancer and BSE was significantly correlated with the frequency of practice of BSE

($r = 0.24$, $p < .01$). In addition, knowledge can enhance breast cancer screening practices and early detection (Ford et al., 1997). Knowledge of breast examination recommendations was a significant predictor of ever having had a clinical breast examination (Yi & Prows, 1996). Four hundred women completed surveys about knowledge of the recommended frequency of BSE and preventive behaviors; an urban emergency department found that knowledge was greater in women with private insurance. Knowledge of the recommended frequency of BSE was significantly greater among whites and Native Americans than among African-American, Asian, or Hispanics. Stated performance of preventive behaviors was 72% for BSE and for mammography. Champoin and Menon (1997) studied low-income African-American women aged between 45 and 64 years and found that knowledge was significantly predicted by either frequency or proficiency of BSE. Those health professionals who reported performing BSE regularly were found to have higher scores of knowledge than those who did not, and health care professionals with higher scores on knowledge were found to practice BSE more frequently (Patistea et al., 1992).

10) Physician's recommendation. Physician's advice is known to be one of the key determinants of women's screening behavior (Champion & Miller, 1996 cited in Remennick, 1999). Women reported moderate/high adherence to recommendations for early detection of breast cancer. Mammography, CBE, and BSE were predicted by higher health motivation (Rutledge et al., 2001). Another study found that 20% of 620 Russian immigrant women in Israel age over 35 years had had a mammography at their doctor's suggestion, while 1.6% were advised but decided against it, and women who had no regular primary care providers showed the lowest cancer awareness and minimal screening activity (Remennick, 1999). Champion and Menon (1997) studied

low-income African-American women aged 45 to 64 years, and found that having a regular physician significantly predicted either frequency or proficiency of BSE.

11) Family history of cancers or breast cancer. Breast self-examination was more likely to be done by older women, especially those with a family history of breast cancer (Takakuwa et al., 2000). Hailey, Carter, and Burnett (2000) found women with a first-degree relative with breast cancer were more likely to engage in appropriate screening behavior. Kash et al. (1992) stated that women who have a family history of breast cancer have higher anxiety, which is directly related to poor attendance at clinical breast examinations and poor adherence to monthly breast self-examination. Of two hundred and seventeen women enrolled in a breast protection program, 94% came in for regularly scheduled mammograms, while only 69% came in for regular clinical breast examinations. The analysis revealed that increased cancer anxiety decreased regular clinical examinations (coefficient = .65). Only 40% performed BSE monthly, 10% never performed BSE, and 50% did not perform BSE regularly. Bostick et al. (1994) found that a predictor of mammography was a positive family history of breast cancer. Remennick (1999) found that family history was associated with preventive activity, with 65% of respondents who had close persons with cancer rating their own risks as moderate or high, compared to 37% among respondents without such persons.

12) Receiving information resources. Information resources (i.e. video, leaflet, and teaching by using demonstrations) can increase by approximately 30% women's knowledge of breast cancer and BSE as well as in their ability to detect lumps (Ortega, Lopez, & Lopez, 2000). Women use magazines as sources of health-related information, including information about cancer. If women are indeed receiving much of their cancer information from such media coverage, these findings should alert

cancer educators to the possible need to work with these media to help in the dissemination of additional information about cancers to women (Gerlach, Marino, Hoffman, & Goetz, 1997). Remennick (1999) found that women aged over 50 in Israel improved their awareness of breast cancer very little during their life, partly because they received little health information from mainstream society. Training about BSE can also enhance breast-cancer prevention and screening practices and early detection (Ford et al., 1997) because screening practices correlated with having been taught BSE (Krischer et al., 1988). The self-instruction programs (such as video self-instruction kits) had significant and positive impacts on the two BSE proficiency measures, skill demonstrations ($t = 7.32, p < 0.0001$) and lump detection using a simulation ($t = 4.23, p < 0.0001$) in African-American women > 60 years of age (Wood, 1996). Coleman, Lord, Bowie, and Worley (1993) with "a statewide breast cancer screening project" in Arkansas, found a significant increase in the reported frequency of BSE in women who were taught BSE during the project ($\chi^2 105.79, df 8, p < 0.001$). So innovative workplace programs aimed at increasing breast cancer screening need to be developed, and the results of studies can provide culturally sensitive information that may be useful in establishing relevant breast cancer prevention programs (Lambert, Newton, & deMeneses, 1998). Comfort should be considered. Regarding the availability of prevention programs, Caplan and Coughlin (1998) stated that if a prevention program is provided in the workplace, the women have more practice in breast cancer screening.

In Thailand, information is important for preventive behavior. In modern societies, especially in big cities or towns in many parts of Thailand, the mass media are an important part of the everyday lives of most people. All the major media, including television, newspapers, magazines, radio, and films, are fundamental

components of mass culture and they are important sources of health information. One study showed that information is also a factor influencing practice of BSE and frequency of BSE among nurses, outpatients from a breast unit, and outpatients from a general unit who were aged between 30-39 years (Kengkhetkit, Rabieb, & Aemruksa, 1999). In addition, Narkrit (1998) found that women age 40-60 years old in Bangkok received information about breast cancer mainly (32.5%) from television (TV.), 25.7% from health care teams and received information about BSE from a health care team (22.5%) and 21.4% from TV.

13) Family encouragement. A previous study found married women were more likely to have had a mammogram. Married women reported more positive BSE behavior than women belonging to other marital status groups, except for the group of unmarried women having breast cancer, which was more likely to practice BSE regularly (Nichols, Misra, & Alexy, 1996), and marital status was correlated with monthly BSE (Philips & Wilbur, 1995). In addition, Prows (1996) has stated, "more encouragement can encourage women to do mammograms and BSE".

14) Social encouragement. Social factors such as relatives or friends who have had cancer can be a cue to take cervical and breast cancer screening (Jirojwong, & Manderson, 2001). Some studies found that the history of cancer in friends was associated with preventive activity; for cancer in friends and colleagues, rated their own risks as moderate or high at 55% vs. 32% respectively. Among the women who had served as principal caregivers to cancer patients, 62% considered themselves at risk vs. 38% among women with no such experience (Remennick, 1999). Another study found that social influence was correlated with monthly BSE (Philips & Wilbur, 1995). Findings suggest that black women rely on religion as a coping resource to a greater extent than white women. Wagle, Komorita, and Lu (1997) found social

supports were significantly related to the frequency of BSE ($r = 0.45$, $p < 0.05$), but not to the accuracy of BSE ($r = 0.28$). Knowing someone with cancer was significantly related to scores on BSE, Pap smear, and TSE (Nichols, Misra, & Alexy, 1996). No significant relationship between frequency of BSE and perceived level of social support, and social network properties (Rutledge, 1987), was found.

According to the literature review, it was found that factors that may be associated with BSE are cultural belief of having breast cancer, source of information, knowledge about breast cancer, physician's recommendation, age, educational level, family and social encouragement, individual perceptions, information resources, greater risk of breast cancer, decreased barriers to BSE, perceived benefits of BSE, marital status, high health motivation, intention to do BSE in the future, history of breast lumps, family history of breast cancer, income and private insurance. It was found that factors that may be associated with mammography are age, knowledge about breast cancer and mammography, encouragement, physician's recommendation, high awareness, perceived barriers to mammography, race, marital status, history of breast tumor, income and private insurance.

For methodology, most studies used convenient and volunteer women to be the samples, aged 12 years and older. The sample sizes were from 22 to 4,915, about 150-250 women on average. Most of these studies were conducted in developed countries, with only a few from developing countries such as South East Asia, including Thailand. Southern Thai healthy women in Songkhla province, one of the provinces, which reflects different religions, culture and life style, were less likely to be explored and then selected.