Personal practice of and beliefs about breast self examination in students of nursing

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PERSONAL PRACTICE OF AND BELIEFS ABOUT BREAST SELF EXAMINATION IN STUDENTS OF NURSING

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ABSTRACT

PERSONAL PRACTICE OF, AND BELIEFS ABOUT, BREAST SELF EXAMINATION IN STUDENTS OF NURSING

Epidemiological data reveal that breast cancer is a major health problem to women today. Although there are no known means for preventing it, detection and early diagnosis of breast cancer can be readily made through Breast Self Examination (BSE), an inexpensive, non-invasive, cost-effective procedure undertaken by women themselves. Yet, while most women have heard of BSE, very few perform it. By employing Pender's (1987) Health Promotion Model (HPM) as the theoretical nursing framework, it is possible to study reasons for this non-compliance. In this study, two areas are looked at specifically: perceived susceptibility to breast cancer and perceived benefits from BSE practice. Within the context or framework of the HPM, the likelihood of nursing students practising BSE is expected to be greatly increased by these two determinants. It is believed that if students practise BSE regularly they would probably advocate its use in their work as nurses, resulting in an increase in the practise of BSE among the general population. An exploratory descriptive survey was used to examine the beliefs and personal BSE habits of nursing students attending the W.A.C.A.E. School of Nursing, and to test the hypothesis that BSE will be more frequently practised by those students with relatively high levels of belief in perceived susceptibility and perceived benefits. In a convenience sample of 67 Semester 6 female nursing students, in which data was collected by questionnaire, the results showed that, while 90% practise BSE, only 12% were deemed to be effective. As a greater proportion of non-practitioners of BSE recorded higher belief levels in both perceived susceptibility and perceived benefits, there was no support for the hypothesis ($F = 1.82; p > 0.33$). These results indicate that, while nursing students view BSE as an important health behaviour, they may lack the knowledge to teach it effectively to their clients once employed as registered nurses. It is, therefore, recommended that alternative teaching strategies be evaluated and implemented to correct this deficit.
"I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any institution of higher education and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text."

Charles Phillip Lancaster
21 October 1990

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INTRODUCTION

Breast cancer is a major health problem for Australian women today. Early detection methods for the disease are considered the best hope of reducing its mortality rate which, despite advances in treatment technology, has remained unchanged for 30 years.

Breast Self Examination (BSE) is one of these early detection methods. It has advantages over other techniques in that it is simple, inexpensive, non-invasive and allows for self-responsibility of health. Yet, even with a large percentage of the population having heard of it, very few people actually practise BSE, mainly due to a lack of knowledge on how to perform it.

Nurses are in a favoured position to fill this vacuum. However, they do not appear to take advantage of the situation, which may reflect their own lack of knowledge about breast cancer and their lack of personal BSE practice.

Purpose of this Study

This study is concerned with nursing students' beliefs about breast cancer and personal BSE practice. Once graduated and employed as registered nurses, they can play a significant role in teaching effective BSE to women in their care. However, this health education function may be influenced by their beliefs about breast cancer and their own BSE practice. Therefore, by looking at the knowledge and experience of BSE in nursing students, it may be possible to optimise their future role as BSE educators.

The study employs Pender's (1987) Health Promotion Model (HPM) as its theoretical nursing framework. This model is an extension of the more widely used Health Belief Model in that it emphasises both preventative care and health promotion. Of the three determinants of health promoting behaviour - individual perceptions, modifying factors and variables affecting likelihood of action - two components in the category of individual perceptions have been explored: perceived susceptibility to breast cancer and perceived benefits of BSE.

Significance of this Study

Studies have shown positive correlations exist between greater knowledge of breast cancer, effective BSE practice and the incidence of teaching BSE. Therefore, if nursing students are to be encouraged to become effective BSE educators when employed as registered nurses, it is important that they are knowledgeable about breast cancer and BSE practice. By identifying any lack of knowledge and/or
competence in these areas, improved strategies could be evaluated and implemented in an attempt to correct the problem during their initial nursing education.

This study is based on a partial replication of one done by Agars (1989) which looked at registered nurses' personal BSE practice and their health teaching of BSE to patients.
LITERATURE REVIEW

Prevalence of Breast Cancer

According to the Report to the Minister for Health for Western Australia from the Working Party on Screening Mammography (July, 1987), an average of over 5000 women are diagnosed with primary breast cancer in Australia each year. This type of cancer therefore is a major health problem for Australian women. The W.A. Cancer Council claims that one out of every 17 women in Australia will develop breast cancer (Bayley et al., 1980) while Chleboun & Gray (1987) put the probability at one in 15.6. Studies conducted in North America (American Cancer Society, 1989; Craun & Deffenbacher, 1986) and in Great Britain (Edgar, Shamain & Patterson, 1984) reveal similar trends.

Nearly 2000 of these Australian women die each year as a direct result of their breast cancer. The disease is exceeded only by congenital malformations and other perinatal conditions, traffic accidents and coronary heart disease as the major cause of loss of years of life before 70 years of age in women (McMichael & Armstrong, 1988). Yet, despite advances in treatment technologies, no overall change in the rate of breast cancer mortality has occurred in the past 30 years (Nettles-Carlson, 1989).

Cause of Breast Cancer

Carcinogenesis is believed to occur in a series of steps which have been described by De Waard & Trichopoulos (1987, p. 666) as a "... multi-stage process or as an occurrence of a number of ‘hits’ which lead to irreversible transitions on the way to full malignancy".

Prepathogenesis, or the susceptibility stage, occurs when the presence of various risk or predisposing factors appear to render the individual open or liable to the development of breast cancer. A large number of epidemiological studies have been undertaken on the numerous risk factors believed to be involved. The major known ones - female gender, older age, and positive family history in first degree relative - are those that cannot be reduced by behavioural changes (Nettles-Carlson, 1989). Others, such as reproductive behaviour, are difficult to change. On the other hand, there are some modifiable factors, including consumption of alcohol (Willet et al., 1987) and high intake of dietary fat (Clifford et al., 1986) but these have yet to be proved.
As yet no scientific evidence has been produced to link suspected risk factors to the actual development of breast cancer despite strong statistical indications. Yet, while these precipitating factors remain unknown there have been several theories suggested on the genesis of breast tumours. Most prominent of these are:

1. **Cellular transformation theory** which maintains that cancer develops due to genetic alteration caused by mutation of one or more genes, resulting in uncontrolled reproduction and growth. As cancer cells do not secrete chalones, which control the mitosis and growth of normal cells, their growth is uncontrolled. Additionally, they do not possess the same adhesive properties of normal cells, allowing them to travel more easily through the tissues, blood stream and body to form 'pockets' for the malignancy to grow (Guyton, 1982, p.28).

2. **Failure of immune response theory** which claims that the body is continually producing cancerous cells which the immune system recognises as foreign and therefore destroys. When the immune system malfunctions it cannot destroy these rapidly multiplying cells (Luckmann & Sorensen, 1987, p.312).

3. **Oncogene theory** evolved as a result of viral studies. Oncogenes are small segments of DNA able to transform normal cells to cancerous cells. While genetically they are relatively simple, they are able to induce all pathological and clinical changes associated with neoplastic disease and maintain the neoplastic state (Braunwald et al., 1987, p.310).

**Importance of Early Detection**

Early research into the causes of breast cancer led to the belief that the outcome was predetermined by the biological nature of the disease, which is set early in the preclinical phase. McKinnon (in Baum, 1976) suggested there might be two types of breast cancer: a metastasising incurable variety and a non-metastasising curable variety. Therefore, he claimed, any delay in seeking medical assistance made little difference.

However, later research (Melville & Burch, 1987) clearly indicates the chances of survival are directly linked to the stage of the disease at diagnosis. If there is no spread of the disease to the axillary lymph nodes, survival rate and frequency of recurrences after treatment, at 5 and 10 years, are in direct relationship to the size of the primary tumour at the time of diagnosis. If the cancer is diagnosed when 2cm or less is size and no axillary glands are involved 90% of affected persons survive 5 years and as many as 83% 10 years. Therefore, the earlier the tumour is detected the brighter the prognosis.
**Early Detection Methods**

Three practical methods of early detection of breast cancer have been identified: clinical breast examination, mammography and breast self examination.

The effect of clinical physical examination on breast cancer mortality is not known as it has not be evaluated on its own (McMichael et al., 1988). In the Health Insurance Plan of New York (HIP) study (Shapiro, 1977), it was shown to reduce mortality by one third when combined with mammography. However, in a Swedish study, mammography alone was shown to be just as effective (Tabar et al., 1985).

McMichael & Armstrong (1988) report that two other studies in the United Kingdom and Canada are currently evaluating the effectiveness of mammography and clinical breast examination separately. They state that preliminary findings suggest that if skilled clinical breast examination takes place first the incremental contribution of mammography may not be very great in the short term.

However, Gray & Chleboun (in McKay, 1987, p.9) claim that "...the technique of mammography is more efficient than clinical examination since x-rays are able to detect cancers less than 2 centimetres in diameter". This reduces the risk of mortality as breast cancer is identified at an earlier stage. Indeed, mammography has been shown to reduce mortality by as much as 70% (Chamberlain, 1988; Collette et al., 1984; Tabar et al., 1985; Verbeek et al., 1984).

Most investigators have concluded, therefore, that mammography is superior to clinical breast examination in terms of specificity, cost of case detection and sensitivity (McMichael & Armstrong, 1988), despite the findings of a Western Australian study by Atchison (1988) that one in four persons had their breast cancer missed at mammography.

While these two forms of early detection, particularly mammography, may be deemed efficient, they do raise the implications of cost-effectiveness when applied to mass screening. Both are expensive to administer, requiring highly trained health professionals, and in the case of mammography, qualified technicians and sophisticated equipment. Additionally, neither is readily accessible to all people.

**Breast Self Examination**

Later clinical signs of breast carcinomas may include rash, change in skin colour, puckering and dimpling, tenderness, nipple retraction and/or discharge (Billings &Stokes, 1987, p. 623). However, initially it presents as a small, painless, moveable
mass or thickening with distinct edges in a superficial subcutaneous gland in the breast (Porth, 1986, p.578).

By its very nature and location, therefore, breast cancer lends itself to detection by inspection and palpation by the person themselves, making early diagnosis possible (Clarke & Sandler, 1989). If advantage is taken of this fact and if the person practices BSE regularly, combined with and reinforced by regular clinical breast examination and mammography, small cancers can be detected (Melville & Burch, 1987). In fact, McDonald (in Baum, 1976) argues that if women were educated to recognise the appropriate signs and symptoms, and then sought medical advice without delay, cure rates for breast cancer could improve to the 100% level.

This may be an unrealistic goal, yet several studies (Foster et al., 1978; Foster & Costanza, 1984; Greenwald et al., 1978; Huguley & Brown, 1981) have found that breast cancer patients who were BSE performers had an earlier stage of disease at diagnosis, smaller tumour size, less axillary node spread and longer survival than did non-performers. Conversely, studies by Gould-Martin et al. (1982), Senie et al. (1981) and Smith et al. (1980) found no clear benefit to BSE practitioners in terms of stage of disease at diagnosis, tumour size or lymph node involvement. While, perhaps, casting some doubt on BSE as an early detection technique, these inconsistent results may simply be attributable to methodological problems such as different definitions of BSE amongst investigators, different classification systems of breast cancer staging and differing outcome categories (Nettles-Carlson & Smith, 1988).

Advantages & Disadvantages of BSE

BSE has the potential advantages over other methods of early detection of breast cancer in that it is simple, inexpensive, non-invasive and allows people to take responsibility for their own health (Ellis et al., 1990; Nettles-Carlson et al., 1988; O'Malley & Fletcher, 1987).

As Mayer & Frederiksen (1986, p.181) state: "Breast self-examination is a potentially cost-effective procedure for the early detection of breast cancer ... which can be afforded by all women and practised in the absence of specialized personnel" in the comfort and security of their own homes. McNeal (1987) however, claims that as her research showed BSE to be ineffective in reducing breast cancer mortality rates, its benefits, such as low costs and self-responsibility for health, are in fact illusionary.
The accuracy of BSE in early detection of breast cancer, as currently practised by most people, appears to be less than that of a combination of mammography and clinical breast examination (O'Malley & Fletcher, 1987). This suggests that it is not a very sensitive test, which would support the findings of Baines (in Nettles-Carlson, 1989, p.373) that: "From 75% to 90% of all breast cancers are found ... accidentally rather than during purposeful breast self-examination".

Obviously BSE will never match mammography in this area, the latter being 60% to 70% sensitive and 93% to 98% specific for breast cancer (Report to the Minister for Health for Western Australia from the Working Party on Screening Mammography, July 1987). However, by increasing the quality and frequency of BSE practised by individuals through education, it may be possible to improve its accuracy as an early detection tool (Shamain & Edgar, 1987).

**Awareness versus Practice of BSE**

Various studies (Hallal, 1983; Howe, 1981; Marty et al., 1986; Stillman, 1977; Turnbull, 1978) report that up to 99% of women have heard of BSE and yet only 14% to 40% perform it monthly. Rose (1978, p.24) noted: "For many women 'awareness' of breast self-examination means only a generalised perception that there is such a thing, rather than specific knowledge of it". In a study done by Stafford et al. (1985) on 400 Western Australian women, although 96% claimed to have heard of BSE, only 69% examined their breasts, 29% doing so monthly. A mere 11% were judged to have performed it effectively. This supported an earlier Western Australian study by Cornelius & Phillips (1980).

Stillman (1977, p.121) states: "Most women overestimate the prevalence of breast cancer, believe the majority of breast lumps are malignant, are confused as to the causes of breast cancer, and fear and panic in relation to the topic". She claims that the lack of regular practise of BSE by a majority of women appears to stem from fear and anxiety about breast cancer, and lack of knowledge about and confidence in how to do BSE. Other researchers (Hallal, 1982; Rutledge & Davis, 1988; Trotta, 1980) support her view, having linked knowledge, experience and attitudes towards breast cancer and BSE to frequency and efficiency of BSE practice.

It could, therefore, be reasonably assumed that misapprehension about breast cancer, due to a deficit in knowledge, is prohibiting the widespread adoption of BSE practice.
Nurses' Role as BSE Educators

Because nurses interact on an intimate and influential basis with people in their care they are ideally situated to take an educational role in BSE practice (Hirst, 1986). In fact, two studies (McLeod, et al., 1982; Bennett et al., 1983) indicated that people taught by a nurse demonstrated greater knowledge, confidence and practice than people taught by other sources.

Yet only a small proportion of people learn BSE from nurses (Agars, 1989; Bayley et al., 1980; Clarke & Sandler, 1989; Ellis et al., 1990). This may be due to nurses' own lack of knowledge and experience of breast cancer and their lack of personal BSE practice. Only between 11% and 39% have been shown to practise effectively themselves (Agars, 1989; Cole & Gorman, 1984; Ellis et al., 1990; Hirst, 1986) which may be related to their perception that BSE is not an important health teaching priority.

Implications for Nursing Students

While, logistically, it may be difficult to re-educate these nurses in the workforce, such is not the case with nursing students. Advantage should be taken during their initial nursing education to ensure that they become knowledgeable about breast cancer and BSE practice. If they are encouraged to carry it out for themselves it could be inferred that they have incorporated BSE practice into their own philosophy of health. If so, it could be assumed that, once they begin to practise as registered nurses, they would be more inclined to teach it to people in their care.

This study is, therefore, designed to look at the knowledge and experience of BSE in nursing students, with the view to optimising this role of BSE educators.
THEORETICAL FRAMEWORK

Pender's (1987) Health Promotion Model (HPM) was chosen as the theoretical nursing framework for this study because of its emphasis on preventative care and health promotion, together with the nurse's role as an agent of change.

The HPM has been organised similarly to the Health Belief Model, developed by Rosenstock, Hochbaum & Kegels in the early 1950's, which has been used extensively in BSE research because of its focus on health protecting behaviour (Agars, 1989; Champion, 1987; Dickson et al., 1986; Hallal, 1982; Hirst, 1986; Massey, 1986; Rutledge & Davis, 1988). Pender (1987, p.57) however, claims that health protection is directed towards decreasing the probability of experiencing illness and, while this negative outlook may be relevant to motivation for health protection behaviour, it appears to have little motivational significance for health promotion behaviour.

She therefore developed the HPM as "... a complementary counterpart to models of health protection" (Pender, 1987, p.57). In this model equal emphasis is placed on preventative care and health promotion. On the one hand, health promotion behaviours represent moves towards achieving higher levels of health and well-being and can thus be seen as actualising or enhancing the person's health potential. On the other hand, preventative care behaviours are aimed at helping people to avoid impediments that may prevent optimum health (McMurray, 1990, p.85). As such the HPM is a more wide-ranging model and, therefore, more relevant to the study of determinants of BSE practice.

Pender's determinants of health-promoting behaviour (see Figure 1) are divided into 3 categories:

(a) **Individual perceptions.** These factors are seen as exerting a direct influence on the likelihood of engaging in health-promoting actions, and are known as 'primary motivational mechanisms' or cognitive-perceptual factors.

(b) **Modifying factors.** These factors are seen as indirectly influencing patterns of health behaviour through the individual perceptions that directly affect that behaviour.

(c) **Variables affecting the likelihood of action.** Health promotion action depends on either internal or external activating cues whose intensity is, in turn, dependent on the level of readiness to engage in the activity.

This research study explores two of the components of individual perception: perceived benefits from some health action (which facilitates the continued
practise of the newly acquired behaviour), and perceived susceptibility to an illness or disease.

Perceived susceptibility is defined as a reaction to a threat of contracting a specific disease or condition which may motivate an individual to take instrumental action aimed at resolution of distress (Ben-Sira & Padeh in Rutledge, 1987). Various studies (Dickson et al, 1986; Hallal, 1982; Howe, 1981; Massey, 1986) have revealed that a positive relationship exists between a person's perceived susceptibility to breast cancer and BSE practice. In other words, increased perceived susceptibility has been shown to be a strong motivator for practising BSE.

Perceived benefits of BSE are the beliefs regarding the various actions available to reduce the threat of breast cancer. The perceptions of benefits of BSE have been measured in previous studies (Champion, 1987; Hallal, 1982; Howe, 1981; Rutledge & Davis, 1988) and shown to contribute significantly to the practise of BSE.

As the HPM indicates, the likelihood of nursing students practising BSE may be dictated, among other factors, by their levels of perceived susceptibility to contracting breast cancer and perceived benefits from BSE practice.

Accordingly, the following hypothesis was formulated:

"The health belief scores of nursing students practising BSE will be higher than the health belief scores of nursing students who do not practise BSE."

It could be assumed that if nursing students practise BSE regularly they would advocate its use in their work as nurses, functioning as agents of change. A consequence of this should be an increase in the effective practise of BSE among the general female population.
FIGURE 1:
Health Promotion Model

COGNITIVE-PERCEPTUAL FACTORS

- Importance of health
- Perceived control of health
- Perceived self-efficacy
- Definition of health
- Perceived health status
- Perceived benefits of health-promoting behaviours
- Perceived barriers to health-promoting behaviours

MODIFYING FACTORS

- Demographic characteristics
- Biologic characteristics
- Interpersonal influences
- Situational factors
- Behavioural factors

PARTICIPATION IN HEALTH-PROMOTING BEHAVIOUR

- Likelihood of engaging in health-promoting behaviours
- Cues to action

(Pender, 1987, p.59)
DEFINITION OF MAJOR VARIABLES

Nursing Students. Persons enrolled in the Diploma of Health Science (Nursing) at the Western Australian College of Advanced Education School of Nursing at the Churchlands Campus.

Breast Self Examination. The examination of both breasts (or one if one has been removed) by the student, in a systematic manner, for the purpose of detecting an abnormality.

Effective BSE. This is dependent on 4 factors:
   (1) Position - in a supine position
   (2) Method of palpation - with pads of fingers
   (3) Regularity - once every month
   (4) Timing - 1 to 3 days following menstruation

Ineffective BSE. Absence of BSE at least once every 2 months and/or 2 or more of the above criteria for effective BSE.

Health Beliefs. A set of perceptions an individual holds about their susceptibility to a disease (breast cancer), the seriousness of that disease on their life, and the benefits of taking a health action (BSE) to increase well-being and health.

Perceived Susceptibility. The individual’s appraisal of the risk of contracting a condition (breast cancer).

Perceived Benefit. The individual’s appraisal of the effectiveness of a health action (BSE) in increasing a sense of well-being and health.
METHODOLOGY

Design
An exploratory descriptive survey was used in order to gain insight into the personal practice and beliefs about BSE in students of nursing. This approach was considered appropriate as little research appears to have been undertaken among students in this area, particularly over the past 5 years.

Sample
The convenience sample was delimited to female nursing students enrolled in Semester 6 during the second semester of 1990 at the W.A.C.A.E. School of Nursing. The exclusion of students from other semesters was done to avoid a 'recency' effect. Semester 3 students receive instruction on the actual practise of BSE, and Semester 5 students are taught the pathophysiology of breast cancer. As these students from earlier semesters are still receiving instruction on breast cancer and BSE, their current levels of knowledge and awareness in these areas may have been a direct result of their recent learning rather than a reflection of a more enduring behaviour.

Instruments
The three-part survey was adapted from one used by Agars (1989) and incorporated the following instruments: a health belief instrument (part 1); a breast self examination performance instrument (part 2); and a short demographic/history form (part 3). (See Appendix.)

The health belief instrument used in the first section of the survey comprised ten items from Stillman's (1977) health belief instrument concerning perceived susceptibility to breast cancer and perceived benefits of BSE. A Likert-type agree-disagree continuum was used for the first 9 statements and a 3-point rating scale for the tenth.

Stillman reported pretesting this instrument on a sample of 20 women. The content validity for the health belief scale had been previously established by a panel of experts (Stillman, 1977).

While a Cronbach alpha coefficient was not obtained for this study, Agars (1989) obtained a result of 0.87, and Massey (1986) 0.70, for this health belief instrument, signifying a high degree of internal consistency.
The second section of the survey contained an instrument used by Agars (1989) eliciting information regarding the frequency of BSE performance and the method actually used. This was done through the use of 4 multiple choice questions.

Agars (1989) reported submitting this tool to a group of BSE health educators employed by the Cancer Foundation of W.A. who concluded that it did have face and content validity.

The final section obtained the participant's age as well as personal and family history of breast disease, which is believed to have relevance to the practice of BSE. Again, this has been adapted from Stillman's (1977) instrument used in many studies on BSE (Halla!, 1982; Hirst, 1986; Massey 1986; Nettles-Carlson et al., 1988; Shamain & Edgar, 1987).

**Procedure**

Permission to undertake the study was obtained from the School of Nursing Ethics Committee.

The lecturer of a Semester 6 core unit agreed to allow the female students attending that core unit lecture to be approached about participation in the study.

Prior to the administration of the questionnaire the purpose of the study was explained along with the voluntary nature of participation and the right to withdraw at any time. Assurances of confidentiality and anonymity were given. Consent was considered implicit in the voluntary completion and return of the questionnaire.

Completed forms were deposited in a sealed box placed in a visible location in the School of Nursing. Collection of data occurred over a 5 day period. No follow-up reminder to complete and return the questionnaire was used.
ASSUMPTIONS

Stillman (1977, p.122) states: "Although perceived seriousness is one of the variables identified in the Health Belief Model, previous studies indicated that cancer is perceived as maximally serious". Perceived seriousness is also one of the variables included in the HPM. Therefore, for the purpose of this study, it was assumed that the same applied (i.e.: participants considered breast cancer to have a serious effect on their lives).

The HPM proposes that the adoption of health promoting actions is partially influenced by the degree to which the individual values health. Because participants in this study are nursing students, it is assumed that they regard good health as a desirable goal.

Use of a questionnaire for judging proficiency of BSE may not be reliable as participants may know the technique but not implement it (Agars, 1989). In this study it was assumed that the nursing students provided an accurate recall of their BSE practice, and not just their knowledge of BSE.

As with all research in which data are collected through questionnaire, it was assumed that respondents answered this questionnaire truthfully and to the best of their ability.
LIMITATIONS

This study was restricted to Semester 6 female nursing students attending the Diploma of Health Science (Nursing) course at W.A.C.A.E. School of Nursing at the Churchlands Campus. This was purely for the purpose of convenience of access to potential participants by the researcher in the restricted time scale. It means that generalisations beyond the sample should be viewed with caution.

Whether or not the 'Hawthorne effect' (i.e., a change in the participants' response because they know they are taking part in a study) has caused a distortion in the results of this study cannot be measured. Students may have felt that a lack of personal BSE practice reflects badly upon them and, therefore, may have answered as they felt they should.

Assessing the efficiency of BSE by questionnaire is obviously fraught with danger. Ideally, practitioners should demonstrate their technique before a team of trained observers, but this method was beyond the scope of this study.

Finally, a possible non-response bias may be another limitation of this study. Thirty questionnaires (31%) were not returned which may have been a result of these students not practising BSE and, as such, not seeing the necessity to participate in the survey.
RESULTS

Sample characteristics

A total of 97 questionnaires were distributed and 67 returned within 5 days giving a response rate of 69%. All were considered suitable for inclusion in the survey. Participants ranged in age from 19 to 42 years. (Mean = 22.9; S.D. = 5.99)

Personal BSE Practice

Of the 67 responses on personal BSE habits, 90% (60) stated that they practised BSE. To ascertain the effectiveness of that practice the following areas were measured: regularity; timing in relation to menstrual cycle; palpation; body positioning when performing BSE. Effective BSE (score = 8) was seen as monthly performance within 1 to 3 days following menstruation, in a supine position with the pads of the fingers. Partially effective practice (score = 5 to 7) was BSE at least once every two months and 2 more of the above variables. A score of less than 5 was judged ineffective BSE. Aggregate scores could range from 0 to 8 points.

Only 12% of the practitioners were deemed to be fully effective in their BSE practice, with a further 43% partially effective. Because of the difficulties in judging quality of BSE from written questionnaires, these figures may, in fact, be somewhat distorted or overrepresented. The remainder of the BSE performers were judged to be ineffective (See Figure 2).

FIGURE 2:
BSE Performers compared with Non Performers by percent

NON PERFORMERS
(10% ; n=7)

PERFORMERS
(90% ; n=60)
The areas indicating effectiveness of BSE practice are displayed in Figure 3 together with the percentage of correct and incorrect answers in each category.

**FIGURE 3:**
Areas of Effectiveness / Ineffectiveness of BSE Practice in Nursing Students

![Bar chart showing percentages of correct and incorrect answers in each category of BSE practice.]

This research shows that only 27% of BSE practitioners claimed to examine their breasts at the recommended interval of one month. However, if BSE at intervals of every 2 months was considered acceptable, the figure was raised to 45%. Including intervals of 3 to 4 months would increase efficacy rates (on this factor alone) to a very high 92%.

Sixty percent of those participants who practised BSE did so within 1 to 3 days following their period, with 25% not practising in relation to their cycle at all.

The correct method of palpation was used by 88% of BSE performers.

Sixty-seven percent of BSE practitioners in this sample used the recommended supine position when examining their breasts.
Health Beliefs

The participants' health beliefs were measured through their responses to a series of 10 statements. For the first 9 statements, answered on a 4-point agree-disagree continuum, the lowest belief was scored 1 and the highest 4. The final item had a 3-point scale with a response of 'above average' allotted a score of 3, 'average' 2, and 'below average' 1. The potential range of scores was 9 to 39 points, with a score of 32 or more deemed to represent a high degree of belief, 18 to 31 a moderate belief, and below 18 a low belief.

For those participants who practised BSE the range of health belief scores was 25 to 37, while scores ranged from 28 to 37 for non-practitioners. Accordingly, analysis by one-tailed t-test revealed that the hypothesis could not be supported. (See Table 1).

| TABLE 1: |
| Comparative Health Belief Scores (HBS) of BSE Practitioners and Non-practitioners: t-test analysis |

<table>
<thead>
<tr>
<th>BSE</th>
<th>No.</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Variances</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60</td>
<td>32.38</td>
<td>2.85</td>
<td>Unequal</td>
<td>-0.4229</td>
</tr>
<tr>
<td>No</td>
<td>7</td>
<td>32.70</td>
<td>2.11</td>
<td>Equal</td>
<td>0.3431</td>
</tr>
</tbody>
</table>

df      Prob>| t |  
15.6    0.6782  
64.0    0.7326  

Variances are equal, F=1.82 df=(59.6) Prob>F=0.3345

The even-numbered items in the health belief instrument measured perceived susceptibility to breast cancer, with a total range of 5 to 19 points possible. Perceived benefits of BSE were calculated through the odd-numbered statements where scores could vary from 5 to 20. In both instances, a score of 16 or more represented a high degree of belief, 9 to 15 a moderate belief and below 9 a low belief.
Eighty-eight percent of BSE practitioners had a high degree of belief in the benefits of BSE, with the remaining 12% holding a moderate belief. Conversely, of those participants who do not practise BSE, 100% held a high belief that BSE was beneficial. No participants, either practitioners or non-practitioners, fell into the low range. (See Figure 4).

**FIGURE 4:**
Perceived Benefits from the Practice of BSE

<table>
<thead>
<tr>
<th>PERCENTAGE OF PARTICIPANTS</th>
<th>Frequency</th>
<th>Moderate</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSE Practitioners</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Practitioners</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Only 39% of BSE practitioners had a strong belief in their susceptibility to breast cancer and 61% believed they were moderately susceptible. Of the non-practitioners, 43% strongly believed in their susceptibility. Again, no-one in the sample fell into the low range regarding perceived susceptibility. (See Figure 5).

**FIGURE 5:**
Perceived Susceptibility to Breast Cancer
The final question in the health belief instrument asked the participant to rate her chances of getting breast cancer compared to other women. Of those who practise BSE 73% (44) felt they had an above average chance, 15% (9) average, and 12% (7) below average. Figure 6 displays the percentage of each of these groups, as well as the effectiveness, partial effectiveness and non-effectiveness of BSE practice within each group.

FIGURE 6:
Perceived Chance of getting Breast Cancer compared to other women

SELF-RATED CHANCE OF GETTING BREAST CANCER
Eighty-six percent of those participants who do not practise BSE believed they had an above average chance of getting breast cancer, with the remaining 14% rating their chances as average.

**Relationship between Age, HBS and BSE Practice**

The age range of the sample was investigated to establish if any association existed between age and health belief scores. The relationship between age and practice of BSE was also examined. (See Figure 7).

**FIGURE 7:**
Health Belief Scores and BSE Practice according to Age
The age range of the participants did not indicate an association with HBS using Pearson's correlation coefficient ($r = 0.06; p = 0.63$), nor was any association between age range and BSE practice revealed ($r = 0.05; p = 0.59$).

**BSE & Family History**

Participants were asked if they had any family history of breast disease or breast cancer. Twelve (18%) responded in the affirmative, with 11 of these practising BSE. While 7 of the 11 practitioners were judged to be effective or partially effective, there was no proof of a significant relationship between BSE practice and a family relationship of breast cancer using chi-square analysis. ($X^2 [1, n=67] = 0.07; p > 0.05$)
DISCUSSION

The results of this study revealed that 90% of Semester 6 nursing students practise BSE. This was not unexpected in view of their educational preparation and focus on health issues. In fact, most studies on nurses and nursing students consistently describe a higher percentage performing BSE in comparison to the general female population—75% to 95% versus 14% to 40% (Agars, 1989; Bayley et al., 1980; Clarke & Sandler, 1989; Ellis et al., 1990; Hirst, 1986). Perhaps this high compliance rate demonstrates that most nursing students consider BSE important to themselves and will hopefully encourage them to serve as role models when employed as registered nurses. As a consequence they could have a positive influence on their clients' attitudes towards BSE practice.

However, it is of significant concern that the technique of nursing students be assessed as competent in order for them to fulfil this health promotion function. While noting the limitation regarding the measurement of BSE effectiveness through questionnaire, the research found that only 12% of students practised effectively. This replicates the high degree of ineffectiveness in BSE by nurses and nursing students in studies by Agars (1989), Bayley et al., (1980), Ellis et al., (1990) and Hirst (1986). Their effectiveness levels appear no greater than the general population and possibly cast doubt on the value of that health teaching.

Practice of BSE other than monthly (55%) and examination at times other than immediately following menstruation (40%) were the most significant reasons why BSE was rendered ineffective, thus supporting Agars (1989) findings amongst registered nurses. Failure in these areas may be an indication that a sizable proportion of nursing students do not think of BSE as a regular event. While participants in this study were not asked why they did not meet the criteria for effectiveness, it may be that they simply forgot, which indicates that reminder cues may be the key to increasing the frequency of effective BSE practice. Alternatively, the lack of regular practice of BSE at specific times may be due to a deficit in knowledge, which could be corrected through a more thorough educational programme in order to increase BSE competence.

A major aim of this study was to assess nursing students' beliefs about breast cancer and the practice of BSE as an early detection method, using Pender's (1987) Health Promotion Model (HPM) as the theoretical framework. Two components of the individual's perception (perceived susceptibility to breast cancer and perceived benefits from performing BSE) were explored. These were combined to give a
total Health Belief score in an attempt to support the hypothesis that BSE will be more frequently practised amongst those with a relatively high level of belief.

This study was unable to support that hypothesis: no positive relationship was found to exist between BSE practice and increased perceptions of susceptibility to breast cancer and benefits of BSE, thus replicating findings by Agars (1989) and Schlueter (1982).

When the components of the Health Belief score were analysed individually it was found that a large majority (88%) of participants who were BSE practitioners believed strongly in its benefits, and yet all (100%) of the non-practitioners held the same high level of belief. Nearly all the students therefore indicated that they were aware that BSE would be good for them, but this perceived benefit was not enough, in itself, to encourage them all to adopt the practice. Stillman (1977) made a similar finding in her study of an homogeneous, well-educated sample of American women, as did Agars (1989) with Australian registered nurses. One explanation may be that while the advantages of BSE are obvious, the practice itself may not be a very attractive health care activity, indicating that perceived barriers to its performance override perceived benefits.

The Health Promotion Model asserts that a high degree of perceived susceptibility will lead to action, but again the results indicate that this is not the case. Perceived susceptibility was strongly present in only 39% of BSE practitioners and 43% of non-practitioners. In view of the mean age of the participants (22.9 years; S.D. 5.99), this could suggest that younger women do not perceive the risk of getting breast cancer as immediate and consequently, do not see the need to practise BSE now, a view agreed to by Olsen & Mitchell (1989). Support for this opinion can be found in studies on older populations in which high levels of perceived susceptibility were registered (Massey, 1986; Stillman, 1977).

The finding of higher levels of perceived susceptibility among non-practitioners than among practitioners lends weight to Pender's claim (1987, p.57) that this negative variable appears to have little motivational significance in promoting BSE. Because there is no direct way of decreasing susceptibility to breast cancer, more women may view BSE as not worthwhile. Indeed, the underlying implication may be that perceived susceptibility acts as a deterrent in that the finding of an abnormality could raise fears of mastectomy, cancer and death (Chamberlain, 1982). Yet, it was found that 92% of participants with a family history of breast disease undertook regular BSE.
In contradiction to these relatively low levels of perceived susceptibility, a large proportion (75%) of the sample considered themselves to be more vulnerable to breast cancer when asked the question ‘How would you rate your chances of getting breast cancer some day to other women?’ This is despite 94% of the sample falling into a low risk group (i.e., younger women; no personal or family history of breast disease) and replicates the results of surveys among registered nurses (Clarke & Sandler, 1989; Whelen, 1984). Perhaps the assumption to be made here is that, because of their greater exposure to information on breast cancer, the majority of nursing students assigned higher prevalence rates to it than actually exist. This would indicate a general misconception that breast cancer is more prevalent than it really is, and that nursing students, therefore, have no more awareness of its incidence than the general population, as shown in a study by Shainain & Edgar (1987). Alternatively, as the question contained the words ‘some day’, it could mean that nursing students’ increased knowledge has alerted them to the higher risk of contracting breast cancer as they age.

Many researchers (Agars, 1989; Hirst, 1986; Howe, 1981; Huguley & Brown, 1981, Senie et al., 1981) have found that older women, including nurses, are less likely to practise BSE, but this study was unable to support their findings. Perhaps, in this sample, all participants’ relatively recent instruction on breast cancer and BSE may have overridden that expected association. Nevertheless, it could be a pleasing indication that age is not a barrier to BSE practice in well-educated women. Caution should be used, however, when interpreting these results as only 16% (11) of participants were over 26 years.

Overall, this study was unable to find a significant relationship existing between the variable of perceived benefit from BSE and the actual undertaking of breast examination amongst nursing students. Some significance, however, may be present in the fact that there is also no association between perceived susceptibility to breast cancer and BSE practice in this study. It may be that, in relation to BSE, perceived susceptibility and behaviour are not related as stated in the HPM. Susceptibility to other diseases such as heart and lung disease can be diminished by specific health actions but susceptibility to breast cancer does not change with the practice of BSE (Champion, 1985).

Implications for Nursing Practice

Most studies have shown that only 14% to 40% of women in the general population are practising BSE. Given the support for the use of BSE in diminishing morbidity
and mortality from breast cancer, it is essential for nurses to pursue ways to increase this number. However, emphasis on urging nursing students to teach BSE when employed as registered nurses will be unsuccessful unless accompanied by a thorough educational programme on the subject which encourages them to become competent BSE performers themselves.

Nettles-Carlson (1989) claims that women who practise BSE tend to report more positive reasons, such as peace of mind and reassurance, than negative reasons, like fear over cancer. This suggests that a positive teaching approach is more likely to help modify these students' health beliefs than teaching through scare tactics.

An approach that minimises fear and anxiety over the possibility of developing breast cancer could be achieved by presenting BSE as a means of exerting some control over the threat of breast cancer through prompt assessment and early intervention. Knowledge of breast cancer could also be increased, including predisposing factors, prognostic factors associated with tumour size and nodal involvement and surgical intervention (Agars, 1989).

Yet, while providing information is important, information alone has not been shown to lead to increased frequency or higher quality of BSE performance (Redecker, 1989). Other teaching methods should be included. Breast models, for example, which are fairly widely available, are effective teaching aids that foster the development of effective BSE (Smith, 1985). Perhaps the most important of all is personal instruction with provision for practice and return demonstration. This has been shown to be the most effective way for developing proficiency, frequency and confidence in BSE (Assaf et al., 1985).

**Recommendations for Future Research**

While this study does not shown support for the variables of perceived susceptibility and perceived benefits contained in the HPM it cannot be concluded that the model is not applicable to promoting the practice of BSE. Inclusion of other variables in future studies, especially an examination of barriers to BSE practice and cues to stimulate it, would provide a fuller test.

The small percentage of nursing students, in this study, deemed to be effective BSE practitioners indicates the current educational programme is ineffective. A longitudinal study assessing other types of teaching techniques is recommended to determine which is the most efficient in increasing effective BSE compliance amongst students.
REFERENCES:


APPENDIX

QUESTIONNAIRE INTRODUCTION

This questionnaire is part of a research project being conducted for an Honours Degree (Nursing). Its purpose is to study the beliefs and practice of Breast Self Examination amongst fellow nursing students in the School of Nursing, Churchlands.

In order to gather the necessary information I seek your co-operation in completing the attached questionnaire, which will take approximately 5 to 10 minutes. Your participation is completely voluntary and I totally respect your right to refuse at any time.

Confidentiality and anonymity is guaranteed for all participants, as the collected data will be used for statistical purposes only.

Please place your completed questionnaire inside the attached envelope and leave in the sealed box provided.

PLEASE DO NOT PLACE YOUR NAME ON THE QUESTIONNAIRE.

Thank you for your co-operation and participation.
QUESTIONNAIRE

SECTION A

Please read the following statements carefully and circle the appropriate response under each statement.

SA = strongly agree
A = agree
D = disagree
SD = strongly disagree

1. If more women examined their breasts regularly, there would be fewer deaths from breast cancer.
   SA A D SD

2. My health is too good at present to even consider thinking that I might get breast cancer.
   SA A D SD

3. Whether I find a lump in my breast myself doesn’t really matter because by then it is too late anyway.
   SA A D SD

4. Whenever I hear of a friend or relative getting breast cancer it makes me realise I could get it too.
   SA A D SD

5. If I examined my own breasts regularly I might find a lump sooner than if I just went to the doctor for a check-up.
   SA A D SD

6. There are so many things that could happen to me that it is pointless to think about any one thing like breast cancer.
   SA A D SD
7. Even though it is a good idea, I find examining / having to examine my breasts an embarrassing thing to do.

SA A D SD

8. The older I get the more I think about the possibility of getting breast cancer someday.

SA A D SD

9. Examining my breasts often makes / would make me worry unnecessarily about breast cancer.

SA A D SD

10. If I had to think about the possibility that I might someday get breast cancer, I would rate my chances, as compared to other women, as:

(a) average
(b) above average (more likely I would get it)
(c) below average (less likely I would get it)

SECTION B

1. Have you practiced breast self-examination in the past 12 months?

   (a) YES
   (b) NO
   If NO please go to SECTION C.

2. How often do you practice breast self-examination?

   (a) more than once per month
   (b) monthly
   (c) every other month
   (d) every three to four months
   (e) less than every six months
3. When do you practice breast self-examination in relation to your menstrual cycle?
   (a) no relation - any time during month
   (b) immediately before menstruation
   (c) one to three days following menstruation
   (d) mid-cycle
   (e) do not menstruate; practice any time during month

4. How do you practice breast self-examination?
   (i) When performing hand palpation do you use:
       (a) the tips of your fingers?
       (b) the palms of your hands?
       (c) the flat part (pads) of your fingers?

   (ii) Do you practice breast self-examination:
       (a) standing up?
       (b) lying down?

SECTION C
1. Please indicate your age on the line below.

2. Have you ever had any breast surgery for any type of breast disease?
   (a) YES
   (b) NO

3. Have you any family history of breast disease/cancer?
   (a) YES
   (b) NO
   (c) UNSURE

THANK YOU FOR YOUR PARTICIPATION.

PLEASE PLACE THE QUESTIONNAIRE IN THE ATTACHED ENVELOPE AND LEAVE IN THE SEALED BOX PROVIDED.