

## The Practice and Efficacy of Breast Self-Examination: A Critical Review

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**Abstract:** Evaluation of the results of breast self-examination (BSE) is inconclusive. Studies which address the question of proper method of BSE find that most women do not know how to carry out the procedure correctly. Socio-demographic characteristics most consistently related to BSE practice are age and education. New research on BSE must not only take into account such correlates but also provide some verification of the procedure to determine the importance of BSE in the detection and control of breast cancer. (*Am J Public Health* 1983; 73:1324-1326.)

### Introduction

With the hope of reducing cancer mortality, secondary preventive measures have been promoted, including breast self-examination (BSE), a practice which has been widely recommended for many women,<sup>1</sup> and recently the subject of much research.

We have organized the present critical summary around four specific questions: 1) Is BSE an effective method of cancer detection?; 2) Are women who practice BSE more likely to find abnormalities at an earlier stage than those who do not?; 3) Are women following the correct procedure for proper BSE?; 4) What are the characteristics of women who perform BSE?

### Review of the Literature

There are relatively few studies which directly address the question of whether women who practice BSE are more likely to detect their own breast abnormalities compared to other methods of detection. Numerous studies report that a large percentage of breast cancers are first detected by patients,<sup>2-6</sup> while others show that physician examination is a more effective detection technique.<sup>7,8</sup>

Four studies on method of tumor detection report data which include BSE. Greenwald and associates<sup>3</sup> found that of those patients who practiced BSE at the time of tumor discovery, a greater percentage were more likely to find their tumors while performing BSE compared to self-reported accidental discovery or during a routine physician examination. Huguley and Brown<sup>5</sup> found that women who practiced monthly BSE were more likely to discover their tumors while performing BSE rather than by accident as compared to women not performing BSE. While a third study<sup>4</sup> found that patients who practiced BSE were more likely than physicians to detect their own tumors, one cannot determine from the report whether patients discovered tumors through

BSE or accidentally. Finally, Mahoney *et al*,<sup>8</sup> followed a group of patients at high risk for breast cancer for a period of almost six years. All women in the study were taught BSE and about 90 per cent were judged competent in the procedure. Of the total number of new lesions detected (128), most (66 per cent) were discovered during routine physical examination. The remainder were discovered either by BSE (23 per cent) or accidentally by the patient (10 per cent). In the final two years of the study, however, 39 per cent of the patients identified their tumors through BSE.

The results of these four studies, while suggestive of a positive role for BSE as a method of cancer detection, are not sufficient to answer the question of whether women who practice BSE are more likely to detect abnormalities than those who do not. Since it appears that most women discover their own tumors, the specific role of BSE in breast cancer detection requires further investigation.

Five studies have looked at the relationship between BSE and the clinical or pathological stage of breast tumor. Three studies<sup>3,5,9</sup> report that smaller tumors were found in women who practiced BSE or women who practiced BSE with greater frequency. Two studies<sup>4,6</sup> find no such relationship. Cole and Austin<sup>10</sup> have attempted to reconcile the findings in four of these studies where BSE behavior can be examined in relation to the use of other breast cancer detection practices among women, pointing out that often BSE is of greater value in detecting tumors when other detection techniques are not used to a great extent. From this perspective they argue that BSE plays a significant role in detecting breast cancer at an early stage. While this interpretation may be a correct one, another factor could account for the lack of consistency in the study results: there is considerable variation across the five studies on what constituted BSE (e.g., some of the investigators examined BSE practice while others looked at its frequency). One can question whether women who reported practicing BSE were in fact performing the procedure correctly.

This leads to our third question: Are women following the correct procedure for proper BSE? Only one of the above studies was designed to assess the validity of the procedure,<sup>5</sup> while the remaining four studies relied solely on self-reports.

The issue of correct or proper BSE involves frequency, timing, and the adequacy of the technique used.\* Although several studies have reported on the frequency of BSE practice, few have evaluated how women perform the procedure.

In 1978, the American Cancer Society in a survey to assess public attitudes toward cancer and cancer tests found that more than half (67 per cent) of the women surveyed reported that they had performed BSE in the past year, but that most were not performing the procedure monthly, were

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**Editor's Note:** See also related papers, p 1318 and p 1321 this issue.

\*Current recommendations<sup>11</sup> are that BSE should be performed once a month by all women, and for menstruating women it should be done following the menstrual period. The procedure involves a number of specified steps which require approximately 5-10 minutes and take proper positioning for the procedure to be useful.

not spending the recommended amount of time, and not carrying out all of the necessary steps for BSE.<sup>12</sup>

Apart from descriptive surveys,<sup>12,13</sup> and the work of Mahoney, *et al.*,<sup>8</sup> only two other studies we reviewed were specifically designed to evaluate how well women were performing BSE,<sup>5,14</sup> although in a study by Howe<sup>15</sup> some knowledge of the proper procedure was assessed. Each of these studies<sup>5,14,15</sup> found that a substantial number of women who reported doing BSE did not know all of the necessary steps.

A number of studies have looked at the relationship between BSE and various social-psychological, social, and demographic characteristics. Since the range of characteristics is broad, only those variables which are specifically analyzed in at least two studies are reviewed here. In addition, we examine only socio-demographic factors which may influence BSE behavior, although a number of studies have focused on attitudes associated with the behavior.<sup>12,13,16-20</sup>

Five studies found a negative association between age and BSE,<sup>4-6,9,21</sup> two of which were reported to be statistically significant.<sup>6,9</sup> Conversely, two studies found a positive relationship between age and BSE practice or frequency, but neither relationship was reported to be statistically significant,<sup>12,18</sup> while no differences were observed in age and the frequency of BSE practice in another study.<sup>17</sup> Finally, a statistically significant "mixed" association between age and BSE was reported by Howe<sup>15</sup> who found that, while younger women were more likely to practice BSE and more likely to practice BSE on a monthly basis, a greater percentage of women over 40 reported a greater-than-monthly practice. Some of the inconsistencies noted in the findings may be a function of the various age breakdowns utilized in the studies, but in general findings suggest that younger women are more likely to practice BSE or to do so on a monthly basis compared to older women.

Three studies examined race in relation to BSE with inconsistent results.<sup>6,17,21</sup> Only one of these studies, however, reported statistically significant results and found that more Black than Hispanic or White women reported monthly BSE.<sup>17</sup>

Positive associations have been demonstrated between educational level and BSE frequency or practice,<sup>4-6,15,21</sup> although one study found no difference between educational groups in the frequency of BSE.<sup>17</sup>

Three studies found that monthly BSE was reported more frequently by women who were presently married.<sup>6,18,21</sup> Another reported that patients who were separated or divorced had a lower frequency of BSE,<sup>4</sup> and one study found no significant differences between married women and those not married with respect to the frequency of BSE.<sup>17</sup>

A measure of socioeconomic status based on income or occupation was employed by three studies reviewed,<sup>5,17,18</sup> but none found a significant relationship between BSE practice or frequency and a measure of SES, although the tendency was toward more frequent BSE among professionals and high income women.

Two studies found a significant positive association between having professional breast examinations and the frequency of BSE.<sup>6,17</sup> Similar results were obtained in the study by Howe.<sup>15</sup>

BSE instruction by a health professional was examined in three studies, and all found that having instruction in the procedure was related to the frequency of BSE.<sup>17,18,22</sup> Corre-

spondingly, Huguley and Brown<sup>5</sup> found that those judged more competent in practice were significantly more likely to report monthly BSE.

Finally, two studies, found that a history of breast cancer in the family was significantly related to BSE practice and frequency.<sup>5,6</sup>

In summary, the evidence suggests that age, education, marital status, professional breast examinations, BSE instruction, and family history of breast cancer all influence BSE behavior, with age and education showing the most consistent relationship to BSE.

### Discussion

Age and education at the minimum are important control variables that must be used in future studies of BSE. The inconsistencies relating these and other socio-demographic factors to BSE may be due to differences in the populations studied or to the various ways that BSE was assessed. Results from all of the studies we reviewed concerning this latter point show that most women do not carry out the correct procedure. These results were also substantiated by a recent survey we carried out in Baltimore.<sup>23</sup>

These findings, in turn, have implications for the first two issues we examined where results were again inconsistent and the majority of studies did not validate the respondents' BSE practice. If women report that they perform BSE, but are in fact not following the specified procedures, any study which attempts to test the efficacy of the procedure for detection may not be evaluating the effects of BSE at all, but only some behavior perceived to be BSE by respondents. Further, what has not been demonstrated but is an important aspect in evaluating BSE is the efficacy of specific maneuvers which comprise the recommended BSE procedure and whether all the steps for BSE need necessarily be carried out for detection of breast abnormalities. As a corollary, one might ask which maneuvers are women more likely to carry out and why. Some method of verification of BSE self-reports is thus essential in future research, to address these issues and to determine the importance of BSE in the detection and control of breast cancer.

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## PUBLIC HEALTH BRIEFS

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## 'Medical Capsules' from the National Institutes of Health

- The National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) has established a new Hearing Research Study Section.

The Section will review grants and training applications in many areas of prevention, diagnosis and treatment of auditory disorders. These will include studies of the basic and clinical aspects of middle ear diseases (e.g. otitis media), of inner ear diseases (e.g. tinnitus), and of auditory and neurosensory tumors.

- The National Library of Medicine (NLM) will add two new databases to its network this summer.

The Director of Information Resources Online (DIRLINE) will provide descriptions of sources of information available to meet needs not answered by bibliographic citations. DIRLINE lists and describes 13,000 organizations that provide specialized information on a wide variety of subjects.

CANCEREXPRESS, the other database, will provide technical information for cancer researchers and clinicians who want to retrieve information from selected journals. It will contain about 10,000 records describing articles in over four hundred high-quality publications for the most recent four-month period. It will provide bibliographic records identifying articles covering all aspects of the treatment etiology and biology of cancer, and studies of mutagenic and carcinogenic agents.

- Researchers at Beth Israel Hospital in Boston, under a grant from the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases (NIADDK) have developed a new experimental method for administering insulin to diabetics—by nasal spray.

Studies on administering insulin by inhalation have been taking place for some time. The results achieved at Beth Israel, however, mark the first time that appropriate serum insulin levels have been reached using this technique.

A mixture of insulin and bile salt (deoxycholate) as a transport medium was administered through a simple nasal spray applicator to both insulin-dependent (Type I) and noninsulin-dependent (Type II) diabetics and to normal controls. The mixture was absorbed effectively, producing a prompt increase in insulin in the blood and corresponding decrease in levels of blood glucose.

The technique is still being developed and will not be available for clinical use for some time, but inhaled insulin may eventually replace some of the daily injections needed by the nearly 11 million diabetics in the U.S.

-In: News & Features from NIH, July 1983 DHHS/USPHS/NIH, Bethesda, MD