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# Breast Cancer Detection Behavior Among Urban Women

SHARON REEDER, PhD  
EMIL BERKANOVIC, PhD  
ALFRED C. MARCUS, MA

BREAST CANCER is the most frequent cause of cancer deaths among women in the United States. According to the American Cancer Society, about 1 of every 13 U.S. women will develop this disease at some time in her life (1). Although mortality from breast cancer has changed little over the past 40 years, incidence has increased (1). Over the years, many attempts have been made to persuade women to participate in some form of breast cancer screening—examining themselves regularly, having routine breast examinations by health professionals, or undergoing mammographic examination (2). Yet, a report of one study indicates that only about one-half of the women who are asked to attend a mammography clinic will do so (3). Further, although the number varies, most studies have found that fewer than half of the women interviewed practice breast self-examination (BSE) monthly or more often (4-10). Data from the 1973 National Health Interview Survey, on the other hand, indicate that 63 percent of women age 17 and older had their breasts examined by a physician during the year before the interview (11).

Greenwald and associates recently compared the effects of BSE and breast examinations by physicians on the stage of breast cancer at diagnosis (12). They

found that early-stage tumors were diagnosed more frequently as a result of both routine physical examination and BSE than "by accident" by the women. Thus, although the data are limited, there is some evidence that both BSE and professional examination of the breasts could have an impact on breast cancer mortality if they were practiced regularly by all women.

The efficacy of mammography as a tool for mass screening has been of considerable interest recently. However, the September 1977 report of the Beahrs Committee, which reviewed the results of breast cancer detection projects, and the guidelines for the use of mammography issued by the National Cancer Institute in May 1977 have generated some controversy regarding the appropriate use of this procedure. Two issues of obvious concern to those interested in the use of health services are the responses of community physicians to the NCI guidelines and the impact of public discussions of the radiation hazards associated with mammography on the willingness of women to comply with a physician's recommendation to have a mammogram.

In the present study, we analyzed data on women's behavior and behavioral intentions with respect to breast self-examination, physician breast examination, and mammography. The data were collected as part of the Los Angeles Health Study (LAHS), which is a continuing survey of health behavior, health attitudes, symptom responses, and adherence to medical regimens in the Los Angeles metropolitan area. Two major questions are addressed in this paper. First: Are the same women who engage in any one of these behaviors likely to engage in all three? This question is

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*All the authors are with the University of California, Los Angeles. Dr. Reeder is an associate professor in the School of Nursing and Dr. Berkanovic is an associate professor in the School of Public Health, Center for the Health Sciences. Mr. Marcus is a senior statistician in the School of Public Health.*

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important in determining whether there is a single pattern of breast cancer detection behavior among women or whether each of these behaviors is practiced by different women. Although several recent studies have found that preventive health behaviors are largely independent of each other, the question of whether health-promoting behaviors aimed at a single disease are also independent has not been examined explicitly (13,14). The second question, related to the first, is: What are the social characteristics of women who engage in these breast cancer detection behaviors? From the answers to these questions we hope to identify specific target groups toward whom health education efforts aimed at increasing the use of one or another of these behaviors could be directed.

## Methods

**Sampling and fieldwork.** In 1976 the LAHS research team conducted a household survey of a representative sample of 1,200 adults living in Los Angeles County. Respondents were subsequently interviewed by telephone every 6 weeks for 1 year, from fall 1976 to fall 1977. Households were selected according to the sampling frame developed by the UCLA Survey Research Center for its Los Angeles Metropolitan Area Survey. Addresses were sampled on an area probability basis to insure that each housing unit in Los Angeles County had an equal chance of being selected. Respondents were selected randomly from each household. The household and telephone interviews were conducted by a team of professional interviewers under the supervision of staff of the UCLA Survey Research Center.

At the time of the household interviews, 684 women

were in the sample. They were asked a series of questions relating to the BSE procedure, including the frequency with which they examined their breasts for lumps and whether they had ever had instruction on how to do BSE.

Because of the issuance of the NCI guidelines in May 1977, and the accompanying attention to mammography in the media, it was decided that the women should be given a supplementary interview concerning mammography and other related issues. These interviews were conducted by telephone during September and October 1977. Of the 684 women who were initially included in the study, 540 or 79 percent completed the supplemental interview. The supplemental interview included knowledge about the signs of breast cancer, personal risk factors, personal acquaintance with breast cancer patients, previous breast examinations by physicians, and likelihood of having more in the future, and awareness, feelings, and behavioral intentions regarding mammography.

**Variables.** We examined the frequency of three breast cancer detection activities—breast self-examinations, professional breast examinations, and mammography—and analyzed the frequency of these activities for variations among sociodemographic subgroups. In addition, we examined the relationship between these breast cancer detection behaviors and the following other measures:

- Acquaintance with breast cancer—whether a friend or family member has ever had breast cancer.
- Knowledge of breast cancer—an eight-item index that assesses respondents' knowledge about the signs

or symptoms of breast cancer, when the disease is most likely to occur, and knowledge of the appropriate time interval between self-examinations of the breast.

- Objective risk of breast cancer—a summated index consisting of a personal or family history of breast cancer; parity; any lumps, thickenings, or discharge from the nipples; age at menarche; and if appropriate, menopause.
- Perceived efficacy of BSE—a single item asking respondents to rate on a 4-point scale the likelihood of their finding a lump during routine BSE.
- Perceived efficacy of professional examination of the breast—a single item asking respondents to rate on a 4-point scale the likelihood that a physician can detect a lump in the breast.
- Who initiated the professional breast examination—a single item asking respondents whether they or a health professional had initiated the examination.
- Personal opinion regarding mammography—a single open-ended item coded positive-neutral-negative.

Our sample was about equally divided with respect to marital status. The age range was from 18 to over 60; 50 percent of the women were under 40 years old and 22 percent were 60 or over. The women were generally well educated—69 percent had at least a high school education. The income distribution varied considerably, ranging from less than \$5,000 total family income to more than \$40,000. This distribution was collapsed into quartiles. White women represented 65 percent of the sample, Hispanics 19 percent, and blacks 12 percent.

## Results

The following two-way cross-tabulation shows the relationship between frequency of breast self-examination and professional breast examination during the year before the women were interviewed.

Self-examination	Professional examination	
	Yes (N = 383)	No (N = 157)
Never .....	34.5	51.0
Sporadic .....	23.8	23.6
Monthly .....	41.8	25.5

Although there is a statistically significant relationship between the two variables, the magnitude of this relationship is quite small ( $\chi^2=15.7$ ,  $P<.001$ ;  $r=.17$ ,  $P<.001$ ). Thus, it appears that most of the women who had had a professional breast examination in the past 12 months did not engage in BSE monthly or more frequently. Further, only 82 of the women in this sample had undergone mammography. This number is too small to warrant an examination of the extent

to which the same women who did BSE or received professional examination also had had a mammogram. In the analyses that follow, therefore, each of the three breast cancer detection behaviors is analyzed separately.

**Breast self-examination behavior.** Of the 684 women in the sample, 61 percent (418) reported that they practiced BSE. However, as shown in the following table, only 37 percent of the sample said that they performed this procedure monthly or more frequently.

Frequency of BSE	Number	Percent
More than once a month .....	101	14.8
Monthly .....	153	22.4
Every other month .....	52	7.6
Every 3–6 months .....	53	7.7
Less than every 6 months .....	11	1.6
When I remember .....	48	7.0
No BSE .....	266	38.9
Total .....	684	100.0

Of those doing BSE monthly or more often, 90 percent (228) said they had been instructed in the procedure. Nearly 70 percent were instructed by a health professional (physician, nurse, or other health professional), and 31 percent said they also learned how to do BSE from the media (TV, newspapers, or magazines). Only 2 percent mentioned family or friends as a teaching source.

Few differences were observed among sociodemographic subgroups in the frequency with which BSE was practiced. The only statistically significant difference involved race; more black than Hispanic or white women said they practiced BSE monthly.

Correlations were also run between the BSE variables and several other measures, including the risk and knowledge indexes, knowing someone with breast cancer, and the perceived efficacy of BSE. The effects of the sociodemographic background variables were controlled statistically through partial correlation analysis, as shown in the following table. (The partial correlations control for respondent's age, marital status (yes or no), total family income, socioeconomic status, and race—white versus black and Hispanic.)

Variable	Monthly BSE	Received instruction in BSE
Risk index .....	.10	.06
Knowledge of breast cancer . . .	.12, $P<.05$	.12, $P<.0$
Friend or relative with breast cancer .....	.07	.05
Likely to self-find lump ....	.00	.00

The only significant relationship shown in the preceding table involves the knowledge index—more knowledge about breast cancer tended to be associated with receiving BSE instruction and practicing BSE

monthly or more often. The size of these correlations is quite small, however. Although 40 percent of our sample had stated that it was very likely they could find a lump by BSE, this variable bore no relationship to BSE behavior. Similarly, one might assume that knowing someone with breast cancer would have some bearing upon BSE behavior. However, this was not the case. Further, the lack of relationship between risk and BSE may be due to lack of awareness of the risk factors among many of these women.

We also examined the relationship between receiving instruction in BSE and the frequency with which BSE was practiced. We found that 63 percent of the women who had received any BSE instruction were performing the procedure at least monthly—compared to only 40 percent who reported no instruction. Moreover, among the women who had professional BSE instruction, 66 percent performed the procedure at least monthly—compared to 53 percent of the women who had received instruction from a nonprofessional source.

**Professional breast examination.** We were also interested in the extent to which our sample had received a breast examination by a health provider. As previously stated, the women were asked a series of supplementary questions concerning whether a physician or nurse had examined their breasts for cancer, who had initiated the examination (themselves or the professional), when did they last have an examination, and whether they were planning to have a breast examination in the next 12 months. Of the 540 women who responded to the supplemental questionnaire, 489 (91 percent) reported having had a professional breast examination at some time, and 383 (70 percent) reported having had one within the past year. Among the women reporting a breast examination, 85 percent indicated that it was initiated by a health professional or that it had been done during a routine physical examination. Of all the women completing the questionnaire, 419 (78 percent) were planning to have an examination within the next year. It should be noted that this figure is larger than that for those who claimed to have received a breast examination in the previous year.

When we examined this type of breast surveillance according to the demographic characteristics of our sample, we found several significant relationships. As the following table indicates, there was an inverse relationship between age and having a breast examination within the past year, primarily because of the much lower percentage of breast examinations in the 60 and over age category. There were also positive gradients between education, income, socioeconomic status, and having a breast examination in the past year.

<i>Demographic category</i>	<i>Number</i>	<i>Percent</i>
<b>Age group (years):</b>		
18-29 .....	108	75.5
30-39 .....	92	75.4
40-49 .....	53	73.6
50-59 .....	63	73.3
60 and over .....	67	57.3
Significance .....		<.001
<b>Education:</b>		
Grade school .....	49	64.5
Some high school .....	46	63.0
High school .....	109	71.7
Some college .....	103	72.5
College graduate .....	76	79.2
Significance .....		<.01
<b>Total family income:</b>		
Less than \$10,000 .....	128	65.3
\$10,000 or more .....	204	74.7
Significance .....		<.01
<b>Race:</b>		
White .....	257	70.0
Hispanic .....	66	68.8
Black .....	48	84.2
Significance .....		None
<b>Socioeconomic status:</b>		
Low .....	109	65.7
Medium .....	169	69.3
High .....	105	80.8
Significance .....		<.01
<b>Marital status:</b>		
Not married .....	171	64.3
Married .....	212	77.4
Significance .....		<.001

As with the BSE variables, partial correlations, controlled for sociodemographic factors, were run between the breast-examination variables and the knowledge and risk indices, knowing someone with breast cancer, and the perceived likelihood of a physician finding a lump. (The partial correlations control for respondent's age, marital status (yes or no), total family income, socioeconomic status, and race—white versus black and Hispanic.) The results were as follows.

<i>Variable</i>	<i>Had physician examination in past 12 months</i>	<i>Planning physician examination in next 12 months</i>
Risk index .....	.04	.06
Knowledge of breast cancer ....	.01	.08
Friend or relative with cancer .....	.09, <i>P</i> < .05	.15, <i>P</i> < .001
Physician likely to find lump .....	.14, <i>P</i> < .01	.13, <i>P</i> < .01

Women who knew someone with breast cancer were more likely to have had an examination within the past year and to be planning to have one within the next year. This finding also held for women who believed

in the efficacy of breast examinations. However, although these correlations are statistically significant, their magnitudes are not large. It is also surprising that risk is not associated with professional examination of the breasts. One would expect that physicians, being aware of the risk factors, would initiate breast examinations among their high-risk patients.

**Mammography.** As noted earlier, only 82 (15 percent) of the 540 women had ever had a mammogram. This number is too small to permit further analysis. The respondents were also asked if they would obtain a mammographic examination if their physician recommended it. An overwhelming 93 percent responded that it was at least somewhat likely that they would. Further, only 2 of the 77 women who had been advised by their physicians to undergo mammography failed to do so. Thus, although few women in this sample actually had a mammogram, it is not likely that they would be unwilling to undergo a mammography examination if their physicians so recommended.

## Discussion

Several interesting findings have emerged from this analysis. First, 37 percent of the women reported that they were practicing BSE monthly. This figure was fairly consistent across sociodemographic subgroups. Indeed, the only significant difference occurred with respect to race; black women were more likely than white or Hispanic women to report practicing BSE monthly. Although the 37 percent falls within the ranges found in similar studies (4, 6–10), it is somewhat higher than that reported in the United States. For example, the Gallup Organization, Inc., reported that only about 18 percent of a nationwide sample of the women they surveyed were practicing BSE monthly (5). Since our study was confined to Los Angeles, however, it may indicate that BSE is practiced more frequently in urban areas than in the nation as a whole. The higher frequency of BSE in our sample may also reflect increases in the prevalence of BSE over time. The Gallup data were collected in 1973 while our data were collected in 1976. It is worth noting that data collected in 1977 from both a subsection of Los Angeles and the San Francisco Bay Area showed rates of BSE very similar to ours (15). Further, contemporary events may influence breast cancer detection behavior. For example, a recent study suggests that the mastectomies of Betty Ford and Happy Rockefeller resulted in increased willingness to participate in breast cancer detection behavior among women in a large group health plan (16).

Second, it is clear that the three breast cancer de-

tection behaviors examined in this research are largely independent of each other. As a consequence, women who engage in one of these behaviors cannot be expected to engage in either of the others. This, in turn, suggests the importance of studying both the structural and social-psychological factors that underlie each type of breast cancer detection behavior. Physicians' recommendations appear to be a significant factor, since 93 percent of the sample said they would be likely to obtain a mammogram if their physicians advised them to. Thus, one strategy that might increase the percentage of women either doing BSE or obtaining professional breast examinations would be to increase the amount of instruction and appeals by physicians to perform or obtain the examinations. On the other hand, because different types of women engage in monthly BSE than the types who obtain a breast examination somewhat different determinants may underlie each of these behaviors and these differences must be considered if the frequency of these behaviors is to be increased. For example, because BSE can be practiced in private and requires neither equipment nor professional attention, it may be more attractive than professional examinations to some women and less attractive to others.

It would be helpful in planning research aimed at identifying the determinants of these surveillance behaviors if specific subgroups who were conscientious practitioners and those who were not could be identified. Unfortunately, our data indicate that there are some statistically significant differences but they are of insufficient magnitude to have implication for policy. Moreover, the partial correlations indicate that the knowledge, belief, and experiential variables do not provide much assistance in differentiating women who engage in these behaviors. As a consequence, health education strategies aimed at increasing the number of women who practice BSE or obtain professional breast examinations will have to adopt multiple, broad-gauge approaches. Obviously, such global approaches are less efficient than are well-defined programs aimed at specific target groups. More efficient programs in this area, however, must await the identification of variables that can explain variations in breast cancer detection behavior, as well as behavior that can be changed as a result of health education. At present, increasing knowledge about the signs of breast cancer, providing more intimate acquaintance with breast cancer patients, or altering beliefs about either physicians' abilities to find breast cancer early or the women's own ability to detect potentially cancerous lumps appear to be unlikely to have much effect on breast cancer detection behavior.

## References

1. American Cancer Society: Cancer facts and figures. New York, 1977.
2. Magarey, C. J., Todd, P. P., and Blizard, P. J.: Psychosocial factors influencing delay and breast self-examination in women with symptoms of breast cancer. *Soc Sci Med* 11: 229-232 (1977).
3. Shapiro S., Strox, P., Venet, L., and Venet, W.: Changes in five year breast cancer mortality in breast cancer screening program. *Proc Natl Cancer Conf* 7: 663 (1973).
4. Allen, W. A., et al.: Getting the cancer message to the community. *Int J Health Ed* 16: 61-68 (1973).
5. American Cancer Society: Women's attitudes regarding breast cancer. The Gallup Organization, Inc., Princeton, N. J., 1973.
6. Hill, D., et al.: Pilot survey of women's attitudes toward breast cancer and surgery. *Cancer Forum* 9: 141-146 (1975).
7. Van den Heufel, W. G. A.: Participants and nonparticipants in a mammography mass screening. *In Breast cancer: psychosocial aspects of early detection and treatment*, edited by P. C. Brand and P. A. Van Keep. University Park Press, Baltimore, 1978, pp. 44-54.
8. Phillips, A. J., and Brennen, M. E.: The reaction of Canadian women to the Pap test and breast self-examination. *In Public education about cancer*. International Union Against Cancer, Geneva, 1976, pp. 9-18.
9. Hobbs, P.: Evaluation of a teaching program for breast self-examination. *Int J Health Ed* 14: 189-195 (1971).
10. Lieberman Research, Inc.: A basic study of public attitudes toward cancer and cancer tests: highlights. Conducted for the American Cancer Society, New York, November 1978.
11. National Center for Health Statistics: Use of selected medical procedures associated with preventive care. DHEW Publication No. (HRA) 77-1538. U.S. Government Printing Office, Washington, D.C., 1977.
12. Greenwald, P., et al.: Estimated effect of breast self-examination and routine physician examinations on breast cancer mortality. *N Engl J Med* 299: 271-273, Aug. 10, 1978.
13. Harris, D. M., and Guten, S.: Health-protective behavior: an exploration study. *J Health Soc Behav* 20: 17-29 (1979).
14. William, A. F., and Wechsler, H.: Interrelationship of preventive actions in health and other areas. *Health Serv Rep* 87: 969-976, December 1972.
15. Community Cancer Control/Los Angeles: Los Angeles (fall 1977) and San Francisco Bay Area (1977). Community Baseline Data, Los Angeles, July 8, 1978.
16. Fink, R., et al.: Effects of news events on response to a breast cancer screening program. *Public Health Rep* 93: 318-327, July-August 1978.

## SYNOPSIS

REEDER, SHARON (University of California, Los Angeles), BERKANOVIC, EMIL, and MARCUS, ALFRED C.: *Breast cancer detection behavior among urban women*. *Public Health Reports*, Vol. 95, May-June 1980, pp. 276-281.

Data from the ongoing Los Angeles Health Study were analyzed to determine women's behavior and behavioral intentions regarding three modes of breast cancer detection behavior: breast self-examination

(BSE), physician examination of the breasts, and mammography. Two questions were addressed: Are women who engage in one type of breast surveillance behavior likely to engage in all three? What are the social characteristics of women who engage in these breast cancer detection behaviors?

The data indicated that women who had had a recent professional (physician) breast examination did not necessarily practice monthly BSE. Only 82 of a sample of 540 women

had had mammography; thus, it was not possible to relate this type of surveillance to the other two types. However, 93 percent of the women interviewed indicated they would obtain a mammography examination if their physicians recommended it. There were few differences among the sociodemographic subgroups with respect to BSE and professional examination, with the exception that black women were more likely to report practicing monthly BSE than were white or Hispanic women.