

# Inadequate Transfer of Breast Cancer Self-Detection Technology

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**Abstract:** Results of a telephone interview of 290 New Orleans women indicate that, at best, only about 10 per cent of them efficaciously applied breast cancer self-detection technology. These findings suggest that research to date regarding breast self-examination efficacy in early tumor detection actually is problematic since few controls have been provided for the degree to which research subjects possess the knowledge to perform the examination correctly. (*Am J Public Health* 1983; 73:1318-1320.)

Reviews of research regarding the efficacy of breast self-examination (BSE) in detecting tumors in early stages label the practice superior only to accidental tumor discovery by women not utilizing other sources of tumor detection, e.g., physician examination and mammography.<sup>1,2</sup> This research concentrates solely upon reported frequency of breast palpation, however; the issue of the quality of self-examination generally is ignored as a research question, although its importance is acknowledged.<sup>3-10</sup>

Breast self-examination is part of a larger breast cancer detection technology which, at least theoretically, is transferable from physicians to women to enable more frequent, knowledgeable monitoring of the breasts by women themselves. A woman may be said to master self-detection technology when she can: recognize breast cancer signs, understand situations of high cancer risk, and correctly examine her breasts monthly, approximately ten days after menstruation.<sup>11</sup>

At present, the efficacy of the transfer of breast cancer self-detection technology from physicians to the public is unknown. If inefficacious, the efficacy of the technology itself cannot be judged; proper evaluation of a technology assumes its proper application. This paper examines the technology transfer issue.

## Method

Female interviewers administered a health survey by telephone to women over the age of 18 in New Orleans. Sampling occurred through a well-tested random-digit-dialing method<sup>12,13</sup> providing access to both listed and unlisted telephones in New Orleans.\* Respondent anonymity was guaranteed. Interviews were completed in 56 per cent of the

\*A random sample of the first four digits of phone numbers was selected from the New Orleans telephone directory and paired with random computer-generated three-digit numbers to form full, seven-digit numbers. If a household contained only one woman 18 years or older, she became the respondent. If more than one woman resided in the household, a table of random numbers was used to select the respondent. As many as three callbacks were made in attempts to interview women not reached on earlier attempts.

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calls answered at households with female residents. The present sample totals 290 women\*\* who exhibit considerable variation in standard sociodemographic characteristics (Table 1).

The structured interview format contained primarily forced-choice items, covering such areas as: BSE frequency, breast cancer knowledge, correct examination time, and correct examination method.

- Examination frequency was coded as monthly, less than monthly but at least yearly, and less than yearly or never.

- Respondents were asked if each of six possible breast conditions was a cancer symptom. They also were asked to identify 11 statements concerning high-risk breast cancer populations as true or false. For each measure of breast cancer knowledge, scores have been computed for respondents based on the number of correct responses given.\*\*\*

- A multiple choice question on the proper time during the menstrual cycle for BSE included the correct response (about 10 days after menstruation<sup>11</sup>) and four incorrect response choices.

- Respondents were given an incorrect description of the self-examination method which stated: "First you examine a particular area of one breast. Then you move to the other breast and check the same area. You continue like this, going back and forth until all areas of both breasts are covered." Since examining one breast completely before examining the other is fundamental to self-examination,<sup>11</sup> respondents who labeled the incorrect description as correct are assumed less knowledgeable concerning the proper examination method than are those who labeled it incorrect.‡

## Results

Thirty-nine per cent of the respondents report examining their breasts monthly and 28 per cent report at least yearly examinations. Only 54 per cent of the entire sample and 58 per cent of the monthly self-examiners identified more than six of the high cancer risk situations, but 70 per cent of the entire sample and 89 per cent of monthly self-

\*\*Not included in this number are 16 women who had had breast cancer and 66 women who claimed to practice self-examination more than monthly. The latter were excluded due to suspicions about the validity of their responses since they so closely resembled women who reported never examining their breasts in responses to nearly all survey items, especially regarding knowledge of correct time and method of self-examination. Two recent surveys of women concerning the same topic encountered a similar problem among a group of women reporting higher-than-average frequency of self-examination but lower-than-average knowledge about cancer and self-detection techniques.<sup>14,19</sup> Rather than attempt to distinguish those overreporting from those not overreporting, the entire group (mostly Black and lower class) was eliminated from the sample, thus skewing slightly the sociodemographic distributions (Table 1). Including this group in the present sample reduces the already meager degree of transfer of cancer self-detection technology to an apparently artificially low level. Data displaying the results of this inclusion are available from the author.

\*\*\*Details available on request to author.

‡A recent study of Baltimore women which employed a different method of measuring knowledge of the correct method of self-examination reports results similar to those of the present study regarding the proportion of women with knowledge of the correct method.<sup>14</sup>

**TABLE 1—Sociodemographic Characteristics of the Sample (N = 290)**

Characteristics	% Distribution
<b>Age</b>	
18–25	27
26–35	29
36–45	18
46–55	13
56+	13
<b>Marital Status</b>	
Never Married	19
Married or Previously Married	81
<b>Race</b>	
White	77
Non-White	23
<b>Employment</b>	
Yes	55
No	45
<b>Education</b>	
Less than High School	15
High School Degree	32
Some College	31
College Degree	22
<b>Family Income</b>	
Less than \$10,000	25
\$10,001–\$19,999	39
\$20,000–\$29,999	22
\$30,000+	14

**TABLE 2—Knowledge of Proper Time and Method of Examination by Self-Examination Frequency**

Knowledge of Correct Time and Method	Frequency of Examination			Totals (N = 285)
	Monthly (N = 113)	Less Than Monthly (N = 80)	Never (N = 92)	
	%	%	%	%
Correct Time and Method	27	20	12	21
Correct Time Only	20	10	11	15
Correct Method Only	20	37	28	27
Incorrect Time/Incorrect Method	33	33	49	37
TOTAL	100	100	100	100
		cc* = .253	p = .01	

\*Coefficient of Contingency, a measure of association between variables, one of which is nominally scaled (i.e., Correct-Time-Method). If Correct-Time-Method is treated as an ordinal scaled variable, gamma = .262; p = .05.

examiners identified at least four of six breast cancer signs. Only 21 per cent of the sample possessed knowledge of both correct time and method of self-examination.

When the findings regarding time and method of examination are combined with those concerning examination frequency, the transfer of breast cancer self-detection technology to women seems inefficacious (Table 2). One-third of women who examine their breasts monthly can identify neither correct time nor method of examination. Only 27 per cent of monthly self-examiners possess the knowledge necessary to perform a timely and correct examination. This same 27 per cent represents only 11 per cent of the entire sample (31 of 285 respondents). Thus, only about one in ten women appears to perform self-examination monthly and

efficaciously. This number becomes one in 12 (24 of 285) when the breast cancer knowledge variables also are considered (data available from author). Further reflective of superficial technology transfer is the finding that women who examine their breasts monthly do so correctly or incorrectly whether or not they receive personal instruction in self-examination from medical personnel as opposed to non-medical sources, such as films, articles, friends (Table 3).<sup>15–17</sup>

Despite these discouraging findings, we note that some technology transfer does occur (Table 2). Regression analyses indicate that women with more years of education and women who aggressively question their physicians about aspects of the physical examination fare better in the transfer

**Table 3—Knowledge of Proper Time and Method by Source of Instruction among Women Who Perform Monthly Self-Examination**

Knowledge of Correct Time and Method	Source of Information*		Totals (N = 112)
	Medical (N = 85)	Non-Medical (N = 27)	
	%	%	%
Correct Time and Method	27	28	27
Correct Time Only	18	20	19
Correct Method Only	21	24	22
Incorrect Time/Incorrect Method	34	28	32
Total	100 (85)	100 (27)	100 (112)
		cc** = .052	p = ns

\*Medical instruction signifies personal instruction by physician or nurse. Non-medical instruction refers to learning through reading, films, television, or instruction by non-medical personnel (e.g., a friend).

\*\*Coefficient of Contingency, a measure of association between variables, one of which is normally scaled (i.e., Correct-Time-Method). If Correct-Time-Method is treated as an ordinal scaled variable, gamma = -.070; p = ns.

(data available from author). Further, consistently high intercorrelations among the dependent (frequency and knowledge) variables suggest a positive link between indoctrination in and utilization of self-detection technology.<sup>18</sup>

### Discussion

The transfer of breast cancer self-detection technology from the medical community to the public apparently has been inefficacious. However, the present findings offer neither reason nor solution for this problem. More basic research is needed. For example, no one has accurately described exactly how women find their cancers. The general terms "breast self-examination" and "accident" do not suffice. We must learn if medical personnel themselves understand the self-detection technology. If so, do they transmit it fully to patients? Does the problem rest with the patients? How well and for how long do they retain their self-detection skills? If comprehension is lacking, new didactic processes are required. If retention is low, periodic reinforcement is needed.

The present study does permit two rather concrete conclusions:

- It should not be assumed that the transfer of breast cancer self-detection technology to women is easily or rapidly accomplished.
- Until researchers systematically address the issue of the degree to which women assimilate breast cancer self-detection technology, they cannot resolve the issue of the efficacy of the technology itself.

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