

BREAST SELF-EXAMINATION: KNOWLEDGE, ATTITUDES, AND PERFORMANCE AMONG BLACK WOMEN

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This survey assessed the reported frequency of breast self-examination (BSE): the knowledge of the technique and attitudes regarding the self-exam of 180 black women. Most respondents indicated having practiced the exam during the previous year, and 50% reported practicing it monthly or more often. Less than half of the sample indicated performing the exam according to American Cancer Society guidelines, although 92% reported being either very confident or somewhat confident of their performance ability. Attitudinal and demographic variables were tested for significant relationships with BSE practice. Compared with nonperformers, BSE performers were older, had higher annual incomes, and were more likely to believe in the benefits of BSE, to perceive social approval for BSE practice, to have been taught to perform BSE, to have had a Pap smear, a clinical breast exam, and a general physical exam within one year, and to visit a physician in a private office or clinic (as opposed to a hospital emergency room). Frequency of self-exam-

ination was significantly associated with the performer's competency level, age, belief in the benefits of performing BSE, perceived social approval for practice, having been taught to perform the exam, and level of confidence in ability to perform it.

Breast cancer is the leading site of cancer mortality among black women.¹ Black women under the age of 40 are at a higher risk than white women in the same age group in terms of incidence, mortality, and relative survival rates for this disease.¹⁻³ Black women are diagnosed typically at a later stage of disease than are white women,^{1,4-6} which could partly explain the difference in survival rates between the two ethnic groups.

Breast self-examination (BSE) is one of the means for early detection of breast cancer recommended by the American Cancer Society and the National Cancer Institute. Several studies, based on breast cancer patients' retrospective self-report on their practice of the exam, have established that a positive association exists between performance of the exam and early detection of breast cancer.⁷⁻¹¹ There is also evidence that most of the early breast tumors are self-discovered,^{9,10,12} and that the majority of early self-discoveries are by BSE performers.^{10,12} The practice of BSE is especially important when access to annual physician examination of the breast or to other means of early detection is precluded for economic or other reasons.

Despite the apparent advantages of BSE practice,

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TABLE 1. POPULATION SOCIO-DEMOGRAPHIC CHARACTERISTICS (PERCENTAGES)

Age	
Under 30	29
30-40	30
41 or older	41
Marital Status	
Married	46
Never married	28
Divorced, widowed, separated	26
Income Level	
\$10,000 or less	32
\$11,000-\$30,000	50
\$31,000 or more	18
Educational Level	
College or above	32
Partial college	42
High school	24
Less than high school	2

previous surveys show that few women report practicing the exam monthly as recommended,^{13,14} and even fewer do so competently.^{14,15} Most of the surveys on BSE practice have been conducted with samples of white women.^{8-9,12,14-23} We know of only a few studies in which black women were surveyed.^{2,7,10,13,24-26} None of the studies with samples of black women investigated psychosocial predictors of BSE practice. Given the potential importance of BSE practice for early detection of breast cancer and the threat of this disease among black women, it is important not only to know how widespread BSE practice is among black women, but also which variables predict such practice. This survey assessed black women's reported frequency of BSE, their knowledge and perceived quality of their performance of the exam, and investigated attitudinal and other variables which could possibly be related to their practice of the self-exam.

METHOD

A questionnaire, developed by the authors, was administered to a sample of 180 black women, 18 years of age and older, enlisted through two churches in a large metropolitan area in southern California. Table 1 shows the sociodemographic characteristics of the sample. The largest group of participants was 41 years of age or older, married, and had attended college. Fifty percent of the sample had yearly incomes between \$11,000 and \$30,000.

TABLE 2. ATTITUDES TOWARD BREAST SELF-EXAMINATION (PERCENTAGES)

Perceived Barriers to BSE Performance	
BSE makes me worry unnecessarily	26
Anxiety and fear	14
Embarrassment to touch own breasts	8
Perceived Benefits of BSE Performance	
BSE helps detect breast cancer early	83
Regular BSE helps find lump earlier than going to the doctor	75
No need to perform BSE, I would immediately know if something were wrong	16
Perceived Susceptibility to Breast Cancer	
Chances of getting breast cancer:	
above average	9
average	49
below average	42
Perceived Social Approval of BSE Practice	
Doctors recommend monthly BSE	84
My family approves of my performing BSE	76
My friends believe BSE is good	69

The questionnaire contained two types of questions: questions requiring a "yes" or "no" answer, and statements eliciting agreement or disagreement (on a five-point Likert-type scale) about various attitudes toward BSE, and BSE-related attitudes and behavior.

RESULTS

Attitudes Toward Breast Self-Examination

Table 2 shows percentages of respondents who endorsed each of the beliefs postulated by the Health Belief Model (HBM)²⁷ to predict preventive health behavior, ie, perceived barriers, perceived benefits of BSE performance, and perceived susceptibility to breast cancer. Table 2 also shows percentages of respondents endorsing items regarding social approval of BSE performance.

In general, the sample's most commonly held beliefs were those that, according to the HBM, should favor the occurrence of BSE behavior; most of the respondents did not report any barriers to the performance of the self-exam; most indicated believing in the benefits of BSE and reported perceiving themselves at least mildly susceptible to breast cancer. Moreover, a large percentage of

TABLE 3. SELF-REPORTED BREAST SELF-EXAMINATION BEHAVIOR (PERCENTAGES)

BSE Practice		BSE Frequency	
During past year	89	More than monthly	11
During past 6 months	74	Monthly	39
		Less than monthly	24
		Never	26
BSE TECHNIQUE			
Position		Hand Used	
Check breasts:		Opposite†	93
lying down	50	Same	7
standing up	11		
lying down and standing up*	37	Duration of the Exam	
other	2	1-3 min	62
		4-10 min*	25
		10-15 min	10
		15-20 min	3
Part of Fingers Used		Competency Index	
Pads*	28	0	19
Fingertips	68	1	28
Other	14	2	20
NUMBER OF BSE COMPONENTS INCLUDED†		3	20
1-3	10	4-5	13
4-7	48		
8-11†	42		
ABILITY TO PERFORM BSE			
	Confidence Level		
	Very confident		46
	Somewhat confident		46
	Not confident		8
Reasons for No BSE		How Did You Learn BSE?	
Can never remember	30	Taught:	91
Do not trust my ability	22	by a doctor	81
Do not know how	8	by a nurse	13
Do not believe it increases chances of survival	8	other sources	6

* Answers considered correct according to American Cancer Society guidelines.

† The listed components were: keep fingers flat; stand in front of a mirror and look for abnormalities; check nipple; check for skin abnormalities in breasts; raise ipsilateral hand above your head; press both hands firmly on hips; check in arm pits; feel for unusual lumps; move fingers in small circles; place pillow under ipsilateral shoulder.

the sample indicated that friends and family approved performance of the self-exam and were aware of physicians' recommendation of monthly BSE.

Self-Reported BSE Behavior

Table 3 shows self-reported characteristics of BSE behavior. Eighty-nine percent of the respondents indicated that they had practiced BSE during the previous year; 74% indicated having done so during the previous

six-month period; and 39% indicated performing the self-exam monthly.

However, with the exception of examining each breast with the opposite hand, usually less than half of the BSE performers reported performing the steps that should be included in a complete self-exam as recommended by the American Cancer Society. Only a small percentage of respondents indicated checking their breasts both while lying down and standing up in front of a mirror,

TABLE 4. OTHER PREVENTIVE HEALTH BEHAVIORS (PERCENTAGES)

Number of Visits to a Doctor in the Past Year	
Once	17
Twice	30
3 or 4 times	28
5 or more times	18
Never	7
Where Do You Usually Go to See A Doctor?	
Office	64
Clinic	23
Emergency room	9
Other	3
Medical Exams Obtained within Previous Year	
Pap Smear	
yes	92
no	8
Clinical Breast Exam	
yes	74
no	26
General Physical Exam	
yes	88
no	12
Mammogram	
yes	31
no	69

using the pads of their fingers to palpate their breasts, and including in their self-exam the majority (eight or more) of other components of a complete self-exam, which were listed in the questionnaire (Table 3 includes the list of these components). Most reported the duration of their exam to be three minutes or less, an amount of time clearly insufficient to perform a complete exam.

An index of BSE competency was created by counting the number of correct responses (indicated by asterisks in Table 3) on the five BSE competency items in the questionnaire. Sixty-seven percent of the BSE performers answered correctly two or fewer of the five items. A very small proportion of the sample answered all items correctly. However, although the competency level was usually low, 92% of BSE performers indicated being either very confident or somewhat confident of their ability to correctly perform BSE. Most respondents had been taught to perform the exam, and the majority of these were taught by a doctor.

Finally, when non-BSE performers were asked why they did not perform the exam, one third indicated not

being able to remember to perform the exam, and 22% indicated not trusting their ability to perform it.

Other Health Behaviors

Table 4 shows number of respondent visits to a doctor in the previous year and the place where these visits usually occurred. It also shows the percentages of respondents who sought preventive cancer exams in the previous year.

Forty-seven percent of the sample visited a physician once or twice during the previous year, and 64% usually visited a doctor in the office. At least three quarters of the sample had had a Pap smear, a clinical breast exam, and a general physical exam within the previous year, whereas about 30% of the respondents had had a mammogram.

Factors Significantly Associated with BSE

Two dependent variables were chosen: whether or not BSE was practiced within the past year, regardless of the frequency with which it was performed (BSE practice); and BSE frequency within the past six-month period. All variables listed in Tables 1, 2, and 4, plus competency level, perceived level of confidence in ability to perform BSE, whether or not the participant was taught, and who taught the participant to perform the exam were tested for significant relationships with each of the dependent variables. For this analysis, a two-value index was derived for each of the beliefs listed in Table 2. For each belief, the participant was considered endorsing the belief if she agreed with all the statements expressing that belief or disagreed with all the statements denying that belief. Otherwise, the participant was considered as not endorsing the belief. The same analysis was performed for social approval of BSE practice.

Tables 5 and 6 show practice and frequency of BSE according to the variables which were significantly associated with these dependent variables and the values of the statistical coefficients calculated for each relationship.

Compared with nonperformers, BSE performers tended to be older and have a higher yearly income, more often believed in the benefits of performing BSE and perceived social approval for BSE practice, had more often been taught to perform the self-exam, and were more likely to have had a Pap smear, a clinical breast exam, and a general physical exam within one year. Also, nonperformers were more likely than BSE performers to obtain their medical care from a hospital emergency room.

With regard to frequency, the majority of older par-

TABLE 5. DISTRIBUTION OF RESPONDENTS ACCORDING TO BSE PRACTICE BY SIGNIFICANTLY ASSOCIATED VARIABLES

Age	BSE	No BSE	Doctor Visits	BSE	No BSE
23 or <	12	7	Office	76	10
24-40	52	7	Clinic	27	1
41 or >	47	5	ER or other	11	8
$\chi^2 = 8.92$ (2df) $P = 0.01$			$\chi^2 = 16.9$ (3df) $P < 0.01$		
Pap smear	BSE	No BSE	Yearly Income (thousands)	BSE	No BSE
Yes	96	9	10 or <	25	11
No	4	6	11-20	24	2
$\chi^2 = 17$ (1df) $P < 0.001$			21 or >	36	3
			$\chi^2 = 9.08$ (2df) $P = 0.01$		
Clinical Breast Exam	BSE	No BSE			
Yes	79	6			
No	14	11			
$\chi^2 = 17.45$ (1df) $P < 0.001$					
General physical	BSE	No BSE	Belief in Benefits	BSE	No BSE
Yes	72	6	Yes	96	10
No	3	7	No	3	5
$\chi^2 = 22.61$ (1df) $P < 0.001$			$\chi^2 = 13.98$ (1df) $P < 0.01$		
Taught to Perform	BSE	No BSE	Perceived Social Approval	BSE	No BSE
Yes	110	10	Yes	75	5
No	4	3	No	3	4
$\chi^2 = 19.52$ (2df) $P < 0.01$			$\chi^2 = 12.91$ (1df) $P < 0.01$		

Participants performed BSE monthly or more often, whereas younger participants were more often in the "never perform" category. The majority of the participants who believed in BSE benefits and perceived social approval for the self-exam practiced it monthly or more often, whereas most of those who indicated not believing in the benefits of BSE and not perceiving social approval for BSE performance never practiced the self-exam. Having been taught to perform BSE and a higher level of confidence in one's ability to perform the exam were also associated with practicing the exam more often.

None of the other variables, such as marital status, educational level, perceived barriers to BSE performance, and perceived susceptibility to breast cancer, had a significant association with either of the BSE dependent variables.

A multiple regression analysis was conducted for each dependent variable. A model was built, using a stepwise selection of all independent variables shown to have a significant relationship with each dependent variable. The best predictor of BSE practice was the type of setting where the participant usually goes to see a doctor ($\beta = 0.48$, $R^2 = 0.23$). The best predictor of BSE

frequency was confidence level (β for BSE frequency = 0.33, $R^2 = 0.11$; β for BSE competency = 0.30, $R^2 = 0.09$).

DISCUSSION

The percentage of women reporting practice of BSE monthly or more often in the present study was approximately the same percentage of black women practicing monthly BSE reported by Huguley and Brown,¹⁰ Celentano and Holtzman,²⁴ and Dickson et al,¹³ and twice as large as the percentage shown by EVAXX.²⁵

In general, the factors shown here to be significantly related to BSE practice have been shown to be associated with BSE practice in previous studies.

With regard to sociodemographic factors, both age and income have been previously shown to be significantly related to the frequency of BSE. As in the present study, Mamon and Zapka,¹⁴ and Dickson et al¹³ found that older women practiced BSE more regularly. As for income, EVAXX,²⁵ Celentano and Holtzman,²⁴ and the present study found that the more affluent were more likely to practice the exam.

Regarding the Health Belief Model (HBM) the results

TABLE 6. DISTRIBUTION OF RESPONDENTS ACCORDING TO BSE FREQUENCY BY SIGNIFICANTLY ASSOCIATED VARIABLES

Age	Frequency			Competency (# correct)	Frequency		
	mo or >	< mo	never		mo or >	< mo	never
23 or <	7	2	10	1 or <	30	18	27
24-40	33	23	20	2-3	41	18	14
41 or >	43	15	12	4-5	15	4	4
Kendall's Tau b = 0.208, $P \approx 0.01$				Kendall's Tau b = 0.303, $P < 0.001$			
Belief in Benefits	Frequency			Perceived Social Approval	Frequency		
	mo or >	< mo	never		mo or >	< mo	never
Yes	68	33	28	Yes	55	29	3
No	1	1	5	No	1	3	6
$\chi^2 = 9.04$ (2df), $P < 0.05$				$\chi^2 = 8.77$ (2df), $P < 0.05$			
Confidence Level	Frequency			Taught to Perform	Frequency		
	mo or >	< mo	never		mo or >	< mo	never
not conf. somewhat	2	4	6	Yes	86	39	37
conf.	34	21	12	No	0	1	8
very conf.	46	13	7	$\chi^2 = 19.52$ (2df), $P < 0.001$			
Kendall's Tau b = 0.28, $P < 0.001$							

of the present study are consistent with some of the results previously reported. However, it is noteworthy that there is not a complete agreement in the literature regarding relationships involving the beliefs postulated by the HBM and BSE behavior.²³

Perceived benefits of BSE were shown to be associated with BSE frequency in the present study, and also in studies by Howe,¹⁹ Norman et al,²¹ and Calnan and Rutter.¹⁸ The present results were also consistent with findings by Trotta,²² Norman et al,²¹ Bennett et al,²⁸ and Howe¹⁹ that there was no significant association between BSE practice and perceived susceptibility to breast cancer. On the other hand, contrary to our findings, barriers to BSE performance have been shown to be significant predictors of BSE practice by Trotta²² and Mamon and Zapka.¹⁴

Zapka and Mamon²³ have suggested that some of the discrepancy of results regarding the relationship between HBM variables and BSE behavior might be due to age differences between the various samples. Zapka and Mamon found that whether or not a certain factor was significantly associated with BSE frequency depended on the age of the respondents. However, Zapka and Mamon's explanation does not apply to all published studies. An analysis of these studies did not yield any ordered relationship between the age of the sample and the type of results obtained in the study. For example, Mamon and Zapka¹⁴ found that barriers to performance

of BSE were significantly associated with BSE frequency only for the undergraduate students in their sample (mean age = 20 years), whereas Trotta²² found barriers to be the best predictor of BSE frequency in a sample whose average age was 36 years, which was approximately the same age of the graduate students in Mamon and Zapka's sample. On the other hand, Mamon and Zapka¹⁴ found perceived susceptibility to be significantly associated with BSE frequency for graduate students whose average age was 31 years, whereas Trotta²² did not find a significant relationship between susceptibility and BSE frequency in his sample. There seems to be no easy explanation for the discrepancy in results between the various studies. The ability of the variables in the Health Belief Model to predict BSE behavior seems limited, as shown not only by the inconsistency of findings across studies, but also by the fact that, even when a relationship exists, the amount of variance explained by these variables has been usually low.¹⁸

On the other hand, an association between BSE frequency and proficiency, the performer's reported self-confidence, other preventive health behaviors, social support, and person-to-person teaching has been more consistently observed. The present study, and those of Huguley and Brown,¹⁰ and Baines et al²⁹ observed a significant relationship between BSE frequency and competency. Also, as was the case in the present study, Dickson et al,¹³ Bennett et al,²⁸ Huguley and Brown,¹⁰

Baines et al,²⁹ Michalek et al,³⁰ Edwards,³¹ Celentano and Holtzman,²⁴ Alagna et al,¹⁷ Mamon and Zapka,¹⁴ Zapka and Mamon,²³ and Reeder et al,²⁶ obtained a significant relationship between BSE practice and the respondent's reported self-confidence in her skill. Norman et al²¹ was the only study in which such relationship was not observed.

Practice of BSE was significantly associated with having obtained a clinical breast exam in the present study, and in Smith et al,¹² Reeder et al,²⁶ and Mamon and Zapka.¹⁴ The relationship between having had a Pap smear and BSE practice was also observed by Mamon and Zapka,¹⁴ and Bennett et al.²⁸ Social support was the best predictor of BSE frequency in Norman et al²¹ and was more commonly associated with BSE performers than nonperformers in the present study and in Howe.¹⁹

Finally, having been taught to perform the self-exam, usually by a doctor or a nurse, was significantly associated with BSE frequency in Carter et al,³² Trotta,²² Celentano and Holtzman,²⁴ Bennett et al,²⁷ Mamon and Zapka,¹⁴ and in the present study.

Thus, having been taught to perform the self-exam and self-confidence in the ability to perform it, having had a clinical breast exam and a Pap smear within the previous year, competency or knowledge level, and perceived social support for practice of BSE are the factors most consistently shown to be significantly associated with BSE. Perceived benefits of BSE have also been shown to be associated with BSE practice fairly consistently, as only two of the studies reviewed^{14,26} did not obtain a significant relationship between these two factors.

In terms of implications for practitioners, these results imply that BSE instruction by clinicians and nurse practitioners during the clinical encounter should continue, but instruction should emphasize factors associated with proficiency of performance. In the present study, there were two important findings regarding proficiency of performance. First, women who practiced BSE more regularly were those who practiced more competently and reported more confidence in their skills. Equally important was the fact that many women were practicing the exam, however irregularly, but were doing so incorrectly.

It is apparent from the present data that BSE performers were more involved with the medical establishment, having more often obtained exams for early cancer detection, and having visited physicians in clinics or private offices more commonly than in hospital emergency rooms. A possible interpretation of these findings is that women who have a more personal relationship

with their physicians are the ones more carefully taught and encouraged to practice the self-exam. However, if widespread, competent and regular performance of BSE is to be obtained, it is clear that instruction and encouragement to practice should be made available in other medical settings as well.

With regard to attitudes, as stressed by Calnan and Rutter,¹⁸ it seems that health education might be more effective in encouraging women to practice BSE if it focused on changing beliefs about the benefits of practicing the self-exam rather than beliefs about susceptibility to breast cancer.

Acknowledgments

This paper was partially supported by Grant No. DHHS 2 U76 PE00053-099 and Grant No. PHS RR05665-20 SOM.

Special appreciation is expressed to Alicia Garcia, Tonya Gorham, Lakeda Johnson, and LaTanya Martin for their help in recording and reducing data for statistical purposes.

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