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Cancer Anxiety and Attitudes toward Mammography among Screening Attenders, Nonattenders, and Women Never Invited

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ABSTRACT

A mailed questionnaire survey was conducted among the following groups: 179 women who screened false positive at a free mammography screening; a random sample of 250 women who screened negative; 670 nonattenders of the screening; and a random population sample of 250 women who lived in another city and were not invited, but were otherwise comparable. The most frequently reported reason for nonattendance was not having the opportunity. Furthermore, only 18% of the nonattenders reported anxiety about breast cancer compared with 33% of the population sample ($P < .05$). Ninety-nine percent of the women who attended indicated a positive attitude toward mammography that had not been adversely affected by screening experiences. (*Am J Public Health.* 1992; 82:249–251)

Introduction

Mammographic screening has been the only effective means of reducing breast cancer mortality.[1–5] However, several authors have questioned the magnitude of this mortality reduction and called attention to potential adverse effects of mammography screening.[6–11] The few available studies of this topic indicate that most women cope well with the screening situation and its consequences.[12–15] The purpose of this study was to investigate breast cancer anxiety and attitudes toward mammography among screening attenders, nonattenders, and women never invited to participate.

Methods

A free mammographic screening was offered to 4323 women aged 40 or older as part of the Third Tromsö Study conducted in Tromsö, Norway, in 1986 and 1987.[16] Altogether, 3653 (85%) accepted the mammogram. A total of 193 (5%) of the screenees required further evaluation, which for 40 subjects included a biopsy. Details of the screening and case-finding procedures are given elsewhere.[17]

Of the 193 women requiring further examination, only those 179 who were not diagnosed with breast cancer were eligible for the present study, and they constituted the false positive (FP) group. The three other groups in this study were a random sample of 250 women who screened negative (SN), the 670 nonattenders, and a random population sample (PS) of 250 women living in the nearby city of Harstad. The latter women were not invited to the screening but were otherwise comparable to the Tromsö women and thus served as the reference group.

A questionnaire concerning perceptions about mammography, frequency of breast self-examination, and anxiety about having breast cancer was designed, pilot tested, and then mailed to all study subjects in 1987 after the mammography screening was completed. A reminder questionnaire was sent out to all nonrespondents. Among nonattenders, 120 women (18%) were excluded from the study (8 had died, 17 had breast cancer, 32 had moved, and 63 were unknown at address). The response rate among the remaining women was 84% among the SN group ($n = 209$), 89% among the FP group ($n = 160$), 38% among the nonattenders ($n = 210$), and 66% among the PS group ($n = 164$). Subjects were classified as residing in rural areas if their travel distance to the mammography unit was about 30 minutes or more.

Statistical analyses of the data were performed using the Pearson chi-square statistic for categorical data and Student's t test for continuous data.[18] The analyses were performed using SAS programs.[19]

Results

The median age of the study population was 46 years (range of 40 to 61 years), and the mean years of schooling was 10. Risk factors for breast cancer—such as a family history, age at menarche, age at

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TABLE 1—Prevalence (%) of Breast Cancer Anxiety at Follow-up and Recalled Prevalence of Anxiety 1 Year before, by Group: Tromsö, Norway, 1987

	Screening Negative (n = 209)[a]	False Positive (n = 160)[a]	Nonattenders (n = 178)[a]	Population Sample (n = 164)[a]
Follow-up	22*	40	18*	33
One year before[b]	28	38	13*	31

[a]Percentages are based on smaller numbers due to missing responses.
[b]Prior to the screening invitation for the Tromsö women.
*Significantly different ($P < .05$) when compared with the PS group during the same period.
**Significantly different ($P < .001$) when compared with the PS group during the same period.

TABLE 2—Proportion (%) of Women in the Screening Negative and False Positive Groups Describing the Screening Examination as Painful or Unpleasant: Tromsö, Norway, 1987

	Screening Negative (n = 205)	False Positive (n = 157)
Unpleasant only	18	26*
Painful only	4	4
Both	3	11*
Neither	75	59*

*Statistically significant, $P < .01$.

TABLE 3—Prevalence of Breast Cancer Anxiety at Follow-up among Women in the False Positive Group (n = 160) According to Selected Responses: Tromsö, Norway, 1987

Variables	Subjects (n)[a]	Prevalence (%)
Recalled anxiety 1 year before		
No	93	19**
Yes	58	72
Recalled anxiety at screening		
No	107	26**
Yes	41	76
Anxiety about potential workup examination		
No	79	20**
Yes	62	65
Information adequate in workup letter		
No	52	31*
Yes	81	48
Fear of having breast cancer at workup recommendation		
No	59	20**
Yes	76	54

[a]Totals do not add up to 160 due to missing responses.
*Statistically significant, $P < .05$.
**Statistically significant, $P < .001$.

first birth, and prior breast biopsy—did not vary by group. Data are not shown for these factors.

The nonattenders were more likely to live in rural areas than the attenders ($P < .001$); they were also more likely to be unemployed and never to practice breast self-examination than the PS group ($P < .05$). Thirty-two of the nonattenders had had a recent mammogram. This was considered a legitimate reason for nonattendance, and these women were removed from the analysis. The remaining women (n = 178) reported that not having the opportunity (39%); not wanting to participate in the Tromsö Study (15%); fear of X-rays (13%); concern about painful examination (4%); not receiving a personal invitation (4%); fear of discovering breast cancer (3%); and the potential of having a male examiner (3%), were the reasons for nonattendance. Some women gave more than one answer, 22% did not answer, while altogether 14% of the women claimed, without giving further explanations, that none of the listed factors was the rationale behind their nonattendance.

Table 1 shows that both the SN group and the nonattenders reported significantly lower breast cancer anxiety at follow-up than the PS group ($P < .05$). The nonattenders also recalled being less anxious about breast cancer 1 year before, compared with the PS group ($P < .001$). The changes within each group did not gain statistically significant P values.

Altogether, 84% of the women reported having been given adequate information in the screening invitation, and 79% reported the same about the screening examination. Among women receiving the workup letter and examination, 61% and 72% respectively, were satisfied with the information.

Table 2 shows that more women in the FP group than in the SN group experienced the screening examination either as unpleasant or as both painful and unpleasant ($P < .01$). However, the majority in both groups found it neither painful nor unpleasant.

Table 3 shows that, among the FP group, women who recalled having anxiety about breast cancer 1 year before (prior to the screening), anxiety about the anticipated workup examination, or fear of breast cancer upon receiving the workup recommendation were more likely to have breast cancer anxiety at follow-up, after the reassurance, than those who did not ($P < .001$). Women who were content with the information in the workup letter had a higher prevalence of breast cancer anxiety than those who reported the opposite ($P < .05$). No association was found between the prevalence of anxiety about breast cancer and how the information was perceived at the invitation, the screening, or the workup examination.

Ninety-two percent of the nonattenders and 99% of the attenders and the women never invited indicated willingness to participate in another free mammography screening in the future. Of the attenders, 99% said they would also recommend a similar screening to a friend.

Discussion

The present study shows that a high proportion of women in a general population, approximately one out of three, have anxiety about breast cancer. The results further suggest that having negative results on a screening mammogram decreases this prevalence and that women who elect not to attend a screening are less anxious about breast cancer than those who attend.

One strength of this study is that breast cancer anxiety among women who were invited to the mammographic screening can be compared with that of women who were not invited. Another is that reasons for nonattendance could be evaluated without taking the monetary cost of the mammogram into account.

One limitation of this study is the possibility of recall bias. Another is that the survey instrument was not of sufficient depth to explore the relationship of cancer anxiety to other related health-belief concerns. Nevertheless, our results, which suggest that anxiety about breast cancer may motivate attendance at breast cancer screening, are in accordance with other studies, which used survey instruments that focused on more attitude and belief dimensions—such as perceived susceptibility—than ours did.[20–22]

This study reveals a higher attendance rate than do most of the studies reviewed by Vernon et al.[23] The high acceptance may be due to the fact that the mammography screening was put in a broader context of a comprehensive health survey. Our results also reflect the fact that women living or working in the city center had easier access to the mammogram screening facility than those who did not. This inference of inconvenient locations as a significant factor in explaining nonattendance has been proposed in previous studies.[14,17,24]

We do consider the low response rate among nonattenders eligible for the study to be a limitation. The same problem was revealed in the study by Baines et al.[14] Although the 178 nonattenders may not be representative of all the women who declined, their answers should be of value in understanding reasons for nonattendance.

Our finding that 11% found the screening examination somewhat painful is in accordance with that of Baines et al.[14] but in contrast to that of Stomper et al., who found that only 1% reported the examination to be painful.[25] That more women in the FP group than in the SN group perceived the screening examination to be both painful and unpleasant may be because women in the FP group have breasts that are more difficult to examine due to size or density, thus necessitating a stronger and more painful compression of the breasts. These results indicate some drawbacks of screening that have also been revealed in other studies.[13]

The present study indicates that women who were anxious before the screening were more likely to remain so. Discouragingly, perceived adequate information does not seem to prevent anxiety about breast cancer among those who had to go through a workup examination. Additional measures need to be found to minimize this negative effect of the screening.

Nearly all the women taking part in the present study reported that they would attend another mammography screening and also recommend a screening to their friends. These results reflect a positive attitude toward mammography and a willingness to participate that has not been adversely affected by screening experiences. □

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