

# The Impact of Mailing Psychoeducational Materials to Women with Abnormal Mammograms

## ABSTRACT

A randomized trial was conducted to evaluate the impact of mailed psychoeducational materials on adherence to subsequent annual mammography among women with prior abnormal mammograms. The results showed a 13% increment in adherence among women who received this intervention. This effect was independent of all sociodemographic and medical variables examined. We conclude that mailed psychoeducational materials may be an effective mechanism to improve adherence among women with abnormal mammogram results. (*Am J Public Health*. 1992;82:729-730)

*Caryn Lerman, PhD, Eric Ross, ScM, Alice Boyce, MA, Pat McGovern Gorchov, MPH, Robert McLaughlin, Barbara Rimer, DrPH, and Paul Engstrom, MD*

### Introduction

As use of mammography screening increases, an increasing number of women will have abnormal mammograms. The proportion of mammograms interpreted as abnormal in large screening programs is as high as 15% to 20%.<sup>1,2</sup> Thus, if 15% of the 48 million American women 40 years of age or older have mammograms, there would be more than 1 million abnormal mammograms per year.<sup>3</sup> Adherence to annual mammography screening is important for women with abnormal mammograms, because some of these women have an elevated risk for breast cancer.<sup>4</sup>

We conducted a randomized trial involving a mailed psychoeducational booklet to improve adherence to subsequent annual mammography among women with abnormal mammograms. The impact on adherence of two different styles of presenting educational information also was tested. On the basis of Prospect Theory,<sup>5,6</sup> we predicted that communications that emphasize the negative consequences of nonadherence (negative framing) would have a greater positive impact on adherence than equivalent communications that emphasize the positive consequences (positive framing).

### Methods

#### Study Population

Respondents were 446 women, aged 50 to 74 years, who were members of the Health Maintenance Organization of Pennsylvania and New Jersey (HMO PA/NJ). Eligible respondents were those who had received an abnormal mammogram during the previous year and were eligible to receive an annual screening mammogram during the study period (March 1990 to May 1991). As part of their HMO membership, all respondents received an informational brochure and a referral for a free mammogram annually.

The study sample was selected from a pool of 936 women who met the above

criteria. One hundred ninety-one women were excluded in the course of the study for the following reasons: discontinued HMO (10%), age ineligible (6%), cancer diagnosis (3%), and not eligible for mammogram (1%). Other women (n = 210) were excluded during the baseline survey phase because of unavailable telephone numbers (25%), refusals (3%), and language barriers (0.5%). An additional 89 women (17%) were lost during the follow-up survey phase for one of the above reasons. The final sample (n = 446) was not significantly different from the original sample in age, education, or mammogram results.

### Procedures

Respondents were randomized into one of four study groups: (1) no survey—control, (2) survey—control, (3) survey—psychoeducational booklet/negative framing, and (4) survey—psychoeducational booklet/positive framing. The randomization was stratified by prior mammogram result (i.e., low suspicion/showing asymmetric breast tissue vs high suspicion/showing mass). Baseline telephone surveys of sociodemographic and medical characteristics were conducted with respondents randomized to groups 2, 3, and 4. Response rates across these three groups were not significantly different (overall rate = 71%).

One month later, intervention group respondents were mailed a 12-page psychoeducational booklet that described the meaning of abnormal mammograms and emphasized the necessity of continued screening. Suggestions for managing mammography-related anxiety also were included. Two versions of these printed

---

The authors are with the Fox Chase Cancer Center, Cheltenham, Pa.

Requests for reprints should be sent to Caryn Lerman, PhD, Fox Chase Cancer Center, 510 Township Line Road, Cheltenham, PA 19012.

This paper was submitted to the *Journal of Public Health* August 14, 1991, and accepted with revisions December 31, 1991.

TABLE 1—Number and Percentage of Respondents Who Adhered to Mammography (n = 446)

Study Group <sup>a</sup>	Mammogram Result					
	Low Suspicion		High Suspicion		All Results	
	No.	%	No.	%	No.	%
Control—no survey	49	49	31	60	80	53
Control—survey	32	59	18	49	50	55
Experimental—positive	40	71	22	59	62	66
Experimental—negative	46	65	27	69	73	67
All groups	167	59	98	59	265	59

<sup>a</sup>Study group effect significant ( $\chi^2 = 7.76, P < .005$ ).

materials varied in terms of the “framing” of educational messages; however, the message content was equivalent.

One week later, all respondents were mailed the standard HMO breast screening packet, which included the free mammogram referral. Follow-up telephone calls were conducted with all respondents 3 months later, following expiration of the mammogram referrals, to assess adherence (response rate = 89%). Self-reported mammography adherence in this population has been shown to be highly reliable.<sup>7</sup>

## Results

The average age of respondents was 60 years (SD = 6.8). The majority of women were White (85%) and married (71%). Eighty-two percent had at least a high school education. Sixty-three percent had a low-suspicion abnormal mammogram, and 37% had a high-suspicion abnormal mammogram. Fifteen percent had a biopsy after their abnormal mammogram; 16% received additional imaging (ultrasound or repeat mammogram) and 68% did not require diagnostic follow-up. There were no significant differences in these variables between study groups.

Overall, 53% of women in the two control conditions obtained their annual mammograms, compared with 66% of women who received the psychoeducational booklet ( $\chi^2 = 7.76, P < .005$ ). Adherence rates in the two control groups were not different (53% vs 55%), suggesting that the baseline survey did not boost adherence. Adherence rates in the two intervention groups were not significantly different (66% vs 67%), suggesting that the framing of information had no effect.

Logistic regression analysis examined the effect of study group while controlling

for the index of suspicion on the prior mammogram result and for sociodemographic variables. Study group (control vs booklet) was a significant independent predictor of subsequent mammography adherence (odds ratio = 1.7,  $P < .005$ ). The interaction between study group and level of suspicion of the prior mammogram was not significant. No sociodemographic factor predicted adherence significantly.

## Discussion

This randomized trial demonstrated a significant positive impact of a mailed psychoeducational booklet on mammography adherence among women with prior abnormal mammograms. The intervention groups demonstrated 13% greater adherence to subsequent annual mammography. Further analyses indicated that the framing of educational messages did not differentially affect adherence. Also, adherence was not associated with sociodemographic factors or prior mammogram result.

These results have implications for the management of women with abnormal mammograms. Our previous research has indicated that a substantial proportion of these women have psychological difficulties, even after learning that they do not have cancer.<sup>1</sup> Psychoeducational interventions tailored to the unique needs of these women potentially can ameliorate excessive distress and promote continued adherence.<sup>8</sup> Such communications should provide messages to heighten perceived vulnerability to breast cancer<sup>9</sup> but should be balanced with reassuring messages that emphasize the potential for early breast cancer detection and cure.<sup>9-11</sup>

This study was conducted in an HMO population. Women who elect to join an HMO may differ from the general

population. However, our previous research suggests that members of HMO PA/NJ share the same sociodemographic backgrounds as nonmembers in the same geographic areas.<sup>12</sup> Future research is necessary to evaluate the impact of mailed educational materials in other populations with cost and access barriers. □

## Acknowledgments

This research was supported by institutional grants awarded to the Fox Chase Career Center (National Institutes of Health Grants, CA 06927, RO3 CA 51691-01, and RR05895) and an appropriation from the Commonwealth of Pennsylvania.

## References

- Lerman C, Trock B, Rimer BK, Boyce A, Jepson C, Engstrom PF. Psychological and behavioral implications of abnormal mammograms. *Ann Intern Med.* 1991;114:657-661.
- Winchester DP, Lasky HJ, Sylvester J, Maher ML. A television-promoted mammography screening pilot project in the Chicago metropolitan area. *CA.* 1988;38:291-309.
- Dawson DA, Thompson DB, eds. *Breast Cancer Risk Factors and Screening: United States, 1987.* Hyattsville, Md: US Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Health Statistics; 1990; DHHS publication no. PHS 90-1500.
- Dupont WD, Page DL. Risk factors for breast cancer in women with proliferative breast disease. *N Engl J Med.* 1985;312:146-151.
- Tversky A, Kahneman D. The framing of decisions and the psychology of choice. *Science.* 1981;211:453-458.
- Meyerowitz BE, Chaiken S. The effect of message framing on breast self-examination attitudes, intentions, and behavior. *J Pers Soc Psychol.* 1987;52:500-510.
- King E, Rimer BK, Trock B, Balshem A, Engstrom P. How valid are mammography self-reports? *Am J Public Health.* 1990;80:1386-1388.
- Lerman C, Rimer BK, Engstrom PF. Cancer risk notification: psychosocial and ethical implications. *J Clin Oncol.* 1991;9:1275-1281.
- Lerman C, Rimer BK, Engstrom PF. Reducing avoidable cancer mortality through prevention and early detection regimens. *Cancer Res.* 1989;49:4955-4962.
- Rimer BK, Keintz MK, Kessler HB, Engstrom PE, Rosan J. Why women resist mammograms: understanding patient-related barriers to acceptance of screening mammography. *Radiology.* 1989;172:243-246.
- Paskett ED, White E, Carter WB, Chu J. Improving follow-up after an abnormal Pap smear: a randomized controlled trial. *Prev Med.* 1990;19:630-641.
- Lerman C, Rimer B, Trock B, Engstrom P. Factors associated with repeat adherence to breast cancer screening. *Prev Med.* 1990;19:279-290.