Breast Cancer Screening in Two Multicultural Family Practice Teaching Clinics

Liat Lubish MD[1,3], Shragit Greenberg MD[1,3], Michael Friger[2] and Pesach Shvartzman MD[1,3]

Departments of [1]Family Medicine and [2]Epidemiology, Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, and [3]Clalit Health Services, Negev Region, Israel

Abstract

Background: Breast cancer is one of the most prevalent malignancies in women, yet one of the most treatable. Early detection is essential to obtain the desired remission and longevity. Numerous studies have shown that periodic screening for breast cancer can reduce mortality by 20–30%.

Objective: To assess the rates, compliance, characteristics as well as barriers in women regarding mammography screening.

Methods: The study group comprised a random sample of 702 women aged 50 or older from 5,914 eligible women in two teaching clinics in southern Israel. Phone interviews using structured questionnaires were conducted.

Results: The mean age of the study population was 61 years. The vast majority of the women were not born in Israel. Sixty-three percent of the women had undergone a mammography screening, 48% in the past 2 years. Monthly self-breast examinations were performed by 12% of the women in the last 2 years. Significant factors associated with undergoing mammography were: more than 7 years since immigration, married, a higher education level, adequate knowledge about breast cancer and mammography, presence of past or current cancer, and cancer in relatives. The main reasons for not being screened was no referral (54%) and a lack of knowledge about breast cancer and mammography (19%) – conditions easily remedied by physician counseling.

Conclusion: The study suggests that promotional efforts should be concentrated on new immigrants and on less educated and unmarried women.

IMAJ 2001;3:579–583

Breast cancer is the most common malignancy among women in Israel, with about 3,000 new cases diagnosed annually [1]. In the United States the cumulative lifetime probability of developing breast cancer is 12%, and among those women who do develop breast cancer the mortality rate is 35%. Since it is one of the most treatable malignancies, early detection is a critical prerequisite for increasing the possibility of a desired therapeutic response [2].

Several independent randomized trials have evaluated the effects of periodic mammography screening in asymptomatic women. These studies showed that screening can reduce breast cancer mortality by 20–30% when performed annually or every 2 years in women aged 50 and older [2]. The reduction in mortality when take-up and quality control are high is 30% [3,4]. However, the effectiveness of screening asymptomatic woman aged 40–49 is controversial [4]. It is estimated that to achieve the goal of reducing mortality by 30%, it is necessary to screen 60–70% of women aged 50 and older [5]. Given that cancer screening tests have been largely underused in eligible target populations [6], this goal has yet to be achieved [7]. There is a general belief among healthcare providers that this situation stems from a variety of physician- and patient-related barriers that prevent women from undergoing screening [8–11]. Commonly cited barriers include not only cost, inconvenience and fear of the examination, but also a lack of information about breast cancer and recommendations for screening [12,13]. The Israel Family Physician Association and the Israel National Oncology Council recommend a mammography screening every 2 years for women aged 50–75 years and annually to high risk women aged 40 or older.

In Israel at the time of the study (1995), no information was available regarding mammography screening rates, influencing factors or barriers. Since Israel is unique in terms of its diverse and heterogeneous population base and the increasing immigration, the present study sought to assess the compliance to mammography recommendations in a sample of women aged 50 and above registered in two teaching clinics in southern Israel. The rates and characteristics of the women participating in programs for early detection of breast cancer were explored, and the reasons for non-participation evaluated. At the time of the study a reminder system for mammography was not available. While this system is currently operational in most regions where Clalit Health Services function, it has been implemented only partially in the Negev region (southern Israel) and is still problematic.

Methods

The two urban practices that participated in the study are teaching clinics of the Ben-Gurion University Family Medicine Department in Beer Sheva, southern Israel. These clinics provide health services to a population of approximately 20,000 people insured with Clalit Health Services. At the time

of the study there were approximately 5,900 women matching the inclusion criteria.

The study group comprised a random sample of 702 women aged 50–75. The sample size was determined using 80% power and <0.05. Phone interviews using structured questionnaires were conducted. The questionnaires consisted of 44 questions on demographic and socioeconomic characteristics, health risk factors, and participation in programs for early detection (mammography, self-breast examination and breast examination by a physician). The questionnaires also contained items to assess the barriers to participation in the screening process, to ascertain the participants' knowledge of breast cancer and mammography, and to determine the optimal means of imparting this information.

The knowledge questions were:
1. In your opinion, are women over the age of 50 at a higher risk for developing breast cancer?
2. In your opinion, does familial breast cancer (sister or mother) increase the risk for developing breast cancer?
3. How many women, in your opinion, are likely to suffer from breast cancer in their lifetime?
4. What do you think the frequency of mammography screening should be for women over the age of 50?
5. In your opinion, can mammography screening detect new breast cancer that was not found by a physical examination?

Four to five "correct" answers were considered as good knowledge of breast cancer and mammography, and 1–2 "correct" answers as poor knowledge.

At the end of each interview, women who had not been screened in the last 2 years were invited to schedule an appointment.

Results

The demographic and socioeconomic characteristics of the study population are presented in Table 1. The mean age of the participants was 61 years; 61% were born in the former Soviet Union or in Eastern Europe, 72% having immigrated to Israel before 1988. Seventy percent were married and the mean number of children was 2.5 ± 1.5. Mean years of education was 12.1 ± 3.6, with 7% having more than 17 years of education.

Health risk factors in the study population showed that 10% were smokers, 11% were current or past cancer patients (42% of them with breast cancer), and 30% had first-degree relatives with cancer (24% with breast cancer). Participation in programs for early detection of breast cancer is shown in Table 2: 63% of the participants in this study had undergone a mammography screening, 77% of them in the last 2 years, indicating that 48% of the total study population had been screened in the last 2 years. Monthly self-breast examinations were performed by 12% of the women, and 32% of the women had undergone a breast examination by their family physician in the last year.

Analysis of the responses given to the five relevant knowledge questions listed in the Methods section revealed that only 27% of the women participating in this study exhibited a "good" knowledge of breast cancer and mammography,

Table 1. Study population sociodemographic characteristics (=702)

Variables	N	%
Country of birth		
North Africa	155	22
Russia	325	46
East Europe	108	15
South America	51	7
Israel	49	6
Other	24	3
Marital status		
Married	489	70
Single	10	1
Divorced	47	7
Widow	156	22
No. of children		
1–2	432	64
3–4	183	27
5+	61	9
Mean $\pm$ SD	2.5 $\pm$ 1.5	
Years of education		
0–6	44	6
7–12	360	52
13–16	247	35
17+	51	7
Mean $\pm$ SD	12.1 $\pm$ 3.6	

	General population (=5.212)	Study population (=702)
Age		
50–59	40%	50%
60–69	33%	33%
70–76	27%	17%
Mean $\pm$ SD	60.9 $\pm$ 7.5	

Table 2. Beast cancer screening (=702)

Variables	N	%
Mammography: ever		
Yes	440	63
No	262	37
Breast examination by family physician in the last year		
Yes	219	32
No	476	68
Self-breast examination in the last year		
Yes	84	12
No	618	88

whereas 50% of the women exhibited a "poor" knowledge. These questions, used as a barometer to assess the participants' basic knowledge of breast cancer and the breast cancer screening process, show that a direct correlation exists between

Table 3. Socio demographic factors associated with screening mammography

Variables	Mammography Yes (5)	P
Age		
50–59	68.1	
60–69	61.3	
70–76	49.1	< 0.01
Country of origin		
North Africa	59.7	
Russia	50.6	
East Europe	67.1	
South America	76.5	
Israel	68.2	
Other	75.0	< 0.00001
Immigration		
Before 1988	78.7	
1988–1995	62.9	< 0.001
Marital status	67.5	
Married	57.1	
Single	58.0	
Divorced	49.4	< 0.001
Widow		
No. of children		
1–2	59.3	
3–4	71.0	
5+	63.9	< 0.05
Years of education		
0–6	43.2	
7–12	60.3	
13–16	68.0	
17+	70.6	< 0.01
Smoking		
No	60.8	
Yes	58.8	
In the past	88.5	< 0.001
Past or present cancer		
No	60.9	
Yes	78.4	< 0.01
Relative with cancer		
No	56.7	
Yes	65.9	< 0.001
Knowledge (no. of correct answers)		
0–1	49.7	
2–3	71.1	
4–5	72.9	= 0.0000
Self-breast exam		
No	51.1	
Yes	67.0	< 0.001
Investigation of past lump in breast		
No	57.4	
Yes	83.5	= 0.0000

knowledge of breast cancer and mammography and subsequent participation in screening [Table 3].

With regard to the preferred method of communicating information on breast cancer and mammography, 50% of the women chose to receive leaflets in their clinics or from their family physician, 25% indicated newspapers or television, and only 3% wanted their gynecologist to be the main source of this information.

The association between the different sociodemographic variables and health behavior was evaluated by univariant analysis [Table 3] and logistic regression [Table 4]. The results portray a strong correlation between age and undergoing mammography ($P < 0.01$), i.e., most of the women who had undergone mammography screening were aged 50–59. A significant correlation was also found with country of origin, i.e., women born in Israel, South America or Eastern Europe had undergone more mammography screenings than women from the former Soviet Union or North Africa ($P < 0.00001$). Strong predictors of undergoing mammography were married status ($P < 0.001$), higher education ($P < 0.01$), and the time of immigration, i.e., women who immigrated before 1988 had undergone more screening ($P < 0.00001$). Other positive correlations associated with mammography screening were a history of current or past cancer ($P < 0.01$), first-degree relatives with cancer ($P < 0.001$), and having a "good" knowledge about breast cancer and the breast cancer screening process (as defined previously, $P = 0.0000$).

These results were tested via a logistic regression [Table 4]. The outcome of this regression showed again that a knowledge of breast cancer and mammography, the existence of past or present cancer, having undergone investigation of a lump in the breast, the participant's country of origin, and immigration before 1988 were all positive predictors of undergoing a mammography.

Table 4. Results of logistic regression: the factors influencing the dependent variable (screening mammography)

Have you had a mammography screening in the past?

Variables	OR	95% CI	P
Knowledge	1.33		0.0000
Past or present cancer 0–Yes, 1–No	0.46	0.23–0.93	< 0.05
Previous investigation of a breat lump 0–No, 1–Yes	0.29	0.16–0.52	0.0000
Immigration year 0–before 1987, 1–after 1988	0.32	0.21–0.48	0.0000
Country of origin 1–Israel, 0–else	2.2900	1.07–4.96	< 0.05

* Confidence interval was only computed for categorical variables

The main reason cited for not performing a mammography was the lack of referral (54%). In addition, 19% of the participants in this study cited a lack of available information about breast cancer screening. Fears were claimed to be a barrier in only 6.5% of the women.

Discussion

The benefit of mammography screening for women older than 50 is well established by scientific data. A study recently published in *The Lancet* debated these conclusions, positing that despite increased rates of mammography screening in the past 15 years there has been no decline in mortality [14]. The researchers reexamined the eight largest studies assessing the efficacy of mammography screening and concluded that six of these studies were poorly designed and that the other two failed to show a decline in mortality. However, another recent study from Wisconsin showed contrary results – a decline in mortality due to mammography screening [15]. Until additional research is shown to support the conclusion that mammography screening is not effective in reducing mortality, this finding remains controversial.

At the time of our study (1995) little was known on mammography screening rates, influential factors or barriers in Israel. In view of this lack of knowledge and because Israeli society is unique and extremely diversified, our study aimed to assess the compliance to mammography recommendations, the rates and characteristics of the women participating in programs for early detection of breast cancer, and the reasons for non-participation.

The primary care physician is in a crucial position to facilitate mammography referrals. Underestimating the importance of the physician's role or overestimating the patient's resistance can result in lost opportunities for referral. We sought to evaluate adherence to programs for early detection of breast cancer and the variables influencing women to undergo mammography screening.

Numerous studies have shown that more than 90% of middle-aged women are aware of both the need for mammography screening and its advantages [16], while others have indicated that a significant number of women aged 50–55 and older (33% and 21% respectively) were unaware of recommendations for mammography screening. Furthermore, a significant number of participants did not consider themselves to be at risk for developing cancer [17]. According to our data, mammography was performed significantly less in those with " poor" knowledge and information.

Many innovative strategies have been devised in an attempt to overcome these barriers [18]. It appears that patients are willing to undergo screening tests if recommended by their physicians [19], and that more women participate in mammography programs when strongly recommended by their physicians [20,21]. As indicated in this survey, the main reason for not having a mammography was a lack of referral (54%).

Our results show that about 60% of the study population had undergone a mammography, 48% in the previous 2 years as recommended. Following implementation of the reminder system in Clalit Health Services in the Negev region, a compliance of 45% in Beer Sheva and 37% in the whole district was seen for women aged 50–74. Looking at the national levels, primary care physicians have a crucial role in encouraging women to have a mammography even within the reminder system project. It should be noted that the reminder system is not yet fully operational in the Negev district. Breast self-examination was performed by only 12% of women in this study in the past year. This rate of mammography use was similar to that found in a recent national Israeli survey [22], higher than expected by the Israel Cancer Society [1,23], but lower than the estimated rates of 70–90% of women having at least one mammography in countries with socialized medicine [24].

Factors significantly associated with undergoing a mammography included: age 50–59; born in Israel, South America or Eastern Europe; immigration before 1988; more years of education; presence of current or past cancer (also in first-degree relatives); married; and having a knowledge about breast cancer and programs for early detection [21,25]. Several studies have shown that age is not only the most overlooked but also the greatest risk factor. The average breast cancer incidence rate for women older than 65 is 435/100,000 compared to only 71/100,000 for women younger than 65 [21,25]. We have no explanation for the lower mammography screening rate in women older than 60 in our study.

Another significant factor is the time since their immigration to Israel. Immigrants with more than 7 years in Israel (prior to the study) had a higher mammography rate than those with less than 7 years in the country. This is probably due to the fact that new immigrants are busy adapting to a new country and are less interested in health prevention. This finding is unique to this study and may be relevant to other countries with an influx of immigrants (especially from the former Soviet Union and North Africa). Although the sheer number of immigrants (in proportion to the indigenous population) may seem unique to Israel, the demographic data analyzed in this study (country of origin and time since immigration) may help in determining the status of breast cancer screening in other countries.

We found that the main barrier to undergoing mammography was that the women were not referred. This finding emphasizes the central role of family physicians in programs for early detection [19,20], particularly since the women in our study clearly indicated that they wished their family physician to be their main source of information about breast cancer. Reasons for not undergoing mammography were fear in only 6.5% of the sample population, and lack of information on screening recommendations for early detection in 19%. Other surveys cited the same two reasons, suggesting that many women who are currently non-compliant with mammography guidelines would be "converted" if their primary care physician engaged them in a discussion on the need for screening. Numerous studies have confirmed the powerful and positive impact of physician encouragement on an individual's participation in a breast cancer screening process [4,6].

In conclusion, the higher than average screening rate found in these two practices (48%), albeit still far from mammography screening goals, emphasizes the role of the primary care physician – both in referral and awareness of the population at risk. This study also indicates the population to which we should target our main efforts to convince them to undergo mammography – women who are new immigrants (particularly from the former Soviet Union and North Africa), who are less educated, unmarried, and those with a poor knowledge about breast cancer. Furthermore, the role of the family physician is of vital importance to the success of any such program. Since the family physician's spectrum of activities is so wide, we recommend that the practice activities be prioritized following evaluation of the population's characteristics and needs. These might be achieved by adopting community-oriented primary care principles.

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Correspondence: Dr. P. Shvartzman, Chairman, Dept. of Family Medicine, Ben-Gurion University of the Negev, P.O. Box 653, Beer Sheva 84105, Israel. Phone: (972-8) 647-7436, Fax: (972-8) 647-7636, email: spesah@bgumail.bgu.ac.il