Factors Affecting Mammography Screening Utilization among Educated Women in Al Beheira Governorate, Egypt

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Abstract

Background: Breast cancer (BC) is the leading cancer in women worldwide and is increasing particularly in developing countries where the majority of cases are diagnosed in late stages. Early detection at an early stage by mammography screening leads to better prognosis and improves the survival rate for this malignancy. The aim of the study was to analyze factors that affect mammography screening utilization among educated women. Patients and Methods: A total of 700 educated women aged 40 years and older were included in a community-based cross-sectional interview survey that was conducted in between June 2017 and August 2018 in Al Beheira governorate Egypt. Results: Multivariate logistic regression revealed that lack of knowledge about mammography (odds ratio [OR] = 9.8), education level (OR = 6.0), employment status (OR = 3.5), cancer fatalism (OR = 3.0), residence (OR = 2.8), fear of embarrassment (OR = 2.6), fear of positive result (OR = 2.4), family income (OR = 1.9), and health insurance (OR = 1.8) were significant (P < 0.05) predictors of mammography screening utilization. Conclusion: Mammography utilization screening rate is low. Lack of knowledge about mammography, cultural norms, and socioeconomic factors were barriers to mammography screening.

Keywords: Breast, cancer, mammography, screening and factors
45–54 years and biennial mammography screening starting at age 55 years.[11,12] Screening mammography is very useful as it reduces mortality from BC by about 20%–35% in women aged 50–69 years and slightly less in women aged 40–49 years at a period of 14 years of follow-up.[11]

In Egypt, facilities for mammographic screening are available in the major governmental and private hospitals[12] and delivered through mobile units equipped with digital mammography units.[13] Despite these mobile units, which increase the presence in rural areas and less affluent areas, barriers to accessing mammography still exist.[14]

Various factors affect the rates of Ms such as age, educational level, income, ethnic origin, insurance status, marital status, and health status are important factors influencing the uptake of screening services for BC.[15] Other factors include socioeconomic characteristics, utilization of health services, healthy related behavior, and self-assessed health status.[15] Mammography screening rates in developed countries range between 15 and 79%, while they are <5% in developing countries.[16] The important issue for the prevention of death from BC is the development of strategies to increase BC screening rates.[16] To increase participation in BC screening, the study aimed to analyze factors that affect MS utilization among educated women.

**Patients and Methods**

**Methods**

A community-based crosssectional interview survey was conducted in Al Beheira governorate Egypt. A cluster sampling technique was used. Ten districts (of 15 districts) were randomly selected, two clusters from each district (one rural and another urban). Sample from each cluster was proportionate to its size each to represent the women in rural and urban areas. The sample size was determined using Epi info, version 7.1.5, 2015 (CDC). The minimum required sample size was 369, based on the assumption that the mammography screening utilization rate among women was 60%, the precision was 5%, and 95% confidence level. A total of 700 women were randomly selected. Educated women (secondary education and above) aged 40 years and older who accepted to participate were included in the study. Women were categorized into “ever screeners” if they had even used mammogram screening and “ever screeners” if not.

A predesigned interviewing questionnaire was used to collect data from the participants including their sociodemographic data (age of the participants, level of education, residence, employment status, income, health insurance, menopausal status, history of previous breast disease, family history of BC lack of access or time, and lack of social support) and cultural norm and knowledge about mammography screening. The questionnaire was tested through a pilot study of thirty women to detect any difficulties or confusing questions for modification or deletion.

**Statistical analysis**

Data were analyzed using SPSS software, version 16.0 (SPSS Inc., Chicago, IL, USA). Univariate analysis was used to compare variables for the outcomes of interest. Continuous data were compared using the Student’s t-test. Either Chi-square or Fisher’s exact tests were used to compare categorical variables. A multivariate analysis (logistic regressions enter approach) was performed to determine the predictor variable. The results were considered to be statistically significant at \( P < 0.05 \) at confidence interval 95%.

**Results**

A total of 700 women above 40 years were included in this study. Fifty percent of the participants resided in rural areas. Participants were aged between 40 and 68 years (mean age 49.5 + 6.5 years) and nearly 50% had a university degree. Table 1 shows that there was a statistically significant association \( (P > 0.005) \) between the age of the participants, level of education, and residence and MS status of the participants. The difference between ever screener and never screener groups was statistically significant regarding employment status and income. Females have health insurance or a history of previous breast disease, were utilize MS significantly \( (P < 0.05) \) more than females who haven’t. Furthermore, lack of access or time and lack of social support were significantly \( (P < 0.05) \) different between the studied groups. Table 2 shows that regarding the cultural norm and knowledge about mammography, fear of embarrassment, positive result of MS, and fear of treatment were significantly \( (P < 0.01) \) higher in never screener women than ever screener women. Incorrect or lack of knowledge about BC or MS was highly statistically significant \( (P < 0.001) \) different between the studied groups. Multivariate logistic regression revealed that lack of knowledge about mammography (odds ratio \( [OR] = 9.8 \)), education level \( (OR = 6.0) \), employment status \( (OR = 3.5) \), cancer fatalism \( (OR = 3.0) \), residence \( (OR = 2.8) \), fear of embarrassment \( (OR = 2.6) \), fear of positive result \( (OR = 2.4) \), family income \( (OR = 1.9) \), and health insurance \( (OR = 1.8) \) were significant predictors \( (P < 0.05) \) of mammography screening utilization [Table 3].

**Discussion**

BC is the leading cancer in women worldwide and is increasing, particularly in developing countries where the majority of cases are diagnosed in late stages. Early detection by screening mammography and treatment of the disease have been shown to decrease mortality rates.[16] The age at which screening mammography should commence remains controversial. Most countries recommend starting this screening modality between the ages of 40 and 50 years.[17]

In the current study, 14% of the participants reported ever having a mammogram screening. This finding is lower than that reported in Saudi Arabia (40%)[18] and very lower than that in Sweden (92%) and Denmark (79%).[19]
Table 1: Sociodemographic difference between the study groups

| Age*          | Never screeners (n=602), n (%) | Ever screeners (n=98), n (%) |
|---------------|-------------------------------|-----------------------------|
| Below 50 years| 330 (88.5)                    | 43 (11.5)                   |
| Level of education** | 329 (92.2)                          | 28 (7.8)                   |
| Secondary education | 273 (79.6)                          | 70 (20.4)                   |
| University or postgraduate |                                |                             |
| Residence**    | 325 (91.5)                    | 30 (8.5)                    |
| Rural         | 277 (80.3)                    | 68 (19.7)                   |
| Employment status** |                                     |                             |
| Housewife     | 380 (89.5)                    | 45 (10.5)                   |
| Employed (even retired) | 222 (81.0)                         | 53 (19.0)                   |
| Income**      | 367 (92)                      | 33 (8.0)                    |
| Sufficient    | 235 (78.0)                    | 65 (22)                     |
| Health insurance** |                                     |                             |
| Absent        | 333 (90.0)                    | 36 (10.0)                   |
| Present       | 269 (81.0)                    | 62 (19.0)                   |
| Number of children |                                     |                             |
| Four or more  | 392 (87.0)                    | 60 (13.0)                   |
| Three or less | 210 (85.0)                    | 38 (15.0)                   |
| Menopausal status* |                                     |                             |
| Pre- or perimenopause | 377 (84.0)                          | 72 (16.0)                   |
| Postmenopausal | 225 (89.5)                    | 26 (10.5)                   |
| Previous breast disease (yes)* | 320 (83)                                 | 65 (17.0)                   |
| Family history of breast cancer (yes) | 60 (92.3)                                  | 5 (7.7)                     |
| Lack of access or time (yes) ** | 309 (92.0)                                        | 28 (8.0)                    |
| Lack of social support (yes) ** | 271 (92.5)                                        | 22 (7.5)                    |

* = p < 0.05, ** = p < 0.001

Sociodemographic factors of participants (age, education level, family income, and residence) were statistically significant differences between ever screener and never screener groups. This in agreement with many studies. Employment status was statistical significance with MS participation. This may be due to higher income and health insurance accompanied by employment. This is coincides with other studies, while Ersin et al. showed no difference between employed and nonemployed. There was a statistically significant difference between the study groups regarding the menopausal status and personal history of breast disease with MS utilization. This finding is consistent with previous studies reports. Lack of access to screening services (a lack of a nearby facility, health-care provider recommendation, or lack of time) was statistically significant difference between ever screener and never screener group with utilization of MS. Li C et al. stated that MS participation my influenced by distance between the residence and the screening unit which is a major challenge in low- and middle-income countries. Women who did not have health insurance were less likely to undergo mammography than those who have it. This result is supported by other studies that reported a lack of health insurance as a significant predictor of no adherence. Patients without health insurance were less likely to have a regular source of health care, while people with a trusted source of care that they access regularly were more likely to be referred for screening services. Social support for health can includes both functional support, such as having others to provide transportation to medical appointments, and emotional support, such as having others available to discuss breast health or to give medical advice. Lack of knowledge about BC and percentage of women who believed that the treatment for cancer is worse than cancer were statistically significant different between our study groups. Furthermore,
women having a lack of knowledge about mammography were less likely to participate in mammography screening. This is line with another study.\textsuperscript{[1]} Regarding cultural norms and belief, women having negative cultural (cancer fatalism) and fear of embarrassment or fear of receiving a cancer were less likely to undergo mammography than women have not. Cancer fatalism: Cancer fatalism is the belief that a cancer diagnosis means that death is inevitable.\textsuperscript{[5]} Cultural taboo and women’s fear of mastectomy or losing a breast were identified as barriers to screening.\textsuperscript{[24]}

**Conclusion**

The mammography utilization screening rate is low. Although the participants were educated female, the lack of knowledge about mammography and cultural norms were the main barriers to mammography screening.

**Recommendation**

Education programs or sessions for females, especially for those living in the rural area to improve their culture and knowledge about BC and mammogram screening after 40 years. Providing free mammography screening services to targeting the risk groups (low educated, have low-income, noninsured women, and living in rural areas) to remove the financial and accessibility barriers.

**Study limitation**

First, the study used a cross-sectional design. Second, the sample was not representative all the Egyptian population as it was conducted in one governorate only. Third, women’s self-report was in compliance with mammography use, so they might suffer from reporting bias.

**Ethical consideration**

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and met the ethical standard outlines in Helsinki Declaration of 1975 as revised in 2000. The purpose of the study was explained to all and they were informed that all collected data will be used for scientific purpose only. They were ensured strict confidentiality and anonymity before proceeding in the interview.

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**Conflicts of interest**

There are no conflicts of interest.

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