

Evaluating the Knowledge of Breast Cancer Screening and Prevention among Arab-American Women in Michigan

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Published online: 5 May 2010
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Abstract Arab-American women are more likely to be diagnosed with advanced staged breast cancer. We analyzed data from 100 women utilizing a breast cancer literacy assessment tool aimed at understanding functional literacy levels about breast-self exams (BSE), clinical breast exams (CBE), and mammograms. The educational program improved women's knowledge of BSE (OR=0.15; 95% CI=0.04, 0.50) and CBE (OR=0.15; 95% CI=0.04, 0.54), more for women with higher education. Consideration of women's educational status is an important factor in planning educational programs to improve knowledge on breast cancer screening and prevention in this minority population.

Keywords Arab-American women · Functional cancer literacy · Breast cancer screening

Introduction

Women from ethnic minority groups are more likely to be diagnosed with advanced-stage breast cancer and larger tumors [1], a disparity partly attributable to the fact that minority women do not have adequate knowledge about

early detection or screening services [2]. A way to address these disparities is to offer language-appropriate and culturally appropriate educational programs to disseminate vital information about breast health and wellness [3–5]. One understudied ethnic minority group of women is Arab-Americans, in part because traditionally they have often been grouped with Caucasians. The largest concentration of Arab-Americans outside of the Middle East is in Metropolitan Detroit, MI [6]. Schwartz et al. [7] found that these women in Metropolitan Detroit were less likely to have ever had a mammogram than all Michigan women and had a lower prevalence of mammography compared to other racial/ethnic groups. A number of barriers to Arab-American mammography screening were cited and included embarrassment, fear of detection, and discomfort with the procedure [7]. Other recent studies have shed light on the barriers faced by Arab-Americans in accessing cancer screenings [8–10] such as language and transportation, lack of knowledge, time, discrimination, the complexity of the health system, and cultural factors such as cancer causation beliefs, which are not recognized by health care professionals [8–10]. These barriers negatively affect screening behaviors [9]. Our main objective in this study was to assess the baseline knowledge of breast cancer screening and prevention among Arab-American women in Michigan as well as their knowledge after an intervention. Additionally, we measured the association between change in knowledge and its relationship with women's preferred language of assessment (English or Arabic).

Supported by the Cancer Epidemiology Education in Special Populations Program of the University of Michigan (R25 CA112383)

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Methods

This study was approved by the Michigan State University Institutional Review Board, and written informed consents

were obtained from all participants. Data were collected from 100 Arab-American women residing in Metropolitan Detroit, whose mean age was 41 years (± 16.6). The study examined the “knowledge and screening” domain of the Breast Cancer Literacy Assessment Tool© [11]. This tool, designed to elicit functional breast cancer literacy levels on breast self-exams (BSEs), clinical breast exams (CBEs), and mammograms, has a reliability of 0.85 for the English and 0.75 for the Arabic version [11, 12]. Data were collected in the context of the Kin KeeperSM Cancer Prevention Intervention that used bilingual Arab community health workers (CHWs) to deliver the educational intervention in the homes of Arab-American women surrounded by their adult female family members [5, 12]. The tools were orally administered in a pre/post-intervention to 24 families, providing the women the option to take the assessment in English or Arabic. For our post-data analysis, five CHWs who led the interventions were contacted via email and telephone. Qualitative interviews with two CHWs were carried out by email. Each CHW worker was asked to share his or her thoughts as to why there was a significant decline in the following questions: “Which of these commonly used screening practices are the same?” (1) BSE and CBE, (2) CBE and mammogram, (3) mammogram and BSE, (4) all are the same, and (5) none are the same. Additionally, the CHWs were asked to identify their country of origin and comment on how women perceived cancer within that specific country. These qualitative interviews provided invaluable insights regarding some of the observed quantitative results.

Statistical Analysis

The SPSS statistical package, version 16.0, was used to analyze the data. Stratified analysis was performed to explore potential differences in knowledge by language, age, marital status, education level, household income, and health status. Based on this bivariate analysis, responses to the questions were further grouped as follows: (a) those that the participants improved after the educational intervention (i.e., the pre-intervention response was incorrect but the post-intervention response was correct, thus increasing their score), (b) questions that the participants regressed after the program; (i.e., the pre-response was correct, but the post-response was incorrect), (c) questions where the participants had the same correct response before and after, and (d) questions where participants continued to give the incorrect answer even after the CHWs' instruction. The responses to the questions were then analyzed using a multinomial regression model to calculate odds ratios (ORs) and 95% confidence intervals (CIs).

Results

After adjusting for age, employment, insurance, and marital status in the multinomial regression models, we tested for the effect of language and education on improvement after the educational intervention (shown in Table 1). We found that education was a significant predictor of improvement in questions 1 and 2. For question 1, which asked, “Who

Table 1 Effect of language of instrument, education level, and age on the probability of test score “remaining same or incorrect” ($N = 100$)

	OR (95% CI)				
	Q1	Q2	Q3	Q4	Q5
Language					
English	1.00	1.00	1.00	1.00	1.00
Arabic	2.37 (0.83, 6.81)	1.65 (0.45, 5.91)	0.67 (0.17, 2.67)	0.47 (0.14, 1.58)	2.37 (0.82, 6.80)
Education					
Less than college	1.00	1.00	1.00	1.00	1.00
College or above	0.15* (0.04, 0.50)	0.15* (0.04, 0.54)	0.84 (0.27, 2.61)	0.53 (0.14, 2.00)	0.56 (0.14, 2.16)
Age (years)					
50 or more	1.00	1.00	1.00	1.00	1.00
18–30	1.57 (0.39, 6.40)	1.31 (0.29, 5.99)	0.80 (0.16, 3.87)	–	0.14* (0.03, 0.75)
30–39	1.17 (0.20, 6.97)	1.30 (0.43, 3.92)	0.99 (0.31, 3.18)	–	0.49 (0.15, 1.58)
40–49	1.74 (0.48, 6.34)	0.76 (0.12, 4.73)	1.17 (0.26, 5.19)	–	0.77 (0.26, 2.24)

The probability of “remained same or incorrect” was modeled

Other variables that were adjusted for (except for question 4): Employment, Insurance status, and marital status

*Statistically significant at 0.05 significant level

– Low variability in the dependent variable made convergence of estimation to fail. Convergence only established after age and other covariates were dropped out of the model

performs a breast self-exam?”, women who said they had “college or above” level education had a significant reduction in their probability of remaining the same or incorrect (OR=0.15; 95% CI=0.04, 0.50). Improvement for the subsequent question, which asked who performs a CBE, was also significantly associated with “college or above” level education. (OR=0.15, CI=0.04, 0.54). For question 5, which tested knowledge regarding appropriate time intervals for SBE, CBE, and mammograms, the likelihood of remaining the same or incorrect was significantly associated with age, with the youngest age group of 18–30 years having a much lower probability of remaining incorrect as compared to the reference group of 50+ years (OR=0.14, CI=0.03, 0.75). Finally, for question 4 (Which of these commonly used screening practices are the same?), which displayed a marked decline in test scores, there was little variation in the outcome variable across covariates.

Discussion

In our study, we observed that Arab-American women in Michigan had substantial increase in knowledge about breast cancer and screening following the educational intervention regardless of their language preference. Our study showed that women who took the assessment test in English had better gains in knowledge than those who took it in Arabic. Women who took the test in English tended to have higher education, income levels, and previous employment. This may indicate that investments in education and employment of minority populations may also augment cancer education programs. Although women who took the assessment test in English were younger than women who took it in Arabic, education of young women before the age of recommended breast cancer screening (age 40 or older) may be helpful for their future screening. In order to narrow the gap, starting breast cancer screening education early in life may have a positive impact when women reach the actual age of screening.

Women's reporting that all screening methods are the same following the intervention was surprising. We interviewed the CHWs who conducted the intervention to help us understand the possible reason(s) for this surprising response. The CHWs stated that women's overconfident attitude and fear of being diagnosed with breast cancer were major factors for the incorrect answers. It is also possible that CHWs may have portrayed a CBE as being the same as BSE. During the home visits, BSE was demonstrated using breast models to address reservations such as invasion of privacy; hence, they may have unintentionally implied to the women that “the physician would be doing the same exact procedure” as the women do during BSE. This

unexpected finding is important. It reveals a potential pitfall in educating women about breast cancer screening. It is necessary to educate them on the differences as well as the respective role of breast cancer screening procedures/modalities and the associated guidelines. It is foreseeable that if women perceive BSE to be equivalent to CBE, they may decide not to visit a medical provider under the assumption that the BSE alone is adequate screening. This could especially be true for women who lack health insurance who may resort to replacing an insurance-paid CBE with BSE, which does not require payment. However, in the process of being culturally sensitive, it is paramount that the education is accurate and does not misrepresent or compromise the different procedures/modalities involved in comprehensive breast cancer screening.

Overall, while cultural variables were not explicitly elicited in this study, the qualitative interviews with the CHWs suggested that they may be correlated with education and may interact in their influence on knowledge of breast cancer screening. In essence, although education, age, and language were found to be critical factors among the research participants, there are numerous other dynamics such as culture and religion that influence the women's levels of breast cancer screening knowledge that were not explicitly captured in this study. This was a community-based study and cannot be generalized to the larger Arab-American female population.

Acknowledgments This study was supported by the Cancer Epidemiology Education in Special Populations Program of the University of Michigan (R25 CA112383).

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