



Patterns and determinants of mammography screening in Lebanese women

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ABSTRACT

The associations of ever using and/or repeating a mammography test with psychosocial and socio-demographic factors were surveyed in 2014 among Lebanese women ≥ 40 .

A sample of 2400 women was selected across Lebanon. Variables with significant bivariate associations with various types of behaviors were entered in multivariate analysis.

Of the total, 105 women (4.4%) had never heard of mammography as a tool for early breast cancer detection. Among the remaining 2295, 45% had ever used it, of whom 10% had obtained it for the first time within the 12 months preceding the survey. Repeaters were 67% of 926 women who had the time opportunity to do so (median lifetime frequency: 2). Older age, higher socio-economic status (SES) and living within the Greater Beirut (GB) area were significantly associated with ever-use. Within GB, psychosocial factors such as perceived susceptibility and benefits were most strongly associated with ever-use. Outside GB, socio-economic advantage seemed to mostly affect ever-use. Only 4% reported opposition from husbands to their mammography, and husband's support was significant for adherence to mammography guidelines mostly outside GB. Higher education emerged also as a significant socio-demographic determinant for ever-repeating in all regions. Perceived comfort of the previous test strongly affected the likelihood of repeating it.

Providing mammography free-of-charge may alleviate some obstacles among women with socio-economic disadvantage. Stressing that good results one year do not make the cancer less likely or repeating the test less important, as well as improving the comfort of mammography testing could ensure test repeating.

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1. Introduction

Breast cancer is the most commonly diagnosed cancer in women around the globe (Ferlay et al., 2010). In Lebanon, it has topped the list of cancers among women for the past 50 years, and accounts annually for about one-third of all reported cases (Shamseddine et al., 2004; Ministry of Public Health. National Cancer Registry, 2015). The worldwide rise in breast cancer incidence is inevitable, since it is related to major changes in reproductive life patterns (Lakkis et al., 2010). The age-standardized incidence rate in Lebanon has increased from 16.4 per 100,000 in 1965 (Abou-Daoud, 1966) to 95.7 in 2008 (Ministry of Public Health. National Cancer Registry, 2015). Several screening tools allow an early diagnosis of breast cancer, rendering the possibility of efficient treatment and definite cure very likely. Of those, mammography is a cost-effective screening tool which improves the prognosis and reduces mortality (White et al., 2004; Barth et al., 2005).

Since 2002, annual awareness campaigns have been conducted in Lebanon to obtain a wider adoption of mammography screening. In

2009, national guidelines for screening were established calling for annual mammography for women aged 40 and above with no family history of breast cancer (Adib et al., 2008). Lifetime utilization has been increasing steadily from 28.9% in 2005 to 43% in 2013. In contrast, regular re-utilization has moved only slightly over time from about 18% in 2005 to about 21% in 2013, ultimately reaching a plateau level in some regions of Lebanon (Haddad et al., 2015). Lower utilization rates may be associated with two large categories of obstacles. The first includes logistical/structural determinants such as the availability and accessibility of a screening center, and test affordability. The other large category includes psychosocial factors such as values, expectations and beliefs which affect the way women transform knowledge regarding mammography into actual behavior. Socio-demographic determinants affect the way structural and psychosocial factors predict mammography utilization (Adib et al., 2009).

The Health Belief Model (HBM) is one psychosocial model which has been used in several studies as a theoretical framework to predict breast cancer detection behaviors (Petro-Nustas, 2001; Secginli and Nahcivan, 2006; Arevian et al., 2011; Wu and Ronis, 2009). In this paper, data from the 2014 assessment survey that followed the 2013 campaign in Lebanon were used to assess the effect of psychosocial factors derived from the HBM. The immediate aim was to optimize the educational content

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of advertisement messages which accompany the annual campaigns, whereas the ultimate one was to promote a cognitive status in favor of annually repeating the screening mammography.

2. Objectives

In reaching the aims, this analysis has targeted the following objectives:

1. To assess the levels of practice of screening mammography among Lebanese women aged 40 and above.
2. To describe these levels by relevant socio-demographic variables.
3. To measure the association between HBM psychosocial factors and the various levels of practice under consideration.

3. Methods

3.1. Study design and sampling procedures

The study utilizes a cross-sectional sample survey design, targeting the female population of Lebanon between the ages of 40 and 75. Sampling was carried out in 10 regions (or *cazas*) across Lebanon: Beirut city and suburbs (Greater-Beirut or GB); Akkar and Batroun in North Lebanon; Chouf and Kesrouan in the central Mount Lebanon; Sour (Tyre) and Nabatieh in South Lebanon; and Zahleh and Baalbeck in the eastern inner Bekaa valley. In each district, the two *cazas* selected presented specific socio-cultural particularities to ensure that all subgroups of the diversified Lebanese population are represented (Fig. 1).

In each region, an equal number of participants were selected, using the basic equation in random sampling:

$$N \geq [(Z\alpha)^2 p(1 - p)] / \delta^2$$

where $Z\alpha = 1.96$ for a tolerated error of $\alpha = 0.05$;

p = prevalence of mammography obtained in the previous 12 months as measured in 2005 = 18% (Adib et al., 2009);

δ = degree of precision expected around the estimation of the prevalence = 5%.

Under these conditions, a minimum number of women to be selected in each region was 226, with a total of 2260 women. The targeted number was inflated to 240 to compensate for potential missing data.

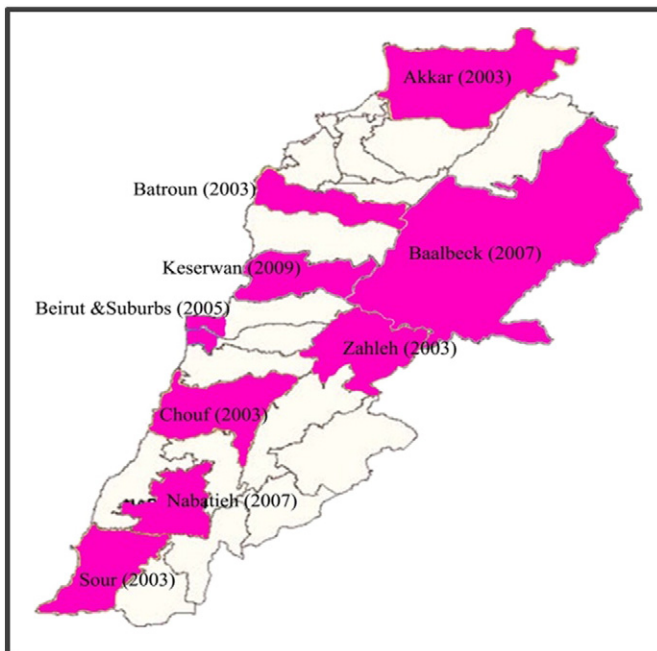


Fig. 1. Districts “cazas” in Lebanon included in the serial surveys to assess mammography utilization patterns and rates. Dates in brackets are years when this district was first included in the surveys.

Within each *caza*, all entities: towns and villages were enumerated according to their population weights, with larger entities obtaining more numbers, thus a larger probability of selection, in the list. Participants were selected using a multi-stage random cluster sampling technique. Women were excluded if they had been residing in the area for < 12 months preceding the survey. Subsequently, numbers were randomly selected, each indicating a cluster of 24 women to be identified, to reach 10 numbers per *caza*. Within each entity then a central place was defined by the research team from which the area was canvassed in a clock-ward fashion. Each building encountered was canvassed from bottom to top to recruit one eligible woman who accepted to participate. The process was repeated until the 24 needed women were identified and interviewed.

3.2. Instrument and variables

The instrument used was a self-administered questionnaire, prepared in Arabic, pilot-tested for ease of comprehension, and conducted in the privacy of the respondents' homes in the presence of the research assistant who remained available to provide support especially for women who could not easily read or write. It consisted of three parts:

- A behavioral component which included 7 items related to mammography practice;
- A psychosocial component which included four items inspired from the Health Belief Model and measured on a 5-point Likert scale ranging from strong disagreement (1) to strong agreement (5): perceived susceptibility of breast cancer, perceived seriousness of breast cancer, perceived benefits of mammography (perception of efficacy of the test), perceived barriers: perceived cost, perceived comfort of previous mammography, perceived difficulty to access a center, perceived support from spouse;
- A socio-demographic component which included variables such as age, marital status, educational level (elementary, secondary, and university), working situation, and socio-economic status (SES) derived from the distribution of the household crowding index (number of people per room in the same household). The lowest quartile of the crowding distribution was considered as highest SES, the highest as the lowest SES while the intermediate distribution was categorized as middle SES.

3.3. Statistical analysis

The first part of the analysis included the detailed description of all variables measured in the questionnaire. The outcome/dependent variable was categorized in four patterns:

- 1- Ever heard of mammography (vs. never heard)
- 2- Ever used mammography (vs. never used) among those who had heard of the test
- 3- Ever repeated mammography (vs. never repeated) among those who ever used, excluding those who had used the mammography test for the first time in the year preceding this survey
- 4- Repeating the mammography in the previous year (as recommended) vs. at an earlier time among those who had ever repeated the test

The prevalence rates of various patterns were calculated with their corresponding 95% confidence intervals (95% CI).

The second part of the analysis assessed the association of socio-demographic variables with ever-using, ever-repeating, and repeating the mammography in the previous year. The association of psychosocial variables was assessed only with the latter two outcomes. Associations found to be statistically significant (P -value ≤ 0.05) were eventually included in two multivariate logistic regression models to determine their joint effects. Associations were measured with an adjusted odds-ratio (OR_{adj}) and a corresponding 95% CI. An association was deemed not significant if the 95% CI around the OR_{adj} included the value 1.

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