Barriers For Mammography Among Non-Adherent Women In Jordan: A National Survey

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Abstract: Background: Women's perception of lower barriers to mammography is the most significant predictor of adherence to mammography screening. Notably, barriers are defined within women's cultural context. Little is known about barriers toward mammography among women in Jordan **Aim**: to identify perceived barriers towards performing mammography screening among none adherent women in Jordan. **Materials and Method:** Cross sectional survey on a random nationally representative sample through the Jordanian Department of Statistics. Face to face interviews were used to complete a structured questionnaire in interviewees' households. **Results:** a total of 626 women above 40 years participated in the study. Respondents expressed different barriers that discouraged them from performing mammography. An absence of health problems was reported as the major barrier; followed, by a wide margin, by lack of knowledge of the significance of mammography (15.7%). Pain and embarrassment were the least reported barriers. Those who reported absence of health problems as a barrier for mammography were significantly less likely to have higher education. Additionally, those who had routine medical checkups were more likely to report lack of physician recommendation as a barrier (32% of those who had routine health checkups as compared to only 17% of those who did not report this as a barrier. **Discussion:** Unlike other women worldwide, women in Jordan shared a unique misconception about the diagnostic only (rather than screening as well) nature of the mammography procedure. Addressing women's perceived cultural barriers is essential. Attention should be emphasized to message framing while designing outreach strategies to enhance utilization of breast cancer screening services.
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1. Introduction

Breast cancer is a disease that strikes women at any age; however its incidence begins to increase at the age of forty (American Cancer Society (ACS), 2012). Globally, breast cancer ranks as one of the most prevalent cancers, and in Jordan, breast cancer statistics are equally alarming. Breast cancer ranks as the cancer with the highest incidence rate, accounting for 19.6 % of total cancer cases in the country. Furthermore, it consistently ranks as the top female cancer throughout the years 1996-2009. In 2009 for example, breast cancer accounted for 36.8 % of all female cancers (Ministry of Health (MOH), 2009). In addition, histopathological examination of the female breast cancers has shown that only less than a third of breast cancer cases were diagnosed at stage zero and one (MOH, 2009). As such, it is not surprising that breast cancer also has the highest mortality rate among all female cancer types (MOH, 2009).

Screening mammography in asymptomatic women plays a pivotal role in the early detection of the disease among women at average risk, and has been shown to reduce breast cancer related mortality (ACS, 2012, United States Preventive Services Task Force (USPSTF), nd). Although mammography is well known for its benefits of early detection of the disease, women across the world are witnessing barriers to the screening behavior. According to previous studies, women's perception of fewer barriers to mammography is the most significant predictor of adherence to mammography screening behavior (Allen, Bastani, Bazargan, and Leonard, 2002; Black, Stein, and Loveland-Cherry, 2001; Ho, Yamal, Atkinson, Basen-Engquist, Tortolero-Luna, and Follen, 2005; Lee-Lin, Menon, Pett, Nail, Lee, and Mooney, 2007; Meana, Bunston, George, Wells, and Rosser, 2001; Russell, Champion, and Skinner, 2006; Russell, Perkins, Zollinger, and Champion, 2006; Soskolne, Marie, and Manor, 2007; Yu and Wu, 2005). In fact, barriers to mammography screening were uniquely defined according to the cultural context of each study. For example, inconvenience getting to a clinic was the only significant barrier among a sample of mixed Hispanic, African and white American women (Allen

et al., 2002). Similarly, inconvenience was found to be a significant barrier to the procedure among a group of Chinese American women (Yu & Wu, 2005). Cost (Ho et al., 2005) and language barriers (Ho et al., 2005; Lee-Lin et al., 2007) were among the top ranked barriers among Asian women living in the United States. Others have concluded that worry and embarrassment are barriers to mammography screening (Black et al., 2001; Lee-Lin et al., 2007). In the Middle East, perceiving the procedure to be painful was revealed to be the only significant factor as compared to embarrassment and difficult access by public transportation among Arab Israeli women (Soskolne et al., 2007).

In a unique approach, some studies documented differences in perception of barriers among women who were adherent to screening recommendations and those who were not (Daley, Kreamer-Diaz, and James, 2012; Ahmadian, Samah, Redzuan, and Emby, 2011). Though both groups were concerned about transportation, cost, lack of insurance, and fear from finding cancer; non-adherent women highlighted other barriers (Daley et al., 2012). These included the presence of other priorities taking precedence over preventive care, and having a previous negative experience with health care services and mistrust issues (Daley et al., 2012). In some countries with conservative Islamic milieu such as Iran, specific differences were found between mammography adherent and non-adherent women (Ahmadian et al., 2011). Lack of doctors' advice and worries about breast cancer were primary concerns of mammography among adherent women. Meanwhile, embarrassment and lack of media support and resources were the most salient barriers for non-adherent women (Ahmadian et al., 2011).

Only one study, which was conducted before more than a decade, has investigated factors that contribute to the performance of mammography among Jordanian women (Petro-Nustas, 2001). The study found that perception of fewer barriers (cost, transportation, pain and worry of finding breast cancer) was strongly correlated with screening behavior in a sample of women who were admitting a private clinic in Amman. According to a recent national survey, only 7% (115) of the women in Jordan reported ever performing mammography in the past. Among those women, a few (21 (18%)) reported that they performed the procedure for screening purposes (Ahmad, Al-Gamal, Othman, and Nasrallah, 2012).

Understanding women's self-reported barriers that inevitably and negatively impact mammography screening rates in Jordan is an important first step. Proper identification of those barriers can facilitate the development of culturally-sensitive outreach strategies that address the specific barriers reported by women themselves. Ultimately, this might enhance the prevalence of utilizing mammography screening among non-adherent women in Jordan.

Recently, a national survey was completed in Jordan to establish a baseline of public's knowledge, attitudes and practices as they relate to cancer prevention, early detection, and cancer research and treatment. Using data from this survey, the purpose of this paper was to analyze, among Jordanian women who were eligible for mammography screening at the time of the survey (forty years of age and above), perceived barriers for performing mammography. The specific objectives were to:

- Describe screening rates among a nationally representative sample of Jordanian women eligible for screening and reasons for performing mammography.
- Identify perceived barriers for mammography screening behavior among non-adherent women in Jordan.
- Compare perceived barriers for mammography screening among non-adherent women within the three regions in Jordan.
- Describe the association of demographic characteristics (age, education and marital status) in addition to performing routine health check-ups with mammography screening behavior among women in Jordan.

2. Materials and Method

2.1 Survey Design

A cross-sectional survey design.

2.2 Sampling

Sampling was performed through the Jordanian Department of Statistics (DOS). In order to produce reliable population-based estimates, the sampling frame utilized the most recent (2004) census data, which was then updated prior to the implementing the study. The detailed sampling procedures have been previously published (Ahram, Othman, and Shahrouri, 2012).In brief, nationally representative estimates for the 12 governorates within the three regions of Jordan: North, Central and South were generated by employing a three-stage sampling procedure. First, blocks were selected as the primary sampling units (PSUs) with a probability proportional to the size of the PSU. In the second stage, a fixed number of 15 households were selected as final sampling units in each PSU. In the third stage, random selection of individual interviewee from each household was carried using Kish table procedure. The survey was intended for Jordanian residents 18 years or

older who were cognitively able and could communicate in Arabic.

2.3 Survey Instrument and Administration

A structured comprehensive questionnaire was designed by a national advisory committee, which included local research experts from different research, clinical and academic institutions as well as representatives from the Ministry of Health and Department of Statistics. International tools were used to guide the development of the questionnaire; especially the Health Information National Trends Survey (Hesse et al., 2006). However, for ethical and cultural consideration, the tool was revised to adapt the local context in Jordan.

The survey instrument was pilot tested and adapted to the local context prior to implementing on a national scale. Field data collection was implemented over two months through Jordan's Department of Statistics, and covered the three main regions (North, Central and South) in the country. Face to face interviews were used to complete the survey in interviewees' households. Participants were briefed about the purpose of the study, the procedure, and their rights to voluntarily participate, withdraw, or refuse to participate prior to the interview. Verbal informed consent was obtained; agreement to host interview in participants' house is a culturally appropriate method to obtain consent.

2.4 Study Variables

In addition to basic demographic information, the items of the survey gauged a multitude of items that covered knowledge, attitudes and behaviors that were deemed to be relevant to cancer prevention and control. For the purpose of this analysis, demographic variables as well as variables related to perceived barriers for mammography performance among non-adherent women in Jordan were used. Non-adherence was defined as never performing mammography in the past. Specific variables used in this analysis included:

Demographic characteristics: age, education and marital status.

Background variables: region of residence and getting routine health checkup

Barriers to mammography screening: women perceived barriers which were measured by open ended question; women were asked to state their perceived barriers for not having a mammogram (multiple responses were allowed).

2.5 Statistical Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software (version 17.0). Univariate descriptive statistics were used to describe sample characteristics and reasons for not performing mammography non-adherent women. Cross-tabulations were performed to examine the association between three most commonly cited barriers among non-adherent women, and demographic variables of age, education and marital status in addition to residential region and performing routine health checkups.

3. Results

3.1 Sample

The final sample size in this survey was 3,196 participants which included a total of 1549 women who were interviewed about breast cancer in particular. For the purpose of this report, the analysis was limited to women eligible for breast cancer screening (based on breast cancer screening and early detection guidelines used by Jordan Breast Cancer Program (JBCP), i.e. women who were above 40 years at the time of the study (n=696 women). Among these only 70 (10%) women reported ever having a mammogram and these were considered as the adherent women. The 626 women who were non-adherent to mammography screening were analyzed separately. Demographic characteristics of both groups are illustrated in table 1.

When the adherent women (10%) were questioned about the reasons for having mammogram, reasons varied; with only about one third indicated performing it for screening purposes. Almost another third indicated performing the procedure as a follow up of a previously detected lump. Table 2 shows women's reported reasons for having a mammogram.

3.2 Perceived Barriers for Performing Mammography Screening

Women in this study expressed different reasons for not performing a mammography for early detection of breast cancer. An absence of health problems was reported as the number one reason that prevented non-adherent women from performing mammography (74.8%). Pain, embarrassment and health insurance coverage were least reported as barriers that prevented women from getting the screening (0.8, 1.1 and 0.6% respectively). Table (3) shows women's reported barriers for not having mammography screening.

3.3 The Influence of Demographic Factors on Women's Perception of Barriers

Further analysis showed that the demographic characteristics of age and marital status were not associated with the perception of barriers to perform mammography. However, only educational level was significantly associated with barrier number 1 (I have not had any health problem). Women who indicated absence of any health problem as a barrier for

mammography were less likely to have higher education ($\chi^{2=}$ 9.35 df (2), p=0.009).

By investigating regional differences results showed that 20% of the women from the northern region were more likely to report barrier number 2 (I don't know that I needed to have it) ($\chi^{2=}$ 12.37 df (2), p=0.002). On the other hand, 80% of the women in the southern region were more likely to report that they had not had any health problems to perform the mammography screening ($\chi^{2=}$ 12.72 df (2), p=0.002).

Finally, it was found that those who go for routine medical checkup were more likely to report lack of physician recommendation (Barrier 3: My doctor did not request it). 32% of those who go for routine health checkup reported lack of physician recommendation as compared to only 17% of those who did not go for routine health checkup ($\chi^{2=}$ 8.61 df (1), p=0.004).

4. Discussion

In our study we aimed at exploring women perceived barriers for mammography screening which is the golden test for early detection of breast cancer in average risk women. Our results showed an obvious underutilization of mammography screening services. The high rate of non-adherence, which is defined as never having mammography, is alarming. Only 10% (70 women) of those who were eligible for mammography screening (i.e. women who were above 40 years at time of the survey) in this study reported ever having a mammogram. Low rates of mammography utilization in Jordan are even lower than those reported in many other regions in the world such as Malaysia (25.5%) (Al-Naggar and Bobryshev, 2012) and Iran (21.5%) (Ahmadian et al., 2011). Therefore, understanding women perceptions toward the performance of screening mammography is inevitably the first step to improve screening participation rate among candidate women.

Despite the modest conservative Islamic background of most women in Jordan, neither embarrassment nor worry of being diagnosed with cancer was a major concern among this group of Jordanian women. The most striking finding of our study was that the majority of women lacked knowledge about the premise of screening in asymptomatic women. Results of our study indicated that the most widely cited reasons for not performing screening were related to "not feeling ill" or not perceiving the need to have a mammogram. This highlights a deeply embedded misconception that the procedure is only diagnostic rather than serves a screening purpose. Thus, lacking knowledge about the importance of performing mammography, despite the presence of physical symptoms, was the most influential barrier that prohibited women to perform breast cancer screening. Although this was the most reported barrier for not having a mammogram in their lifetime, we found a national disparity within the three regions of Jordan; especially among women from Northern and Southern regions of Jordan (periphery of Jordan). One possible explanation for this finding could be that the efforts of the Jordan Breast Cancer Program, the main entity involved in raising the awareness about breast cancer in Jordan, are not targeting the peripheral regions (Northern or the Southern regions) of Jordan with similar intensity they target the Central region of Jordan (e.g., Amman, Zarqa). Therefore, cancer control programs could benefit from our results when developing breast cancer awareness campaigns. Such campaigns should pay attention to their knowledge dissemination plans and consider adequacy of communicating knowledge about breast cancer across different regions of a given country.

Unlike women from other groups (Allen, Bastani, Bazargan, and Leonard 2002, Black, Stein, and Loveland-Cherry 2001, Ho, Yamal, Atkinson, Basen-Engquist, Tortolero-Luna, and Follen 2005, Lee-Lin, Menon, Pett, Nail, Lee, and Mooney 2007, Meana, Bunston, George, Wells, and Rosser 2001, Russell, Champion, and Skinner 2006, Russell, Perkins, Zollinger, and Champion 2006, Soskolne, Marie, and Manor 2007, Yu and Wu 2005), our study showed that women in Jordan failed to report fiscal, time-related as well as access-related barriers to mammography screening. This might be related to the low adherence rates of mammography screening among this group of women. Had there been more widespread attempts at mammography screening, external barriers (such as cost and accessibility) might have emerged as a concern for not performing the screening. Early stage breast cancer at diagnosis accounts for about 55% of the new breast cancer cases among Jordanian women (MOH, 2 009). Furthermore, it was found that in the Arab breast cancer was occupying the number one position in all countries and that advanced disease is very common in many countries of the Arab world such as Egypt, Tunisia, the Yemen, Saudi Arabia, Kuwait, Syria, and Palestine (Salim et al., 2009). Thus, the lower proportion of early stage breast cancer could be related to less utilization of screening mammography compared to women in more developed countries. Indeed, this stresses the importance of educating women about the need for engagement in mammography screening even though they do not have symptoms.

A promising finding of our study was that lack of knowledge about the screening premise (in asymptomatic state) of mammography was associated with lower education but not with age and marital status. We found that women with higher levels of

education were less likely to report on absence of health problems as a barrier to mammography screening. Therefore, principles of healthy practice for the purpose of early detection of diseases should be integrated into varied educational settings in Jordan. Such interventions could assist in correcting misconceptions about the diagnostic and screening purposes of mammogram.

Finally, lack of physician recommendation was among the top ranked barriers to breast cancer screening among this group of women. Thirty two percent of those who did go for routine health checkup and 17% of those who did not go reported lack of physician recommendation as a barrier to mammography screening. In addition, around a quarter of those who ever had the procedure reported that they had it when recommended by their doctors when visited for other unrelated medical conditions. Lack of physician recommendation was found to be the number one barrier for not being screened for breast cancer among women from other cultural groups (George, 2001). Previous studies in Jordan (Othman et al., 2012), furthermore, have called for involving health care professionals to enhance the rates of breast cancer screening utilization. Physicians are in a unique position that enable them to be very influential in promoting breast cancer screening. Jordanians in general demonstrate a high respect of physicians and consider them the ultimate source of medical knowledge. Thus, physicians' involvement could be essential for the success of breast cancer campaigns in Jordan. In addition, future research should investigate the prevalence of and barriers to prescribing screening mammography among physicians.

4.1 Limitations

Unfortunately, the number of women who were eligible for screening and actually had it for that purpose was very small; thus limiting our ability to further investigate the characteristics of those women. In congruence with other self-report studies, our study relied on participants' recall of perceived barriers for not performing mammography.

Table 1: Demographic characteristics of the study sample (adherent vs. non-adherent n=696)

Demographics	**Adherent N=70**	**Non-adherent N=626**
Age		
40-49	30	253
50-59	22	159
60 and above	18	214
Marital Status		
Single	3	34
Married	49	407
All others	18	185
Education		
Elementary or less	24	334
Preparatory to high school	22	178
Diploma and above	24	114

Table 2: Women reported reasons for having mammogram (n=70).

Item	**n**	**Percent of cases**
1. Family history of breast cancer	5	7.1
2. Regular checkup	22	31.4
3. Age	4	5.7
4. Previously detected lump	19	27.1
5. Follow up of breast cancer treatment	4	5.7
6. On hormone replacement therapy	1	1.4
7. Unrelated medical condition	18	25.7
8. Pain or tingling in the breast	5	7.1

Table 3: Perceived barriers for not having mammogram among women in Jordan (n= 626)

Item	n	Percent of cases
1. I have not had any health problem	468	74.8
2. I didn't know that I needed to have it	98	15.7
3. My doctor did not request it	69	11
4. Afraid of results	52	8.3
5. Don't think it's important	40	6.4
6. Costs too much	34	5.4
7. Do not have time to do it	25	4
8. Do not know where to go	8	1.3
9. My doctor said it was no needed	7	1.1
10. Too embarrassing	7	1.1
11. Procedure may be painful	5	0.8
12. My insurance does not cover it	4	0.6
13. Other reasons	6	1

5. Conclusion

This study revealed that the most influential barrier to mammography screening among Jordanian women was a marked lack of knowledge about the need to perform mammography; Jordanian women thought of mammography as a procedure to be performed only when symptoms of breast cancer are present. Only few women in this sample indicated performing the procedure as part of a regular checkup. Furthermore, our study demonstrated that health care providers, namely physicians are authoritative and contributes to the limited utilization of breast cancer screening. The barriers identified in this study are culturally and gender sensitive. Attention to addressing barriers according to women's perspectives and within their cultural context is essential. Therefore, we call for outreach strategies that are designed to address the nature of women's identified barriers in a culturally appropriate context.

Efforts to fight breast cancer in Jordan are still in the infancy stage. Valuable efforts to engage social norms (influential, religious and popular national figures) into the call for screening are evident through the annual national campaigns led by JBCP. However, findings from our study all highlighted a remarkable detour in the current efforts that are targeting cognitive variables only. Decision makers should benefit from our findings and consider message framing that correct the misconception about the diagnostic nature of the mammogram procedure. Involving physicians in breast cancer awareness campaigns is another strategy that may have a positive impact on mammography participation rates in Jordan. It was found that inviting women to community breast cancer screening services is better than no intervention (Bonfill, Marzo, Pladevall, MartÃ, and Emparanza 2007).

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