

## RESEARCH ARTICLE

# Outcome of Breast Cancer Screening: A Lebanese Single Institution Experience

Hampig Raphael Kourie\*, Alain Daher, Dany Matar, Joelle Antoun, Lony Salloum, Joseph Kattan

### Abstract

**Background:** Since 2002, from October till December of each year, the Lebanese Ministry of Public Health conducts a mammogram based breast cancer screening campaign in the whole country for women over 40 years of age. These mammograms are performed free of charge in governmental hospitals or for reduced fees in private hospitals. The aim of this study is to analyze the direct impact of this campaign on cancer detection and subsequent treatment. **Materials and Methods:** Radiologic records of women screened with a mammogram during the campaign period from October till December 2012 at Saint Joseph Hospital, Baouchrieh, Beirut, were reviewed. Results of mammograms were reported using the ACR score. Women with ACR score  $\geq 4$  were tracked and investigated. **Results:** 900 screening mammograms were performed; median age was 55.2 years (range: 31-81 years). Some 826 (91.8%) had an ACR score of  $\leq 2$ ; 66 (7.3%) an ACR = 3 and only 8 (0.89%) an ACR = 4. Thus, less than 1% (8/900) of all screened women were considered at high risk and needed a close follow-up. Among these 8 women, 4 underwent surgery for an early breast cancer, one had synchronous metastatic breast cancer and two were lost to follow-up. **Conclusions:** To conclude, Among 900-screened women for BC, less than 1% (8 out of 900) were at high risk of hiding a BC (ACR=4), half of them benefited from early therapy (4 women out of 900) and one was a false positive. Larger studies on national level should be accomplished to have a complete data on breast cancer screening in Lebanon. The results of these studies can affect the Lebanese health policy regarding BC.

**Keywords:** Mammogram - screening of breast cancer - early breast cancer - Lebanon

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### Introduction

Breast cancer (BC) is the most common cancer in women worldwide. One over eight can suffer from BC during their lifetime (US Breast Cancer Statistics, 2013). It is also the most frequent cancer in Lebanon with age-adjusted incidence estimated at 76 new cases per 100 000 (Lebanese National Cancer Registry, 2003, [www.public-health.gov.lb](http://www.public-health.gov.lb)). During the last three decades, treatment modalities of breast cancer have largely evolved and affected positively patients' quality of life, progression free survival and overall survival. However, diagnosis at early stage remains the most relevant prognostic factor for BC cure, and thus, screening remains the angular stone to reduce BC related death (Adib et al., 2009).

Screening of breast cancer is recommended all over the world with confirmed reduction of BC death (Javitt et al 2012). Guidelines are implemented differently depending on the epidemiologic characteristics of the disease in each country. The Lebanese recommendations published in 2009, stated that the starting age for screening is 40

with an annual mammogram, and the duration is as long as a woman is in good health (Adib et al., 2009). These recommendations are actually concordant with a Turkish study recently published (Kahyan et al., 2014). Since 2002, during the last three months of each year, the Lebanese ministry of public health, with the support of different NGOs, organizes a breast cancer screening campaign in the whole country. Women are encouraged to perform mammograms for free in governmental hospitals and for a reduced price in private hospitals.

Many awareness campaign of breast cancer were also launched in Asian countries during the last few years, but many efforts are still needed in these populations to reach the international targets. In Malaysia, a recent study explored the barriers to breast self-examination (BSE) among urban women, the major problems were the lack of awareness and the fear being diagnosed with BC (Al-Dubai et al., 2012). Another survey in Kuwait concluded that early campaigns for screening the BC should be recommended to eliminate the confusion of wrong perceptions about malignant mammary disease (Saeed

Hematology Oncology department, Saint Joseph Hospital, Saint Joseph University, Beirut, Lebanon \*For correspondence: [hampig.kourie@hotmail.com](mailto:hampig.kourie@hotmail.com)

et al., 2014). The lack of awareness for BC screening in Pakistan lead to a significant delay in approach to health care facilities, since 40% of women consider a breast mass “harmless” (Memon et al., 2013). Another Turkish study confirmed that BSE training provided by healthcare professionals might increase early breast cancer diagnosis and treatment rates by improving BSE awareness and practice (Gucuk et Uyeturk., 2013).

Knowing that the aim of this campaign is to detect breast cancer at early stages and consequently save more lives, official reports are focusing on the number of participating women and the mobilization effect of the campaign. Thus, direct consequences, such as cancer detection rate and subsequent therapeutic approach, have not yet been analyzed. The purpose of this single institution study in a major radiologic department is to determine the rate of breast cancer detection among screened women and the therapeutic approach used, which can subsequently give an idea about the national impact of the campaign.

**Materials and Methods**

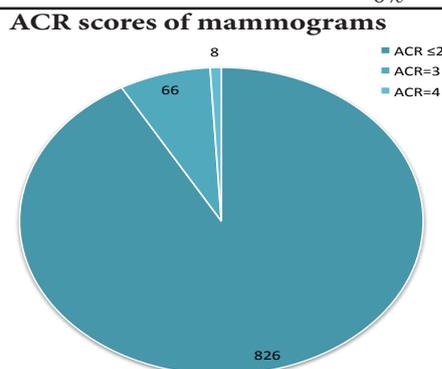
Radiologic records of women screened with a mammogram during the campaign period from October till December 2012 at Saint Joseph Hospital Baouchrieh, Beirut, were reviewed. Results of mammograms were reported according to the ACR score (American College of Radiology , 2003). Women with ACR score  $\geq 4$  were tracked and contacted to determine the outcome of their potential disease.

**Results**

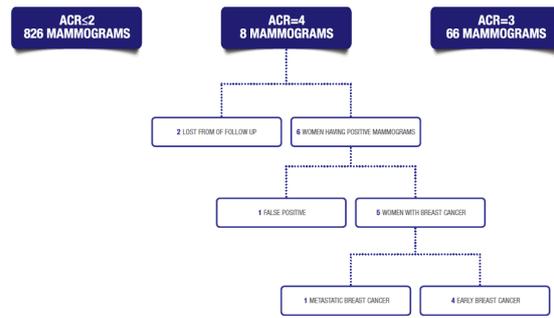
During the campaign of 2012 at Saint Joseph Hospital radiology department, 900 screening mammograms were performed on Lebanese women aged between 31 and 81 with a median age of 55.18. 6% of women were less than 40 years and 8% more than 70 years (Table 1).

**Table 1. Age Distribution of Women Screened by Mammograms**

Age	Percentage of Screened Women
$\leq 40$	6%
41-50	28%
51-60	39%
61-70	19%
$>70$	8%



**Figure 1. ACR Scores of Mammograms During the Campaign of Breast Cancer Screening**



**Figure 2. Outcome of 900 screening mammograms in a Lebanese hospital**

826 (91.8%) had an ACR score of  $\leq 2$ ; 66 (7.3%) with ACR = 3 and only 8 (0.89%) with ACR=4. (Figure 1). Only women having an ACR=4 were closely followed.

Among the 8 women with ACR=4, 6 had a breast biopsy as a next step. Biopsy revealed the presence of breast carcinoma in 5 women, and it was negative in the sixth (false positive). The two other patients were lost to follow-up, including one woman that did not come back to pick up her result. Among the 5 patients with a positive biopsy, 4 patients had a breast surgery and benefited from subsequent adjuvant therapy and one patient received chemotherapy for a metastatic breast cancer (Figure 2). Among the 4 patients with early stage breast cancer, 2 had partial mastectomy followed by radiation therapy and hormonal therapy without chemotherapy and 2 patients had a radical mastectomy followed by chemotherapy and hormonal therapy.

**Discussion**

The number of women screened for breast cancer by mammograms is increasing due to intensive breast cancer screening campaigns in Lebanon since 2002 (Adib et al., East Mediterr Journal 2009), but this rate is still lower than the rate in the developed countries (Pace et al., 2013). Moreover, in different Asian countries including Japan this rate is still lower than Western countries.

Despite that the major limitations of our study is being a single institutional experience, one can postulate that the main reasons behind lower than usual rate of screening are the lack of awareness among Lebanese women especially in the rural regions and the relatively low socio-economic status of the Lebanese population.

The mean age of women screened for breast cancer in Lebanon, according to our study, is 55.18 years. This number exceeds by 5 years the mean age of breast cancer diagnosis in Lebanese women, which is 49.8 years (El saghir et al., 2002). This difference highlights the need for more efforts to encourage women over the age of 40 to get screening mammograms as soon as possible in order to detect BC at earlier stages.

According to the literature, around 10% of patients who are screened by mammograms will be recalled for additional evaluation (BI-RADS > OR=to 3) (Orel et al., 1999). This rate in our institution is 8.22% (74 patients among 900). Moreover, 7.3% (66 patients among 900) of women screened by mammograms had a BI-RADS score of 3 and 0.88% (4 out of 900 patients) had BI-RADS score

of 4 in our institution compared to 5.7% and to 1.8% respectively in the literature (Rosen et al., 2002). These results seem to be concordant.

In the United States, mammogram detects 7.6 BC per 1000 women screened (Berg et al., 2008). This number is 5.55 BC per 1000 women screened in our institution. Since more than 50% of women with breast cancer in Lebanon are aged less than 50 years, and since this age group represents only 34% of all screened women, survival bias might be the possible explanation for the lower BC rates among screened women in Lebanon. Encouraging more younger women to be screened for BC would then increase the number of cancers detected by mammograms.

The main goal of screening BC is to detect more BC at earlier stages. In our institution, 4 out of 5 patients (80%) of breast cancers detected following screening by mammograms were considered at an early stage.

Determining the rate of BC detected among screened women and its subsequent therapeutic approach is an important issue never studied or discussed before in Lebanon. The results of this study can have many implications on the Lebanese governmental health policy in breast cancer screening. Moreover, evaluating the cost-efficiency ratio of mammograms in BC should be the next goal as published in asian countries (Yoo et al., 2013).

## Conclusion

To conclude, among 900-screened women for BC, less than 1 % (8 out of 900) were at high risk of hiding a BC (ACR=4), half of them benefited from early therapy (4 women out of 900) and one was a false positive. Larger studies on national level should be accomplished to have a complete data on breast cancer screening in Lebanon. The results of these studies can affect the Lebanese health policy regarding BC.

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