Knowledge, Attitudes and Perception of Moroccan Women about Breast Cancer

Nadia Benaicha¹, Hafida Charaka¹, Ousmane Desire¹, Samira Elfakir¹, Nabil Tachfouti¹, Mohamed Berraho¹, Youssef Chami Khazraji², Loubna Abousselham³, Latifa Belakhel⁴, Rachid Bekkali² and Chakib Nejjar¹

1. Department of Epidemiology and Clinical Research, Faculty of Medicine, Fez, Morocco

2. Foundation Lalla Salma Prevention and Treatment of Cancers, Rabat, Morocco

3. Direction of Population, Ministry of Health, Rabat, Morocco

4. Direction of Epidemiology and Fight against Diseases (DELM), Ministry of Health, Rabat, Morocco

Abstract: Breast cancer appears to be a disease of both the developing and developed worlds. Among Moroccan women, breast cancer represents 34.4% of all cancers seen in women. This study aimed to give an overview of the knowledge, attitudes and perceptions related to breast cancer among Moroccan women. To our knowledge there is no previous study in Morocco to assess Moroccan women awareness of breast cancer. A national Cross-sectional study started in July 2011 based on eligible women for early detection programs in basal health centers from five Moroccan regions. A self-filled questionnaire was used to collect data outside working time. Knowledge was assessed using 24 true-false items. The questions were asked about symptoms and risk factors of breast cancer. A score ranging from 0 to 24 was calculated by weighting each item 1 point. Then the score was dichotomized according to the threshold 12 (50% correct answers). The study included 1,444 women from the regions of Rabat, Casablanca, Marrakech, Fez and Meknes. The average age was 40.6 ± 10 years, 2 women with a minimum age of 17 years and a 1 with a maximum age of 86 years. At the bivariate analysis using chi-square test we found that Marital Status, Social Security, Education, Origin, Sport, Personal History of Cancer, Medical and Surgical personal History were associated with knowledge score. At the multivariate analysis (Logistic regression), we found that Social Security, Education, Origin, Sport were associated to knowledge score at the final model. This study has important implications for health care providers. The poor knowledge of risk factors and practice of breast screening leads to late stage presentation at diagnosis of breast cancer.

Key words: Cancer, women, Morocco, perception.

1. Introduction

Breast cancer appears to be a disease of both the developing and developed worlds. It is the leading type of cancer in women. Among Moroccan women, breast cancer represents 34.4% of all cancers seen in women and is the second leading cause of cancer-related deaths [1]. According to data from the Greater Casablanca Cancer Registry (GCCR) of 2007, the national annual cancer incidence is estimated at 101.7 new cases per 100,000 in habitants. It corresponds to 30,500 new cancer cases each year in Morocco [1, 2].

According to GCCR, breast cancer incidence has

increased during the three years (2005-2007) to reach 39.9 cases per 100,000 women in 2007. This is comparable with the effects found in three Maghreb countries (Algeria, Tunisia and Libya) and lower compared to the effects found in Jordan, Japan and North America [3-7].

Morocco has since March 2010 a National Prevention and Control of Cancer Plan (NPCCP). The plan includes 4 main strategic areas: prevention (30 measures), early detection (13 measures), diagnostic and therapeutic management (18 measures), and palliative care (13 measures). A strategy was chosen for breast cancer including screening by clinical examination; the target population for this program is all women between 45 years and 69 years old.

Corresponding author: Nadia Benaicha, M.D., research field: epidemiology.

This program began with the early detection of breast cancer (EDBC) which started in 2009 in the prefecture of Temarra. It is based on clinical breast examination in Health Centers. The diagnostic step done at the Reference Center were based on mammography, ultrasound, cyto-puncture and biopsy. The treatment of confirmed cases was carried out at the National Institute of Oncology of Rabat (INO). In early 2011, a gradual extension of the national program was launched in five regions: Fez, Casablanca, Rabat, Marrakech and Meknes.

The success of this plan required understanding the acceptability, compliance and vis-à-vis behavior of the population in relation to this program. The objective of our study was to describe the knowledge, attitude and perception of Moroccan women using health facilities and targeted by the EDBC toward breast cancer screening.

Our hypothesis was that low knowledge about breast cancer contributes to late detection among Moroccan women. This study aimed to give an overview of the knowledge, attitudes and perception related to breast cancer among Moroccan women. To our knowledge there is no previous study in Morocco to assess Moroccan women awareness of breast cancer.

2. Methods

2.1 Study Design

A national Cross-sectional study started in July 2011 based on eligible women for early detection programs in basal health center (primary level).

2.2 Sampling

All women included in the survey were selected in Health Care Cent from five Moroccan regions. For each region (Fez, Meknes, Rabat and Errachidia) two urban and one rural center were selected. For Casablanca region five districts were selected with 8 urban centers and 2 rural centers. In total, 22 centers were selected with a total of 1,444 women who completed the questionnaire.

2.2.1 Data Collection

Data was collected using questionnaires covering socio-demographic information (age, sex, origin ...), knowledge (breast cancer risk factors and protective factors, breast cancer symptom), attitude (breast cancer screening) and practice (breast feeding, oral or injectable contraception...) of the respondent. The questionnaires were administered to the women at the health care center by trained interviewers. Data were entered on Excel and analyzed on SPSS software Version 17.

Test of associations employed chi square statistical tool with level of significance generally taken at 0.05. Knowledge of breast cancer risk factors was further analyzed by assigning 1 to each positive answer (Yes) to knowledge of each of the about symptoms and risk factors of breast cancer with reference to a model of the literature [8]. A score ranging from 0 to 24 was calculated by weighting each item 1 point. Then the score was dichotomized according to the threshold 12 (50% correct answers). A score greater than or equal to 12 was considered as good score, and a score below 12 was considered as poor score. We obtained a binary variable that has been compared to different explanatory variables by a chi-square test. A binary logistic regression was made by including in the model all variables found significant at the bivariate analysis with $P < 0.05$ and all variables found at the bivariate analysis with $P < 0.20$. The multivariate analysis was used (logistic regression).

2.2.2 Results

The study included 1,444 women from the regions of Rabat, Casablanca, Marrakech, Fez and Meknes. The average age was 40.6 ± 10 years, 2 with a minimum age of 17 years and 1 with a maximum age of 86 years. 484 (33.6%) were aged between 45 and 69 and were targeted by the NPCCP. A proportion of 53% of participants had no job and 26.4% were housewives. For the profession of the husband, workers and traders were most represented respectively 22.6% and 9.6%. Married women

accounted for 83.1% of the study population, followed by singles (6.4%). The number of children per woman was on average 2 children $\pm$ 1.7 with a minimum of 0 children and a maximum of 12 children. The average socioeconomic level was the most common, with a proportion of 62.0%. Less than half (41.6%) of participants had social security coverage (Table 1).

At the bivariate analysis using chi-square test we found that marital status (with $P = 0.031$, married women were more likely to have good knowledge score), social security (with $P = 0.003$, women with social security were more likely to have good knowledge score), education ($P \leq 0.000$, educated women were more likely to have good knowledge score), origin ($P \leq 0.000$, urban women were more likely to have good knowledge score), sport ($P \leq$

0.000, active women were more likely to have good knowledge score), personal history of cancer ($P = 0.027$, women with personal history of cancer were more likely to have good knowledge score), medical and surgical personal history ($P = 0.002$, women with medical and surgical medical history were more likely to have good score) were statistically associated to knowledge score.

At the multivariate analysis (Logistic regression), we found at the final model social security (In comparison with women with social security, participants without any social security have adjusted OR = 0.72 [0.56-0.95]), education (In comparison with not educated women, participants with Primary School level have adjusted OR = 1.42 [0.95-2.12], participants with Middle-High School level have adjusted OR = 2.02 [1.31-3.10], participants with

Table 1 Socio-demographic characteristics of participants, 2011.

	N	Percent(%)
Age (Mean $\pm$ SD, year)	40.6 $\pm$ 10.2	
17-44	948	65.7
45-69	484	33.6
69-86	10	0.7
Occupational activity (n = 1,444)		
Employed	319	22.1
Unemployed	765	53.1
House wife	348	24.1
Student	7	0.5
Retired	3	0.2
Marital Statut (n = 1,435)		
Single	92	6.4
Married	1,193	83.1
Divorced	74	5.2
Widowed	76	5.3
Socioeconomic status (n = 1,420)		
Low	488	34.4
Medium	881	62.0
High	51	3.6
Educational level (n = 1,437)		
$\leq$ Primary	852	59.3
Secondary	379	26.4
University	206	14.3
Origin (n = 1,430)		
Urban	976	68.2
Rural	454	31.7

Table 2 Participant characteristics related to breast cancer risk and protectors factors. Morocco 2012.

	N	Percent (%)
Breastfeeding (n = 1,372)		
YES	1,197	87.2
NO	175	12.8
Menarche Age in years (n = 1,397)		
≤ 11	130	9.3
> 11	1,267	90.7
First Childbirth Age in years (n = 1,333)		
≤ 30	1,188	89.1
> 30	145	10.9
Menopause (n = 1,331)		
YES	320	24.0
NO	1,011	76.0
Age at Menopause (n = 308)		
≤ 50	241	78.2
> 50	67	21.8
Oral Contraception Use (n = 1,381)		
YES	1,027	74.4
NO	354	25.6
Oral Contraception Duration of Use in years		
Injected Contraception (n = 1,318)		
YES	1,027	74.4
NO	354	25.6
Injected Contraception Duration of Use in years		

Table 3 Participants knowledge about risk factors of breast cancer. Morocco 2012.

	Increase N (%)	Decrease N (%)	None N (%)	Don't know N (%)
aging effect on the likelihood of breast cancer (n = 1,406)	710 (50.5%)	56 (4.0%)	268 (19.1%)	372 (26.4%)
Null parity effect on the likelihood of breast cancer (n = 1,413)	534 (37.8%)	82 (5.8%)	256 (18.1%)	541 (38.3%)
Age at first child birth over 30 effect on the likelihood of breast cancer (n = 1,414)	437 (30.9%)	73 (5.2%)	298 (21.1%)	606 (42.9%)
Menopause more than 50 years effect on the likelihood of breast cancer (n = 1,416)	464 (32.8%)	90 (6.4%)	237 (16.7%)	625 (44.1%)
Age of menarche less than 11 years effect on the likelihood of breast cancer (n = 1,403)	246 (17.5%)	70 (5.0%)	303 (21.6%)	784 (55.9%)
Breast cancer effect on the likelihood of cancer contralateral (n = 1,316)	632 (48.0%)	38 (2.9%)	145 (11.0%)	501 (38.1%)
Obesity effect on breast cancer likelihood if there is a family history (n = 1,412)	801 (56.7%)	24 (1.7%)	208 (14.7%)	379 (26.8%)
Obesity effect on breast cancer likelihood (n = 1,414)	675 (47.7%)	26 (1.8%)	267 (18.9%)	446 (31.5%)
Oral contraceptives effect on breast cancer likelihood (n = 1,413)	774 (54.8%)	72 (5.1%)	201 (14.2%)	366 (25.9%)
Breast feeding effect on the likelihood of breast cancer (n = 1,413)	153 (10.8%)	882 (62.4%)	196 (13.9%)	182 (12.9%)
Alcohol consumption effect on breast cancer likelihood (n = 1,414)	1,029 (72.8%)	15 (1.0%)	56 (3.9%)	314 (22.2%)
Tobacco effect on breast cancer likelihood (n = 1,416)	1,124 (79.4%)	8 (0.6%)	41 (2.9%)	243 (17.2%)
X-rays effect on breast cancer likelihood (n = 1,411)	828 (58.7%)	21 (1.5%)	105 (7.4%)	457 (32.4%)
Benign breast disease effect on breast cancer likelihood (n = 1,414)	795 (56.2%)	58 (4.1%)	228 (16.1%)	333 (23.6%)
Hormone replacement therapy (HRT) effect on breast cancer likelihood (n = 1,413)	715 (50.6%)	26 (1.8%)	88 (6.2%)	584 (41.3%)

Table 4 Participants knowledge about symptoms of breast cancer. Morocco 2012.

	Yes N (%)	No N (%)	Don't know N (%)
Bleeding from the nipple (n = 1,386)	763 (55.1%)	184 (13.3%)	439 (31.7%)
A symmetric breast sagging (n = 1,420)	638 (44.9%)	232 (16.3%)	550 (38.7%)
Breast mass (n = 1,426)	1,029 (72.2%)	122 (8.6%)	275 (19.3%)
Enlargement of nearby lymph nodes (n = 1,425)	849 (59.6%)	139 (9.8%)	437 (30.7%)
Retraction of the breast skin (n = 1,419)	639 (45.0%)	224 (15.8%)	554 (39.1%)
Abnormal swelling of the arm (n = 149)	686 (48.3%)	176 (12.4%)	556 (39.3%)
Nipple retraction (n = 1,420)	586 (41.3%)	288 (20.3%)	546 (38.5%)
Breast discoloration (n = 1,417)	739 (52.2%)	152 (10.7%)	526 (37.1%)
Abnormal breast enlargement (n = 1,418)	797 (56.2%)	194 (13.7%)	427 (30.1%)

Table 5 Participants knowledge about breast cancer. Morocco 2012.

	Bivariate Analysis		Multivariate Analysis		
	Score ≥ 12	P	OR adjusted	CI 95%	P
Marital Status					
Single (n = 92)	51 (7.7%)	0.031			
Married (n = 1,193)	555 (46.5%)				
Divorced (n = 74)	32 (4.8%)				
Widowed (n = 76)	25 (3.8%)				
Social Security					
Mutual-Private Insurance (n = 599)	352 (53.9%)	0.003	1	[0.56-0.95]	0.020
No Social Security (n = 825)	301 (46.1%)		0.72		
Education					
Not Educated (n = 521)	181 (27.4%)	0.000	1		0.000
Primary School (n = 331)	139 (21.0%)		1.42	[0.95-2.12]	0.000
Middle-High School (n = 379)	213 (32.2%)		2.02	[1.31-3.10]	0.001
College/University (n = 201)	128 (17.0%)		2.73	[1.77-4.21]	0.084
Origin					
Urban (n = 882)	467 (70.5%)	0.000	1		0.005
Rural (n = 454)	170 (25.7%)		0.48	[0.28-0.81]	0.007
Sub urban (n = 94)	25 (3.8%)		0.68	[0.39-1.17]	0.165
Physical activity					
Yes (n = 336)	438 (31.6%)	0.000	1		0.000
No (n = 1,050)	201 (31.5%)		0.55	[0.47-0.72]	
Personal history of cancer					
Yes (n = 45)	29 (4.5%)	0.027			
No (n = 1,050)	617 (95.5%)				
Medical and Surgical Personal history					
Yes (n = 440)	227 (38.5%)	0.002	0.72	[0.56-0.93]	0.011
No (n = 846)	362 (61.5%)				

college/University level have adjusted OR = 2.73 [1.77-4.21]), origin (In comparison with urban women, rural participants have adjusted OR = 0.48 [0.28-0.81], sub urban participants have adjusted OR = 0.68 [0.39-1.17]), sport (In comparison with active women, non active participants have adjusted OR = 0.55 [0.47-0.72]).

3. Discussion

Washbrook (2006) emphasized the importance of

knowledge of breast risk factors among women [12]. In Morocco, breast cancer is the most common cancer among females [1]. It's usually diagnosed at advanced stages and happens more frequently in young women in comparison to western countries [2]. Women's limited knowledge about breast cancer has also been identified elsewhere in developed and developing countries [8-11]. In our study participants showed poor understanding of major breast cancer risk factors and symptoms. The most identified risk factors were

Tobacco, Alcohol which might reflect the religious culture that prohibited tobacco and alcohol. About two thirds of the women did not know that late menopause, childlessness and early menstruation (82.5%) were also risk factors for breast cancer. Such poor knowledge of the risk factors could reinforce myths and lead to low practice of regular screening, especially by older women whose risk are higher. The most identified symptom was breast mass. It can be explained by late stage diagnosis which is frequently associated with palpable breast mass. In addition, a majority of the participants were not aware of early signs of breast cancer such as changes in color or shape of the nipple, implying that they were likely to miss these even if they perform what they deem is BSE.

Education was associated to good knowledge score, the adjusted OR (in comparison with not educated women) increase with the level of education. Among women with high education level (College/University) 63.7% had a good score. This study was in line with what was reported by Mafuvadze et al. [13] who reported that in the USA, 72% of university students had poor knowledge of breast cancer symptoms. This study found a huge gap between urban women and other groups (rural and sub urban women). Possible explanations for less frequent use of preventive services in rural area compare to urban area include greater distances to medical facilities, less access to services, and lower socioeconomic status [14].

The relationship between physical activity and prevention of breast cancer has been proven by numerous epidemiological studies. The American Cancer Society assumes that around one-third of the yearly 500,000 malignant tumor-related deaths result from inactivity, high caloric intake, and overweight [15]. Large studies and meta-analyses demonstrated that physical activity reduces the risk of developing cancer in pre-as well as in postmenopausal women [16]. In this study we found that sportive women have better knowledge of breast cancer symptoms and risk factors. This can be explained by the fact that

participants with better knowledge about breast cancer are usually motivated to practice physical activity as breast cancer prevention. This study has then important implications for health care providers. It revealed poor knowledge of the disease among the majority of our participants, which contribute to late stage diagnosis of breast cancer. This puts a high burden on the already overburdened healthcare services.

4. Ethics, Consent and Permissions

This study has been presented to the local ethics committee of University Hospital Hassan II of Fez who agreed it. Informed consent has been sent to every potential participant. Questionnaires, upon receipt, have been assigned a unique number and at any time during the analysis of the study no person had been cited. These points were clearly stated in the informed consent so that the participant was not reluctant to give confidential information.

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