

Knowledge and Awareness on Breast Cancer among Medical Students in Morocco

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Abstract: Breast cancer appears to be a disease of both the developing and developed worlds. The primary goal of this study was to assess the Moroccan medical students' knowledge and attitude of breast cancer. This was a cross-sectional study carried out on post graduate students at faculty of medicine of Fez-Morocco. The knowledge was assessed using 26 true-false items. A score ranging from 0 to 26 was calculated by weighting each item 1 point. Then the score was dichotomized according to the threshold 13 (50% correct answers). The study included 400 students from the faculty of medicine of Fez-Morocco. A proportion of 67.4% (221) of our study population had a good score. In our study 285(87.7%) of medical students think that Self-Breast Examination is important for breast cancer early detection. In this study, 275 (84.4%) of our study population estimates that breast cancer is a public health problem in Morocco but only 42 (12.9%) have respond correctly about the incidence of cancer in Morocco. Globally, medical students had a good knowledge about breast cancer risk factors. This study provided important data about breast health awareness of medical students in Morocco.

Keywords: Breast cancer, awareness, knowledge, medical students, Morocco.

INTRODUCTION

Breast cancer is the leading type of cancer in women (522.000 deaths) and the most frequently diagnosed cancer in women in 140 of the 184 countries covered by GLOBOCAN worldwide. It has been reported that the breast cancer accounts for 30-40 % of all the cancer incidences in women all over the world [1].

In North Africa and the Middle East, breast cancer is also the first female cancer. It accounts for 14 to 42% of all female cancers with an exponential increase [1]. Among Moroccan women, breast cancer represents 34.4% of all cancers seen in women and is the second leading cause of cancer-related [2-3]. According to the results of the Cancer Registry of the Greater Casablanca Region (RCRC) and the Register of Rabat Cancers (CPR) standardized incidences were

respectively 39.9 and 49.2 per 100,000 women (RCRC, 2012; RCR, 2012) [3]. This is comparable with the effects found in three Maghreb countries (Algeria, Tunisia and Libya) and lower compared to the effects found in Jordan [4-5]. Many studies have shown that the implementation of an early detection program for several years can reduce by 25% the mortality rate from the disease [5]. The screening methods are based on mammography, clinical breast

examination (CBE) by a health professional and self-examination (SBE) by the women themselves [6].

In Morocco, breast cancer is a major health problem and is ranked the first one among women in terms of incidence and mortality. A total of 4,839 cases of breast cancer were recorded in the Cancer Registry of Grand Casablanca database during the period 2008 - 2012. The gross incidence among women was 47100,000 women and the standardized rate on the world population was 49.5 for100, 000 women [3]. According to national 2014 census data, Morocco has a population of 12.22 million women ages 15 years and older who are at risk of developing breast cancer, which means that breast cancer constitutes a major burden for a Moroccan health system already fragile. To fight cancer effectively, Morocco has, since 2010, adopted a National Plan for the Prevention and Control of Cancer (PNPCC). As part of this plan, screening and early detection of breast cancers have been identified as a priority.

Several studies have shown that women's acceptance of cancer screening depends significantly on the attitude of their physicians [7-10]. Medical students in their quality as futures general practitioners can influence on woman health and play an important role in educating women about breast health, BSE and breast cancer. On the other hand, acquiring knowledge for a medical student may be an important step to acquiring skills and the medical knowledge can be considered as a good indicator of students' performances on physical examination. Hence assessing their knowledge about breast cancer symptoms and risk factors is highly recommended. The primary goal of this study was to assess the Moroccan medical students' knowledge and attitude of breast cancer.

METHODS

Study area and study population

Cross-sectional study carried out at the Faculty of Medicine and Pharmacy of Fez (FMPF) on 2016. Fez is the oldest, biggest medieval and second largest city in terms of population of Morocco with a population of 1.1 million inhabitants (2014 census). It's the capital of the Fez-Meknes's administrative region. FMPF is membership of the University Sidi Mohamed Ben Abdellah, the total medical student population at FMPF is around 2000 students. They are required to have high baccalaureate grades and take an entrance exam to attend limited-access.

Participation in the study was voluntary. Inclusion criteria for the study population were students enrolled from first to sixth while the exclusion criteria were those who were not present or did not give consent.

Study design and study procedures

Using random stratified sampling, stratum was year of study. Sample size was estimated at 354 students representing the six years of study basing on an attendance rate of 50% and a response rate of 50%, we chose the penalizing value of 50% resulting in the maximum size of the sample since we do not have prior data from the literature. The inclusion criteria included being students at the Faculty of Medicine and Pharmacy in Fez, and giving their informed consent

DATA COLLECTION AND STATISTICAL ANALYSIS

Anonymously standardized questionnaire in French (which is the official language of medical studies in Morocco) was used for the survey. It consists of 38-item divided into four sections including basic information about participants, general knowledge of cancer prevention, knowledge and perceptions of breast cancer (risk factors, protective factors etc.), breast self-examination and some national epidemiological data. Questionnaires were distributed at the beginning of the course and in coordination with the teachers, after a brief presentation of the objectives and the interest of the study as well the average time needed to complete it and the method required to fill the questionnaires. The questionnaires were administered to the students in classroom with no prior information or announcements in order to minimize response bias. They were collected back immediately after anonymous completion.

Statistical Analysis

All variables were summarized using descriptive statistics. Categorical variables were described in terms of proportions and quantitative variables in terms of average and standard deviation. Before bivariate analysis, a knowledge score was calculated with reference to a model of the literature [11]. The knowledge was assessed using 26 true-false items. The questions were asked about breast cancer (risk factors, protective factors etc.), breast self-examination and some national epidemiological data. A score ranging from 0 to 26 was calculated by weighting each item 1 point. Then the score was dichotomized according to the threshold 13 (50% correct answers). A score greater than or equal to 13 was considered as good score, and a score below 13 was considered as poor score. We obtained a binary variable that has been compared to different explanatory variables by a chi-square test. The threshold of significance had been fixed at 5%. Data were entered on Excel and analyzed on Epi-info version 7 in Laboratory of Epidemiology, Clinical research and Community Health at the faculty of medicine of Fez-Morocco.

Ethical consideration

Ethical approval for this study was granted by the Ethics Review Committee of the Hospital Clinic of

Barcelona, Spain (CEIC) [Reg. No. HCB/2016/0903], and Ethics Review Committees of University Hospital of Fez in 10 June 2016. The study was conducted in accordance with the Good Clinical Practice Guidelines set up by the WHO, and under the provisions of the Declaration of Helsinki, and local rules and regulations.

RESULTS

A total of 400 students broadly representing of the students of the Faculty of Medicine and Pharmacy of Fez were included in this study. Of these, 328 completed the questionnaires, which correspond to a response rate of 82%. Sociodemographic characteristics of participants, opinions and training received about breast cancer.

The average age was 20.76 ± 2.71 years, with a minimum age of 16 years and with a maximum age of 30 years. The majority of our study population was female 221 (67.4%). A proportion of 67.4% (221) of our study population had a good score (\geq than 50% of correct answers). The mean score was 14.69 ± 4.63 with a minimum of 0 and a maximum of 25.

The risk factor best knowing by medical student in our study is aging 288 (88.3%), followed by family history of breast cancer 280 (86.2%). The less knowing risk factor was physical inactivity effect on breast cancer likelihood 122 (38.4%). 246 (75.9%) recognize breastfeeding as factor protector of breast cancer and 253 (78.1%) recognized tobacco as increasing the risk of breast cancer (Table 1).

Table-1: Medical students Knowledge about risk factors of breast cancer. Morocco 2016. (N=324)

	Risk factor N (%)	Protective factor N (%)	Doesn't play any role N (%)	Don't know N (%)
aging (n=326)	288 (88.3%)	8 (2.5%)	19 (5.8%)	11 (3.4%)
Family history of breast cancer (n=325)	280 (86.2%)	3 (0.9%)	19 (5.8%)	23 (7.0%)
Age at first child birth over 30 (n=326)	187 (57.4%)	18 (5.5%)	42 (12.9%)	79 (24.2%)
Null parity (n=322)	161 (50.0%)	13 (4.0%)	28 (8.7%)	120 (37.3%)
Age of menarche less than 12 years (n=324)	132 (40.7%)	18 (5.6%)	83 (25.6%)	91 (28.1%)
breastfeeding (n=324)	11 (3.4%)	246 (75.9%)	32 (9.9%)	35 (10.8%)
Menopause more than 55 years (n=324)	157 (48.5%)	36 (11.1%)	31 (9.6%)	100 (30.9%)
Hormone replacement therapy (HRT) (n=321)	182 (56.7%)	24 (7.5%)	19 (5.9%)	96 (29.9%)
Mastodynia (n=325)	194 (59.7%)	10 (3.1%)	66 (20.3%)	55 (16.9%)
Benign breast tumor (n=323)	270 (83.6%)	5 (1.5%)	23 (7.1%)	27 (7.7%)
Oral contraceptives (n=323)	171 (52.9%)	14 (4.3%)	3 (11.1%)	102 (31.6%)
Injectable contraception (n=323)	120 (37.2%)	14 (4.3%)	37 (11.5%)	152 (47.1%)
Obesity (n=253)	153 (60.5%)	2 (0.8%)	53 (20.9%)	45 (17.8%)
Overweight (n=322)	155 (48.1%)	4 (1.2%)	87 (27.0%)	76 (23.6%)
Physical inactivity (n=318)	122 (38.4%)	8 (2.5%)	61 (19.2%)	127 (39.9%)
Tobacco I (n=324)	253 (78.1%)	7 (2.2%)	32 (9.9%)	32 (9.9%)

For 275 (84.4%) breast cancer is a public health problem in Morocco but only 42 (12.9%) have a correct response about the incidence of breast cancer new cases in Morocco. 297 (91.4%) strongly agree that clinical breast examination (CBE) is important for breast cancer early detection but only 217 (66.8%) are convinced that clinical breast examination (CBE) can reduce mortality from breast cancer. Mammography is important for breast cancer early detection for 254 (78.4%) and 256 (79.3%) recognized the age class targeted by the national program of breast cancer prevention (Table 2).

At the bivariate analysis using chi-square test we found that study level was significantly associated with breast cancer knowledge ($p < 0.0001$), the medical students in advanced levels were more likely to have good knowledge about breast cancer. The sex didn't play any role from statistical point of view about breast cancer knowledge among medical students ($p = 0.798$). T-test (means comparison) found that age is significantly associated with having a good knowledge score, actually students with good score were older than students with bad score (21.41 ± 1.98 years VS 19.42 ± 1.92 years) (table 3).

Table-2: Medical students Knowledge about breast cancer screening and epidemiology. Morocco 2016. (N=324)

	Strongly agree N (%)	Agree N (%)	Disagree N (%)	Strongly disagree N (%)	Don't know N (%)
Breast cancer is a public health problem in Morocco (n=326)	275 (84.4%)	35 (10.7%)	3 (0.6%)	4 (1.2%)	10 (3.1%)
The number of new cases of cancer in Morocco and 30 000 cases per year (n=325)	42 (12.9%)	33 (10.2%)	18 (5.5%)	16 (4.9%)	216 (66.5%)
The number of new cases of cancer in Morocco and 60 000 cases per year (n=324)	19 (5.9%)	17 (5.2%)	18 (5.6%)	32 (9.9%)	238 (73.5%)
Self-Breast Examination (SBE) is important for breast cancer early detection (325)	285 (87.7%)	25 (7.7%)	0 (0.0%)	7 (2.2%)	8 (2.5%)
Self-Breast Examination (SBE) can reduce mortality from breast cancer (n=325)	183 (56.3%)	56 (17.2%)	22 (6.8%)	41 (12.6%)	23 (7.1%)
clinical breast examination (CBE) is important for breast cancer early detection (n=325)	297 (91.4%)	13 (4.0%)	2 (0.6%)	6 (1.8%)	7 (2.2%)
clinical breast examination (CBE) can reduce mortality from breast cancer (n=325)	217 (66.8%)	56 (17.2%)	14 (4.3%)	25 (7.7%)	13 (4.0%)
Mammography is important for breast cancer early detection (n=324)	254 (78.4%)	34 (10.5%)	10(3.1%)	12 (3.7%)	14 (4.3%)
Breast cancer screening is necessary for women aged more than 30 years (n=325)	153 (47.1%)	72 (22.2%)	42 (12.9%)	43 (13.2%)	15 (4.6%)
Breast cancer screening is necessary for women aged between 45 and 70 years (n=323)	256 (79.3%)	33 (10.2%)	6 (1.9%)	14 (4.3%)	14 (4.3%)

Table-3: Medical students Knowledge about breast cancer (bi-variate analysis). Morocco 2016. (N=324)

	Score ≥13	Score <13	p
Age (Mean ± S.D)	21.41±1.98	19.42±1.92	<0.0001
Sex (n=323)			
• Male	66 (29.9%)	36 (33.6%)	0.798
• Female	151(68.3%)	70 (65.4%)	
Study Level (n=328)			
• 1 st year	24 (10.9%)	46 (43.0%)	<0.0001
• 2 nd year	19 (8.6%)	34 (31.8%)	
• 3 rd year	41 (18.6%)	17 (15.9%)	
• 4 th year	43 (19.5%)	3 (2.8%)	
• 5 th year	59 (26.7%)	4 (3.7%)	
• 6 th year	35 (15.8%)	3 (2.8%)	

DISCUSSION

Our study aimed to assess the Moroccan medical students' knowledge and awareness about breast cancer. Globally, medical students had a good knowledge about breast cancer risk factors. Medical students are the future general practitioners and hence assessing their knowledge about breast cancer symptoms and risk factors is highly recommended. This study aimed to assess the Moroccan medical students' knowledge, attitude and perception of breast cancer.

In Morocco medical studies are 7 years long and it begins just after the certificate of high school. The selection process to be accepted in this prestigious field is based on high marks at school and a selection exam. In our study we include a sample from all the study levels (from the first to the six year). Actually, the seventh year is only an internship without specific courses. This was a descriptive cross-sectional study and hence the representativeness of the sample was very important and if we take the gender as indicator we can remark that the sample fit with the source

population as medical students are approximately female in two third.

Globally, medical students had a good knowledge about breast cancer risk factors and epidemiology. The most widely known risk factors by the students were aging and a family history of breast cancer (respectively 88.3% and 86.2%). Moroccan medical students have enough knowledge that the implication of genetic patrimony and hereditary factors can influence our probability of developing breast cancer. This increased awareness in the role of genetic factors in breast cancer can be related to the national program of prevention and detection of breast and cervical cancer which was a result of the cooperation between the Moroccan ministry of health and the Princess Lalla Salma Foundation. These findings are in agreement with many international studies. Actually, the 2009 Lebanese National Mammography Campaign showed that 8.9% of participants had family history of breast cancer. [12] In Pakistan, among the one thousand women interviewed recently, 13.4% reported family history of breast cancer among which 18% had their 1st degree relatives affected [13].

In our study 285 (87.7%) of medical students think that Self-Breast Examination (SBE) is important for breast cancer early detection but only 183 (56.3%) believes Self-Breast Examination (SBE) can reduce mortality from breast cancer. This contrast can be explained by the fact that the major cases of breast cancer are diagnosed at late stages in Morocco [11]. Medical students are pessimistic about the prognosis of breast cancer and have doubts about the contribution of the (BSE) regarding the reduction of mortality. In studies of other populations, the percentage of BSE awareness was 52% among Jordanian nurses, [14] 37% among Australian students [15] and 31% among Pennsylvanian women. Other studies that showed low rates of (BSE) practice suggested that the practice is globally low among women, regardless of their age and occupation. [16,17] In Morocco, the rates reported by a previous study by our department found that (BSE) rate is on line with those described by previous Egyptian and Turkish studies, in which only 6% and 2.65% of the general study populations practiced BSE monthly, respectively [16, 18].

The idea that some behaviors like tobacco or contraception can modify the risk of developing breast cancer is supported by many studies. For example, McTiernan found that lifestyle changes can influence young women and help them to avoid the risk factors [19]. Other studies showed that the level of students' knowledge can make them more responsible about their own health and more sensitive about protective measures in their health practice [18]. In this study, we found that medical students have insufficient knowledge about lifestyle changes to correct breast cancer risk factors such as obesity, high fat diet or

injectable contraception. These breast cancer risk factors can be changed with health education. So medical students which are future health care professionals can play an important role in educating Moroccan women, enhance their awareness in breast cancer risk factors and influence their behavior. Many studies found that the physician's ability to effectively communicate information about not only diagnosis and treatment but also risk factors can affect women's trust of their physician and significantly affect their decision making [21-25].

In this study, 275 (84.4%) of our study population estimates that breast cancer is a public health problem in Morocco but only 42 (12.9%) have responded correctly about the incidence (number of new cases) of cancer in Morocco which is 30 000 cases per year. This revealed that medical students have a poor knowledge about public health data; this can be related on the one hand to the fact that a large part of medical studies is oriented to clinical problems and in the other hand maybe medical students aren't enough interested by public health field as very few of them decide after to specialize in this field. Our research study has revealed a huge gap of knowledge among Moroccan medical students about the public health data. In a study from Germany, only one-third of the respondents correctly estimated the incidence of breast cancer [26], the authors suggested that such poor knowledge can reduce the efficacy of programs for early detection of breast cancer.

CONCLUSION

To our knowledge, there have been no studies about this issue in Morocco and there have been only a few studies about the issue in adolescents in the world. Therefore, the results of this study could not be compared widely. This study provided important data about breast health awareness of medical students in Morocco.

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