

Evaluation of secondary school teachers' knowledge on screening for breast cancer in Benin

Adama Faye, Sèlomè Julie Emma Azanman-Doumenou, Khadim Niang, Anta Tal-Tal

ABSTRACT

Aims: Breast cancer is a public health problem in Africa. The objective of this study is to assess the knowledge of secondary school teachers on screening for breast cancers and to determine the associated factors. **Methods:** This is a cross-sectional, descriptive and analytical study. A stratified three-stage sampling allowed us to draw 405 secondary school teachers working in a public institution from the Atlantic to Benin during the 2013–2014 school year. The data were collected on an individual interview in schools. The knowledge was considered good if the teacher knew about: mammography, its frequency of realization and its target. A logistic regression was performed. **Results:** The mean age was 35.2 years (8.5). The male teachers accounted for 82.77%. Half of the teachers (49.90%) had good knowledge about breast cancer screening. Factors related to knowledge about breast cancer screening among high school teachers are: level of information (OR adjusted = 11.54 [6.62–20.11]), history of breast cancer in (adjusted OR = 4.75 [1.39–10.21]) and females (adjusted OR = 2.64 [1.29–5.42]). **Conclusion:** The study shows insufficient information on breast cancer in Benin. It is essential to raise this

level by establishing a national cancer control program.

Keywords: Benin, Breast cancer, Knowledge, Screening, Teacher

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INTRODUCTION

In 2012, 1.7 million new cases of breast cancer were diagnosed worldwide and 6.3 million women were diagnosed with breast cancer [1, 2]. The global incidence rate for breast cancer in 2012 was 34 per 100,000. This rate was 27.3 per 100,000 in developing countries. Breast cancer is the most common cause of cancer death in women (522,000 deaths in 2012) [1, 2]. More than half of all cancers (56.8%) and cancer deaths (64.9%) in 2012 occurred in the poorest regions of the world such as West Africa. In Benin, there is no adequate cancer surveillance system [3]. In 2012, two registries of cancers were available in the country but not functional [3]. According to data from the national reference center, breast cancer represented 32.5% of all cancers in women [3]. Breast cancer ranks first among gynecological and breast bone cancers and it represented 44.3% of all cancer cases in women [4]. Most cases are diagnosed at

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an advanced stage (65%) and the high cost of the cancer case management decreases the therapeutic possibilities, which in turn reduces to less than 42% the survival up to five years. Early screening is an effective strategy. In developing countries, it has resulted to a significant reduction in cancer mortality. Studies on women's knowledge and practice in India and Venezuela show that specific knowledge about cervical cancer screening is an essential element that determines whether a woman is going to be screened or not [5, 6]. In Nigeria, a study found a statistically significant difference between the level of knowledge of female teachers and that of other female workers at the university who do not teach [7]. The school environment constitutes an important framework for acquiring knowledge, particularly for young adolescents, hence the need for teachers to have a good knowledge about women's cancer. Teachers also have considerable knowledge transfer skills and have been used as peer educators in the fight against other public health problems [8]. The identification of the determinants of health and education authorities' knowledge on breast cancer will make it possible to better orient the interventions in schools and universities. The general objective of this work is to study the determinants of secondary school teachers' knowledge on breast cancer in Benin.

Setting

Located in West Africa on the Gulf of Guinea, Benin covers an area of 114,763 square kilometers. It is bounded in the north by Burkina Faso and Niger, in the east by Nigeria, in the west by Togo and in the South by the Atlantic Ocean. The population of Benin is estimated at 9,983,884 inhabitants in 2013 according to the fourth general population and housing census (RGHP4) [9]. It is a young population made up of 51.2% of women and 52.2% of the Benin households live below the poverty line [9]. It is one of the poorest countries in the world with a GDP of US \$795 per capita. The national territory is divided into twelve administrative departments and 77 boroughs [9]. Located in southern Benin, the department of the Atlantic where this study was conducted is made up of 9 boroughs. There are 6351 secondary school teachers including 846 women distributed unequally among 73 public institutions, [10]. There are two types of public secondary schools. Large secondary schools with undergraduate classes (1st, 2nd, 3rd, 4th form) and second cycle classes (5th form, lower sixth, upper sixth). There are 26 of them, that is to say 35.6% of the public secondary schools in the department [MES]. In each borough, there are at least two large secondary schools. The average number of teachers in a large secondary school is 162. In those institutions, women represent almost 25% of teachers. Small secondary schools made up of undergraduate classes only (1st, 2nd, 3rd, 4th form).

The average number of teachers in small secondary schools is 42 with about 10% of all teachers [10].

MATERIALS AND METHODS

Type of study

It is a cross-sectional, descriptive and analytical study.

Study population

It covered all secondary school teachers working in a public secondary school in the Department of the Atlantic in Benin. We limit our study to those of the public sector because there is no institution in Benin that manages the total number of teachers working in the private sector only.

Sampling

A random stratified three-stage sampling was performed for this study. The first stage allowed the drawing of 3 of the 9 boroughs. The second degree consisted of drawing lots in each borough one large and two small secondary schools. The third was to draw lots of teachers from each school. In each large secondary school, a single draw of three men is carried out for each woman (25%). And in each small secondary school, we make a simple draw of nine men for one woman. The sample size is calculated according to the Schwartz formula. $N = [Z\alpha^2 \cdot P(1-P)]/e^2$

Z α : = 1.96: discrepancy corresponding to the risk granted ($\alpha = 5\%$, $z\alpha = 1.96$)

P: proportion of teachers with a good screening knowledge for breast or cervical cancer.

E: margin of error (set at 5%).

The sample size thus calculated is 384 teachers. Taking into account a non-response rate of 5%, we end up with a final size of 404.

Data collection

The data collection was done on the basis of an anonymous questionnaire, closed-ended, self-administered. The questionnaire is first tested on about thirty teachers from the borough of Abomey-Calavi. This allowed us to observe the respondents' answers. The difficulties and ambiguities encountered were corrected before the final investigation began. The questionnaire consisted of two parts. The first one is related to the personal and professional characteristics, to the way people get informed and to the different contacts with the cancers. The second part is related to the knowledge on the screening of the two cancers. The questions assessing knowledge about cancer screening

are the recommendations of the Federation of French Gynecologists and Obstetricians, France’s National Agency for Health and Scientific Research in Cancer, as well as that of the Institutes of Preventive Medicine [11–13]. The interviews took place at schools where the teachers are selected by lot after the authorization of the principal and the informed consent of the respondents. The information score is divided into two levels of information: Score that is greater than or equal to 6 corresponds to a good level of information; and score that is less than 6 corresponds to a poor level of information. The knowledge of screening was assessed on the basis of three questions: knowledge of mammography as a benchmark, knowledge of the periodicity and target population. Knowledge is said to be good whenever the knowledge score is greater than or equal to the mean score. Otherwise, it is said to be bad.

Data analysis

The data was analyzed using software R version 3.1.1. Quantitative variables were expressed as an average associated with the standard deviation and the qualitative variables as a percentage. The comparison between the dependent variable on screening and the qualitative variables was performed using a Pearson chi-square test. A downward logistic regression was performed. The dependent variable (knowledge about cancer screening) is the modeled variable. All independent variables with a p of less than 0.25 [14] in the bi-variate analysis were included in the multivariate analysis. The comparison of the models was done by the test of the likelihood ratio with a top-down procedure. The suitability of the model was studied by the Hosmer and Lemeshow test. The association measure was the adjusted odds ratio (OR) and its 95% confidence interval.

RESULTS

Personal and professional characteristics

A total of 405 teachers were surveyed. The average age of teachers was 35.20 years (8.55). More than half (59.50%) of teachers were under 36 years of age and 82.71% were male. Less than half of the teachers in this study were single (38.80%). The average length of service was 8.14 years (7.24). They taught respectively 54.60% the letters and 39.50% the sciences. 68.10% had a time of discussion with students about health. Two-thirds of the teachers in our study had a relative or friend in the medical field. The mean score for teachers in our sample was 5.58 (1.33). More than half of them (52%) had a lower than average level of information (Table 1). In this study, 30.10% of teachers had had a history of breast cancer in their environment. Most teachers (95.80%) were aware

Table 1: Distribution of teachers according to personal and professional characteristics

	N	(%)
Age (year)		
<36	241	59.50
≥36	164	40.50
Sex		
Male	335	82.72
Female	70	17.28
Education Level		
Baccalaureate	68	16.80
Bachelor’s degree	172	42.50
Master’s degree and more	165	40.70
Marital status		
Single	157	38.80
Married	248	61.20
Taught subject matter		
Literature	221	54.60
Science	160	39.50
Others	24	5.90
Vocational training		
No	184	45.40
Yes	221	54.60
Continuous training		
Yes	174	43.00
No	231	57.00
Relatives or friends in the medical field		
Yes	269	66.40
No	136	33.60
Information score		
Good	195	48.00
Poor	210	52.00

of the existence of breast cancer. The main sources were the media (73.00%) and the medical staff (18.80%).

Knowledge of breast cancer screening

Almost half knew (51.40%) knew mammography as the benchmark for breast cancer screening, 23% were aware of the frequency of mammography, and 26.40% were the target population. A total of 49.90% had good knowledge of breast cancer screening.

Bivariate analysis

The level of knowledge was good in 58.6% of women and 48.1% of men ($p = 0.14$). It increased slightly with the level of education with respectively: bachelor's degree (47.10%), license (48.3%) and mastery and more (52.1%). Knowledge is not influenced by marital status or discipline taught. It was higher among those with a relative or friend in the medical field (55.0% versus 39.7%) and teachers with a good level of information (75.9% versus 25.7%). Having a relative or a friend in the field. The level of knowledge was higher among those with relatives who had breast cancer (Table 2).

Multivariate analysis

Female secondary school teachers were almost three times more likely to have good knowledge about breast cancer screening compared to their male counterparts. The good level of information increased by nearly 12 times the chance of breast cancer screening. The same applies to having a loved one who has suffered from breast cancer (OR = 9.93, 95% CI 4.80–20.57). The fact that the source was from medical staff (OR = 4.75, IC at (1.39–10.21) or the media (4.43 (1.40–14.00)) increased knowledge about screening (Table 3).

DISCUSSION

The results of our study shows that 51.4% of respondents were familiar with mammography as a benchmark, 23.0% of them knew the frequency and 26.4% were the target population. The main factors are related to personal characteristics, to the level of information and to a history of cancer in the family.

The knowledge study of breast cancer screening showed that 51.40% of teachers knew that mammography was the benchmark test for breast cancer screening. This proportion is lower than in other studies. Indeed, several studies have been conducted on care providers' knowledge of the methods of breast cancer screening. In Cameroon [15], 94.1% of claimants had reported mammography. This proportion was 73.0% in Nigeria [16]. No study was done on teachers. These higher levels among providers are explained by training and professional practice. Improving the level of knowledge of teachers can contribute to a better knowledge of breast cancer. Female secondary school teachers were almost three times more likely to have good knowledge of breast cancer screening compared to their male counterparts. As for the providers, there was no gender difference [15]. While Najdyhor et al. [17] in Poland also found that knowledge was more important in women than men. This link between knowledge about breast cancer screening and gender could be explained by the fact that the disease is much more common in women. So they feel more

Table 2: Teacher knowledge on breast cancer screening based on personal and professional characteristics

Knowledge of Breast Cancer Screening		
	N	p-value
Age		
<36	122 (50.60%)	0.790
≥36	80 (48.80%)	
Sex		
Male	161 (48.10%)	0.140
Female	41 (58.60%)	
Education Level		
Baccalaureate	32 (47.10%)	0.620
Bachelor's degree	83 (48.30%)	
Master's degree and more	85 (52.10%)	
Marital status		
Single	79 (50.30%)	0.960
Married	123 (49.60%)	
Discipline taught		
Literature	113 (51.10%)	0.840
Science	77 (48.10%)	
Others	12 (50.00%)	
Vocational training		
No	83 (45.10%)	0.090
Yes	119 (53.80%)	
Continuous training		
Yes	82 (47.10%)	0.390
No	120 (51.90%)	
Relatives or friends in the medical field		
Oui	148 (55.00%)	0.005
Non	54 (39.70%)	
Level of information		
Good	148 (75.90%)	2.2e-16
Poor	54 (25.70%)	
Pregnant women with breast cancer		
Yes	96 (78.70%)	6.16e-14
No	106 (37.50%)	
Information source		
Medical staff	53 (72.60%)	3.9e-09
Media	142 (50.20%)	
Others	7 (21.90%)	

Table 3: Factors associated with knowledge of breast cancer screening among secondary school teachers (logistic regression)

	p-value	Adjusted OR
Sex		
Male		1
Female	0.008	2.64 (1.29–5.42)
Pregnant women with breast cancer		
No		1
Yes	< 0.001	9.93 (4.80–20.57)
Relatives or friends in the medical field		
No		1
Yes	0.012	4.75 (1.39–10.21)
Level of information		
Poor		1
Good	< 0.001	11.54 (6.62–20.11)

concerned. However, it is necessary to take men into account in screening campaigns.

High school teachers with relatives who had breast cancer had better knowledge about breast cancer screening. This could be explained by the fact that those who had personal experience with breast cancer would be obliged to seek additional information on the screening in order to prevent the disease.

The results of our study show that high-school teachers with a good level of information were almost more likely to have good knowledge about breast cancer screening compared to their colleague. Particular emphasis should be placed on information especially through medical staff and the mass media. More generally, the integration of these aspects of breast cancer into teacher education curricula should be studied. This will strengthen their basic knowledge and increase their involvement in the fight against non-communicable diseases. This study has some limitations. It was carried out only at the level of public establishments. However, this may not influence too much the results of the fact that teachers, whether private or public, have benefited from the same training.

CONCLUSION

This survey which is meant to assess teachers' knowledge about breast cancer screening has shown that the teachers interviewed had average knowledge about breast cancer. Strategies that focus on information, education and communication need to be developed with the support of mass media and health care providers.

Author Contributions

Adama Faye – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Sèlomè Julie Emma Azanman-Doumenou – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Khadim Niang – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Anta Tal-Tal – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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