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Factors Associated with the Use of Cervical Cancer Screening in the Mbour Health District (Senegal)

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Abstract

Cervical cancer with an estimated incidence between 1700 and 2000 new cases per year and mortality around 70% to 80% has become the leading cancer in Senegal. The objectives of this present work were to study the factors associated with cervical cancer screening in the Mbour health district in 2015. It was a cross-sectional, descriptive and analytical study carried out on a sample of 599 women chosen according to a two-stage survey. The survey used a questionnaire where data on individual characteristics, knowledge, attitudes and practices are collected during an individual interview after informed consent. The data collected were entered in the Epi Info 3.5.3 software and analyzed with the R 3.1.2 software. The average age was 44.4 years with a standard deviation of 8.9. The proportion of women screened for cervical cancer was 19.4%. Screening for cervical cancer was positively related to the possession of an income-generating activity (Adjusted OR = 2.39 [1.4 - 4.2]), increase of education and knowledge of a person suffering from cancer in the environment (adjusted OR = 2.40 [1.3 - 4.2]). Knowledge of the methods of diagnosis of cervical cancer was positively associated with cervical cancer screening (adjusted OR = 20 [11.1 - 33.3]). The lack of awareness and the lack of financial resources and education for women were the main obstacles to cervical cancer screening for women in Mbour. The health system should focus on building the capacity of women to fight cervical cancer.

1. Introduction

Cervical cancer (CCU) is linked to persistent infection with certain human papillomaviruses (HPV) [1]. It is a real public health problem. With a devastating impact on women's health, especially in developing countries, cervical cancer worldwide accounts for 10% of female cancers and ranks second behind women's breast cancer.

According to the World Health Organization [2] 18 million new cases were diagnosed in 2018 with 8.5 million cancer-related deaths. This scourge represents one of the most serious damage to health of women in countries with limited resources. According to the WHO if no preventive action including "organized screening of women who are sexually active or who have been" is planned, the deaths from this type of gynecological and breast cancer will increase by 25% over the ten next years in these same countries [2]. However, industrialized countries where screening for UCC are organized; there has been a steady decline in the incidence and mortality of this cancer for over 50 years and this pathology is becoming increasingly rare [3]. In developing countries, cytological screening programs for cervical cancer have been introduced over the past 30 years. Thus, in South Africa [4], the IVA, coupled with the immediate treatment of positive women from the first visit, allowed the reduction of the incidence of cancer by 26% and was economical in terms of cost/efficiency.

According to the WHO [5] in 2010, in Senegal there were 1197 cases of CCU declared and 795 died, *i.e.* a fatality rate of 66.41%. Efforts have been made in recent years to improve the management of cervical cancer with the availability of visual inspection tests in public structures, the training of health personnel, the introduction of HPV vaccination in girls but also the realization of mass campaigns of screening for gynecological cancers.

However, the use of screening remains low, estimated at 12% at the national level in 2015 [6]. This work thus makes it possible to study the associated factors of cervical cancer screening of women aged 35 to 65 years from the Mbour health district.

2. Methodology

2.1. Study Framework

Mbour is one of the departments of the Thies region. The Thies region represents one of the 14 regions of Senegal, and is located 70 km from the capital, Dakar.

The health district of Mbour has an area of 526 km² and occupies the northwest part of the department of the same name.

The population in 2014 was estimated at 354,141 inhabitants. There is a high population density with 658 inhabitants/km². The annual growth rate is 2.7 inhabitants, and the population is very young with 57% aged under 20 years. The district of Mbour is an area of high migration due to the rapid development of economic activities such as fishing and tourism.

The operational area of Mbour represents the first district of the department

in terms of socio-health infrastructures, with 24 health posts and 1 health center, 18 maternity wards and 20 health outposts. There are many private health structures which do not respect the traditional organization of the health system; the health information of these structures is not always capitalized in the reports of the health district.

The management of cervical cancer occupies an important place in the health district of Mbour. In 2015, a major program was implemented consisting of screening by visual inspection with acetic acid and Lugol at all service points and positive cases referred to the health center or the hospital for a colposcopy and possibly a biopsy.

2.2. Study Type

The study was cross-sectional, descriptive and analytical and took place during the last quarter of 2015.

2.3. Study Population and Sampling Protocol

The survey population was represented by all women aged 35 - 65 from the Mbour health district.

To be included in this study, the woman had to reside in the area of responsibility of the Mbour health district for at least 6 months. Women who were absent, those who were not available during the collection phase and those who refused to participate were not included

The sample size was calculated by the Schwartz formula (n = (ε2 × p × q)/i2).

With prevalence of breast cancer screening in women of reproductive age the p was not known, we chose 50%, ε = 1.96 and an accuracy of 5%, the number is equal to 384 individuals. To minimize the cluster effect, we multiplied the result obtained by 1.5, giving a population of 576.

A two-stage cluster survey was conducted. The first step was to draw villages or neighborhoods to investigate. The second degree concerned the drawing of the concessions. Depending on the size of the population of the selected district or village, groups of concessions are formed. In each concession, the investigator interviewed all women who met the inclusion criteria. The selection of the following concessions was made with leaps of three.

2.4. Collection of Data

For the study, a questionnaire was used to collect data from the women to be surveyed. This questionnaire was drawn up using a systematic document review and built around the dimensions of Andersen's conceptual framework [7] on accessibility to care services. So it had the following dimensions:
- Individual characteristics: age, income-generating activity, marital status, education, etc.
- Knowledge (resources): diagnostic methods, places of screening, possibility of recovery, cancer cases in the surroundings, information on cancer…
- Needs: types of exams to help the patient.

To study knowledge, coding was done to identify women with good knowledge (Table 1).

Twelve investigators trained in data collection were responsible for conducting the investigation. The questionnaires were administered by direct interview in the women's own homes.

2.5. Data Entry and Analysis

The data was entered on the Epi Info 7.2 software.

The data was analyzed with the R 3.3.1 software [8]. Qualitative variables were described with absolute and relative frequencies and quantitative variables by mean and standard deviation.

Multivariate analysis was performed with a simple logistic regression for determination factors related to breast cancer screening, with adjustment independent variables ensuring the applicability conditions with a significance level set at 5%.

Variables with p less than 0.25 in bivariate analysis were used for modeling [9]. The lrtest (likelihood ratio) and AIC allowed the choice of the latter with the step-down method.

Finally, the test of Hosmer-Lemeshow tested the adequacy of the final model [10]. Associations were measured by odds ratios with their confidence intervals.

2.6. Ethical Considerations

The consent of the interviewees was previously acquired. Respondents were informed of the objectives and constraints of the study, their rights to refuse to participate in the study or to leave it at any time. Anonymity and confidentiality were respected.

Table 1. Knowledge answers coding.

Knowledge questions	Expected responses	Good knowledge
How does cervical cancer manifest?	• Vaginal bleeding (between periods, after sex, in postmenopausal women) • Serous-bloody vaginal discharge • Appearance of abdominopelvic pains or during sexual intercourse • Increased duration of menstruation	Woman who cited vaginal bleeding with two other signs
Can cervical cancer be cured?	• Yes, he can be cured • Detected early it can be cured • Tracked late, sometimes it can't be cured	Woman who cited at least one of the expected answers
How can cervical cancer be identified early?	• Gynecological examination with visual inspection • Smear • Colposcopy	Woman who cited at least one of the expected answers
Where can cervical cancer be screened?	• Health posts • Health centers • Hospitals • Private gynecological clinics and practices	Woman who cited at least one of the expected answers

3. Results

A sample of 599 women was surveyed during this study.

The average age of the sample was 44.4 years with a standard deviation of 8.9 and a median of 42 years. The maximum age was 65 years.

The study showed that 46.6% of respondents were out of school followed by 33.6% who had a primary level. 64.9% of women had income-generating activities.

The women surveyed were aware of cervical cancer screening sites (80.6%) diagnostic methods (74.5%). The possibility of cure of cancer was known by 28.4% of women, and one case of cervical cancer was known by 16.2% of the women surveyed. However, the symptomatology of cervical cancer was less known (18.4%). A proportion of 19.4% of women had already been screened for cervical cancer (Table 2).

The practice of screening for cervical cancer was related to the age of the woman (p = 0.041). The women screened had an average age of 45.8 years, the not screened women had 44.0 years.

In bivariate analysis, cervical cancer screening was positively associated with the existence of income-generating activity in women (p = 0.006) and increased levels of socio-economic well-being (p < 0.001). This screening was also positively associated with knowledges of a case of cervical cancer in the environment (p < 0.001), cancer symptoms (p < 0.001), the possibility of cure (p < 0.001), diagnostic methods (p < 0.001) and screening sites (p < 0.001). This screening was not related to schooling and marital status (Table 3).

In multivariate analysis, cervical cancer screening was positively related to the possession of income-generating activity (aOR = 2.39).

Compared to not-in-school women, primary education was not statistically associated with screening. However, secondary and higher levels were associated with the practice of this screening with adjusted odds ratios, respectively of 2.46 and 6.22.

Knowledge of a person with cervical cancer and diagnostic methods were positively associated with cervical cancer screening (Table 4).

4. Discussion

At the end of this study, the survey concerned 599 women aged 35 to 65 from the district of Mbour. Among women, those who had screened for cervical cancer at the time of the survey represented 19%. Having an income-generating activity, the level of education, knowing someone who has had cervical cancer and knowing the methods of diagnosing cancer were statistically associated with the practice of cervical cancer uterus screening. The main limitation of this study remains the fact that the data collected were declarative. No evidence of the realization of cervical cancer screening was provided by the women. However, given the absence of taboos on this practice, and the collection that took place under confidentiality conditions make it possible to prejudge the absence of bias related to this fact.

Table 2. Characteristics of women (n = 599).

Parameters	Absolute frequencies (n)	Relative frequencies (%)
Income-generating activity		
Yes	389	64.9
No	210	35.1
Marital status		
Single	24	4.0
Married	487	81.4
Divorced	44	7.3
Widow	44	7.3
Level of education		
Not in school	279	46.6
Primary	201	33.6
Secondary	100	16.7
Higher	19	3.2
Level of household well-being		
Poorer	73	12.2
Poor	183	30.6
Rich	158	26.4
Richer	185	30.9
Knowledge of a cancer case in the environment		
Yes	97	16.2
No	502	83.8
Knowledge of cancer symptoms		
Good	110	18.4
Bad	489	81.6
Knowledge of possibility of curred		
Yes	170	28.4
No	429	71.6
Knowledge of a diagnostic method		
Yes	446	74.5
No	153	25.5
Knowledge of screening sites		
At least one site cited	478	79.8
No known site	121	20.2
Cervical cancer screening		
Yes	116	19.4
No	483	80.6

Table 3. Factors associated with cervical cancer screening in bivariate analysis (n = 599).

Parameters	Cervical cancer screening n (%)	p-value
Income-generating activity		
Yes	88 (22.6)	0.006
No	28 (13.3)	
Marital status		
Single	4 (16.7)	
Married	93 (19.1)	0.922
Divorced	9 (20.5)	
Widow	10 (22.7)	
Level of education		
Not in school	42 (15.1)	
Primary	46 (22.9)	0.097
Secondary	24 (24.0)	
Higher	4 (21.1)	
Level of household well-being		
Poorer	7 (9.6)	
Poor	21 (11.5)	<0.001
Rich	36 (22.8)	
Richer	52 (28.1)	
Knowledge of a cancer case in the environment		
Yes	36 (37.1)	<0.001
No	80 (15.9)	
Knowledge of cancer symptoms		
Good	44 (40.0)	<0.001
Bad	72 (14.7)	
Knowledge of possibility of healing		
Yes	90 (52.9)	<0.001
No	26 (6.1)	
Knowledge of a diagnostic method		
Yes	27 (6.3)	<0.001
No	89 (52.4)	
Knowledge of screening sites		
At least one site cited	3 (2.0)	<0.001
No known site	113 (25.3)	

Table 4. Factors associated with cervical cancer screening in multivariate analysis (n = 599).

Parameters	Cervical cancer screening aOR [IC 95%]
Age of woman (in years)	1.03 [0.9 - 1.06]
Income-generating activity	
Yes	**2.39 [1.4 - 4.2]**
No	1
Level of education	
Not in school	1
Primary	1.09 [0.6 - 2.0]
Secondary	**2.46 [1.1 - 5.3]**
Higher	**6.22 [1.6 - 24.3]**
Level of household well-being	
Poorer	1
Poor	1.3 [0.5 - 4.0]
Rich	0.65 [0.2 - 1.9]
Richer	0.8 [0.3 - 2.4]
Knowledge of a cancer case in the environment	
Yes	**2.40 [1.3 - 4.2]**
No	1
Knowledge of cancer symptoms	
Good	1.5 [0.8 - 2.7]
Bad	1
Knowledge of possibility of cured	
Yes	1.2 [0.6 - 1.2]
No	1
Knowledge of a diagnostic method	
Yes	**20 [11.1 - 33.3]**
No	1
Knowledge of screening sites	
At least one site cited	2.5 [0.7 - 10.0]
No known site	1

The practice of screening for cervical cancer found in the Mbour district in the study remained high (19.4%) compared to that national during the decade 1980-1990 which was estimated at 16.2% [11] and that of 12% found at national level [6].

The study showed that cervical cancer screening is not linked to marital status. However, the proportion of women who used cervical cancer screening was

higher among married women (80%) than among unmarried women. This result agrees with those of Tieba [12] who found that 25.0% of married women were screened for cervical cancer against 19.4% in unmarried women.

Positive relationships exist between seeking care and the woman's profession. In fact, women exercising an income-generating activity (76%) were more likely to be screened because of their power to better support the expenses generated by their state of health [12]. Indeed, the lack of means often constitutes a brake on the use of health services and screening in particular, this because of the costs linked to the practice of screening: price of consultation, price of test, price of transport to get to the screening site [13].

According to Rondet [14] women's socio-economic characteristics, having a low level of education, having a low-income level, having incomplete health insurance quality, are characteristics associated with delay or lack of participation in screenings for gynecological cancers. Our study also showed that increase in education was statistically associated with cervical screening. Indeed, compared to not-in-school women, primary education was not statistically associated with screening. However, secondary and higher levels were associated with the practice of this screening with adjusted odds ratios, respectively of 2.46 and 6.22. Similar results had been obtained by Tieba [12].

This relationship could be explained by the fact that women's lack of education would be a hindrance to the apprehension of health problems and the search for adequate solutions, by limiting the use of prevention services. On the other side the instruction of the woman allows her to become aware of the outside world, to assert her rights, to have self-confidence, and to be able to influence decisions affecting herself.

The study showed that knowledge of symptoms is a key element in adhering to screening for cervical cancer. This result agrees with that of Mahdaoui E [15] where the main symptom of cervical cancer known by women is metrorrhagia (67%).

Knowledge of a case of cervical cancer was associated with the practice of screening for it by women. A similar result is established by Tieba M. [12]. It emerges from this study that 40% of women who had declared having had parents who were victims of this disease had recourse to screening against 12.3% for the others. Indeed, the perception of risk is higher at this level (p < 0.001). The presence of a case of cervical cancer is therefore a strong message of communication to get women in the environment to carry out the screening, probably due to a better understanding of the reality of the cancer and the risk involved.

Knowledge of diagnostic methods has also been a factor associated with cervical cancer screening. However, this relationship is not deterministic. Indeed, a good knowledge of diagnostic methods could just result from the screening itself.

In general, the level of knowledge of cancer and screening is an important dimension to be considered as being a determinant of the use of screening since it

constitutes a basic data for understanding the perception of cervical uterus cancer and screening by women [12].

5. Conclusions

Cervical cancer is a serious infectious disease, the incidence of which is still high, especially in developing countries. It is a disease whose evolution is slow which makes it possible to stop the evolution if the diagnosis is made early. However, at the level of the Mbour health district, the screening rate remains low (19%) due to the lack of knowledge of women on this pathology in relation to the low level of education or the socioeconomic level.

To improve this poor practice of cervical cancer screening, countries must make this pathology a priority by implementing a relevant program that will target the empowerment of women through an improvement in their educational and economic levels.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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