

Cervical Cancer Screening: Knowledge, Participation and Associated Factors among Women in the Dantokpa Market in Benin

Badirou Aguemon^{1,*}, Barikissou Georgia Damien², Charles Jérôme Sossa³,
Sèondji Gérard Roméo Padonou¹, Mondukpè Jennifer Marie-Gérard Olofindji¹

¹Department of Public Health, Faculty of Health Sciences, University of Abomey-Calavi, Cotonou, Republic of Benin

²Population and Health Department, Center for Training and Research in Population, University of Abomey-Calavi, Cotonou, Republic of Benin

³Regional Institute of Public Health, University of Abomey-Calavi, Ouidah, Republic of Benin

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Abstract Introduction: Cervical cancer is an important public health issue worldwide and the number of cervical cancer is increasing in Benin country. The study aimed to evaluate the level of knowledge and degree of participation of women with regard to screening, as well as the factors associated with it. **Methods:** A cross-sectional survey was conducted between August and September 2020. A sample of 474 women was selected by three-stage cluster sampling. The women selling in the Dantokpa market, aged 25 to 65 were interviewed. **Results:** The mean age of the women was 40.20 years \pm 10.66. The mean score for knowledge level about cervical cancer was 3.01 \pm 2.77 and that for knowledge level about screening was 2.72 \pm 3.07. The family history of gynecological cancers ($p < 0.0001$), the level of knowledge about cervical cancer ($p < 0.0001$), and the level of knowledge about cancer screening ($p < 0.0001$) were significantly associated with the practice of screening. **Conclusion:** In order to increase the use of cervical cancer screening by market women, it is necessary to carry out large information campaigns to improve the level of knowledge of women in the market on the disease development and benefice of screening.

Keywords Cervical Cancer, Knowledge, Screening Practice, Benin, Dantokpa Market Women

1. Introduction

Cervical cancer (CC) is a worldwide public health problem. Its incidence continues to rise each year. CC is the fourth most common cancer among women globally, with an estimated 570,000 new cases in 2018. Nearly 90% of the 311,000 deaths worldwide in 2018 occurred in low and middle-income countries [1, 2]. Women who die of CC, especially in developing countries, are in the prime of their lives. According to WHO, CC will kill more than 443,000 women a year worldwide by 2030 without screening; more than 98% of these deaths will occur in developing countries, of which 90% will occur in sub-Saharan Africa [3]. CC control includes primary prevention by vaccination against Human Papilloma Virus in adolescent girls who have not yet started a sexual activity, secondary prevention by screening and treatment

of pre-cancerous lesions, and tertiary prevention by diagnosis and treatment of invasive CC, and palliative care [1, 3].

CC ranks second among the most frequent cancers over the past five years with a prevalence of 16.8% in Benin [4]. The high toll of CC is due to the fact that the majority of cases are detected in late stages as a result of its ignorance by the majority of populations at risk, limited access to prevention programs, treatment services, and resources.

In Benin, actions carried out to control CC are mostly free screening and awareness campaigns carried out occasionally within the framework of International Women's Day by foundations and other civil organizations, each acting on its side. In addition, these crusades last only four days most of the time. They do not specifically take into account certain categories of population, in particular, less education and low socioeconomic people. In Benin, the various studies on cancers deal more with biomedical and therapeutic aspects. Thus, the present study was addressed to less education and low economic women. It was addressed to women selling at Dantokpa market (the largest market in Benin). The socio-demographic characteristics and the gynecological and obstetrical profile of women will be described, and the factors linked to the practice of screening among the women will be identified.

2. Methods

Study Area

Dantokpa market is located in Cotonou (the economic capital) in the south of Benin country. It consists of a large main building on three levels (66 by 44 meters) and is subdivided into several compartments. The fame of the market is sub-regional or even international since many traders from West and Central Africa meet on this large business platform. Dantokpa is subdivided into eight activity areas namely: Dadonou-sodji (sofladoto), a condiment sales area; Singbodji (Avo-sodji): fabric sales area; Singboglouè miscellaneous sales area; Noukougou-sodji: herbal tea sales area; Gbogbanou: Tokpa radio area; Missèbo: area for selling second-hand clothes; Pi èce-sodji: spare parts sales area; and Djinounkoun-sodji: foodstuffs sales area. Each activity area is subdivided into several aisles (more than five). Each aisle was structured in two rows. Several fixed places or shops are located in each row. According to statistics from the Société de Gestion des Marchés Autonomes du Bénin (SOGEMA) in 2016, Dantokpa has 16,406 fixed places (shops, baits, hangars, boxes and kiosks). Most of the vendors in Dantokpa are women. They are specialized in all types of trades, foods, and agro-industries.

Generally, the users (male and female) of the Dantokpa

market had a level of education below primary school (60%) and a low socio-economic level (73%) [5]. 27% of female vendors have never been to school [6].

Population and Study Design

A cross-sectional study was carried out from August 2, 2020 to September 31st, 2020 among women in the Dantokpa market.

The inclusion criteria were: i) to be a woman trader in the market, ii) belonging to be 25 to 65 age group, and ii) and gave verbal consent. The exclusion criteria were: i) women with gynecological cancer (uterus and appendix), ii) have undergone a total hysterectomy, and iii) have refused to participate in the survey.

Sampling

A three-stage cluster sampling was done. The first degree was represented by the activity zone, the second degree was the aisle (corridor) within the activity zone and the third degree was the shop.

Sample Size

The sample size was calculated from Schwartz formula: $n = (\epsilon^2 pq / i^2) * 2$. ϵ , a reduced deviation for a risk equal to 5%, was equal to 1.96; p was the probability of occurrence of CC, for that we used the prevalence of CC in Benin ($p=16.8\%$) [4]; q was equal to $1-p$; i was a desired precision (i was equal to 0.05); and k was a cluster effect equal to 2.

The sample size was $n = 430$. With an estimated margin of error of 10%, the total population to be surveyed was $n = 473$.

Sampling Technique

Three-stage random selection was done. In the first degree, five activity areas out of the eight were selected by simple randomization. In the second stage, five aisles were selected in each selected activity area by simple randomization. A total of 25 aisles were paced in the five selected activity areas. Finally, in the third degree, the shops were randomly selected. Only one woman present at the time of the survey was selected by the shop gradually until the expected number was reached. If there were no women in a shop, the next shop was selected.

Data Collection Technique and Tools

Data were collected by using a questionnaire. The questions were addressed to the women by using the face-to-face technique.

Variables

The dependent variable of this study is the screening

participation (the practice of screening), classified into two categories (Yes: for women who have been screened at least once, and No: for women who have never been screened).

The independent variables were socio-demographic variables (age, marital status, education level, religion, monthly income, etc.); gynecology and obstetrics variables (parity, history of miscarriages; history of cesarean section; use of hormonal contraceptives; experience of genital infections during the last 12 months; gynecological follow-up (consultation with a gynecologist during the last 12 months or the past 3 years; family history of gynecological cancer). Variables related to CC knowledge were also taken into account. This information allowed us to calculate the knowledge score on CC. Each correct answer is assigned 1 and a false one 0. The knowledge score is equal to the sum of the grades credited to each item and is rated from 0 to 9.

The women were classified according to their knowledge level in the following categories:

"No knowledge": score = 0.

"Low knowledge": score between 1-3 grades

"Average knowledge" corresponding to a score between 4 and 6 grades

"Good knowledge" corresponding to a score greater than 6 grades

The knowledge about screening was also assessed. It concerned the knowledge of screening possibilities; the place of performance; the age to start screening; the professionals qualified to do so; and the cost.

This information allowed us to calculate the knowledge score on CC screening. Each correct answer was assigned 1 and the false answer was assigned 0. The knowledge score is equal to the sum of the points assigned to each item and is rated from 0 to 13. The women were classified according to their level of knowledge in the following categories:

"No knowledge": score = 0

"Low knowledge": score 1-4 grades

"Average knowledge" corresponding to a score between 5 and 8 grades

"Good knowledge" corresponding to a score greater

than 8 grades.

Data Management and Statistical Analysis

SPSS version 18 software was used for data encoding and analysis. The socio-demographic characteristics, the gynecological and obstetrical profile of the respondents, the frequency of screening, the level of knowledge of women about CC, and their level of knowledge about screening were described. A bivariate analysis was performed using statistical tests including the chi-square test to compare percentages and the student test to compare means. For multivariate analysis, all variables with a p-value $\leq 20\%$ during bivariate analysis were introduced into a logistic regression model. The significance level was $p < 0.05$.

3. Results

A total of 478 women aged 25 to 65 were enrolled in the study. 474 women completed the survey. Four people were eliminated for inconsistent responses.

Socio-demographic Characteristics

The mean age of the respondents was 40.21 ± 10.66 years old. The youngest was 25 years old and the oldest was 65 years old. People aged 25 to 35 were the most represented (38%). Married women represented 75.70% of the study population. Table 1 summarizes the information related to socio-demographic characteristics.

Women's Gynecological and Obstetrical Profile

More than 70% of the women were multiparous. Most of them had neither a history of miscarriages (84.20%) nor a family history of gynecological cancer (86.30%). 10% of women had a genital infection in the past 12 months. As for gynecological follow-up, 80.40% of respondents had not benefited from it during the past 12 months. Table 2 shows the gynecological and obstetrical profiles of the respondents.

Table 1. Women distribution according socio-demographical characteristics, Dantokpa market, Cotonou, 2020

Percentage distribution of women according to socio-demographic characteristics	n	Percentage (%)
Marital status		
Single	60	12.70
Married	359	75.70
Divorced	21	4.40
Widow	34	7.20
Education level		
Not schooled	155	32.70
Primary/secondary	285	60.10
Higher level	34	7.20
Ethnic group		
Fon	191	40.30
Goun	87	18.40
Yoruba/Nago	105	22.10
Mahi	37	7.80
Adja/Mina	16	3.30
Others	38	8.00
Religion		
Christian	354	74.70
Muslim	103	21.70
Traditional	3	0.60
None	14	3.00
Place of residence		
Cotonou	317	66.90
Outside of Cotonou	157	33.10
Monthly income (Fcfa)		
< 40.000	115	24.30
≥ 40.000	359	75.70

Table 2. Women's distribution according to gynecological and obstetrical profile, Dantokpa market, Cotonou, 2020

Percentage distribution of women according to socio-demographic characteristics	n	Percentage (%)
Parity		
Nulliparous	35	7.40
Primiparous	93	19.60
Multiparous	346	73.00
History of miscarriage		
Yes	75	15.80
No	399	84.20
History of caesarean section		
Yes	91	19.20
No	383	80.80
Hormonal contraceptives use		
Yes	120	25.30
No	354	74.70
Genital infections in the past months		
Yes	52	11.00
No	422	89.00
Gynaecological follow-up over the last 12 months		
Yes	69	14.60
No	405	85.40
Gynaecological follow-up over the last three years		
Yes	126	26.60
No	348	73.40
Family history of gynaecological cancer		
Yes	51	10.76
No	423	89.24

Table 3. Life-experience of women already screened cervical cancer, Dantokpa market, Cotonou, 2020

Percentage distribution of women according to life-experience	n	Percentage (%)
Screening cost		
Free	10	45.50
Paid	12	54.54
Cost of screening acceptability		
Yes	2	9.10
No	9	40.90
No answer	11	50.00
Satisfaction with the reception		
Yes	21	95.45
No	1	4.55
Time spent at the centre for screening		
Less than half hour	12	54.54
Half hour-one hour	7	31.82
More than one hour	3	13.64
Satisfaction with the progress of the screening		
Yes	19	86.36
No	3	13.64
Painful during the screening		
Yes	6	27.27
No	16	72.73
Troublesome during screening		
Yes	10	45.46
No	12	54.54
Bleeding after the screening		
Yes	10	45.46
No	12	54.54
Result deadline		
Less than a week	10	45.46
A week	6	27.27
Two weeks	6	27.27
Three weeks and over	0	0.00

Screening Practice and Lives of Women already been Screened for Cervical Cancer

Of the 474 women who had already been screened, 4.64% (n=22) were screened at least once for CC. Among them, 16 (73%) were carried out less than five years ago. For more than half of the women (54.54%) the screening was not free. For most of them (40.90%), the cost of screening was not acceptable. Most of the women had been seen by a midwife or gynecologist after the screening results. More than 80% of them had received an explanation of their result and said they were ready to have another screening if necessary. Table 3 shows the experiences of

women who have already been screened for CC.

Women’s Knowledge about Cervical Cancer

30.17% of women had no knowledge, 28.48% had low knowledge, 24.26% had intermediate knowledge and 17.09% have good knowledge of CC disease. More than half of the respondents (59.90%) knew the existence of CC. 67.90% of women were unaware of CC; 11% thought that CC could appear as early as the age of 30. More than 70% of women were unaware of the existence of means of preventing CC (Table 4).

Table 4. Women's knowledge in cervical cancer, Dantokpa market, Cotonou, 2020

Percentage distribution of women according to knowledge in cervical cancer	n	Percentage (%)
Cervical cancer existence		
Yes	284	59.90
No	72	15.20
Do not know	118	24.90
Knowledge at least one risk factor		
Yes	133	28.10
No	341	71.90
Knowledge at least one symptom		
Yes	99	20.90
No	375	79.10
Women at risk for cervical cancer		
SAW*	2	0.40
SIW**	121	25.50
Menopausal women	40	8.40
All women	58	12.20
Do not know	253	53.37
Cervical cancer age prevalence (years)		
25	47	9.90
30	52	11.00
40	19	4.00
50 and over	34	7.17
Do not know	322	6.93
Cervical cancer treatment		
Yes	189	39.90
No	285	60.10
Healing possibility		
Yes	154	32.50
No	320	67.50
Cervical cancer lethality		
Yes	269	56.80
No	205	43.20
Existence of cervical cancer prevention's means		
Yes	129	27.20
No	345	72.80

*SAW: sexually active women; ** SIW: sexually inactive women.

Women's knowledge about cervical cancer screening

47.04% of women have no knowledge, 17.30% had low knowledge, 32.91% had intermediate knowledge and 2.74% have good knowledge of CC disease. The majority of women (70%) did not know any health care center where it is possible to be tested. 77.63% of the study population did not know if the pregnant woman was suitable for screening. More than 70% of the respondents did not know what age to start screening for CC.

Socio-demographic and obstetric factors associated with screening practice

In the bivariate analysis, the following variables were significantly associated with the practices of screening: education level ($p < 0.0001$), place of residence ($p = 0.0080$),

and monthly income ($p = 0.0070$). There is also a significant relationship between screening practice and genital infections during the last 12 months ($p = 0.0010$), gynecological follow-up during the last 12 months ($p < 0.0001$), the family history of cancer, gynecological ($p < 0.0001$), gynecological follow-up over the past 3 years ($p = 0.0570$), (Table 5).

The bivariate analysis with the different knowledge scores revealed that: the level of knowledge of women about CC was significantly associated with the screening practice ($p < 0.0001$); the level of knowledge of women about CC screening was significantly associated with screening practice ($p < 0.0001$). The mean CC knowledge score was therefore significantly higher in women who had screened at least once than in others, 7.09 versus 2.75. The same is true for the mean knowledge score for CC

screening, which was significantly higher among those who have already performed it, 8.14 versus 2.43.

In multivariate analysis, the family history of gynecological cancers (OR=16.44 [2.51-107.90], p=0.0040), the knowledge score on CC, (OR=2.41

[1.12-5.19], p=0.0250) and the knowledge score on screening (OR=3.02 [1.71-5.36], p<0.0001) were significantly associated on screening practice adjusted on gynecological follow-up in the last 12 months and level of education (Table 6).

Table 5. Socio-demographical and obstetrical factors associated with women screening, bivariate analysis, Dantokpa market, Cotonou, 2020

Percentage distribution of women according to socio-demographic characteristics	Screening practice (n)		p-value
	Yes	No	
Education level			<0.0001
Not schooled	2	153	
Primary/secondary	12	273	
Higher	8	26	
Place of residence			0.0080
Cotonou	9	308	
Periphery of Cotonou	13	144	
Monthly income (FCFA)			0.0070
<40.000	0	115	
≥40.000	22	337	
Genital infections over the 12 past months			0.0010
Yes	7	45	
No	15	407	
Gynecological follow-up over the 12 past months			<0.0001
Yes	15	54	
No	7	398	
Cervical cancer family history			<0.0001
Yes	10	41	
No	12	411	

Table 6. Socio-demographical and obstetrical factors associated with women screening practices, multivariate analysis, Dantokpa market, Cotonou, 2020

Variables	Screening practice	
	OR [CI at 95%]	p-value
Gynecological follow-up over the past 12 months	4.55 [0.94-21.90]	0.0590
Family history of gynaecological cancers	16.44 [2.51-107.90]	0.0040
Level of knowledge about cervical cancer	2.41 [1.12-5.19]	0.0250
Screening knowledge score	3.02 [1.71-5.36]	<0.0001
Education level	4.45 [0.93-21.19]	0.0600

4. Discussion

The study aimed at evaluating the level of knowledge and degree of participation of women with regard to screening and associated factors. Of the respondents, 17.09% had good knowledge about CC and 2.74% had good knowledge about CC screening. 4.64% of women were screened at least once for CC. The family history of gynecological cancers, the knowledge score on CC, and the knowledge score on screening were significantly associated with screening practices.

Dantokpa Market'S Women Screening for Cervical Cancer

The screening prevalence in our study population is very low and similar to those, reported by Dakenyo et al. in Cameroon in 2018 (7.41%) [7]. Ilboudo in Burkina and Gakou in Senegal found a better level of CC screening prevalence than ours respectively of 20.22% [8, 9] and 28% [10]. The low prevalence found in the study could be explained by the lack of targeting of mass screening campaigns organized for women. Among the women who did the screening, most of them (68.18%) were motivated by a health worker and 81.81% would recommend screening to beloved. Dakenyo et al. came to the same conclusion. He reported that 75% of women underwent screening because they were motivated by a health worker [7]. As for recommending screening to beloved, a study conducted by Ilboudo found that 98.20% of respondents would agree to recommend screening to beloved [9].

Screening Practice And Barriers of Screening for Cervical Cancer

Several factors can affect a woman's ability and desire to participate in CC prevention programs. It is essential to identify the reasons that prevent a woman from using the services in the context of implementing a successful program [11, 12]. In the current study, the reasons for not getting the screening test done can be the screening cost, the time spent at the centre for screening, troublesome during screening, and bleeding after the screening.

Cervical Cancer Knowledge and Screening

Among the surveyed women, 59.90% had already heard of CC. Belkhey, in Algeria, found a lower result (42.43%) in 2014 [13]. Compaore et al, in 2016 noted that more than 90% of respondents had heard of CC [14]. Gakou found 82% in a study in Dakar in 2018 [10]. However, a large number of our respondents (71.90%) did not know any risk factors. The differences observed between these various studies could be linked to the variability of the socio-demographic profile of the women included in each study. Geremew et al. in Ethiopia in 2018, also found a low percentage of women with knowledge of CC [15].

The level of knowledge about screening is also low with an average score of 2.72 (3.07) [scale from 0 to 13]. A similar result was found by Ilboudo in Burkina Faso. The women had poor knowledge with an average score of 4.31 points ± 2.55 out of 11 [9].

These results suggest that there is a real need for sensitization on CC. It is, therefore, necessary to continue and intensify awareness-raising and information campaigns for women on this disease.

Factors Associated with Screening Practice

During bivariate analysis, monthly income was statistically associated with the practice of screening. According to the literature, screening is less likely among low-income women: they are therefore more at risk of developing CC [1-3, 16, 17]. Usually, women face difficulties related not only to the cost of screening but also to the related costs that arise during screening. These difficulties explain why women with a low socioeconomic level are reluctant to be tested. In Benin, as in several other countries, mass screening is organized during campaigns where screening is very low cost or even free. But these are not permanent strategies. Such public health actions should be encouraged in order to allow a greater number of women to adopt CC screening. Family history of gynecological cancers, the level of knowledge about CC, and the level of knowledge about screening for CC, are the main factors associated with the practice of screening. In Kenya, Rosser et al. found a strong relationship between the practice of screening and the level of knowledge of the disease [18]. The association between gynecological follow-up ($p = 0.0590$) and the screening practice was not significant even if the number of people performing the screening was clearly higher in the group of those who undergo gynecological follow-up compared to others.

Our results are consistent with those of other authors. In fact, according to a study carried out in the Val-d'Oise department in France, women having a gynecological consultation every year had a 90% chance of having had a cervico-uterine smear [19]. Furthermore, a study report showed in 2014 that the lack of screening in women in Ile-de-France was significantly associated with contributing factors such as gynecological follow-up [16, 17]. The same authors have shown that women who have never been enrolled in or having an equal level of education at primary or secondary level were less screened than women with higher education. This trend is also observed in our study even though the association between the education level and the screening practice was not significant ($p = 0.0600$) in the final model. According to the WHO, health education should ensure that women, their families, and the community understand that CC is preventable. Health education messages about CC should also be consistent with national policy,

culturally appropriate, and consistent across different levels of the health system [20].

5. Study Limitations

A simple random selection of all respondents would have been more accurate and would have covered the entire market but the full list of female users was not available. In addition, the survey could be combined with a mass screening of the target population.

6. Conclusions

The study showed that a low rate of completion of CC screening was linked to family history of gynecological cancers, the level of knowledge about CC and the level of knowledge about screening for CC. Improving and strengthening women's knowledge of CC and related screening can increase their participation in screening. Intervention on CC prevention in Benin must prioritize education and information for women while facilitating easier financial accessibility. Women of the Dantokpa market need frequent awareness sessions and a regular bi-annual mass screening campaign.

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Conflict of Interest

The authors declare that they have no conflict of interests.

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