Knowledge and Risk Factors of Cervical Cancer among Women in Towns of Fako Division- Cameroon

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Cervical cancer (CC) is a worldwide disease, with 85% of new cases occurring in developing countries in general and Africa south of the Sahara in particular.
Aim: The objective of this study was to find possible factors that could affect knowledge about CC and some CC risk factors in our community.
Study Design: A community-based cross-sectional study was carried out in Buea, Mutengene, and Tiko.
Result: Knowledge about CC is modulated by the level of education and the young age of women. Risk factors, although universal, seem to vary according to the geographical area and the socio-cultural environment where one lives. Some risk factors identified are; early onset of sexual intercourse, polygamous marriages, multiple sexual partners, the sexual behavior of the male partner, Human papillomavirus (HPV) infections, sexually transmitted diseases (STDs), Human Deficiency Virus (HIV), and history of genital warts.
Conclusion: None enhancement of lifestyle as the voluntary refusal of cervical cancer screening and CC vaccination has also been risky for CC.

Keywords: Cervical cancer; knowledge; risk factors; none enhancement of lifestyle.

1. INTRODUCTION

The evidence surrounding the prevalence of cervical cancer (CC) shows that about 80-90% of the disease becoming pronounced when they are at an advanced stage [1,2] Based on the literature, CC is a preventable disease [3,4]. Studies have shown that the reported 528,000 annual cases and more than 266,000 fatal cases in developing countries could have been significantly reduced if the symptoms were known or if patients had effective preventive programs. In recent times, sub-Saharan Africa (SSA) has been deeply hit by this disease [5,3,6] According to some studies done in Cameroon, the prevalence of CC is about 13.4 % [7] The incriminating agent is the human papillomavirus (HPV) [8-10] which is found in 99.7% of cases of cervical cancer [11,12,2] The HPV agent is sexually transmissible [12] and there exist about 100 species [13-16] which are not all pathogenic. Evidence has shown that species 16 and 18 represent 2/3 of pathological cases [13,17,18,15] Some studies identified risk factors for CC are poor hygiene, the onset of sexual activities at a very young age, multiple sexual partners, polygamy, person leaving with HIV infection, infection with HPV, low socioeconomic status, multiple deliveries, recurrent STDs [8,19,20]

Although risk factors are universal, they vary according to geographical locations and socio-cultural peculiarities [8,20] Therefore, this study using a community-based approach attempts to consolidate existing literature by exploring CC's community knowledge and further investigating the predictors of CC among the study sample.

Furthermore, given the peculiarity of developing countries and the environmental position of the group, the study attempted to understand their situation with this study to support intervention and health policies.

2. LITERATURE REVIEW

Literature has cemented HPV as the epicenter of CC. This virus was detected in 99.7 % of all premalignant to invasive cancer of the cervix of the uterus [11,21,12,22,23] It is also found in perineal, oral, pharyngeal, and esophageal lesions [24] There are 100 species, but not all are pathological. Species 8, 11,16,18,31,33,45,52, and 58 are responsible for precancerous lesions and invasive CC [25] HPV acts through the help of its oncoproteins E6 and E7. These oncoproteins have a deleterious effect on the major tumor suppressors; retinoblastoma and P53. Furthermore, they get integrated into the host cell's DNA and distort the normal functioning of the infected cells. This evidence brings about the malfunctioning of the sense of contact, cellular control, immune response, and apoptosis [26]. Like HPV, the Human Immunodeficiency Virus (HIV) in women younger than 25 years generally clear the cervical HPV infection because of their robust immune system [13] Women with HIV have higher odds of being infected with oncogenic HPV [27,28] Immune suppression in the presence of HPV will lead to permanent infection of the cervix of the uterus by the HPV; with time, this could lead to cervical dysplasia [29,30] A sound immune system will combat cancer cells and slow down their growth and development [31]

Another aggravator of developing a CC is the presence of Chlamydia trachomatis. Chlamydia trachomatis is a sexually transmitted disease that can cause inflammation of the genital tract, leading to infertility. In general, this infection is asymptomatic [31] However, its DNA has been found in about 40 % of invasive cervical cancers [32] Thus, the presence of chlamydia alongside the chronic inflammation leading to dysplasia makes it more difficult to clear off the HPV [33] In addition, this occurrence brings along a concentration of E6 and E7 oncogenes with their clinical expression.

Furthermore, the presence of antibodies directed against chlamydia carries the odds of 1.8 being associated with squamous epithelial cancer [1] The higher the antibodies, the higher the odds in women less than 55 years old.

Smoking is considered one of the most critical cofactors in the genesis of CC [34-37] Nicotine has been detected in the cervical mucus of women having CC [31] Women who smoke have twice the chance of developing CC. The risk is proportional to the number of cigarettes smoked [31] The chances of developing CC are halved after ten years in women who stopped smoking [34-37] Nicotine and byproducts alter the DNA and induce a local immune depression in cervical squamous cells, making it possible for HPV to strive [38]

Other essential indicators point to Early-onset of sexual activities and that the cervix is primarily immature below 18 years. The local immunity is wanting, so the cervix cannot defend itself. HPV can settle on such cervixes on a chronic mode [39-44] Also, having multiple sexual partners can increase the chance of infection of HPV since it is a sexually transmissible disease. The risk of infection is proportionate to the number of the sexual partner [45-47] About 75% of women will be exposed to HPV during their sexual life [13,48] In the case of pregnancy, multiple pregnancies are synonymous with repeated cervical trauma. This condition renders the cervix more vulnerable. In addition, numerous sexual encounters spread over long periods could be a risk factor depending on the individual's social behavior and immune status [35,36,49].

Low socioeconomic status may incapacitate women's autonomy toward improved health. Low economic and social level affect woman financially and hinder their independence in health-related decisions [50,51] Women with a low social status fight for daily survival and will accord less attention to health issues, mainly in the domain of prevention. Even if they are aware of some health problems, they will hardly go to a hospital because of a lack of money [13,50,52] At the level of the country, the situation is not better. Screening exercises are rare because of a lack of resources and human resources. As a result, the skeletal health system looks overwhelmed. Efficient long-term follow-up of patients, referral and counter referral systems, traceability, cohort follow-up of patients are all wanting [50,53,54] Also, level of education reduces awareness and knowledge. Some people with little or no education are even ignorant of the existence of CC. However, with a high level of education, many women are aware of symptoms of the disease and go out in search of preventive measures and rational treatment [50,55,25]

3. MATERIALS AND METHODS

3.1 Study Design, Sample Population, and Strategy

This community-based cross-sectional study was carried out from the 5th to the 20th of January 2021 in three communities; Buea, Mutengene, and Tiko in the Fako Division- Cameroon. Buea and its environment have a population of 200,000 inhabitants [56] Mutengene has a population of 32,936 [57] and Tiko has a mainly farming and trading population of 117,883 [58].

3.2 Sampling Procedure

Women aged from 15 to 62 years were recruited for the study. Peer educators explained the questionnaires and procedures to respondents and assured them of anonymity and confidentiality. Questionnaires were then administered to those who consented. Pregnant women and those with a history of total hysterectomy were excluded from the study.

3.3 Sample Size Determination

The sample size was calculated using the CDC-Epi InfoTM 7.2.3.1 StatCalc software, with the following characteristics: an estimated population size for Fako Division of 120,000 inhabitants[65], expected frequency of persons living with cervical cancer in Cameroon of 13.8 % [66], accepted error margin of 5%, design effect of 1.0 and one clusters. Thus, the CDC-Epi InfoTM 7.2.3.1 StatCalc estimated minimum sample size was 183.

3.4 Research Instrument and Data Collection

The data instrument (paper-based questionnaire) was adapted from a related study [50] The questionnaire contained sections to capture demographic characteristics, awareness, and knowledge of cervical cancer. Trained peer-educators / nurses administered the questionnaires. Before the survey, a pilot session was done to ensure that respondents understood it and that questions were interpreted as intended.

Knowledge of cervical cancer was assessed on six questions (Table 2), five of which were True/False/I don't know and one Yes/ No question. A negative response was assigned a score of '1' and a positive response '0' for the Yes/No question. All of the True / False questions were considered true. Responses for these questions were coded as '1' for a correct ("True") and '0' for an incorrect response ("False/I don't know"). A composite score was derived for each respondent. Composite scores of 5 – 6 were considered a high knowledge level, 3 – 4 were considered a medium level knowledge. Scores of 1-2 were considered to indicate a low knowledge level.

3.5 Study Variables

The dependent variable in this study was the knowledge level score, determined as described above. Independent variables were respondents' general characteristics.

3.6 Statistical Analysis

Data was captured into Microsoft Excel Office 2018 (Microsoft Inc) and exported to CDC-Epi InfoTM 7.2.3.1 (CDC-Epi InfoTM, USA) for statistical analysis. Categorical variables are presented as frequency tables, and the association between knowledge of cervical cancer (none/low/ medium) and demographic characteristics were assessed using bivariate analysis and multivariate logistic regression analyses. Odds ratios (OR) and Chi-square (χ^2) tests were used to compare participants' characteristics with knowledge of cervical cancer. P-values ≤ of 0.05 were considered significant.

4. RESULTS

A total of 250 consecutively enrolled participants were included in this analysis; their general characteristics are presented in Table 1.

The respondents ranged from 15 – 62 years, with the overall mean (x ± SD) age being 33.2 ± 12.7 years. The largest age group of study participants were 21 – 30 years old, with 24.8%of respondents in this group. The next most populous group was the 31 – 40 years age group at 24%, and the least being the more than 50 years age group 12%. A little more than one-third 95 (38%) of the respondents had attended tertiary education, followed by 78 (31.2%) with secondary education, 52 (20.8%) with primary and then 25 (10%) with no formal education. 52% of our sample population was married, followed by 38.8 % made of single women, then 7.2 and 2%, respectively, for widows and divorcees.

4.1 Knowledge and Risks of Cervical Cancer

Of the 250 participants, only 4 (1.6%) had previously taken the HPV vaccine. Participant's knowledge of cervical cancer is presented in Table 2.

54 and 28.8 % making a total of 82.8 % of our sample population, cannot establish the link between HPV and cervical CC. Just 29.9 % of our sample think that CC is preventable. 54.8 % do not know that treatment of precancerous lesions can prevent CC. Just 28% are aware that there is a test to detect HPV. 59.6 % do not know of the existence of any vaccine against CC. Just 36.6% of our sample study are aware that infection with HPV could lead to CC. In our sample, nobody was highly knowledgeable in CC. The percentages were 26.4, 46.4, and 22.7, respectively, for no measurable, low, and medium knowledge levels.

Cervical Cancer Risk / Protective Factors are presented in Table 3.

Just 17.2% of our studied population had had a previous CC screening, and only 37.2 of this group had screening 0-3 years ago. 1.6 % had some prior treatment for CC. 17.6% have a history of genital warts. 58% of our sample had their 1st sexual intercourse between 15-20 years of age. About the number of sexual partners for the last five years, 80.7 % had 0-3 partners, 18.9 had between 4-6 sexual partners, and 0.4 % had 7-10 sexual partners. 2.6 % of our studied population comes from a polygamous marriage. About 30.4 % of women interrogated affirm that their husbands have extra conjugal affairs with

some other women, and just 1.7 of our sample had received an HPV vaccine. 4.3% of our sample is HIV positive. And 11.5 % of women interrogated confirm to have had at least one episode of a sexually transmitted disease for the past year. 13.7 % are using a contraceptive method.

Table 1. General characteristics of study participants

Characteristic	Categories	Frequency (%)
Age groups (Years)	15 – 20	55 (22.0)
	21 – 30	62 (24.8)
	31 – 40	60 (24.0)
	41 – 50	43 (17.2)
	> 50	30 (12.0)
Age of first sex (Years)	15 – 20	145 (58.0)
	21 – 25	68 (27.2)
	26 – 30	26 (10.4)
	31 – 35	9 (3.6)
	36 – 40	2 (0.8)
Education	No Formal Education	25 (10.0)
	Primary	52 (20.8)
	Secondary	78 (31.2)
	Tertiary	95 (38.0)
Marital status	Single	97 (38.8)
	Married	130 (52.0)
	Divorcee	5 (2.0)
	Widow	18 (7.2)
Residence	Buea	82 (32.8)
	Mutengene	85 (34.0)
	Tiko	83 (33.2)

Table 2. Knowledge of cervical cancer

Question on knowledge of cervical cancer	True	False	Idon't know
Infection with HPV increases risk of cervical cancer	43 (17.2)	72 (28.8)	135 (54.0)
Cervical cancer is preventable (Y/N)	74 (29.6)	143 (57.2)	33 (13.2)
Treatment for precancerous lesion can help prevent cervical cancer	113 (45.2)	36 (14.4)	101 (40.4)
Is there a test to check if someone is infected with HPV	70 (28.0)	101 (40.4)	79 (31.6)
Is there a vaccine to prevent cervical cancer	101 (40.4)	88 (35.2)	61 (24.4)
All women infected with HPV get cervical cancer	91 (36.4)	11 (4.4)	148 (59.2)
Graded knowledge of cervical cancer		**Frequency**	**%**
0		66	26.4
1		44	17.6
2		72	28.8
3		48	19.2
4		20	8.0
No measurable knowledge		66	26.4
Low knowledge level		116	46.4
Medium knowledge level		68	22.7

Association between knowledge of Cervical Cancer and patients' characteristics. Age and educational status had a significant association (p < 0.05) with knowledge of CC (Table 4) in both bivariate analysis and multinomial regression analysis.

The association between the respondents' characteristics and CC is statistically significant for ages 15-20 and 21-30. The odds of not being knowledgeable about CC are increased by 2.3 and 2.7 for persons with no formal education and primary level of education, respectively. On the other hand, it is statistically significant for secondary school education. Tertiary education was used as the dependent characteristic. The odds of knowing CC are increased by 2.5 and 5.2 for married women and divorcees.

Table 3. Risk of cervical cancer

Risk of cervical cancer	Subclass	Frequency	%
Prior CC screening		43/227	17.2
Duration of previous screening (years)	0 – 3	16/207	37.2
	4 – 5	10/207	23.3
	6 – 10	12/207	27.9
	> 10	05/207	11.6
Prior treatment of CC		04/244	1.6
History of genital warts		44/250	17.6
Age of first sex	15 – 20	145/250	58.0
	21 – 25	68/250	27.2
	26 – 30	26/250	10.4
	31 – 35	09/250	3.6
	36 – 40	02/250	0.8
Number of sexual partners in the last 5 years	0 – 3	196/243	80.7
	4 – 6	46/243	18.9
	7 – 10	01/243	0.4
Is your husband having other wives		03/115	2.6
Is your husband having other sexual partners		73/240	30.4
Have you had a vaccine for HPV?		04/242	1.7
Are you HIV positive		10/231	4.3
Have you had any STI in the last one year		26/227	11.5
Are you on oral contraceptives for family planning?		34/249	13.7

Table 4. Associations between respondents' characteristics and knowledge of cervical cancer

DV →		Knowledge of cervical cancer				
Variable ↓	Subclass	No (%)	Yes (%)	Total (%)	*p*-value	O.R (95% C.I)
Age groups (Years)	15 – 20	2 (3.0)	53 (28.8)	55 (22.0)	9.01×10^{-4}*	0.0 (0.0 – 0.3)
	21 – 30	2 (3.0)	60 (32.6)	62 (24.8)	2.45×10^{-4}*	0.0 (0.0 – 0.2)
	31 – 40	28 (42.4)	32 (17.4	60 (24.0)	0.56	1.4 (0.5 – 4.0) †
	41 – 50	24 (36.4)	19 (10.3)	43 (17.2)	0.13	2.4 (0.8 – 7.2)†
	> 50	10 (15.2)	20 (10.9)	30 (12.0)	Ref	1.0
Education	NFE	9 (13.6)	16 (8.7)	25 (10.0)	0.27	2.3 (0.5 –10.5)†
	Primary	18 (27.3)	34 (18.5)	52 (20.8)	0.05	2.7 (1.0 – 7.3)†
	Secondary	6 (9.1)	72 (39.1)	78 (31.2)	3.99×10^{-3}*	0.2 (0.1 – 0.6)
	Tertiary	33 (50.0)	62 (33.7)	95 (38.0)	Ref	1.0
Marital status	Single	17 (25.8)	80 (43.5)	97 (38.8)	0.69	0.7 (0.1 – 3.5)
	Married	39 (59.1)	91 (49.5)	130 (52.0)	0.26	2.5 (0.5 –11.9)†
	Divorced	4 (6.1)	1 (0.5)	5 (2.0)	0.22	5.2 (0.4 –72.1)†
	Widowed	6 (9.1)	12 (6.5)	18 (7.2)	Ref	1.0
Residence	Buea	24 (36.4)	58 (31.5)	82 (32.8)	0.93	1.0 (0.4 – 2.4)
	Mutengene	18 (27.3)	67 (36.4)	85 (34.0)	0.57	0.8 (0.3 – 2.0)
	Tiko	24 (36.4)	59 (32.1)	83 (33.2)	Ref	1.0
	Total	*66*	*184*	*250*		

*p-values with statistical significance, NFE; No formal education

5. DISCUSSION

The study objective was to examine community knowledge of CC and further investigate the predictors of CC among the study sample. This approach may help to manage the CC burden in the communities of investigation and support intervention. The findings from the analysis show that the number of sexual partners can aggravate CC in the community. About 0.4 and 18.9 % of our study population have had respectively 7-10 and 4-6 sexual partners for the past five years. Since CC is a sexually transmissible disease, the number of partners increases the risk of being infected [46,12] About 75% of sexually active women may contact during their active life with the HPV [12] In this same trend, 2.6% of our respondents have contracted a polygamous marriage and 30.4% report that their husbands have extramarital affairs with other women, which is increase CC in other similar studies [46,4,19] The male partner can carry the HPV from an infected partner to a non-infected female partner [7].

Concurrently, age at first sex increases the risk of CC. About 58 % of our sample population had their 1st sexual intercourse between 15- 20 years. Authors are unanimous that at this tender age ≤ of 18 years of age, the cervix is immature and unable to defend itself adequately against HPV, making this age group vulnerable to HPV chronic infection [41]. Also, HIV infection is a risk factor for CC [25,30] 4.3% of our sample population is HIV positive. In addition, 11.5% of this same population affirms having had at least one episode of STI for the last year. STIs are also risk factors for HPV infections [13,25].

Respondents with a history of HPV-related infection such that genital warts were found in 17.6% of our sample population. About 100 species of HPV do exist, and species 6, 11 mainly account for genital warts [13,17]. Lifestyle enhancement, such as some behavioral patterns deeply anchored in our populations, is regarded as "risky." In this study, just 17.2% had had a previous CC screening done. In this group, 62.8% were screened for CC more than three years ago. From the onset of the premalignant lesion to cancer of the cervix, the time length could span from 10 to 15 years [56,24] This evidence is why screening is advisable every three years to avoid unpleasant surprises [56,24]. ust 1.7 % of our studied population has been effectively vaccinated. Vaccination is one of the primary prevention methods of CC, and it has been proven to be very effective [58,57].

Education is pivotal in acquiring knowledge, and all researchers converge views on this [59,50,60,61]The more a woman is literate, the sharper is her sense of judgment. Her mindset is tilted towards rational thinking. Formal education exposes one to new concepts. Knowledge could be acquired formerly and permits the learner to understand the intricacies of the disease [50] In our study, the bulk of our sample, 72.8%, was instead not at all knowledgeable or lowly knowledgeable. Just 22.7% were averagely knowledgeable.

The age groups 15-20 and 21-30 are statistically significant as far as knowledge is concerned. This result is owed to the demographic structure of Cameroon's population, with an essentially young population [62,63] It is also at this age that secondary and tertiary levels of education are attained. The reason may be the youthful pattern of Cameroon's population and school. On the other hand, some sub-components in the marital status seem favorable for acquiring knowledge about CC. For example, 2.5 and 5.2% increase the chances of married and divorcees more knowledgeable in matters patterning to CC. The former may be engaged in a stable relationship, so more attention is accorded to health issues. The latter may be aware that they belong to a risk group, and they do their best to acquire knowledge regarding some health issues.

There are few Limitations to be considered in the study. The data that was acquired from the questionnaire entirely depended on the self-reported accounts of respondents. However, questionnaires were pre-tested and administered by trained peer-educators or nurses.

6. CONCLUSION

Although preventable, CC continues to constitute a real burden on the fragile health structures of developing countries. First sexual intercourse at a very young age, multiple sexual partners, the male sexual factor, people living with HIV, history of genital warts and STDs have been identified as possible risk factors for CC.

Some personal decisions as not attending CC screening and none acceptance of vaccination against HPV are regarded as deleterious for the fight against CC.

Acquisition of knowledge is a function of the level of education. The higher one is learned, the better the knowledge on CC. In this study, young age is also a contributory factor for the acquisition of knowledge.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for advancing knowledge.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

The Institutional Review Board – Faculty of Health Sciences (IRB-FHS) of the University of Buea approved the study, and authorizations were obtained from the administration of Atlantic medical Foundation Hospital -Mutengene.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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