



Socio-economic Determinants Influencing Cervical Cancer Screening in Buea: A Cross-Sectional Study

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Authors' contributions

This work was carried out in collaboration among all authors. Authors CNF, TA and TT designed the study. Authors FNC and PNF performed the statistical analysis. Authors CNF, TT, TA and FNC wrote the protocol and wrote the first draft of the manuscript. Authors CNF and TA managed the analyses of the study. Authors CNF, TA, FNC and PNF managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Cervical cancer remains a huge burden in scarce resource communities as Cameroon. The morbidity and mortality are huge, despite the preventable nature of this pathology. This study set to explore the socio-economic variables which could help influence positively presentation for screening and lessen the pressure on our fragile health system.

Methodology: A one-day free screening campaign was carried out at the Buea regional hospital on

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the 2nd of November, 2019. The study population consisted of women aged 16 to 66 years old. After thorough explanation of the exercise to the potential participants to this study, a questionnaire was distributed to them. Assurance was given about the confidentiality of this study, and they were also informed that, they could opt out at any moment, if they so wish.

Results: Some of the socio-economic variables influencing presentation for cervical cancer screening were identified and they seem to modulate individual behaviour towards cervical cancer screening. They were namely: age, level of education, residence, marital status, age at first sexual intercourse, number of sexual partners, number of pregnancies and number of deliveries.

Conclusion: The key contributors influencing presentation at screening in this study were: age, level of education, residence, age at first sexual intercourse, number of sexual partners, number of pregnancies and number of deliveries. Understanding and acting on these variables could help curb down morbidity and mortality, thus alleviating the burden on our fragile health system.

Keywords: Cancer of the cervix; socio-economic variables; influencing participation; screening.

1. INTRODUCTION

Cancer of the cervix is fast becoming a very heavy burden both clinically and financially in developing countries [1]. It is the 2nd gynaecological cancer in women worldwide and is responsible for heavy morbidity and mortality [2]. There are about 528.000 cases of cervical cancer occurring all over the world with 266.000 deaths annually, with 85% of these cases occurring in the developing world [3]. In Cameroon about 6.00.000 women are sexually active and are at risk of developing cancer of the cervix. 1993 new cases are diagnosed per year, and over 55% of these cases die annually, despite the fact that cancer of the cervix is highly preventable [4].

This disease is essentially preventable, given its natural course [3]. The Bethesda classification of cervical cancer ranges from normal cervix, derangement of cells of no specified significance, Low Grade Lesion, High Grade lesion then finally Infiltrating Cancer [3]. The evolution from one stage to the next, is very gradual, and may take up to 10 years [5,6]. Cervical cancer can be prevented by primary measures which are screening, and vaccination. The secondary measure is detection of an early abnormality through screening and treatment of the pre-invasive lesions [6].

Prevention should be the watchword in Sub Saharan Africa (SSA) and Cameroon in particular. Among some of the negative situations which warrants attention are the lack of trained health personnel, poor health facilities and the absence of insurance coverage for cancer treatment [7]. Research on prevention seems to be the key factor in the control of cancer in SSA countries.

Research on prevention seems to have a biomedical orientation. Thus, vaccination programs against Human Papilloma virus (HPV), constitute the solution [8]. This same direction of research but with more focus on the trends of breast and cervical cancer was carried out with the objective of providing information on its trends [9]. However, less visible in these studies are knowledge on the understanding of the people's socio-cultural beliefs on cervical cancer screening. Such orientation does last in the West and have changed research on cancer in the Western and some African countries [10]. With reference to Nigeria specifically, social beliefs about women's body contributed to an understanding of failure to adhere to treatment or discontinuation [7]. Push and pull factors affecting participation in screening in cancer in Cameroon has not been given attention. A less visible focus on individual behaviour promotion was mentioned as smoking, alcohol consumption, physical inactivity, obesity and household use of solid fuel [11]. Also, factors hindering cancer awareness relating to the absence of mass communication through media campaign [10]. An orientation towards an understanding of how screening is conceptualized, understood, perceived and how religious beliefs are linked to cancer screening is still absent in Cameroon. In this regard, the current study's main attention is to provide an answer to this question: What are the socio-economic determinants influencing participation in screening of cervical cancer in Buea in particular and Cameroon at large?

Given the fact that cancer of the cervix is not a disease of sudden onset, and after observing cases reporting to hospitals at the end stage of the disease, with little or nothing to do, we were interested in this study, to find out, what socio-

economic ally could influence women present themselves for primary and secondary preventive measures. Which socio-economic variables could be responsible for the poor uptake for cervical cancer screening?

2. MATERIALS AND METHODS

A free campaign for cervical cancer screening was organized in Buea regional hospital, this study took into consideration among others the following socio-economic variables; age, level of education, marital status, occupation, residence, number of sexual partners for the last 5 years, age of first intercourse, number of deliveries and pregnancies.

2.1 Study Design and Setting

This was a hospital-based cross-sectional study, conducted in November 2019 at the Buea Regional hospital annex to explore the determinants of cervical cancer screening uptake among healthy women in Buea and its hinterlands, responding to the free cervical cancer screening campaign. The Buea Regional hospital annex is a state-owned hospital in the South West Region of Cameroon, accommodating about 40,000 inhabitants [12,13]. This intermediate level health institution is the lone referral hospital in the Buea health area and serves as a teaching hospital for students of the Faculty of Health Sciences of the state-owned University; the University of Buea. Buea, the administrative seat of the South West region of Cameroon, is built at the foot of Mount Cameroon which stands majestically at 4,100 m above sea level.

2.2 Sample Size Determination

The sample size was calculated using the CDC-Epi Info™ 7.2.3.1 StatCalc software with the following characteristics: An estimated population size for Buea Health area of 40,000 inhabitants [12,13], expected frequency of persons living with cervical cancer in Cameroon of 13.8% [14], accepted error margin of 5%, design effect of 1.0 and one cluster. Thus, the CDC-Epi Info™ 7.2.3.1 StatCalc estimated minimum sample size was 182. A final sample of 168 participants was consecutively enrolled into the study.

2.3 Research Instruments and Data Collection

Data was collected purposively from respondents in November 2019. A structured, pre-tested questionnaire was used for data collection.

2.4 Study Variables

Dependent variable: Previous uptake of cervical cancer screening.

Independent variables: Socio-economic determinants.

2.5 Statistical Analysis

We entered data into and analysed with IBM-SPSS Statistics 21.0 for windows (IBM-SPSS Corp., Chicago USA). The Chi square (χ^2) test was used to compare socio-demographic characteristics with previous cervical cancer screening and stepwise multinomial logistic regression to identify significant correlates of the main socio-demographic covariates. Only covariates with χ^2 *p*-values of 0.21 were included in the multinomial regression analysis. *p*-values \leq 0.05 were considered significant.

2.6 Limitations and Strengths of the Study

The current socio-political tensions greatly affected turnout and consequently the sample size of the study. The data that was acquired from the questionnaire completely depended on self-reported accounts of respondents. However, questionnaires were administered by trained peer-educators or nurses.

3. RESULTS

3.1 Demographic Characteristics

A total of 168 respondents turned up for the study, but only 140 were consecutively recruited during the study period. Thus 28 (16.7%) were excluded because they provided incomplete information with regard to medical history or demographic characteristics. Thirty-eight (27.1%) of the 140 participants included in this study, had previously been screened for cervical cancer. General characteristics of the study population are described in Table 1.

Only 26 (18.7%) of the participants were between the ages of 31 and 40 years old while the majority 61 (43.9%) belonged to the \leq 30 age group. The age range prior to first sex was 10 – 35 years and there were five (3.6%) virgins in the study. Seventy-one (50.7%) of the 121 participants who disclosed their age of first sex, had first sex before the age of 20 years. Majority (58.3%) of the participants had their first sex when they were less than 20 years old.

More than half (55.4%) of the participants were urban dwellers, while about a fifth (20.9%) were rural dwellers. In addition, more than half 89 (65.4%) of the respondents were currently unmarried.

In regards to the participants occupation, majority of the women were found to be skilled workers 63 (45.7%) and students 48 (34.8%). In regards to education, the majority 89 (65%) were found to be highly literate (tertiary education). The percentage of participants who attended primary and secondary education were minimal. Only 14 (10.2%) and 34 (24.8%) of the population attended primary and secondary education respectively.

3.2 Socio-Economic Determinants of Cervical Cancer Screening Uptake

Bivariate analysis showed that there were significant associations of cervical cancer uptake with age, marital status and number of sexual partners ($p < 0.05$). Table 1 shows the multinomial linear regression analysis of the possible socio-economic determinants of cervical cancer screening uptake. Respondents in the ≤ 30 [$p = 0.050$; O.R = 7.9 (1.0 – 63.5)] and 31 – 40 [$p = 0.031$; O.R = 7.8 (1.2 – 50.4)] years age groups were significantly more likely to respond to cervical cancer screening than those in the 41 – 50 [$p = 0.25$; O.R = 2.5 (0.5 – 12.4)] and the > 50 years age groups.

Participants with tertiary educational status were more likely going to turn up for cervical cancer

screening when compared to their secondary counterparts [$p = 0.047$; O.R = 0.3 (0.1 – 1.0)]. Although many urban dwellers turned up to this study, multinomial linear regression analysis showed that the rural [$p = 0.886$; O.R = 1.1 (0.3 – 4.5)] and the semi urban [$p = 0.419$; O.R = 1.6 (0.5 – 5.6)] dwellers were more likely to respond to cervical cancer screening when compared to the urban dwellers. No significant difference was found between occupation, marital status and age of first sex with cervical cancer screening. Participants with more than one sex partner were significantly more likely [$p = 0.027$; O.R = 4.9 (1.2 – 20.7)] to respond to cervical cancer screening than those with one sex partner. Further adjustment for marital status and age of first sex did not change these estimates.

Majority (54.8%) of the participants had between 0 – 1 sexual partner, while those with more than one partner were about five times [$p = 0.027$; O.R = 4.9 (1.2 – 20.7)] more likely to turn up for cervical cancer screening.

Table 2 shows the possible relationship between the number of pregnancies /deliveries and their influence on cervical cancer screening. Those with fewer pregnancies and those with fewer number of deliveries 0 – 4 pregnancies and 0 – 3 deliveries respectively, turned up for cervical cancer screening when compared to those with more pregnancies and deliveries. Bivariate analysis showed that the association between the number of pregnancies/ deliveries and cervical cancer screening was significant ($p < 0.05$).

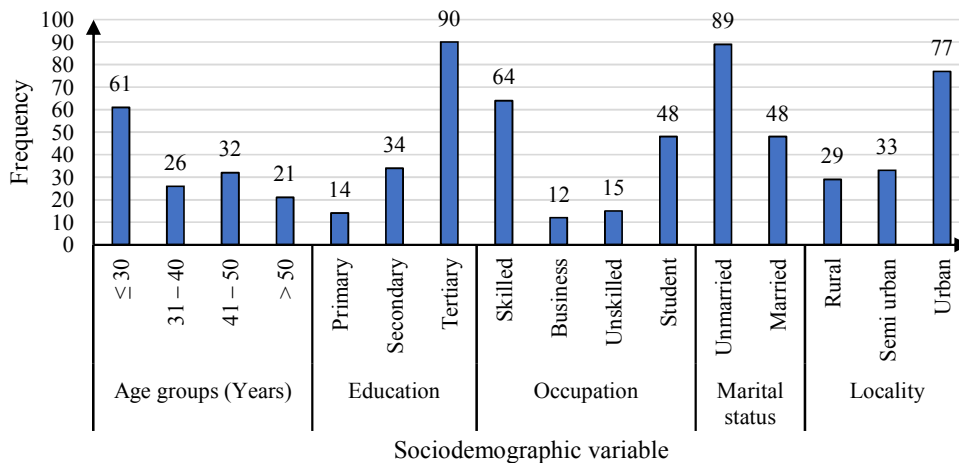


Fig. 1. Socio-demographic variables influencing cervical cancer screening

Table 1. Socio-economic determinants influencing cervical cancer screening

Variable	DV: Uptake of cervical cancer screening					
	Age groups (Years)	Yes (%)	No (%)	Total (%)	p-value	O.R (95% C.I)
≤ 30 (16 – 30)	5 (13.2)	56 (55.4)	61 (43.9)	0.050*	7.9 (1.0 – 63.5)†	
31 – 40	6 (15.8)	20 (19.8)	26 (18.7)	0.031*	7.8 (1.2 – 50.4)†	
41 – 50	15 (39.5)	16 (15.8)	31 (22.3)	0.25	2.5 (0.5 – 12.4)†	
> 50 (51 – 66)	12 (31.6)	9 (8.9)	21 (15.1)	Ref	1.0	
Education						
Primary	6 (15.8)	8 (8.1)	14 (10.2)	0.261	3.2 (0.4 – 24.7) †	
Secondary	13 (34.2)	21 (21.2)	34 (24.8)	0.047*	0.3 (0.1 – 1.0)	
Tertiary	19 (50.0)	70 (70.7)	89 (65.0)	Ref	1.0	
Locality						
Rural	7 (18.4)	22 (21.8)	29 (20.9)	0.886	1.1 (0.3 – 4.5)	
Semi urban	10 (26.3)	23 (22.8)	33 (23.7)	0.419	1.6 (0.5 – 5.6) †	
Urban	21 (55.3)	56 (55.4)	77 (55.4)	Ref	1.0	
Occupation						
Skilled	24 (63.2)	39 (39.0)	63 (45.7)	0.601	0.6 (0.1 – 4.2)	
Business	6 (15.8)	6 (6.0)	12 (8.7)	0.114	0.1 (0.0 – 1.6)	
Unskilled/ Unemployed	5 (13.2)	10 (10.0)	15 (10.9)	0.966	1.0 (0.1 – 11.3) †	
Student	3 (7.9)	45 (45.0)	48 (34.8)	Ref	1.0	
Marital status						
Unmarried	19 (51.4)	70 (70.7)	89 (65.4)	0.526	0.7 (0.2 – 2.2)	
Married	18 (48.6)	29 (28.9)	47 (34.6)	Ref	1.0	
Age of first sex						
< 20 years	21 (61.8)	49 (57.0)	70 (58.3)	0.334	0.6 (0.2 – 1.7)	
≥ 20 years	13 (38.2)	37 (43.0)	50 (41.7)	Ref	1.0	
Number of sex partners						
> 1 partner	8 (22.2)	48 (54.5)	56 (45.2)	0.027*	4.9 (1.2 – 20.7) †	
0 – 1 partner	28 (77.8)	40 (45.5)	68 (54.8)	Ref	1.0	

*p-values with statistical significance, O.R: Odds Ratio, Ref: Reference, DV: Dependent variable, 95% C.I: 95% Confidence interval, † O.R with more likelihood of occurrence

Table 2. Association between number of pregnancies/ deliveries and probable screening uptake

Number of pregnancies	Uptake of cervical cancer screening				χ ²	p – value
	Yes (%)	No (%)	Total (%)			
0 – 4 pregnancies	25 (71.4)	83 (86.5)	108 (82.4)	4.003	0.045*	
5 – 10 pregnancies	10 (28.6)	13 (13.5)	23 (17.6)			
Number of deliveries						
0 – 3 deliveries	26 (74.3)	86 (89.6)	112 (85.5)	4.840	0.028*	
4 – 8 deliveries	9 (25.7)	10 (10.4)	19 (14.5)			

*p-values with statistical significance

4. DISCUSSION

4.1 Demographic Characteristics

Cancer of the cervix is one of the most common cancers in women, associated with high mortality [1].

In our study, the majority of respondents were in the 30 or less (≤ 30) aged group, followed by the

age group of 41 to 50 years group. This is slightly different from the findings of Singh, Narayan [15], who had 41-50 group, followed by 51-60. This difference could be due to the fact that Buea harbours many tertiary institutions draining in so many students who are young and more informed on healthcare challenges.

Our findings are similar to those in South India that, the majority of participants in their study

belonged to the age group of 20-24 years [16] and in line with results reported by Mwaka et al. [17] in Uganda.

The findings are however different from those of Belglaiiaa, Souho [18] who had the majority of 41-50 years in their study, and Shah, Vyas [19] who also had majority in the 41 – 50 years age group in their study. This could be explained by the fact that, these women had a comorbidity, which was not the case in our study.

4.2 Socio-Economic Determinants of Cervical Cancer Screening Uptake amongst Respondents

Of the nine possible determinants explored, age, education, marital status, number of sex partners and number of pregnancies/ deliveries were the most likely determinants of cervical cancer screening.

In our study, respondents in the age groups of ≤ 30 and the 31 – 40 years were about eight times more likely to turn up for cervical cancer screening. Our findings are similar to a study carried out on cervical cancer awareness amongst HIV positive women in the city of Laâyoune, Morocco [18]. They showed that 14.7% of women who were less than 30 years old were aware of cervical cancer screening. Our finding is however different from a study reported in rural India, in which many more older women in the age groups 40 – 49 and 50 – 59 years and were about twice and thrice respectively more likely to participated in the study compared to the younger women [20].

In bivariate analysis, our study revealed that there was a significant association between educational status and cervical cancer screening uptake. It was further observed in the multinomial regression analysis that participants who had attended at least university education were more likely to turn up for cervical cancer when compared with those in the lower educational statuses. This is similar to the study on cervical cancer in other African countries [18,21] and differed from that of a study in rural India where more of those with no education took part in the study compared with the educated class [20].

The majority (65.4%) of unmarried participants in our study was similar to the 85% reported in India [19] and different from the 140/158 currently married women in rural India [20]. The significant association of marital status with

cervical cancer screening uptake in this study, was in line with the association of marital status with cervical cancer awareness amongst HIV positive women in the city of Laâyoune, Morocco [18].

In this study, the number of respondents with multiples sex partners was 45.2% which was in line with the 48.2% reported in South India [16] and lower compared to the 11.5% reported in Ahmedabad, Gujarat, India [19]. In bivariate and multinomial regression analysis, our study showed that the number of sexual partners had a significant association with cervical cancer screening uptake, which is in line with the association of number of lifetime sexual partners with cervical cancer awareness amongst HIV positive women in the city of Laâyoune, Morocco [18] as well as in Ahmedabad, Gujarat, India [19].

We also observed that cervical cancer screening depended on the number of pregnancies, which is in line with repeated pregnancies reported in India [19,20].

In both the bivariate and multivariate analysis, cervical cancer screening showed no significant association with the locality of participants. However, more than half (55.4%) of the participants were urban dwellers which was lower compared to the 95.7% reported in Morocco [18]. The differences may be due to different study area, different study designs and different sample sizes.

Bivariate and multivariate analysis also showed that cervical cancer screening had no significant association with the occupation of the participants. However, only 10.9% of our participants were unskilled/ unemployed and together with the students, were more likely to turn up for cervical cancer screening when compared with the skilled workers and business class. This was in line with a study in Morocco [18].

There is a good correlation between, high level of education and the probability of coming for cancer screening, according to our study. These findings are different from those of Belglaiiaa et al. [18] in Morocco and Tadesse [21] in Ethiopia. The reason could be that in the two studies cited above, the participants were already sick and were seeking for treatment.

However, our findings on education and cervical cancer in this study are very much in agreement with the works of [22–25].

Many Habitats of slums and rural areas are made of rudimentary, semisolid, thatched or traditionally conceived materials as planks also known as “caraboat”. These are external signs of poverty. In general, these people live below the poverty line as defined by the World Bank, that is with less than 1.9 US dollar /day [26]. These conditions are less receptive to preventive measures as they are more focused on how to survive on daily basis. On the other hand, the probability of urban dwellers presenting themselves for screening is statistically significant with a p value < 0.05. This is in accordance with the works of Thulaseedharan et al. [20].

Occupation is subdivided in our study as skilled, business and unskilled/unemployed. It is assumed that people with skilled labour have a higher revenue as opposed to unskilled / unemployed. paradoxically, in this study, the latter has greater odds to present themselves for screening. This could be explained by the fact that, it was a free cancer campaign. our findings are similar to those of Jissa et al. [20].

4.3 Marital Status

The marital status did not seem to influence participants in this study to present themselves for screening. However, some authors say, celibacy, widowhood make women more vulnerable social pressure and do increase their chances of developing a cervical cancer [27–29].

4.4 Age at First Sex and Number of Sexual Partners

The age at first sexual intercourse in our study did not influence the participation of the respondent, although there was an increase odd of 0.6. This is not in accordance with many findings which put early sexual intercourse as a risk factor for developing cervical cancer. The male factor plays in significant role in the transmission of the human papilloma virus as the cervix is not yet ripe, it could develop malignancy [21,27–31].

Not only did persons with multiple sexual partners have a statistically significant influence to appear in a screening cancer campaign, but they also had an odds ratio of 4.9, meaning that they stand five times the risk of developing a cancer of the cervix. This could be explained by the facts that, the majority of respondents in this study are not married. Added to this, Buea being a cradle of tertiary institutions, participants in this

study are much aware of the existence of the cervical cancer.

This is very much in ally with what is found in literature. Early age at first sexual intercourse and having multiple sexual partners are a risk factors for developing cancer of the cervix [32–34].

5. CONCLUSION

Despite the fact that cervical cancer is a preventable disease, the morbidity and mortality toll remain high in the developing world. This study was to find out what are the socio-economic factors which could influence women to present themselves for cervical cancer screening.

Some of the variables in favour of screening have been identify such as age, the educational level, the residence, the occupation, marital status, age of 1st sexual intercourse, number of sex partners as well as the number of pregnancies and deliveries.

A good understanding of these variables could help improve on the uptake for primary and secondary measures for prevention and help reduce the burden of this disease in our communities.

CONSENT

Respondents involved women who turned up at the Buea Regional hospital annex in response to the free cervical cancer screening campaign. The inclusion criteria were all women aged 21 years old and above who turned up for the screening, signed the informed consent, and were without mental or physical limitations. Pregnant women and those who were more than 65 years old were excluded. For each consenting participant, a trained peer-educator or nurse, administered a face-to-face interview and clinical questionnaire before screening, to collect socio-economic variables; age, education, marital status, occupation, number of sexual partners for the past five years, age of first intercourse, number of pregnancies and deliveries. All submitted questionnaires were checked by the researcher for consistency. Each participant signed the consent form.

ETHICAL APPROVAL

The ethical clearance was given by the Department of Obstetrics and Gynaecology of

the University of Buea. Administrative clearance was obtained from the regional delegation of public health Buea.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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