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Factors Associated with Utilization of Cervical Cancer Screening Services among Women Aged 25 - 49 in Bushenyi District, Western Uganda

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ABSTRACT

Background

Cervical cancer is a public health concern worldwide among women. In Africa, Uganda, cervical cancer incidence rate is at 54.8 per 100,000 per year. Despite the interventions, by Ministry of Health, the screening coverage is still very low .This study therefore aimed at identifying factors associated with utilization of cervical cancer screening services among women aged 25 - 49 years in Bushenyi district western Uganda**.**

Methods

A descriptive cross-sectional study design was employed and questionnaires were administered using Semi structured interviews to collect data from women of reproductive age from May to July 2022. A total of 392 women from Bushenyi district, western Uganda were selected using systematic sampling in the study area.

Results

The study established that the utilization of cervical cancer screening services was 15.1% (n= 58/385) in Ishaka Bushenyi and Kizinda Kigoma Town council.

The study also showed that women aged 25-34 years were two times more likely to utilize cervical screening services compared to those aged 45-49 years significantly at p<0.040; cOR=2.234, 95% CI (0.13-11.93). Women who were divorced were five times less likely to utilize cervical cancer screening services compared to the single significantly at p<0.001, cOR=5.11, 95% CI (2.31-29.3). Also, women with no formal education were five times less likely to utilize cervical cancer screening services compared to those with formal education significantly at

p<0.001, cOR=5.31, 95%CI [1.16-16.66]. The knowledge of cervical cancer screening in this study was high (>90%) of the studied population.

Conclusion

Education and age were found to be significant factors in the uptake of cervical cancer screening services in women aged 25–49 years. The study recommends that women in rural areas utilize Cervical Cancer Screening services to benefit from the intervention

INTRODUCTION

Cervical cancer is a slow-growing cancer that has been linked with human papillomavirus (HPV) which begins in the cervix of women and occurs mostly in women over the age of 30 years. The cervix is the lower end of the uterus that connects the vagina to the womb. Once the cancerous cells begin to grow, the abnormal cells can slowly invade the whole body to cause devastating effects on health (Akinyemiju, 2012).

The World Health Organization (WHO) advocates for a comprehensive approach to cervical cancer prevention and control to identify opportunities to deliver effective interventions. Existing review papers indicate a high level of knowledge and advancements for multiple areas of focus within the larger effort of cervical cancer prevention and treatment including knowledge of biomarkers for cervical cancer, HPV vaccination for young adolescent women, and feasible approaches to screen and treat adult women in low resource settings (Finocchario-Kessler et al., 2016).

In Uganda, the prevalence of cervical cancer in women as reported by Information Centre on HPV and Cancer **(**ICO) (HPV Information Centre, 2016) was at 33.6% combined with low screening utilization which has resulted in the country having one of the highest cervical cancer incidence rates in the world of 47.5 per 100,000 per year (Nakisige et al., 2017). In a recent study in Bushenyi district, western Uganda, the overall prevalence of cervical cancer was 31.9% hence the need to find out the need for this study.

Although the emergence of nucleic acid hybridization techniques such as such as Southern blotting, in situ hybridization (ISH), and dot blot hybridization, which used radioactive nucleic acid probes to detect the presence of HPV, enabled scientists to detect the HPV strains associated with cervical cancer, the protocols involved were time-consuming and also involved the use of radioactivity which is harmful to human health (Abreu et al., 2012; Kapranos, 1991) implying that there was need for rapid, safe and non-radioactive methods; this led to the development of the first non-radioactive in situ hybridization (ISH) probe in 1980s, which provided a specific method that was safer, faster, and highly sensitive and specific for in-situ detection of HPV DNA (Todd, et al., 1989).

However, the PCR -based techniques still have their own flaws and may give false negative results, particularly with samples that are infected with multiple HPV genotypes and have a low viral copy number (Abreu et al., 2012). Another method that has emerged is the one that combines *in situ* hybridization technology with flow

cytometry analysis to detect the presence of HPV mRNA in whole cells that is able to predict the likelihood of cervical cancer progression based on the overexpression of HPV oncogenes (Kottaridi, et al., 2011). The Health Belief Model (HBM) by Becker (1974) was used as a theory in order to understand the failure of people to adopt disease prevention strategies or screening tests for the early detection of disease.

The most common factors that lead to cervical cancer among women is exposure to high – risk Human Papillomaviruses (hrHPV) through sexual intercourse although several other risk-factors have been reported (Jones et al., 2016) which becoming sexually active at a young age especially younger than 18 years old, having many sexual partners and smoking (Statement, 2019). HPV infects cells on the surface of the skin, and those lining the genitals, anus, mouth and throat, but not the blood or internal organs such as the heart or lungs and spreads from one person to another during skin-to-skin contact. Sexual history can also increase the risk of cervical cancer (Perkins et al., 2020).

Despite its preventable nature, worldwide cervical cancer is the third most common form of cancer among women after breast and colorectal cancer. The women of poorer communities are mostly affected by the disease. There is evidence that approximately 83% of the world's new cases and 85% of all cervical cancer deaths reported are from developing countries (Mengesha et al., 2020).

Currently, the Pap test is known as the most successful and cheapest cervical cancer screening test globally which is expected to decrease the incidence and mortality of cervical cancer (Hammer, 2019). Cervical cancer screening is a cost-effective way to save lives. A 1993 World Bank study found that screening women every five years with standard follow-up for identified cases costs about $100 per disability adjusted life year (DALY) gained, compared with about $2,600 per DALY for treatment of invasive cancer and palliative care (ACCP, 2003). To be able to improve on the uptake of the screening services, it is important to establish the factors that influence these practices and hence the need for studies like the one being proposed.

Materials and Methods

Study design and population

The study was a descriptive cross-sectional study involving women of reproductive age staying in Bushenyi-Ishaka Municipality and Kizinda-Kigoma Town Council. The study population was all women of reproductive age between 25-49 years in the study area.

Sample size

The sample size of level of utilization of cervical cancer screening services and the level awareness about cervical cancer screening services among women in the study area was determined using the Slovin (1960) formula.

$$n = \frac{N}{1 + Ne^2}$$

Where;

n= Sample size

N= Population size (UBOS 2021)

e = Margin of error

Therefore, required sample size was calculated as substituted below;

[(19263)/1+19263*0.052]

n= 392 women of reproductive age

To assess the factors associated with the utilization of cervical cancer screening services among women in the study area, Cochran's (1977) formula of sample distribution was applied as follows:

$$n_{\circ} = \frac{Z^2 Pq}{e^2}$$

Where;

Z is the score value from the Z table at 95% confidence interval (1.96)

P(0.5)

q is 1=p, 1-0.5 = 0.5

e is the error

$$n_{\circ} = \frac{(1.96)^2 0.5x0.5}{0.05^2}$$ =385 participants

Sampling frame

Simple random sampling was used to select the required number of women in each of the selected study sites in consideration with the sample size.

Using my interval as 5, I will keep selecting every fifth household on each of the days of collecting data.

Data collection process

Data was collected using a structured questionnaire purposed to capture information on socio-demographic characteristics, knowledge and utilization of cervical cancer screening services. The survey questionnaire had sections. The first section included questions on the participants' socio-demographic characteristics such as age, highest level of education attained, marital status, area of residence, and number of children, previous health seeking behaviors, and use and methods of contraception. The second section included questions that assess the respondents' specific knowledge about cervical cancer prevention measures, symptoms and screening methods. These sections assessed women's knowledge of recommended age for cervical cancer vaccination, screening and the frequency of screening. Some questions required Yes/ No/I do not know responses while others require the participant to mention responses. The third section comprised aspects of utilization of cervical cancer screening services.

The questionnaires were given unique codes, checked for completeness at the end of data collection.

Variable and measurements

The questionnaire was used to collect information on factors associated with the utilization of cervical cancer screening services. The questionnaire consisted of different sections. The pre-test was done for about 10 interviewees in the community.

Inappropriate or ambiguous questions were adjusted and modified.

The awareness score was based on their beliefs and feelings towards cervical cancer, its screening practice, prevention and treatment. This was measured using the Likert scale system in which scores range from 1 for strongly disagree to 5 for strongly agree. The responses were summed up, and a total score was obtained for each respondent. The mean score was calculated and those who scored equal to and greater than the mean, or less than the mean, were categorized as having a positive or negative attitude, respectively.

Data Analyses

Data entry and analyses used SPSS software Version 14.

Descriptive analyses reported the frequencies with percentages and means with standard deviation (SD) of categorical and continuous variables, respectively. Bivariate analyses were performed to identify potential independent variables for initial models of multivariate analysis of cervical cancer screening, using backward stepwise conditional logistic regression. Crude Odds Ratios (OR) with 95% Confident Interval (CI) and *p*-value were selected for multivariable regression analyses.

Ethical considerations

The study was approved by the Research Ethics Committee for KIU . The purpose of the study was explained to participants who were asked to sign a consent form about voluntary participation in the research project. It was made clear that they could leave the study at any time without penalty if they were not comfortable, and their healthcare provision would not be affected in the future.

Results

Socio-demographic characteristics of participants

There were 392 women recruited from two study areas:

Occupations varied, but three areas dominated: , Peasant farmer,student and civil servant. Those with no education were two times less likely to utilize Cervical cancer screening . The majority of women were married .

Bivariate analyses

RESULTS

Table 1. Bivariate analysis on association of demographic factors with the utilization of cervical cancer screening services in the study area.

The finding of Bivariate indicates education status was statistically significantly associated with the utilization of cervical cancer screening services among women in the study area in the model at 5% level at p-value <0.025.

Independent variables	Utilization of CC Screening		cOR (95% CI)	P-Values <0.05
	Yes n = 58(15.1%)	No n= 327(84.9%)		
Place of residence				
BIM	36(16.7%)	179(83.3%)	1.00	
K-KTC	22(12.9%)	148(87.1%)	1.327(0.700-2.515)	0.386
Age Category				
25-34	22(12.2%)	158(87.8%)	2.234(0.13-11.93)	0.083
35-44	17(19.3%)	71(80.7%)	1.032(0.11-10.03)	0.750
45-49	19(16.3%)	98(83.7%)	1.00	
Religion				
Christian	33(13.4%)	214(86.6%)	1.245(0.232-1.215)	0.171
Muslim	16(16.3%)	82(83.7%)	0.724(.672-0.269)	0.395
Others	9(22.5%)	31(77.5%)	1.00	
Tribe				
Munyankole	41(13.6%)	260(86.4%)	1.29(0.18-2.25)	0.419
Mukiga	8(25.0%)	24(75.0%)	1.13(0.13-1.67)	0.699
Mufumbira	3(25.0%)	9(75.0%)	1.14(0.12-1.73)	0.701
Others specify	6(15.0%)	34(85.0%)	1.00	
Marital status				
Married	29(14.9%)	166(85.1%)	2.20(0.760-2.451)	0.934
Widow	10(15.9%)	53(84.1%)	1.50(0.19-1.330)	0.973
Single	7(17.1%)	34(82.9%)	1.00	
Divorced	12(14.0%)	74(86.0%)	2.96(2.31-3.788)	0.886
Education Status				
None	9(9.5%)	86(90.5%)	**5.31(1.16-10.66)**	**0.025**
Primary	9(12.3%)	64(87.7%)	2.28(0.32-8.48)	0.033
Secondary	28(17.5%)	132(82.5%)	1.10(0.23-8.76)	0.056
Tertiary	12(21.1%)	45(78.9%)	1.00	
Occupation				
Peasant farmer	16(12.6%)	111(87.4%)	2.01(0.12-9.51)	0.975
Self employed	36(18.3%)	161(81.7%)	1.93(0.32-11.48)	0.993
Student	4(8.5%)	43(91.5%)	2.28(0.53-12.55)	0.996
Civil servant	2(14.3%)	12(85.7%)	1.00	

cOR= Crude odds ratio. CI= Confidence interval.

Table 2. Multivariate analysis on association of demographic factors with the utilization of cervical cancer screening services among women in the study area.

The Multivariate analysis as showed, place of residence, age Category, religion, tribe, marital status, education Status and occupation were. None Education were two times less likely to utilize cervical cancer screening services with aOR = 2.382, 95% CI 0.138-3.056.

Independent variables	Utilization of CC Screening		aOR (95% CI)	P-Values <0.05
	Yes n = 58(15.1%)	No n= 327(84.9%)		
Place of residence				
BIM	36(16.7%)	179(83.3%)	1.123(0.556-2.268)	0.747
K-KTC	22(12.9%)	148(87.1%)	1.00	
Age Category				
25-34	22(12.2%)	158(87.8%)	1.107(0.494-2.483)	0.159
35-44	17(19.3%)	71(80.7%)	0.605(.301-1.217)	0.805
45-49	19(16.3%)	98(83.7%)	1.00	
Religion				
Christian	33(13.4%)	214(86.6%)	0.566(0.232-1.382)	0.211
Muslim	16(16.3%)	82(83.7%)	0.668(0.255-1.749	0.411
Others	9(22.5%)	31(77.5%)	1.00	
Tribe				
Munyankole	41(13.6%)	260(86.4%)	1.278(0.444-3.678)	0.649
Mukiga	8(25.0%)	24(75.0%)	2.882(0.689-12.057)	0.147
Mufumbira	3(25.0%)	9(75.0%)	2.570(0.469-14.073	0.277
Others specify	6(15.0%)	34(85.0%)	1.00	
Marital status				
Married	29(14.9%)	166(85.1%)	0.947(0.415-2.161)	0.897
Widow	10(15.9%)	53(84.1%)	0.646(0.219-1.907)	0.429
Single	7(17.1%)	34(82.9%)	1.215(0.389-3.792)	0.738
Divorced	12(14.0%)	74(86.0%)	1.00	
Education Status				
None	9(9.5%)	86(90.5%)	2.382(0.138-3.056)	0.064
Primary	9(12.3%)	64(87.7%)	0.483(0.177-1.318)	0.155
Secondary	28(17.5%)	132(82.5%)	0.677(0.287-1.598)	0.373
Tertiary	12(21.1%)	45(78.9%)	1.00	
Occupation				
Peasant farmer	16(12.6%)	111(87.4%)	0.804(0.158-4.093)	0.793
Self employed	36(18.3%)	161(81.7%)	1.250(0.254-6.151)	0.783
Student	4(8.5%)	43(91.5%)	0.560(0.085-3.698)	0.547
Civil servant	2(14.3%)	12(85.7%)	1.00	

aOR= Adjusted odds ratio. CI= Confidence interval.

Table 6. RESULTS

Socio demography	cOR	95% CI	P value
Education Status			
None	5.31	5.31	0.025
Primary	2.28	2.28	0.033
Secondary	1.10	1.10	0.056
Tertiary	1.00	1.00	
Age for first sexual encounter <19 years	100	2.260	0.032

DISCUSSIONS

In this study, utilization of cervical cancer screening was low at 15.1%. This means that women in Bushenyi – Ishaka Municipality and Kigoma Kizinda Town Council are on a high risk of getting cervical cancer. The above results were in contrast with the study findings by Kileo et al., (2015) on Utilization of cervical cancer screening services and its associated factors among primary school teachers in Ilala Municipality, Dar es Salaam, Tanzania which revealed that the utilization of cervical cancer screening services was 28 %. On the other hand, the study findings were slightly higher than those of the study by Adane et al., (2020) on knowledge and practice of cervical cancer screening and associated factors among reproductive age group women in districts of Gurage zone, Southern Ethiopia which had 14.8%. This might be because of low educational levels and lack of time since both studies were done rural settings where most mothers were peasants.

On the other hand, study results showed that majority 195(50.6%) respondents were 5km and below from the nearest heath facility. This therefore means that majority of women had chances of accessing medical health services with ease, in time and at low costs.

The study findings are in contrast with the study findings by Gizaw et al., 2022 on uptake of cervical cancer screening and its predictors among women of reproductive age in Gomma district, South West Ethiopia which revealed that women who were near health centres and had one or more visit of health facilities per year for any

health problems were 3.63 times (AOR = 3.63, 95% CI = 1.86–6.93) more likely to receive cervical cancer screening services from health facilities compared to those women with no history of health facility visits. This may be because women who live very far from the health centres are more likely not to utilize cervical screening services

The level awareness of cervical cancer screening services among women in the study area

In this study, women who knew about cervical cancer screening through medical personnel were 0.217 times less likely to utilize cervical cancer screening service as compared to those who knew it from media 5km (aOR 0.217, 95%CI 0.017-2.730, p=0.237). On the other hand, results showed that 218(56.6%) respondents knew about cervical cancer through media while screening 167(43.4%) knew about it through medical personnel.

Earlier Ugandan studies have pinned media as their source of medical information other than medical personnel (Nakisige et al., 2017). This may be because most people in Uganda prefer news information than seeking it directly from the responsible persons (Nakisige et al., 2017).

The factors associated with the utilization of cervical cancer screening services among women in the study area

In consideration with the third objective, study findings on age showed that women who were aged 25-34 years were 2 times less likely to utilize cervical screening services compared to those who were aged 45-49 years [p=0.083; cOR=2.234, 95% CI (0.13-11.93)]. In accordance with similar studies, (Ncube et al., 2015) the study found age to be a significant factor in the uptake of cervical cancer screening. This study found that women in the youngest age group (19-29 years) were less likely to have ever had cervical screening compared with women in the older age groups. The underuse of screening among the youngest age group might not pose a significant public health concern as they are less likely to develop cervical cancer compared to older women (aged 30-50 years) (Ncube et al., 2015). The reason of young women not involved in the cervical screening services may be because of a belief that cervical cancer is for only old women.

This is similar with previous research from Korea in which factors associated with participation in cervical cancer screening among young Korean women showed that older age, higher education level and unemployed women

were significantly associated with cervical cancer screening (Chang et al., 2017), similar to a study in Taiwan by Lin et al., 2008.

More so, education status in the current study showed a high significance; women who did not go to school were 5 times less likely to utilize cervical cancer screening services compared to those who had tertiary level of education [p<0.001, cOR=5.31, 95%CI [1.16-16.66]. A similar study by Rahman, et al., (2019) on cervical cancer screening decentralized policy adaptation in African showed that low education among women in Africa is the most determinant factor towards low cervical cancer screening (Rahman, et al., 2019).Observation from a study carried out by Black, E., Hyslop, F., & Richmond, R. (2019) on barriers and facilitators to uptake of cervical cancer screening among women in Uganda also confirmed that low education levels hinder cervical cancer screening services. This might be because uneducated mothers lack information and confidence to present their problems to medical personnel and therefore lose a chance of being considered in most health diagnosis.

In the current study, residents from Kizinda-Kigoma Town Council were 2 times less likely to utilize cervical screening services compared to those who were residents from Ishaka Bushenyi Municipality [p=0.050; cOR=2.33, 95% CI (0.763-4.400). This may because according to our demographic characteristics, the majority of the uneducated women were from Kigoma – Kizinda Town Council.

Adequate knowledge of cervical cancer is very important if women are to be aware of the risks, measures for prevention and the necessity of screening. In this study, women's knowledge was not significantly associated with cervical cancer screening, different to previous research from Canada (Bruni et al., 2019). Women with better knowledge of cervical cancer are more likely to undergo screening than those without such knowledge.

Providing the health education about cervical cancer prevention to women such as at the hospitals might increase their knowledge and awareness of the diseases, subsequently increasing the accessibility to the services

Study limitations

The results of this study should be interpreted in the light of certain limitations. The first limitation was the fact that limitation is that our data collection took place in only two Study areas.

The sample is therefore not representative of the whole country and the results cannot be easily extrapolated to other districts.

Conclusions

Utilization of cervical cancer screening services was very low at 15%. Lack of awareness, lack of skilled health care personnel, fears of costs, lack of symptoms and social stigma were identified as the most important factors affecting utilization of cervical cancer screening services.

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Author Contributions
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Conflict of interest

The authors declare there is no conflict of interest whatsoever as regards to this manuscript.

Authors contribution

L.K., conceptualized the study, collected the data and designed the manuscript, A.A., analysed the data, interpret the data and review the manuscript to fit publication standard, T.A., supervised the study and edit the manuscript to make it fit for publication.

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