RESEARCH ARTICLE

CERVICAL CANCER STATUS AND RELATED RISK FACTORS IN MUNINI HOSPITAL, NYARUGURU DISTRICT RWANDA

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ARTICLE INFO

ABSTRACT

Background: Cervical cancer is the fourth most common cancer among women worldwide. This study aims to assess cervical cancer status and related risk factors. **Methods:** Patients who attended the hospital cervical cancer screening and prevention center were enrolled in the present study. The data of patients were analyzed using SPSS software. Frequencies and descriptive statistics were used to show the study population concerning relevant variables, and binary logistic regression assessed the risk factors of cervical cancer. A p-value <0.05 was considered statistically significant, and the confidence level was at 95%. **Results:** A total of 136 women were included in this retrospective study from July 2020 to July 2021. We found that 54 (39.7%) women had cervical cancer; the mean age was 39.33 years (SD = 12.8 years). We also found that factors like more than five sex partners (OR= 2.5; 95%CI (1.04 – 6.10, $p=0.03$)), primary education level (OR= 2.9; 95% CI (1.20 – 7.36, $p=0.018$)), staying in the rural area (12;95%CI (3.61-45.90, $p=0.007$)), and being HIV positive (OR=19.6; 95%CI (8.1-47.66, $p=0.006$)), increase the risk of cervical cancer. **Conclusion:** This study revealed the risk factors for cervical cancer.Cervical cancer education and prevention has to be performed to all women categories, and it is necessary to build more cancer treatment centers in all regions of the country.

INTRODUCTION

Cervical cancer is the fourth most common cancer among women worldwide (1, 2). Primary prevention and screening are the most effective modalities for decreasing the healthcare burden and mortality related to cervical cancer (3). Cervical cancer continues to be listed among the top gynecologic cancers worldwide. According to current data, cervical cancer is ranked fourteenth among all cancers and fourth-ranked cancer among women worldwide (4). Previous GLOBOCAN estimates for 2008 indicated that approximately 530 000 cervical cancer cases and 275 000 deaths had occurred worldwide, with 85% of cases occurring in less developed countries (5).

Cervical cancer intervention focuses on primary and secondary prevention (6). Primary prevention and screening are the best methods to decrease cervical cancer burden and decrease mortality. In the United States and other developing countries, most screening and diagnostic efforts are directed towards the early identification of high-risk human papillomavirus (HPV) lesions through HPV testing and Pap smears (7, 8). Although HPV testing is not recommended in women younger than 30 years of age, low-risk younger women should begin screening with Pap tests at age 21 and continue until age 65, according to the United States Preventive Services Task Force recommendations. Newer recommendations offer 3 to 5-year intervals between screening based on prior results and the use of pap and HPV co-testing (9, 10).

Since cervical cancer is a sexually transmitted infection, it is preventable (11, 12). Targeted education, screening, and intervention can reduce the burden of illness. Disparities exist in screening rates, early diagnosis, and timely treatment (13). This cancer is a burden to different African countries, including Rwanda. Various risk factors have been associated with cervical cancer, including initiation of sexual activity at less than 20 (9), unmarried, older age at the first pregnancy, and multiparity (14-17). This current study has the primary purpose of determining the status of cervical cancer and related risk factors in Munini Hospital located in Nyaruguru district in the South Province of Rwanda.

METHODS AND MATERIALS

Study Design, Period, and Area: A retrospective cohort study was conducted in Munini Hospital, located in Nyaruguru District in the South Province of RWANDA, from July 2020 to July 2021.

Populations of the Study: Medical records of women diagnosed with cervical cancer in the hospital were source populations, and all medical records of cervical cancer patients from July 2020 to July 2021 were study populations. Medical records with incomplete information in addition to those not found during the data collection period were excluded.

Sample Size and Sampling Procedures: The sample size of this study was patients' medical records recorded from July 2020 to July 2021 MUNINI DISTRICT HOSPITAL's cervical cancer screening department, and 136 forms that fulfilled the inclusion criteria were identified and data were collected from them. Pap Smear results were the dependent variable, and socio-demographic characteristics, clinical symptoms, and risk factors were independent variables.

Data Processing and Analysis: The patients who came to the hospital cervical cancer screening center were enrolled in the present study. The data of patients were analyzed using SPSS software. Frequencies and descriptive statistics were used to show the study population concerning relevant variables, and binary logistic regression assessed the risk factors of cervical cancer. A p-value <0.05 was considered statistically significant, and the confidence level was at 95%.

Ethical Declaration: The study was conducted according to the guidelines of the Declaration of Helsinki, andethical approval for this study was obtained from the Shandong University senate through the Research and Publication Committee's recommendations and has been approved according to Shandong University Research Policy. And informed consent was obtained from Munini Hospital Research Committee and patients.

RESULTS

In total,136 women participated in this study. 101(74. %) of the participants were married, 16(11.8%) single, 12 (8.8%) widowed, 7 (5.1%) divorced. The mean age was 39.33 years (SD = 12.8 years). The majority of the women are housewives, and most of them live in rural areas. 86 (63.2%) women who participated in this study had primary education level, and those who had secondary school education level was 50(36.8%) (Table 1).

In addition, 82(60.3) of women who participated in this study were found to have more than five sex partners. Also, most of the women in this study had their first sexual intercourse when they were over 19 years old. Differently, most of the women in this study had their first pregnancy while they were under 19 years of age. Moreover, 87(64%) women consumed alcohol while 49(36%) did not take alcohol. Furthermore, we found that 59(43.4) were HIV positive while 77(56.6%) women were HIV negative. By using PAP smear, it was found that 54(39.7%) of the women in the current study were PAP smear-positive. Additionally, women presented cervical cancer symptoms such as (postcoital bleeding, foul smell discharge, dyspareunia, vaginal bleeding, Vaginal pruritis, pelvic pain, Lumbar pain, and dyspareunia,postcoital bleeding and foul smell discharge, and Postcoital bleeding pelvic pain). Besides,vaginal and postcoital bleeding was the most prevalent symptom table (Figure 1). Moreover, binary logistics regression has been used to assess the risk factors, and risk factors related to cervical cancer included having more than five sex partners (OR= 2.5; 95%CI (1.04 – 6.10, *p*=0.03)), primary education level (OR= 2.9; 95% CI (1.20 – 7.36, *p*=0.018)), rural (12;95%CI (3.61-45.90, *p*=0.007)), and being HIV positive (OR=19.6; 95%CI (8.1-47.66, *p*=0.006)).

Table 1. Socio-demographic Characteristics

Variables	Category	Frequencies	Percentages (%)
Sex	Female	136	100
Age	<20	12	8.8
	30-40	14	10.3
	40-50	60	44.1
	50-60	36	26.5
	>60	14	10.3
Martial	Single	16	11.8
	Married	101	74.3
	Widowed	12	8.8
	divorced	7	5.1
Education	Primary	86	63.2
	Secondary	50	36.8
Residence	Urban	87	64.0
	Rural	49	36.0
Occupation	Housewife	87	64.0
	Not housewife	49	36.0
Sex partners	Less than 5 sex partners	54	39.7
	More than 5 sex partners	82	60.3
The age of having first sex	under 19 years of ages	65	47.8
	Over 19 years of age	71	52.2
The age of being pregnant for the first time	under 19 years of age	80	58.8
	Over 19 years of age	56	41.2
Alcohol consumption	Yes	87	64.0
	No	49	36.0
HIV	Positive	87	64.0
	Negative	49	36.0
Pap smear	Negative	82	60.3
	Positive	54	37.7

DISCUSSION

A persistent HPV infection almost always causes cervical cancer. There are four steps in cervical cancer development: infection with HPV, viral persistence, precancerous changes, and invasive cervical cancer (18). Generally, precancerous changes often develop within five years of HPV infection, while invasive cervical cancer typically arises over 5–10 years in 20%–30% of patients with precancerous growths.

Table 2. Risk factors that are related to cervical cancer

Risk factor	Codes	Odds Ratio (95% CI)	*Pvalue*
Sex partners	More than 5 sex partners	2.5 (1.04- 6.17)	0.039*
	Less than 5 sex partners		
First sexual intercourse	Under 19 years of ages	0.8 (0.36 - 2.02)	0.857
	Over 19 years of ages		
First pregnancy	Under 19 years of ages	0.6 (0.29 - 2.19)	0.805
	Over 19 years of ages		
Education status	Primary	2.9 (1.20- 7.36)	0.018*
	Secondary		
Residence	Rural	12 (3.61- 45.90)	0.007*
	Urban		
Taking alcohol	Yes	2.4 (0.82 - 7.02)	0.115
	No		
HIV	Positive	19.6 (8.1 - 47.66)	0.006*
	Negative		

This study had the primary purpose of assessing the status of cervical cancer, most presented symptoms, and related risk factors for women diagnosed at Manini hospital. The mean age of the women who participated in this study was 39.33 years (SD = 12.8 years) (19). In this study, we found that 54(30.7%) of the women who participated in this study were had cervical cancer; this was proved by performing Pap test, these results were less than those reported by studies conducted by Kumari A et al., who reported 52% (20), and 66% reported by Pelzer et al. (21).
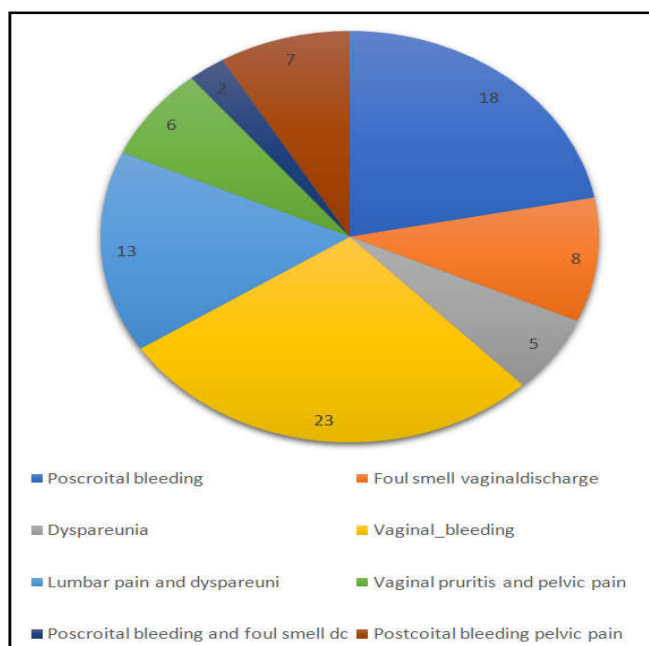

Figure 1. Identified clinical symptoms related to cervical cancer

We sought to see the most prevalent symptoms presented by the women who participated in this study.We found that patients showed different crucial cervical cancer symptoms such as postcoital bleeding, foul smell discharge, dyspareunia, vaginal bleeding,Vaginal pruritis, and pelvic pain,Lumbar pain, and dyspareunia,postcoital bleeding and foul smell discharge and Postcoital bleeding pelvic pain. However, vaginal bleeding was the most prevalent symptom, followed by postcoital bleeding, and our results agreed with a study performed by Amos D. Mwaka et al. (22) and Moodley et al. (23). Vaginal bleeding can be life-threatening in advanced disease, with an incidence ranging from 0.7% to 100%. Bleeding is the immediate cause of death in 6% of women with cervical cancer, and its management often poses a challenge (24).

In this study, we assessed risk factors that we believed to be related to cervical cancer. Through binary logistic regression, we found that more than five sex partners, primary education level, staying in rural areas, and being HIV positive were the factors that likely increased the likelihood of developing cervical cancer. Our results agreed with other published studies, such as a study conducted byZhi-Chang Liu et al., which revealed that people having multiple sex partners are more likely to get HPV which is the cause of cervical cancer, than people who do not have multiple sex partners (25). Moreover, we found that people with primary education are more likely to have cervical cancer than those with a secondary education level.One of the facts that can be related to this is that most of the people who have primary education do not know much about different prevention measures and our result was supported by a study conducted by Elias Bekele Wakwoya et al. (26). Furthermore, various studies have reported that staying in rural areas is a crucial risk factor for cervical cancer (27), which agrees with our results. On the other hand, we noted that also being HIV positive increased the risk of getting cervical cancer, and this was in agreement with a study which was performed in Senegal, which revealed that being HIV positive is a crucial risk factor for both cervical cancer and cervical intraepithelial neoplasia(28).

Conclusion

The study revealed that the prevalence of cervical cancer is low, and it has shown that the most prevalent symptoms are vaginal bleeding and postcoital bleeding. In addition, this study highlighted the factors that significantly increased the likelihood of developing cervical cancer; those factors are having more sex partners, primary education level, staying in rural areas, and being HIV infected. It is better to give special attention to patients who are at high risk of getting cervical cancer. Moreover, cervical cancer education has to be expanded to all women categories, and it is better to increase cancer treatment centers in all regions of the country.

Acknowledgments

Funding details

Abbreviations

GLOBOCAN: Global Cancer Observatory; HPV: Human Papilloma Virus; HIV: Human Immunodeficiency Virus; Pap Test: Papanicolaou Test; SPSS: Statistical Package for Social Science.

Authors'contibution

MH Conceptualization, writing, original drafting of the work and design of the work. AAGNsoftware and formal analysis.; JRI methodology and data curation. contributed to data acquisition.; YJ Supervision, validation, visualization and funding acquisionand final approval of the work.

Data Availability Statement: The data will be available upon request.

Conflicts of Interest: The authors declare no conflict of interest.

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