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Original Research Article

Prevalence of Cervical Cancer among Sexually Active Women Receiving Antiretroviral Therapy at First Referral Hospital, Mutum Biyu, Nigeria

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Abstract: ***Introduction*:** Despite improvements in antiretroviral therapy (ART) and cervical cancer screening, the incidence of cervical cancer remains disproportionately high among sexually active women in Nigeria. This study determined the prevalence and associated risk factors of cervical cancer among sexually active women receiving antiretroviral therapy at First Referral Hospital, Mutum Biyu, Nigeria. ***Material and Method*:** This is a survey study design that is evaluative in nature. Data were derived from respondents through interview and laboratory diagnosis and analyzed with Statistical Package for Social Sciences (SPSS) version 22 statistical software. The choice of this study design is informed by the fact that it enables a researcher to obtain data that may not be found in extant literature which can be utilized in testing hypotheses. ***Result*:** Majority 63% of the study population were not victims of cervical cancer while 37% of the study population were cervical cancer patients. The majority of respondents (58%) had never heard of cervical cancer, and an even larger proportion (89%) were unaware of cervical cancer screening. Awareness of cervical cancer among this population is thus notably low. ***Conclusion*:** There is low level of awareness about cervical cancer and it associated risk factors among sexually active women receiving antiretroviral therapy in the study area. Hence, the need for health education programs.

Keywords: Cervical Screening, Antiretroviral Therapy.

1.0 INTRODUCTION

About 60% of all adults living with HIV in Sub Saharan Africa (SSA) are women (Redfield *et al.,* 2019) and the incidence of cervical cancer among women with HIV is higher than women without HIV (Gaffing *et al*., 2016; Selji *et al.,* 2025). In 2012, 527,000 new cases of cervical cancer were reported globally with an estimate of 93,000 new cases and 57, 000 deaths in SSA (UNAIDS, 2020). By the next decade, experts revealed that approximately 500,000 mortalities will be recorded annually in the world due to cervical cancer with most of the cases in SSA (Mboumba *et al.,* 2017). Considering the elevated rates of cervical cancer in SSA (Gamde *et al.,* 2024a; Gamde *et al*., 2025a), with about half of the cases in West Africa (GLOBOCAN, 2021) and Nigeria a leading country in terms of incidence and mortality (Kafuruki *et al.,* 2013; Gamde *et al*., 2024).

Previous studies have shown that women with HIV have a higher risk of developing cervical cancer (Rohner *et al.,* 2020). In response to this increased risk, cervical cancer prevention among women with HIV is a priority designated at all levels of health governance, and HIV management protocols are beginning to integrate cervical cancer screening services as an important component of care and treatment to women with HIV (WHO, 2024). While cervical cancer screening is critical to prevent late presentation of cervical cancer and the increased risk of mortality at later stages (Mukama *et al.,* 2017), integrated screening services are not fully implemented in most HIV clinics across Africa (Kumakech *et al.,* 2015).

Despite advancements in antiretroviral therapy (ART) and cervical cancer screening, the incidence of cervical cancer remains disproportionately high among sexually active women receiving ART at the First Referral Hospital in Mutum Biyu, Taraba State. This study was conducted to the determine the prevalence at referral Hospital in Mutum Biyu Gassol Local Government, Taraba State, with an extensive capacity and mechanism for dispensing ARVs to patients, however, there are currently no available infrastructures or materials for screening services and education for

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women living with HIV. This study determined the prevalence and associated risk factors of cervical cancer among sexually active women receiving antiretroviral therapy at First Referral Hospital, Mutum Biyu, Nigeria.

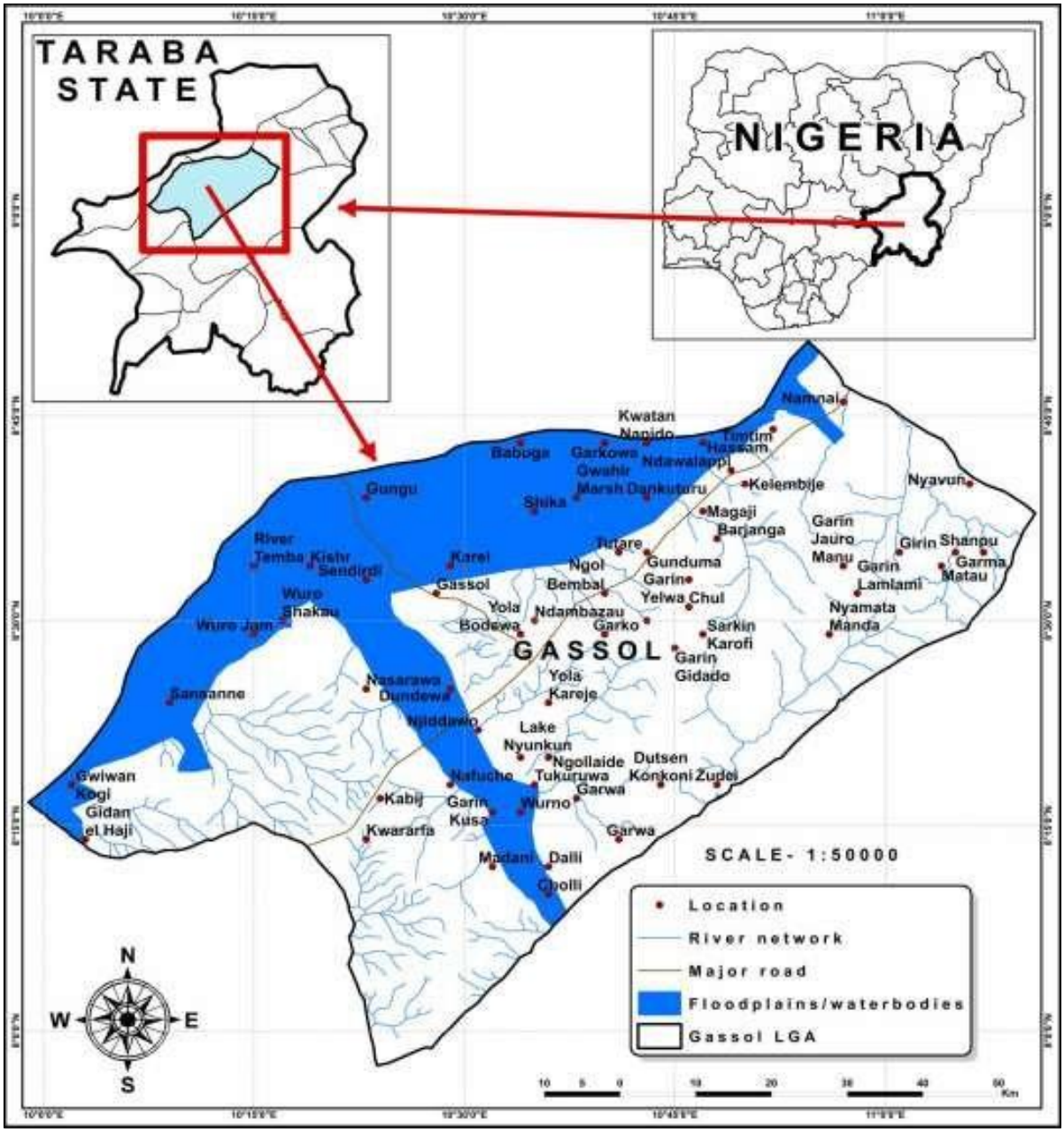
2.0 METHODOLOGY

2.1 Research Design

This is a survey study design that is evaluative in nature. This design derives data essentially from respondents through interview and laboratory diagnosis. The choice of this study design is informed by the fact that it enables a researcher to obtain data that may not be found in extant literature which can be utilized in testing hypotheses.

2.2 Area of the Study

Referral Hospital in Mutum Biyu is the study area. Mutum Biyu is located in Gassol Local Government Area in Taraba State, Nigeria. It is the headquarters of the Local Government on the A4 highway at 8°38′00″N 10°46′00″E. It has an area of 5,548 km2 and a population of 244,749 at the 2006 census with the postal code of the area is 672.



Source: Google map

2.3 Screening Population

HIV-positive women older than 18 years of age either on anti-retroviral therapy (ART) or ART naïve attending PEPFAR treatment clinics for HIV care are enrolled at both sites. Participants are women who voluntarily presented and gave informed consent for cervical cancer screening.

2.4 Screening Procedure

After obtaining informed consent, nurses obtained demographic and clinical information on all participants and examined the introitus and vulva, noting any abnormalities. A bivalve speculum was then introduced into the vagina for examination of the cervix using a halogen lamp. The squamo-columnar junction of the cervix (transformation zone) was identified and any secretions or exudate cleaned off before a nurse applied a cotton wool swab soaked in 5% acetic acid solution for 3 minutes. The results of each examination will be noted. Pre-cancerous lesions will be defined as being dense aceto-white lesions with well-defined margins observed within the vicinity of the transformation zone originating from the squamo-columnar junction, or if the whole cervix or cervical growth turned white. A suspicion of cancer was defined as any cervical ulcer or growth being observed. Following VIA, if there is any uncertainty about the lesion observed, visual inspection with Lugol's iodine (VILI) was conducted.

A positive VILI was characterized as being well-defined, bright yellow iodine non-uptake areas touching the squamo-columnar junction or close to the cervical Os if the squamo-columnar junction was not seen. Results of VIA or VILI were classified according to the International Agency for Research Against Cancer (IARC) manual and recorded after each test. Positive areas were mapped on case report forms and the number of positive lesions, the quadrant affected and degree of extension noted.

2.5 Quality Assurance

At the end of every week, quality assurance meetings were held with nurses and other staff to review all the result taken during the week, with the aim of assessing the nurses' visual detection skills and referral decisions. In those cases, where there is a missed diagnosis of clinical relevance the patient was recalled.

2.6 Statistical Analysis

Data was analyzed with Statistical Package for Social Sciences (SPSS) version 22 statistical software. Relative risk and 95% confidence intervals (95%CI) will be calculated using log-binomial regression models. Other data collected via was analyzed using descriptive statistics and simple percentage and tabulation.

2.7 Ethical Consideration

Ethical approval was obtained from the Human Research and Ethics Committee (HREC) of the Taraba State University, Jalingo. Written informed consent will be obtained from each respondent with assurance of confidentiality of information, right to withdraw from the study at any point in time and voluntariness of participation.

3.0 RESULT

Table 1 provides an overview of the sociodemographic and clinical characteristics of sexually active women receiving antiretroviral therapy at First Referral Hospital, Mutum Biyu, Taraba State. The age distribution shows that the majority (61.4%) are between 40-49 years, with the 30-39 age group being the second largest (19.3%). Regarding marital status, most participants are single (64.0%), while married women make up 31.3%. The educational qualification data reveals that the majority have secondary education (75.5%), with only a small fraction having tertiary education (18.7%). In terms of occupation, nearly half (47.7%) are farmers, followed by students (27.3%) and civil servants (16.7%). These characteristics provide valuable insights into the demographic profile of the study population, which can inform targeted interventions and healthcare planning.

Table 1: Sociodemographic and clinical characteristics

SEX	**Frequency**	**Percentage%**
AGE	**Frequency**	**Percentage%**
20-29	13	12.0
30-39	13	19.3
40-49	52	61.4
50-59	12	7.3
Total	100	**100.0**
MARITAL STATUS	**Frequency**	**Percentage%**
Single	53	64.0
Married	14	31.3
Divorced	13	2.0
Widowed	6	2.7
Unspecified	6	2.7
Total	100	**100.0**
EDU. QUALIFICATION	**Frequency**	**Percentage%**
Primary	1	6.0
Secondary	92	75.5
Tertiary	7	18.7
Total	100	**100.0**

OCCUPATION	Frequency	Percentage%
farmer	43	47.7
Civil servant	18	16.7
Student	21	27.3
Unemployed	8	9.3
Total	100	**100.0**

The results in figure 1 showed that majority 63% of the study population were not victims of cervical cancer while 37% of the study population were cervical cancer patients. The high prevalence of cervical cancer among the study population may be attributed to demographic or epidemiological characteristics specific to the region or group studied. For instance, factors such as limited access to preventive healthcare, and low screening rates.

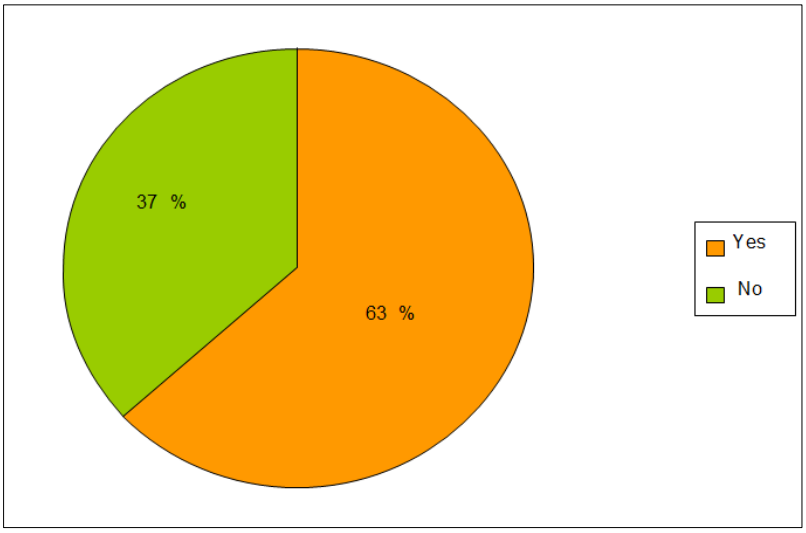


Figure 1: Prevalence of Cervical Cancer among Sexually Active Women

Table 2. presents data on risk factors associated with cervical cancer (CC) incidence among HIV-positive women at First Referral Hospital, Mutum Biyu, Taraba State. The majority of respondents (58%) had never heard of cervical cancer, and an even larger proportion (89%) were unaware of cervical cancer screening. Awareness of cervical cancer among this population is thus notably low. Knowledge of individuals with cervical cancer was also minimal, with only 4% reporting familiarity with someone affected by the disease. Furthermore, the prevalence of undergoing Pap smears was extremely low, with only 2% having had the test. This indicates a significant gap in preventive care.

Regarding known risk factors for cervical cancer, 51% identified multiple sexual partners as a risk factor, followed by early onset of sexual activity (31%), sexually transmitted infections (11%), and prolonged use of contraceptive pills (7%). This data underscores a critical need for increased awareness and preventive measures, highlighting a gap in both education and access to screening services for HIV-positive women at the hospital.

Table 2: Risk factors associated with cervical cancer

Risk Factors	Frequency	Percentage %
Ever heard of CC		
Yes	42	42%
No	58	58%
Ever heard of CC screening		
yes	11	11%
no	89	89%
Knew someone with CC		
yes	4	4%
no	96	96%
Ever had a Pap smear		
yes	2	2%
no	98	98%

Risk Factors	Frequency	Percentage %
Knew risk factors for CC		
Sexually transmitted infection	11	11%
Multiple sexual partners	51	51%
Early onset of sexual activity	31	31%
Prolonged use of contraceptive pill	7	7%

Table 3 explores the integration of cervical cancer screening into HIV care and treatment programs at First Referral Hospital, Mutum Biyu, Taraba State, comparing outcomes for HIV-negative and HIV-positive patients. Treatment Intent and Planned Treatment: The intent to offer palliative or radical treatment is similar for both groups, with a marginally higher percentage of HIV-positive patients receiving palliative care. Planned treatments like external beam radiotherapy and brachytherapy are nearly equally distributed between the two groups, though there are slightly more HIV-positive patients undergoing external boost and brachytherapy.

Treatment Interruptions: HIV-positive patients face higher rates of treatment interruptions (82%) compared to HIV-negative patients (53%), with significant differences due to patient defaulting, blood transfusions, and co-morbidities. The p-value indicates significant issues, particularly in blood transfusion needs ($p = 0.012$) and treatment interruptions overall ($p = 0.004$).

Radiation Treatment Deficit: HIV-positive patients experience a greater average deficit in radiation treatment (6.7 Gy) compared to HIV-negative patients (2.8 Gy), though the overall deficit isn't significantly different ($p = 0.120$). The proportion of patients with treatment deficits is higher among HIV-positive individuals (24%).

Treatment Completion and Toxicity: Fewer HIV-positive patients complete their treatment (76%) compared to HIV-negative patients (89%). HIV-positive patients also experience higher treatment toxicity, particularly ski n toxicity ($p = 0.040$) and overall toxicity ($p = 0.040$), indicating more severe side effects.

Table 3: The Integration of Cervical Cancer Screening into HIV Care and Treatment Programs

Treatment intent and outcomes	HIV negative n = 49 (%)	HIV positive n = 51 (%)	p-value
Treatment intent			
Palliative	4	7	0.530
Radical	43	44	
Planned treatment			
External beam radiotherapy	47	51	
External boost	6	8	
Brachytherapy	32	29	
Concurrent chemotherapy	34	38	
Treatment interruptions			
Patient defaulted	6 (13)	6 (12)	0.004
Hospital related	11 (24)	11 (22)	
Blood transfusion	2 (4)	8 (16)	
Co-morbidity	7 (15)	14 (28)	
Total interruptions	24 (53)	41 (82)	
Radiation treatment deficit (Gy)			
Total treatment deficit	131	340	0.120
Patients with treatment deficits	5 (11)	12 (24)	
Average deficit of total group	2.8	6.7	0.021
Average deficit of incompletely treated	26.2	28.3	
Treatment completion	42 (89)	39 (76)	0.060
Blood transfusion during treatment	13 (25)	25 (50)	0.012
Treatment toxicity			
Skin	4	12	0.040
Bladder	3	6	0.290
Gastrointestinal	1	0	0.480
Haematological	1	1	0.730
Total	**9**	**19**	**0.040**

4.0 DISCUSSION

Cervical cancer is a major public health issue worldwide and remains one of the most common malignancies among women in Taraba State. The present data show that cervical cancer awareness was poor among women attending an HIV at First Referral Hospital, Mutum Biyu, Taraba **S**tat**e**. About 80% of the HIV clinic population had never heard of cervical cancer and its screening. This finding is consistent with other studies that reported lack of awareness about cervical cancer among HIV-positive women in other countries (Firnhaber *et al.,* 2010). However, it contrasts with similar studies carried out in South Africa and Kenya, where HIV-positive women were found to be well informed about this disease (Firnhaber *et al.,* 2010). This difference might be attributed to the fact that these two countries have a national cervical cancer screening policy. In our study, younger and women who never attended school were less aware about cervical cancer compared with school-educated women. This agrees with data from studies conducted in other low-income countries like Nigeria. Education encourages female empowerment and may improve women's knowledge of safe sex practices. Nulliparous women showed limited awareness about cervical cancer. This might be explained by the fact that they have never attended maternal and child health clinics.

In this study, there was no good source of information (17.4%) for most women, and only 4.2% of them reported health professionals as their source of information. This is in line with a study from Nigeria, where mass media was identified as the major source of information (23%) about cervical cancer. The role of media in the transfer of knowledge may become more effective when Taraba will use it more actively in a policy of cancer prevention.

Having information on the causes and risk factors of cervical cancer is beneficial for a woman to take preventive measures and to change behaviour. In this regard, none of the women knew that HPV infection is a cause of cervical cancer. Generally, there was low knowledge of the risk factors for cervical cancer, which is in agreement with the findings of similar studies reported in Nigeria and Zimbabwe (Nega *et al.,* 2018; Gamde *et al*., 2024; Gamde *et al*., 2025b). Interestingly, the minority (20.9%) of women aware of cervical cancer were able to recognize at least one risk factor, such as STIs, multiple sexual partners, early onset of sexual activity, prolonged use of contraceptive pill and smoking. The abysmal level of knowledge among the youngest, unschooled and nulliparous population highlights the urgent need to improve education about cervical cancer prevention by vaccines and screening.41 We suggest that HIV care providers need to have health education sessions about cervical cancer risk factors when managing highly vulnerable women.

Another significant finding revealed that only few women in our study had undergone a Pap smear test. This is consistent with the fact that the majority of women (80.9%) were not aware of cervical cancer. This result confirms previous reports of low screening coverage among HIV-infected women, ranging from 9% in Tanzania,42 10% in Nigeria,37 to 13% in South Africa. This low screening rate underscores the fact that women are not informed of the importance and benefits of the Pap smear test in the prevention of cervical cancer.

According to the results of our study, the main reason cited for not undergoing Pap smear was the absence of symptoms (47%). A similar reason was also reported by 46% of Lao women infected with HIV (Nega *et al.,* 2018) and 67% of female sex workers in a Thai study (Palefsky *et al*., 2020). This might be explained by lack of awareness among women on the natural history of cervical cancer and the principle of smear test screening. This stresses the necessity of including information about the natural course of cervical cancer in health prevention programmes.

A worrisome finding in this study is that more than 90% of the respondents did not know that cervical cancer can be prevented, which is consistent with the findings of (Eze *et al.,* 2020) who reported that few women had knowledge of the prevention of cervical cancer. Moreover, only 19.2% of the respondents knew that cervical cancer can be treated, which is low compared with two studies from China where about 81% of the respondents were knowledgeable of the potential curability of cervical cancer.

5.0 CONCLUSION

Our data demonstrated a low level of awareness about cervical cancer and its associated risk factors among HIV-positive in the study area. Consequently, there is an over-riding need to implement and strengthen health education programmes on cervical cancer and its prevention in HIV treatment centres in Nigeria.

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