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Outcome and Barriers to Cervical Cancer Screening Amongst Human Immunodeficiency Virus-Positive Women Attending Aminu Kano Teaching Hospital, Kano State, Nigeria

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Abstract

Sub-Saharan Africa carries the overwhelming share of the global burden of human immunodeficiency virus (HIV) infection and of HIV-associated cervical cancer. Screening is an effective strategy for the prevention, early diagnosis and prompt management of cervical precancerous lesions among HIV-positive women. This study assessed the outcome and barriers to cervical cancer screening among HIV-positive women attending Aminu Kano Teaching Hospital, Kano. Using a cross sectional study design, a pro forma was used to collect data and screen 740 HIV-positive women. Screening was done using visual inspection with acetic acid and Lugol's iodine and the data were analysed using SPSS version 24.0. The age of the patients ranged from 25 to 49 years with a mean age of 30.7 ± 2.4 years. Majority (n=698; 94.3%) were ≥ 30 years and married (n=592; 80.0%). Almost half (n=362; 48.9%) had

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secondary level of education and many (n=520; 70.3%) were unemployed. A few (n=42; 5.7%) had positive results on visual inspection with acetic acid and a lesser proportion (n=26; 3.5%) had positive screening results on visual inspection with Lugol's iodine. Lack of awareness of screening services for cervical cancer was found to be a barrier to cervical cancer screening and treatment among two-thirds (n=565; 76.4%) of the patients while a substantial proportion (n=592; 80.0%) reported that their personal belief which was strengthened by their religion prevented them from accessing cervical cancer screening services. Also, two-thirds (n=493; 66.6%) agreed that their culture which considers cervical screening a taboo was a barrier to screening. There is a need for targeted and enhanced education with counselling to optimize the uptake of screening for cervical cancer among HIV-positive women in HIV treatment centers. The generated data can guide in the provision of evidence-based policy and decision-making.

Keywords: Human Immunodeficiency Virus, Cervical Cancer, Screening, Women and Kano

INTRODUCTION

Sub-Saharan Africa (SSA) carries the overwhelming share of the global burden of human immunodeficiency virus (HIV) infection and of HIV-associated cervical cancer (Khalil *et al*., 2022). Screening for cervical cancer is an effective strategy for the prevention, early diagnosis, and prompt management of precancerous cervical lesions among HIV-positive women (Ononogbu *et al.,* 2013). Cervical cancer is the second most common cancer in women globally, affecting women, communities and society (Wanyenze *et al.,* 2017). There is a marked difference in prevalence of cervical cancer between developed, low-and middle-income countries (LMIC) (WHO, 2013). While the LMIC contributed 83% of all cases of global burden of cervical cancers, it had only an average of 19% cancer screening services compared to higher income countries with 63% screening coverage (Johnson *et al*., 2018; Uy *et al*., 2017). An estimated 604,237 women were diagnosed with cervical cancer which represents 6.5% of all female cancers in 2020 (Uy *et al.,* 2017). Up to 90% of these women were in less developed countries where access to prevention, screening, and treatment is limited (Uy *et al*., 2017).

Globally, cervical cancer is the most common cancer diagnosed in women living with HIV and its often classified as an acquired immunodeficiency syndrome (AIDs) defining illness (Rosser *et al*., 2017). A woman living with HIV (WLHIV) is six times more likely to have cervical cancer than an HIV-negative woman (Uy *et al*., 2017; Rosser *et al*., 2017). The global burden of cervical cancer in women living with HIV in 2018 was 5.8% but was much higher (25%) in Africa (Levi *et al*., 2016). Earlier in Nigeria, a study conducted in north central reported the prevalence of cervical pre-cancer and cancer among WLHIV as 6% (Ononogbu *et al*., 2013).

Cervical cancer is preventable by early screening and intervention at the precancerous stage due to its low progression pathology (McFarland *et al.,* 2016). A number of developing countries including Nigeria introduced visual inspection screening methods to ensure screening and prevention of cervical cancer among HIV-positive women (Huchko *et al*., 2015). The implementation of a cervical cancer screening program with technically appropriate detection methods could reduce morbidity and mortality among women living with HIV because they are at increased risk of infection with human papilloma virus (HPV) which results in cervical abnormalities and changes (Firnhaber *et al.,* 2013). Visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI) are increasingly recommended in various cervical cancer screening protocols in low-resource settings; although VIA is more widely used, VILI has been advocated as an easier and more specific screening test (Huchko *et al.,* 2015). In many developing countries where pap smear and colposcopy are not available, both VIA and VILI remain very helpful tools in picking up

abnormal-looking cervix which can then be confirmed by pap smear or colposcopy especially among individuals at high risk of cervical cancer such as WLHIV (Paswan *et al*., 2018). It's expected that screening using any of the two methods can go a long way in reducing the incidence of cervical carcinoma among HIV-positive women.

There is a great difference in the prognosis of the cases diagnosed early as compared to those diagnosed in advanced stages (Paswan *et al*., 2018). Thus, there is an urgent need to scale up coverage of cervical cancer screening services and reduce or eliminate cervical cancer as one of major public health problems in the future and limit the disparities on the disease burden among HIV positive women, especially in countries with weak health system. Therefore, this study was conducted to determine the outcome of cervical cancer screening among HIV positive women attending Aminu Kano Teaching Hospital, Kano, Nigeria. Again, the barriers to the treatment of cervical cancer and reasons behind the uptake of cervical cancer screening among HIV-positive patients attending the hospital were assessed.

METHODOLOGY

Study Area

Kano State is one of the 36 states of the Federal Republic of Nigeria located in north-western Nigeria in a semi-arid region located between latitudes 10.30^{o}N to 13^{o}N and longitude 7.40^{o}E and 10.39^{o}E. The state is the largest commercial centre of northern Nigeria; bordered by Jigawa State in the north-east, Katsina State in the north-west and Kaduna State is on the southern boundary and Bauchi in the south-east. It has 44 Local Government Areas (LGAs) and 484 political wards [National Population Census (NPC), 2006]. It has a total land area of 20,760 square kilometers and the inhabitants are mainly Hausa-Fulani, with a substantial proportion constituting other ethnic groups such as Igbo and Yoruba ethnic groups. Majority are Muslims by religion. It is one of the most populous states in the country (NPC., 2006) with a projected population of 15,172,462 for the year 2023. The state has a prevalence of 0.6% (CI: 0.3- 0.9) for HIV/AIDS [Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS), 2019].

Study Setting

The study site was Aminu Kano Teaching Hospital (AKTH), a tertiary health institution under the Federal Ministry of Health commissioned on the 24th of August 1988. The hospital is a 700-bedded hospital and receives patients from within Kano and the neighboring states of Jigawa, Katsina, Kaduna, Bauchi and Zamfara states. AKTH serves both as a tertiary and referral health Centre. The anteretroviral therapy (ART) clinic of the hospital, also known as the S.S. Wali ART centre offers treatment and support services to patients daily. These include counseling, laboratory tests, clinical examinations, and home-based care.

WLHIV are managed at the S.S Wali ART clinic where screening for cervical cancer is done using visual inspection with acetic acid and Lugol's iodine by trained nurses/midwives and supervised by at least one medical doctor.

Study Design and Population

The study was cross-sectional in design. A pro forma was used to collect data and screen the HIV-positive women attending the ART clinic. HIV-positive women aged between 25 and 49 years were studied. Patients who had given birth within the last 12 weeks, had treatment for precancerous cervical lesions or cervical cancer, and those with previous history of known allergy to acetic acid or Lugol's iodine were excluded.

Sample Size

The study period was from 25th March 2020 to 17th July 2023. A total of 740 eligible HIV-positive women aged between 25 and 49 years were screened in the period.

Data Collection

A pro forma was used to collect patients' socio-demographic characteristics, results of the visual inspection and perceived reasons for accessing cervical screening services. A trained medical officer assisted by three trained nurses screened the eligible patients. After obtaining the consent of the patients, they were directed to a private examination room. The patients were made comfortable, put in lithotomy position and a sterile Cusco's self-retaining vaginal speculum was inserted. The cervix was bathed with 5% acetic acid and a visual inspection done (Pole *et al*., 2015). Appearance of any distinct acetowhite area in the transformation zone was considered as VIA positive (Ghosh *et al*., 2012 and Denslow *et al*, 2014). After 2 minutes of the VIA, normal saline was applied to the cervix and the Lugol's iodine applied. Iodine uptake was noted as brown (positive uptake), yellow brown (partial uptake) and mustard yellow (no uptake). Areas of no uptake were considered as VILI negative while areas of partial and positive uptake were considered as VILI positive (Ghosh *et al.,* 2012). The same observer then carried out a colposcopy after one hour or the next visit. Patients with positive results for any of the tests had cervical biopsy, endocervical curettage and referred to the gynaecologist for further management.

Ethical Considerations

Approval for the conduct of the study was obtained from the Kano State Health Research and Ethics Committee with reference number - SHREC/2023/4073. All necessary information was read to the participants including assuring confidentiality, anonymity, benefits of the study, and freedom to withdraw at any time. Once understood and accepted, the participants signed or thumb-printed the informed consent form.

Statistical Analysis

Data collected were cleaned, coded and entered into Excel Spreadsheet on Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0. Quantitative variables that were normally distributed were summarized and presented using mean and standard deviation, while qualitative variables were summarized and presented using frequencies and percentages.

RESULTS

The age of the patients ranged from 25 to 49 years with a mean age of 30.7 ± 2.4 years. The majority (n=698; 94.3%) were ≥ 30 years old and married (n=592; 80.0%). Almost half (n=362; 48.9%) had a secondary level of education and many (n=520; 70.3%) were unemployed. Majority of the respondents (n=334; 45.1%) were on first-line regimen (TDF/3TC/DTG or ABC/3TC/DTG) and almost all the clients (98.1%) had suppressed viral load of less than 1,000 copies per/mL (Table 1).

Table 1: Socio-demographic characteristics of respondents

The majority (n=698; 94.3%) of the patients were aged ≥30 years, were married (n=592; 80.0%) and were on first-line regimen (n= 613; 82.8%) (Table 1).

Variable(s)	Frequency (n=740)	Percentage (%)
Age group (years)		
<30	42	5.7
≥30	698	94.3
Weight (kg)		
20-69.9	478	64.6
70-90	215	29.1
90+	47	6.4
Educational status		
None	129	17.4
Qur'anic	150	20.3
Primary	99	13.4
Secondary	362	48.9
Marital status		
Divorce	5	0.7
Single	107	14.4
Separated	6	0.8
Widow	30	4.1
Married	592	80.0
Occupational status		
Employed	220	29.7
Unemployed	520	70.3
First regimen		
First line	334	45.1
Second line	2	0.3
Old first line	204	27.6
Transferred in on first line	200	27.0
Current regimen		
First line	613	82.8
Second line	127	17.2
Viral load (copies per/mL)		
0 - 999.9	726	98.1
≥1000	14	1.9

Table 2: Outcome of cervical cancer screening using visual inspection with acetic acid

Outcome	Frequency (n=740)	Percentage (%)
Positive	42	5.7
Negative	698	94.3

A few (n=42; 5.7%) of the patients had positive screening results on visual inspection with acetic acid (table 2).

Table 3: Outcome of cervical cancer screening using visual inspection with Lugol's iodine

Outcome	Frequency (n=740)	Percentage (%)
Positive	26	3.5
Negative	714	96.5

A lesser proportion (n=26; 3.5%) had positive screening results on visual inspection with Lugol's Iodine (Table 3).

Table 4: Perceived barriers to cervical cancer prevention, screening and treatment.

Variable	Frequency (n=740)	Percentage (%)
Awareness		
Yes	175	23.6
No	565	76.4
Belief/religion		
Yes	592	80.0
No	148	20.0
Culture		
Yes	493	66.6
No	247	33.4

Lack of awareness of screening services for cervical cancer was found to be a barrier to cervical cancer screening, prevention and treatment among two-thirds (n=565; 76.4%) of the patients while a substantial proportion (n=592; 80.0%) reported that their personal belief strengthened by their religion prevented them from accessing cervical cancer screening services. Also, two-thirds (n=493; 66.6%) agreed that their culture which considers cervical screening a taboo was a barrier to screening (Table 4).

Table 5: Reasons for utilization or non-utilization of cervical cancer screening

Variable	Frequency (n=740)	Percentage (%)
Accessibility to screening services		
Accessible	596	80.5
Non accessible	144	19.5
Permission by spouse		
Permitted	646	87.3
Non permitted	94	12.7
Cost		
Affordable	654	88.4
Non affordable	86	11.6

Permission by spouse was found to be a major reason for non-utilization of cervical cancer screening according to majority of the clients (n=646; 87.3%) as they required their husbands' permission to utilize services even if the services were readily available. Similarly, the cost of transportation to the hospital and the cost of treating cervical precancerous lesions or cancer in case their screening outcome turned out to be positive (n=654; 88.4%) was also found to be one of the reason for non-utilization of cervical cancer screening (Table 5).

DISCUSSION

The study noted that majority of the patients were in their third and fourth decades of life. This is a critical stage of life and HIV/AIDS with its potential sequelae may have significant consequences on the overall well-being, economic productivity, sexual and reproductive health of the patients. This finding is similar to the previous report of Yakasai *et al* (2013). The use of visual inspection with acetic acid approach in the context of a "screen-and-treat" protocol in developing countries is currently recommended by the WHO guidelines (WHO, 2014). This method is often coupled with visual inspection with Lugol's iodine and is reported to improve the performance of VIA on HIV-positive women (Huchko *et al*., 2014). A few of the patients (5.7%) had positive results on visual inspection with acetic acid and a lesser proportion (3.5%) had positive screening results on visual inspection with Lugol's iodine. The results are similar to the findings of Ononogbu *et al* (2013) amongst HIV-positive women that participated in the cervical cancer screen-and-treat program in Abuja, north central Nigeria. These authors found a 6% prevalence of cervical precancerous lesions among HIV-positive

women screened in their study. Contrastingly, in Sokoto, northwest Nigeria, an assessment of cervical smears of infertile women attending the gynaecological clinic noted a higher proportion (11.3%) of cervical intraepithelial lesions among the women (Nnadi *et al.,* 2014). However, a higher number, one in three of HIV-positive women receiving care at the Ottawa clinic (Canada) who underwent cervical screening had at least one abnormal test result (Leece *et al.,* 2010). The outcome of cervical screening rate for HIV-positive women in our study is lower compared with the three studies reported above. Issues around estimation of cervical screening positivity may be responsible for this (Leece *et al*., 2010; Bowman *et al*., 1997). It's generally recognised that HIV-positive women are at a higher risk of developing cervical cancer due to their compromised immune systems, which can lead to a higher prevalence of persistent HPV infections, which is a major risk factor for cervical cancer (Stelzle *et al.,* 2021). More so, rapid progression and higher rates of cervical intraepithelial neoplasia are seen among HPV and HIV co-infected individuals, and often the disease progression remain unaffected by use of anti-retroviral therapy (Uy *et al.,* 2017; Rosser *et al.,* 2017; Stelzle *et al*., 2021).

About two-thirds of the patients screened in this study were not aware of cervical screening services and this constituted a barrier to accessing preventive and treatment services. Lack of awareness of a health or health-related service contributes largely to low uptake and utilization of services (National Academies of Sciences, 2018). A similar finding was noted in a study conducted on the perceptions of barriers and facilitators to cervical cancer screening among low-income, HIV-infected women from an integrated HIV clinic in Abidjan (Fletcher *et al*., 2014). Many of the WLHIV reported their reason for never screening for cervical cancer as the lack of information (Fletcher *et al*., 2014). The majority of the patients reported that their personal and religious beliefs prevented them from accessing cervical cancer screening services. Patients have often refused access to care or services because of their personal belief intertwined with religious beliefs. This has been commonly reported, particularly for diseases with fatal or poor prognosis (Swihart., *et al*). Also contributory among two-thirds of the patients was the notion that their culture considered cervical screening a taboo. Largely, healthcare seeking behaviours of humans are issues ingrained in the individual's beliefs, religion and culture (UNESCO, 2002; Swihart., *et al*).

Improving awareness and uptake of screening services for cervical cancer among WLHIV in Nigeria is crucial to reduce the incidence of the disease among this vulnerable population. Recent studies in Nigeria suggests that there is a need to improve awareness and uptake of screening through strategies such as health promotion campaigns, community outreach programs and integration of cervical cancer screening as an effective strategy for the prevention and treatment of HIV/AIDS (Ezechi., et al 2013; Najjuka.,et al 2022)

The individual's perceived need for utilization of health services is often enhanced by the service's accessibility, affordability, and availability (National Academies of Sciences, 2018). As patients reported in this study, access to the health facility, permission from spouse and affordability were not barriers to accessing cervical screening services. However, their level of awareness of the service with their beliefs, culture, and religion largely prevented them from utilizing the screening services. To improve the uptake of cervical cancer screening, it is critical to improve health education and awareness among women living with HIV, by reshaping the hospital-based communication approach for cervical cancer screening (Bayu *et al.,* 2016). Oftentimes, communications on cervical cancer prevention services are standardized and not adapted or tailored to the social context of HIV-positive women in developing countries (Tchounga *et al*., 2019). A specific educational programme, which uses

culturally sensitive and linguistically appropriate strategies to deliver a tailored cervical cancer prevention message could enhance awareness among WLHIV and increase access to cervical cancer screening (Rosser *et al*., 2015; Firnhaber *et al*., 2013). Furthermore, a collaboration between cervical cancer screening providers and community health educators is critical to improve the understanding of health education messages as reported in previous research (Heard, 2009).

In addition to patients-related barriers, providers-related barriers such as lack of knowledge and failure to inform or encourage HIV-positive women to be screened have been reported as important factors influencing cervical cancer screening uptake (Robbins *et al*., 2017). Researchers have noted the role of healthcare providers as being central in the decision of WLHIV to get screened (Moodley *et al*., 2001; Robbins *et al*., 2017).

CONCLUSION

A few of the patients had positive results on visual inspection with acetic acid and a lesser proportion had positive screening results on visual inspection with Lugol's iodine. There is need to structure and intensify health education and counselling interventions that contextualize individual and setting characteristics to optimize uptake of cervical cancer screening among HIV-positive women in HIV treatment centers. Furthermore, future studies in this setting should explore provider-related factors that affect uptake of the screening services among WLHIV.

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