



self-inoculation, waterborne transmittal and vertical transmission. The natural history of cervical cancer is represented by HPV acquisition, HPV persistence, progression to precancerous lesions, and finally to invasive cervical cancer. The natural history of cervical cancer is represented by HPV acquisition, HPV persistence, progression to precancerous lesions, and finally to invasive cervical cancer.

Objective: This study aimed to explore the increase in incidences of early onset cervical cancer among Negative women, including teenagers, presenting at the Oncology Clinic of the University of Nairobi.

Methodology: A cross-sectional study was conducted in the Oncology Clinic of the University of Nairobi from 2018 to 2020. The study included 100 women aged 15-25 years who were newly diagnosed with cervical cancer. The study included 100 women aged 15-25 years who were newly diagnosed with cervical cancer.

Findings: The study revealed that 15% of the women were teenagers (aged 15-19 years). The majority of the women (85%) were aged 20-25 years. The study revealed that 15% of the women were teenagers (aged 15-19 years). The majority of the women (85%) were aged 20-25 years.

Conclusion: The study revealed that there is an increase in the incidence of early onset cervical cancer among teenagers. The study revealed that there is an increase in the incidence of early onset cervical cancer among teenagers.

In Kenya, Cervical cancer contributes approximately 12% of all cancer cases diagnosed, and is the leading cause of all cancer deaths, with over 3,200 deaths reported in 2020 [1]. The uptake of screening is low (approximately 16% in 2015) [6] and only a quarter of 2,927 sampled health facilities offered screening in 2018, [6] despite the fact that Kenya has been implementing a national screening programme for more than a decade [7].

The HIV/AIDS epidemic led to Early Onset incidences of cervical cancer at a global level, with increasing incidence in women below 40 years of age, compared to the previous age - set of women in their 6th-

cervical cancer [10,11].

who were of the ages 13-35 years old were purposively selected. The samples consisted of HIV +VE and HIV-VE patients with Early Onset cervical cancer, and were being treated at the oncology clinic of the JOOTRH, since the inception of the clinic in January 2012-2019 December. In the period of 2020-2021, participants were purposively selected using maximum variation sampling strategy as they were diagnosed and registered in the Oncology clinic. The patients were drawn from different population categories of ethnicities, socio-economic statuses, place of residences, level of education and religion. A total sample size of 52 cases was selected, in the period of 2012 - 2019 and a sample of 86 participants was recruited actively in the prospective period of 2020 - 2021.

Procedure and research design

This was a mixed-methods study design, including both quantitative and qualitative components. The quantitative components focused on age sets, HIV statuses, cervical cancer vaccination, screening, diagnosis, histology results, FIGO Staging in the period of 2012-2019 and 2020-2021 data reviews and analysis, with data sources being the patient files in the former period while using clinical research forms and other source documents in the latter period. The qualitative component involved evaluating knowledge about cervical cancer, sourced through review of files and use of clinical research forms and semi-structured interviews in the former and latter periods respectively. The study was based on the JOOTRH's Oncology Clinic services to patients with early onset cervical cancer in both periods, within the age set of 13-35 years old.

Study period

The review of files was done for the period of 8 years since the inception of the Oncology in January 2012 to December 2019 (2012-2019), and the period of active recruitment, collection of data with clinical research forms and other source documents was in the period of September 2020 to September 2021 (2020-2021).

Measurement

Data was collected using structured document analysis forms and lists in the period of 2012-2019, while clinical research forms and semi-structured interviews were used for data collection in the period of 2020-2021. The study specifically sought to determine the incidences of early onset cervical cancer cases, HIV-status, the patients' demographics, knowledge of cancer, vaccinated against HPV, screening, stage of disease and histological results of the cancer tissues.

The primary outcome variable was the incidences of Early Onset Cancer of the cervix in both HIV Positive and Negative women of ages 13-35 years old. This variable was measured through all the reviewed files in the period 2012 - 2019 and of the actively recruited patients in the period 2020 - 2021.

The quantitative data were analyzed using Epi Info™ 7.0 (US CDC, Atlanta, GA). The qualitative data was thematically tabulated while the quantitative data was summarized in trend series (bar charts and line graphs).

Ethical considerations

All the documents analyzed and patients recruited in this study were accessed after getting an approval from the JOOTRH's Ethical Review Committee (I.E.R.C) and expressed informed consent from the recruited patients. There was no patient who was coerced into joining the study and those who declined were not denied the state they declines).

Patients aged 13-19 (teenagers)=6
Hence Percentage = $\frac{6}{49} \times 100 = 12.24\%$ teenagers were diagnosed with early onset cervical cancer in this period.

As compared to the incidence of teenagers with early onset cervical cancer in the Period 2012-2019

Total HIV VE (13-35)=49

Patients aged 13-19 (teenagers)=1
Hence Percentage = $\frac{1}{22} \times 100 = 4.54\%$ Actual 110.9(d 201

Citation: Ajwang A, Ogutu G, Rogo K, Otoi S, Beltman J, et al. (2023) Are Non-Sexual and Vertical HPV Transmission Increasing the Incidence of Early Onset Cancers in HIV Negative Teenagers in Western Kenya? – A Case Study of Jaramogi Oginga Odinga Teaching and Referral Hospital. *Cervical Cancer*, 8: 185.

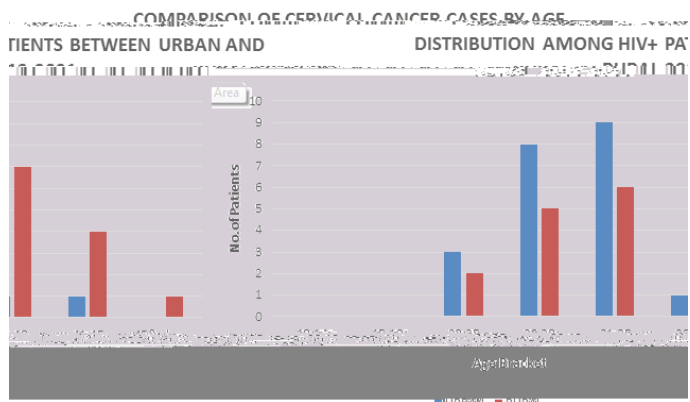


Figure 2: Comparison of Cervical Cancer Cases by Age Distribution Among HIV+ Patients Between Urban and Rural Settings.

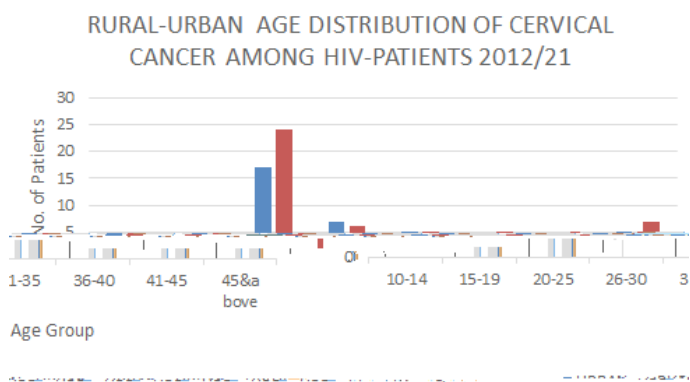


Figure 3: Rural-Urban Age Distribution of Cervical Cancer Among HIV-Patients 2012/21

4 patients aged between 15-19 in rural presented cervical cancer cases, in the 2020-2021 period of study.

The prevalent age bracket is 20-25 years old and biased towards rural patients, even though the first period of review is longer at 8 years (2012-2019), while the second period of study is shorter at one year (2020-2021).

There is a higher percentage of rural residing HIV negative (HIV -VE) young women (<35 years of age), diagnosed with cancer of the cervix in the 2020-2021 period of study at 57% , compared with 43% residing in the urban centers.

The first period of study although is a longer duration of eight years, 2012-2019, the young (<35 years old) HIV negative (HIV -VE) women diagnosed at FIGO Stages III and IV, are at 80% for those residents of the rural settings, as compared to 20% of those who reside in the urban centers.

There is a preponderance of young (<35 years of age) HIV negative (HIV -VE) women being diagnosed at advanced stages (FIGO Stages III and IV) of cancer of the cervix at 74% residing in the rural areas, as compared to 26% urban dwellers, all in a period of one year 2020-2021 of study (Figure 4).

Although 2012-2019 period is long, only one patient below 20 years old (13yrs) presented with cervical cancer, and it is in rural area. No urban case featured in the below 20 years during that period.

Most incidences in the period was in age group 20-25 mostly in rural areas, but during the longer period of eight years (2012-2019)

of study from year of inception of oncology clinic to end of 2019, the year of review.

The first period of study although is a longer duration of eight years, 2012-2019, the young (<35 years old) HIV negative (HIV -VE) women diagnosed at FIGO Stages III and IV, are at 80% for those residents of the rural settings, as compared to 20% of those who reside in the urban centers (Figure 5).

During this period, there were more cervical cancer cases than the previous one.

There are more cervical cancer cases in very young women in this one year 2020-2021 study period, than in the longer 8 year 2012-2019 study period, i.e., patients below 19 years than in the previous period.

There are more cases in rural than urban.

The most prevalent age group is 20-25 biased in favour of rural residents.

There is a higher percentage of rural residing HIV negative (HIV -VE) young women (<35 years of age), diagnosed with cancer of the cervix in the 2020-2021 study period, at 57%, compared with 43% residing in the urban centers.

There is a preponderance of young (<35 years of age) HIV negative (HIV -VE) women being diagnosed at advanced stages (FIGO Stages III and IV) of cancer of the cervix at 74% residing in the rural areas, as compared to 26% urban dwellers, all in a period of one year of study 2020-2021 (Figure 6).

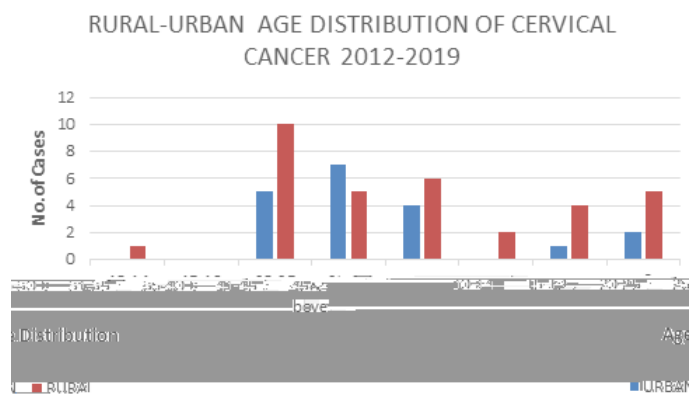


Figure 4: Rural-Urban Age Distribution of Cervical Cancer 2012-2019

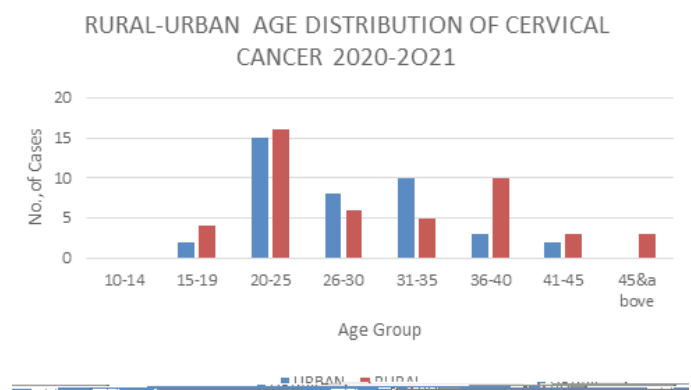


Figure 5: Rural-Urban Age Distribution of Cervical Cancer 2020-2021

may be involved in the cases of these teenagers, even for the high risk HPV type 16.

These patients were also diagnosed in advanced stages (Figo Stages III and IV) of cancer of the cervix, with poor prognosis.

We did not do HPV laboratory investigations in this study, hence we did not identify and isolate the types of the HPV's that had infected these teenagers.

Recommendations

The study highly recommends a multi-center, multi-country longitudinal cohort study using electronic health records and/or early-life bio-specimen collection, from ante-natal period of mothers with HPV, until these newborns become sexually active, to find out if some of the participants will develop invasive carcinoma, before they start being infected with HPV's sexually. The types of HPV should also be isolated from the mother and the children. The study also recommends raising awareness of the early-onset cancer of the cervix amongst teenage girls and young women and improving the early-life environment as immediate goals: these are likely to reduce the burden of both early-onset and late onset cancers. The study also recommends raising awareness and knowledge about small cell neuroendocrine cancer of the cervix amongst medics; so that they can intensify the early screening and reduce age at start of screening for cancer, identification of HPV's and their subtypes and initiate aggressive treatment for it. Another recommendation is increasing the general knowledge and awareness of cancer of the cervix, in schools, places of worship, social spaces, funerals and all relevant gatherings that information about cancer of the cervix can be given. The policy of routine HPV vaccination and early screening of cancer of the cervix in all sexually active women should continue and spread all over the country even to the remotest rural areas to benefit women in those regions. This routine early screening should be done to both the young HIV-VE and HIV +VE women in the entire country.

This study did not involve laboratory investigations of HPV types, hence it needs a follow up research that will involve taking cervical smears to the laboratory to investigate the presence of HPV in the cervix of the respective patients, identify the various types of the HPV, ascertain if there are particular patients who have a combination or mixed presence of two or more HPV types.

Source of Funding

The PhD candidate used his funds, and was helped by the personnel at the hospital, together with volunteering students and the investigators availed their expertise locally to conduct the study. We used the local hospital paper records in the cabinets of the oncology department and the records office. Uziama University School of Medicine supported the study by availing the volunteering students.

References

1. Ajwang A, Ogutu G, Rogo K, Otoi S, Beltman J, et al. (2023) Are Non-Sexual and Vertical HPV Transmission Increasing the Incidence of Early Onset Cancers in HIV Negative Teenagers in Western Kenya? – A Case Study of Jaramogi Oginga Odinga Teaching and Referral Hospital. *Cervical Cancer*, 8: 185.

