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Prevalence of Cervical Cancer and Associating Factors among HIV Infected Women of Omaruru District in Namibia

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Abstract

In 2015 Namibia reported 55 deaths due to cervical cancer, and the prevalence of HIV was 13,3% among adults aged between 15 -49. There is an increased risk of cervical cancer among women living with HIV, the prevalence of this type of cancer and the association with risk factors is unknown at the Omaruru Hospital. High prevalence of HPV infection, advanced HIV disease, tobacco, multiple sexual partners, parity, and poor socio-economic conditions are listed among contributing factors that increase morbidity and mortality of cervical cancer, which can be controlled & cured if diagnosed early. This research aimed to determine the prevalence of cervical Cancer among HIV-positive women on ARVs and assess the risk factors contributing to the emergence of cervix cancer in this population. The approach methodologic used was a retrospective cross-sectional of 49 women randomly selected among those who were done pap smears at the Omaruru ART clinic between August 2016 to August 2017. There was no positive result for cervical cancers found. Hence, the prevalence of HPV was found to be 16,32%, with Cervical dysplasia 3 cases of CIN I and 5 cases of CIN II with no association established with risk factors, and a case of CIN II in a primigravida with multiple sexual partners were found. To conclude, a meaningful analysis with STATA 14 revealed no positive results for cervical cancer from the 49 cases with no risk factors association established,30.61% of negative HPV (30 - 39 years;28.57% (40-50 years), CIN II aged 30 to 39 years (4%);4% (40- 50 years) 2% above 50 years old. The HPV prevalence (16,32%,),3 cases of CIN 1, and 5 cases of CIN II are indicators that more efforts need to be made.

Keywords: *Cervical cancer prevalence, Cervical cancer screening, HPV prevalence, HIV women on antiretroviral treatment, primigravida, multiple sexual partners.*

Introduction

Cervical cancer is one of the commonest types of cancerous disease affecting the reproductive system of women and threatening their lives worldwide. Human Papillomavirus has been proven to be the major cause of invasive cancer in addition to others associated factors. High HIV prevalence and poor socio-economic conditions in Sub-Saharan Africa has worsened the quality of women's reproductive health and productivity in society. In 2015 it was reported that the cancer of cervix caused 55 deaths in Namibia, 101 in Botswana, 3478 in South Africa, the prevalence of HIV was 13,3 among adult aged between 15-49 years in Namibia, estimated at 19,2% in South Africa and 21,9% in Botswana [1]. The importance of this study is to establish the prevalence of cervical cancer and the association between exposure to risk factors and the occurrence of cervical cancer among HIV infected women on ART at the Omaruru Health District of Namibia and determine the prevalence. Beside the fact that HIV treatment has widely improved the chance of survival by prolonging the life of people

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living with HIV, cervical cancer caused by human papillomavirus still and remains one of the sexual transmitted diseases which hinders females patients' quality reproductive health status. The morbidity and mortality of cervical cancer is increased due to the immuno suppression caused by HIV infection which exposed woman to be more vulnerable to this cancer which can be controlled if early diagnosed [2].

It is estimated that more than 530,000 women are diagnosed with Cervical Cancer in the world each and every year. More than 85 % of them are from low- and middle-income countries with high mortality in sub-Saharan African countries in addition to its existing high HIV prevalence, morbidity, and mortality [3]. In 2016, the United States of America recorded 12990 new cases of Cervical uterine Cancer and 4120 deaths [4] while 3126 new cases and 890 deaths were reported in the United Kingdom in 2015 [5].It is estimated that only 19% of women from developing countries have access to Cervical Cancer screening, and more than 60% of women from developed countries have been screened on a regular basis [6]. Furthermore, WHO stressed that around 99 038 new cases of uterine cancer are being diagnosed every year in Africa, with close to 60 098 deaths [7].

Cervical and breast cancers are the top leading causes of death related to cancer among women worldwide and out of 20,000,000 of women who died each year in the world from cancer related diseases, cervical cancer is on the lead among all other types of cancers and around 13% of all cancer diseases diagnosed to women are attributed to cervical cancer in the world. [1, 2, 8]. On the other hand, Cervical Cancer is considered as AIDS defining disease, therefore there is increased number of women affected with this type of cancer in region with high burden of HIV and low socio-economic standard. CDC stated that around 23 women die from cancer of cervix in a population of 100,000 in Sub Saharan African region while it only 3 who die in North America for the same population [1]. Cervical cancer was found to be the most devastating type of cancer affecting women in Tanzania and increased in proportion by HIV prevalence and WHO reported that out of 5,743 cases of Cervical cancer diagnosed in the world, there was 3000 women who lost their life in South Africa in 2010 [9, 10].

In 2015, found that 60% of 5.7 million of HIV positive people in South Africa are women, and Human Papilloma Virus is among the factors that highly contribute to acquire HIV infection and offers a greater chance of progression to invasive cervical cancer and it was found that poor socio-economic status and living standards of life have increases the number of the victim from this deadliest cancer illness but preventable through regular screening of cervix and early management of pre-cancerous lesions [11, 12].

Data from the Namibian National Cancer registry reported that from 2010 to 2014, the total number of all types of cancers cases was 11248 with a proportion of 54,4 % for females and 45,6 % for Males and 3.3 % of this case were children under 15 years for a total population of 2,3 Million. Breast Cancer was the most commonest type of cancer for that specific period, 1579 cases reported or 27,4 % of all types of Cancers diagnosed in female while Cervical Cancer is on second place with 19,4 % or 1118 cases with an estimated incidence of 27,2 per 100.000 which far very high from the incidence of 15,6 per 100.000 reported during the previous 5 years report. Cancer of the Cervix annual incidence increases with age in Namibia, for women of age between 20 -24 the value is 0,2 /100000 with a pic of 122,4/100.0000 for women aged between 72-79 years. Cervical cancer is among the top three types of Cancers diseases diagnosed among women of all ethnic in the country and remain the leading cancer of female in all regions of Namibia [13].

A comparison of the epidemiological situation of cancer of the cervix in developing countries and countries from the Sub-Saharan region reveals that there are many challenges in the screening process, except the availability of

required resources to offer adequate, efficient, and sustainable management of diagnosed cases in developed countries [14]. Developed countries have low HIV prevalence and better socio-economic living conditions with good health systems but have not successfully contained or fully controlled the pandemic of cervical cancer, and most countries in Sub Saharan area account for 70% of HIV cases diagnosed in the world and have limited resources in term of Cervical Cancer screening, Vaccination and Management of cases due to poor governance system, poverty, lack of knowledge, low literacy rate and bad socio-economic living standard [15].

Considering the major role that HPV plays in generating cervical cancer in addition to other predisposing factors, it is mandatory that preventive efforts are focused on regular screening for HPV through pap Smear or Visual inspection with acetic Acid (VIA), avail vaccination and reduce exposure to predisposing factors [10]. Early treatment should be offered to all women with abnormal Pap smear results or Cervical Intraepithelial dysplasia. Regular screening, early initiation of anti-cancerous management, and anti-retroviral treatment is encouraged to all women diagnosed HIV positives and their partners [15, 16]. Moreover, there is a need to integrate HIV services with other reproductive health programs, including cervical cancer screening and treatment, family planning, STI screening and treatment, and Voluntary Male Circumcision.

The WHO recommends that both developed and developing nations should strengthen preventive efforts and control measures for invasive cancer to all eligible women. Ever said that women of reproductive age and menopausal stage should be aware of predisposing factors and methodology for early diagnosis of cervical cancer [14].

Based on World Health recommendation HPV vaccine should be offered to girls of 9-13 years to prevent HPV infection, HPV test should be used to screen women of the reproductive , menopausal period and this information should widely be spread to all the people so that all population of the world should access to basic health services including Cervical cancer screening (preventive care), curative services and palliative care without discrimination [16]. As part of preventive measures to mitigate this cancer, vaccination and regular screening are keys strategies that can prevent morbidity among HIV positives women since it boosts their immunity against HPV infection and encourage them to adhere well on anti-retroviral treatment.

In Namibia, Access to Health Services is available to all citizens for free of charge in all Health state facilities. Cervical cancer screening is available to eligible clients. A comprehensive national assessment of cervical cancer done in Namibia in 2012 revealed that 59 women died every year [17]. The fight against cancer of the cervix in Namibia has involved a multisector team including the Ministries of Health and Gender, Namibian Cancer Association, ITECH, and other stakeholders. There is a need to reinforce the existing referral System in place whenever dealing with clients with abnormal Pap smear results or CIN for early management to expect better outcomes. As for now, Pap smear remains the commonest screening method used in most of the health facilities in the country while VIAC is still in the pilot stage [17].

This type of cancer can also affect men, but it is widely spread among women due to their anatomic features, and HPV remains the causal agent. Any person who is sexually active is at risk of HPV regardless of their gender they can acquire such infection via vaginal, anal, and oral sex and such infection expose them to the risk of cancer and genital wart in the further. Therefore vaccination is encouraged to all of them [14]. The relevance of this statement is justified by the fact that HPV infection types 16 and 18 are the major factors accounting to most cervical cancer cases [16].There are various challenges reported during pap smear screening due to cultural beliefs and stigma about Cancer (People are very much afraid to be diagnosed with cancer and

some women are not comfortable to be screened by male nurses).In 2016 the importance of addressing stigma as a key element in the promotion of Uterine cancer screening in Sub-Saharan Africa was reported [18]. The major impact in the population should, in the one hand, be materialized by reducing the morbidity and mortality related to this type of cancer and availing preventive, curative, integrated, and palliative services to needy populations. On the other hand, to strengthen awareness campaigns on risk factors to minimize the incidence and promote regular cervical cancer screening [19].

The Ministry of Health and Social Services of Namibia has introduced cervical Cancer screening (pap smear) as an indicator of HIV quality improvement care; therefore, there is a need of integration of ART services and Females Reproductive services offered to all ART clinic in Namibia, and Pap smear services are also offered to all Primary Health Clinics and Private Health Facilities [20].

In 2017), it was reported that the integration of ART services with reproduction program is a good step toward the achievement of the 90%-90%-90% UNAIDS targets goals in Namibia [21].

AIDSMAP reported invasive cervical cancer in people living with HIV is an indicator of advanced disease or simply considered as an AIDS-defining Illness therefore associated with a high mortality rate [22]. Early and regular screening for HPV infection of HIV-positive females can prevent unnecessary death of these vulnerable women who are already immunocompromised in addition to low CD4 count, while the Ministry of Health Namibia has opted for yearly cervical cancer screening of all women living with HIV [19, 23].

Since cervical cancer is the second most dangerous type of cancer among women in Namibia, there is a need to identify contributing factors that influence its prevalence and incidence among women affected by HIV. Moreover, health education about cervical cancer screening and the availability of such services to primary Health clinics and ART Clinics are key components the fight against cervical Cancer in Namibia [19]. The Knowledge of the commonest public health issue by the population offers a high chance of public health interventions to succeed and control the epidemic in that environment and population [19], and I am of on the opinion that availing information about cervical Cancer in Omaruru District in Namibia can easily influence the attitude, behaviour, and care of both clients and Health care providers which will result in the reduction of both Morbidity and Mortality related to the disease.

Purposefully this study is aimed to determine the existing prevalence of cervical Cancer among HIV-positive patients enrolled in care at the Omaruru State Hospital. In addition to that, I would like to identify the major contributing factors to the incidence and prevalence of this cancerous disease for the defined population.

The outcomes of this research will identify existing gaps in service delivery within the concerned population of the study in line with cervical cancer and the population. Such route causes analysis exercise can avail recommendations, suggestions, and evidence-based findings that can positively influence all efforts in the fight against cervical cancer by involving all stakeholders and the patients themselves.

Cervical cancer is a preventable, curable, and deadly depending on the knowledge of the people at risk, exposure to risk factors, availability of Health services, and the time for the diagnosis. The National Health Service in the UK argued that Uterine Cancer might not be completely prevented however encourages safer sex practices, Cervical Cancer vaccination, regular screening, and avoiding smoking to reduce the risk [5].

In 2014, it was reported that cervical cancer seems to be a silent killer in the sense that close to 500,000 women are being diagnosed every day in the world, and 32% of those diagnosed die in five years in the United States [24].

Suggestions from this analysis will contribute to improving the care and control of this type of cancer in the Omaruru Community. On the hand, evidence from this study should clarify the association between the degree of HIV infection, risk factors, and prevalence of Human Papilloma Virus in the Namibian context. A report from Tanzania in 2011 revealed that the prevalence and incidence of cervical cancer is highly associated with HPV and worse with high HIV prevalence in Tanzania and concluded on the need to strengthen awareness and Health Education in the population [25]. Since the literature search reveals that there is no much publication done about cancer of cervix in Omaruru Health District of Namibia. The outcomes of this study will offer information that will contextualize the epidemic of cervical cancer and it is associated factors in the Omaruru Health District of Namibia. Furthermore, targeted preventives and curative measures can be applied based on the recommendation to ensure morbidity and mortality are on the lower side.

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In Africa, although there are some inconsistency and limitation of data, it is reported that women with HIV/AIDS have an increased chance of developing cervical cancer [26]. In contrast to Western Europe and in the United States of America where there are accurate data, it is, however reported that HIV positives women with low CD4 stand a very high rate of developing cancer of the cervix in comparison to HIV-negative women [27].

The mortality and morbidity rate related to cancer of the cervix is high in low-income countries due to the inaccessibility of well-organized screening services, lack of HPV vaccination, and poor service delivery [12]. The incidence of Invasive Cervical Cancer in Zambia is the second highest in the world, with most of the cases identified among HIV positives women, while in Sub-Saharan Africa, invasive Cervical Cancer is the commonest type of cancer, accounting for many deaths related to cancer among women [28, 29].

It was reported in 2010 more than 3000 deaths were caused by cervical cancer out of 5,743 cases diagnosed in South Africa in 2009. With a crude incidence of 11,1 per 100,000 for cervical Cancer, Namibia is ranked number 5 in Southern Africa after Swaziland, Lesotho, South Africa, and Botswana [10, 30].

The greatest number of victims of cervical cancer are women living in poor-income countries with poor socio-economic status, and there are numerous factors associated with the incidence of cervical cancer, such as Human Papillomavirus Infection, and other socio-economic and cultural factors such as early marriages, high parity, and polygamy are blamed for the increased rate of cervical Cancer in Sub Saharan Africa due to poor living standards of the population. He also stressed out that polygamy increases the risk of cervical cancer by two-fold [12, 31]. In addition, it was reported in 2011 in South Africa that combined contraceptive pills use for more than five years increases the development of cervical cancer by three-fold [32]. Namibia being a neighbouring country to South Africa is, shares many of mentioned risk factors. Therefore understanding research studies done on cervical Cancer in South Africa could bring to light an understanding of the situation in the Namibia context. According to WHO 2010, it was reported more than 3000 deaths were caused by cervical cancer out of 5,743 cases diagnosed in

South Africa in 2009. With a crude incidence of 11,1 per 100,000 for cervical Cancer, Namibia is ranked number 5 in Southern Africa after Swaziland, Lesotho, South Africa, and Botswana [10, 30].

A study from Tanzania in 2015 reported that Cervical Cancer is the deadliest cancer among all types of Cancers that affect women living in Tanzania [9]. The combination of HIV and Cervical cancer is putting women's lives at risk, and the two diseases are inextricably linked with women living with HIV up to five times more likely to develop cervical cancer. As mentioned earlier, HPV, the agent contributing to the genesis of cervical cancer, could be reduced if wide-scale vaccination is done for eligible people and should be coupled with regular screening and early referral of cervical dysplasia for specialized care to reduce morbidity and mortality. Hence, HIV care and such screening services should be under one roof to detect and effectively manage these two deadly conditions. Clifford. Furthermore, I t reported that the prevalence of pre-cancerous cervical lesions (CIN) was 10.3% among HIV-infected women living in the Northern part of Namibia. Severe Immuno suppression expressed by CD4 lower than 200 was associated with a higher risk of CIN in comparison to women with CD4 higher than 200 [23]. On the other hand, in a similar study done in Tanzania reported that HIV-positive women have a higher prevalence of invasive cervical cancer in comparison to other women of the general population. The incidence and prevalence also increase with the severity of immuno suppression [33].

It appears like the greatest number of victims of cervical cancer are women living in poor-income countries; with poor socio-economic status reported that both HIV and Cervical cancer are preventable if all preventive measures are effectively applied at an early stage, and such interventions can prevent the high number of costly interventions such as the removal of pre-cancerous lesion that may cost up to 25 US dollars per clients while HIV treatment may require up to 100 U$ per person in a month [12, 30]. There is a link between Cervical Cancer and poverty since the social determinant of the poor population exposes them to an increased risk of acquiring HIV, HPV, and other Sexual Transmitted Diseases. Various studies done in African countries and other low-income countries reveals that women living with HIV have a high risk of developing Cancer of the Cervix, and the prevalence of cervical cancer is the same among HIV-positive and HIV-negative in Romania, implying there is no increased risk cervical cancer in HIV positive people [31, 25]. The infection with HPV type 16 and 18 is the main agents contributing to the genesis of cervical cancer that could be reduced if wide scale vaccination is done for eligible people and coupled with regular screening and early referral of cervical dysplasia for specialize care to reduce morbidity and mortality [16]. There is a need to clearly understand the existing policies, and strategies for services delivery aimed at cervical cancer management in developed countries and low-income settings to propose interventions accordingly.

A cross-sectional study done in 2015 in Brazil reported a great association between HPV, HIV-positive status, cervical dysplasia, and high risk of progression to invasive cervical cancer, especially among HIV-positive women with very low CD4 count or advanced HIV immunosuppression [34].On the other hand, in South African settings, 60% of the 5,7 million HIV-positive people are women exposed to HPV, which is a potting factor in acquiring HIV Infection and increases the chance for progression from pre-cancerous cervical lesions to Invasive Cancer of the cervix [11]. It was estimated in 2013 that 771,887 women aged between 14-49 years had cervical cancer, with an annual estimation of 59 deaths per year and 132 new cases (Namibia fact sheet, 2014). therefore there is a need to encourage regular screening and awareness and anticipate early management of abnormal cervical abnormalities [31].

The association between HIV and HPV, Pre-cancerous lesions in HIV-positive women, the degree of Immunity and the possibility of Disease progression were mentioned in various articles reviewed as the leading factors contributing to acquiring cervical cancer in both HIV-negative and HIV-positive women. Neoplasm such as Kaposi Sarcoma, Non-Hodgkin Lymphomas, and Invasive Cervical Cancer are AIDS-defining illnesses. Such conditions are seen in people with advanced disease stages; therefore, Cancer of the Cervix is usually seen in women with weakened immunity systems.

This association between the degree of immunity and the incidence or prevalence of Cervical Cancer in HIV positive has attracted the interest of most articles reviewed. Also, to note that there was a mutual risk of disease progression between HIV/AIDS and Invasive Cervical Cancer [29, 32].

Another aspect of this topic which was explored by WHO in 2017, was the evaluation on the nature of service deliveries and disease burden in rich countries and poor countries. In the European context, it was reported that the incidence of cervical cancer among HIV positives women was not correlated with the background risk of invasive Cervical Cancer in the general population of women [16, 32].

With relevance to this study, there is a special interest to know if cervical cancer associating factors mentioned by these authors are also applicable in the key population of Omaruru Health District in Namibia. Furthermore, I will also avail the non-existing data of cervical cancer to the scientific world and the selected community with the aim of controlling this deadly disease in this environment.

CDC reported 2013, 4,217 deaths occurred globally from women of reproductive period out of 11,955 females confirmed cases of Cervical Cancer [33]. Most authors reviewed during the literature search did not talk much about other associating factors of CIN among HIV women apart from the degree of Immunosuppression, and they did not specify the best screening test for CIN that can be used in HIV-positive people, Visual Inspection with Acetic Acid (VIA) and Papanicolaou (pap smear) methods are the two methods available (explore on the high sensitivity of VIA compare to Pap smear also cheap, short turn around, time screen and treat advantage) [35, 36]. The search did not come across many articles reporting on the impact of cervical vaccine and its impact on the control of this cervical cancer prevalence.

As there is no much data reported from this search about the association of risk factors such as HIV Viral Load Level, Smoking, age, alcohol parity, and cervical Cancer in the Namibian context. On the hand, there is no available data on the prevalence of cervical cancer among HIV positives women living in Namibia [19].

The Objectives of the research paper were to determine the prevalence of Cervical Cancer among women living with HIV in the health of the District of Omaruru in Namibia and to identify contributing factors.

Materials and Methods

Both HIV-positive and Negative women are vulnerable to invasive cervical cancer even though the incidence risk is different. The same principle applies to the environment and countries where this woman is residing. Women from developed countries are lucky to benefit from a well-organized Health service in an environment with low HIV prevalence. This study was conducted at Omaruru District Hospital of Namibia among women enrolled at the ART clinic and screened for cervical cancer for the period of August 2016 to August 2017.

The collection of data was done by using a designed questionnaire has limited option in gathering information associated to risk factors since not all the needed data were not captured in the Electronic Patient Care Monitoring system (EPMS), cervical cancer register, patient's care booklet.

In addition to that, missing results were traced at the Omaruru District Hospital Laboratory

Department (Namibian National Institute of Pathology) by using the reference number of the patient.

Method

A retrospective cross-sectional study of 49 HIV-infected women randomly selected among those who were done pap smear screening at the Omaruru ART-clinic between August 2016 to August 2017 Female HIV positive patients enrolled in care at the Omaruru Health District (Namibia) for more than a 1year, from the age of 16 years and above and this population was estimated at 700.

The sample size was determined by using epi-info software, and the parameters selected for the calculation were cervical cancer prevalence of 24% (from South Africa) with a confidence level of 95 % (1-Alpha), power or chance of detecting of 80% (1-beta) that lead to sample size of 49.

Secondary data were extracted from the EPMS and Cervical cancer register using a designed questionnaire. This process will be done through a random selection of cases from the mentioned sources. There was no possibility of directly contacting all patients with missing vital data in the database (EPMS and cervical cancer Register), and there was no possibility to directly contact all the patients.

This study is susceptible to some bias likely to affect the internal validity of the findings as the cross-sectional study itself is a major limitation since the cause and effect limits the interference between different variables and cervical cancer outcomes. We are aware that many factors may influence the data, like independent variables such as age, number of partners, male circumcision, HIV-positive status, etc. Bias is minimized, and confounding factors will have controlled through stratification of the risk and linear regression.

Since the study is descriptive in nature, given the fact that the sample size was somewhat small, means could be compared using ANOVA. Graphs were also used to draw and represent data and compare the binary Yes/No as given by the presence or absence of requested information.

To ensure the validity of the study, we ensured that the process of data collection and analysis was done in a rigorous way with frequent verification and ensured a clean transferability process was done by avoiding errors. In addition to that, we ensured that the information collected about risk factors was true (verification in Booklet)) and results from the laboratory (Biopsy results, Pap smear results, CD4, Viral Load) are a true reflection of the patient clinical condition.

Variable: Age, Tabaco usage, age of first sexual intercourse, parity, number of partners, date of pap smear screening, CD4 count, viral load, oral contraceptive use, pap smear results, duration of ART Treatment, marital status, Circumcised partner, STI, employment status.

Data analysis tool*:* Through inferential statistics, collected data were analyzed through descriptive statistics with multiple comparisons to determine the prevalence and establish the significance between selected variables and cervical cancer/HPV by using the STATA 14 software.

STATA 14 software was used to analyse codes from an excel sheet. Descriptive statistics such as frequency, standard deviation, and mean were used. Then the summary of derived data is presented in the form of tables and graphs. With regards to inferential statistics, the significance test with a p-value of 0.05 is used as well.

Research Ethics*:* Approval from the Permanent Secretary of the Ministry of Health and Social Services of Namibia was granted before data collection, and an authorization for reach document was presented to the Medical Superintend of the Omaruru District Hospital before the data collection process. All data collected were kept in a safe place where no other person could access and those kept on the laptop require a password. To ensure confidentiality and anonymity, the patients were identified by their unique number instead of the names.

Results

Data presentation and analysis concerned a set of narrative and interpretive techniques. All answered questions were coded. Data were synthesized and broken down into manageable units, and patterns or themes were identified to make it possible for meaningful analysis.

As depicted in Table 1, the mean age of respondents is 2.7 with a standard deviation of 0.89; the Parity mean of respondents is 2.04 with a standard deviation of 0.84; the mean of the number of sexual partners is 2.4 with a standard deviation of 0.6; the mean respondents of marital status is 0.1 with a standard deviation of 0.3; the respondents mean with regards to employment status is 0.3 with a standard deviation of 0.4; and the mean of respondents with regards to the number of the circumcised partner is 0.3 with a standard deviation of 0.4.

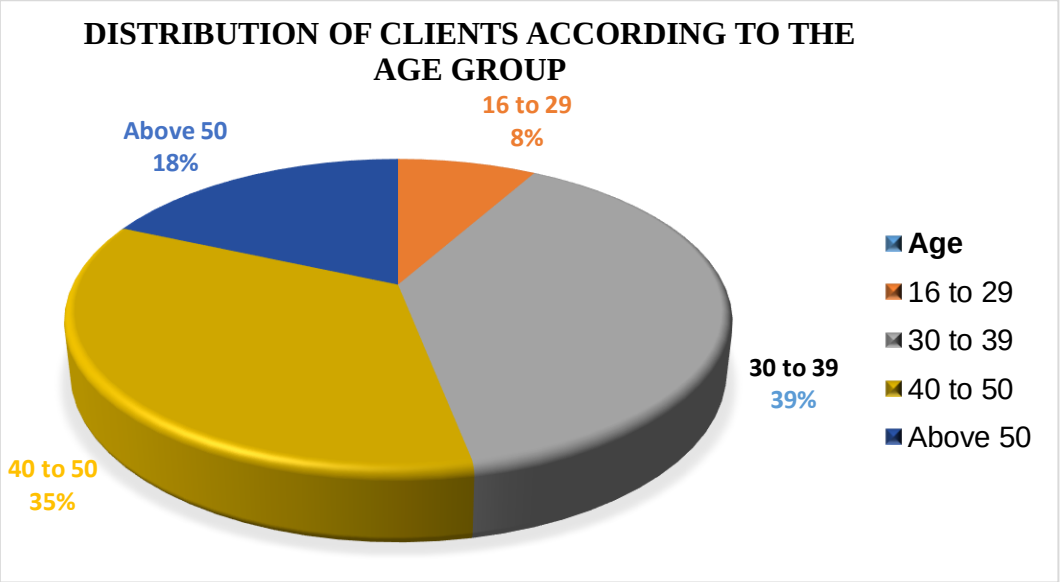

Figure 1. Distribution of Clients according to the Age Group

Table 1. Observations of Participants with Regards to Means and Standard Deviation

Variables	Observation	Mean	Std. Deviation	Min	Max
Age	49	41.367	9.263	26	60
Parity	49	2.75	1.407	0	5
Number of Sexual Partners	49	5.429	1.696	3	9
CD4 Count	49	215.204	143.7806	18	765
Viral Load	49	2977.673	20017.33	20	140231
Pap Smear	49	.2653061	.6382107	0	2

As depicted in Table 2, Pap smear/HPV status has been found negative, with 30.61% among young women ranging from 30 to 39 years old and 28.57% among those ranging from 40 to 50 years old. CIN II has been found among women ranging from 30 to 39, with 4% and 4% among 40 to 50 years old and only 2% among women above 50 years old. The prevalence was not conclusive as there was no positive result among all our participants.

Table 2. Observations of Participants with Regard to Pap Smear and Age

Pap Smear/ HPV Status	Age in years				
	16 to 29	30 to 39	40 to 50	>50	Total
Negative	4	15	14	8	41

	9.76	36.59	34.15	19.51	100.00
	100.00	78.95	82.35	88.89	83.67
	8.16	30.61	28.57	16.33	83.67
CIN I	0	2	1	0	3
	0.00	66.67	33.33	0.00	100.00
	0.00	10.53	5.88	0.00	6.12
	0.00	4.08	2.04	0.00	6.12
CIN II	0	2	2	1	5
	0.00	40.00	40.00	20.00	100.00
	0.00	10.53	11.76	11.11	10.20
	0.00	4.08	4.08	2.04	10.20
Total	4	19	17	9	49
	8.16	38.78	34.69	18.37	100.00
	100.00	100.00	100.00	100.00	100.00
	8.16	38.78	34.69	18.37	100.00

As depicted in Table 3, Pap smear/HPV is 83.6% negative among all the parity, with a high yield of 40% among multiparous. CIN II has been found among primigravida and multiparous for 4%, respectively, and 2% among grand multiparous.

Table 3. Observations of Participants with Regard to Pap Smear and Parity

Pap Smear/ HPV Status	**Parity**				
	Nulliparous	**Primigravida**	**Multiparous**	**Grand multiparous**	**Total**
Negative	3	4	20	14	41
	7.32	9.76	48.78	34.15	100.00
	100.00	57.14	83.33	93.33	83.67
	6.12	8.16	40.82	28.57	83.67
CIN I	0	1	2	0	3
	0.00	33.33	66.67	0.00	100.00
	0.00	14.29	8.33	0.00	10.20
	0.00	2.04	4.08	0.00	10.20
CIN II	0	2	2	1	5
	0.00	40.00	40.00	20.00	100.00
	0.00	28.57	8.33	6.67	10.20
	0.00	4.08	4.08	2.04	10.20
Total	3	7	24	15	49
	6.12	14.29	48.98	30.61	100.00
	100.00	100.00	100.00	100.00	100.00
	6.12	14.29	48.98	30.61	100.00

As depicted in Table 4, Pap smear is found negative among clients with target not detected at about 57.1% and the total percentage of negative tests of 83.67%. Only 4% and 10.2% of the client with CIN I and CIN II, respectively, with target not detected.

Table 4. Observations of Participants with Regard to Pap Smear and Viral Load

Pap Smear/ HPV Status	**Viral Load in RNA/ml**				
	TND	**31 to 99**	**100 to 999**	**from 1,000 above**	**Total**
Negative	28	3	9	1	41
	68.29	7.32	21.95	2.44	100.00
	80.00	100.00	90.00	100.00	83.67
	57.14	6.12	18.37	2.04	83.67
CIN I	2	0	1	0	3
	66.67	0.00	33.33	0.00	100.00
	5.71	0.00	10.00	0.00	6.12
	4.08	0.00	2.04	0.00	6.12
CIN II	5	0	0	0	5
	100.00	0.00	0.00	0.00	100.00
	14.29	0.00	0.00	0.00	10.20
	10.20	0.00	0.00	0.00	10.20
Total	35	3	10	1	49
	71.43	6.12	20.41	2.04	100.00
	100.00	100.00	100.00	100.00	100.00
	71.43	6.12	20.41	2.04	100.00

As depicted in Table 5, 10% of participants who developed CIN II have more than 5 partners followed by 6.12% of those who developed CIN I have 3 to 5 partners.

Table 5. Observations of Participants with Regard to Pap Smear and Number of Sexual Partners

Pap Smear/ HPV Status	**Number of sexual partners**				
	No Partner	**1 to 2 partners**	**3 to 5 partners**	**Above 5 partners**	**Total**
Negative	1	0	23	17	41
	2.44	0.00	56.10	41.46	100.00
	100.00	0.00	88.46	77.27	83.67
	2.04	0.00	46.94	34.69	83.67
CIN I	0	0	3	0	3
	0.00	0.00	100.00	0.00	100.00
	0.00	0.00	11.54	0.00	6.12
	0.00	0.00	6.12	0.00	6.12
CIN II	0	0	0	5	5
	0.00	0.00	0.00	100.00	100.00
	0.00	0.00	0.00	22.73	10.20
	0.00	0.00	0.00	10.20	10.20
Total	1	0	26	22	49
	2.04	0.00	53.06	44.90	100.00
	100.00	0.00	100.00	100.00	100.00
	2.04	0.00	53.06	44.90	100.00

As depicted in Table 6; 83.6% of negative result has been found among women having circumcised and not circumcised partners. CIN I was found in 4.08 % among those having not

circumcised partners, and 6.12% was found in CIN II for the same social group. As depicted in Table 7; CIN II is found among 10.2% of participants not on contraception and 4% of participants with CIN I.

Table 6. Observations of Participants with Regard to Pap Smear and Circumcised Partners

Pap Smear/ HPV Status	**Circumcised partner**		
	Not circumcised	**Circumcised**	**Total**
Negative	26	15	41
	63.41	36.59	100.00
	83.87	83.33	83.67
	53.06	30.61	83.67
CIN I	2	1	3
	66.67	33.33	100.00
	6.45	5.56	6.12
	4.08	2.04	6.12
CIN II	3	2	5
	60.00	40.00	100.00
	9.68	11.11	10.20
	6.12	4.08	10.20
Total	31	18	49
	63.27	36.73	100.00
	100.00	100.00	100.00
	63.27	36.73	100.00

Table 7. Observations of Participants with Regard to Pap Smear and Oral Contraception

Pap Smear/ HPV Status	**Not on contraception**	**On contraception**	**Total**
Negative	38	3	41
	92.68	7.32	100.00
	84.44	75.00	83.67
	77.55	6.12	83.67
CIN I	2	1	3
	66.67	33.33	100.00
	4.44	25.00	6.12
	4.08	2.04	6.12
CIN II	5	0	5
	100.00	0.00	100.00
	11.11	0.00	10.20
	10.20	0.00	10.20
Total	45	4	49
	91.84	8.16	100.00
	100.00	100.00	100.00
	91.84	8.16	100.00

As depicted in Table 8; CIN II has been observed among no employed participants with 4% versus 6.12% of employed participants. And 4% of CIN among employed participants versus 2% of non-employed.

Table 8. Observations of Participants with Regards to Pap Smear and Employment Status

Pap Smear/ HPV Status	**Employment Status**		
	Not employed	**Employed**	**Total**
Negative	28	13	41
	68.29	31.71	100.00
	87.50	76.47	83.67
	57.14	26.53	83.67
CIN I	2	1	3
	66.67	33.33	100.00
	6.25	5.88	6.12
	4.08	2.04	6.12
CIN II	2	3	5
	40.00	60.00	100.00
	6.25	17.65	10.20
	4.08	6.12	10.20
Total	32	17	49
	65.31	34.69	100.00
	100.00	100.00	100.00
	65.31	34.69	100.00

As depicted in Table 9; there are 10.2% of CIN II and 6.82% of CIN I among non-married women, with a total of 83.67% of negative among both married and non-married.

Table 9. Observations of Participants with Regard to Pap smear and Marital Status

Pap Smear/ HPV Status	**Marital Status**		
	Non-married	**Married**	**Total**
Negative	36	5	41
	87.80	12.20	100.00
	81.82	100.00	83.67
	73.47	10.20	83.67
CIN I	3	0	3
	100.00	0.00	100.00
	6.82	0.00	6.82
	6.82	0.00	6.82
CIN II	5	0	5
	100.00	0.00	100.00
	11.36	0.00	11.36
	10.20	0.00	10.20
Total	44	5	49
	89.80	10.20	100.00
	100.00	100.00	100.00
	89.80	10.20	100.00

Interpretation: It is stipulated that the hypothesis of no difference between pap smear and HPV status, we can conclude that there is no association between Pap smear and marital status (P-value: 0.3318) with Fisher test of 0.96 and alpha = 5%. With r^2 =0.02, the variation in marital status accounts 2% to Pap smears (Table 10).

Table 10. Test of Homogeneity and Association between Pap Smear/HPV and Marital Status

Pap Smear/HPV Status	**Coef.**	**Std. Err**	**t**	**p> |t|**	**[95% Conf. Interval]**
Marital Status	-.2954545	.3013181	-0.98	0.332	-.9016284 .3107193
	.2954545	.0962525	3.07	0.004	.1018194 .4890897

- Ho: diff = 0;
- Ha: diff < 0 Ha: diff ≠ 0 - Ha: diff > 0
- Number of obs = 49 - R-squared = 0.0200
- F (1, 47) = 0.96 - Adj R-squared = -0.0008
- Prob > F = 0.3318 - Root MSE = .63847

Interpretation: Considering the hypothesis of no difference between pap-smear and HPV status, we can conclude that there is no association between Pap smear and marital status (P-value: 0.2270) with a Fisher test of 1.5 and alpha = 5%. With r^2 = 0.0309, the variation in the viral load accounts for 3.09 % to Pap smear (Table 11).

Table 11. Test of Homogeneity and Association between Pap Smear/HPV and Viral Load

Pap Smear/HPV Status	**Coef.**	**Std. Err**	**t**	**p> |t|**	**[95% Conf. Interval]**
Viral Load	-.1170213	.0955849	-1.22	0.227	-.3093133 .0752707
	.3297872	.1048859	3.14	0.003	.1187839 .5407905

- Ho: diff = 0;
- Ha: diff < 0 Ha: diff ≠ 0 - Ha: diff > 0
- Number of obs = 49 - R-squared = 0.0309
- F (1, 47) = 1.50 - Adj R-squared = -0.0103
- Prob > F = 0.2270 - Root MSE = .63492

Interpretation: based on the hypothesis of no difference between pap-smear and HPV status, we can conclude that there is no association between Pap smear/HPV smear and Oral contraceptive pills in 5 years (P-value: 0.9607) with Fisher test of 0.00 and alpha = 5%. With r^2 = 0.0001, the variation in oral contraceptives and pills in 5 years status accounts for 0.01% of Pap smear (Table 12).

Table 12. Test of Homogeneity and Association between Pap Smear/HPV and Oral Contraception in 5 years

Pap Smear/ HPV Status	**Coef.**	**Std. Err**	**T**	**p> |t|**	**[95% Conf. Interval]**
Oral contraceptive pills in 5 years	-.0166667	.3365009	-0.05	0.961	-.6936192 .6602858
	.2666667	.0961431	2.77	0.008	.0732517 .4600817

- Ho: diff = 0;
- Ha: diff < 0 Ha: diff ≠ 0 - Ha: diff > 0

- Number of obs = 49
- F (1, 47) = 0.00
- Prob > F = 0.9607
- R-squared = 0.0001
- Adj R-squared = -0.0212
- Root MSE = .64495

Interpretation: Knowing the hypothesis of no difference between pap-smear and HPV status, we can conclude that there is no association between Pap smear and Circumcised Partners status (P-value: 0.9183) with Fisher test of 0.96 and alpha = 5%. With r^2 =0.0002, the variation in circumcised and partners' status accounts for 0.02% to Pap smear. With r^2 = 0.0002, the variation in marital status accounts for 0.02% to Pap smear (Table 13).

Table 13. Test of Homogeneity and Association between Pap smear/HPV and Circumcised Partners

Pap Smear/ HPV Status	**Coef.**	**Std. Err**	**T**	**p> |t|**	**[95% Conf. Interval]**
Circumcised Partners status	.0197133	.191103	0.10	0.918	-.3647364 .404163
	.2580645	.1158259	2.23	0.031	.0250528 .4910762

- Number of obs = 49
- F(1, 47) = 0.01
- Prob > F = 0.9183
- R-squared = 0.0002
- Adj R-squared = -0.0210
- Root MSE = .64489

Interpretation: based on the hypothesis of no difference between pap-smear and HPV status, we can conclude that there is no association between Pap smear and Tobacco consumption (P-value: 0.4486) with Fisher test of 0.58 and alpha = 5%. With r^2 =0.0123, the variation in Tobacco consumption accounts for 1.23% to Pap smear (Table 14).

Table 14. Test of Homogeneity and Association between Pap Smear/HPV and Tobacco Consumption

Pap Smear/ HPV Status	**Coef.**	**Std. Err**	**T**	**p> |t|**	**[95% Conf. Interval]**
Tobacco consumption	.2555556	.3344387	0.76	0.449	-.4172483 .9283594
	.2444444	.0955539	2.56	0.014	.0522148 .4366741

- Number of obs = 49
- F(1, 47) = 0.58
- Prob > F = 0.4486
- R-squared = 0.0123
- Adj R-squared = -0.0087
- Root MSE = .641

Interpretation: based on the hypothesis of no difference between pap-smear and HPV status, we can conclude that there is no association between Pap smear and Employment Status (P-value: 0.2457) with Fisher test of 1.38 and alpha = 5%. With r^2 = 0.0286, the variation in employment status accounts for 2.86% to Pap smear (Table 15).

Table 15. Test of Homogeneity and Association between Pap Smear/HPV and Employment Status

Pap Smear/ HPV Status	**Coef.**	**Std. Err**	**T**	**p> |t|**	**[95% Conf. Interval]**
Employment Status	.2242647	.1907842	1.18	0.246	-.1595436 .608073
	.1875	.1123748	1.67	0.102	-.0385689 .4135689

- Number of obs = 49
- F(1, 47) = 1.38
- Prob > F = 0.2457
- R-squared = 0.0286
- Adj R-squared = -0.0079
- Root MSE = .63569

Interpretation: In regard of the hypothesis of no difference between pap smear and HPV status, we can conclude that there is no association between Pap smear and age (P-value: 0.8449) with Fisher test of 0.8449 and alpha=5%. With r^2 =0.0008, the variation in age accounts for 0.08% to Pap smear (Table 16).

Table 16. Test of Homogeneity and Association between Pap smear/HPV and Age

Pap Smear/ HPV Status	Coef.	Std. Err	t	p> |t|	[95% Conf. Interval]
Age	.0207424	.1054368	0.20	0.845	-.1913692 .2328539
	.2106987	.292459	0.72	0.475	-.3776529 .7990503

- Number of obs = 49
- F(1, 47) = 0.04
- Prob > F = 0.8449
- R-squared = 0.0008
- Adj R-squared = -0.0204
- Root MSE = .6447

Interpretation: based on the hypothesis of no difference between pap smear and HPV status, we can conclude that there is no association between Pap smear and CD4 Count (P-value: 0.6378) with Fisher test of 0.22 and alpha=5%. With r^2 =0.0048, the variation in CD4 count accounts for 0.48% to Pap smear (Table 17).

Table 17. Test of Homogeneity and Association between Pap smear/HPV and CD4 Count

Pap Smear/ HPV Status	Coef.	Std. Err	t	p> |t|	[95% Conf. Interval]
CD4 Count	-.1167665	.2464483	-0.47	0.638	-.6125566 .3790237
	.3892216	.2772195	1.40	0.167	-.1684721 .9469152

- Number of obs = 49
- F(1, 47) = 0.22
- Prob > F = 0.6378
- R-squared = 0.0048
- Adj R-squared = -0.0164
- Root MSE = .64343

Discussion

Prevalence of Cervical Cancer & Human Papilloma and Risk Evaluation among HIV Positives Women

The finding of this study could not identify patient with positive cervical cancer results among the 8 cases with Cervical Dysplasia from our sample size of 49 analysed. This situation is justified by some raisons such as long waiting time from Pap smear to diagnosis of cervical cancer estimate to range between 8 months to 13 months in the Namibian setting [19] In addition to high number patients lost for follow up due the long waiting period to have final diagnosis and treatment.

The prevalence of cervical cancer could not be determined in this study since there were no case of cervical cancer identified from our sample which is also small to accurately avail such result in the context of our selected environment. Hence, the prevalence of Human Papilloma virus (HPV) infection from this study is 16.32% (Table 2).

There was no possibility to compare the prevalence of Cancer among HIV patient with severely compromised immunity and those with improved immune status since our results are inconclusive about the prevalence in this research. Yet, with the calculated prevalence Human Papilloma (HPV) of 16.32% percentage, the proportion of patients tested Negative for Human Papilloma Virus (HPV) is 83.67%. Only 4% and 10.2% of client with CIN I and CIN II respectively with suppressed Viral Load or target not detected (Table 4).

Linkage of Risks Factors of Cervical Cancer & Human Papilloma (HPV) and Incidence among People Living with HIV

Age

The incidence of Human Papilloma infection and cervical cancer is very rare in women below the age of 20 years, irrespective of their HIV positive. Most women with pre-cancerous lesions or CIN from this sample are between the age of 30 to 49 years (Table 2), with an increased incidence rate among women older than 65 years, accounting for more than 15% of new cases [35]. According to our findings, 30.6% of women between the age of 30 to 39 years had negative results for Human Papilloma Virus, ad those between the age of 40 to 50 years represented 28.5% of negatives cases, while those with CIN II represented 4% of women between the of 30 to 39years and 4% of women between 40 to 50 years and those above 50 years represented 2%. Despite the small size of our sample, the median age for HPV is around 40 years (table 2), and the estimated median age for HPV is generally estimated around 49 years [16]. Unfortunately, it was not possible to estimate the median age for cervical form this study due the unavailability of positive cases of invasive cancer from this sample. Pap smear screening is not recommended among HIV negative women of less than twenty years due to low incidence of Human Papilloma Virus incidence and cervical cancer; however, HIV positive patients should under cervical screening every year [19]. According to the analysis (Table 2), none of the women below 20 years had a positive Human Papilloma Virus Infection; therefore I support the practice of discouraging pap smear screening in women of less than 20 years unless those with positive HIV status.

Tobacco

According to the Cancer Research of the United Kingdom, people who smoke stand a greater chance of developing cancer of several organs such as the lungs, uterus, and oral cavity. The risk increases proportionally to the duration of the smoking habit and the daily quantity of cigarette sticks taken [5]. The analysis of that collected in this study reveals that there were very few smokers in our sample, with a mean of 0.81 (Table 1). Only 4 women were smokers among the cases selected for our sample. Out of the four, it was also noted that only one of them had positive results for Human Papilloma Virus. From this finding, it is difficult to conclude that HIV-positive women who smoke have a greater chance of developing Human Papilloma and Cancer of the cervix virus in the Health District of Namibia.

Parity

The risk of acquiring Cervical Cancer is increased in women with high parity (multiparous); therefore, women who only have one child(primigravida) and Nulliparous stand a very low chance of acquiring Human Papilloma Virus and uterine Cancer [5]. According to Table 3, most women who tested Negative for Human Papilloma Virus infection are multiparous, representing 40%. It was noted that 2% of multiparous had CIN II, and 4% of them were primigravida. Based on our findings, it is not possible to conclude that multiparous stand an elevated risk of developing cervical cancer since the prevalence is zero and many of them had negative Human Papilloma Virus results. However, primigravida also stands a chance of developing CIN II and represents 4% of all CIN II cases.

Multiple Sexual Partners and Sexual Transmitted Infection

Women who are involved in unprotected sexual intercourse with multiple partners can easily contract HIV and various Sexual transmitted diseases such as syphilis, gonorrhoea, chlamydia, Herpes simplex, genital ulcers, and Human Papilloma Virus infection that can further progress to uterine cancer [14]. The results from (Table 5) reveal that most of the women who developed CIN II had more than 5

partners, and 6.12% of those who had CIN I had a number of partners ranging from 3 to 5. These results clearly attest that people who have more Sexual partners are on the risk of developing Human Papilloma Virus infection that can eventually progress to invasive cervical cancer.

Uncircumcised Sexual Partner

According to UNAIDS, the man who are circumcised have a reduced risk of acquiring HIV by 60% and reduces the risk of their female sexual partner acquiring Human Papilloma Virus infection and develops cancer of the cervix [42]. Based on results from table 4.6, 83,6% of women who had negative results for pap smear had circumcised sexual partners, while 6,12% of those who had CIN II and 4,08% of those with CIN I had uncircumcised sexual partners. These results match with the above conclusion from UNAIDS.

Oral Contraceptive

There is an increased chance of developing Cervical Cancer among those on oral contraceptives for ten years [5]. Our analysis found that 10,2% of women who had CIN II were smokers, while 4% of those with CIN I were also smoking.

Poor Socio-economic Status

Women with poor socio-economic status are on higher risk of acquiring Human Papilloma Virus infection and cancer of the uterus at later stage [14]. The selected variable that helped us to level the economic status was the employment status, considering that employed women have a better socio-economic status than the unemployed since there are very few married women in this sample. According to Table 8, it was noted that 4% of women with CIN II were unemployed versus 6,12% of employed while 4% of those with CIN I were employed versus 2% of employed.

Marital Status

Single women have higher number of sexual partners in comparison to married women who mostly stick to one partner, and therefore, they have a reduced chance of acquiring HIV, HPV, and other STIs [14]. According to Table 4.9, there are 10,2% of CIN II and 6,82% of CIN I among non-married women, while 83,67 % represent the group of married and non-married women. The results concur with the fact that women with multiple partners are at high of HPV and Cervical Cancer; therefore, married women have reduced of Cancer and HPV.

Interpretation of the Findings

With a sample of 49 participants, it was discovered that no women were tested positive for cervical cancer. Therefore, determining the prevalence of Cervical Cancer among female HIV positive at Omaruru Health District in Namibia was found not to be conclusive. In this analysis of 49 people.

The undetermined prevalence from this study is due to the sample size, which appear to be small especially in Namibian context were the time from the date of pap smear to the date of release of biopsy result and access to treatment is around 8 to 13 months. In addition, this research was a cross-sectional study, which simply means it was just a snapshot of the selected population. Although there was no positive result for Cervical cancer among the 49 women screened for pap smear, however it was discovered that 8 participants had Cervical Dysplasia (CIN) or positive result of Human Papilloma Virus (HPV) well known has man agent that causes invasive Cervical cancer. The prevalence of Human Papilloma Virus was 16,32 and proportion for Cervical dysplasia was 3 cases of CIN I and 5 cases of CIN II. From our literature review, it was noted that all risk factors considered as variables in our analysis were not linked to increased chance of Human Papilloma virus and Cervical Cancer. Hence, the results of this study did not conclude that multiparous have an increases risk chance of acquiring HPV but reveal that it also possible to have cervical dysplasia (CIN II) in primigravida. Furthermore, this research did not reach a conclusive opinion

with regard chance of HPV and invasive cervical cancer among women who smoke in Omaruru Health District of Namibia.

Limitation of the Study

This study could not identify positive cases of cervical Cancer among HIV-positive women who were randomly selected to form our sample of 49. This difficulty could not allow the calculation of the cervical cancer prevalence on the selected population and establish the risk association linkage the factors. However, we managed to calculate the HPV prevalence and establish it association with the risk factors. The size of the sample (small), the type of the study in line with the type of frame of the research, and the timeline for cervical cancer results could not help establish a clear associative relation of the factors and cervical cancer. The data collection source doesn't capture indicators of the environment like rural and urban area of residence.

Implication of the Findings on Public Health

Discovering that there was no case of cervical cancer among 49 HIV positive patient on treatment after being screen with Pap smear, it shows that there is a need to intensify cervical cancer screening on this population group and reduce the time for diagnostic due their vulnerability. Another screening method which are more sensitive and specific than pap smears such as VIA or HPV testing would reinforce this process of case detection in Namibia. Since anti-retroviral treatment reduces the chance of acquiring cancer of the cervix [16], healthcare workers and people living in HIV are encouraged to strictly adhere well to their medication to ensure viral load suppression as noted among women who formed our sample. The degree of association between selected risk factors and the incidence of HPV can clearly tell that the public should consider implementing all precautions and measures to reduce exposure to such factors.

Conclusion

To conclude, this research was not able to determine the prevalence of cervical cancer among HIV positives women on treatment at the Omaruru District Hospital in Namibia with a sample size of 49 patients randomly selected from the pap smear register. Without the said prevalence, it was also impossible to establish the risk association between selected risk factors and the prevalence we do not have after data analysis.

The size of the sample and the long timeframe to access cervical cancer results may be considered as the major contributing elements that did not let us reach a conclusive outcome in line with the study's objectives. Nevertheless, these limiting factors could not stop the calculation on the prevalence of Human Papilloma Virus and elaborate the risk associated with the influencing factors. After saying that, it was noted that most of the patients from our sample were doing well on anti-retroviral treatment based on viral load suppression indicators. Data analysis revealed that the prevalence of Human Papilloma Virus was estimated at 16.3%. There is an increased risk of acquiring the Human Papilloma Virus in people among women of more than 40 years and a very low chance for those under 20 years. According to the WHO report of 2017 there is an elevated risk of pre-cancerous lesions of cervical cancer among women aged between 30 years and 49 years. It is recommended to conduct yearly screening with visual inspection with acetic acid (VIA) [16].

The said risk is found to be high among women who have elevated viral load, those with uncircumcised sexual partners, using oral family planning, multiple sexual partners and unmarried, and those unemployed. However, the few smokers from this sample did not show to have an increased chance of HPV, and the same applied to multiparous women. Hence, it was discovered that some primigravida also stands a chance of developing grade two cervical dysplasia (CIN II), which is very unusual.

Employment status appears to be a confounding variable even though it was used as an indicator of social-economic status since some clients may be employed with very low income and poor socio-economic living status.

Recommendation

The Ministry of Health of Namibia should strengthen cervical cancer screening among HIV positives women since it appears like that this screening is not constantly facility like Omaruru District Hospital, and there is no proper mechanism to ensure that results of pap smear are availed on time close monitoring of patients with cervical dysplasia. As illustrated in our data analysis, none of the 8 women with CIN was referred for colposcopy or biopsy to confirm the diagnosis of cervical cancer. I would also recommend that workers from the laboratory consider all cases of CIN as a special case by urgently reporting to clinicians. From pap, there are more vulnerable to Human Papilloma Virus infection that can easily progress to invasive cancer of the cervix. There is a need to reduce the timeframe between pap smear and colposcopy or biopsy results to facilitate early diagnosis and anticipate treatment. Adopting a more sensitive and specific screening method, such as Visual Inspection with Acetic Acid (VIA) the management of the patient with abnormal results. Implementing this great intervention will require the change of policy by replacing pap smear with VIA as first-line screening test for cervical cancer.

Furthermore, healthcare workers are encouraged to screen all HIV-positive women for Human Papilloma Virus irrespective of their parity, age, and socio-economic background. With a prevalence of 16,38% for a small sample of 49 people (Table 2), it is alarming and requires improvement in spreading awareness messages about risk factors in the general population.

As a preventive measure to mitigate the incidence of cervical cancer in the general population would highly recommend the ministry of health of Namibia to adopt cervical cancer vaccination as part of the routine immunization calendar to all Namibian women. According to the World Health Organization report of 2017, cervical cancer vaccination should be offered to girls of age between 8 and 13years [16].

Since this study could not offer an answer to the research question, I would advocate that another research could be done at the Omaruru state Hospital of Namibia by other researchers with the same topic, considering a bigger sample with well-updated data collection sources considering a period longer than 13 months. I would also suggest that a prospective study to be conducted in the same environment or elsewhere in Namibia by using more sensitive and specific cervical cancer screening methods such as VIA or HPV tests. VIA and HPV tests are more preferred tests than Pap Smear due to their sensitivity and specificity rate, therefore, VIA is the best method that can be used to screen and immediately treat abnormal lesions on the cervix on the same day [16].

Conflict of Interest

There is no conflict of interest with the content of this research paper.

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