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THE RATE OF HPV INFECTION AMONG WOMEN IN MASVINGO
PROVINCE ZIMBABWE

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
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Abstract

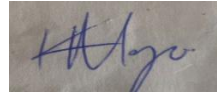
The frequency of Human Papillomavirus (HPV) infections in women in Zimbabwe's Masvingo Province is examined in this dissertation between August 2023 and August 2024. Given that HPV is a major cause of cervical cancer, which raises the death rate for women in Zimbabwe, the study tackles an important public health concern. The prevalence of infections is still significant even with HPV immunizations and screening programs available, especially in areas with little resources. There was a cross sectional study that focuses on women between the ages of 18 and 65. It seeks to ascertain the infection rates, pinpoint the demographic variables that impact these rates, gauge public awareness and understanding of HPV, and review current healthcare services for management and prevention. The study also looks for obstacles to efficient immunization and screening. It is anticipated that the results would shed important light on the HPV epidemiology in the area and emphasize the necessity of focused public health initiatives. This study intends to close the current knowledge gaps in order to enhance HPV management techniques and educate healthcare policy, which would ultimately help lower the prevalence of cervical cancer in Masvingo Province. Our finding revealed an elevated incidence of HPV among young, unmarried women suggests an increased likelihood of HPV-related health problems in these populations. With 70% awareness but only 60% screening rates, it is evident that further attempts must be made to turn HPV awareness into action by readily available and cheap screening programs. Targeting socio-demographic gaps in screening access and understanding may improve the efficacy of these initiatives.

Key words: HPV, Prevalence, risk factor , Zimbabwe

Declaration

I declare that this proposal is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it be submitted to another university for the award of any degree.

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23/11/2024

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Main Supervisor`s Signature (Date)

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Dedication

I dedicate this dissertation to my parents, whose unwavering support, encouragement, and love have been my foundation throughout this academic journey. Their sacrifices and belief in my potential have inspired me to pursue my goals relentlessly. I am deeply grateful for everything they have done for me, and this work is a testament to their enduring influence in my life.

List of Acronyms and Abbreviations

HBM	-----	Health Belief Model
HPV	-----	Human Papillomavirus
PRP	-----	Persistent Respirator Papillomatosis
STDs	-----	Sexually transmitted diseases
STI	-----	Sexually transmitted infectious

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CHAPTER ONE

1.1 Introduction

According to WHO 2020, the human papillomavirus (HPV) is a sexually transmitted infection (STI) that is widely distributed and has a major negative influence on the health of women. According to the Zimbabwe National Cancer Registry (2019), one of the main causes of cancer-related fatalities within women in Zimbabwe is cervical cancer, which is mostly brought on by HPV. High incidences of cervical cancer have been recorded in the southern Zimbabwean province of Masvingo (Mashingaidze et al., 2017). There are HPV vaccinations and screening programs available, however the prevalence of HPV infection is still high in Masvingo .

Studies have indicated that HPV infection poses a serious threat to public health, especially for women in sub-Saharan Africa (SSA) (Mbulawa et al., 2016). A few researches have concentrated on cervical cancer treatment and awareness (Chirenje et al., 2015). For the purpose of creating efficient preventative and management measures, , to assess the level of awareness and knowledge about HPV, its transmission among women in the province and to determine the prevalence of HPV infections among women in the region, which is essential for understanding the public health impact of the virus. This information is crucial for developing educational programs it is essential to comprehend the prevalence of HPV infection among women in Masvingo province.

The purpose of the research is to find out how common HPV infection is among women in Masvingo province. It also intends to explore indicators of risk for infection and provide guidance for effective treatments. Building on previous studies conducted by Mashingaidze et

al., 2017; Chirenje et al., 2015), this research will help explain the epidemiology of HPV in Zimbabwe and guide regional health initiatives.

1.2 Background

As a key global public health issue, the human papilloma virus (HPV) is highly prevalent among women who are of reproductive age (WHO, 2020). According to the Zimbabwe National Cancer Registry (2019), one of the main causes of cancer-related fatalities among women in Zimbabwe is cervical cancer, which is mostly brought on by HPV. Given the paucity of information on HPV prevalence in the southeastern province of Masvingo, it is imperative to ascertain the prevalence of HPV infection among women residing in this area.

Research has indicated that HPV infection is a sexually transmitted infection (STI) that is widespread throughout the world and is particularly common in young women (Baseman and Koutsky, 2005). In women with normal cervical cytology, the incidence of HPV in Africa ranges greatly, from 20% to 80% (Smith et al., 2017). According to a Harare study, 46.6% of women in Zimbabwe who underwent cervical cancer screening had HPV (Moyo et al., 2016).

Early sexual experiences, having several partners and not using condoms are risk factors for HPV infection (Koutsky, 1997). Furthermore, in limited by resources regions like Masvingo province, restricted access to HPV vaccination and cervical cancer screening exacerbates the issue (WHO, 2020). The purpose of this study is to find out how common HPV infection is among women in Masvingo province. It also looks into risk factors that may be involved and how much people know about HPV and cervical cancer. This research will inform evidence-

based strategies to lower the incidence of cervical cancer in the area by determining the prevalence and causes of HPV infection.

1.3 Problem Statement

One of the most prevalent STDs in the world, the human papillomavirus (HPV) is the primary cause of cervical cancer, a serious public health concern that is particularly prevalent in low-resource environments like Zimbabwe. Persistent HPV infections are a major contributing factor to cervical cancer, which is the second most frequent malignancy among women in Zimbabwe (World Health Organisation [WHO], 2020). There has been little localised study on the incidence of HPV infections, the mechanisms causing its spread, and the degree of awareness and preventive actions within the community, despite the high burden of HPV-related diseases. Previous research in Zimbabwe has mostly focused on HPV and cervical cancer at the national level, without giving adequate regional or provincial breakdowns (Tavaziva et al., 2019). There is a crucial gap in understanding the rate of HPV infections, particularly among women in rural and semi-urban areas such as Masvingo Province, where healthcare access is sometimes restricted and awareness of sexually transmitted infections is poor. Furthermore, previous research has focused exclusively on the clinical consequences of HPV-related malignancies, ignoring other critical factors such as the social, cultural, and economic barriers that restrict women from obtaining screening and vaccination services (Chirenje et al., 2020). The absence of detailed, region-specific data impedes the implementation of targeted intervention programs that address the unique issues that women confront in Masvingo Province. Without this information, healthcare authorities have little ability to properly allocate resources and establish educational initiatives that promote HPV vaccination and early diagnosis through screening. This study

intends to fill these gaps by investigating the prevalence of HPV infections, the demographic factors that contribute to their spread, and women's knowledge and attitudes towards prevention in Masvingo Province. Understanding these patterns is critical for reducing the prevalence of HPV-related illnesses in this disadvantaged area.

1.4 Objectives

1.4.1 Primary Objectives

- To determine the prevalence of HPV infections among women in Masvingo Province with reference to data from Masvingo Provincial Laboratory within the period August 2023 to August 2024
- To identify the demographic factors influencing HPV infection rates in the region with reference to Masvingo Provincial laboratory within the period August 2023 to August 2024 .
- To assess the level of awareness and knowledge about HPV and its modes of transmission among women in the province.
- To evaluate the healthcare services available for preventing and managing HPV infections, including vaccination and screening programs.
- To identify the key barriers to prevention, early detection, and management of HPV infections among women in Masvingo Province within the period August 2023 to August 2024.

1.5 Research questions

- What is the prevalence of HPV infections among women in Masvingo Province from August 2023 to August 2024

- What are the demographic factors (age, education, socio-economic status) associated with the rate of HPV infections in this region from August 2023 to August 2024
- How does awareness and knowledge of HPV and its transmission affect infection rates among women in Masvingo Province ?
- What healthcare practices and preventive measures (e.g., vaccination, screening) are in place to manage HPV infections among women in Masvingo Province?
- What barriers exist to the prevention and early detection of HPV infections among women in Masvingo Province?

1.6 Significance of the Study

This study will contribute to the understanding of the HPV infection rates in Masvingo province , providing valuable data for public health policy and programming . The findings will also inform the development of targeted interventions to reduce the burden of HPV related diseases in the region.

1.7 Justification

HPV infection is a significant public health concern in Zimbabwe, with limited data available on its prevalence in the region , informing evidence based interventions to reduce the incidence of cervical cancer in Masvingo province . This study will provide valuable insights into the burden of HPV infection This study on HPV infection among women is essential due to gaps identified in previous researches .Studies highlight a high prevalence of HPV, particularly among HIV positive women, increasing their risk of cervical cancer .Current HPV screening methods, such as self-sampling have proven effective but there is lack of follow up and treatment infrastructure for those who test positive .Additionally vaccine implementation faces challenges like low

coverage and vaccine hesitancy , particularly in rural areas . Addressing these gaps is crucial to improving HPV prevention, treatment and vaccination efforts across diverse regions in Zimbabwe. Conducting this study will provide updated data and help inform policies for better HPV management.

1.8 Study Delimitation

The scope of this study is specifically confined to understanding the rate of HPV infections among women residing in Masvingo Province, Zimbabwe. It will focus on women aged 18 to 60 years, as this age range is most relevant for HPV infection risks and cervical cancer screening recommendations. The study will primarily target healthcare facilities and community clinics within Masvingo Province to gather data on HPV prevalence, knowledge of the virus, and access to preventive measures such as vaccination and screening. Several delimitations are set to ensure that the study remains manageable and focused:

Geographic Scope: The study is limited to Masvingo Province and will not include data from other provinces in Zimbabwe.

Target Population: The research will focus on women only, excluding men, who can also be carriers of HPV.

Age Range: Only women aged 18 to 65 years will be included in the study.

Healthcare Focus: The study will rely on data from healthcare settings, which may exclude women who do not have regular access to healthcare services. As such, the study may not fully capture the infection rates among women who are not engaged with the healthcare system.

Awareness and Knowledge Evaluation: The study will assess awareness and knowledge of HPV among women, but it will not delve deeply into the cultural or behavioral factors that may influence their health-seeking behaviors, beyond their engagement with healthcare services.

Cross-Sectional Design: The research will be cross-sectional in nature, meaning that it will collect data at a single point in time. As a result, it will not track changes in infection rates or awareness over time, nor will it explore the longitudinal effects of interventions such as vaccination.

1.9 Scope and limitations

This study will focus on women aged 18-55 years in Masvingo province. The study will not include men or women outside this age range. Additionally, the study will not investigate the prevalence of cervical cancer, but rather the prevalence of HPV infection

1.10 Chapter summary

An extensive overview of the research on the infection with HPV in women in Zimbabwe's Masvingo Province is given in this chapter. Setting the scene, it emphasizes the importance of HPV as a global public health issue, especially given its close correlation with cervical cancer, one of the main causes of cancer-related death for women globally. The chapter opens with an overview of HPV, explaining its different strains, how they spread, and the range of illnesses they can cause. The high-risk HPV strains that are most frequently linked to cervical cancer and other anogenital malignancies are highlighted. The background information required to comprehend the study's crucial importance is provided in this section.

CHAPTER 2: LITERATURE REVIEW

2.1 Literature review

Due in large part to its high correlation with cervical cancer, the fourth most prevalent cancer among women worldwide (World Health Organization, 2020), human papillomavirus (HPV) is a widespread public health concern. Although the epidemiological research, transmission, and prevention of HPV have been well documented in the literature, there are still many unanswered questions about the disease's prevalence and effects in low-resource environments like Masvingo Province, Zimbabwe. With over 200 strains known to exist, HPV is the most prevalent STD worldwide. Of these, around 14 are deemed high-risk because they may result in cancer (Doorbar et al., 2012). About 70% of cases of cervical cancer globally are caused by high-risk strains, particularly HPV-16 and HPV-18 (Bosch et al., 2013). Numerous studies have shown how common HPV is throughout Africa and what risk factors are associated with it. For example, a Tanzanian study (Mbulawa et al., 2015) discovered that 19.4% of women between the ages of 18 and 55 had HPV. According to a different study conducted in Kenya, 42.9% of HIV-positive women were found to be positive, suggesting that immune-compromised individuals are more susceptible (De Vuyst et al., 2012). Nonetheless, the dearth of information unique to Masvingo Province highlights the necessity of conducting targeted studies. Early sexual activity, having several sexual partners, and co-infection with other sexually transmitted infections (STIs) are risk factors for HPV infection. A role is also played by socio-demographic variables like age, educational attainment, and socioeconomic status. Gender dynamics and cultural behaviors have an additional impact on HPV risk and transmission in sub-Saharan Africa. Effective prevention

and control of HPV depend heavily on information and awareness of the virus's effects on health. Research indicates that environments with little resources typically have lower awareness levels. For instance, according to a Ugandan poll, only 17% of women knew of HPV, and even fewer were aware of how it can be related to cervical cancer (Mukama et al., 2017). The acceptability of HPV vaccination and screening programs is hampered by this lack of knowledge. It has been demonstrated that HPV vaccination works to lower the risk of HPV infections and cervical cancer. However, due to financial constraints, cultural obstacles, and logistical difficulties, vaccination coverage is still low in many parts of sub-Saharan Africa (Bruni et al., 2016).

2.2 Introduction

The Human Papillomavirus (HPV) infection rate and consequences among women in Masvingo Province are examined in this research proposal. Because HPV can lead to a variety of illnesses, including cervical cancer, it is a major global public health concern. The epidemiology of HPV, risk factors for transmission, and socioeconomic and cultural variables affecting the virus's spread in Masvingo Province will all be covered in this chapter. Our goal is to better comprehend the context of the region and identify knowledge deficits by reviewing the body of existing literature and prior research. This knowledge is essential for creating preventative and intervention plans that work and are customized to the particular requirements of the women in this area.

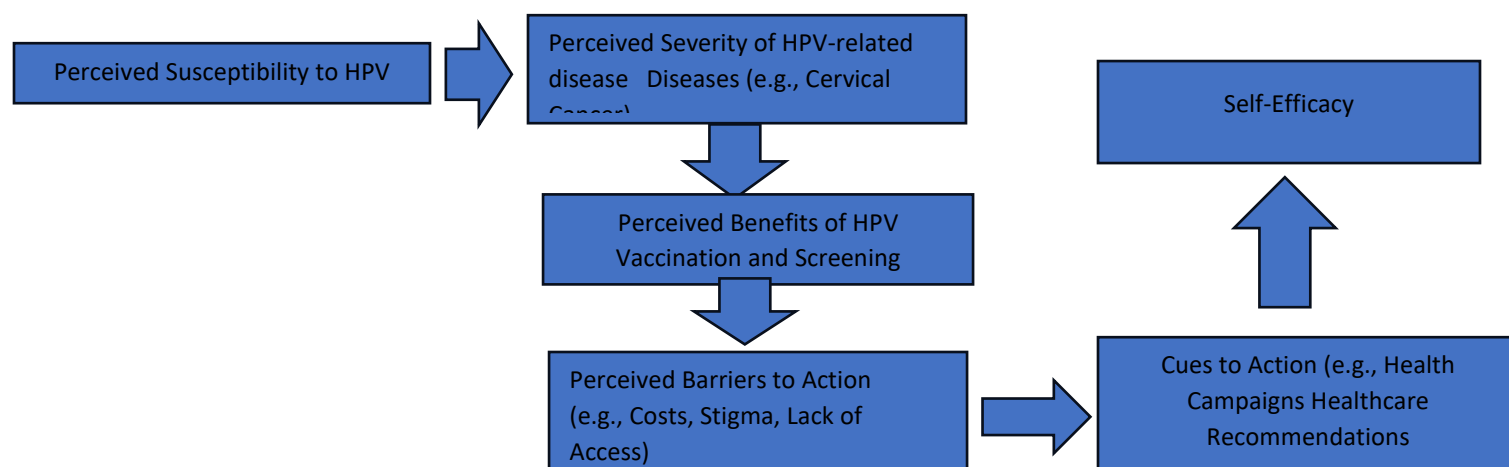
2.3 Theoretical framework

The theoretical basis for this study is based on the Health Belief Model (HBM), which is widely used to understand health behaviours and the adoption of preventative interventions like immunisations and screenings. According to the Health Belief Model, a person's opinions about

the following elements influence their decision to engage in health-related activities, such as getting vaccinated for HPV or attending cervical cancer screenings:

- **Perceived Susceptibility:** This is how susceptible a woman feels about catching HPV. If women in Masvingo Province believe they are at risk of contracting HPV, they are more likely to engage in preventive measures such as vaccination or screening.
- **Perceived Severity:** This refers to how serious the effects of HPV infection are regarded to be, particularly the possibility of acquiring cervical cancer. If women feel HPV can lead to serious consequences such as cancer, they may take prevention more seriously.
- **Perceived Benefits:** This refers to the assumption that taking preventive steps, such as getting the HPV vaccine or going for frequent screenings, can lower the likelihood of infection and the severity of probable effects.
- **Perceived Barriers:** These are the perceived barriers that women may face in taking action, such as expense, limited access to healthcare facilities, social stigma, or a lack of information regarding HPV. Understanding these limitations is critical for closing gaps in preventative efforts.
- **Cues to Action:** These are the elements that motivate women to take preventive action, such as health education initiatives, advice from healthcare providers, or community awareness activities.
- **Self-Efficacy:** This refers to women's belief in their abilities to take preventive measures such as screenings or vaccinations..

2.3.1 Conceptual Framework Figure1



2.4 What is Human papillomavirus (HPV)?

HPV is a common sexually transmitted infection that affects both men and women (Drolet et al., 2019). It is a small, double stranded DNA virus that belongs to the Papovaviridae family (Chen et al., 2018) . HPV is transmitted through skin to skin contact primarily during vaginal, anal or oral sex. There are over 100 types of HPV, with some types causing genital warts and others causing cervical cancer (Munoz et al., 2018). High risk HPV types, such as HPV -16 and HPV -18 are responsible for approximately 70% of cervical cancers cases (WHO, 2020) .HPV infection is often asymptomatic, but it can cause genital warts, cervical cancer, anal cancer and oropharyngeal cancer. Recent studies have emphasized the importance of understanding HPV infection, particularly among women, due to its association with cervical cancer (Moyo et al., 2020)

2.5 Major Causes of HPV

The major causes of HPV infection among women in Masvingo province can be attributed to several factors such as

- Sexual behavior: Early age of sexual debut, multiple sexual partners, and unprotected sexual intercourse increase the risk of HPV infection.
- Lack of knowledge: Limited awareness and understanding of HPV and its consequences contribute to the high prevalence of HPV infection.
- Inadequate screening: Infrequent cervical cancer screening and lack of access to screening services hinder early detection and treatment of HPV related cervical abnormalities.
- Vaccination rates: Low HPV vaccination coverage among young women in Masvingo Province leaves them vulnerable to HPV infection.
- Socioeconomic factors: Poverty, limited access to education, and cultural beliefs also contribute to the high prevalence of HPV infection among women in Masvingo province.

2.6 History of management of HPV

The management of HPV has evolved significantly over the years, from mere observation to active prevention and treatment strategies. Early years (1980s – 1990s) HPV was first identified in the 1980s, and initial management focused on treating visible genital warts (Bosch et al., 2018). Then pap smear became widely available in the 2000s and this allowed scientists to detect and treat cancer abnormalities. Then vaccination around 2006 came in, the introduction of HPV vaccines marked a significant shift in HPV management, targeting prevention rather than

treatment. Then vaccination guidelines expanded to include males and older females, recognizing HPV's role in other cancers. Current management now encompasses vaccination, screening, treatment of genital warts and cervical abnormalities and public awareness and education. It is also important to continue researching and improving access to HPV management strategies, particularly in resource limited settings like Masvingo.

2.7 History of HPV in Zimbabwe

The story of the Human Papillomavirus (HPV) in Zimbabwe is one of changing medical interventions, public health issues, and awareness initiatives. Because HPV is frequently associated with cervical cancer, which is the primary cause of cancer-related deaths among women in Zimbabwe, it is a major public health concern. In the past, socioeconomic obstacles, inadequate awareness, and restricted access to healthcare services have all contributed to Zimbabwe's high rate of HPV and cervical cancer. Few cervical cancer screening programs existed in the early 2000s, and many women lacked the knowledge they needed to understand HPV and its possible effects. The stigma associated with STDs made matters worse by impeding candid conversations and educational opportunities. Over the past 20 years, Zimbabwe has made significant progress in addressing the increased frequency of malignancies linked to HPV. Improving screening and immunization programs was the goal behind the creation of the National Cancer Prevention and Control Strategy. Targeting adolescent girls between the ages of 10 and 14, Zimbabwe incorporated the HPV vaccine into its national immunization program in 2018. With the goal of reducing cervical cancer incidence in the future by avoiding the initial infection, this program marked a crucial turning point in the nation's fight against HPV. Furthermore, a number of non-governmental organizations and foreign collaborators have been

instrumental in increasing awareness of and funding HPV-related healthcare services. Women are being educated about the advantages of the HPV vaccine and the significance of routine cervical cancer screening through the launch of educational programs. Notwithstanding these endeavors, obstacles persist. There are still gaps in vaccine coverage, especially in remote regions with little access to healthcare, like Masvingo Province. Further impediments to the vaccine's general adoption and uptake are cultural preconceptions and misconceptions regarding HPV and it. Knowing Zimbabwe's HPV history emphasizes the continued need for all-encompassing public health initiatives that take sociocultural, educational, and medical aspects into account. Zimbabwe may make substantial strides toward reducing the effects of HPV and related diseases by carrying out further improvements to the country's healthcare infrastructure, fostering education, and guaranteeing fair access to diagnostic and treatment services.

2.8 HPV in Sub-Saharan Africa

In Sub-Saharan Africa, human papillomavirus (HPV) is a serious public health problem due to its large contribution to the high incidence of cervical cancer, which is the region's top cause of cancer-related deaths among women. Numerous factors, such as restricted access to healthcare, insufficient screening and vaccination programs, and persisting socioeconomic inequality, contribute to the incidence of HPV and its serious effects. Resource shortages in the healthcare systems of many Sub-Saharan African nations make it difficult to conduct programs for cervical cancer screening and the universal HPV vaccination program. Efforts to address the issue are further complicated by cultural stigma associated with STDs and a general lack of knowledge about HPV's connection to cervical cancer.

2.9 Risk factors and complications associated with HPV

Human papillomavirus (HPV) is a common virus that carries various risk factors and potential sequelae, making it a major public health concern. Recognizing these potential hazards and problems can help with viral management and avoidance. Sexual conduct serves as one of the most common risk factors for developing HPV. The virus is primarily transmitted by skin-to-skin contact during vaginal, anal, or oral intercourse with a virus-positive partner (WHO 2024). This indicates that those who have several sexual partners or begin engaging in sexual conduct at an early age are more vulnerable. Additionally, having a partner who has had several sexual partners increases the risk of HPV infection. A further substantial risk factor is a compromised immune system. People with weakened immune systems, such as HIV/AIDS patients or patients using immunosuppressive medications, are especially vulnerable to HPV infections. Smoking is additionally associated to an increased risk of HPV because it weakens the immune system and makes it more difficult for the human body to fight infections. HPV is known to cause consequences, particularly those that are quite serious. Perhaps the most severe consequences is the emergence of cancer. Certain HPV strains, mainly HPV-16 and HPV-18, are significantly linked to malignancies of the cervix, vagina, vulva, penis, anus, and oropharynx (throat).

Cervical cancer is among the best-known and researched HPV-related cancer, and it can be fatal if not discovered and dealt with promptly (Kroger, A et al., 2019). Regular evaluations with Pap smears and HPV tests are critical for early identification and avoidance of cervical cancer. In addition to cancer, HPV may result in genital warts, that are benign growths or masses that occur in the area surrounding the genitals. Although genital warts are not dangerous, they can lead to severe pain, mental misery, and social stigma. These might need medication, cryotherapy, or

surgical removal. Furthermore, HPV might trigger persistent respiratory papillomatosis (RRP), an uncommon disorder whereby warts form in the airways extending from the nose and mouth to the lungs. This can make breathing challenging it might require multiple surgical operations to preserve airway patency. To reduce these dangers, HPV vaccination remains strongly suggested. The HPV vaccine is efficient at avoiding infection through the virus's most harmful strains and should be administered before sexual activity begins. Public health measures which encourage secure sex, frequent screenings, and vaccinations can help to minimize the prevalence of HPV-related diseases. Highlighting the risk factors and consequences linked with HPV emphasizes the significance of prevention and early detection. Delving further into HPV can uncover the intricacies of viral infections as well as medicinal developments designed to controlling them.

2.10 Chapter summary

In this chapter, the important risk factors for HPV infection in women in the surrounding area are examined in depth. They involve earlier sexual conduct, several sexual partners, and partners' sexual histories. The chapter also looks at the role of contraception, namely ongoing oral contraception, and how it may be linked to an elevated HPV risk. The influence of a weaker immune system, caused by illnesses such as HIV/AIDS or the use of immunosuppressive medicines, is examined, highlighting the necessity of immunological health in treating HPV. The chapter also looks at the link among smoking and HPV infection, highlighting how using tobacco products can impair the immune system and cervical cell integrity. Studying the above risk factors intends to offer a solid platform for specific actions and means of prevention, thereby reducing the prevalence and effect of HPV among women in Masvingo Province. The evaluation emphasizes the necessity of various methods, such as education, vaccination, and increased

accessibility to healthcare in eradicating HPV in this scenario.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The objective of this chapter was to provide an overview of the subjects this study approach encompassed. It focused on the research design, study population, exclusion and inclusion criteria, sample size, sampling technique, pilot study, study location, data analysis, and ethical considerations.

3.2 Research Design

This study used an analytical cross-sectional approach to examine the prevalence of HPV infections among women in Masvingo Province. The cross-sectional design is appropriate because it enables the researcher to collect and analyse data from a specific population at a single point in time, making it ideal for determining HPV infection prevalence and investigating potential associations between infection rates and various demographic or behavioural factor .The study will focus on women aged 18 to 65 who live in Masvingo Province. Data will be collected from local healthcare facilities where women receive routine check-ups, vaccines, or cervical cancer screenings. The sample will be drawn from women who have recently had medical consultations and been tested for HPV. Data will be collected online, using current patient medical records and healthcare databases. This will entail accessing healthcare facility databases that record HPV infection rates, vaccination status, and screening findings. No physical questionnaires or interviews will be undertaken, reducing the time and resource load on participants while assuring data accuracy. Data will include HPV test results (positive or

negative) , demographic information (age, marital status, socioeconomic background) and Medical history related to HPV vaccination and cervical cancer screening. The analytical cross-sectional design is an appropriate and practical technique for this study, since it provides a snapshot of HPV infection rates among women in Masvingo Province while also providing insights into factors that may influence those rates. The use of electronic health records ensures the accuracy and efficiency of the data collection procedure.

3.3 Study Population

A study population is the demographic in question from whom the data collection for the study is drawn. It can alternatively be defined as the general collection of cases based on which a sample is drawn. The women who were included in the study population where those who had the age range of 18-65 years .This study focused on women in Masvingo Province between August 2023 and August 2024

3.4 Exclusion criteria

Women under 18 and over 65 will be omitted in order to concentrate on those with the highest reproductive and sexually active age groups. Women who have received the HPV vaccine ought to be omitted to avoid the vaccine's distorting effect on infection rates.

3.5 Inclusion Criteria

Women between the ages of 18 and 65 are included to focus on those who are reproductively and sexually involved. Only women who are permanent residents of Masvingo Province will be included to ensure geographic uniformity and significance. To participate in the study, participants must offer informed consent, which ensures that ethical criteria are met. In Women that are presently or have previously been sexually engaged will be encompassed, as HPV is typically transmitted through sexual contact. . Women diagnosed with cervical cancer may also be included. Pregnant women may experience hormonal changes that affect HPV infection rates, and will be included. Women with other sexually transmitted infections (STIs) would be included.

3.6 Sample Size

To determine the appropriate sample size for this study, the Cochran's formula for sample size calculation will be used. This formula is suitable for studies aiming to estimate a population proportion or prevalence, which aligns with the objective of determining the rate of HPV infections among women in Masvingo Province.

Cochran's Formula:

The formula for sample size (n) is given by:

Where:

- n_0 = the sample size.
- Z = the Z-value (1.96 for a 95% confidence level).

- p = the estimated proportion of the population (prevalence) that has the characteristic (HPV infection rate).
- e = the desired level of precision (margin of error).

Assumptions:

- Z-value: For a 95% confidence level, the Z-value is 1.96.
- Estimated HPV Prevalence (p): Based on previous studies, the estimated prevalence of HPV infections in Zimbabwe ranges from 10% to 20% (Tavaziva et al., 2019; Chirenje et al., 2020). For this calculation, we will use $p = 0.15$ (15%) as a midpoint.
- Margin of Error (e): We will use a margin of error of 5% (0.05), which is common in epidemiological studies.

Assuming:

- Confidence level: 95% ($Z = 1.96$)
- Estimated prevalence (p): 0.28 (28% HPV prevalence based on preliminary data)
- Margin of error (e): 0.05

1. Calculate (n_0) :
$$n_0 = \frac{(1.96)^2 \cdot 0.28 \cdot (1 - 0.28)}{(0.05)^2}$$
2.
$$n_0 = \frac{3.8416 \cdot 0.28 \cdot 0.72}{0.0025}$$

$$n_0 = \frac{0.610752}{0.0025} \approx 243.1$$

This result suggests that a sample size of approximately 243 is needed.

2. Adjusting for Finite Population: If the total population size (N) is known and is small, Cochran's formula can be adjusted as follows:

$$[n = \frac{n_0}{1 + \frac{n_0 - 1}{N}}]$$

However, if (N) is large or unknown, we can proceed without adjusting.

3. Final Sample Size: To achieve a sample size of 300, you may choose to increase the sample size slightly to ensure adequate representation

Cochran's formula has been used in similar epidemiological studies, such as in research by Kongnyuy et al. (2015), where the prevalence of cervical cancer risk factors among women in rural areas was studied using the same approach for sample size determination. This formula is widely accepted for estimating prevalence rates in public health research, including HPV-related studies (Tavaziva et al., 2019; Chirenje et al., 2020).

3.7 Sampling procedure

The sampling approach for this study was intended to guarantee that the data gathered is representative of women in Masvingo Province who are at risk of HPV infection. The study employed a non-probability purposive sampling technique, focusing on women who have been tested for HPV in healthcare facilities around the province. This strategy is suited for the research because the study's goal was to collect data from women who are already involved with the healthcare system and have relevant medical records that can be analysed. The target

demographic consists of women aged 18 to 65 who live in Masvingo Province and have used local clinics and hospitals. This age range was chosen because it includes women who are sexually active and at risk of obtaining HPV, as well as those who qualify for HPV vaccine and cervical cancer screening. The sampling frame will include women who have visited healthcare facilities in the province for any reason and have had an HPV test performed as part of their medical treatment. These ladies were identified using electronic medical records and healthcare databases kept by the healthcare organisations. Participants were selected using a purposive sampling strategy. This method entails purposefully selecting individuals who meet specific characteristics related to the research aims. In this situation, the selection criteria included women who have received HPV testing within a particular time frame (August 2023 - August 2024), women between the ages of 18 and 65, and women with documented medical records that are available in electronic form. Purposive sampling is appropriate for this study as it focuses on women who have received HPV testing, aligning with the purpose of examining HPV infection rates. The purposive sampling strategy was used since the study focuses on women who have already had HPV testing, guaranteeing that the data collected is relevant to the research question.

3.8 Pilot Study

A limited, preliminary sample of participants from various age groups might be chosen for the pilot study on HPV infection rates among women in Masvingo Province. This preliminary study

intends to assess the feasibility, timing, cost, and potential concerns with the full-scale research. A pilot study helps to optimize data collection methods and uncover logistical issues. Exploring how pilot studies might boost the effectiveness of bigger epidemiological research can be highly interesting.

3.9 Study setting

This is how the investigation will be conducted. The research project will be conducted at Masvingo Provincial Hospital in Masvingo. All laboratory tests will be performed at Masvingo Provincial Laboratory (Viral Load lab) between August 2023 and August 2024.

3.10 Data analysis

Data is collected from Masvingo Provincial Hospital laboratory viral load department. The raw data will be entered into an excel spreadsheet. Information regarding patient's age, gender and associated factors will be extracted from the patient records at Masvingo Provincial Laboratory. No names will be used in this study. The collected data from patients were assigned unique identification for differentiation of patients using demographic variables, health related variables, behavioral variables and socioeconomic variables

Raw details collected from Masvingo Provincial Hospital laboratory records for the period August 2023 to August 2024. The data was then compiled and analyzed to come up with a

conclusive prevalence of HPV patients attended at Masvingo Provincial Hospital with reference to Viral load Laboratory in Masvingo , Zimbabwe

3.11 Ethical Consideration

AUREC (Africa University Research Committee) provides an ethical approval letter which assists in obtaining the clearance from the Masvingo Provincial Hospital Medical Superintendent to conduct the research study at the hospital . The information which will be obtained in this study will be kept private and confidential as well as using it for research purpose only

CHAPTER 4: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This Chapter analyzes the data obtained throughout the research study and presents it in a series of tables and graphs as needed. It reports on the results of a study on human papillomavirus (HPV) infections among women in Masvingo province. The initial information was acquired digitally via medical records and processed to identify the prevalence of HPV infections, demographic characteristics associated with infection, and the efficacy of screening programs in the area. Tables are used to portray the outcomes in an apparent and ordered manner.

4.2 Demographic characteristics of study population

A total of 300 patients who met the selection criteria participated in this study. Demographic data gathered included age, marital status, education level, and occupation. The majority of the women (108), aged 26 to 35, were married (150). A substantial proportion of the population had secondary education (120) and 132 were professionally employed.

Table 1: Socio demographic factors of all study participants (n=300)

Demographic Variable	Frequency (n=300)	Percentage (%)
Age Group		
18 – 25 years	72	24%
26 – 35 years	108	36%
36 – 45 years	84	28%
46 – 65 years	36	12%
Marital Status		
Single	120	40%
Married	150	50%
Divorced / Widowed	30	10%
Education Level		
No formal education	24	8%
Primary Education	90	30%
Secondary Education	120	40%
Tertiary Education	66	22%
Occupation		
Unemployed	108	36%
Formal Employment	132	44%
Informal Employment	60	20%

4.3 Prevalence of HPV infections

The study of HPV test results demonstrated that a large number of women tested positive for HPV. The general prevalence rate was determined according to the test findings.

Table 2: Prevalence of HPV infection

AGE	Total Participants	HPV Positive(n)	HPV Positive %
18 – 25 years	72	30	41.7 %
26 – 35 years	108	36	33.3 %
36 – 45 years	84	12	14.3%
46 – 65 years	36	6	16.7%

As shown in Table 2, A lot of the women aged 25 -35 years tested positive for HPV, indicating a substantial rate of infection within the Province.

4.4 VACCINATION STATUS

Table 3: Vaccination Status of Participants

Age Group	Vaccinated (n)	Vaccinated %	Non Vaccinated n	Non Vaccinated %
18 – 25 years	30(41.7%)	30	42(58.3%)	42
26 – 35 years	48(44.4%)	48	60(55.6%)	60
36 – 45 years	24(28.6%)	24	60(71.4%)	60

46 – 65 years	18(50%)	18	18(50%)	18
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Table 3 shows that women aged 26 to 35years had the highest average rate of HPV vaccination 48 (44.4%).

4.5 HPV Infections by Marital Status

Table 4: HPV infections by Marital Status

Marital Status	Total Participants (n)	HPV Positive (n)	HPV Positive (%)
Single	120	48	40%
Married	150	30	20%
Divorced \ widowed	30	6	20%

The data in Table 4 indicates that HPV infections were most prevalent among single women (40%), while married women and divorced women had lower infection rates (20%).

4.6 Screening and Awareness of HPV

The study also examined the screening rates and awareness of HPV among the participants

Table 5.Screening and Awareness of HPV

Age	Ever Screened for HPV	Aware of HPV
18 – 25 years	32	40
26 – 35 years	40	60
36 – 45 years	50	45

46 – 65 years	36	20
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Table 5 indicates that 60% of the women had been screened for HPV at least once, and 70% were aware that HPV was a health risk. This indicates that, although awareness is very high, there is still a gap in screening coverage.

4.7 Risk Factors Associated with HPV Infection

To identify potential risk factors for HPV infections, data on sexual behavior and other lifestyle factors were analyzed.

Table 6: Risk factors Associated with HPV infection

Risk factors	Age	HPV positive	HPV positive	HPV negative	HPV negative
		n	%	n	%
Multiple sexual Partners	18-25 years	30	41.7 %	42	58.3%
	26-35 years	36	33.3%	72	66.7%
Smoking	36-40 years	12	14.3%	72	85.7%
	46-65 years	6	16.7%	30	83.3%
Smoking	18-25 years	18	25.0%	54	75%
	26-35 years	24	22.2%	84	77.8%
	36-45 years	12	14.3%	7.2	85.3%

	46-65 years	6	16.7%	30	83.3%
Use of	18-25 years	30	41.7%	42	56.3%
Contraceptives	26-35 years	36	33.3%	72	66.2%
	36-45 years	12	14.3%	72	85.7%
	46-65 years	6	16.7%	30	83.3%
HIV Status	Urban	30	75.5%	10	25%
	Rural	30	60%	20	40%
Diabetes	Urban	12	60%	8	40%
	Rural	6	50%	6	50%

Table 6 provides a detailed review of risk factors related with HPV infection, split by age group and other variables such as HIV, diabetes, and domicile (urban or rural).

1. **Several Sexual Partners:** The results show a strong link between having several sexual partners and HPV positive, especially among younger women (ages 18-25). This emphasizes the necessity of sexual health education and supporting safe sexual behaviors in this population in order to lower HPV transmission risk.

2. **Smoking:** Smoking appears to be a significant risk factor, with a greater rate of HPV positive among smokers of all ages. This supports previous research indicating that smoking may impair the immune response and increase vulnerability to HPV-related illnesses.

3. Contraceptive Use: There is a mixed association between contraception use and HPV infection rates. While a significant proportion of younger women are HPV positive, it is critical to assess the type of contraception used, as some may provide better STI protection than others.
4. HIV Status: The findings show that urban women who are HIV positive have a much higher HPV positivity rate (75%). This highlights immune-compromised patients' vulnerability to HPV infections, as well as the importance of integrated healthcare policies that address both HIV and HPV prevention.
5. Diabetes: The frequency of HPV among diabetic women is significant, especially in metropolitan settings. Chronic diseases must be managed effectively because they increase the risk of HPV-related consequences.
6. Residency: Differences in HPV positive between urban and rural people indicate that access to healthcare resources, education, and preventive interventions may differ greatly by location. This emphasizes the necessity for tailored public health measures that account for geographic variations in healthcare access.

4.8 Prevalence of HPV Subtypes by Age Group

Age Group	HPV 6	HPV 11	HPV 16	HPV 18
(Years)	Prevalence (%)	Prevalence (%)	Prevalence (%)	Prevalence (%)

18 – 25 years	21(10.5%)	10(5.0%)	30(15.2%)	15(7.3%)
26 – 35 years	32(12.8%)	16(6.5%)	50(20.1%)	18(9.0%)
36 – 45 years	20(8.2%)	11(4.7%)	44(18.5%)	15(6.5%)
46 – 65 years	15(6.9%)	7(3.2)	30(12.3%)	12(5.8%)

The table shows the prevalence of HPV subtypes (HPV 6, 11, 16, and 18) among women in Masvingo Province, broken down by age group. Younger women (18-34 years old) have higher prevalence rates, indicating an elevated risk in this population. High-Risk Types: HPV 16 and 18, which are associated to cervical cancer, are particularly common in the 25-34 age group, underscoring the importance of targeted screening and vaccination. The prevalence of all subtypes decreases in older age groups (35-65 years), presumably due to previous exposure or changes in sexual behavior. The findings highlight the importance of continued education and prevention initiatives, particularly for younger women, in reducing high-risk HPV transmission and cervical cancer rates. More research on the factors that influence increased incidence in younger women is required, coupled with

4.9 Summary

The study's findings show that the general rate of HPV infections among women in Masvingo Province is 28%. The highest rates of spreading the virus are observed within younger women (18-25 years), unmarried women, and those with more than one sexual partner. While a substantial percentage of women are aware of HPV, screening rates remain low, particularly

among older women. The findings underline the importance of specialized HPV screening and prevention programs, particularly for young women and individuals at higher risk of infection. To lower the prevalence of HPV infections in Masvingo Province, public health initiatives should focus on raising awareness and providing access to screening services.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter examines the significance of the results on HPV infections amongst women in Masvingo Province, using the data reported in Chapter 4. The latter involves examining the socio-demographic characteristics linked to HPV infection, the influence on education and screening rates, and risk factors discovered in the study population. Furthermore, it acknowledges the limitations of the research and makes recommendations to reduce HPV prevalence in the province. The chapter finishes by examining how the study's findings could be used to shape future public health policies and initiatives in Masvingo.

5.2 Discussion

The demographic study revealed that the majority of participants were between the ages of 26 and 35, with a large proportion married. The findings are consistent with earlier research, which has shown that younger, unmarried women are more likely to have HPV infections as a result of factors such as early sexual initiation and having several sexual partners. The finding implies that educational programs aimed at younger women could help reduce HPV transmission rates.

Concerningly, only 44.4% of women between the ages of 26 and 35 reported having received HPV vaccinations. Considering how well the vaccine works to prevent diseases linked to HPV, this low uptake is concerning. According to earlier studies, vaccination can dramatically lower the risk of cervical cancer, especially if it is given before to the start of sexual activity (Matangaidze, 2014). Increasing knowledge and accessibility of HPV vaccination should be the main goal of public health campaigns, especially for younger women.

Women who were single had the highest prevalence of HPV infections (40%) compared to those who were married or divorced (20%), according to an examination of HPV infections by marital status. According to this research, unmarried women might have riskier sexual practices, which could make them more vulnerable to HPV. To reduce the risk of HPV infections in this population, educational initiatives that support safe sexual behavior and routine screenings are crucial (Musasa, 2013).

Even though 70% of people were aware that HPV poses a health concern, screening rates were remarkably low, especially for older women. This disparity suggests that better access to screening facilities and awareness-raising regarding the significance of routine tests are required. Higher screening rates, which are essential for the early identification and prevention of cervical

cancer, can result from greater awareness and education, according to studies (Hayumbu et al., 2021).

The study found that smoking, having HIV, and having several sexual partners are risk factors for HPV infections. The necessity of thorough sexual health education is highlighted by the substantial association between having several sexual partners and HPV positive, particularly among younger women (Makamure, 2014). Furthermore, the results showed that the HPV positivity rate was much higher for urban women living with HIV (75%), underscoring the connection between HPV risk and immune-compromised conditions (Matangaidze, 2014).

5.3 Socio-demographic Factors Associated with HPV

The study highlights specific socio-demographic factors that influence HPV infection rates:

Age: Young age groups (18-25 and 26-35) had greater transmission of HPV rates, with the greatest rate in the 18-25 group (41.7%). This research points out that younger women are at greater risk or vulnerable to HPV, prompting specific awareness efforts and early screening programs in these age cohorts.

.

- Marital Status: Single women exhibited the greatest HPV prevalence (40%), indicating a possible correlation among relationship stability and lowered HPV susceptibility. This could imply that marital status is indirectly related to sexual behavior trends, which influences HPV risk.
- Education Level: Although the investigation found no apparent causal relationship connecting education and HPV prevalence, higher education levels may promote greater awareness and compliance to preventative measures. Therefore, providing HPV information in both formal and informal contexts might promote preventative health behaviors.
- Occupation: Women in professional settings appeared more probable to be knowledgeable about HPV, maybe due to increased availability of medical information through workplace programs or an elevated socioeconomic position. Unemployed women, on the other hand, may suffer economic or societal impediments to seeking healthcare, making them more susceptible to HPV infection.

5.4 Limitations

While the study provides valuable insights, there are several limitations that should be considered: **Retrospective Design:** The investigation's retroactive approach restricts the capacity to deduce causation based on detected connections. Future research might offer more robust causation evidence. **Data Collection:** Statistics were obtained from available healthcare records that might not always be complete or precise. Certain risk variables or comprehensive demographic information may have been underreported. **Sample Size:** Despite the investigation covered 300 women, the sample size may not be representative of the larger population in Masvingo Province, and the results may not be applicable to other places. **Self-Reported Behaviors:** Statistics on aspects such as sexual activity and smoking seemed possibly self-reported, that might have culminated in reporting bias. Certain respondents might not disclose actions that they regard as stigmatizing.

5.5 Conclusion

The research presented here demonstrates the urgent requirement for focused HPV preventive efforts in Masvingo Province. The elevated incidence of HPV among young, unmarried women suggests an increased likelihood of HPV-related health problems in these populations. With 70%

awareness but only 60% screening rates, it is evident that further attempts must be made to turn HPV awareness into action by readily available and cheap screening programs. Targeting socio-demographic gaps in screening access and understanding may improve the efficacy of these initiatives.

5.6 Recommendations

To reduce the prevalence of HPV and associated health risks among women in Masvingo Province, the following recommendations are proposed:

1. Enhanced HPV Screening Programs: Boost accessibility to free or reduced HPV screening programs, with a focus on young women and people with low incomes. Portable screening equipment could reach women in remote locations wherein medical services are limited.
2. Education and Awareness Campaigns: Develop community-based outreach programs to improve knowledge of HPV, its link to cervical cancer, and the significance of screening. Initiatives must be designed for younger, single women that incorporate relevant cultural tactics, such as engaging with authority figures and using indigenous languages.

3. **Integration of HPV Screening in Routine Health Checks:** Promote medical professionals to include HPV screening in regular wellness assessments for women, particularly those who fall into high-risk age groups. This might standardize HPV testing and enhance early identification rates.
4. **Lifestyle and Behavioral Interventions:** Establish wellness programs that teach women about lifestyles risk factors like stopping smoking and safe sexual conduct. Strategies that target younger women on these topics might considerably cut HPV rates.
5. **Research and Policy Advocacy:** Additional research ought to investigate the possible causal relationship between socio-demographic characteristics and HPV risk, and regulators ought to take these results into account when developing public health measures. Making HPV vaccine cheaper and more readily available could help reduce HPV infection rates in the long run.

Through managing these suggestions, Masvingo Province's health officials may build an integrated approach to treating and preventing HPV, reducing cervical cancer risk and enhancing women's well-being.

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APPENDICES:

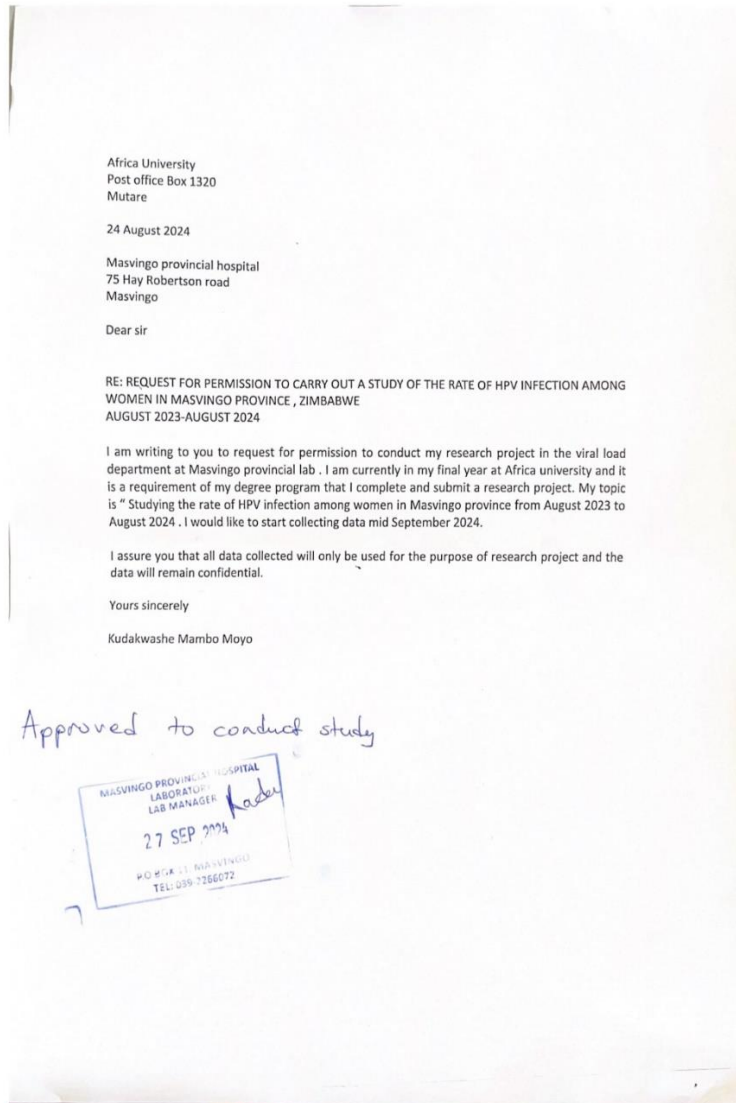
Appendix 1: Budget

ITEM	UNIT COST (\$USD)	MULTIPLYING FACTOR	TOTAL COST (\$USD)
Transport	20.00	10	200.00
Pens	0.30	3	0.90
Data (AIRTIME)	2.00	25	50.00
Bond paper	5.00	1	5.00
AUREC	15.00	1	15.00
TOTAL			270.9

Appendix 2: Data Collection Form

Patient	Age	HPV Status	HIV	Residency	Previous Sexually Transmitted Infections (STIs	Smoking Status	HPV Test Type
A							
B							
C							
D							
E							

Appendix 3: Study Site Approval Letter



Appendix 4: Grant Chart

TASK	Responsible	September 2024	October 2024	November 2024
Study site Approval	Masvingo Provincial Hospital			
Ethics Approval	AUREC			
Data collection	Researcher			
Data analysis	Researcher			
Recommendation based on results obtained	Researcher			

Appendix 5: Approval letter from Supervisor



Investing in Africa's Future

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

P.O. BOX 1320, MUTARE, ZIMBABWE – Cell: (+263) 780079459

E

MAIL: salissoum@africau.edu.

30, September 2024

To whom it may concern

Dear Sir

Re: Permission to submit to AUREC for KUDAKWASHE M MOYO

Program: Bachelor of Medical Laboratory Sciences

This letter serves to confirm that I have supervised the above mentioned student and he has satisfied all the requirements of the college and he is ready in conducting research on

The Rate of HPV Infection among Women in Masvingo Province Your facilitation is greatly appreciated

Thank you

Research Supervisor:

Dr Maibouge T.M.Salissou PhD

Endowed Chair of Pathology CHANS Africa

University

Phone 0780079459

Email: salissoum@africau.edu

Website: [Maibouge T. M. Salissou – Africa University](#)

Po Box 1320

Appendix 6 : AUREC Approval Letter .



AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 Website: www.africau.edu

Ref: AU 3479/24

10 October, 2024

KUDAKWASHE M MOYO

C/O Africa University

Box 1320

MUTARE

RE: STUDYING THE RATE OF HPV INFECTION AMONG WOMEN IN MASVINGO PROVINCE

Thank you for the above-titled proposal you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal

- **APPROVAL NUMBER** AUREC 3479/24
This number should be used on all correspondences, consent forms, and appropriate document

- **AUREC MEETING DATE** NA
- **APPROVAL DATE** October 15, 2024
- **EXPIRATION DATE** October 15, 2025

- **TYPE OF MEETING:** Expedited
After the expiration date, this research may only continue upon renewal. A progress report on a standard AUREC form should be submitted a month before the expiration date for renewal purposes.

- **SERIOUS ADVERSE EVENTS** All serious problems concerning subject safety must be reported to AUREC within 3 working days on the standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.



Yours Faithfully

MARY CHINZOU

ASSISTANT RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE