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Investigation of risky sexual behaviour amongst HIV/AIDS positive individuals on antiretroviral treatment in Buffalo City Metropolitan Municipality Eastern Cape Province, South Africa.

BY

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**MINI DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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**IN THE
FACULTY OF HEALTH SCIENCE**

**AT THE
UNIVERSITY OF FORT HARE**

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01.07. 2022

DECLARATION

I, Mzukisi E. Pere, student number 200400754, do hereby declare that this research dissertation titled ***Investigation of risky sexual behaviour and associated factors amongst HIV/AIDS positive individuals on antiretroviral treatment in Buffalo City Metropolitan Municipality East London, Eastern Cape Province, South Africa***, is submitted to the University of Fort Hare for the degree of Master of Public Health. This study is the product of my own work. It has not been submitted before to any other institution by myself or any other person in fulfilment of the requirements for the attainment of any other qualifications. I further cede the copyright of this research in favour of the University of Fort Hare.

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Certification

This mini-dissertation titled **Investigation of risky sexual behaviour amongst HIV/AIDS positive individuals on antiretroviral treatment in Buffalo City Metropolitan Municipality Eastern Cape Province, South Africa**, meets the guidelines outlining the award of the postgraduate degree **MASTER OF PUBLIC HEALTH** at the Fort Hare University and is approved for its contribution to scientific knowledge and literary presentation.

Supervisor: Dr B F. Mayeye

Signature... 

Date: 01.07.2022



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ABSTRACT

Background: Human immunodeficiency virus (HIV)/ acquired immune deficiency syndrome (AIDS) is one of the major public health concerns. Antiretroviral treatments (ART) is available immediately for HIV-positive individuals but sexually transmitted infections are on the rise. The majority of HIV positive patients on ART are engaging in unsafe sexual practices.

Purpose: The aim of this study was to investigate risky sexual behaviour of people on antiretroviral treatment regarding prevention. The study was conducted on adult clients in the Buffalo City Metropolitan Municipality.

Methods: A quantitative and descriptive cross-sectional design was conducted whereby 304 patients who visited Nontatyambo Health Centre were randomly selected. Data was entered and analyzed using Statistical Package for the Social Sciences (SPSS) 24. Simple descriptive statistics such as numbers, percentages and tables were used to characterise variables. A chi-square test was used to explore associations between dependent and independent variables. Test significance, confidence intervals and p-values of all the causes and contributory factors were set at 0.05.

Results: Thirty two percent reported having sex with multiple sexual partners while 19% reported never using a condom. Forty eight percent reported having had sexually transmitted infections since starting on ART. The median age (36 years (IQR: 31, 45) vs. 35 years (IQR: 26, 40)) of those who reported STIs was higher than the median age of those who did not report STI ($p=0.012$). Males (57%, $p=0.049$), those who were employed (55%, $p=0.048$), and those who were cohabitating (68%, 0.030) were more likely to report STI. Similarly, those who had unprotected sex with a casual partner (62%, $p<0.001$), and those who did not use a condom because a partner did not like it (71%, $p=0.001$) were more likely to report STIs. A significant number of 32% of the participants reported engaging in risky sexual practices while 48% had reported an STI. Recommendations include educational outreach programmes and capacitation of health care workers with appropriate skills and tools.

Keywords: ART, condoms, risky sexual behaviour, Sexual transmitted infections

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ART	Anti-Retroviral Treatment
BCM M	Buffalo City Metropolitan Municipality
CHC	Community Health Centre
DOH	Department of Health
DHIS	District Health Information System
HIV	Human Immunodeficiency Syndrome
HPV	Human papillomavirus
HSV	Herpes simplex virus
MSM	Men having Sex with men
MUS	Male urethritis syndrome
NGOs	Non-governmental organizations
PLWHA	People Living With HIV and AIDS
PMTCT	Prevention from Mother to Child Transmission
SANAC	South African National Aids Council
SPSS	Statistical Package for Social Sciences
STIs	Sexually Transmitted Infections
UN	United Nations
UNAID	Joint United Nations Programme on HIV/AIDS
UTT	Universal test and treat
VDS	Vaginal Discharge Syndrome
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION AND ORIENTATION OF THE STUDY

1.1. Introduction and background

Human immunodeficiency virus (HIV) was first detected more than four decades ago while the first cases of Acquired Immunodeficiency Syndrome (AIDS) were reported in 1986 (WHO, 2016). The Sub-Saharan Africa region is the hardest hit by HIV/AIDS, with over 37.7 million people living with the virus in 2020. About 1.5 million people became infected in 2020, while around 690 000 people died due to AIDS-related illnesses. In 2020, around 27 million people in the region were receiving treatment, while another 6.5 million were on medication. In 2018, South Africa was the biggest contributor to the continent's new infections, with over 242,000 cases. Other countries such as Uganda, Kenya, and Tanzania also experienced significant increases in new infections (UNAIDS, 2021).

In 2012, just 31.2 percent of people living with HIV were on ART (Johnson, Mossong, Dorrington, Schomaker, Hoffmann, Keiser, Fox, Wood, Prozesky, Giddy, Belen, Garone, Cornell, Egger & Boule, 2013; UNAIDS, 2012; UNAIDS, 2017). There has been an increase of access to antiretroviral treatment (ART), with countries like South Africa in particular opting for a universal test and treat strategy (WHO, 2016) Despite the progress that has been made in treating HIV, the number of people living with the virus continues to rise. In 2018, about 20.6 million people were infected with HIV, and this figure was 5% higher than the previous year.

The life expectancy has dramatically improved from just below 52 years in 2012 to 61 and 67 years for male and females respectively (Statistics -South Africa, 2019). More people living with AIDS on ART appear to be healthy with less HIV symptoms. Antiretroviral treatment suppresses the level of virus in the blood system, thereby reducing the likelihood of acquiring opportunist diseases, AIDS and death. Furthermore, they minimize the risk of HIV transmission through undetectable viral load within the individual. This led to health workers not giving adequate health education to patients on ART regarding prevention of STI,s by avoiding risky sexual practices.

One of the biggest challenges that public health officials face is the spread of sexually transmitted infections especially amongst HIV positive individuals. According to the World Health Organization, it is estimated that about a million infections occur every day (WHO, 2016). More than 500 million people worldwide are living with genital herpes, gonorrhoea, syphilis and trichomoniasis which are the primary causes of human papilloma virus which leads to cervical cancer in women (WHO, 2016). There are other dangers associated with sexually transmitted infections like pelvic inflammation, still birth and HIV. More than 2, 6 million people are infected by HIV every year in the sub-Sahara region. Furthermore, the HIV resistant strain is transmitted from those on antiretroviral treatment to their sexual partners (Demissie, Shifera, Asfaw & Kiros, 2015). About a third of people with HIV engage in sexual intercourse without a condom, which could result in the development of a new strain of the virus and transmission to other people. Studies also suggest that the prevalence of this practice among people on HIV/AIDS treatment remains high (Tadesse & Gelagay 2019; Wondemagegn & Berkessa 2020).



Sexual health is an important aspect which should be adequately addressed in reducing the risk of HIV transmission. The occurrence of sexually transmitted infections among those on antiretroviral treatment will pose a risk of new HIV infections which might present a resistant viral strain to the antiretroviral treatment that they are using (Cohen, Council, & Chen, 2019). Cohen, Council, and Chen, (2019) found that testing for HIV and initiating on antiretroviral treatment had a limited effect in reducing behaviour among people living with HIV on antiretroviral treatment.

In this study the researcher investigated risky sexual behaviours of people who are on antiretroviral treatment in Buffalo City Metropolitan Municipality (BCMM) Eastern Cape Province.

1.2. Problem statement

A recent increase in the number of sexually transmitted infections among people living with HIV in the Eastern Cape has been attributed to the use of antiretroviral therapy. According to the clinic records of the District Health information system (2019) more than 100 cases of sexually transmitted infections (STIs) are being recorded on a monthly basis (DHIS, 2019). The practice of risky sexual behaviour among people with HIV is considered a public health concern. It can also lead to the development of new strains of the virus and the transmission of the disease to their partner (DHIS, 2019). Around 500 million people globally are living with various sexually transmitted diseases, such as gonorrhoea, syphilis, and genital herpes. These conditions can lead to cervical cancer. Some of these patients are on treatment for these conditions (WHO, 2016).

Although the use of antiretroviral drugs has been shown to reduce the transmission of HIV, there are still many sexually transmitted infections among people who are on treatment. This may be due to the trust they put in antiretroviral treatment into thinking that, since they are on ARVs, they will not get infected with sexually transmitted infections. HIV positive individuals on ART often feel strong and healthy and consequently may have a desire to engage in unprotected sexual intercourse. Sexual health is an important aspect which should be adequately addressed in reducing the risk of HIV transmission. The occurrence of sexually transmitted infections among those on antiretroviral treatment will pose a risk of new HIV infections which might present a resistant viral strain to the antiretroviral treatment that they are using (Cohen, Council, & Chen, 2019). A study that investigates the link between risky sexual practices and the spread of HIV/AIDS among people on ART treatment in BCMM has not been conducted. Therefore, there is a need to examine risky sexual behaviours and knowledge of its consequences among people on antiretroviral treatment in the Buffalo Metropolitan Municipality.

1.3. Purpose of the study

The aim of this study was to investigate risky sexual behaviour of HIV positive patients on antiretroviral treatment regarding prevention of STIs in Buffalo City Metropolitan Municipality, Eastern Cape Province.

1.4. The objectives of the study

The study objectives were:

- 1) To determine the relationship between the demographic characteristics of HIV positive patients who are on antiretroviral treatment and their engagement in risky sexual practices in Buffalo City Metropolitan Municipality District.
- 2) To assess awareness of sexually transmitted infections and their prevention among HIV positive patients who are on antiretroviral treatment.
- 3) To examine the extent of risky sexual practices by patients who are HIV positive on antiretroviral treatment.
- 4) To examine knowledge of the consequences of engaging in risky sexual practices while on antiretroviral treatment

1.5. Research questions

The research questions of the study:

- a) What is the relationship between the demographic characteristics of patients who are HIV positive on antiretroviral treatment and their engagement in risky sexual practices in Buffalo City Metropolitan Municipality District?
- b) Are HIV positive patients on ART aware of signs and symptoms of STIs and their prevention?

- c) To what extent are HIV positive patients on antiretroviral treatment aware of risky sexual practices?
- d) Are HIV positive patients knowledgeable of the consequences of engaging in risky sexual practices while on antiretroviral treatment?

1.6. Significance of the study

The study findings could have important implications on how to decrease risky sexual behaviours which will reduce biological risk of HIV transmission, especially now that the country has undertaken a universal test and treat approach. Findings on this study can be used to pursue further studies in order to improve and design new policies.

This study aims to analyze the current situation regarding the treatment and prevention of sexual transmission of HIV among people with these conditions. It will also provide guidelines on how to improve the methods used by healthcare workers to prevent sexual transmission.

This study could benefit the programme policy implementers, civil society organisations supporting sexual reproductive and the South African National AIDS Council (SANAC). This study will also be used in the development of new HIV programs. It will also provide the necessary information to improve the programs' effectiveness.

Policy and programme implementers in both fields will be able to evaluate their work against the findings from this study thus adjusting and strengthening their programmes based on this study.

1.7. Limitations of the study

The study was based on self-reported risky sexual practices and sexually transmitted infection of HIV positive individuals living in the Buffalo City Metropolitan Municipality only and thus the findings would not be generalized to the broader community of the Eastern Cape Province.

1.8. Operational definition of concepts

1.8.1. Risky sexual behaviour

This behavior can increase the likelihood that the infected person will become pregnant or infect their partner. The transmission rate increases when the person infected with HIV describes their sexual activity (Okobo, Castelnovo, Moore, Musaazi, Kambugu, Birungi & Van Rie, 2018).

1.8.2. Prevalence

Joubert and Ehrlich (2012) describe prevalence as the number of people who have a particular disease at a specific time. It focuses on existing cases regardless of onset.

1.8.3. Sexually transmitted infections

The most common sexually transmitted infections are those that can be passed from one person to another through intercourse. They can occur through oral sex, anal sex, or skin-to-skin contact (SANAC, 2017).



1.8.4. Antiretroviral treatments

In the treatment of HIV, drugs known as anti-retroviral are used to prevent the virus from infecting a person. They can also stop the virus's natural reproduction in the body (WHO, 2016).

1.8.5. People living with HIV/AIDS

This refers to the individuals who are diagnosed/tested positive for HIV infection.

1.9. Delimitations of the study

The data only targeted patients between the ages of 18 and 50 years old who have been on ART for the past 12 months. Adolescents who were under 18 years accessing ART attending primary health care facilities were not considered to participate in this study. The study was only targeted patients accessing X CHC and patients from the other clinics were excluded.

1.10. Conceptual framework

1.10.1. Health belief model (HBM) conceptual framework

This study was based HBM conceptual framework. The goal of this study was to analyze the effects of the HBM conceptual framework on a person's expectations regarding a health-related action. It states that a person's actions should be based on their belief that a negative health condition could be prevented. They should also expect that they can avoid experiencing a negative health condition by using sexual protection (Glanz, Rimer, & Viswanath, 2008).

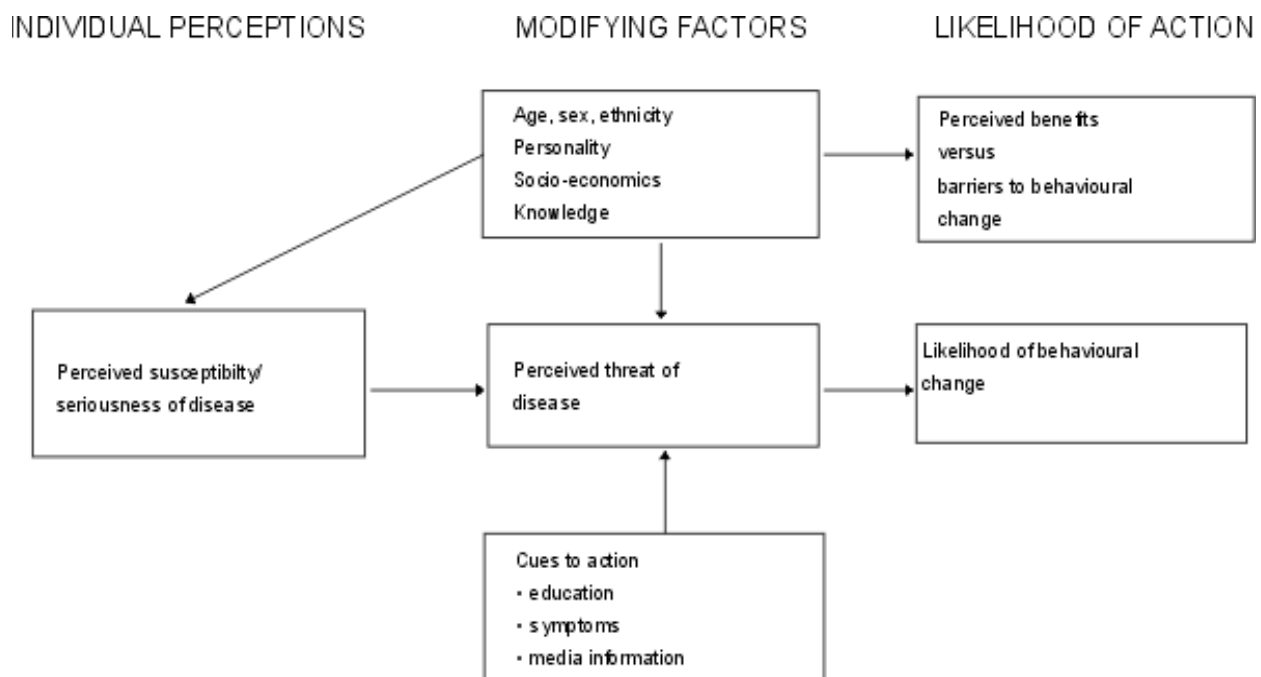


Figure 1: Health belief model

Source: Glanz, Rimer, and Viswanath, (eds.), 2008

Individual perceptions: Individuals have varying perceptions about their perceived susceptibility to various types of diseases. These include perceived benefits, barriers, and severity.

Perceived susceptibility: When people believe that they are at risk of getting AIDS, they are more likely to take action to prevent the disease from happening to them (Glanz, Rimer, & Viswanath, 2008). This belief is influenced by various factors such as their

cultural and gender backgrounds, as well as their lack of authority or decision-making power when it comes to sex. Individuals on AIDS spectrum treatment (ART) are more susceptible to developing sexually transmitted infections (STIs) if they do not use condoms consistently and correctly.

Perceived severity: The perceived severity of a disease is a function of an individual's belief about the seriousness of the condition. It can also be influenced by the beliefs that a disease would have a negative effect on one's life, or by the difficulties that it would cause (Glanz et al. 2008). This perception is also likely to influence an individual's actions when it comes to taking preventive measures.

Perceived threat: The perceived threat to a disease such as HIV is influenced by the severity of the situation and the perception of the disease as a serious threat. This makes people more likely to use condoms. Perception of threat to disease is also influenced by the modifying factors and cues to action (Stanhope & Lancaster, 2005). The use of prophylactics may also be influenced by the perceived threat of developing resistance to treatment.

Perceived barriers: The perceived barriers that people encounter when trying to adopt a new behavior are often evaluated by their own evaluation (Karimy, Azarpira & Araban, 2017; Glanz, Rimer & Viswanath, 2008). For instance, the attitudes of partners and friends toward the use of condoms can be considered barriers to people's efforts to become more sexual.

Modifying factors

Factors that modify a person's perceptions are:

- **Demographic variables:** The likelihood of using condoms is influenced by various demographic factors such as age, gender, and marital status. An unmarried person may be more likely to use condoms than a married person due to the freedom that they have to make their own choices (Asare, & Sharma, 2012).

- Psychological variables: Beliefs and cultural factors may influence the motivation of women to use condoms. This is because of their husbands' expectations. On the other hand, women's motivation may be low due to cultural pressure.
- Structural variables: The level of education, past experiences, and knowledge about HIV are some of the structural factors that can influence the likelihood of people being compliant with HIV (Glanz, Rimer, & Viswanath, 2008).

Other factors such as financial status and prior contact with the disease can also affect the decisions people make when it comes to health actions (Buldeo & Gilbert, 2015).

1.11. Layout of the Study

Chapter 1: Introduction and Orientation of the Study. The chapter begins with an introduction and provides a background information on the study. It then explores the various aspects of the study and its objectives. It also discusses the study's key concepts and study significance, limitations, introducing the conceptual framework and the layout of the study.



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Chapter 2: Literature Review. In the second chapter of this study literature review is conducted. The review looked at international, regional and local articles related to the topic in various countries and regions, including Sub-Saharan Africa and South Africa. It provides a detailed analysis of the factors that influenced sexual behaviours and STI prevalence among people on ART.

Chapter 3: Research Methodology. The chapter then describes the various aspects of the study's methodology. It covers the various aspects of the research design, including the setting, sampling method, and pilot study. The tools used in the collection process are also explained. This section also provides an overview of the ethical principles that were applied in the study.

Chapter 4: Data Analysis, Presentation of Results and Discussions. The fourth chapter of this study reviews the findings of the study and provides an analysis of the

main findings. It also explores the various aspects of the study and its objectives. This chapter also reviews the findings of the study using the collected data and discusses the data from the respondents.

Chapter 5: Summary, recommendations, and conclusion. The concluding chapter of this book provides an overview of the findings and recommendations of the study. It also reviews the various limitations and strengths of the study.

1.12. Summary

The first chapter of this study introduced the main idea of the study and its significance. It also covered the various aspects of the research, including the theoretical framework, the design, and the methods used. The next chapter will discuss the various studies that were conducted before the study was conducted.

The next chapter looks at the literature review of the study.



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CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter aims to provide an overview of the literature on the topic of interest. It also reviews the previous works on the same subject in order to make informed decisions regarding the direction of research (Joubert & Ehrlich, 2012). The goal of the review is to describe the various studies that have been conducted on the topic of trust and transformational leadership. It also aims to identify areas of controversy and gaps in the literature. Lastly, it should demonstrate why the research is necessary, important and valid (Joubert & Ehrlich, 2012). Reviewed documents on ART and STI,S were obtained from websites (online) and research articles from journals that are peer reviewed sourced from accredited research sites: EBSCOHost, journals, Cochrane Library, PubMed, Biomedical Journal (BMJ), databases, books, and government publications. Key words that were used when searching were ART and STI,s. Prevalence of STI,s globally and South Africa, sexual behaviours and STI prevalence globally and Africa. Consequences of risky sexual behaviours amongst people on ART

This review has been conducted with more than ten different articles which were looking at the sexual behaviours and prevalence of sexually transmitted infections among people living with HIV/AIDS who are on antiretroviral treatment. This review looked at international, regional and local articles related to the topic.

2.2 Global and African review of sexual behaviours and STI prevalence among people on ART

The majority of studies that were looking at sexual practices do so from the angle of sexual behaviour, knowledge and attitudes. One of the most common reasons why there were fewer studies looking into the sexual transmission of HIV infections among people who were on antiretroviral therapy was due to the lack of evidence supporting the link between these infections and the risky sexual behaviour of these individuals. ART naïve people are reportedly to likely practice risky sexual behaviour or practices with females having more unprotected sexual intercourse compared to males (Adeboye, Yongsong, &

James, 2016). There was, however, no evidence supporting this kind of practice among those who are ART experienced. However, Demissie, Shifera, Asfaw, and Kiros, (2015) found both experienced and newly enrolled people (32.9%) had risky sexual behaviours. Most of them had admitted to being sexually active with their partners without protection or experienced a condom burst. According to Shukla (2017) in a study that was conducted in India 25% of people living with HIV/AIDS had high risky sexual behaviour. There were other associated factors with risky sexual practices such as gender, alcohol, age, employment status and the duration of the treatment. In one of the studies in Ethiopia risky sexual behaviours between the ages of 18-29 was at 38% (Mollad & Gelagay, 2017).

In a study which looked at the prevalence of risky sexual practice it was discovered that 39% had risky practice three months before the data was collected (Tadesse and Gelagay, 2020) with substance abuse significantly associated with it. People living with HIV/AIDS who were sexually active had risky sexual behaviour. These findings are similar to those of a study by Mosisa, Woldemichael, and Ayalew (2018) which was conducted in Ethiopia whereby more than 32% of people living with HIV/AIDS had engaged in risky sexual behaviour with similar associated factors. Almost all (98.0%) non-condom users had unprotected sex with a partner they did not know of their HIV status. Mosisa, Woldemichael, and Ayalew (2018) also found that prevalence of sexually transmitted infection was at 14% among people living with HIV/AIDS. Those are people who reported multiple sexual partners.

Other studies had different findings related to risky sexual behaviours and people living with HIV/AIDS who are on antiretroviral therapy. Xu, Wang and Cheng, (2020) found that 72% of his participants who were people on antiretroviral therapy had no risky sexual behaviour and only 6% who were doing so with their fixed partners. This is similar to findings from a study published by Moges et al. (2020) whereby only 15% of the participants had risky sexual behaviour.

There were few studies looking into the prevalence of sexually transmitted infections among individuals living with HIV/AIDS and on antiretroviral therapy (ART). Poudel-Tandukar et al. (2017) found that 1.2% of the infections were caused by syphilis, while 5% were due to other infections. According to Tsachouridou et al. (2016), 58% of people

living with HIV in a tertiary hospital in Greece (5.2%) were diagnosed with syphilis. Antiretroviral treatment and other sexually transmitted infections were the causes of syphilis.

Risky sexual behaviours/practices are not associated with marital status in people who are HIV positive on antiretroviral treatment. Both single and married respondents accounted for more than 52% of risky sexual behaviours while men were found to be culprits of risky sexual practices with 52% of them having unprotected sexual intercourse with unknown partners compared to 40% of females (Kharsany, McKinnon, Lewis, Cawood, Khanyile, Maseko, Goodman, Beckett, Govender, George, & Ayalew, 2020).

2.3 The Sub-Saharan and South African review of sexual behaviours and STI prevalence among people on ART

Evidence from the Sub-Saharan African with regards sexual practices and prevalence of sexually transmitted infections indicates that there are opposing findings. According to the study which was conducted in Botswana, risky sexual behaviour accounted for only 8% of people living with HIV who are on antiretroviral treatment. Those are people who simultaneously reported having multiple sexual partners (Keetile & Kgosidintsi, 2018). George et al. (2019) found that testing for HIV and initiating on antiretroviral treatment had a limited effect in reducing behaviour among people living with HIV on antiretroviral treatment. Whereas according to Risher, Rehle, Simbayi, Shisana, and Celentano, (2016) there was not enough evidence suggesting risky sexual behaviour among people living with HIV/AIDS being associated with antiretroviral treatment in people living with HIV/AIDS. Basera, Takuva, Muloongo, Tshuma, and Nyasulu, (2016) and Risher et al. (2016) found a very close association between people living with HIV and sexually transmitted infection with 19.9% people living with HIV having reported for an STI.

In South Africa and other sub-Saharan African countries there are few studies reporting an increase in risky sexual behaviour by people living with HIV/AIDS on ART as alluded to earlier studied in this review. Sexually transmitted infections are relatively high among the general population within the country

Giuliano et al. (2015) and Francis et al. (2018) found that there is a high prevalence of sexually transmitted infections among rural South Africans. The majority of the infections that were reported were not sexually transmitted. These infections were among the men and women who were aged 15 to 24. They were also more likely to be asymptomatic. Some of the other factors that were associated with these infections included being female, being older, and not being employed. Six percent men and 19% women of people living with HIV/AIDS were among those who were found with sexually transmitted infections. Okoboi et al. (2018) found that in South Africa, risky sexual behaviour is associated with duration of ART whereby after 12 months of ART initiation there was notably decrease as compared to pre-ART (OR 0.86, 95% CI 0.78–0.95).

According to SANAC (2017-2020) the prevalence of sexually transmitted infections in the country is at 1.4 million from 15 years of age and above. These were only new cases of STI that were treated between 2015/16. These cases remain a huge problem and a risk to new HIV infection. The prevalence of syphilis had decreased among antenatal clients from 11.2% in 1997 to 1.6% in 2011 during the antenatal survey that was conducted. The group that is fast developing STIs is the men having sex with other men with more than a third of them having reported an STI symptom. The country's prevalence rate is high among a sexually active group of young women at 17-47% for bacterial vaginosis (SANAC, 2017-2020). Cape Town had high syphilis prevalence among sex workers compared to other cities within the country at 19%. Meanwhile, the prevalence rate of syphilis was at 6.2% gonorrhoea 10.9% and chlamydia at 32.8% and HSV antibodies 46.5% among the other groups. This was observed in a study that was looking at sexual transmitted infection prevalence among young women in the Western Cape. However, 40% of the study participants were found to be HPV positive with no co-infection of any treatable sexually transmitted disease (SANAC, 2017-2022).

2.4 Provincial and regional review of sexual behaviours and STI prevalence among people on ART

According to Adeboye, Yongsong and James (2016) risky sexual behaviour in the Eastern Cape is prevalent among the youth irrespective of HIV status. Their study revealed that more than 50% of youth had been involved in sexual activities in the last 12 months with

the majority being females. While 72.8% reported no condom use there were other associated factors contributing to this such as living conditions and drug/alcohol consumption. Human papilloma virus was more prevalent among HIV positive people with 41% compared to HIV negative people at 21% (Taku et al., 2020).

Buffalo City Metropolitan Municipality, a region which serves a few townships and rural areas, has close to 80 000 people living with HIV/AIDs who are on antiretroviral treatment. On the other hand, Community Health Centre X which was the focal point of this study had around 8200 clients on antiretroviral treatment. This facility also recorded close to 100 cases of sexually transmitted infections on monthly basis (DHIS, 2019).

2.5 Summary

In this chapter a literature review was conducted on issues regarding risky sexual practices and prevalence of sexually transmitted infections among PLWHA who are on antiretroviral therapy. This was done by looking at global and regional trends. It can be concluded that evidence in this review suggests that antiretroviral treatment among HIV positive people was linked to risky sexual behaviour and few studies dispute this. This was not only a danger to people living with HIV/AIDs but also to the general population as well as it impacts preventive strategies. Therefore, this supports the notion that sexually transmitted infections are a public health concern that requires new research and monitoring in order to win the fight against HIV/AIDS.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter covered the literature as it relates to the topic of risky sexual practices among HIV/AIDS positive individuals who are taking antiretroviral therapy. This chapter also discussed the various aspects of the research, such as its design, sampling procedure, and population. The paper also covered the various aspects of the research instrument used in the study, such as its reliability and validity. This study was conducted using the Health Belief Model (HBM) framework. The concept of the Health Belief Model states that people will take various health-related actions if they feel that a negative condition can be prevented.

The study objectives were:

- To determine the relationship between the demographic characteristics of HIV positive patients who are on antiretroviral treatment and their engagement in risky sexual practices in Buffalo City Metropolitan Municipality District.
- To assess awareness of sexually transmitted infections and their prevention among HIV positive patients who are on antiretroviral treatment.
- To examine the extent of risky sexual practices by patients who are HIV positive on antiretroviral treatment.
- To examine knowledge of the consequences of engaging in risky sexual practices while on antiretroviral treatment.

3.2 Research approach and design

The goal of this study was to explore the relationship between trust and organizational outcomes through a quantitative approach. The study was conducted through a non-experimental design (Brink, Van der Walt & Van Rensburg, 2018). It also used a survey to collect data.

Study design refers to the strategy or overall design of the study. Umar, Lai, Chang, Bhatt & Su (2020) explain that study design is a roadmap to follow during the research journey to find answers to the research objectives. Research design includes what must be done about the topic to be investigated, among whom and what methods of research will be employed, as well as why the research needs to be done (Nardi, 2018).

3.2.1 Quantitative approach

The quantitative method was used to examine risky sexual practices and associated factors amongst HIV/AIDS positive individuals on antiretroviral treatment in BCMM. A quantitative method is used to investigate a problem based on an empirical theory with both independent and dependent variables, measured with raw numerical data and analysed with quantitative methods in order to determine if the generalization of theory can be tested (Fisher, Medaglia & Jeronimus, 2018).

3.2.2 Descriptive design

This study has described the various factors that affect the risk of getting infected with HIV and AIDS in BCMM. The study was conducted through a descriptive design, which allows researchers to observe and document the situation as it happens. This type of study can also serve as a starting point for developing theories and hypotheses (Polit & Beck, 2017).

3.2.3 Survey design

Data collection was performed by means of a survey. This is a non-experimental research process utilized in studies that involve collecting information about a specific population. This method is commonly used to collect data on the various factors that affect a person's behavior and attitudes (Polit & Beck, 2017). It can also provide insight into the distribution and prevalence of certain behaviours and beliefs. The researcher conducted the study using a survey approach because it allows him or her to collect large numbers of data.

3.3 Research Methods

Research methods provide for qualitative and quantitative research design that involved a sample frame, a population, and a variety of sampling methods. The research methods

of this study discussed the study setting, population, and the sampling methods used which include the sample frame, sample size and inclusion and exclusion criteria, data collection, data analysis ethical considerations and data management. This study followed a quantitative method.

3.3.1 Study setting

The study was conducted in the Eastern Cape, Buffalo City Municipality in East London Mdantsane Township which is offering primary health care services. Community Health Centre was the facility where this study was based. X CHC has a total of 8200 HIV positive patients who are on ARV treatment. Mdantsane Township has 10 primary health clinics. X CHC which was the focal point of this study had around 6000 adult clients on antiretroviral treatment. This facility also recorded close to 100 cases of sexually transmitted infections on monthly basis (DHIS, 2019).

3.3.2 Study population

The study population consisted of all patients who were HIV positive on antiretroviral treatment in Mdantsane who were attending the above mentioned Community Health Centre.



3.3.3 Target population

Patients who were 18-50 years of age on antiretroviral treatment for 12 months or more were considered. The research was conducted during their clinic visits.

3.3.4 Sample and sampling technique

3.3.4.1 Nonprobability sampling method of Convenience sampling

This study was measuring disease distribution of sexually transmitted infections among people on antiretroviral treatment) in a population. This was done to people who had visited the primary health care facility on that particular day therefore convenience sampling method under non-probability was used and suitable for this kind of study. This is the technique which relies on data collection from population members who are conveniently available to participate in the study. In this sampling method involves getting participants wherever you can find them and typically wherever is convenient.

3.3.4.2 Determination of the sample size

The facility had an estimated number about 6000 patients on antiretroviral treatment who were between the ages of 18-50 years; therefore, the Raosoft sample calculator was used with 5% margin of error allowed and 95% confidence level to determine the exact sample size. Convenience sampling technique was conducted whereby every person who was at the facility was invited to participate in the study. The sample size was 367 participants. An extra 10% was taken to allow for spoilt, refusing and non-responding qualifying participants (Naing, Winn, & Rusli, 2006). This meant the total sample size was 377.

3.3.4.3 Inclusion criteria

All participants who were males and females between age 18 and 50 who had been on ART for the past 12 months were included.

3.3.4.4 Exclusion criteria

Participants who were sick during the data collection period were excluded.

3.3.4.5 Recruitment procedure

The researcher visited the data collection sites 2 weeks before data collection period for a familiarization visit. During this process, operation managers from the clinics were informed about the intended research activity and the manner in which ethical issues would be ensured. Registered nurses were requested to distribute letters of invitation to HIV positive patients who were on ARV,s visiting the clinic to access their treatment or visiting the health centre for their routine check up to be seen by the health care worker or visiting child health or antenatal clinic to participate in the study.

3.3.5 Data collection tool

The questionnaire was developed by the researcher based on the objectives, literature review and conceptual framework. It was written in English and adapted to the South African context. The developed instrument had 35 items grouped into four sections.

The questionnaire was divided into four sections:

Section A: demographic characteristics of participants.

Section B: extent of risky sexual practices

Section C: awareness about measures for prevention of STIs

Section D: knowledge of the consequences of engaging in risky sexual practices

Developments of items in the questionnaire were influenced by some construct of the Health belief model: For example demographic characteristics of participants is related to **perceived susceptibility**. Extent of risky sexual practices is aligned with **cues to action**. Awareness about measures for prevention of STI and knowledge of the consequences of engaging in risky sexual practices are related to **perceived benefits of the action**. Awareness about measures for prevention of STI and knowledge of the consequences of engaging in risky sexual practices is related to **perceived benefits of the action**

3.3.6 Validity of the instrument

A pilot study was conducted to check the validity of an instrument. This type of evaluation is carried out to determine if the instrument has actually measured what it supposed to measure (Burns & Grove, 2016). According to Barnham (2015), the validity of an instrument is a measure of how much of an abstract construct it actually reflects. The validity of the tool is also a measure of how it reflects the participants' responses. For instance, the level of accuracy depends on the number of times the instrument is administered to the same group of individuals (Brink, Van der Walt and Van Rensburg, 2018).

3.3.7 Reliability of the instrument

The reliability of a measure refers to the consistency of its results when compared with the results of a similar test that was administered to the same group of people (Burns and Grove, 2016). This is because the same measurement instrument is used to measure the same results with the same set of people at two different times. This study was conducted to establish a consistency between the characteristics of patients and the study materials. The instruments used in the study were designed to measure the effectiveness of the instructions and the completeness of the responses. The researchers also wanted to

analyze the data collection technique and the accuracy of the questionnaire (Burns and Grove, 2016). According to Polit and Beck (2017) reliability analyses the various aspects of the questionnaire and determine its validity. The results of the study revealed that the questionnaire was more accurate and reliable when compared with the pre-test. The pilot testing of the instrument also contributed to the reliability of the results.

3.3.8 Data collection method

The researcher made appointment with the managers of the identified PHC clinics prior to the visit. The purpose of the appointment was for building rapport with CHWs, Clinic Managers before data collection process starts. The participants were recruited during the time when they were visiting the health centre to collect their treatment, to be seen by the health worker or visiting child health or antenatal clinic. They were invited to participate by distributing letters requesting their participation in the study.

The participants were given information sheets to read and understand the purpose, objectives and their rights were spelt out before they signed consent forms. The research was conducted at identified PHC clinic within the local area in a private room to ensure privacy. Safety precautions related to covid-19 infection prevention were adhered to: social distancing, putting on masks and sanitisation of hands and surfaces. The participants were then given self-administered questionnaire to complete. The survey was conducted in English and was designed to help the participants understand the various terms used in the study. The researchers then split the survey into four sections that were focused on sexual practices, socio-demography, and prevalence.

3.3.9 Data analysis

The data was then converted into a form that can be used for analysis, and the numerical values for each response were assigned. The data was then entered into the statistical package for social sciences SPSS 24. After the data was processed, it was analyzed for errors, and special variables were created. A qualified statistician was used to analyze

the data collected during the study. The multiple statistical methods used in the analysis included the number of tables, graphs, and percentages. A chi square test was also used to explore the relationships between independent and dependent variables. The significance of the various factors that affect the development of trust was then set at 0.05.

3.4 Ethical considerations

Ethical clearance and an ethics certificate were obtained from the University of Fort Hare's Human Research Ethics Clearance Committee (**Ref # 2021=09=08=PereM see appendix 3**). Permission to conduct the study was obtained from the Eastern Cape Department of Health in Bhisho (**see appendix 4**) Buffalo City Metropolitan District (**see appendix 5**) as well as from X CHC.

Other ethical issues that were considered in relation to the participants were:

3.4.1 Informed consent

Details about the study were explained to the subjects using their preferred language of choice. Clear comprehensive information about the study was given. This was done in both verbal and in written forms. The participants were allowed to read and understand the consent form before they signed it. Each participant was given a copy of signed consent form while the other remains with the researcher (**see appendix 2**) they were informed that participation is voluntary and they have the right to withdraw from the study at any time.

3.4.2 Confidentiality and anonymity

The participants were informed that anonymity would be maintained all the time during the process with no names being written when completing their questionnaire (their identities would be kept secret). Information about the participants won't be divulged in any case. Confidentiality would be maintained as there would be no names mentioned and the participants who wish to withdraw from the study will be able to do so at any time without penalty. Confidentiality was maintained as the name of the facility where research was conducted was not mentioned and not documented in the questionnaire in the study

and in other research documents. Participants who wish to withdraw from the study will be able to do so at any time without penalty. Participants were assured that the information collected would be accessible only to the research team and that all the completed questionnaires and reports would be kept under lock and key. The information obtained from data collection was not divulged to anybody.

Lastly, extracted data was stored electronically on a computer protected by a secret password for patient confidentiality. Hard copies of documented collection sheets with information obtained from patients' records were stored in a locked cabinet in an office used by the researcher to ensure privacy is maintained and confidentiality.

3.4.3 Information

The participants were provided with clear and comprehensive information regarding participation in the study. This was in both written and verbal form. Furthermore, the participants were allowed to ask questions if something was not clear.

3.4.4 Beneficence

In addition to being able to trust, participants also have a right to be protected from harm and discomfort. This concept is commonly referred to as the right to be protected from various forms of harm and discomfort. (Brink, Van der Walt and Van Rensburg, 2018). The researcher arranged with the psychologist of the health centre to be on standby. Those participants whom felt emotional and discomfort during interview process were referred by the researcher to the psychologist for counselling and further assistance.

3.4.5 Justice

The concept of justice refers to the right of a participant to be treated fairly and freely in a study. This type of research was conducted on a case-control basis, and the researcher ensured that the participants were not forced to participate (Brink, 2006).

3.4.6 Risk factors

Due to the current COVID-19 pandemic situation, the data collection was conducted in open consulting rooms. Masks were worn and hands and surfaces were sanitised. A

physical distance between 1.5-2.0m was maintained between the participants. In certain situations, screening was done just before data collection is conducted.

3.4.7 Dissemination of the study

Once the researcher completed the study, the findings would be kept and filed as proof of study in the University of Fort Hare library in the form of a CD as well as electronically. The study would be published in an academic journal to provide a valuable contribution to the reduction of STIs. The researcher will organise a meeting with the Community Health Centre management to report on the study. A copy of the document will be sent to the Department of Health Research and Epidemiology office.

3.5 Summary

The research methodology chapter has presented in detail the methods used for conducting this research. A quantitative descriptive cross sectional study was conducted. The data collection tool, its variables, issues of validity and reliability, data collection procedure and data analysis was all described in this chapter. The participants were requested to respond to an appropriate questionnaire. Issues related to ethical aspects during data collection were observed.

CHAPTER FOUR: DATA ANALYSIS PRESENTATION OF RESULTS AND DISCUSSIONS

4.1. Introduction

The previous chapter covered the various steps involved in conducting a study. This section also covered the procedures that were followed during the study's development. The results of the study were then presented and the findings were analyzed. The study also included the characteristics of the study's participants and sexual practices.

In this chapter the researcher attempted to answer the following research questions:

- What is the relationship between the demographic characteristics of patients who are HIV positive on antiretroviral treatment and their engagement in risky sexual practices in Buffalo City Metropolitan Municipality District?
- Are HIV positive patients on ART aware of signs and symptoms of STIs and their prevention?
- To what extent are HIV positive patients on antiretroviral treatment aware of risky sexual practices?
- Are HIV positive patients knowledgeable of the consequences of engaging in risky sexual practices while on antiretroviral treatment?

The results are presented in a form of descriptive table whereby percentages, p-value and odd ratios are outlined. Furthermore, discussion of the study findings is presented later in this chapter. The purpose of the discussion is to find if the study findings correlates/ disagrees with what is available on the literature. In this study, the researcher operationalised and performed literature control based on preliminary review of literature in chapter 2.

4.2. Demographic characteristics

Between November 2021 and February 2022, 563 HIV positive patients who attended Nontyatyambo Community Health Centre for their routine care were approached and requested to participate in the study. Of this, 211 (37%) did not meet the inclusion criteria, 48 (9%) refused to participate in the study, and 304 (54%) agreed to participate and signed informed consent forms. Of those who were enrolled in the study, 72% (220/304) were females and 98% (298/304) were Black/African with a median age 35 years (interquartile range [IQR]: 28, 42 years) (**Table 1**). Majority of the participants were single (73%, 222/304), unemployed (59%, 178/304), residing in urban settlement (65%, 198/304) with more than 80% of them either completed matric (31%, 94/304) or in secondary school (50%, 152/304) (**Table 1**).

4.2.1. Sexual behavioural practices and relationship dynamics

Of the 304 participants enrolled in the study, 16% (50/304) were staying alone, 13% (40/304) were cohabitating 51% (157/304) were either staying with parents or sibling while 19% (58/304) were staying with their spouses (**Table 1**). In addition, 78% (238/304) reported that they were in a relationship, of whom 11% (25/236) have been in a relationship for less than a year, 63% (147/236) were in a relation for one to five years, while 27% (62/236) were in a relationship for more than five years (**Table 1**).

Majority (69%, 206/300) of the participants reported that they had a relationship with same partner in the past 12 months, while 32% (96/300) reported that they had sex with multiple sexual partners (**Table 1**). When asked about condom use frequency in the past 12 months, 19% (58/304) reported that they never used a condom, 45% (135/304) reported that they used it sometimes, while 36% (110/304) always used condom. Furthermore, 41% (125/304) reported that they had unprotected sex with casual partner. When asked about the reasons for not using condom, 34% (66/304) reported that they were either married or trust their sexual partners, 20% (38/304) reported that their partners did not like condom while 11% (21/304) indicated they did not like using a condom. More than 35% (68/304) reported other reasons (**Table 1**).

When asked about condom access and ability to use them, 86% (261/304) reported that they can access condoms without feeling embarrassed, 88% (267/304) were confident in ability to put on condom, and 86% (262/304) were confident to ask their partners to put on a condom. When asked about their perception on condom use, 43% (132/304) agreed with the statement that said, “condom creates doubt between sexual partners” and 54% (165/304) indicated that chances of refusing sex were low if a condom was not available (Table 1).

Table 4. 1: Demographic characteristics, sexual behavioural practices and relationship dynamics of HIV positive patients on ART, Buffalo City Metro, Eastern Cape.

Variable	N (%)
Age, years	304 (100%)
Median (IQR)	35 (28, 42)
Age group, years	
<30	83 (27%)
30-39	120 (39%)
≥40	101 (33%)
Gender	
Female	220 (72%)
Male	84 (28%)
Race	
Other	6 (2%)
Black/African	298 (98%)
Marital status	
Divorced/Widowed	17 (6%)
Married	65 (21%)
Single	222 (73%)
Level of Education	
Primary	24 (8%)
Secondary	152 (50%)
Completed grade 12	94 (31%)
Post school	34 (11%)
Employment Status	
Employed	126 (41%)
Unemployed	178 (59%)
Settlement Type	
Rural	106 (35%)
Urban	198 (65%)
Who do you leave with	
Alone	50 (16%)
Cohabiting	40 (13%)

Variable		N (%)
	Parents or sibling	157 (51%)
	Spouse	58 (19%)
Period on ART		
	<4 years	115 (52%)
	≥4 years	105 (48%)
Currently in a relationship		
	No	68 (22%)
	Yes	236 (78%)
Relationship period		
	<1 year	25 (11%)
	1-5 years	147 (63%)
	>5 years	62 (27%)
Had sex with same partner, past 12 months		
	No	94 (31%)
	Yes	206 (69%)
Has multiple sexual partners		
	No	204 (68%)
	Yes	96 (32%)
Condom use frequency in the past 12 months		
	Never	58 (19%)
	Sometimes	135 (45%)
	Always	110 (36%)
Unprotected sex with casual partner		
	No	178 (59%)
	Yes	125 (41%)
Reasons for not using a condom		
	Other	68 (35%)
	I don't like it	21 (11%)
	Partner doesn't like it	38 (20%)
	Married or trusts the partner	66 (34%)
Know where to get condoms		
	No	16 (5%)
	Yes	288 (95%)
Can access condoms without being embarrassed		
	No	43 (14%)
	Yes	261 (86%)
Confident in ability to put on condom		
	No	37 (12%)
	Yes	267 (88%)
Confident to ask partner to put on a condom		
	No	41 (14%)
	Yes	262 (86%)

Variable	N (%)
Condom creates doubt between sexual partners	
Agree	132 (43%)
Disagree	133 (44%)
Not sure	39 (13%)
What are chances of refusing sex when there is no condom	
High	139 (46%)
Low	165 (54%)
Had STIs since on ART	
No	158 (52%)
Yes	146 (48%)
What are the chances of you getting an STIs	
High	37 (12%)
Low	267 (88%)

4.2.2. Sexual transmitted infections

Of the 304 participants enrolled in the study, 48% (146/304) indicated that they had sexually transmitted infections since starting on ART (**Table 2**). The median age (36 years (IQR: 31, 45) vs. 35 years (IQR: 26, 40)) of those who reported STIs was higher than the median age of those who did not report STI ($p=0.012$). Males (57%, 48/84, $p=0.049$), those who were employed (55%, 69/26, $p=0.048$), and those who were cohabitating (68%, 27/40, 0.030) were more likely to report STI. Similarly, those who had unprotected sex with a casual partner (62%, 78/125, $p<0.001$), and those who did not use a condom because a partner did not like it (71%, 27/38, $p=0.001$) were more likely to report STIs. STIs were also common among those who reported that they cannot access condoms without being embarrassed (70%, 30/43, $p=0.002$), those who were not confident to ask their partners to put on a condom (73%, 30/41, $p=0.001$), those who believed that a condom creates doubt between sexual partners (58%, 77/132, $p=0.007$), and those who believed that their chances of getting STIs were higher (69%, $p<0.001$) (**Table 2**).

Table 4.2: Sexual transmitted infections by demographic characteristics, sexual behavioural practices, and perceptions

Variable	STIs		N (%)	Chi2 P-value
	Yes - n (%)	No – n (%)		
Age, years	146 (48%)	158 (52%)	304 (100%)	
Median (IQR)	36 (31, 45)	35 (26, 40)	35 (28, 42)	0.012

Variable	STIs		N (%)	Chi2 P-value
	Yes - n (%)	No – n (%)		
Age group, years				0.239
	<30	34 (41%)	49 (59%)	83 (27%)
	30-39	58 (48%)	62 (52%)	120 (39%)
	≥40	54 (53%)	47 (47%)	101 (33%)
Gender				0.049
	Female	98 (45%)	122 (55%)	220 (72%)
	Male	48 (57%)	36 (43%)	84 (28%)
Race				0.922
	Other	3 (50%)	3 (50%)	6 (2%)
	Black/African	143 (48%)	155 (52%)	298 (98%)
Marital status				0.64
	Divorced/Widowed	10 (59%)	7 (41%)	17 (6%)
	Married	30 (46%)	35 (54%)	65 (21%)
	Single	106 (48%)	116 (52%)	222 (73%)
Level of Education				0.746
	Primary	13 (54%)	11 (46%)	24 (8%)
	Secondary	76 (50%)	76 (50%)	152 (50%)
	Completed grade 12	42 (45%)	52 (55%)	94 (31%)
	Post school	15 (44%)	19 (56%)	34 (11%)
Employment Status				0.048
	Employed	69 (55%)	57 (45%)	126 (41%)
	Unemployed	77 (43%)	101 (57%)	178 (59%)
Settlement Type				0.456
	Rural	54 (51%)	54 (49%)	106 (35%)
	Urban	92 (46%)	106 (54%)	198 (65%)
Who do you leave with				0.03
	Alone	26 (52%)	24 (48%)	50 (16%)
	Cohabitating	27 (68%)	13 (33%)	40 (13%)
	Parents or sibling	65 (42%)	91 (58%)	157 (51%)
	Spouse	28 (48%)	30 (52%)	58 (19%)
Period on ART				0.381
	<4 years	48 (42%)	67 (58%)	115 (52%)
	≥4 years	50 (48%)	55 (52%)	105 (48%)
Currently in a relationship				0.067
	No	26 (38%)	42 (62%)	68 (22%)
	Yes	120 (51%)	116 (49%)	236 (78%)
Relationship period				0.34

Variable	STIs		N (%)	Chi2 P-value
	Yes - n (%)	No - n (%)		
<1 year	16 (64%)	9 (36%)	25 (11%)	
1-5 years	74 (50%)	73 (50%)	147 (63%)	
>5 years	29 (47%)	33 (53%)	62 (27%)	
Had sex with same partner, past 12 months				0.696
No	47 (50%)	47 (50%)	94 (31%)	
Yes	98 (48%)	108 (52%)	206 (69%)	
Has multiple sexual partners				0.086
No	91 (45%)	113 (55%)	204 (68%)	
Yes	53 (55%)	43 (45%)	96 (32%)	
Condom use frequency in the past 12 months				0.117
Never	25 (43%)	33 (57%)	58 (19%)	
Sometimes	74 (55%)	61 (45%)	135 (45%)	
Always	47 (43%)	63 (57%)	110 (36%)	
Unprotected sex with casual partner				<0.001
No	68 (38%)	110 (62%)	178 (59%)	
Yes	78 (62%)	47 (38%)	125 (41%)	
Reasons for not using a condom				0.001
Other	23 (34%)	45 (66%)	68 (35%)	
I don't like it	14 (67%)	7 (33%)	21 (11%)	
Partner doesn't like it	27 (71%)	11 (29%)	38 (20%)	
Married or trusts the partner	35 (53%)	31 (47%)	66 (34%)	
Know where to get condoms				0.499
No	9 (56%)	7 (44%)	16 (5%)	
Yes	137 (48%)	151 (52%)	288 (95%)	
Can access condoms without being embarrassed				0.002
No	30 (70%)	13 (30%)	43 (14%)	
Yes	116 (44%)	145 (56%)	261 (86%)	
Confident in ability to put on condom				0.666
No	19 (51%)	18 (49%)	37 (12%)	
Yes	127 (48%)	140 (52%)	267 (88%)	
Confident to ask partner to put on a condom				0.001
No	30 (73%)	11 (27%)	41 (14%)	
Yes	116 (44%)	146 (56%)	262 (86%)	
Condom creates doubt between sexual partners				0.007
Agree	77 (58%)	55 (42%)	132 (43%)	
Disagree	54 (41%)	79 (59%)	133 (44%)	

Variable	STIs		N (%)	Chi2 P-value
	Yes - n (%)	No - n (%)		
Not sure	15 (38%)	24 (62%)	39 (13%)	0.686
What are chances of refusing sex when there is no condom				
High	65 (47%)	74 (53%)	139 (46%)	
Low	81 (49%)	84 (51%)	165 (54%)	<0.001
What are the chances of you getting an STIs				
High	55 (69%)	25 (31%)	37 (12%)	
Low	90 (40%)	133 (60%)	267 (88%)	

4.2.3. Risk factors for sexual transmitted infections

History of STIs was reported by 48% (146/304) of the participants who were ART. On univariate analysis, having a history of STI was associated with being a male (Odds Ratio (OR) 1.66, 95% Confidence Interval (CI): 1.00 to 2.76, $p=0.050$), and staying with parents or siblings (OR 2.91, 95% CI: 1.40 to 6.06, $p=0.004$) compared with staying with sexual partner or alone (**Table 3**). In addition, history of STI was also associated with having unprotected sex with casual partners (OR 2.68, 95% CI: 1.68 to 4.30, $p<0.001$), and not using a condom because sexual partner does not like it (OR 4.80, 95% CI: 2.03 to 11.38, $p<0.001$).

However, history of STIs was negatively associated with the with being unemployed (OR 0.63, 95% CI: 0.40 to 1.00, $p=0.049$), accessing condoms without being embarrassed (OR 0.35, 95% CI: 0.17 to 0.69, $p=0.003$), having confidence to ask a partner to put on a condom (OR 0.29, 95% CI: 0.14 to 0.61, $p=0.001$), disagreeing with the perception that condom creates doubt between sexual partners (OR 0.48, 95% CI: 0.30 to 0.80, $p=0.004$), and having low risk perceptions about ones chances of getting STI (OR 0.31, 95% CI: 0.18 to 0.53, $p<0.001$) (**Table 3**).

However, on multivariate analysis, having a history of STIs was significantly associated with having unprotected sex with casual partner (Adjusted Odds Ratio (aOR) 2.16. 95% CI: 1.00 to 4.67, $p=0.050$) and not using a condom because sexual partner does not like it (aOR 4.81, 95% CI: 1.71 to 13.56, $p=0.003$). Having confidence to ask a partner to put on a condom (aOR 0.26, 95% CI: 0.09 to 0.78, $p=0.016$) and disagreeing with the

perception that condom creates doubt between sexual partners (aOR 0.43, 95% CI: 0.20 to 0.90, p=0.025) were still negatively associated with having a history of STIs (**Table 3**).

Table 4. 3: Risk factors for sexual transmitted infections

Variable	N (%)	STIs		Univariate analysis			Multivariate analysis				
		Yes	- n	No	- n	Crude	95% CI	p-value	Adjusted	95% CI	p-value
		(%)		(%)		OR			OR		
Age group, years											
<30	83 (27%)	34 (41%)	49 (59%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce		
30-39	120 (39%)	58 (48%)	62 (52%)	1.35	0.77 - 2.37	0.300	1.10	0.43 - 2.83	0.839		
≥40	101 (33%)	54 (53%)	47 (47%)	1.66	0.92 - 2.98	0.092	1.60	0.59 - 4.34	0.353		
Gender											
Female	220 (72%)	98 (45%)	122 (55%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce		
Male	84 (28%)	48 (57%)	36 (43%)	1.66	1.00 - 2.76	0.050	0.69	0.29 - 1.63	0.397		
Race											
Other	6 (2%)	3 (50%)	3 (50%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce		
Black/African	298 (98%)	143 (48%)	155 (52%)	0.92	0.18 - 4.64	0.922					
Marital status											
Divorced/Widowed	17 (6%)	10 (59%)	7 (41%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce		
Married	65 (21%)	30 (46%)	35 (54%)	0.60	0.20 - 1.77	0.355					
Single	222 (73%)	106 (48%)	116 (52%)	0.64	0.24 - 1.74	0.382					
Level of Education											
Primary	24 (8%)	13 (54%)	11 (46%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce		
Secondary	152 (50%)	76 (50%)	76 (50%)	1.50	0.52 - 4.28	0.452					
Completed grade 12	94 (31%)	42 (45%)	52 (55%)	1.27	0.60 - 2.68	0.536					
Post school	34 (11%)	15 (44%)	19 (56%)	1.02	0.46 - 2.25	0.955					
Employment Status											
Employed	126 (41%)	69 (55%)	57 (45%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce		

Variable	N (%)	STIs		Univariate analysis			Multivariate analysis		
		Yes - n (%)	No - n (%)	Crude OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Unemployed	178 (59%)	77 (43%)	101 (57%)	0.63	0.40 - 1.00	0.049	0.63	0.30 - 1.33	0.226
Settlement Type									
Rural	106 (35%)	54 (51%)	54 (49%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Urban	198 (65%)	92 (46%)	106 (54%)	0.84	0.52 - 1.34	0.457			
Who do you leave with									
Alone	50 (16%)	26 (52%)	24 (48%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Cohabiting	40 (13%)	27 (68%)	13 (33%)	1.52	0.80 - 2.88	0.202	0.73	0.23 - 2.42	0.619
Parents or sibling	157 (51%)	65 (42%)	91 (58%)	2.91	1.40 - 6.06	0.004	1.49	0.54 - 4.07	0.439
Spouse	58 (19%)	28 (48%)	30 (52%)	1.31	0.71 - 2.39	0.387	0.42	0.14 - 1.25	0.118
Period on ART									
<4 years	115 (52%)	48 (42%)	67 (58%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
≥4 years	105 (48%)	50 (48%)	55 (52%)	1.27	0.74 - 2.16	0.381			
Currently in a relationship									
No	68 (22%)	26 (38%)	42 (62%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Yes	236 (78%)	120 (51%)	116 (49%)	1.67	0.96 - 2.90	0.068	1.61	0.61 - 4.24	0.334
Relationship period									
<1 year	25 (11%)	16 (64%)	9 (36%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
1-5 years	147 (63%)	74 (50%)	73 (50%)	0.57	0.24 - 1.37	0.210			
>5 years	62 (27%)	29 (47%)	33 (53%)	0.49	0.19 - 1.29	0.149			
Had sex with same partner, past 12 months									
No	94 (31%)	47 (50%)	47 (50%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Yes	206 (69%)	98 (48%)	108 (52%)	0.91	0.56 - 1.48	0.696			
Has multiple sexual partners									
No	204 (68%)	91 (45%)	113 (55%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce

Variable	N (%)	STIs		Univariate analysis			Multivariate analysis		
		Yes - n (%)	No - n (%)	Crude OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Yes	96 (32%)	53 (55%)	43 (45%)	1.53	0.94 - 2.49	0.087	0.99	0.42 - 2.36	0.990
Condom use frequency in the past 12 months									
Never	58 (19%)	25 (43%)	33 (57%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Sometimes	135 (45%)	74 (55%)	61 (45%)	1.02	0.53 - 1.93	0.963	0.73	0.33 - 1.62	0.435
Always	110 (36%)	47 (43%)	63 (57%)	1.63	0.98 - 2.70	0.060	*	*	*
Unprotected sex with casual partner									
No	178 (59%)	68 (38%)	110 (62%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Yes	125 (41%)	78 (62%)	47 (38%)	2.68	1.68 - 4.30	<0.001	2.16	1.00 - 4.67	0.050
Reasons for not using a condom									
Other	68 (35%)	23 (34%)	45 (66%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
I don't like it	21 (11%)	14 (67%)	7 (33%)	3.91	1.39 - 11.04	0.010	1.80	0.47 - 6.94	0.391
Partner doesn't like it	38 (20%)	27 (71%)	11 (29%)	4.80	2.03 - 11.38	<0.001	4.81	1.71 - 13.56	0.003
Married or trusts the partner	66 (34%)	35 (53%)	31 (47%)	2.21	1.10 - 4.44	0.026	2.54	1.02 - 6.33	0.046
Know where to get condoms									
No	16 (5%)	9 (56%)	7 (44%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Yes	288 (95%)	137 (48%)	151 (52%)	0.71	0.26 - 1.95	0.501			
Can access condoms without being embarrassed									
No	43 (14%)	30 (70%)	13 (30%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Yes	261 (86%)	116 (44%)	145 (56%)	0.35	0.17 - 0.69	0.003	0.46	0.16 - 1.31	0.145
Confident in ability to put on condom									
No	37 (12%)	19 (51%)	18 (49%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Yes	267 (88%)	127 (48%)	140 (52%)	0.86	0.43 - 1.71	0.666			
Confident to ask partner to put on a condom									
No	41 (14%)	30 (73%)	11 (27%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce

Variable	N (%)	STIs		Univariate analysis			Multivariate analysis		
		Yes - n (%)	No - n (%)	Crude OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Yes	262 (86%)	116 (44%)	146 (56%)	0.29	0.14 - 0.61	0.001	0.26	0.09 - 0.78	0.016
Condom creates doubt between sexual partners									
Agree	132 (43%)	77 (58%)	55 (42%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Disagree	133 (44%)	54 (41%)	79 (59%)	0.48	0.30 - 0.80	0.004	0.43	0.20 - 0.90	0.025
Not sure	39 (13%)	15 (38%)	24 (62%)	0.45	0.21 - 0.93	0.031	0.30	0.10 - 0.92	0.036
What are chances of refusing sex when there is no condom									
High	139 (46%)	65 (47%)	74 (53%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Low	165 (54%)	81 (49%)	84 (51%)	1.10	0.70 - 1.72	0.686			
What are the chances of you getting an STIs									
High	37 (12%)	55 (69%)	25 (31%)	1	Referenc e	Referen ce	1	Referenc e	Referen ce
Low	267 (88%)	90 (40%)	133 (60%)	0.31	0.18 - 0.53	<0.001	1.24	0.59 - 2.58	0.572

4.3. Discussions

4.3.1. Socio-Demographic characteristics

This study revealed 72% of respondents being females and 98% of them were Black/African with a median age of 35 years (interquartile range [IQR]: 28, 42 years). These results are similar with (Demissie et al. 2015 and UNAIDS, 2016) whereby females have a higher chances to seek health care compared to the male respondents who tend to let things disappear by themselves. Respondents from Demissie, et al. (2015) study had mean age of 35.28±8.94 (standard deviation) which is similar to the study findings with regards to mean age.

Majority of the participants were single 73% while a study from Uganda by Okoboi et al. (2018) had similar findings where most patients were females coming from urban area and were not married.

According to Zizzamia (2020) South Africa is engulfed by unemployment which influences poverty and it results in higher inequalities which results to huge socio economic disparities. Similar findings were observed in this study whereby 59% were unemployed with urban settlers at 65% which also consistent with was reported by Statistics South Africa (2019). The study found that participants were able to read and write as majority of them had attained secondary or completed matric. In this study perception of susceptibility is influenced by various factors as indicated in Figure 1.2 such as their cultural, unemployment, gender backgrounds, as well as their lack of authority or decision-making power when it comes to sex. Individuals on AIDS spectrum treatment (ART) are more susceptible to developing sexually transmitted infections (STIs) if they do not use condoms consistently and correctly. In this study, according to HBM the age factor of the adolescent individual is a modifying factors. Psychological variables such as cultural and spiritual beliefs may encourage or hinder engaging in preventative health behaviours such as use of a condom. Women's motivation may be low because of cultural pressure to obey their husbands (Buldeo & Gilbert, 2015).



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4.3.1.1. Sexual relations

The majority of the study participants (78%) were in sexual relationships which can be expected on healthy individuals who are on antiretroviral therapy. Those that were in sexual relations 11 % of them had been in those relations for less than a year. Either they changed partners or were in no relations at all. These results are consistent with a study conducted by (Kharsany, McKinnon, Lewis, Cawood, Khanyile, Maseko, Goodman, Beckett, Govender, George, & Ayalew, 2020). Demissie et al. (2015) revealed that many people who use HIV drugs are still having trouble using condoms. They also noted that there are still individuals living with the virus who have difficulty maintaining safe sex. It was found that 69% had reported being with same partner for the last twelve-month period while 32% reported of having sexual intercourse with different partners. The findings in this study are consistent with what has been discovered by Keetile and Kgosidintsi (2018) whereby they found that 9% of respondents who were on ART were involved in multiple sexual partners' relationships. However, Adeboye, Yongsong and

James (2016) revealed that the risk of having multiple sexual partners was two times higher among male than females.

4.3.1.2. Condom use

The combined frequency of inconsistency in condom use was at 64% with 19% never used it and 45 % using it occasionally. These results are consistent with the finding in Ethiopia and Botswana whereby inconsistency in condom use was at 30.4% (Demissie et al. 2015 & Keetile & Kgosidintsi 2018). This may be due to similarity in the geographical area between Southern African region and Botswana.

The reason that were stated which were related to inconsistency in condom use 34% of the participants were married or trust their partners or their partners totally refused to use it 11% and 20% of them did not like it. While more than 30% were totally not in favour of the condom usage. Poor condom use was evident in the sense that 41% of the study participants report unprotected sexual intercourse with a casual partner. The 86 % percent of the study participants were able to access and have an ability to use a condom. The findings of this study support the Health Belief Model construct of **perceived severity** that people are more likely to take a health-related action if they feel that they can avoid a negative health condition. For instance, they are more likely to believe that they can avoid sexually transmitted infections (STIs) by using condoms. They also believe that they can successfully use sexual protection with confidence (Glanz, Rimer, & Viswanath, 2008).

However, 54% indicated that chances of refusing sexual intercourse when there was no condom were very low similar results were found in Botswana by Keetile and Kgosidintsi (2018) whereby respondents were less likely to refuse sexual intercourse if there was no condom. The perception towards condom use was that it creates doubt regarding issues of infidelity between the sexual partners as 43% of them stated that.

4.3.1.3. Sexual transmitted infections

A study conducted on HIV-positive individuals revealed that about 48% of the study participants had sexually transmitted infections. They also indicated that they had started taking antiretroviral drugs. A study by Basera et al. (2016) in South Africa had similar

findings of just over 20% of prevalence of sexually transmitted infections amongst individuals on ARVs. The median age for those who are reporting sexually transmitted infections was 36 years. The percentage of people who were employed and were cohabitating or had sex with a casual partner was significantly higher than those who were both employed and had sex with a casual partner. Those who did not use a condom were also more likely to contract sexually transmitted infections. In addition, 73% of individuals who were not confident in asking their partners to put on a condom said they could not access them without being embarrassed. Study participants who believed that a condom creates doubt between sexual partners and those who believed that their chances of getting STIs were higher reported history of sexually transmitted infections with 58% and 69% respectively.

4.3.1.4. Risk factors for sexual transmitted infections

The findings from this study indicated that sexually transmitted infections were reported by 48% of the participants who were on ART. The risk factors that were highly associated with sexually transmitted infections were being a male, having unprotected sexual intercourse with a casual or unknown partner, staying with parents or siblings and not using a condom because sexual partner refused to use condoms Kharsany et al. (2020) had different findings in South Africa whereby sexually transmitted infections was associated with marital status, employment status, alcohol, gender based violence as well as the inability to access a health care institution. Those who were staying with sexual partner or alone were not associated with sexually transmitted infections while another South African based study conducted by Kharsany et al. (2020) found being single had a significant association with reporting an STI. However, being unemployed was negatively associated with neither risky sexual behaviour nor sexually transmitted infections. Similar with Basera et al. (2016) in their study indicated that, employment status, and ART status had no significant association with reporting of sexually transmitted infection.

Those that have confidence in asking their partners to put on a condom during sexual encounter were less likely to have sexual transmitted infections. **Perception of threat to disease is also influenced by the modifying factors and cues to action** (Stanhope &

Lancaster, 2005). Perceived threat such as development of new strains of the virus and the transmission of the disease to their partners is a perceived threat a resistance to ART might reinforce use of condoms with confidence. **External cues** that may affect consistent use of condoms would be from partners and friends (Kozier et al., 2008). Awareness about measures for prevention of STI and knowledge of the consequences of engaging in risky sexual practices **are related to perceived benefits of the action** (Glanz, et al. 2008).

Perceived barriers is an individual's own evaluation of the obstacles In this study it was found that having and disagreeing with perception that condom creates doubt between sexual partners was negatively associated with sexually transmitted infections (Glanz, et al. 2008).

4.4. Summary

This chapter outlined the results whereby it was discovered that majority those who were enrolled in the study, 72% were females and 98% were Black/African with a median age 35 years (interquartile range [IQR]: 28, 42 years) while single participants were at 73%. The 69% of the participants reported being with the same partner in the past 12 months, while 32% reported that they had sex with multiple sexual partners. The 48% of the participants indicated that they had sexually transmitted infections since starting on ART. The median age (36 years (IQR: 31, 45) vs. 35 years (IQR: 26, 40)) of those who reported STIs was higher than the median age of those who did not report STI ($p=0.012$). Males (57%, $p=0.049$), those who were employed (55%, $p=0.048$), and those who were cohabitating (68%, 0.030) were more likely to report STI. Similarly, those who had unprotected sex with a casual partner (62%, $p<0.001$), and those who did not use a condom because a partner did not like it (71%, $p=0.001$) were more likely to report sexually transmitted infections. A significant number of (32%) of the participants reported to be engaging in risky sexual practice.

Some of the results from the study are found to be in correlations with what is available in the literature. There were however those results that were totally different and there were areas that this study and other studies didn't cover.



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CHAPTER FIVE: SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1. Introduction

The previous chapter gave an in depth descriptive analysis and presentation of the results. The discussion of the results was also given on the previous chapter whereby some of the study findings correlate with the available literature while other findings disagree. The purpose of this chapter is to give a brief overview of the study and the conclusions reached, limitations and formulate recommendations that emanate from the study.

In this study the objectives were:

- 1) To determine the relationship between the demographic characteristics of HIV positive patients who are on antiretroviral treatment and their engagement in risky sexual practices in Buffalo City Metropolitan Municipality District.
- 2) To assess awareness of sexually transmitted infections and their prevention among HIV positive patients who are on antiretroviral treatment.
- 3) To examine the extent of risky sexual practices by patients who are HIV positive on antiretroviral treatment.
- 4) To examine knowledge of the consequences of engaging in risky sexual practices while on antiretroviral treatment

5.2 Summary of the study

The constructs of Health Belief Model was used to guide this study. The constructs used in chapter 3 and in chapter 4 in this study are as follows: perception of susceptibility which is influenced by various factors as indicated in Figure 1.2 such as their cultural, unemployment, gender backgrounds, as well as their lack of authority or decision-making power when it comes to sex (Glanz, et al. 2008).

Perception of threat to disease is also influenced by the modifying factors and cues to action (Glanz, et al. 2008). Development of new strains of the virus and the transmission of the disease to their partners is a perceived threat as might reinforce use of condoms with confidence. Perceived barriers are individual's own evaluation of the obstacles when the partner does not want to use condoms (Glanz, et al. 2008). External cues that may affect consistent use of condoms would be from partners and friends (Kozier et al., 2008).

This study was conducted through a quantitative approach, cross sectional design, and a structured questionnaire. The researcher developed a data collection tool based on Health Belief Model. Data was collected by the researcher where ethical considerations were observed.

The data collected during the study were analysed using a statistical method that involved the use of descriptive statistics. The researchers were able to obtain permission to access the patients' information by following ethical guidelines established by the University of Fort Hare.



5.3 Major Findings

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The investigation of risky sexual practices and associated factors amongst HIV/AIDS positive individuals on antiretroviral results is consistent with findings from other studies elsewhere, especially those conducted within the Southern African region.

The results from this study indicated that majority of the participants were females and Black/African, unemployed, in sexual relationships with same partner for the last twelve-month and some of the participants involved in multiple sexual partners' relationships.

Although condoms were accessible to participants inconsistency in condom use was noted that was associated with being married or refusal to use condoms by partner. Poor condom use was evident in the sense that 41% of the study participants report unprotected sexual intercourse with a casual partner. The risk factors for acquiring sexually transmitted infections were being a male, having unprotected sexual intercourse with a casual or unknown partner, staying with parents or siblings and not using a condom because sexual partner refused to. However, being unemployed was negatively

associated with neither risky. Although participants were aware of STI,s and its negative consequences to individuals on ART the majority of the participants were not using protection.

5.4 Analysis of realised responses by objective

This section aims to analyse the responses that were received in the study to determine how they align with the research objectives. The following sections provide an overview of the various aspects of the study.

Objective 1 of the study was to determine the relationship between the demographic characteristics of HIV positive patients who are on antiretroviral treatment and their engagement in risky sexual practices in Buffalo City Metropolitan Municipality District.

This objective has been achieved through results analysed in Chapter 4. The results from this study indicated that majority of the participants were females and Black/African, unemployed, in sexual relationships with same partner for the last twelve-month and some of the participants involved in multiple sexual partners' relationships.

Objective 2 aimed at assessing the awareness of sexually transmitted infections and their prevention among HIV positive patients who are on antiretroviral treatment

Although participants were aware of STI,s and its negative consequences, the findings from the study, revealed that about 48% of the participants had sexually transmitted infections. Most participants who were not confident in asking their partners to put on a condom said they would not be able to do so, with around 70% stating that they would be embarrassed.

Objective 3 sought to examine the extent of risky sexual practices by patients who are HIV positive on antiretroviral treatment.

. The findings from this study revealed that about half of the participants who were on antiretroviral therapy who were sexually active, not using condom and were having intercourse with an unknown partner.

The study participants were almost all able to access and use a condom. The results of the study revealed that the majority of them were satisfied with their current sexual behavior and that they expected to avoid negative health conditions such as sexually transmitted infections (STIs). However, despite the high accessibility of condoms, there was still a significant inconsistency in their use, with 45% reported to seldom or never used condoms. In addition, about half of the study participants reported having sex with a casual partner. The prevalence of sexually transmitted infections among the study participants was 48%. The age at which the majority of them became infected was 36 years. The risk factors that were associated with acquiring infections were being a man, having unprotected sex with a woman, and staying with a family member or sibling. Based on the assumption that people will take various health-related actions if they feel that a negative condition can be prevented, the researchers concluded that the majority of them avoided risky sexual practices while on antiretroviral treatment.

Objective 4 sought to examine knowledge of the consequences of engaging in risky sexual practices while on antiretroviral treatment.

Although participants were knowledgeable about the consequences of engaging in risky sexual practices while on antiretroviral treatment and were also aware of STIs and its negative consequences, the majority of the participants were not using condoms or using them inconsistently.

Having a positive mind-set about asking partners to use a condom during sexual encounters was associated with a lower risk of getting infected. The study also noted that having a negative perception of condom use was associated with getting sexually transmitted infections.

LIMITATIONS OF THE STUDY

The results of this study cannot be generalized due to the following limitations: firstly, sexual behaviours and sexually transmitted infections were based on self-report and data

collectors didn't verify any of these results which can introduce bias in participants' responses. Secondly the study was undertaken in one facility in a township with many other health facilities therefore the results cannot be generalized. Lastly this was a cross-sectional study which is unable to detect causal associations between pre and post-ART changes in sexual risk behaviours.

5.5 Recommendations

Based on the study findings if the country is to achieve effective prevention of STIs more must be done by strengthening and implementation of the following issues:

5.5.1 Education implications

- Educational materials for patients should include information on benefits of STIs prevention and condom use.
- All health professionals should attend courses and updates on STIs prevention

5.5.2 Department of Health

- The department should provide tools within primary health care settings that will enable the health professionals to test the type of sexually transmitted infection a client presents with.
- In Mdantsane Township and surrounding areas where X Community Health Centre is serving these communities there is a need to create programmes for young people so they can be kept busy while empowering them with knowledge and skills which will be needed before they can enter the job market. These skills could help them with skills that will assist them to put something on the table. Developed programmes must include Knowledge and skills regarding issues of sexuality including STIs.

5.6 Future Research Implications

Replication studies by researchers can be done to contribute to improvement of condom use. Results from such a study could guide development of meaningful interventions.

Further research must be conducted using a qualitative approach where in-depth knowledge skills and attitude towards condom use can elucidate from the participants.

5.7 Conclusion

The objective of the study was to investigate the sexual behaviour of people on HIV treatment who were in Buffalo City's Metropolitan Municipality. Data was collected on 304 patients who visited the X Health Centre. After the data collection process, the data was analyzed using the SPSS 24 statistical package. The descriptive statistics used to describe the variables were also used to identify the characteristics of the patients. The chi square test was used to examine the associations between various independent and dependent variables. The significance of these variables was then set. The p-values of all the contributing factors and the cause of the issue were also set.

The results indicated that some participants had sex with multiple partners, and the majority of these participants had never used a condom. Almost half of the participants had sexually transmitted infections, which is higher than the number of those who did not report these infections. These findings are indicating that HIV positive patients on ART are practising unsafe sex. These findings are an indication that a serious public health problem exist which calls for serious a serious health promotion intervention.

The study recommends both educational outreach programmes and institutional support through provision of necessary tools to support the primary health care while emphasizing a need for more skill for workers and policy makers for the benefit of the communities served.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

SECTION A: DEMOGRAPHIC INFORMATION (HBM construct - perceived susceptibility).

1. AGE (in years)					
		2. GENDER			
Male				Female	
		3. MARITAL STATUS			
Single				Married	
Divorce				Widow	
		4. RACE			
African				White	
Coloured				Indian	
		5. EDUCATIONAL LEVEL			
Primary school				Secondary school	
Completed grade 12				Diploma	
Completed FET College				Degree	
		6. OCCUPATIONAL STATUS			
Employed				Unemployed	
Self employed				Student	

		7. LIVING AREA	
Rural area			Urban area
		8. WHO DO YOU LIVE WITH?	
Alone			Parents
Siblings			Husband/ wife
Boyfriend or girlfriend			
		9. PERIOD ON TREATMENT	
1 year			1-2 years
2-3 years			3-4 year
4 years and more			



SECTION B: RISKY SEXUAL PRACTISES: INFORMATION ABOUT SEXUAL PRACTICES (HBM construct - cues to action).

	This section ask you about sexual practices			
10.	Are you currently in a sexual relationship	Yes		No
11.	How long have you been in the current relationship?			
12	Have you been with the same partner for the past 12 months?	Yes		No
13	If no, how many other partners did you have?	One		
		Two and more		
		Never had a partner		
14	Have you ever had sex without condom with causal/unknown or one night stand partner in the last 12 months?	Yes		
		No		
1514.	If you had more than one partner, did you use condom with all of them?	Yes		
		No		

16	I know where to get condoms when I need one	Yes	
		No	
		Not sure	

17	I feel confident in my ability to put a condom on myself	Yes	
		No	
		Not sure	
18	I feel confident I could access condoms without feeling embarrassed	Agree	
		Disagree	
		Not sure	
19.	Are you confident about asking your partner to use a condom?	Yes	
		No	
		Not sure	
20	Condom creates doubt between sexual partners	Agree	
		Disagree	
		Not sure	
21	What are the chances of you refusing sex if you partner does not want to use a condom?	Low chance	
		High chance	
22	How do you rate your overall condom use in the past 12 months?	I never use condoms	
		I always use condoms	
		I sometimes use condoms	
23	If you don't use condoms what are your reasons? H	I don't like it	
		I trust my partner	
		My partner does not like it	
		I am married	
		Other	



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This section ask about sexual transmitted infection			
24	Have you been treated for sexual transmitted infections since started on treatment?	Yes	
		No	
25	If yes did you tell your partner?	Yes	
		No	
26	Number of sexually transmitted infections during the last 12 months	Once	
		Two/More	
27	Did you receive the treatment?	Yes	
		No	
28	What are the chances of you getting a STI?	High chance	
		Low chance	
29	The last time you experienced an STI symptom what did you do?	Consulted a doctor/clinic	
		I went to a pharmacy	
		I went to a traditional /herbalist/spiritual healer	
30	(To be answered by males only). Did you have any of these symptoms during the past 12 months?	No	
		Genital ulcer/sores	
		Urethral discharge	
		Scrotal swelling	
31	(To be answer by females only). Did you have any of these symptoms during the past 12 months?	No	
		Abnormal vaginal discharge	
		Genital ulcer/sores	
		Lower abdominal pain	

APPENDIX 2: INFORMED CONSENT

PARTICIPANT'S INFORMATION SHEET

Dear participants

My name is Mzukisi Ernest Pere and I am a student studying for a master's degree in public health at University of Fort Hare. This research study is titled ***Investigation of sexual behaviours among HIV/AIDS positive individuals on antiretroviral treatment in Buffalo City Metropolitan Municipality Eastern Cape Province.***

The purpose of the study is to determine knowledge, attitude and behaviours of people who are on antiretroviral treatment regarding prevention of Sexual Transmitted Infections.

Should you consent to participate in this study; the interviews will be conducted in a private room to ensure privacy. The interview will take approximately 30 minutes. During interview please answer all questions as honestly and accurately as possible. Participation in this research is voluntary, the human dignity is respected, Anonymity and strict privacy is maintained, and individual is allowed to refuse or withdraw to participate if felt discomfort without any risk or penalty. If you choose to participate in this study, please complete and sign the form which is provided to indicate your consent and you will be given copy of consent form to keep with your records.

The findings of this study will be published in a final research report once the study has been completed. If you are interested in receiving copy research findings of this study you are welcome to contact me for meeting. The research report will be available in University of Fort Hare Library once I have completed my master's degree. For any queries and complaints regarding this study, please do not be hesitated to contact university of Fort Hare on 043 704 7588 or researcher on the contacts number below.

Thank you for your time.

Mzukisi Ernest Pere

0737051214

Informed Consent form

I hereby agree to participate in research study titled **Investigation of sexual behaviours among HIV/AIDS positive individuals on antiretroviral treatment in Buffalo City Metropolitan Municipality Eastern Cape Province, South Africa.**

I understand my participation in this study is voluntary. Anonymity will be maintained, and all the information given will be managed with strict confidentiality.

I understand that I have the right to withdraw from the study at any time without having to give reason for withdrawing and without any penalty or future disadvantage.

I have been given the opportunity to ask questions and discuss this study with researcher and I received satisfactory answers to all questions.

I have received the researcher's contacts details should I need to speak about any queries or decided to withdraw.

I have read the consent, it was explained clearly, and I understand the information, and therefore I declare I voluntarily agree to participate in the study, with the signature indicated below.



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.....		
Participant	Signature	Date
.....		
Researcher	Signature	Date

APPENDIX 3: ETHICAL CLEARANCE FROM UNIVERSITY OF FORT HARE



HEALTH RESEARCH ETHICS COMMITTEE

P.O Box 1054
East London 5200
Tel: +27 (0) 43 704 7368
E-mail: dgoon@ufh.ac.za

ETHICAL CLEARANCE CERTIFICATE

Certificate **REC-100118-054 (Ref #2021=09=08=PereM)**

Project title: **Investigation of sexual behaviours among HIV/AIDS individuals on antiretroviral therapy in Buffalo City Metropolitan Municipality, Eastern Cape Province**

Nature of Project: **Masters of Public Health**

Principal Researcher: **Pere M**

Student Number: **200400754**

Supervisor: **Dr BF Mayeye**

In addition to the need to comply with the highest level of ethical conduct principal investigators must report back annually as an evaluation and monitoring mechanism on the progress being made by the research. Such a report must be sent to HREC monitoring@ufh.ac.za. The Ethics Committee wishes you well in your research endeavours.

Yours sincerely

Professor DT Goon

Chairperson: HREC

6th September 2021

APPENDIX 4: ETHICAL APPROVAL FROM EASTERN CAPE DEPARTMENT OF HEALTH



Enquiries: Yvonne Gixela

Tel no: 079 074 0859

Email: Yvonne.Gixela@echealth.gov.za / ygixela@gmail.com

Date: 05 October 2021

Investigation of sexual behaviors among HIV/AIDS individuals on antiretroviral therapy in Buffalo City Metropolitan Municipality, Eastern Cape Province. (EC_202109_021)

Dear Mr. M. Pere

The department would like to inform you that your application for the abovementioned research topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health in writing.
2. You are advised to ensure, observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants.
3. The Department of Health expects you to provide a progress update on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Eastern Cape Health Research Committee secretariat. You may also be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

SECRETARIAT: EASTERN CAPE HEALTH RESEARCH COMMITTEE



TOGETHER, MOVING THE HEALTH SYSTEM FORWARD

APPENDIX 5: LETTER TO BUFFALO CITY METRO

13 Burdon Martin Rd
Chiselhurst
East London
5247
10 September 2021

The Secretary
Research Committee
Amathole District municipality
East London

Dear Sir/Madam

RE: REQUEST FOR PERMISSION TO COLLECT DATA

Topic: Investigation of sexual behaviours among HIV/AIDS individuals on antiretroviral therapy in Buffalo City Metropolitan Municipality, Eastern Cape Province.

I hereby request permission to conduct a study on investigation of sexual behaviours among people living with HIV/AIDS who are on antiretroviral treatment in Nontyatyambo health centre for fulfilment of my studies in Master of Public Health with University of Fort Hare. The aim of this study is to investigate risky sexual practices of people who are on antiretroviral treatment regarding prevention in Buffalo City Metropolitan Municipality, Eastern Cape Province. The study finding may assist in coming up with specific preventive strategies and programs for this target group and facilitate in health promotion among them.

For queries or for more information or clarity regarding this study research, please feel free to contact The Principal Investigator: Mzukisi Pere or email at mzukisipere@gmail.com.

Thanks for your consideration.

Yours Sincerely

M. Pere

APPENDIX 6: BUDGET

Item	Details	Cost/unit (R)	Total Cost (R)
Stationary	Papers, print ink, pencils, staple, staplers, puncture, 4 GB USB, rubbers, data bundles 3G, pens		R1000.00
Personnel	- Transport allowance (Fuel)	R1 500.00	R1500.00
	- Communication: Cell phone	R1 500.00	R1 500.00
	- Internet cost	R150 per month X 10months (time left to complete research)	R1 500.00
Printing: Data collection tool, informed consent forms and participants' information sheets	800 Pages  University of Fort Hare Together in Excellence	R2.00 (per page)	R1 700.00
Printing Thesis	130 Pages X 4	R2.00	R1 000.00
Binding Thesis	X 4	R500.00	R2 000.00
Statistician	X1	R3 000.00	R3 000.00
Language editing	X1	R3 000.00	R3 000.00
Grand Total			R16 200.00

APPENDIX 7: TIMELINES

Activity	Time
Research proposal	February 2021
Introduction and background	March 2021
Literature review	March 2021
Theoretical framework	April 2021
Research methodology	April 2021
Application for ethics certificate	May 2021
Data collection	September 2021
Data analysis findings and conclusion	February 2022
Compiling and submission of dissertation	April 2022



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APPENDIX 8: CERTIFICATE OF EDITING



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01 June 2022 • 010/2022

TO WHOM IT MAY CONCERN

CERTIFICATE OF EDITING

This certificate confirms that professional language editing services were rendered on the following submission:

TITLE: INVESTIGATION OF RISKY SEXUAL PRACTICES AND ASSOCIATED FACTORS AMONGST HIV/AIDS POSITIVE INDIVIDUALS ON ANTIRETROVIRAL TREATMENT IN BUFFALO CITY METROPOLITAN MUNICIPALITY EASTERN CAPE PROVINCE, SOUTH AFRICA

STUDENT: Mzukisi Enerst Pere • 200400754

PROGRAMME: Master of Public Health

INSTITUTION: University of Fort Hare

PAGES: 74 (Last page number 64)

We hope you find our work acceptable to your expectation.

Best regards

A. BEST

Membership No: **BES003**

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Professional registrations: CIGFARO, SAMEA, IACD, IOA, PMSA, CIPPT, SAAPAM and SABPP

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