# FACTORS ASSOCIATED WITH HIV KNOWLEDGE AMONG YOUNGER ADOLESCENTS AGED 12-14 YEARS OLD IN SOUTH AFRICA.

**BY**

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A RESEARCH REPORT SUBMITTED TO THE SCHOOLS OF PUBLIC HEALTH AND SOCIAL SCIENCES, UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN HEALTH DEMOGRAPHY

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**DECLERATION**

I, Tswelopele Makgale, declare that this research report is my own work. All the secondary material has been acknowledged and referenced according to the American Psychological Association (APA) referencing style. This research paper is being submitted to the faculty of Humanities for a degree of Master of Arts in Health Demography at the University of the Witwatersrand, Johannesburg. To the best of my knowledge, it has not been submitted before in part or in full for any degree or examination at this or any other University.

[Signature of candidate]

T.Makgale

15 March 2024

**DEDICATION**

I dedicate this paper to Almighty God, whose grace has been my constant source of strength throughout this journey.

To my parents, Reuben and Nonzwakazi Makgale, your love, sacrifices, and encouragement have shaped me into the person I am today. Your endless belief in me has fuelled my determination to pursue excellence in all endeavours. This achievement is as much yours as it is mine, and I dedicate it to you with heartfelt appreciation.

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**ACRONYMS AND ABBREVIATIONS**

| | |
|---|---|
| AIDS | Acquired Immunodeficiency Syndrome |
| ALHIV | Adolescents Living with HIV |
| ART | Antiretroviral therapy |
| CD4 | Clusters of differentiation 4 |
| CSA | Child sexual abuse |
| FMP | Family Matters Programme |
| GBV | Gender based violence |
| HIV | Human Immunodeficiency Virus |
| HSRC | Human Science Research Council |
| LO | Life Orientation |
| MDGs | Millennium Development Goals |
| NSP | The National Strategic Plan |
| PMTCT | Prevention of Mother to Child Transmissions |
| PSU | Primary sampling unit |
| RRR | Relative risk ratio |
| SABSSM | South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey |
| SALs | Small area layers |
| SDGs | Sustainable Development Goals |
| SSA | Sub-Saharan Africa |
| Stats SA | Statistics South Africa |
| STIs | Sexually Transmitted Infections |
| TBP | Theory of Planned Behaviour |
| UNAIDS | Joint United Nations Programme on HIV/AIDS |
| UNICEF | United Nations Children's Fund |
| VP | Visiting point |
| VMMC | Voluntary Medical Male Circumcision |
| WHO | World Health Organisation |

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background

In the setting of a society grappling with challenges such as violence, poverty, crime, unemployment and malnutrition, South Africa is witnessing rapidly growing HIV/AIDS infections by global standards (Satoh & Beyer, 2019). These societal problems not only foster conditions that contribute to the escalation of the HIV/AIDS epidemic but also overwhelm the capacity of the healthcare system to manage the added burden of other crises (Hagn et al., 2020). Presently, HIV/AIDS stands as the most significant threat to the reconstruction and development efforts in South Africa (Hahn et al., 2020).

Since the beginning of the HIV/AIDS epidemic, approximately 85.6 million individuals have been infected with the Human Immunodeficiency Virus, resulting in the deaths of roughly 40.4 million people (World Health Organization, 2023). By the end of 2022, the global population living with HIV was about 39.0 million (World Health Organization, 2023). However, the impact of the epidemic exhibits significant variations across countries and regions. The sub-Saharan African region continues to bear the brunt of the epidemic, with over 70.0% of global HIV cases found in this region (Kharsney et al., 2016). Within this region, South Africa accounts for a population of 7.8 million individuals affected by HIV (Human Sciences Research Council, 2023). The majority of HIV transmissions in South Africa occurs heterosexually, including through commercial sex (WHO, 2018). However, there is an increasing prevalence of HIV among men who have sex with men (UNAIDS, 2017). Engaging in concurrent sexual relationships, having unprotected sexual intercourse, socioeconomic inequalities, gender stereotypes, sexual violence and substance (drug and alcohol) abuse are identified as some of the socio-behavioural and structural factors contributing to the HIV epidemic (Conroy et al., 2017; Madiba et al., 2017). Additional socio-behavioural factors that contribute to the HIV prevalence in South Africa include early initiation of sexual activity and age disparate partnerships (Zuma et al., 2022). Early sexual debut defined as having the first sexual intercourse at or before the age of 14, carries significant consequences for adolescents globally. This includes early pregnancy, HIV/AIDS, violence and substance abuse (WHO,

2021). While sexual activity during adolescence is considered a normative developmental milestone, early sexual initiation before 19, and especially before 15, is associated with engaging in risky sexual behaviours throughout adolescence and adulthood (Gladys & Joyce, 2015; Yosef et al., 2020). Early sexual experience is linked to higher rates of STIs, highlighting the exposure of adolescents with early sexual debut to risky sexual behaviours. A study found that the initiation of sexual activity at an early age has repercussions on the sexual and reproductive health of young individuals, especially adolescents. Those who engage in early sexual activity are more prone to engaging in high-risk sexual behaviours, such as having multiple sexual partners, and are less inclined to use a condom (Yosef et al., 2020). Despite condoms being the most effective means of safeguarding against HIV and other STDs, teenagers engaging in sexual activity either use condoms inconsistently or refrain from using them altogether (Marihno et al., 2012).

Although early sexual initiation is linked to a danger to reproductive health, sexuality is a natural aspect of teenage development. However, younger sexual initiation is linked to major risks which could have future consequences (Gambadauro et al., 2018). Data shows that, over the past three decades, the average age of the first sexual encounter has fallen and that a growing number of teenagers are reporting having sex before the age of 16 (Leon-Himmelstine et al., 2019). For instance, in the Caribbean region, girls and boys start sexual activity early, with 20 % of girls and 40.0% of boys aged 13-15 reporting having been sexually active (Leon-Himmelstine et al., 2019). On average, 56.0% of girls and 79.0% of boys had sex before the age of 14 (Leon-Himmelstine et al., 2019). Furthermore, a study found that the occurrence of sexual intercourse before the age of 12 was ten times more prevalent among boys compared to girls. By the age of 15, 14.2% of females and 38.2% of males had experienced sexual intercourse (Richter et al., 2015). In the United States, it was found that by the age of 19, almost 70% of both males and females acknowledged having engaged in sexual activity (Gladys & Joyce, 2015). The age at which individuals first engage in sexual activity varies across various locations and among individuals is influenced by diverse factors (Durowade et al., 2017). Over two-thirds (67.8%) experienced early sexual initiation, with an approximate prevalence of 11%. The average age at the initiation of sexual activity was 13.10 ± 2.82, and among those with early sexual debut, the mean age was 11.68 ± 1.98 (Durowade et al., 2017). In a separate study, around 17% of the participants were below 15 years of age at their first instance of sexual intercourse (Magnusson et al., 2019).

Thai males and females' average ages for their first sexual encounters dropped from 13.2 and 13.3 years old in 2005 to 12.2 and 12.3 years old, respectively, in 2011 (Tipwareerom & Weglicki, 2017). This is a problem as sexual encounters frequently take place before these young people have developed self-defence knowledge, adequate knowledge of STIs, or access to health services and resources (like condoms). Young people's sexual relationships are frequently erratic, unplanned, and occasionally the result of coercion or force (Ochieng et al, 2011). Early sexual initiation is associated with various risk factors such as limited education, increased risk of Sexually Transmitted Infections (STIs) and unintended pregnancy (Mostert et al., 2020). Insufficient awareness regarding HIV prevention, transmission, and treatment may contribute to the disease's spread. Despite the implementation of intervention programmes and health promotion services, many adolescents remain uninformed about sexual health practices (Mostert et al., 2020).

In 2019, the global count of adolescents aged 10-19 living with HIV amounted to 1.7 million, with 1.5 million (88.0%) of them located in sub-Saharan Africa (SSA) and 360 000 in South Africa (UNICEF, 2019). Adolescents living with HIV (ALHIV) include those who contracted HIV either through perinatal transmission or through sexual intercourse (UNICEF, 2019). While the gender distribution among younger ALHIV aged 10-14 years is relatively equal, those aged 15-19 years are predominantly female due to their heightened biological and structural vulnerabilities (UNICEF, 2019). Females in this age group are at increased risk of HIV transmission through sexual intercourse compared to their male counterparts (Slogrove et al., 2018). Results from the sixth South African National HIV Prevalence, Incidence, Behaviour and Communication Survey (SABSSM VI) revealed differences in HIV prevalence based on gender. In comparison to males within the corresponding age groups, females aged 15-19 years exhibited an approximately twofold higher HIV prevalence (Human Sciences Research Council, 2023).

The HIV/AIDS epidemic has significantly affected children in South Africa. Over 300 000 children are born to HIV-positive mothers each year, and HIV/AIDS-related illnesses are a major cause of child mortality (Burkholder, 2019). In 2022, an estimated 740 children contracted HIV every day, and an estimated 274 children passed away from AIDS-related causes, primarily as a result of insufficient access to services for HIV prevention, care and treatment (UNICEF, 2023). A study found that about half of children living with HIV did not make it to their second birthday (Marston et al., 2011). However, as they got older, fewer children died, and many survived into their teenage and adult years (Marston et al., 2011). The

severity of the infection at birth, linked to when they got the virus, led to differences in how likely they were to survive (United Nations Children's Fund, 2013). This affected the pattern of HIV in children as they grew up. For those who got HIV from their mothers during birth, the average survival was about 1.1 years. However, if they got infected through breastfeeding, the average survival was much longer, around 9.4 years (Marston et al., 2011). Preventing the transmission of HIV from mothers to children (PMTCT) has significantly decreased infections in children. The "Global Plan" aimed to eliminate HIV in children by 2015, setting targets like 90% PMTCT coverage and reducing transmission risks (UNAIDS, 2011). The plan focused on four areas: preventing HIV in women of childbearing age, providing access to contraceptives, HIV testing, and antiretroviral therapy (ART) treatment for pregnant women, and offering care to women, children and families. By 2014, child infections were down by 48.0%, and efforts continued through the "Start Free, Stay Free, AIDS Free" framework (UNAIDS, 2015).

Effects of maternal HIV illness can impact the health and development of children both directly and indirectly. Direct effects occur when children contract HIV through vertical transmission. Research indicates that HIV-positive children in SSA, particularly in communities with high HIV prevalence, are more prone to malnutrition than those without HIV (Conserve et al., 2015). Indirect effects stem from the impact of maternal HIV illness on a mother's ability to care for her children (Conserve et al., 2015). A study showed that mothers who were employed and had a stable income often lost these resources after contracting HIV (Guo et al., 2012). The subsequent loss of income and lack of financial support made it challenging for them to provide enough food for their children (Guo et al., 2012). This, in turn, can lead to changes in family structure and economic status, resulting in insufficient food supplies for children and malnutrition (Guo et al., 2012).

A growing number of children are living in conditions of poverty and neglect because of the increasing rates of sickness and death among young adults, which decrease the pool of caregivers and breadwinners and often lead to children becoming orphans (Desmond & Gow, 2020). Moreover, a study showed that the effects of HIV on the home and educational opportunities may limit access to education owing to financial hardship, deteriorating health from poor nutrition and other illnesses (Burkerholder, 2019). The effects may further differ by gender, which induces a gender gap among these children. Children in households affected by HIV often encounter psychosocial challenges linked to stigma associated with HIV/AIDS from their communities. They may also experience added responsibilities such as household chores and caring for themselves, younger siblings and parents who are unwell (Conserve et al., 2015).

Furthermore, the status of being orphaned places children at risk of participating in intergenerational or transactional sexual relationships, elevating their vulnerability to acquiring HIV/AIDS.

## 1.2 Problem Statement

Millennium Development Goal 6, which aimed to combat HIV/AIDS, malaria, and other diseases, included the objective to "halt by 2015 and have started to reverse the spread of HIV/AIDS" (United Nations, 2015). More recently, United Nations Sustainable Development Goal 3, focusing on ensuring healthy lives and wellbeing for all, explicitly calls for ending the HIV epidemic by 2030 (United Nations, 2015). The Joint United Nations Programme on HIV/AIDS (UNAIDS) fast-track strategy has established targets for diagnosis and treatment in 2020 and 2030, with the aim of significantly reducing new infections and deaths by 2030 (UNAIDS, 2014). However, despite these ambitious goals, a recent assessment of the state of HIV suggests that the world is not on track to end the epidemic (Bekker et al., 2018). Additionally, global spending on HIV in SSA reached its peak in 2013 and has since declined, potentially jeopardising ongoing efforts to combat HIV (Dieleman et al., 2018). SSA has the highest number of people living with HIV. In 2022, South Africa reported to have the highest number of people living with HIV (7.6 million), followed by Mozambique (2.6 million), Uganda, Zambia, and Kenya (1.4 million) (Elfein, 2023).

South Africa, a country notably impacted by HIV/AIDS, has implemented diverse strategies to address this challenge. These measures include enhancing ART accessibility and executing prevention initiatives like the Prevention of Mother-to-Child Transmission (PMTCT). PMTCT focuses on diagnosing pregnant women and ensuring access to antiretroviral drugs, thereby reducing the transmission of the virus to newborns. Additionally, the country has embraced Voluntary Medical Male Circumcision (VMMC), advocating male circumcision as a preventive measure, supported by studies demonstrating its efficacy in lowering the risk of HIV transmission. Although improvements have been made to reduce the spread of the virus through the various intervention and strategies, it is important to note that completely halting and reversing the spread of HIV/AIDS is a complex and ongoing challenge in South Africa.

Many programmes addressing Millennium Development Goals 6 in South Africa are reactive rather than proactive. Reactive planning involves programmes driven by donors, which may not be tailored to the actual needs of the country (Mulaudzi et al., 2016). These donor-driven

initiatives often fail to tackle the specific issues within the South African context (Mulaudzi et al., 2016). The study also made very important points about how some HIV/AIDS programmes are made without considering the local context and do not consider cultural differences (Mulaudzi et al., 2016). These programmes are usually created by decision-makers without asking the people who use them. They are designed to tackle a specific health issue, often funded by donors and must achieve certain health goals in a set timeframe. The people providing the services need training, and these programmes often focus on specific aspects, leaving out the more comprehensive approach that is recommended in basic healthcare settings. Even if these programmes achieve their health goals, they do not address issues related to cultural practices, healthy behaviours, education levels and economic status. The involvement and empowerment of the people using the programmes are often very limited.

Considerable efforts have been made to understand HIV/AIDS knowledge among adolescents (15-19 years) and young adults (20-24 years). For instance, a study found that only 33.0% of young people aged 15-24 worldwide have comprehensive knowledge of HIV, meaning they are aware of the two main methods of preventing HIV through sexual transmission and injection drug use (UNAIDS, 2020). Youth awareness levels are even lower in many countries with high HIV prevalence, such as those in SSA. For instance, the Fifth South African National HIV Prevalence, Incidence, Behaviour and Communication Survey (SABSSM V) found that only 27.0% of young women and 36.0% of young males in South Africa between the ages of 15 and 24 had a thorough understanding of HIV (Marinda et al., 2020). While specific HIV/AIDS knowledge has been explored extensively among these two age groups, younger adolescents aged (12-14 years old) are often neglected when research is conducted.

Poor HIV knowledge among younger teenagers (12-14 years old) may increase the risk of HIV transmission, cause them to ignore infection symptoms, delay diagnosis and treatment and, drive them to stigmatise and discriminate against people with the virus. The stigma and misinformation about HIV contribute to the spread of the disease. Internalised stigma and false beliefs about HIV can cause emotions of humiliation, disclosure anxiety, loneliness, and despair (Sherall, 2021). Extensive evidence shows that individuals with HIV and AIDS consistently face ongoing stigma and discrimination (Sherall, 2021). The propagation of AIDS myths and false information among South African adolescents makes it difficult to spread factual understanding (De Wet et al., 2019).

In order to successfully eradicate the disease from the population, it is imperative that focus be given to this age group. However, there is little research done on the levels of HIV knowledge among younger adolescents (12-14 years old) because of the difficulty in asking these young people about a culturally sensitive topic like HIV/AIDS in the presence of guardians and parents. Moreover, adolescents who have been made orphans by HIV and/or AIDS or who are living in substandard conditions with ill parents as a result of the disease are particularly susceptible to transactional sexual exploitation which exposes them to the risk of contracting HIV (Taukeni et al., 2016). Since younger adolescents are consumers of culture, media, peer information and parental perceptions and since HIV misinformation is largely fuelled by these sources of information and belief systems for young people, research that examines what younger adolescents know and do not know about the disease in relation to these social and subjective norms is important and needed.

### 1.3 Research question and sub-questions

**Main Research Question:**

What are the demographic, socioeconomic and subjective norms associated with HIV knowledge among adolescents aged 12-14 years old in South Africa?

**Sub-Questions:**

1. What are the levels of HIV knowledge among adolescents aged 12-14 years old in South Africa?
2. What are the demographic, socioeconomic and subjective norm characteristics associated with HIV knowledge among adolescents aged 12-14 years old in South Africa?

### 1.4 Research objective and sub-objectives

**Main Research Objective:**

To examine the demographic, socioeconomic and subjective norms associated with HIV knowledge among adolescents aged 12-14 years old in South Africa.

**Sub-Objectives:**

1. To establish the levels of HIV knowledge among adolescents aged 12-14 years old in South Africa.
2. To identify the demographic, socioeconomic and subjective norm characteristics associated with HIV knowledge among adolescents aged 12-14 years old in South Africa.

## 1.5 Justification:

In the landscape of HIV research, a substantial number of studies tends to concentrate on adolescents aged 15-24 years old, largely due to their heightened vulnerability to HIV infection and their pivotal role in shaping the trajectory of the HIV epidemic. However, adolescents aged 12-14 years old often find themselves marginalised or altogether excluded from such research endeavours, despite representing a critical developmental stage where foundational attitudes, behaviours and knowledge about HIV are formed.

Reasons for the neglect of younger adolescents in HIV studies is the prevailing assumption regarding their cognitive capabilities and maturity levels. There exists a common perception that individuals in the 12-14 age range may not possess the requisite cognitive capabilities to comprehend the complexities of HIV-related information or to meaningfully engage in research protocols (Govender et al., 2018). Consequently, researchers may hesitate to include this age group in their studies, fearing potential inaccuracies or inconsistencies in data collection stemming from perceived limitations in comprehension and communication skills (Govender et al., 2018).

Moreover, ethical considerations also play a significant role in the exclusion of younger adolescents from HIV research. Given the sensitive nature of topics related to sexual health and HIV, researchers must navigate a complex ethical landscape, particularly when involving minors in research activities (Nakalega et al., 2021). Concerns regarding the potential for psychological distress, breach of privacy or unintended disclosure of sensitive information are heightened when dealing with younger adolescents, leading some researchers to err on the side of caution and refrain from including this age group altogether (Rosenthal et al., 2018).

In light of these considerations, this study breaks new ground by focusing specifically on younger adolescents aged 12-14 years old and their HIV knowledge levels. Leveraging secondary data from the Fifth South African National HIV Prevalence, Incidence, Behaviour and Communication Survey obtained through questionnaires tailored for this age group and secured with explicit parental or guardian consent, this research aims to fill a critical gap in the existing literature. By delving into the factors associated with HIV knowledge among younger adolescents, this study aims to provide valuable insights that can inform more inclusive and effective strategies for HIV prevention and education efforts, ultimately contributing to improved health outcomes among adolescents across the age spectrum.

Adolescents go through a period of physical maturation, sexual development, and growth that frequently results in romantic and sexual relationships (Taukeni et al., 2016). In the early stages of this period, it is important that these teenagers are equipped with the correct HIV information in order to prevent stigma perpetuation and the spread of the disease. Correct HIV information will enable adolescents (12-14 years old) to protect themselves against the illness, and as a result, this will also help to eradicate South Africa's high HIV prevalence.

To combat the HIV/AIDS epidemic, South Africa has implemented a number of pertinent policies and actions. In 2016, the government declared the adoption of a new evidence-based policy, wherein all individuals diagnosed with HIV would be provided with HIV treatment promptly without the need for an additional immune system test (CD4 cell count) to determine eligibility (UNAIDS, 2016). Several National Strategic Plans for HIV, TB and STIs (National Strategic Plan on HIV and /or AIDS and STD 2000-2005, National Strategic Plan on HIV and AIDS and STI 2007-2011 and National Strategic Plan on HIV, STIs and TB 2012-2016) have been released. However, the latest one is the National Strategic Plan for HIV, TB and STIs 2023-2028 which places emphasis on being able to provide innovative, people- and community-centred interventions and multi-sectoral approaches to reduce the barriers and enhance access to equitable HIV, TB and STI prevention and treatment services (National Department of Health, 2023).

The Families Matter! Programme (FMP) is an evidence-supported initiative, adapted from the evidence-based intervention: Families Matter! Programme (FMP) based on research conducted in the USA and Kenya, directed at parents and caregivers of children aged 9-12, aiming to encourage positive parenting behaviours and facilitate open communication about sexual topics and risk reduction (TB/HIV Care, 2017). It covers issues like child sexual abuse (CSA) and

gender-based violence (GBV), with the goal of reducing risky sexual behaviours in adolescents, including delaying sexual initiation. FMP consists of community-based workshops conducted over six sessions, each lasting about three hours, where participants gradually build knowledge and skills (TB HIV Care, 2017). The programme aims to raise awareness about current sexual risks for teenagers, promote effective parenting practices, enhance communication about sexuality, and address sensitive topics like CSA and GBV in culturally appropriate ways. It seeks to help parents overcome communication barriers and improve skills such as monitoring and fostering strong parent-child relationships.

Despite attempts at action not yet yielding results in terms of changed behaviour and a decrease in HIV/AIDS prevalence within the population, these measures are a sign that the South African government and its partners intend to address the HIV/AIDS epidemic. It is thus essential to determine what knowledge adolescents (aged 12-14) have regarding HIV. Furthermore, this study is essential because it will help national government and South African organisations that focus on HIV awareness better understand the HIV-related knowledge gaps among adolescents and the interventions that should be prioritised when establishing HIV knowledge programmes.

The results obtained in this study will be useful to the three-year National Youth HIV Prevention Strategy (2022-2025) led by the South African National AIDS Council (SANAC) . The goal of this strategy is to integrate critical health and social services; youth development programmes, social and behaviour change communication and improved access to quality health products and services (NdoH, 2022). Noteworthy is the fact that this strategy centres on the age bracket of 15-24 years. The findings derived from this study can provide valuable insights for the government to comprehend and ensure the inclusion of individuals aged 12-14 years in this strategic plan, considering their susceptibility to contracting HIV. Having HIV/AIDS knowledge at an early age is crucial for preventing the prevalence of HIV for several reasons. First and foremost, early education empowers individuals with the information needed to make informed decisions about their sexual health (George et al., 2022).

Understanding how HIV is transmitted, prevented, and treated will allow young people to adopt safer behaviours and practices. Additionally, early knowledge promotes the importance of regular testing and knowing one's HIV status, leading to timely interventions if necessary. Furthermore, educating young individuals will help reduce stigma and discrimination associated with HIV/AIDS, fostering a more supportive and inclusive environment. By instilling awareness and responsible behaviour from an early age, there is a greater likelihood

of establishing a generation that actively engages in HIV prevention, contributing to the overall reduction of HIV prevalence in the community.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Global perspective of HIV knowledge

According to a study done in Italy in 2013, the cause for the rising prevalence of STIs is undoubtedly due to the general population's lack of interest in fighting the sexually transmitted health issue; this lack of interest is related to the lack of knowledge available on the topic, particularly among young people (Visalli et al., 2014). It is noteworthy that the study also found that STIs affect many young people because most STIs can develop asymptomatically and can be "passed on unaware during unprotected intercourse" (Visalli et al., 2014). This study further revealed that the questions about the definition of "HIV-positive", the idea of HIV/AIDS, and the future of a person with AIDS had the largest percentage of inaccurate answers. This indicates that the students' knowledge of these topics is not comprehensive. The findings also revealed that respondents' lack of responses to the question about the measures to be taken against HIV-positive individuals gave rise to widespread concerns about the illness. This is concerning because it may propagate misconceptions and stigma about HIV/AIDS, exposing people to contract the illness because they lack adequate information and knowledge. Although young people in the study demonstrated awareness of how STIs and HIV are transmitted, this information was determined to be minimal. The fact that 95.0% of study participants said they would like to implement sex education in schools raises concerns about this (Visalli et al., 2014). This demonstrates even further how parents and teenagers alike lack sex education. This is troubling because sex education can give teenagers the tools they need to regulate healthy sexual development in their relationships with others and with themselves.

To further emphasise the importance of parents educating their adolescents about sexual health matters, a study in Saudi Arabia by Alsubaie (2020) showed that adolescents predominantly sought sexual information from friends and the media, with comparatively less reliance on reputable sources like schools, health professionals, health services and parents. This shows limited communication between adolescents and their parents regarding sexual health matters, revealing a noticeable gap in discussions on sexual health-related issues between Saudi parents and their sons (Alsubaie, 2020). This finding can be clarified by cultural taboos, societal denial and a lack of recognition regarding the significance of empowering adolescents with accurate information and knowledge. The information obtained from peers and mass media is

occasionally misleading, potentially causing significant harm to an adolescent's perceptions and attitudes towards risky behaviours. Schools should therefore serve as a focal point for sex education, and any interventions deemed helpful by young people should be used to increase their awareness and allay their questions and uncertainties.

A study conducted in Malaysia, investigating HIV knowledge among university students, revealed that the students were familiar with the terms 'HIV' and 'AIDS'. However, the students lacked detailed knowledge about the disease's transmission (Talwar & Rahman, 2015). This suggests that, despite four decades into the epidemic, the community's understanding remained limited. From this context, one could infer that while young people in Malaysia had a basic understanding of HIV, they still held various misconceptions, hindering them from making informed decisions and undertaking appropriate actions (Talwar & Rahman, 2015). The research also found a correlation between gender and HIV knowledge. Male students exhibited higher levels of knowledge compared to their female counterparts. The odds of male students possessing better HIV knowledge were found to be 1.7 times higher than that of females, suggesting that females are at a comparatively higher risk due to their lower knowledge levels (Talwar & Rahman, 2015). If university students lack comprehensive HIV knowledge, younger adolescents, particularly those aged 12-14, may face even greater challenges in having HIV and AIDS knowledge.

It is evident that there are also gender disparities that exist. Literature shows that in general, the females' partners are older which explains why this is the case (Samkange-Zeeb et al., 2011). Young female adolescents may be at an increased risk of contracting HIV when engaging in relationships with older partners (Schaefer et al., 2017). This heightened risk is often associated with factors such as a power imbalance and differences in sexual experience. Older partners may have a greater likelihood of already being exposed to HIV, increasing the potential for transmission to their younger partners (Schaefer et al., 2017). Additionally, age differences can contribute to unequal power dynamics in relationships, making it challenging for younger individuals to negotiate safer sexual practices or insist on HIV prevention measures. Lack of experience and knowledge about safe sex practices among young female adolescents may also play a role in their vulnerability (Mahvu et al., 2018). Older partners might be less likely to prioritise safe sex, and younger individuals may not feel empowered to advocate for protective measures (Mahvu et al., 2018). Research conducted in various nations revealed that women's health attributes were lower compared to men, and the primary factors contributing to this disparity were gender inequality (GI) and a society where males held a

dominant position (Khammarnia et al., 2014; Mbonye, 2012). Gender and societal disparities exert substantial influence on individuals' social and economic standing which may have a correlation between young female adolescents contracting HIV and factors such as poverty and engagement in high-risk relationships (Khammarnia et al., 2014). There are several variables that affect adolescents' propensity for sexual activity, including unstable economic conditions, peer pressure to engage in sex, alcohol and drug use and societal norms (Leon-Himmelstine et al., 2019). The study further demonstrated how concerns with femininity norms might cause girls and young women to adopt submissive roles, which typically prevents them from speaking up and limits their ability to influence sexual decision-making in romantic relationships (Leon-Himmelstine et al., 2019). As a result, they are exposed to sexual risks and vulnerabilities and find it challenging to engage in safe sex.

According to Sano and others, there is a correlation between low HIV knowledge and higher levels of misinformation concerning the virus' transmission (Sano et al., 2016). The study conducted in America in 2018 indicated that there are some misconceptions about HIV and AIDS among undergraduate students. For example, 55.0% of the students thought that HIV could be spread by insects or mosquito bites, and 6.0% thought that HIV-positive people could be identified by their facial features. About 22.0% of students felt that HIV might spread by sharing a public restroom with an infected individual, and 20.0% of respondents thought it could spread through sharing clothing and the bathroom (Andrew et al., 2018). Nineteen percent of respondents thought there was a cure for AIDS, whereas 4.0% said HIV did not impact young people. In a related study done in Indonesia, it was shown that 75.9% of the participants had false beliefs regarding how HIV spread (Suantari, 2017). Beliefs regarding HIV transmission were associated with respondents' educational level and the wealth index quintile; respondents with lower educational levels were more likely to hold these beliefs (Suantari, 2017; Sheikh et al, 2017).

Adolescents exhibit a spectrum of attitudes towards HIV, influenced by several factors such as having insufficient knowledge about HIV transmission, limited access to comprehensive sex education and societal norms that may downplay the severity of HIV/AIDS. In a study conducted in India among adolescents aged 14-19, the findings reveal several misconceptions among adolescents about the mode of transmission, prevention, and cure of HIV/AIDS. A notable 43.4% of adolescents believed that HIV/AIDS could be transmitted by eating or drinking from the same plate or glass as an infected person (Lal et al., 2019). Additionally, a substantial 72.3% thought that sharing clothes with an HIV-infected person could lead to

transmission, and 70.1% held the misconception that sharing toilets could spread HIV/AIDS (Lal et al., 2019). These findings highlight significant gaps in knowledge regarding the actual modes of HIV transmission, prevention, and treatments.

In a study conducted among Iranian student's, results indicated that their knowledge was low and that wrong beliefs put them at risk for being infected with the disease. For instance, the response to the question "a person can be infected with HIV despite a negative HIV test" indicates a notable level of misunderstanding or lack of awareness among both male (44.4%) and female (48.8%) students (Vakilian, 2021). The percentages for both genders are relatively high, suggesting a common misconception about the reliability of HIV testing in accurately determining infection status. The results further suggest a significant difference between male and female students regarding their perceptions of the threat of AIDS and the association between unprotected sex and the risk of sexually transmitted diseases (STDs). In response to the statement "unprotected sex puts adolescents at risk of STDs", 45.8% of female students and 60.5% of male students answered "totally disagree" (Vakalian, 2021) This discrepancy indicates that a higher proportion of male students expressed disagreement with the idea that unprotected sex poses a risk of STDs compared to their female counterparts. The findings imply a potential gender-related variation in awareness or attitudes towards the connection between unprotected sex and the risk of contracting STDs. Furthermore, the Iranian students exhibited a low attitude towards the risk of AIDS infection, leading to the presence of stigma related to AIDS. Additionally, they held a belief that their likelihood of contracting HIV was low, diminishing their motivation to use condoms in their sexual relationships (Vakalian, 2021).

### 2.2 Knowledge of HIV in SSA

SSA is grappling with a public health problem of HIV/AIDS. Despite increased activism and the distribution of thorough HIV/AIDS information in SSA, it seems that not much has been accomplished to lower the prevalence of the disease in this region. The United Nations Programme on HIV and AIDS (UNAIDS) found that up to 70.0% of adolescents in SSA lack sufficient understanding of HIV transmission (UNAIDS, 2014). Effectively combating HIV/AIDS relies on strategies centred around knowledge and information dissemination. In a population vulnerable to risky sexual behaviours (RSB), partial or inadequate knowledge, let alone a total lack of understanding about HIV among adolescents, can have severe consequences. Although there have been increased efforts, there has not been much progress

in increasing the general knowledge of HIV among different communities, particularly the young and sexually active population.

A study conducted in Nigeria sheds light on the HIV knowledge among young adolescents aged 10-14, emphasising the significance of comprehensive HIV education. The findings indicate that while the majority of the adolescents had heard of HIV (72.0%), there were notable gaps in their understanding of transmission and prevention (Badru et al., 2020). Specifically, less than half (45.7%) of those aware of HIV correctly indicating identified unprotected sex as a mode of transmission, and a mere 12.0% recognised the preventive role of condoms (Badru et al., 2020). This underscores a crucial need for comprehensive HIV education tailored to this age group, addressing not only awareness but also accurate knowledge about transmission and prevention methods. Moreover, the study highlights the impact of parent-child discussions on HIV knowledge. Adolescents who engaged in conversations with their parents were more likely to possess comprehensive HIV knowledge (Badru et al., 2020). This underscores the role of family communication in enhancing awareness and understanding of HIV among young adolescents.

In a comparative study among male youth in Ivory Coast, Cameroon and Gabon, the study underscored the fundamental importance of comprehensive HIV/AIDS knowledge for effective implementation of prevention, care, and support plans. The study highlighted a concerning gap in comprehensive HIV/AIDS knowledge among male youth in these countries, falling significantly below the target set by UNAIDS in 2016, which aimed for 90.0% of young people globally to have knowledge for self-protection (Minet et al., 2016). Some 60.9% of male youth from Ivory Coast did not have comprehensive HIV knowledge, followed by 51.9% from Cameroon and 51.0% from Gabon. The study further explored demographic factors influencing HIV/AIDS knowledge. It found that urban residents tend to have higher knowledge than their rural counterparts, a variation reported in SSA (Minet et al., 2016). This urban-rural discrepancy is attributed to differences in mass-media coverage and HIV/AIDS prevention programmes. Educational level emerged as a significant predictor of comprehensive HIV/AIDS knowledge and parental education and discussions about sexuality also played a pivotal role in shaping adolescents' knowledge (Minet et al., 2016).

Teenagers, particularly females, are the main group at risk for contracting this virus. (Francis et al., 2022). Young women are more likely to get HIV due to several factors, including educational possibilities, media exposure, economic inequities, power dynamics in romantic

relationships and transactional sex (Choudhry et al., 2015; Darteh, 2020). Inequalities in adolescent girls' sexual and reproductive health are grounded in social, cultural and economic contexts that affect their autonomy and decision-making. Sub-Saharan African marriage customs are characterised by large age gaps between prospective spouses and a high rate of child marriage (marriage before the age of 18) among females (Hertrich, 2017). In addition to being a violation of a child's rights, this also has potential consequences for adolescent sexual reproductive health and access to education. While child marriage does occur among boys, it is much less prevalent than it is among girls in most countries (Hertrich, 2017). The HIV/AIDS epidemic mostly affecting adolescent girls and young women is significantly influenced by the age gap between sexual partners since older male partners are more likely to be HIV-positive than adolescent males. The reduced sexual power and negotiating abilities of girls may also contribute to the non-use of condoms (Evans et al., 2016). Adolescent girls and young women (AGYW) often face difficulties in negotiating safer sex, influenced by the prevalent power dynamics favouring men in sexual decision-making. A study indicated that 74.9% of AGYW in SSA were involved in negotiating safe sex (Frimpong et al., 2021). Furthermore, of those possessing comprehensive HIV knowledge, 80.1% of respondents, were more inclined to engage in discussions about safe sex compared to those lacking comprehensive HIV knowledge (Frimpong et al., 2021). This highlights the crucial role of comprehensive HIV knowledge in empowering AGYW to adopt safer sexual practices.

Adolescent girls and young women's poor understanding of HIV transmission and prevention strategies is one of the main contributing factors to RSB that predispose them to the risk of contracting and spreading HIV (Butts et al., 2017). A study focused on identifying the sources of HIV prevention knowledge among female adolescents aged 10-14 years revealed unfavourable attitudes and normative beliefs towards condom use, leading to negative perceptions (Butt et al., 2017). Misconceptions, such as the belief that condom use hinders sexual satisfaction and a lack of confidence in condom efficacy, were identified as factors motivating individuals to engage in unprotected sex. Additionally, male preferences for condomless sex were noted as having a detrimental impact on safer sex practices (Butt et al., 2021). These misconceptions were identified in responses indicating a lack of understanding about HIV, its transmission, and preventive measures (Butt et al., 2017). Some participants expressed inaccurate beliefs, such as the idea that testing positive for HIV leads to death or that children can contract AIDS from playing with discarded condoms (Butt et al., 2017). These

findings underscore the importance of targeted education to address misconceptions and promote accurate knowledge about HIV and prevention methods.

Providing HIV/AIDS education is essential for filling the gaps in comprehensive HIV/AIDS knowledge, as shown by a study in Malawi (Chirwa, 2020), which found that secondary education had a good impact on the youth's understanding about HIV. To demonstrate the value of education in ensuring that teenagers are informed about HIV, a study was done in Eswatini, where undergraduate nursing students were asked about their knowledge of HIV/AIDS. The study showed that the students had a strong understanding of how the virus spreads. However, this study also showed that they did not have comprehensive HIV knowledge because the study revealed that condoms were the only method of HIV/AIDS prevention that the first-year nursing students believed to be effective (Dlamini et al., 2022). Similarly, most first-year nursing students in a Nigerian study showed ignorance of the HIV transmission process. They all believed that patients with HIV or AIDS should not be housed in the same ward as healthy individuals (Akpotor et al., 2018). This is concerning since providing care to the public necessitates that healthcare professionals have knowledge about HIV and AIDS, which many of the students lacked. Given that they are in university education, it is assumed that they are knowledgeable about HIV/AIDS (Akpotor et al., 2018). This further demonstrates that secondary school curricula do not adequately teach students about HIV.

In a Kenyan study (2010), condom attitudes and knowledge were poorly rated among secondary school students. Condoms' protective function in preventing HIV transmission was seen negatively. Even though most students had seen a condom and thought they worked well to prevent conception, just 22.9% of them thought condoms worked well to prevent HIV/AIDS (Ochieng et al, 2011). The fact that condoms are only used as a contraceptive and not as a means of preventing STDs like HIV/AIDS indicates that little is known about HIV prevention (Visalli et al., 2014). When alternative contraceptives are used, condom use becomes erratic if they are being used as a form of birth control. Consequently, the likelihood of contracting the disease increases.

### 2.3 HIV knowledge in South Africa

Worldwide, South Africa boasts the highest incidence of HIV/AIDS. It has been indicated that there is significant heterogeneity in the epidemiology of HIV across South Africa (Johnson et al., 2023). Incidence rates have shown consistent declines in all provinces, with the most

substantial reductions observed in KwaZulu-Natal (67.0%) and the smallest in the Western Cape (36.0%) between 2010 and 2020 (Johnson et al., 2023). Despite the marked decline in incidence rates in KwaZulu-Natal, it still maintains the highest HIV prevalence (22.0%) among the provinces and Western Cape with the lowest prevalence (Human Sciences Research Council, 2023). Since a cure remains elusive, the sole method to diminish HIV prevalence rates is prevention. Achieving this necessitates behavioural modification, a process intricately linked with comprehensive understanding of HIV. Understanding how HIV is transmitted and prevented, along with a decrease in risky behaviours, plays a crucial role in fighting the spread of HIV (UNAIDS, 2010). Health literacy plays a crucial role in interventions aimed at preventing and addressing epidemics like HIV. According to the WHO, health literacy encompasses the cognitive and social skills that influence individuals' motivation and ability to obtain, comprehend and use information effectively to promote and sustain good health (Apfel et al., 2013). This includes people's knowledge, motivation and competencies in accessing, understanding, critically evaluating and applying health information to make informed decisions about healthcare, thereby enhancing quality of life throughout their lives.

A study revealed that among university students from the KwaZulu-Natal and Western Cape, students had an adequate general knowledge on HIV/AIDS, misconceptions concerning the transmission of HIV/AIDS were low (Reddy and Frantz, 2013). Similarly, in a study conducted in a rural university in Limpopo, the findings showed that less than half (42.0%) of the students were shown to possess comprehensive HIV knowledge. What was particularly interesting about this study was that majority of the students knew that HIV is transmitted through sexual intercourse (88.4%), by sharing needles (95.4%) and having vaginal sex without a condom (92.8%) (Murwira et al., 2021). However, these students lacked knowledge that HIV cannot be transmitted through a dirty toilet and that the disease is not transmitted through a mosquito carrying the virus (Murwira et al., 2021).

It is particularly concerning that university students have inadequate knowledge about the transmission of HIV because they represent a demographic typically associated with higher education levels and critical thinking skills (Murwira et al., 2021). As individuals pursuing higher education, university students are expected to have greater access to information and resources, including sexual health education. Therefore, their lack of comprehensive understanding about HIV transmission despite their educational status suggests potential gaps in the effectiveness of existing educational programmes or barriers to accessing accurate information. Additionally, without a thorough understanding of how HIV is transmitted,

university students may engage in behaviours that increase their risk of infection, while misconceptions could perpetuate stigma and discrimination against those living with HIV/AIDS. Furthermore, insufficient knowledge may hinder public health initiatives aimed at reducing transmission rates and achieving broader health goals.

However, in contrast to the findings above, it was found that 100% of high school learners in Eastern Cape knew that HIV can be spread through sexual intercourse. The majority of respondents knew that HIV/AIDS cannot be spread through handshakes (100%), sharing the same toilet seat (90.0%) and mosquito bites (86.0%) and cannot be transmitted through witchcraft (78.0%) (Fana, 2021). Attitudes among these learners was also quite impressive as the majority (70.0%) indicated that they were willing to take care of a relative living with HIV and AIDS and 72.0% reported that they would still continue being friends with someone diagnosed with HIV (Fana, 2021). Furthermore, in a cross-sectional study conducted among primary school learners, high levels of HIV transmission knowledge (94.0%) were found (Dzhugudzha & Madiba, 2021). The study further showed that 88.0% of learners knew that HIV can be transmitted by sharing a needle, 93.0% knew that HIV cannot be spread by shaking hands while 85.0% knew that HIV cannot spread by sharing a toilet with an HIV-positive person (Dzhugudzha & Madiba, 2021). It is noteworthy that regardless of the good knowledge possessed by these learners, it was also worrisome that knowledge of some of the items regarding the routes of transmission was poor. For instance, less than half (41.0%) of the learners reported that coughing and sneezing can spread the virus, while 28.0% did not know that an HIV-positive mother who is pregnant can infect her unborn baby with HIV; and 25.0% did not know that HIV cannot be spread by eating and drinking from the same plate or glass as an HIV-positive person (Dzhugudzha & Madiba, 2021).

Across all the studies mentioned, there is a consistent awareness of sexual transmission of HIV, with participants demonstrating a high level of knowledge regarding this mode of transmission. However, despite generally high levels of HIV knowledge, there were notable gaps in understanding specific modes of transmission in each study, such as misconceptions regarding casual contact. Positive attitudes towards individuals living with HIV/AIDS were observed across different age groups, with participants expressing willingness to provide care and maintain friendships with those diagnosed with HIV. However, differences emerged in the depth of knowledge and specific misconceptions. These differences underscore the importance of targeted educational interventions tailored to the unique needs of each population group,

addressing specific knowledge gaps and misconceptions to promote accurate understanding of HIV transmission and preventive measures.

Understanding the nuances of HIV knowledge between rural and urban areas is crucial for effective public health interventions. Disparities in HIV knowledge often exist due to various socioeconomic, cultural and infrastructural factors unique to each setting. In urban areas, access to education, healthcare services and information may be more readily available compared to rural regions. Additionally, urban populations may benefit from greater exposure to diverse social networks and community resources, which can facilitate access to accurate HIV/AIDS information. A study reported that knowledge of mother-to-child-transmission of HIV and AIDS was low among women residing in rural areas compared to those in urban areas. They suggested that this was perhaps because rural areas often face challenges such as limited access to healthcare facilities, lower literacy rates, cultural stigmas and geographical isolation, all of which can contribute to gaps in HIV knowledge (Darteh et al., 2021). Similarly, another study affirmed that urban youths tend to be more knowledgeable about HIV and AIDS compared to their rural counterparts (Zuma et al., 2011). This suggests that insufficient information and awareness may increase the vulnerability of rural youth to unplanned pregnancies, STIs, and HIV.

Certain cultural practices, such as initiation ceremonies, can also pose risks for HIV transmission if safe sex practices are not promoted or if traditional practices involve rituals that may increase vulnerability to infection. A study revealed that in rural areas, men who undergo cultural initiation and traditional circumcision often hold the belief that transitioning from boyhood to manhood renders them immune to contracting STIs, including HIV (Nyembezi et al., 2014). The study also found that 92.0% of participants shared this belief, viewing circumcision as providing protection during sexual intercourse due to the removal of the foreskin, which is perceived to lower the risk of HIV/AIDS transmission (Nyembezi et al., 2014). The study underscores the necessity for culturally sensitive education, particularly targeting initiation leaders, initiates and all involved in such practices to enhance awareness and prevent the spread of HIV/AIDS.

On the other hand, a research study conducted in Limpopo presented a different perspective. The study carried out in the Vhembe district of Limpopo revealed that within the Vhavenda community, traditional male circumcision, known as ‘Mula’, was accompanied by the imparting of life rules to circumcised men (Ndou-Maambona et al., 2022). Boys who

underwent this customary circumcision were provided with guidance on the significance of fidelity and displaying respect towards their partners (Ndou-Maambona et al., 2022). Furthermore, they were urged to use condoms during sexual intercourse as a measure to protect themselves against HIV transmission. This approach demonstrates a more comprehensive understanding of HIV prevention within the cultural context, emphasising not only the physical act of circumcision but also the importance of safe sex practices and mutual respect in sexual relationships. The findings suggest that within certain cultural contexts, traditional practices can be leveraged to promote HIV awareness and prevention strategies effectively.

Gender disparities in HIV prevalence rates underscore the need to understand and address the specific challenges faced by men and women in accessing accurate HIV information. Women, who are disproportionately affected by the epidemic, often encounter gendered social norms and behaviours that increase their vulnerability to HIV infection (Kazemzdeh et al., 2021). Various elements of culture and social structure, such as women being in polygamous relationships, inadequate formal education, limited economic prospects, experiences of gender-based violence and constrained decision-making authority, all contribute to women's lack of comprehensive HIV knowledge (Kazemzdeh et al., 2021). Various studies have found differences in HIV knowledge among women and men. For instance, a study conducted by Khamisa et al. (2020) highlighted significant disparities between male and female students. It indicated that female students had notably lower awareness regarding unprotected anal sex as a risk factor for HIV/AIDS in comparison to their male peers. Furthermore, the study revealed that 8.3% of male students and 3.8% of female students held the belief that AIDS could be cured (Khamisa et al., 2020). The lack of adequate understanding of HIV/AIDS likely contributes to the engagement of young individuals in risky sexual behaviour, thus leading to a high prevalence of HIV infection among them (Haroun et al., 2015). In another study it was highlighted that 17.4% of the high school teenage girls doubted the usefulness of the condom in combating HIV infection (Chadyiwanembwa & Habedi, 2023). A separate study conducted between 2017 and 2018 among young adults (aged 18-24 years) in two high HIV-prevalent districts in South Africa revealed that less than half of the participants had accurate knowledge about HIV (Shambu et al., 2020). The findings indicated that males slightly surpassed females in knowledge levels (47.3% for males compared to 42.1% for females) (Shambu et al., 2020). A study conducted by UNAIDS supports these findings in that it states that seven out of 10 young women do not have adequate knowledge about HIV/AIDS (UNAIDS, 2019). Their

knowledge was not comprehensive and fell short of the UN target of (95.0%) for people between 15 and 24 years old by 2010 (Vaya et al., 2019).

## 2.4 Theoretical Framework

This research paper adopted the Theory of Planned Behaviour (TPB). Ajzen developed the TPB which offers a helpful theoretical framework for studying human social behaviour in a variety of contexts. Theory of Planned Behaviour, which is an extension of the Theory of Reasoned Action (TRA), suggests that perceptions of behavioural control, subjective norms and attitudes toward the activity may all be used to anticipate intention, which in turn can be used to predict behaviour. The model's concepts (Figure 2.1) enable the prediction of human purpose and behaviour in particular situations.

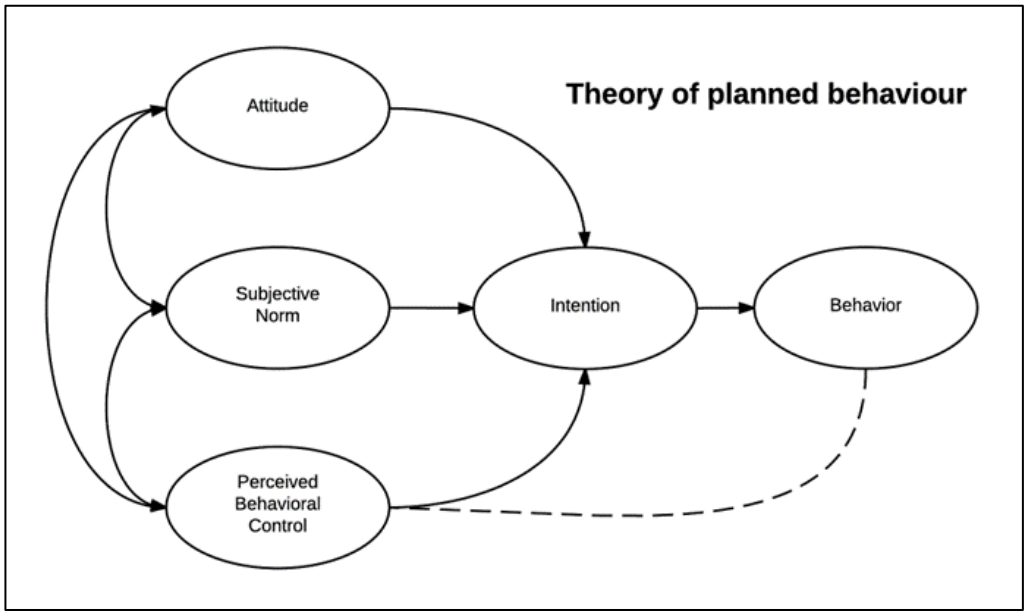


***Figure 2.1: Theory of Planned Behaviour.***

***Source: (Azjen, 1991)***

The degree to which a behaviour is seen favourably or unfavourably is known as attitude toward the activity. Subjective norms are the societal pressure that people feel to conform to certain behaviours. The perceived level of behavioural control reveals how simple or difficult it is for a behaviour to occur. Generally speaking, a stronger intention to engage in the behaviour is linked to a more positive attitude, more favourable subjective standards and more perceived control. In turn, behaviour can be predicted with the aid of purpose and perceived behavioural control. A better likelihood of achieving the behaviour can result from a stronger intention or greater readiness to do so.

However, when faced with challenges, people are typically more prone to act in ways that show a higher level of trust (perceived behavioural control). For instance, if someone feels in control of their activities, senses social pressure to act and has a good attitude about HIV prevention and treatment, they may be more likely to engage in behaviours that stop the spread of HIV, including using condoms and undergoing regular tests. On the other hand, a person may be less likely to practise HIV prevention behaviours if they have negative attitudes toward HIV prevention and treatment, do not sense societal pressure to act, and believe that they have little control over their conduct. In general, the TPB can offer insightful information into the variables that affect a person's knowledge and behaviour towards HIV prevention and can help to inform the creation of successful interventions meant to encourage HIV prevention behaviours.

## 2.5 Conceptual Framework

The conceptual framework for this study is an adaption of the TPB (1991) by Ajzen. The model in Figure 2.2 indicates the demographic and socioeconomic variables which include age, sex, race, province, place of residence, grade and orphanhood status.

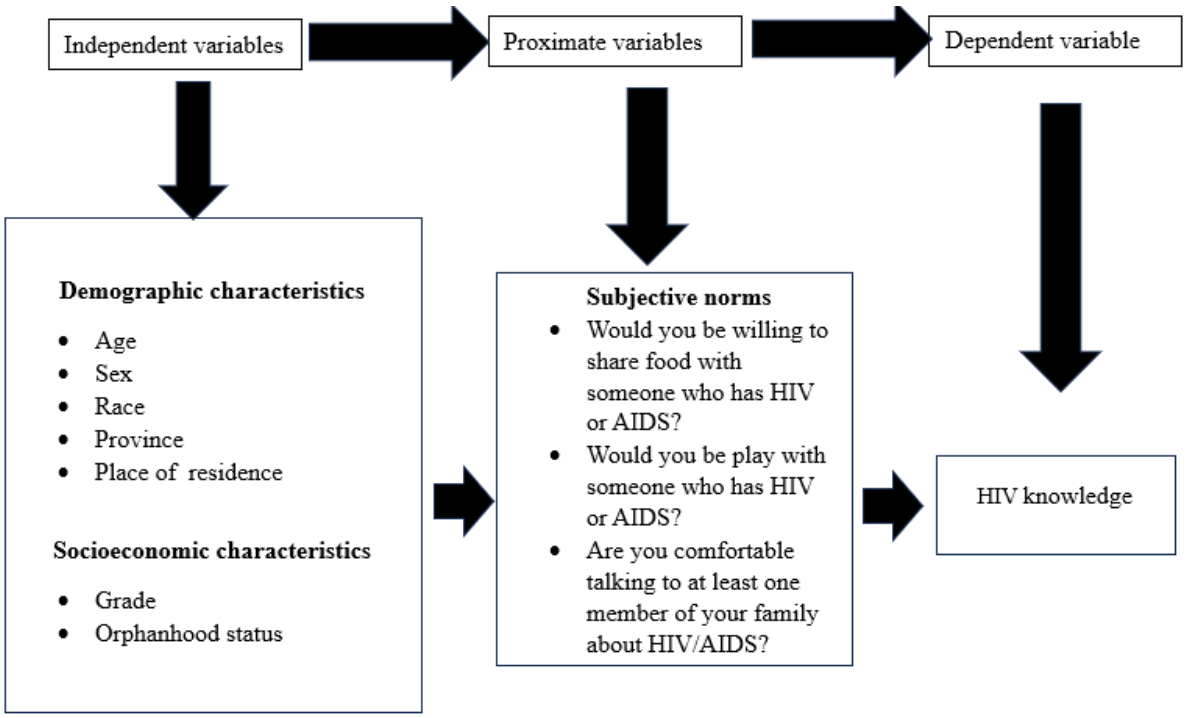


***Figure 2.2: Conceptual Framework***

***Source: (adapted from Ajzen 1991)***

These variables work through subjective norms to influence the adolescent's behavioural intention (HIV knowledge). Furthermore, the model illustrates subjective norms, which refer to whether most people approve or disapprove of the behaviour, indicated by questions found in the SABSSM V 2017 questionnaire, such as: "Would you be willing to share food with someone who has HIV?", "Would you play with someone who has HIV/AIDS" and "Are you comfortable talking to at least one member of your family about HIV/AIDS?" The subjective norms have a direct influence on the adolescent's HIV knowledge. For the purpose of the study, attitudes will not be operationalised and therefore not controlled for in the conceptual framework.

The conceptual framework for this study offers a nuanced lens through which to explore the complex dynamics influencing HIV knowledge among younger adolescents aged 12-14 years old in South Africa. While excluding perceived behavioural control and attitudes, demographic and socioeconomic factors such as age, sex, race, place of residence, grade, orphanhood status and subjective norms like willingness to play with individuals living with HIV/AIDS are integral components of this framework. These factors act as distal influence on younger adolescent's subjective norms, which are beliefs and attitudes about what is socially acceptable. These subjective norms affect behaviours such as willingness to share food or play with someone who has HIVAIDS. For instance, individuals from communities with strong stigma against HIVAIDS may be less willing to engage with affected individuals and might have less HIV knowledge. Conversely, those raised in environments that encourage open communication about HIV/AIDS may be more informed. These demographic and socioeconomic variables hold significant influence over an individual's exposure to HIV/AIDS education, access to resources and social support networks.

Moreover, within the South African context, where the HIV/AIDS epidemic has profoundly impacted communities, understanding subjective norms becomes pivotal. The willingness of adolescents to interact with, share resources with and discuss HIV/AIDS with affected individuals is deeply rooted in societal attitudes and cultural norms. Given the prevalence of the disease in South Africa, such social influences carry considerable weight in shaping adolescent perceptions and behaviours regarding HIV/AIDS. By exploring these factors, one is able to unravel the intricate web of influences guiding HIV knowledge acquisition and retention among this age group (12-14 years old). This insight is particularly pertinent for informing tailored interventions aimed at fostering accurate and comprehensive understanding

and promoting positive attitudes towards HIV/AIDS prevention and care among South Africa's younger population.

# CHAPTER THREE

# METHODOLOGY

## 3.1 Study area

The study area for this research study is South Africa. The population of South Africa in 2023 was 62,0 million. Gauteng has the highest population (15 099 422), followed by KwaZulu-Natal (12 423 907), while Free State (2 964 412) and Northern Cape (1 355 946) has the lowest population sizes (Statistics South Africa, 2023). The country is divided into four racial groups which includes Black Africans, Coloureds, Indians/Asians, and Whites. The majority of South Africa's population (49.1 million) is comprised of African individuals, making up around 81.4% of the country's total population (Statistics South Africa,2023). South Africa has a youthful population with a significant youth bulge (34,0%) aged 15-34 years old (STATSA, 2023). The estimated HIV prevalence rate is approximately 13,9% among the South African population. Of South African women aged 15-49, approximately 24% are HIV positive (STATSA, 2023). Given that South Africa has one of the highest HIV prevalence rates in the world, understanding the level of knowledge and misconceptions about HIV among younger adolescents is crucial for tailoring educational programs that address these gaps and ultimately reduce future infection rates. While younger adolescents aged 12-14 may not yet be engaging in high-risk behaviours, they are at a formative age where they begin to develop attitudes and beliefs about sexuality and health. Early education during this critical period can prevent the adoption of risky behaviours as they grow older, contributing to long-term reductions in HIV transmission. This is why South Africa was chosen as the study area for the study.

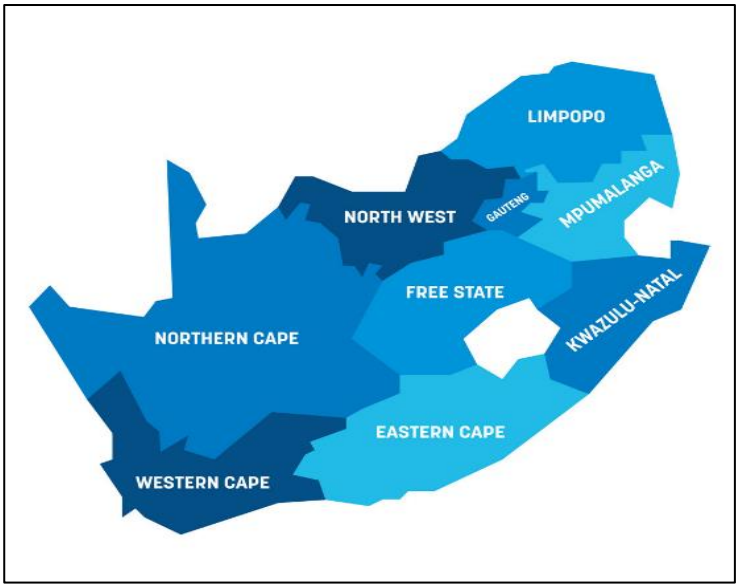

*Figure 3.1: Map of South Africa.*

*Source: https://www.vectorstock.com/royalty-free-vector/south-africa-map-provinces-vector-34560932*

### 3.2 Study design and data source

This study utilised secondary data and employed a cross sectional study design. Data used was from the Fifth South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey (SABSSM V) of 2017, which is a national representative study conducted across all nine provinces in South Africa. This is the fifth wave of a national cross-sectional survey that has been conducted by a research collaboration under the direction of the Human Sciences Research Council (HSRC) since 2002. The survey's design and methodology were based on those employed and approved in the HSRC's four prior surveys, which were conducted in 2002, 2005, 2008, and 2012. The 2017 survey used small area layers (SALs) as the primary sampling unit (PSU). The SALs were sampled with a probability proportion to its size with the number of visiting points (VPs) as a measure of size. The selection of SALs were stratified by province and locality type (Simbayi et al., 2019).

### 3.3 Study population

The population of interest for this study was younger adolescents aged 12-14 years old of all races and provinces in South Africa whose consent was provided by the caregiver and minor (as the parental permission and minor's decision had to be consistent). Thus, if the minor decided not to participate, the parent could not override this decision (Simbayi et al., 2019).

### 3.4 Sample size

The study focused on younger adolescents aged 12-14 years old, originally drawing from a larger sample of 66,129 participants in the SABSSM V 2017 survey. This initial group was filtered down to 3,883 cases specifically representing younger adolescents aged 12-14 years old. To ensure the results were accurate and reflective of the national population, survey

weights were applied to adjust for any oversampling or under-sampling. The weighting code "ibreal12_sabssm" was utilized for this purpose, ensuring that the dataset represented the entire national population rather than just a subset. Consequently, the total weighted sample size for younger adolescents aged 12-14 years old was 927,861, which formed the analytical sample used in the study.

### 3.5 Questionnaire design

The Fifth South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey (SABSSM V) of 2017 consists of four questionnaires; Household questionnaire (also known as a visiting-point questionnaire), questionnaire for parents and guardian of children aged 0-11 years, questionnaire for children aged 12-14 years and a questionnaire for people aged 15 years and older. This study used the questionnaire for children aged 12-14 years old. The questionnaire includes questions on HIV and AIDS knowledge, perceptions, and stigma sexual debut, knowledge and support, health questions, among others.

### 3.6 Research hypothesis

**Ho:** Demographic, socioeconomic and subjective norms characteristics are NOT associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

**Ha:** Demographic, socioeconomic and subjective norms characteristics are associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

### 3.7 Study variables

#### 3.7.1 Dependent variable

The dependent variable in this study was HIV knowledge and it was defined as having accurate knowledge of all HIV knowledge questions from the survey. To create the variable eight questions from the survey which assessed HIV and AIDS knowledge, perceptions and stigma were used. The adolescents were asked: (1) “Can AIDS be cured?”; (2) Can a person reduce the risk of HIV by having fewer sexual partners?”; (3) “Can a healthy-looking person have HIV?”; (4) “Can HIV be transmitted from a mother to her unborn baby?”; (5) Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?”; (6) “Can a person get HIV by sharing food with someone who is infected?”; (7)

Can a person reduce the risk of getting HIV by using a condom every time he/she has sex?"; (8) "Can male circumcision reduce the risk of HIV infection in males. All of the questions had 'yes', 'no' and 'don't know' response categories. The 'don't know' responses were dropped as these responses did not provide meaningful data for analysis, it was also to ensure that the data accurately reflected the participants knowledge on HIV and AIDS. Additionally, including these responses would have skewed the results and compromised the validity of the findings. The dependent variable comprised of three categories: low HIV knowledge, average HIV knowledge, and comprehensive HIV knowledge. Low HIV knowledge indicated participants who answered 1-3 out of the eight questions correctly, while average HIV knowledge referred to those who answered 4-5 questions correctly. Comprehensive HIV knowledge was assigned to respondents who answered 6-8 questions correctly out of the eight provided.

***Table 3.1: HIV and AIDS knowledge, perceptions, and stigma questions.***

| **Questions about knowledge and perceptions of HIV/AIDS** | **Yes** | **No** | **Don't know** |
|---|---|---|---|
| Can AIDS be cured? | 1 | 2 | 3 |
| Can a person reduce the risk of HIV by having fewer sexual partners? | 1 | 2 | 3 |
| Can a healthy-looking person have HIV? | 1 | 2 | 3 |
| Can HIV be transmitted from a mother to her unborn baby? | 1 | 2 | 3 |
| Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | 1 | 2 | 3 |
| Can a person get HIV by sharing food with someone who is infected? | 1 | 2 | 3 |
| Can a person reduce the risk of getting HIV by using a condom every time he/she has sex? | 1 | 2 | 3 |
| Can medical male circumcision reduce the risk of HIV infection in males? | 1 | 2 | 3 |

***(The answers highlighted in blue are the correct answers to the questions about knowledge and perceptions of HIV/AIDS.)***

***Source: (adapted from De Wet., 2019)***

### 3.7.2 Independent variables

***Table 3.2: Characteristics of younger adolescents aged 12-14 years old in the study and their descriptions.***

| Variable name | Original codes | How variables were coded in this study |
|---|---|---|
| **Demographic characteristics** | | |
| Age | 12-14 | 12-14 |
| Sex | (1) Male<br>(2) Female | (1) Male<br>(2) Female |
| Race | (1) African<br>(2) White<br>(3) Coloured<br>(4) Indian/Asian<br>(5) Other | (1) African<br>(2) Other |
| Place of residence | (1) Urban<br>(2) Rural informal (tribal area)<br>(3) Rural formal (farms) | (1) Urban<br>(2) Rural |
| Province | (1) Western Cape<br>(2) Eastern Cape<br>(3) Northern Cape<br>(4) Free-State<br>(5) KwaZulu-Natal<br>(6) North-West<br>(7) Gauteng<br>(8) Mpumalanga<br>(9) Limpopo | (1) Western Cape<br>(2) Eastern Cape<br>(3) Northern Cape<br>(4) Free-State<br>(5) KwaZulu-Natal<br>(6) North-West<br>(7) Gauteng<br>(8) Mpumalanga<br>(9) Limpopo |
| **Socioeconomic characteristics** | | |
| Grade | (1) Grade 3<br>(2) Grade 4<br>(3) Grade 5<br>(4) Grade 6<br>(5) Grade 7<br>(6) Grade 8 | (1) Grade 3<br>(2) Grade 4<br>(3) Grade 5<br>(4) Grade 6<br>(5) Grade 7<br>(6) Grade 8 |
| Orphanhood status | (1) Yes<br>(2) No<br>(3) Don’t know | (1) Yes<br>(2) No |
| **Subjective norms** | | |

| | | |
|---|---|---|
| Would you be willing to share food with someone who has HIV/AIDS? | (1) Yes<br>(2) No<br>(3) Not sure | (1) Yes<br>(2) No |
| Would you play with someone who has HIV/AIDS? | (1) Yes<br>(2) No<br>(3) Not sure | (1) Yes<br>(2) No |
| Are you comfortable talking to at least one member of your family about HIV/AIDS? | (1) Yes<br>(2) No<br>(3) Not sure | (1) Yes<br>(2) No |

Table 3.2 shows how the study categorised the independent variables. The study had ten independent variables which consisted of demographic, socioeconomic and subjective norm variables.

The demographic characteristics measured in this study were: age, sex, race, place of residence and province. Age was measured at the time of the survey in years. The variable consisted of younger adolescents aged 12-14 years old as the questionnaire was restricted only to those aged 12-14 years old. The study kept the original coding of sex as male and female.

Regarding race, the survey had four known population groups which were coded as African, White, Coloured, Indian/Asian, and Other. However, in this study, race was recoded as African and the other three races were merged to create Other due to their small sample sizes.

'Geotype' which was renamed 'place of residence' in this study, consisted of three categories: urban, rural informal (tribal) and rural formal (farms) which were recoded as: urban and rural in this study. Province was treated with its original coding, which was Western Cape, Eastern Cape, Northern Cape, Free State, Kwa-Zulu Natal, North-West, Gauteng Mpumalanga, and Limpopo. Grade was also treated with its original coding, which was Grade 1, Grade 2 Grade 3, Grade 4, Grade 5, Grade 6, Grade 7 and Grade 8. A new variable called `orphanhood status` was created to indicate the orphanhood status of respondents based on whether their biological parents are alive. Two questions from the questionnaire were used: "Is your biological mother alive?" and "Is your biological father alive?". Initially, this variable was set up with no values. A value of 1 was then assigned to respondents who are single orphans, meaning either their mother is alive and their father is deceased or missing, or their father is alive and their mother is deceased or missing. A value of 2 was assigned to respondents who are double orphans, meaning both parents are deceased. A value of 3 was assigned to respondents whose both parents are alive. This variable was labelled "Parent status" and the values were defined as

follows: 1 for "Single Orphan," 2 for "Double Orphan," and 3 for "Both parents alive." Finally, a table was created to display the number of respondents in each category.

The respondents were further asked seven questions relating to people living with HIV/AIDS. However, from the seven questions, three questions were chosen ,as they were considered most relevant to the objectives of this study. The questions were: “Are you comfortable talking to at least one member of your family about HIV/AIDS?”,” Would you be willing to play with someone who has HIV or AIDS?” and “Would you be willing to share food with someone who has HIV or AIDS?”. These three questions were recoded as yes and no.

### 3.8 Data analysis plan

Three levels of analysis were conducted in this study to address the objectives as follows:

***Objective 1****: To establish the levels of HIV knowledge among younger adolescents aged 12-14 years in South Africa.*

To address this objective, a pie chart showing the levels of HIV knowledge was created.

Further analysis was conducted as follows:

i. To assess how adolescents answered HIV-related questions, a ranked frequency and percentage distribution table was used.
ii. Sex ratio was used to explore HIV knowledge levels based on sex. The use of the sex ratio helped gain insights into potential gender-specific patterns and differences in HIV knowledge among younger adolescents aged 12-14 years old. The equation of the sex ratio is as follows:

$$\text{Sex Ratio} = (\text{Number of females} / \text{Number of males}) \times 100$$

***Objective 2:*** *To identify the demographic, socioeconomic and subjective norms associated with HIV knowledge among adolescents aged 12-14 years old in South Africa.*

A bivariate analysis using the Pearson’s chi-square test was performed to measure the association between the demographic, socioeconomic and subjective norm characteristics associated with HIV knowledge among younger adolescents aged 12-14 years old in South

Africa. Additionally, p-values less than 0.05 ($p<0.05$) were used to determine whether the difference was statistically significant at 95% level of confidence.

***Objective 3:*** *To examine the demographic, socioeconomic and subjective norms associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.*

To examine the demographic, socioeconomic and subjective norms associated with HIV knowledge among younger adolescents aged 12-14 years old, a multinomial logistic regression model was performed. This multinomial logistic regression model was used because the outcome variable (HIV knowledge) had three categories (low HIV knowledge, average HIV knowledge and comprehensive HIV knowledge). The results were presented as relative risk ratios (RRR) and the statistical significance used p-values less than 0.05 ($p<0.05$). The equation for multinomial logistic regression is:

$$\Pr(Y_i = 1) = \frac{e^{\boldsymbol{\beta}_1 \cdot \mathbf{X}_i}}{1 + \sum_{k=1}^{K-1} e^{\boldsymbol{\beta}_k \cdot \mathbf{X}_i}}$$

$$\Pr(Y_i = 2) = \frac{e^{\boldsymbol{\beta}_2 \cdot \mathbf{X}_i}}{1 + \sum_{k=1}^{K-1} e^{\boldsymbol{\beta}_k \cdot \mathbf{X}_i}}$$

$$\cdots\cdots$$

$$\Pr(Y_i = K-1) = \frac{e^{\boldsymbol{\beta}_{K-1} \cdot \mathbf{X}_i}}{1 + \sum_{k=1}^{K-1} e^{\boldsymbol{\beta}_k \cdot \mathbf{X}_i}}$$

***Source: (Long & Freese, 2006)***

### 3.9 Data management

The Fifth South African National HIV, Behaviour and Health Survey 2017 was downloaded from the Health Science Research Council (HSRC) research data service website (http://datacuration.hsrc.ac.za/search/browse) and the data was analysed using STATA version 14.

### 3.10 Ethical considerations

The study utilised secondary data obtained from SABSSM V 2017. The survey followed global ethical standards and adhered to the South African Children's Act of 2007. The HSRC employed fieldwork staff, provided them with training in research ethics and the implementation of informed-consent procedures. This was done to ensure that all respondents voluntarily gave informed consent before participating in the interviews. Every individual who participated in the survey provided written or verbal consent, which aligned with the survey protocol. One-on-one interviews were conducted at respondents' homes, with a strong emphasis on maintaining respondent confidentiality. To protect privacy, no personal identifiers like names were used; instead, unique, and anonymous barcodes were scanned onto electronic questionnaires after being attached to blood specimens. The Faculty of Humanities at the University of Witwatersrand approved this research study and the ethics waiver number is WDEGM2023/07/03.

# CHAPTER FOUR

# RESULTS

## 4.1 Descriptive results

Table 4.1 presents a ranking of respondents' knowledge regarding various aspects of HIV. The table shows that most adolescents aged 12-14 years old (83.9%) were aware that a person can reduce the risk of contracting HIV by using a condom every time he/she has sex. A further 83.4% knew that HIV can be transmitted from a mother to her unborn baby. Additionally, 65.9% of younger adolescents aged 12-14 years old were aware that a person cannot get HIV by sharing food with someone who is infected with HIV/AIDS. Overall, these findings suggested a positive trend in HIV knowledge among adolescents aged 12-14 years old, with a significant number who demonstrated awareness of key aspects related to HIV prevention.

***Table 4.1: Ranked frequency and percentage distribution of HIV knowledge (N=927 861).***

| **Knowledge of HIV questions** | **Correct answer** | **N** | **%** |
|---|---|---|---|
| 1. Can a person reduce the risk of HIV by using a condom every time he/she has sex? | Yes | 779 335 | 83.9 |
| 2. Can HIV be transmitted from a mother to her unborn baby? | Yes | 773 583 | 83.4 |
| 3. Can a healthy-looking person have HIV? | Yes | 753 408 | 80.2 |
| 4. Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Yes | 697 279 | 75.2 |
| 5. Can AIDS be cured? | No | 697 193 | 75.1 |
| 6. Can medical male circumcision reduce the risk of HIV infection in males? | Yes | 671 371 | 72.4 |
| 7. Can a person reduce the risk of HIV by having fewer sexual partners? | Yes | 694 283 | 70.0 |

| | | | |
|---|---|---|---|
| 8. Can a person get HIV by sharing food with someone who is infected? | No | 612 388 | 65.9 |

***Source: (adapted from De Wet et al., 2019)***

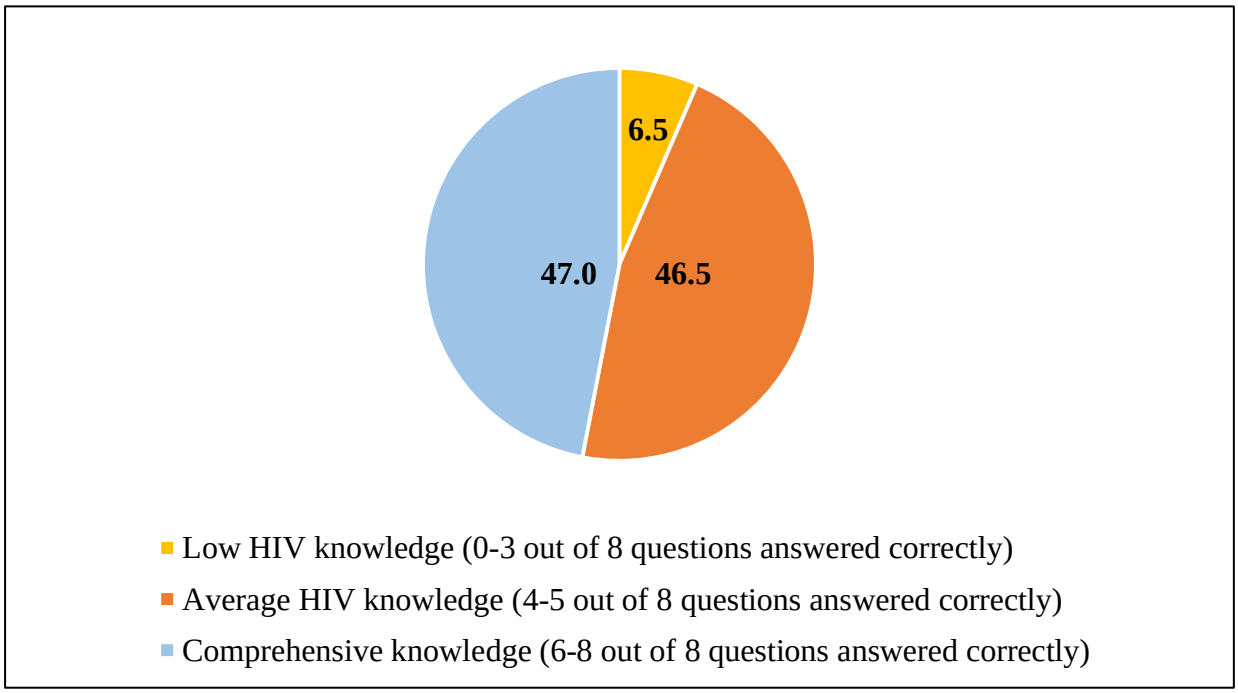


***Figure 4.1: Percentage distribution of HIV knowledge among younger adolescents aged 12-14 years old in South Africa (N=927 861).***

The findings from figure 4.1 indicate a relatively positive situation regarding HIV knowledge among younger adolescents aged 12-14 years old. Almost half of the population (47.0%) demonstrated comprehensive knowledge about HIV (6-8 out of 8 questions answered correctly), showcasing a substantial understanding of HIV transmission, prevention, and related topics. Additionally, 46.5% possessed average HIV knowledge, reflecting a moderate level of understanding. However, a smaller percentage (6.5%) exhibited low HIV knowledge. Overall, the results highlighted a commendable level of HIV knowledge among adolescents.

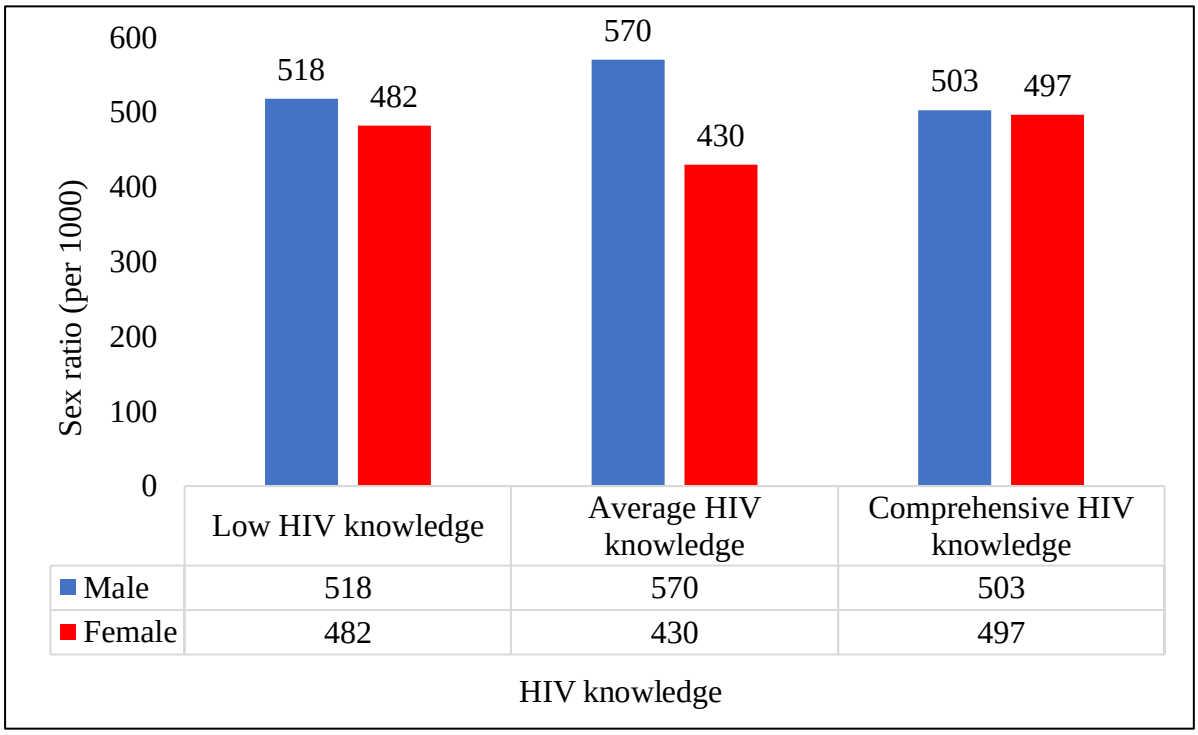


***Figure 4.2: Sex ratio by HIV knowledge per 1000 younger adolescent aged 12-14 years old in South Africa (N=927 861).***

Figure 4.2 above illustrates the sex ratios by HIV knowledge among younger adolescents aged 12-14 years old in South Africa. These results were obtained by dividing the number of males by the number of females in the population sample. These findings suggest that, on average, a higher proportion of male adolescents in the population exhibited better knowledge levels in both average and comprehensive HIV knowledge categories. According to the results above, male adolescents had better HIV knowledge compared to their female counterparts. This was evident in the higher sex ratios for average HIV knowledge (570 per 1000 males versus 430 per 1000 females) and comprehensive HIV knowledge (503 per 1000 males versus 497 per 1000 females). These differences highlighted potential disparities in the effectiveness of HIV education and awareness programmes that target adolescents.

### 4.2 To identify demographic, socioeconomic, and subjective norm characteristics associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

***Table 4.2: Percentage distribution of HIV knowledge by demographic, socioeconomic and subjective norms.***

| Independent variables | Low HIV knowledge | Average HIV knowledge | Comprehensive HIV knowledge | Total N (%) | P-value |
|---|---|---|---|---|---|
| **Age** | | | | | 0.136 |
| 12 | 25 678 (8.3%) | 155 106(45.1%) | 131 295(46.6%) | 312 079(100%) | |
| 13 | 9 924 (5.8%) | 151 424(42.7%) | 125 646(51.5%) | 286 994(100%) | |

| | | | | | |
|---|---|---|---|---|---|
| 14 | 24 511 (6.5%) | 125 362(38.5%) | 178 912(55.0%) | 328 785(100%) | |
| **Sex** | | | | | 0.586 |
| Male | 31 115 (7.4%) | 246 538(42.7%) | 219 346(49.9%) | 496 999(100%) | |
| Female | 28 998 (6.3%) | 185 355(41.4%) | 216 507(52.7%) | 430 860(100%) | |
| **Race** | | | | | 0.537 |
| African | 53 171 (6.8%) | 371 097(41.3%) | 385 165(51.9%) | 809 433(100%) | |
| Other | 6 942 (7.1%) | 60 796 (45.0%) | 50 687 (47.9%) | 118 428(100%) | |
| **Place of residence** | | | | | **0.022*** |
| Urban | 41 148 (7.5%) | 289 382(45.5%) | 234 572(47.0%) | 565 102(100%) | |
| Rural | 18 965 (6.3%) | 142 510(38.7%) | 201 281(55.0%) | 362 759(100%) | |
| **Province** | | | | | 0.117 |
| Western Cape | 2 419 (4.4%) | 42 909 (53.6%) | 36 667 (42.0%) | 81 995 (100%) | |
| Eastern Cape | 3 320 (4.9%) | 21 151 (32.8%) | 34 717 (62.3%) | 59 188 (100%) | |
| Northern Cape | 1 127 (10.3%) | 5 528 (35.9%) | 7 281 (53.9%) | 13 936 (100%) | |
| Free State | 3 434 (5.0%) | 22 061 (38.3%) | 17 883 (56.7%) | 43 378 (100%) | |
| KwaZuluNatal | 14 488 (5.3%) | 114 112(41.2%) | 140 547(53.5%) | 269 107(100%) | |
| North-West | 2 825 (7.1%) | 27 437 (39.3%) | 37 605 (53.6%) | 67 867 (100%) | |
| Gauteng | 19 521(10.1%) | 127 919(47.8%) | 75 809 (42.1%) | 223 249(100%) | |
| Mpumalanga | 2 974 (10.1%) | 20 068 (37.7%) | 39 508 (52.2%) | 62 550 (100%) | |
| Limpopo | 10 003 (6.8%) | 50 705 (48.7%) | 45 833 (44.6%) | 106 541(100%) | |
| **Grade** | | | | | **0.000*** |
| Grade 3 | 3 466 (7.7%) | 20 944 (48.7%) | 10 067 (43.6%) | 34 477(100%) | |
| Grade 4 | 4 577 (7.6%) | 71 083 (50.9%) | 42 137 (41.5%) | 117 797(100%) | |
| Grade 5 | 29 459 (9.4%) | 119 875(45.6%) | 103 537(45.0%) | 252 871(100%) | |
| Grade 6 | 13 129 (5.2%) | 104 750(43.6%) | 112 370 | 230 249(100%) | |
| Grade 7 | 3009 (3.4%) | 82 812 (37.8%) | (51.2%) | 188 269(100%) | |
| Grade 8 | 6 470 (10.0%) | 32 427 (27.1%) | 102 448(58.8%) | 104 189(100%) | |
| | | | 65 292 (63.2%) | | |
| **Orphanhood status** | | | | | 0.808 |
| Single orphan | 15 040 (5.8%) | 59 550 (44.5%) | 55 545 (49.7%) | 130 044(100%) | |
| Double orphan | 3 017 (11.1%) | 12 838 (37.0%) | 14 281 (51.9%) | 30 136(100%) | |
| Both parents alive | 42 055 (6.9%) | 359 504(41.7%) | 366 026(51.4%) | 767 68(100%) | |
| **Would you be willing to share food with someone who has HIV/AIDS?** | | | | | **0.000*** |
| Yes | 118 102(4.0%) | 252 412(39.4%) | 303 101(56.6%) | 673 615(100%) | |
| No | 42 011(12.0%) | 179 481(47.4%) | 132 588(40.6%) | 354 080(100%) | |
| **Would you be willing to play with someone who has HIV/AIDS?** | | | | | **0.000*** |
| Yes | 23 181 (3.9%) | 319 838(40.2%) | 383 341(55.9%) | 726 360(100%) | |
| No | 36 932(16.4%) | 109 627(47.9%) | 52 512 (35.7%) | 201 501(100%) | |
| **Are you at comfortable talking to at least one** | | | | | **0.000*** |

| | | | | | |
|---|---|---|---|---|---|
| **member of your family about HIV/AIDS?** | | | | | |
| Yes | 28 450 (4.2%) | 332 378(43.2%) | 344 026(52.6%) | 704 854(100%) | |
| No | 31 663(17.2%) | 96 496 (37.0%) | 91 827 (45.2%) | 223 007(100%) | |

***[*p-value<0.05 represents significant results at 95% level of confidence]***

Table 4.2 shows the percentage distribution of HIV knowledge (low HIV knowledge, average HIV knowledge and comprehensive HIV knowledge) by demographic, socioeconomic and subjective norms characteristics. With regards to age, 55.0% of younger adolescents aged 14 years old had comprehensive HIV knowledge followed by 51.5% aged 13 years old. These percentage distributions were important as they showed that comprehensive HIV knowledge was higher among those aged 14 years old. Contrary to these findings, majority of those who had average HIV knowledge were aged 12 years old (45.1%) followed by those aged 13 years old (42.7%). The Pearson chi2 test of association indicated that there is no significant association between age and HIV knowledge because the p-value was statistically insignificant (p-value > 0.136). The table also showed that there is no significant association between sex (p-value > 0.586), race (p-value > 0.537), province (p-value > 0.117), orphanhood status (p-value > 0.808) and HIV knowledge.

With regards to place of residence, adolescents with comprehensive HIV knowledge (55.0%) resided in rural areas followed by adolescents who resided in urban areas (47.0%). However, 45.5% of adolescents with average HIV knowledge resided in urban areas compared to 38.7% who resided in rural areas. The results showed that there is a statistically significant association between place of residence and HIV knowledge (p-value < 0.022).

Notably, more than half of students in Grade 8 exhibited comprehensive HIV knowledge (63.2%). Students in Grade 7 also showed a relatively high understanding of HIV knowledge (58.8%). In contrast, students in lower grades, such as Grade 3 and Grade 4, displayed lower levels of comprehensive HIV knowledge, with 43.6% and 41.5%, respectively. On the other hand, students in Grade 3 and Grade 4 demonstrated average levels of HIV knowledge, with 48.7% and 50.9%, respectively. Conversely, a smaller proportion of students in Grade 7 and Grade 8 exhibited average HIV knowledge, 37.8% and 27.1%, respectively. These results indicated that is a statistically significant association between grade and HIV knowledge among the younger adolescents (p-value < 0.000).

With regards to the subjective norms, the findings revealed that 56.6% of adolescents who showed willingness to share food with someone who has HIV/AIDS had comprehensive HIV

knowledge in comparison to the 40.6% of those who did not show willingness. Additionally, more than half of those who are willing to play with someone who has HIV/AIDS (55.9%) had comprehensive HIV knowledge, in comparison to the 35.7% of those did not show willingness to play with someone who has HIV/AIDS. Moreover, the results highlighted the importance of family communication in shaping HIV knowledge among adolescents as 52.6% of adolescents who were comfortable talking to at least one member of their family about the disease had comprehensive HIV knowledge while 45.2% of those who were not had comprehensive HIV knowledge. There is a statistically significant association between all three subjective norms and HIV knowledge among adolescents (p-value < 0.000). Overall, these findings underscore the influence of subjective norms, particularly attitudes towards individuals with HIV/AIDS and family communication, on adolescents' HIV knowledge.

### 4.3 To examine demographic, socioeconomic, and subjective norms associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

***Table 4.3.1: Unadjusted multinomial logistic regression of the association between demographic, socioeconomic and subjective norms with HIV knowledge.***

| **Low HIV knowledge (base outcome)** | **Average HIV knowledge** | | | **Comprehensive HIV knowledge** | | |
|---|---|---|---|---|---|---|
| **Characteristics** | **RRR** | **P-value** | **CI** | **RRR** | **P-value** | **CI** |
| **Age** | | | | | | |
| 12 (RC) | | | | | | |
| 13 | 2.525* | 0.000 | 2.46-2.58 | 2.476* | 0.000 | 2.41-2.53 |
| 14 | 0.486 * | 0.000 | 0.83-0.86 | 1.427* | 0.000 | 1.40-1.45 |
| **Sex** | | | | | | |
| Male (RC) | | | | | | |
| Female | 0.806* | 0.000 | 0.79-0.82 | 1.509* | 0.000 | 1.04-1.07 |
| **Race** | | | | | | |
| African (RC) | | | | | | |
| Other | 1.254* | 0.000 | 1.22-1.28 | 1.007* | 0.000 | 0.98-1.03 |
| **Place of residence** | | | | | | |
| Urban (RC) | | | | | | |
| Rural | 1.068* | 0.000 | 1.10-1.08 | 1.861* | 0.000 | 1.82-1.89 |
| **Province** | | | | | | |
| Western Cape (RC) | | | | | | |
| Eastern Cape | 0.359* | 0.000 | 0.33-0.37 | 0.689* | 0.000 | 0.65-0.72 |
| Northern Cape | 0.276* | 0.000 | 0.25-0.29 | 0.426* | 0.000 | 0.39-0.45 |
| Free State | 0.362* | 0.000 | 0.43-0.38 | 0.343* | 0.000 | 0.32-0.03 |
| KwaZulu Natal | 0.444* | 0.000 | 0.42-0.46 | 0.640* | 0.000 | 0.61-0.66 |
| North-West | 0.547* | 0.000 | 0.51-0.57 | 0.878* | 0.000 | 0.83-0.92 |
| Gauteng | 0.369* | 0.000 | 0.35-0.38 | 0.256* | 0.000 | 0.24-0.26 |
| Mpumalanga | 0.380* | 0.000 | 0.35-0.38 | 0.876* | 0.000 | 0.82-0.92 |
| Limpopo | 0.285* | 0.000 | 0.27-0.29 | 0.302* | 0.000 | 0.28-0.31 |
| **Grade** | | | | | | |
| Grade 3 (RC) | | | | | | |
| Grade 4 | 2.570* | 0.000 | 2.45-2.69 | 3.169* | 0.000 | 3.01-3.32 |

| | | | | | |
|---|---|---|---|---|---|
| Grade 5 | 0.673* | 0.000 | 0.64-0.69 | 1.210* | 0.000 | 1.16-1.26 |
| Grade 6 | 1.320* | 0.000 | 1.26-1.37 | 2.946* | 0.000 | 2.82-3.07 |
| Grade 7 | 4.554* | 0.000 | 4.32-4.79 | 11.720* | 0.000 | 11.11-12.35 |
| Grade 8 | 0.829* | 0.000 | 0.79-0.86 | 3.474* | 0.000 | 3.31-3.63 |
| **Orphanhood status** | | | | | | |
| Single orphan (RC) | | | | | | |
| Double orphan | 1.074* | 0.000 | 1.02-1.22 | 1.281* | 0.000 | 1.22-1.33 |
| Both parents alive | 2.159* | 0.000 | 2.11-2.20 | 2.356* | 0.000 | 2.30-2.40 |
| **Sharing food with someone who has HIV/AIDS** | | | | | | |
| Yes (RC) | | | | | | |
| No | 0.306* | 0.000 | 0.30-0.31 | 0.188* | 0.000 | 0.18-0.92 |
| **Playing with someone who has HIV/AIDS** | | | | | | |
| Yes (RC) | | | | | | |
| No | 0.219* | 0.000 | 0.21-0.22 | 0.085* | 0.000 | 0.84-0.08 |
| **Comfortable talking to at least one family member about HIV/AIDS** | | | | | | |
| Yes (RC) | | | | | | |
| No | 0.269* | 0.000 | 0.26-0.27 | 0.239* | 0.000 | 0.23-0.24 |

***[RC= Reference Category, *p-value<0.05 represents significant results at 95% level of confidence]***

The option "base outcome" has been used to indicate the category that will be used for the baseline comparison group or reference category. In the output shown above, "Low HIV knowledge" has been used as the baseline comparison group. With reference to age, the relative risk (RR) of having average HIV knowledge versus low HIV knowledge increases by a factor of 2.52 ( P<0.05; 95% CI= 2.46- 2.58) for adolescents aged 13 years old in relation to those aged 12 years old. There is a slight difference when looking at the RR of adolescents having comprehensive HIV knowledge versus low HIV knowledge as the relative risk increases by 2.47 (P<0.05; 95% CI= 2.41- 2.5) for adolescents aged 13 years old in relation to those aged 12 years old. The RR of having average HIV knowledge versus low knowledge decreases by a factor of 0.48 (P<0.05; 95% CI=0.83-0.86) for adolescents aged 14 years old in relation to those aged 12 years old. However, the relative risk of adolescents having comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 1.42 (P<0.05; CI= 1.40-1.45) for adolescents aged 14 years old in relation to those aged 12 years old. Furthermore, the results showed there is a statistically significant association between age and HIV knowledge.

The relative risk of female adolescents having average HIV knowledge versus low HIV knowledge decreases by a factor of 0.80 (P<0.05; CI= 0.79-0.82) in relation to their male counterparts. Contrary, the RR of female adolescents possessing comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 1.50 (P<0.05; CI= 1.04-1.07) in relation to male adolescents. The results showed there is a statistically significant association between sex and HIV knowledge.

Regarding race, the relative risk of other population groups possessing average and comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 1.25 (P<0.05; CI= 1.22-1.28) and 1.07 (P<0.05; CI= 0.98-1.03) respectively, in relation to Black adolescents. The results showed there is a statistically significant association between race and HIV knowledge.

Among adolescents who live in rural areas compared to those living in urban areas, the relative risk of having average and comprehensive HIV knowledge versus low knowledge increases by a factor of 1.06 (P<0.05; CI= 1.10-1.08) and 1.86 (P<0.05; CI=1.82-1.89) respectively.

In terms of grade, the relative risk of Grade 4 pupils possessing average HIV knowledge versus low HIV knowledge increases by a factor of 2.57 (P<0.05; CI=2.45-2.69) in relation to pupils in Grade 3. Similarly, the relative risk of pupils in Grade 4 possessing comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 3.16 (P<0.05; CI= 3.01-3.32) in relation to pupils in Grade 3. Of those in Grade 5 compared to those in Grade 3 we see that the relative risk of having average HIV knowledge versus low HIV knowledge decreases by 33.0% (RRR:0.673; P<0.05; CI=0.64-0.69) while the relative risk of having comprehensive HIV knowledge versus low HIV knowledge increases by 21.0% (RRR:1.210; P<0.05; CI=1.16-1.26). The relative risk of Grade 6 pupils possessing average HIV knowledge versus low HIV knowledge increases by a factor of 1.32 (P<0.05; CI= 1.26-1.37) in relation to pupils in Grade 3. The relative risk of Grade 6 pupils having comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 2.94 (P<0.05; CI= 2.82-3.07) in relation to those in Grade 3. The relative risk of Grade 7 pupils having average and comprehensive HIV knowledge versus low HIV knowledge increases by 4 folds (RRR:4.55; P<0.05; CI=4.32-4.79) and 11 folds (RRR:11.72; P<0.05; CI=11.11-12.35) respectively, in relation to Grade 3 pupils. The relative risk of Grade 8 pupils having average HIV knowledge versus low HIV knowledge decreases by a factor of 0.82 (P<0.05; CI= 0.79-0.86) in relation to pupils in Grade 3. However, the relative risk of Grade 8 pupils having comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 3.47 (P,0.05; CI=3.31-3.63) in relation to pupils in Grade 3. The results further indicate that grade and HIV knowledge are statistically associated.

Regarding orphanhood status, the relative risk of double orphaned adolescents having average and comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 1.07 (P<0.05; CI=1.02-1.22) and 1.28 (P<0.05; CI=1.22-1.33) respectively, in relation to single orphaned adolescents. Similarly, the relative risk of adolescents with both parents alive have

an increased average and comprehensive HIV knowledge, 2.15 (P<0.05; CI=2.30-2.40) and 2.35 (P<0.05; CI=2.30-2.40) respectively in relation to single orphaned adolescents. This shows that adolescents aged 12-14 years old with both parents have a higher likelihood of having average and comprehensive HIV knowledge when compared to their peers with one or no parents.

In terms of the subjective norms, the results indicate that the relative risk of adolescents who showed unwillingness to share food with someone who had HIV/AIDS had a 70% (RRR: 0.30; P<0.05; CI=0.30-0.31) reduced likelihood of having average HIV knowledge and 82% (RRR: 0.18; P<0.05; CI=0.18-0.92) reduced likelihood of possessing comprehensive HIV knowledge when compared to their peers who showed willingness to share food with someone who has HIV/AIDS. Additionally, the relative risk of adolescents who were not willing to play with someone who has HIV/AIDS having average HIV knowledge versus low HIV knowledge decreases by a factor of 0.21(P<0.05; CI=0.21-0.22) and 0.08 (P<0.05; CI=0.84-0.08) for adolescents who has comprehensive HIV knowledge in relation to adolescents who showed willingness to play with someone who has HIV/AIDS. Lastly, among those who are not comfortable talking to a family member about HIV/AIDS, their relative risk of having average and comprehensive HIV knowledge versus low HIV knowledge decreases by a factor of 0.26 and 0.23 respectively, in relation to those who were comfortable talking to a family member about the disease.

**Table 4.3.2: Adjusted multinomial logistic regression of the association between demographic, socioeconomic and subjective norms with HIV knowledge.**

| **Low HIV knowledge (base outcome)** | **Average HIV knowledge** | | | **Comprehensive HIV knowledge** | | |
|---|---|---|---|---|---|---|
| **Characteristics** | **RRR** | **P-value** | **CI** | **RRR** | **P-value** | **CI** |
| **Age** | | | | | | |
| 12 (RC) | | | | | | |
| 13 | 1.753* | 0.000 | 1.70-1.80 | 1.377* | 0.000 | 1.34-1.41 |
| 14 | 0.555 * | 0.000 | 0.54-0.56 | 0.696* | 0.000 | 0.68-0.71 |
| **Sex** | | | | | | |
| Male (RC) | | | | | | |
| Female | 0.811* | 0.000 | 0.79-0.82 | 1.010* | 0.000 | 0.99-1.03 |
| **Race** | | | | | | |
| African (RC) | | | | | | |
| Other | 0.706* | 0.000 | 0.68-0.73 | 0.685* | 0.000 | 0.66-0.70 |
| **Place of residence** | | | | | | |
| Urban (RC) | | | | | | |
| Rural | 1.525* | 0.000 | 1.48-1.56 | 2.189* | 0.000 | 2.13-2.24 |
| **Province** | | | | | | |
| Western Cape (RC) | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Eastern Cape | 0.279* | 0.000 | 0.26-0.29 | 0.454* | 0.000 | 0.42-0.48 |
| Northern Cape | 0.209* | 0.000 | 0.19-0.22 | 0.260* | 0.000 | 0.23-0.28 |
| Free State | 0.504* | 0.000 | 0.47-0.53 | 0.509* | 0.000 | 0.47-0.54 |
| KwaZulu Natal | 0.273* | 0.000 | 0.25-0.28 | 0.315* | 0.000 | 0.29-0.33 |
| North-West | 0.260* | 0.000 | 0.24-0.27 | 0.361* | 0.000 | 0.33-0.38 |
| Gauteng | 0.312* | 0.000 | 0.29-0.32 | 0.198* | 0.000 | 0.18-0.20 |
| Mpumalanga | 0.303* | 0.000 | 0.28-0.32 | 0.559* | 0.000 | 0.52-0.59 |
| Limpopo | 0.196* | 0.000 | 0.18-0.20 | 0.142* | 0.000 | 0.13-0.15 |
| **Grade** | | | | | | |
| Grade 3 (RC) | | | | | | |
| Grade 4 | 2.087* | 0.000 | 1.98-2.19 | 2.035* | 0.000 | 1.92-2.15 |
| Grade 5 | 0.465* | 0.000 | 0.44-0.48 | 0.756* | 0.000 | 0.72-0.79 |
| Grade 6 | 1.196* | 0.000 | 1.14-1.25 | 2.059* | 0.000 | 1.95-2.16 |
| Grade 7 | 3.420* | 0.000 | 3.23-3.62 | 6.209* | 0.000 | 5.84-6.59 |
| Grade 8 | 0.712* | 0.000 | 0.67-0.74 | 2.197* | 0.000 | 2.08-2.31 |
| **Orphanhood status** | | | | | | |
| Single orphan (RC) | | | | | | |
| Double orphan | 0.984 | 0.517 | 0.93-1.03 | 0.769* | 0.000 | 0.73-0.80 |
| Both parents alive | 2.356* | 0.000 | 2.11-2.20 | 3.039* | 0.000 | 2.96-3.11 |
| **Sharing food with someone who has HIV/AIDS** | | | | | | |
| Yes (RC) | | | | | | |
| No | 0.641* | 0.000 | 0.62-0.65 | 0.641* | 0.000 | 0.62-0.65 |
| **Playing with someone who has HIV/AIDS** | | | | | | |
| Yes (RC) | | | | | | |
| No | 0.328* | 0.000 | 0.32-0.33 | 0.130* | 0.000 | 0.12-0.13 |
| **Comfortable talking to at least one family member about HIV/AIDS** | | | | | | |
| Yes (RC) | | | | | | |
| No | 0.275* | 0.000 | 0.27-0.28 | 0.303* | 0.000 | 0.29-0.30 |

***[RC= Reference category, *p<0.05 represents significant results at 95% level of confidence]***

Table 4.3.2 above shows the adjusted multinomial logistic regression model. The model predicted the association between all demographic, socioeconomic and subjective norm characteristics, and HIV knowledge outcomes precisely, low HIV knowledge, average HIV knowledge and comprehensive HIV knowledge. Findings from the table indicated that 'age' , 'sex' , 'race', 'place of residence'. 'grade', 'province' , 'orphanhood status' and all three subjective norms were significantly associated with HIV knowledge outcomes (average HIV knowledge and comprehensive HIV knowledge) with low HIV knowledge as the base category.

The results from table 4.3.2 indicated that the relative risk ratio of adolescents aged 13 years old possessing average and comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 1.75 (P<0.05; CI=1.70-1.80) and 1.37 (P<0.05; CI=1.34-1.41) respectively, in relation to adolescents aged 12 years old. Interestingly, the findings further revealed that the relative risk of possessing average and comprehensive HIV knowledge versus low HIV knowledge among those aged 14 years old decreases by a factor of 0.55 (P<0.05; CI=

0.54.0.56) and 0.69 (P<0.05; CI= 0.68-0.71) respectively, in relation to those aged 12 years old.

The relative risk of non-African female adolescents possessing average HIV knowledge versus low HIV knowledge decreases by a factor of 0.81 (P<0.05= CI: 0.79-0.82) and 0.70 (P<0.05; CI= 0.68-073) respectively, in relation to Black male adolescents while controlling for other covariates. However, the relative risk of female adolescents possessing comprehensive HIV knowledge versus low HIV knowledge increases by a factor of 1.01 (P<0.05; CI= 0.99-1.03) in relation to their male counterparts while controlling for other covariates.

Surprisingly, the results revealed that the relative risk of having average and comprehensive HIV knowledge versus low HIV knowledge among adolescents who resided in rural areas increases by a factor of 1.52 (P<0.05; CI=1.48-1.52) and 2.18 (P<0.05; CI=2.13-2.24) respectively, in relation to adolescents who resided in urban areas.

In consideration of province, the relative risk of having average HIV knowledge versus low HIV knowledge decreases for adolescents who lived in Limpopo (RRR:0.196; P<0.05; CI= 0.18-0.20) , Northern Cape (RRR:0.209; P<0.05; CI=0.19-0.22) and North-West (RRR:0.260; P<0.05; CI=0.24-0.27) in relation to adolescents who lived in Western Cape while controlling for other covariates. Similarly, the relative risk of adolescents having comprehensive HIV knowledge versus low HIV knowledge decreases by a factor of 0.14 (P<0.05; CI=0.13-0.15) for those who lived in Limpopo, 0.19 (P<0.05; CI= 0.18-0.20) for those who lived in Gauteng and lastly 0.26 (P<0.05; 0.23-0.48) for those who lived in Northern Cape in relation to adolescents who lived in Western Cape while controlling for other covariates.

With regards to grade, the relative risk of having average HIV knowledge versus low HIV knowledge increases by factors of 3.42 (P<0.05; CI=3.23-3.62) , 2.08 (P<0.05; CI= 1.98-2.19) and 1.19 (P<0.05; CI=1.14-1.25) for adolescents in Grade 7,4 and 6 respectively, as compared to those in Grade 3 when other covariates are held constant. Furthermore, the results showed that the relative risk of adolescents in Grade 8 and 5 possessing average HIV knowledge versus low HIV knowledge decreases by a factor of 0.71 (P<0.05; CI=0.67-0.74) and 0.46 (P<0.05; CI= 0.44-0.48) respectively, as compared to adolescents in Grade 3, when other covariates are held constant.

The relative risk of adolescents with both parents alive having average and comprehensive HIV knowledge versus low HIV knowledge increases by factors of 2.35 (P<0.05; CI=2.11-2.20) and 3.30 (P<0.05; CI=2.96-3.11) respectively, in relation to single orphaned adolescents. However,

the results indicated that the relative risk of possessing average and comprehensive HIV knowledge decreases by factors of 0.98 (P<0.05; CI=0.93-1.03) and 0.76 (P<0.05; CI= 0.73-0.80) for double orphaned adolescents respectively, in relation to those who are single orphaned.

With regards to the subjective norms, the results indicated that there was no relative risk (RRR:0.641; P<0.05; CI=0.62-0.65) differences in terms of having average and comprehensive HIV knowledge versus having low HIV knowledge among adolescents who were not willing to share food with someone who has HIV/AIDS in relation to those who showed willingness to share. Additionally, we see that the relative risk of having average and comprehensive HIV knowledge versus low HIV knowledge decreases by factors of 0.32 (P<0.05; CI= 0.32-0.33) and 0.13 (P<0.05; CI= 0.12-0.13) respectively, for adolescents who are willing to play with someone who has HIV/AIDS in relation to those who are not. Lastly, the relative risk of having average and comprehensive HIV knowledge versus low HIV knowledge decrease by a factor of 0.27 (P<0.05; CI= 0.27-0.28) and 0.30 (P<0.05; CI= 0.29-0.30) respectively, for adolescents who reported that they were not comfortable talking to at least one family member about HIV/AIDS compared to those who were comfortable.

### 4.4 Testing of Hypothesis

The study tested for the hypothesis using the multinomial logistic regression model.

**Ho:** Demographic, socioeconomic and subjective norms characteristics are NOT associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

**Ha:** Demographic, socioeconomic and subjective norms characteristics are associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

With significance level set at $\alpha = 0.05$, the p-values obtained from the multinomial logistic regression model were less than 0.05. Therefore, the study rejected the null hypothesis and concluded that demographic, socioeconomic and subjective norm characteristics are associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa.

# CHAPTER FIVE

# DISCUSSION

## 5.1 Introduction

HIV/AIDS remains one of the most pressing global challenges, particularly in regions with high prevalence rates such as South Africa. Despite concerted efforts to address the epidemic, certain populations, particularly younger adolescents aged 12-14 years old, have been relatively overlooked in HIV prevention and education initiatives. The aim of the study was to explore the levels and association between demographic, socioeconomic and subjective norms and HIV knowledge among adolescents aged 12-14 years old in South Africa. This study is crucial for addressing the importance of early intervention in shaping lifelong health behaviours and aims to inform tailored education policies for this vulnerable population. This chapter highlights key findings, discusses their implications, and proposes recommendations for future interventions to promote the sexual health of adolescents aged 12-14 years old in South Africa.

## 5.2 Discussion of study findings

The first objective of the study was to establish the levels of HIV knowledge among younger adolescents aged 12-14 years old in South Africa. The study's findings revealed that 47.0% of younger adolescents in South Africa had comprehensive HIV knowledge. The findings of this study showed a relatively higher level of HIV knowledge compared to other nations. Similar studies from Uganda and Nigeria showed a substantial gap in knowledge. Only 39.0% and 9.4% younger adolescents had comprehensive understanding of the disease, respectively (Badru et al., 2020; Byansi et al., 2023). One preventive method of avoiding HIV transmission is by using a condom, the majority of the adolescents in this study, compromising of 83.9%, knew that using a condom can prevent HIV transmission. In a study conducted in Cote d'Ivoire, it was reported that 42.0% of adolescents had acquired this knowledge (Richard et al., 2020) while it was reported that in India, 28.0% of adolescents held the misconception that individuals with HIV could appear healthy while the results of this study demonstrated that 80.2% of adolescents correctly answered this question (Neema et al., 2017)

The variance in these results can be attributed to the integration of HIV education into the South African school curriculum, specifically Life Orientation (LO) which is a compulsory subject that aims to ensure that young individuals receive information on HIV prevention, transmission and stigma. The LO curriculum was integrated into the South African national education system in 1997 with the objective of equipping learners with essential life skills and empowering them to make informed decisions regarding their health. The LO curriculum is compulsory for South African students from Grades 4 to 12. A significant component of this curriculum is dedicated to educating learners about STIs, RSB and strategies for HIV prevention. Each week, students receive two hours of instruction dedicated to the LO curriculum, resulting in a total of 80 hours of teaching and learning for each grade level where the curriculum is implemented (Department of Basic Education, 2011). The relatively "high" level of HIV knowledge in South Africa compared to other nations does not negate the fact that overall knowledge remains low. This is especially worrying because HIV education has been incorporated into school settings to effectively reach a broad demographic of young individuals. Research findings suggest that HIV/AIDS education programmes implemented in schools can bring about notable shifts in knowledge and attitudes related to sexual behaviour among young people. These changes often translate into increased condom usage and decreased instances of sexual health issues, including unwanted pregnancies, STIs, and abortions (Kinsler et al., 2004; Kirby et al., 2007). However, it can be argued that the approach used by educators when teaching about HIV, particularly in a society where HIV is considered taboo and a culturally sensitive topic, is the contributing factor to the low levels of HIV knowledge in South Africa. In addition, the stigma surrounding HIV/AIDS in South Africa might lead to hesitancy among teachers to address the topic openly and comprehensively in the classroom. Consequently, this will result in HIV education being treated as a sensitive subject, leading to inadequate coverage of essential information.

One study suggested that in order to enhance the effectiveness of HIV/AIDS education within schools, it is essential for teachers to undergo training. This training would enable them to increase students' understanding of HIV prevention strategies and behaviours associated with HIV/AIDS (Thomas et al., 1999). Previous research found that in instances where teachers received such training, they were more inclined to incorporate HIV/AIDS education into their classroom teachings (Sarma & Oliveras et al. 2013). Furthermore, exposure to training was linked with reduced difficulties encountered by teachers when addressing HIV/AIDS topics in the classroom (Sarma & Oliveras, 2013). This underscores the significance of training

educators, as it can contribute to the refinement of their individual skills and bolster their confidence levels (Sarma & Oliveras, 2013). Ultimately, training could ensure that teachers serve as reliable sources of accurate information and trustworthy individuals with whom young people can comfortably discuss sensitive and complex issues pertaining to sexuality.

The second and third objective of the study was to identify and examine demographic, socioeconomic and subjective norm characteristics associated with HIV knowledge among younger adolescents aged 12-14 years old in South Africa. In terms of age, the multinomial logistic regression results indicated that age is positively associated with HIV knowledge in South Africa even after adjusting for the influence of other covariates. This result is congruent with existing studies that have been conducted in other developing countries namely Nigeria (Kareen et al., 2023), Uganda (Estifanos et al., 2021), South Sudan (Mude et al., 2020), Ethiopia (Dadi et al., 2020). It is commonly believed that as individuals grow older, their HIV knowledge tends to increase. In this particular study, adolescents aged 13 and 14 were found to have a higher likelihood of possessing comprehensive HIV knowledge compared to those aged 12. Surprisingly, when the model was adjusted for other factors, it was found that adolescents aged 14 actually had lower relative risk of having comprehensive HIV knowledge compared to those aged 12. Age is often found to be associated with HIV knowledge because adolescents undergo cognitive and emotional development as they grow older, which can influence their ability to comprehend and retain information about HIV/AIDS (Backes, 2019). Furthermore, adolescents may be influenced by their peers who have knowledge about HIV/AIDS, leading to discussions and exchanges of information that contribute to greater awareness and understanding of the topic (Backes, 2019). Therefore, age serves as a significant factor associated with HIV knowledge, reflecting developmental, educational, experiential and social influences on individuals' exposure to and understanding of HIV/AIDS-related information.

The findings of this study suggest a notable discrepancy in HIV knowledge based on gender. Male adolescents exhibited less understanding of HIV compared to their female counterparts. This contradicts previous research that often portrayed AGYW as lacking in comprehensive and accurate HIV knowledge regarding sexual transmission (Simbayi et al., 2019; UNAIDS, 2019). Unlike these prior studies, in this study, females demonstrated a more thorough grasp of HIV-related information. In contrast, a study in Ethiopia found that females were 40.0% less likely to possess comprehensive HIV knowledge compared to males (Oljira et al., 2013). Additionally, another study reported that males had higher levels of HIV knowledge than

females (Nabunya et al.,2021). They proposed a hypothesis suggesting that gender and cultural norms might contribute to these differences, speculating that societal expectations and limited educational opportunities for girls could result in lesser HIV knowledge.

In the context of South Africa, the observed phenomenon where female adolescents tend to possess more comprehensive HIV knowledge compared to their male counterparts can be attributed to existing health education interventions. Health education programmes have often targeted women and girls due to their heightened vulnerability to HIV/AIDS, as studies have indicated that implementing behavioural interventions that are tailored to gender and cultural contexts continues to be a significant strategy in lowering the risk of HIV transmission among women in South Africa (Saleh et al., 2008).

For instance, an initiative at targeted women and girls is the DREAMS initiative, established by PEPFAR in 2014, aims to combat HIV/AIDS among AGYW in SSA (George et al., 2020). Operating in ten countries, including South Africa, DREAMS targets structural and behavioural factors such as poverty, gender inequality, and gender-based violence that increase AGYW's vulnerability to HIV (George et al., 2020). With the goal of reducing HIV incidence by 25.0% in the first year and 40.0% in the second year of implementation, DREAMS implements evidence-based interventions tailored to local contexts. In South Africa, DREAMS interventions are underway in five high HIV-burden districts, including Johannesburg, Ekurhuleni, eThekwini, uMgungundlovu and uMkhanyakude, reflecting a concerted effort to address HIV transmission among AGYW and make significant strides in reducing HIV incidence by increasing HIV knowledge in these populations.

Another intervention is the SISTA (Sisters Informing Sisters about Topics on AIDS) South Africa which is a culturally tailored HIV prevention intervention programme designed specifically for African women. It aims to empower women with knowledge and skills to reduce their risk of HIV infection through a series of structured group sessions (Sapiano et al., 2013). In one of the sessions provided, the focus is on providing information about the realities in the women's communities, including HIV stigma and practices like dry sex which increase their vulnerability to HIV (Sapiano et al., 2013). Skills-building activities centre around the correct application of male condoms, consistent use and strategies for negotiating safer sex without being threatening or demeaning to male partners while a different session aims to further enhance participants' sexual communication skills and their ability to encourage male partners to seek testing for STIs and HIV (Sapiano et al., 2013). SISTA South Africa is adapted

from the original SISTA programme developed in the United States and modified to suit the cultural context and needs of South African women. It emphasises community involvement, peer support and empowerment to help women make informed decisions about their sexual health and reduce their vulnerability to HIV.

In a study involving isiXhosa-speaking women in the Western Cape, the study aimed to evaluate the effectiveness of SISTA South Africa. Results revealed that participants engaged in the programme exhibited greater HIV knowledge in comparison to those not involved in the intervention (Wingwood et al., 2013). Furthermore, the study noted that individuals assigned to the intervention group demonstrated more accepting attitudes toward individuals living with HIV (Wingwood et al., 2013). The higher HIV knowledge observed among participants in the programme underscores the importance and effectiveness of tailored HIV prevention interventions in addressing knowledge gaps and empowering at-risk populations with essential information. Additionally, the increased acceptance of people living with HIV among participants in the intervention group highlights the potential impact of such programmes in reducing HIV-related stigma and discrimination.

This suggests that culturally sensitive programmes like SISTA South Africa and DREAMS have played a crucial role in equipping AGYW with the knowledge needed to make informed decisions about their sexual health and reduce their risk of HIV transmission.

In consideration of place of residence, existing literature has shown that individuals residing in urban areas tend to have better comprehensive HIV knowledge than those residing in rural areas (Abate et al., 2020; Ankunda et al., 2017; Ekholuenetale et al., 2022; Fenny et al., 2017). While it is true that rural areas often face challenges such as limited access to healthcare services and resources, this study suggests that HIV knowledge among adolescents may not necessarily follow this pattern. Despite facing barriers in access to healthcare services and health information, results obtained in this study showed that adolescents who live in rural areas were found to be more likely to possess comprehensive HIV knowledge compared to those who live in urban areas. This unexpected result underscores the importance of considering context-specific factors and tailoring interventions to address the unique needs of different populations, including rural communities. A plausible explanation for why younger adolescents living in rural areas have better knowledge could be that South Africa's rural communities are often supported by a network of local non-governmental organisations (NGOs) and community-based organisations (CBOs) dedicated to addressing health and social

issues, including HIV/AIDS. These organisations operate at the grassroots level, leveraging their understanding of local contexts and cultural norms to implement tailored HIV education and support programmes. They conduct community outreach initiatives, establish support groups and provide access to HIV testing and counselling services. Importantly, local NGOs and CBOs often have strong ties to the communities they serve, allowing them to effectively engage community members, build trust and deliver culturally appropriate HIV education interventions. In rural areas where formal healthcare infrastructure may be lacking, these organisations fill critical gaps, complementing government efforts and ensuring that adolescents have access to comprehensive HIV knowledge and support services.

In terms of grade level, the multinomial logistic regression (unadjusted and adjusted) used in this study demonstrated that there is a statistically significant relationship between grade level and HIV/AIDS knowledge. Specifically, students in Grades 4-8 exhibited a higher level of HIV/AIDS knowledge compared to those in Grade 3. This finding aligns with a study conducted in Tanzania, which observed that Grade 7 students possessed a higher level of HIV knowledge than those in Grade 6, and Grade 6 students had a higher level of knowledge than those in Grade 5 (Rushahu, 2015). Differences in HIV/AIDS knowledge by grade may be attributed to variations in the content and depth of sexual education provided at different grade levels. Younger adolescents in lower grades might receive a more fundamental and introductory sexual education, while their counterparts in higher grades may access more comprehensive information about HIV transmission, prevention methods and associated health topics. Additionally, the influence of peers and social dynamics within different grade levels could contribute to variations in the dissemination and assimilation of HIV-related information.

The findings of this study highlighted a significant impact of social attitudes and communication barriers on HIV knowledge among adolescents aged 12-14 years old. The findings demonstrated that adolescents who expressed reluctance or discomfort in sharing food or playing with someone who has HIV/AIDS, as well as those who were not comfortable talking to a family member about the disease, were less likely to have comprehensive HIV knowledge. This finding is consistent with existing studies (Maughan-Brown & Spaull, 2014; Yibrehu & Mbwele, 2020). These attitudes and communication barriers may reflect underlying stigmatising beliefs or misconceptions about HIV/AIDS within the community or family environment. Adolescents who are hesitant to engage in social interactions or discussions related to HIV/AIDS may also be less likely to seek out accurate information or participate in educational activities about the disease. This highlights the importance of addressing social

stigma and improving communication channels within families and communities to enhance HIV knowledge among adolescents. Interventions aimed at reducing HIV-related stigma and discrimination can create a more supportive environment for adolescents to learn about HIV/AIDS without fear of judgement or rejection. Additionally, promoting open and honest communication about HIV/AIDS within families can foster trust and encourage adolescents to seek guidance and information from trusted sources. By addressing these social and communication barriers, comprehensive HIV education programmes can better reach and empower adolescents with the knowledge and skills necessary to protect themselves and others from HIV/AIDS. Moreover, community-based initiatives that promote inclusivity, empathy, and respect for individuals living with HIV/AIDS can help reshape social attitudes and create a more compassionate and informed society.

The significance of these findings lies in their demonstration that, despite the inclusion of HIV knowledge education in school curricula across all provinces, there is a need to equip families and guardians as well.

### 5.3 Applicability of findings to the theoretical and conceptual framework

The study was conducted with guidance from the Theory of Planned Behaviour, a widely used framework for predicting and explaining various health behaviours and intentions. The application of the TPB provided a structured framework that guided the study effectively, offering valuable insights into the factors influencing HIV knowledge among younger adolescents aged 12-14 years in South Africa. By applying the TPB, the study was able to investigate the interplay between demographic variables, socioeconomic factors, and subjective norms related to HIV/AIDS knowledge. The TPB's emphasis on intention as a predictor of behaviour allowed this study to identify significant predictors of comprehensive HIV knowledge among adolescents, including, gender, urban or rural residence, social factors such as grade level, orphanhood status and willingness towards interacting with individuals living with HIV/AIDS. Overall, the use of the TPB provided a comprehensive framework for structuring the study and interpreting its findings, ultimately shedding light on important factors influencing HIV knowledge among younger adolescents in South Africa.

# CHAPTER SIX

# CONCLUSION AND RECOMMENDATIONS

## 6.1 Conclusion

Younger adolescents do not have comprehensive HIV knowledge. The knowledge questions in this study constitute basic HIV knowledge, yet 12-14-year-olds still do not have this basic education about the disease. Equipping younger adolescents aged 12-14 years old with comprehensive HIV knowledge is crucial for several reasons, despite the majority of them not being sexually active. Firstly, providing comprehensive HIV education at a young age lays a solid foundation for understanding sexual health and risk factors associated with HIV transmission. Even if they are not currently sexually active, adolescents in this age group may soon enter a stage where they become sexually curious and experiment with sexual activities. By having a thorough understanding of HIV, they would be better prepared to make informed decisions about their sexual health when the time comes. Additionally, comprehensive HIV education goes beyond sexual activity and encompasses broader aspects such as understanding stigma, discrimination and the importance of empathy towards individuals living with HIV. This knowledge helps foster a supportive and inclusive environment and reduces the stigma associated with HIV/AIDS. Furthermore, HIV education encourages critical thinking and empowers adolescents to challenge misconceptions, myths and misinformation surrounding HIV/AIDS, ultimately promoting healthier attitudes and behaviours. It is evident that adolescents aged 12-14 years old in South Africa do not have comprehensive HIV knowledge.

The South African government has undertaken several initiatives to ensure adolescents are equipped with HIV knowledge. Firstly, by integrating HIV education into the national school curriculum, adolescents receive standardised information about prevention, transmission, treatment and, stigma reduction through programmes like LO. Additionally, the government collaborates with international organisations, NGOs and civil society groups to strengthen HIV education initiatives, leveraging resources and expertise. Despite these efforts, there is still concern about the low level of HIV knowledge among adolescents. Thus, while the government's efforts are commendable, there is a pressing need for continuous evaluation, improvement and targeted interventions to address the persistent gaps in HIV knowledge among adolescents in South Africa.

In answering the main objective of the study, the findings showed the existence of a significant relationship between demographic, socioeconomic and subjective norms and HIV knowledge. This demonstrates that within the South African context, various factors impact HIV awareness, consequently shaping individual behaviours. Nevertheless, it is important to recognise that possessing knowledge about HIV does not necessarily translate into adopting safe sexual practices.

### 6.2 Recommendations

A crucial step for the Department of Education is to reassess the current curriculum regarding HIV education and explore opportunities for enhancement. One effective approach to enriching the curriculum can involve integrating various visual aids such as diagrams, illustrations, and videos. These multimedia elements play a pivotal role in enhancing the comprehension of younger adolescents on HIV-related topics. By utilising visual aids, complex concepts become more accessible, bridging the gap between abstract ideas and practical understanding. For instance, diagrams can illustrate the biological mechanisms of HIV transmission, while illustrations can depict the effects of the virus on the human body. Additionally, videos can provide real-life scenarios and narratives, enabling students to relate to the subject matter more effectively. Moreover, multimedia formats cater to different learning styles and preferences, ensuring that educational content resonates with a diverse range of students. Overall, incorporating visual aids into the curriculum not only enriches the learning experience but also will promote a deeper understanding of HIV-related issues among younger adolescents.

Peer-led education programmes where older adolescents who have received comprehensive HIV education can mentor and educate younger adolescents can be implemented. Peer education has been shown to be effective in disseminating accurate information among adolescents and can create a more comfortable environment for discussing sensitive topics like HIV. In the proposed peer education programme, older adolescents should be selected and trained to become peer educators for younger adolescents, equipping them with comprehensive knowledge of HIV/AIDS transmission, prevention methods and effective communication skills through specialised training sessions and interactive exercises. Collaboratively developed, age-appropriate educational materials, in partnership with educators and health professionals, will ensure cultural relevance and engagement. Additionally, peer educators should offer one-on-one support and counselling, addressing younger adolescents concerns in a confidential

manner. Regular monitoring and evaluation of the programme's impact on knowledge, attitudes, and behaviours related to HIV/AIDS will guide adjustments and improvements, ensuring sustained effectiveness. Ultimately, this peer education programme will empower older adolescents to serve as catalysts for positive behaviour change among younger adolescents, fostering supportive environments and promoting accurate understanding of HIV/AIDS.

Furthermore, to bridge the gap between formal education in schools and the home environment the Families Matter Programme which focuses on parents and caregivers of children aged 9-12 within communities has been implemented with the aim to encourage positive parenting approaches and improve communication between parents and children regarding topics related to sex and reducing sexual risks. Despite its existence, reassessing of the programme is needed given the persistently low levels of HIV knowledge among adolescents. By reassessing the programme, policymakers and educators can identify potential shortcomings or areas for improvement and implement necessary changes to enhance its effectiveness. This re-evaluation process can take several forms, such as conducting thorough evaluations of programme outcomes, soliciting feedback from participants and stakeholders, and updating curriculum materials to reflect current evidence-based practices and emerging trends in HIV prevention and education. Additionally, reassessing the programme will provide an opportunity to explore innovative approaches and strategies for reaching adolescents who may not have been effectively reached by the existing programme. By addressing these gaps and refining programme delivery, re-evaluation can ultimately contribute to increased HIV knowledge among adolescents, empowering them with the information and skills needed to make informed decisions about their sexual health and well-being.

### 6.3 Suggestions for Further Studies

Demographic and socioeconomic factors are prone to changing. Therefore, there is a need for further studies to utilise the Sixth South African National HIV Prevalence, Incidence, Behaviour and Communication Survey (SABSSM VI) to explore potential differences in HIV knowledge across demographic and socioeconomic characteristics.

This study additionally suggests that it would be interesting to further conduct qualitative research. This will assist researchers to delve deeper into the factors identified in this quantitative study. For instance, researchers could conduct in-depth interviews with younger

adolescents to understand their perspectives and knowledge gaps regarding HIV/AIDS. By directly engaging with participants, researchers can uncover unique cultural beliefs and personal narratives that quantitative surveys might miss. Qualitative exploration will complement the quantitative findings of this study and offer a better understanding of the factors influencing HIV knowledge among younger adolescents in South Africa.

Further studies can also conduct longitudinal studies as this will offer a comprehensive approach to understanding the dynamics of HIV knowledge among younger adolescents over time. By monitoring younger adolescent's experiences and behaviours over time, researchers will gain valuable insights into the pathways of HIV knowledge acquisition and the factors that influence shifts in knowledge and behaviour patterns as adolescents advance through various developmental phases. Additionally, longitudinal studies will enable researchers to explore the effectiveness of HIV prevention interventions over extended periods, providing evidence on their long-term impact and sustainability. Overall, longitudinal research plays a crucial role in advancing our understanding of HIV prevention and informing strategies for promoting positive health outcomes among younger adolescents over time.

### 6.4 Policy significance

The findings of this study underscore the critical significance of including individuals younger than 15 years into the National Youth HIV Prevention Strategy, highlighting a need for policy adaptation. Adolescents within this age group are at a crucial stage of development, marked by profound physical, emotional, and cognitive transformations. As they navigate this transitional phase, their increasing curiosity about their bodies, relationships, and sexual matters heightens. Empowering them with accurate HIV knowledge from a young age is necessary for fostering informed decision-making regarding their sexual well-being. Therefore, post the completion of the 2022-2025 National Youth HIV Prevention Strategy, it will become mandatory for the government to evaluate and refine the policy framework to include those under 15 years. This adaptation should include tailoring the strategy to cater specifically to this age group, ensuring the provision of fundamental HIV education that is both accurate and age appropriate. Such measures are crucial for fostering a generation equipped to safeguard their sexual health and make informed choices, thereby perpetuating the efficacy and relevance of HIV prevention efforts within the broader national agenda.

## 6.5 Limitations of the study

In conducting a cross-sectional study assessing HIV knowledge among adolescents through the SABSSM V survey featuring closed-ended questions, such as “Yes, “ “No, “ and “Maybe, “ administered in the presence of their parents or guardians, the potential for underreporting emerges as a critical consideration. This risk is exacerbated by various factors inherent to the survey context. Firstly, adolescents may have succumbed to social desirability bias, feeling compelled to provide responses deemed favourable or socially acceptable in front of their guardians. Secondly, fears of judgement or reprisal, whether real or perceived, may have influenced adolescents to withhold candid responses regarding their HIV knowledge or behaviours. Additionally, parental presence during the survey may exert direct pressure on adolescents to align their responses with parental beliefs or expectations.

Considering that this study used secondary data which was conducted by data collectors interviewing the adolescents, language and literacy barriers constitute limitations to the study. These barriers can profoundly impact the validity and reliability of the study’s findings, as well as the inclusivity and representation of the sample population. South Africa is a linguistically diverse country with 11 official languages, and many adolescents may not be proficient in the language in which the survey or questionnaire was administered. This linguistic diversity might have presented a challenge in ensuring that the survey materials were accessible and comprehensible to all participants. Moreover, even if the survey was administered in a language that participants understand, there could still be disparities in literacy levels among younger adolescents. Low literacy levels can impede their ability to comprehend the survey questions accurately, leading to incomplete or erroneous responses. Additionally, adolescents may struggle with interpreting complex medical terminology such as “medical male circumcision” or concepts related to HIV/AIDS, further complicating their ability to provide accurate responses.

The use of a cross-sectional design in a study assessing HIV knowledge among younger adolescents aged 12-14 years old in South Africa presents several notable implications and limitations. Primarily, a cross-sectional design allows for the collection of data at a single point in time, offering a snapshot of the participants’ HIV knowledge levels and associated factors. While this approach is valuable for capturing a momentary understanding of HIV knowledge among adolescents, it inherently restricts the ability to establish causality or determine the temporal sequence of events. In other words, the study cannot ascertain whether the identified

factors influence HIV knowledge or if HIV knowledge influences these factors. This limitation is particularly relevant in the context of HIV education and prevention efforts, where understanding the causal relationships between various factors and HIV knowledge is crucial for designing effective interventions.

Furthermore, the cross-sectional design may not capture changes in HIV knowledge over time or account for the dynamic nature of factors influencing HIV knowledge among adolescents. Factors such as access to healthcare services, educational interventions, socioeconomic conditions and cultural norms may evolve over time, influencing HIV knowledge levels among younger adolescents. Without longitudinal data collection, the study cannot explore how these factors impact changes in HIV knowledge or assess the long-term effectiveness of interventions aimed at improving HIV knowledge among adolescents.

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