A FRAMEWORK TO FACILITATE THE INTEGRATION OF HIV/AIDS CONTENT INTO UNIVERSITY CURRICULA

BY

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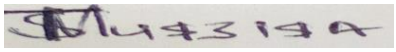
DECLARATION

I, **Tinotenda Success Murwira** hereby declare that thesis titled ***A framework to facilitate the integration of HIV/AIDS content into university curricula*** for the Doctor of Philosophy degree in Public Health at the University of Venda hereby submitted by me, has not previously for any other degree at this university or any other institution. It is my original work in design and in execution and that all references used herein have been duly acknowledged.

Student's signature :  Date 01/09/2020

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ABSTRACT

Background: South Africa continues to struggle with the high prevalence of Human Immune-deficiency Virus and Acquired Immune deficiency Syndrome. Young people of the university going age are the most affected by this disease. The higher education sector, particularly teachers, are well placed to mitigate this pandemic through teaching and learning. Despite the fact, that a lot has been written on the need to integrate HIV/AIDS content into curricula very few institutions of higher learning are heeding the call mainly due to lack of guidance on how to integrate HIV/AIDS content.

Aim:The aim of the study was to develop a framework that facilitate integration of HIV/AIDS content into university curricula.

Methods: This cross-sectional study employed quantitative methodology and was conducted in two phases : Data was collected using different methods such as cross sectional surveys, content analysis and systematic reviews. For cross sectional surveys the target population included teachers and students and they were selected using systematic and purposive sampling respectively. The study setting was University of Venda. Data were analysed using SPSS, version 23. Multiple logistic regression and chi-square tests ($\chi 2$) were employed to determine the associations.

Results: The thesis comprises five interdependent studies. **Study one**: A systematic review of peer-reviewed journals and grey literature of HIV/AIDS programmes in higher education was conducted. It was found that HIV/AIDS content was integrated mainly into existing , compulsory, undergraduate modules, health sciences disciplines focused on basic facts about HIV/AIDS. The HIV/AIDS content was taught using classroom based teaching strategies. **Study two**: A quantitative content analysis, to gauge the extent of HIV/AIDS integration into the curricula in various departments at Univen was conducted. The results of this study suggest that HIV/AIDS content was limited as only 68 modules/courses out of 1979 had HIV/AIDS content in different disciplines across all eight schools at the university. **Study three:** A survey was conducted to assess the knowledge, attitudes and practices of students towards learning about HIV/AIDS content among 340 students . The study found out that majority of the students possessed high knowledge about HIV/AIDS, though they had misconceptions about HIV transmission routes. Further they supported the introduction of formal teaching and learning about HIV/AIDS in their disciplines and very few students were taught about HIV/AIDS in their studies. **Study four:** A survey was conducted to assess knowledge, attitudes and practices of teachers towards teaching and learning of HIV/AIDS content in the curriculum among 240 teachers . The results showed that

the majority of teachers were knowledgeable about HIV/AIDS , had positive attitudes towards the teaching and learning of HIV/AIDS content in the curriculum and very few taught about HIV/AIDS. **Study five**: Data from the study findings, literature and analysis of the curriculum were integrated within Information ,Motivation and Behaviour Model to develop the proposed framework for integrating HIV/AIDS content.

Conclusion: The purpose of the study was to develop a framework that facilitates the integration of HIV/AIDS content into the undergraduate curriculum. The proposed framework in this study may assist HEIs, faculties and teachers to integrate HIV/AIDS content formally into their curriculum and ensure that various academic departments can integrate HIV/AIDS-related issues into the undergraduate curricula. The framework outlines HIV/AIDS competencies for different levels of study in various disciplines and its adoption may assist HEIs in producing graduates who can survive and work in a world ravaged by HIV/AIDS. In order to implement the proposed framework for integration of HIV/AIDS content into undergraduate curricula, recommendations were made.

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LIST OF ACRONYMS

AAU	Association of African Universities
ACE	Advanced Certificate in Education
AIDS	Acquired Immune Deficiency Syndrome
CTP	Committee of Technikon Principals
FETs	Further Education Training Colleges
FTF	First Things First
HEAIDS	Higher Education HIV and AIDS Programme
HEIs	Higher Education Institutions
HESA	Higher Education South Africa
HIV	Human Immune Deficiency Virus
HIVCT	HIV Counselling and Testing
HSRC	Human Science Research Council
LGBTI	Lesbian Gay Bisexual and Transgender Intersex
IMB	Information Motivation and Behavioural Model
KPs	Key Populations
NIH	National Institutes of Health
PBL	Problem Based Learning
PGCE	Postgraduate Certificate in Education
PICOS	Population Intervention Comparison and Outcomes
PLWHA	People living with HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
SA	South Africa

SACPO	South African College Principals Organisation
SANAC	South Africa National AIDS Council
SAUVCA	South African Universities Vice Chancellors Association
SPSS	Statistical Package for the Social Sciences
STATSSA	Statistics South Africa
STIs	Sexually transmitted Infections
TB	Tuberculosis
TVET	Technical and Vocational Education Training
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNAIDS	United Nations AIDS Development Fund
UNESCO	United National Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNIVEN	University of Venda
USA	United States of America
USAF	Universities South Africa
UWI	University of West Indies
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

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CHAPTER 1

GENERAL INTRODUCTION

Theoretical background of the study

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) are major global public health issue worldwide. According to estimates from the Joint United Nationals Program on HIV/AIDS (UNAIDS), around 78 million people have been diagnosed with HIV, and 35 million have died from AIDS-related illnesses since the start of the epidemic (UNAIDS, 2018). Approximately 36.9 million people were living with HIV at the end of 2017, of whom 19.4 million were children, adolescents, women and girls. In addition, an estimated 4,900 people became diagnosed with HIV each day, and 2,580 died of AIDS daily due to the lack of access to HIV prevention, care and treatment services (UNAIDS, 2018). The most affected group by HIV are young women aged 15-24 years (UNAIDS, 2018). Approximately 40% of all new HIV infections occurred in young people aged 15-24 years in 2012 (UNAIDS), 2015). Most people living with HIV reside in low- and middle-income countries with Sub-Sahara being the most affected region (UNAIDS, 2015). About 25.7 million live with HIV/AIDS in Sub-Saharan Africa, 3.4 million in the Western Pacific, 3.5 million in South East Asia, 1.5 million in the Americas and 2,3 million in Europe (UNAIDS, 2018) (Figure 1)**.** Within the African region, East and Southern Africa are the regions with most people living with HIV/AIDS. About 19.4 million people in this region are HIV positive, half (56%) of them are women. Also, young women (aged 15-24 years) accounted for 26% of new HIV infections in 2016, despite making up just 10% of the population in Sub-Saharan Africa (UNAIDS, 2017a).

Additionally, South Africa has the highest HIV prevalence rates in the world, with 7.2 million people living with the disease (UNAIDS, 2018). It also accounts for a third of all new infections in Southern Africa (UNAIDS, 2017a). Although the epidemic in South Africa is generalised, some key populations groups have a higher than average rate of HIV prevalence (UNAIDS, 2017a). According to a South African survey in 2012, black African women aged 20-35, people cohabiting, black African men aged 25-49, disabled people aged 15 and over, high-risk alcohol drinkers aged 15 and over and recreational drug users are key population groups who are more likely to be HIV positive (Shisana et al., 2014). The highest prevalence of HIV in South Africa is among women aged 30-34, males aged 35-39 and female teenagers 15-19 (Shisana et al., 2014). Also, recent estimates suggest that about one-fifth of South African women of reproductive age (15-49 years) are HIV positive (Statistics South Africa, 2019). HIV prevalence in South Africa is more predominant among women than men (Statistics South Africa, 2019). The HIV prevalence among females aged 15-24 was four times higher than among males in the same age group and females aged 15-49, it was twice as high compared to males in the same age group (UNAIDS, 2017).

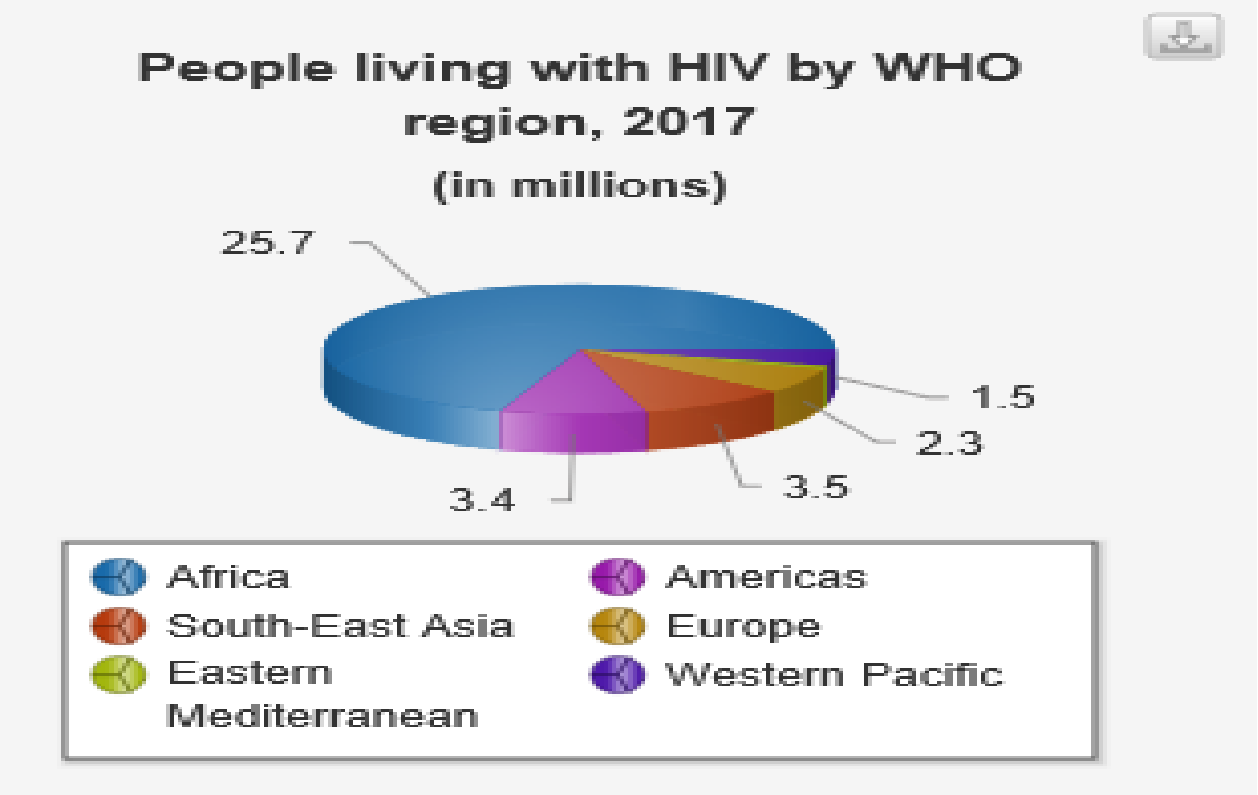

Figure 1: Global Prevalence of HIV/AIDS
Source: UNAIDS, 2018

According to the UNAIDS report, new HIV infections are decreasing worldwide. Estimations are that in 2016, 1.8 million new infections accounting for an 11% decline since 2010 (UNAIDS, 2017b). Regarding HIV deaths, only one million people died of AIDS as compared to 1.9 million people in 2005 (UNAIDS, 2017b). This decline in HIV-related deaths is not consistent worldwide, for instance, the eastern and southern Africa region had a 29% decline in new HIV infections between 2010 and 2016, and in the same period, Latin America showed no change in rates of new disease while eastern Europe and central Asia experienced a 60% rise (UNAIDS, 2017b). Furthermore, the reduction in HIV-related deaths can be attributed to the provision of anti-retroviral drugs in many countries (UNAIDS, 2017b). However, the number of new HIV infections is not decreasing fast enough to meet global targets (UNAIDS, 2018). The main route of HIV transmission remains through heterosexual sex. Men who have sex with men account for 12% of new infections worldwide (UNAIDS, 2018). About 9% of new HIV infections annually are children, and the vast majority infected in utero, at birth or through breastfeeding (UNAIDS, 2018). The prevalence of HIV among injecting drug users varies widely between countries. In the UK, approximately 1% of people who inject drugs have HIV; in other areas of the world, including Romania, Estonia and the Philippines, >40% of people who inject drugs have HIV (UNAIDS, 2018).

Although preventative measures are in place to reduce the spread of HIV/AIDS among young people, there is evidence that they are not effective in reducing new infections (Govender et al., 2018). In response to the crisis among young people, the international community has long realised that HIV/AIDS education is a significant weapon in the fight against the spread of the pandemic, with many countries introducing various curriculum strategies in education sector(Nyatsanza & Wood, 2017). Carm (2018) point out that education ministries or departments around the world are becoming increasingly aware that with no vaccine or cure for HIV/AIDS in sight, education can be an effective way to protect young people. Also, the impact of education on HIV/AIDS is well documented, and this sector can develop to become a country's most potent weapon against this threat (Zinyemba, Pavlova, & Groot, 2020).

The gaps in knowledge concerning HIV among young people still prevail in Sub-Saharan Africa, so further investment in HIV/AIDS education is needed in these countries (UNAIDS, 2015). Thirty-six per cent of young men and 30% of young women (aged 15-24 years) have comprehensive and correct knowledge of how to prevent HIV in the 37 countries with available data for the period of 2011-2016 (UNAIDS, 2018b). Among the 41 countries with data available for both young men and women (age 15-24 years) for the same period, condom use in high-risk sex in the previous 12 months was less than 50% among young women in 31 countries and young men in 18 countries (UNAIDS, 2018b). This implies that more efforts are essential to ensure that young people have adequate information to help them prevent HIV infections (Govender et al., 2018).

Subsequently, the South African government through its multi-sectoral approach in the Higher Education AIDS Programme enacted a policy highlighting the role of education in the fight against the epidemic (Higher Education HIV/AIDS Programme (HEAIDS), 2010a). The Policy and Strategic Framework on HIV/AIDS for Higher Education (2008) identified curriculum integration and innovation as part of HIV/AIDS education prevention measures (HEAIDS, 2010a). The revised Policy and Strategic Framework on HIV/AIDS for Higher Education (HEAIDS, 2012) assists in positioning HIV/AIDS education as the concern of every academic in the sector. There is evidence that highlights the growing recognition of the critical role that Higher Education Institutions (HEIs) in South Africa can and should play in assisting students to live and cope with the multiple challenges associated in an age of widespread HIV/AIDS (Pillay & Wood, 2016).

Despite these HIV/AIDS policies which creates space for integrating HIV/AIDS content into curricula with information about the pandemic, there is evidence that university students in South Africa are not well prepared to be HIV-competent graduates (Govender et al., 2018).

In support of this, a HEAIDS (2010d) research report suggested that most employers in one of the large South African companies indicated that graduates were not equipped to deal with HIV/AIDS issues in the workplace; they lacked information on how to deal with the personal, human side of HIV/AIDS, particularly in the case of disclosure and the associated stigma (HEAIDS, 2010d). Finally, the report indicated that even where HIV/AIDS is part of the curriculum, it was not enough to equip students to live and work in a society devastated by the pandemic (HEAIDS, 2010d).

Global perspectives on HIV infections among young people

Youth definition/classification varies as it includes a group of people categorised as adolescents, youth, young people and children(UNAIDS, 2018). Young people are defined by the United Nations (UN) as those aged 10-24 years (Melorose, Perroy & Careas, 2015). Although it varies between countries, this category is generally sub-divided into adolescents (10-19 years) and youth (15-24 years). Young people aged 15-24 represent approximately 16% of the global population, which translates to nearly 1.2 billion people and accounts for 34% of adults acquiring HIV (Melorose, Perroy & Careas, 2015). According to the South African National Youth Policy 2009-2014 and the National Youth Commission Act 1996, young people are those individuals aged between 14-35 years. This is the age group with whom HEIs mostly interact, as students gain admission into post-school education. For this study, young people are those attending post-school education.

Young people aged 10-24 years constitute one-quarter of the world's population, and they are among the most affected by the global epidemic of HIV (World Health Organisation (WHO), 2015a). About 36.9 million people are living with HIV, and 3.9 million are youth aged 15 to 24 (UNAIDS, 2018). Therefore, this means young people, aged 15-24, account for approximately a third of new HIV infections (UNAIDS, 2018). Most young people living with HIV are in low- and middle-income countries, with 84% in Sub-Saharan Africa (United Nations Children's Fund (UNICEF, 2016). Current UNAIDS estimates suggest that the number of new infections among young people in the East and Southern Africa region aged between 15 and 24 years was 300,000 in 2015 (UNICEF, 2016). Half of 15 to 19-year-olds living with HIV in the world live in just six countries: South Africa, Nigeria, Kenya, India, Mozambique and Tanzania (UNICEF, 2016). Young women are the most affected group (UNICEF, 2016). In Sub-Saharan Africa, young women 15-24 accounted for a quarter of all new HIV infections in the region in 2017, even though they represent only 10% of the population (UNICEF, 2016). About 71% of the new infections were recorded among young women in Sub-Saharan Africa; adolescent

girls (aged 15-19), Latin America and the Caribbean, adolescent boys (aged 15-19) constitute 59% of new infections (UNAIDS, 2017a).

Young people also form a significant proportion of the Key Populations (KPs) who are most vulnerable to acquiring HIV and often have higher levels of HIV prevalence than their older cohorts in these groups (Avert, 2018). As such, to clearly describe the incidence of HIV among the youth it is necessary to scrutinise young people in key at-risk populations such as young women, sex workers, men who have sex with men, people who inject drugs or transgender people. Sex work increases the likelihood of HIV infection among youth or young people. For instance, in Asia, 95% of young people who are HIV positive belong to key at-risk populations (Avert, 2018). Similar findings from a study conducted in the USA which indicated that adolescents under 18 who sell sex are highly vulnerable to HIV and other Sexually Transmitted Infections (STIs) have higher levels of HIV and STIs than older sex workers and limited access to services such as HIV testing, prevention, and treatment (McClure, Chandler & Bissell, 2015). Similarly, in another study conducted in Mozambique in urban areas which shows that sex workers aged 15-17 had no access to treatment and HIV testing, hence the higher levels of HIV and STIs (Inguane et al., 2015).

Young women and girls have the highest prevalence of HIV in many countries around the world (UNAIDS, 2019). It is estimated that young women aged 15-24 years are eight times more likely to be HIV positive as compared to their male counterparts (UNAIDS, 2019). Furthermore, a young woman is newly infected with HIV almost every minute (UNAIDS, 2018). In Sub-Saharan Africa, young women account for one in four new HIV infections (UNAIDS, 2017b). Young people who are part of the transgender group have high HIV rates (UNAIDS, 2018a). The vulnerability of young transgender to HIV is because they engage in unprotected anal sex; they sell sex and inject street drugs (WHO, 2015b). Although there are insufficient studies on HIV among transgender communities at a global level, individual studies suggest a high HIV prevalence (Avert, 2018). In Indonesia, HIV prevalence among transgender people was 5.4% among 15 to 19-year-olds and 14.2% among 20 to 24-year-olds (WHO, 2015b). Similar findings from a study in the US among transgender women suggesting that 8% of those aged 13-19 years had HIV. Another study conducted in the USA among the minority transgender women aged 16-25 reported that 22% were HIV positive (WHO, 2015b). Young men who have sex with men is another unique group with high rates of HIV worldwide compared to heterosexual men (Avert, 2018). Previous research suggests that young gay men have greater HIV risk than both heterosexual young people and older men who have sex with men (WHO, 2015a). Young gay men acquire HIV at a relatively earlier age (Avert, 2018).

Estimations are that about 4.2% of men who have sex with men aged 25 and under are living with HIV, compared to 3.7% among all men who have sex with men (UNAIDS, 2019). The vulnerability of gay men to HIV is heightened by the fact that they are often discriminated against or harassed, and this affects their ability to access treatment and prevention programmes (UNAIDS, 2016). In addition, high rates of substance abuse and prostitution heighten the risk of acquiring HIV at an early age (UNAIDS, 2016).

Young people who inject drugs are likely to acquire HIV sooner than other youth(UNAIDS, 2016). The prevalence of HIV in young people who inject drugs worldwide is predicted to be 5.2% (UNAIDS, 2019). However, it is much higher in certain countries. A secondary analysis from biological and behavioural surveys found a 23% HIV prevalence in Greece, 17% in Myanmar, 34% in Pakistan and 25% in Thailand among young people who inject drugs (UNICEF, 2016) and they also have a higher prevalence of HIV/AIDS (WHO, 2016).

Risky sexual behaviours among post-schooling students

According to UNAIDS (2017), HIV primarily spreads through heterosexual contact in Sub-Saharan Africa. Chanakira et al., (2015) state that the high rates of STIs, including HIV among youth, are mainly due to at-risk sexual lifestyles. According to Kebede, Alem and Mitike (2018), risky sexual behaviour is commonly defined as 'behaviour that increases susceptibility of an individual to problems related to sexuality and reproductive health' (Kebede et al., 2018). Risky behaviour that makes students vulnerable to contracting HIV includes inconsistent condom use, multiple sexual partnerships, intergenerational sex and transactional sex (Chanakira et al., 2015). Factors increasing young people's vulnerability to infection include poverty, lack of power in sexual relationships, violence, liberal atmosphere at the university (Chanakira et al., 2015; Ware, Tura, Alemu, & Andarge 2018).

Engaging in unprotected sex with a partner whose status is unknown places young people at risk of being infected with HIV (Chanakira et al., 2015). A study conducted in South Africa indicated that condom usage among sexually active students was low despite the high level of knowledge about condom use and availability (Mthembu, Maharaj, and Rademeyer, 2019). Similar findings from a study conducted among university students in Zambia suggested that males students did not use a condom in the most recent sexual act (Menon et al., 2016). Another study conducted at a university in Ethopia reported prevalence of inconsistent condom use was (83.5%) during recent sexual intercourse (Kebede et al., 2018). A study conducted in South Africa observed that condom usage among the student population was low with less than half (45.2%) having used a condom at their first sexual intercourse and only

28.5% having used a condom at every sexual intercourse during the last 3 months (Haffejee, Koorbanally & Corona, 2018). In another study conducted among students in Kosovo reported that condom use was very low (Milic et al.,2020). A study conducted among students at a university in Kenya concluded that more than one quarter of both males and females reported non-use of condoms with sexual partners(Othieno, Okoth, Peltzer, Pengpid, & Malla, 2015). Svodziwa and Kurete (2017) established that due to economic hardship in Zimbabwe, university students cohabit more as a way of relieving cost associated with college life. Cohabitation is associated with engaging in unprotected sex which could result in STIs such as HIV (Svodziwa & Kurete, 2017).

Having multiple sexual partners is a known HIV risk among students (Chanakira et al., 2015). The definition of multiple sexual partners is 'having more than one sexual partner over a period' (Yaya & Bishwajit, 2018). The number of lifetime sexual partners and involvement in multiple sexual partnerships has shown to be a factor fuelling the spread of HIV especially among young people (Muchiri et al., 2017). Mavhandu-Mudzusi and Tesfaye Asgedom (2016) observed that some female students at a university in Ethiopia engaged in 'partner exchanges', which involved small groups of friends exchanging partners for short periods for no reason other than sheer 'exhilaration'. In Nigerian universities, the relationships are characterised by fluctuations between two sets of partners: those on-campus partners and those off-campus (Yaya & Bishwajit, 2018). A study conducted at a Kenyan University among university students indicated that about 30% reported having had multiple sexual partners yet 36% of the males and 21% of the females had more than two sex partners in the preceding 12 months, (Othieno, Okoth, Peltzer, Pengpid, & Malla, 2015). In Thailand, 94% of university students who were moderately or highly at risk of HIV infection (18% of the total sample) did not consider themselves as being at risk or just perceived low risk, thereby tending to have unprotected sex (Khawcharoenporn, Chunloy & Apisarnthanarak, 2015). Furthermore, a study conducted in Portugal shows that students engage in at-risk sexual behaviours such as using drugs or alcohol during sexual activity having sex with multiple and casual partners, and inconsistently using condoms (Santos, Ferreira & Ferreira, 2016).

Intergenerational sex is also considered high-risk sexual behaviour putting students at risk of HIV infection. A considerable age discrepancy between sexual partners is associated with an increased risk of HIV transmission (UNAIDS, 2019). The reason for this is that intergenerational sex is often risky because older partners are more likely to have had more previous sexual encounters (De Wet, Alex-Ojei & Akinyemi, 2019). In addition to this, intergenerational relationships tend to result in an imbalance of power in the liaison (De Wet, Alex-Ojei & Akinyemi, 2019). This feature is especially true if the female is the younger partner,

making it harder for young women in such relationships to negotiate and insist on safer sex practices such as Voluntary Counselling and Testing (VCT) and condom use (UNAIDS, 2014). Older male partners involved in these intergenerational relationships are often referred to as 'sugar daddies' or 'blessers' (Shrestha, Karki & Copenhaver,2016). According to Choudhry et al. (2014), it is common for university students to have transactional sex with older partners, and a romantic partner closer to them in age on campus. Such reports reflect that these intergenerational sexual relationships might be to get gifts and material favours in return for sex. These sexual relationships place university students at increased risk of contracting HIV (De Wet, Alex-Ojei & Akinyemi, 2019).

Substance and drug abuse are also a risk factor for HIV transmission among students (Gräf, Mesenburg & Fassa 2020). Alcohol and drug use alter judgment, remove inhibitions and influence students to engage in high-risk sexual behaviours (Petruželka et al., 2018). A study conducted among university students in the USA reported that reported male students who used marijuana, drugs and alcohol were likely to have multiple sexual partnerships and inconsistent condom use among female students (George, 2017). Similar findings were reported in a study by Petruželka et al., (2018) at a university in the Balkans indicating that students who used alcohol were three times more likely to have multiple sexual partners as compared to non-drinkers. In the USA, about 100,000 college students reported that they were too drunk to recall consenting to sex, and approximately 400,000 students had unsafe sex after alcohol consumption (Brown, Gause & Northern, 2016). Further, students who were heavy drinkers were three times more likely to have more than one sexual partner than those who do not engage in heavy drinking (Mair, Ponicki & Gruenewald, 2016). Several reasons illustrate why heavy drinking might lead to risky sexual behaviours. For example, because alcohol decreases judgment (Mair, Ponicki & Gruenewald, 2016). Othieno et al., (2015) reported that and one-fifth of the students at a Kenyan university had engaged in sex after drinking. In a study conducted among Zambian college students suggest that frequent alcohol use was a significant risk factor for risky sexual behaviors(Yang et al.,2019). Excessive alcohol consumption impairs sexual health decision-making (Logan et al.,2015). For example, alcohol consumption is associated with increased unprotected sexual intercourse among young people (Kerridge, Tran, & Hasin,2015). If the target of reducing the number of new HIV infections by 75% by 2030 is to be achieved, intensified HIV prevention efforts are necessary, for instance, improved HIV/AIDS education (Govender et al., 2018).

Response of Higher education to HIV/AIDS in South Africa

The South African Department of Higher Education and Training realised the impact of HIV / AIDS on the sector and responded to the pandemic systematically by providing a unified approach (HEAIDS, 2010c). In South Africa, only 16% of 18-24-year-olds have the opportunity for higher education studies, and this is low compared to other countries (HEAIDS, 2012b). Therefore, the Department of Higher Education must protect the students who are the future human resource of the country (HEAIDS, 2012b). Several programmes have been implemented in phases to mitigate HIV/AIDS in HEIs across the country (HEAIDS, 2010a). These include raising awareness about HIV/AIDS, combating further spread of the virus and providing treatment, care and support for people living with HIV/AIDS (HEAIDS, 2018).

The Higher Education South Africa (HESA) is a representative body of 23 public universities in South Africa (HEAIDS, 2015b). The core function of HESA is to form a united voice in policymaking on issues of national importance for all members (HEAIDS, 2015b). Formed in May 2005, HESA is a replacement of two legal representative organisations for universities and universities of technology, the South African Universities Vice-Chancellors Association (SAUVCA) and the Committee of Technikon Principals (CTP) (HEAIDS, 2015b). To address the impact of HIV/AIDS on the education sector in South Africa, HESA launched HEAIDS which is a national facility to improve and support the HIV/AIDS alleviation programmes implemented within South African HEIs, and gradually to Further Education and Training Colleges (FETs) (HEAIDS, 2015b). It is an integral member of SANAC and initiated by the Department of Higher Education and Training undertaken by HESA, the representative body of South Africa's 23 public HEIs (HEAIDS, 2015b). HEAIDS assists with higher education in its response to fight the spread of the HIV/AIDS epidemic through their elementary functions of learning and teaching, research and innovation, and community engagement. It is now a non-profit company under the leadership of the Department of Higher Education and Training and works in partnership with Universities South Africa (USAF) and the South African College Principals Organisation (SACPO) (HEAIDS, 2015b).

Policy and Strategic Framework on HIV/AIDS for Higher Education in South Africa

For HEAIDS to mitigate and respond to the impact of HIV, a primary step was to craft policies enabling HEIs to implement these programmes without legal hurdles. As such, various strategies were put in place to ensure that the university communities who are affected and infected with HIV/AIDS are supported with proper treatment and care. Furthermore, norms and standards to guide universities to implement and strengthen their response to HIV/AIDS

are in place. The Policy and Strategic Framework on HIV/AIDS for Higher Education 2012 developed from collective work by the HESA and HEAIDS secretariats, universities and the Department of Higher Education and Training (HEAIDS, 2012b). The 2012 Policy and Strategic Framework on HIV/AIDS for Higher Education was reviewed and aligned with the 2012-2016 National Strategic Plan for HIV, STIs and TB and draws from the 2008 Policy Framework on HIV/AIDS for HEAIDS in South Africa (HEAIDS, 2012b). Notably, the previous 2008 Policy Framework on HEAIDS in South Africa did not align with the 2007-2011 National Strategic Plan. Aligning the 2012 Policy Framework on HIV/AIDS for Higher Education with the HIV National Strategic Plan enables the contributions of the higher education sector to play a part in fulfilling the goals of mitigating HIV/AIDS.

HIV/AIDS mitigating programmes in Higher Education institutions in South Africa

Over the years, HEAIDS has helped strengthen the institutional response to HIV in South Africa by facilitating the introduction of interventions by grants and providing much-needed technical assistance(HEAIDS, 2012b). First Things First (FTF), Brothers for Life, Future Beats, ZAZI-Know your power, Lesbian, Gay, Bisexual, Transgender and Intersex (LGBTI) and Curriculum Development are some of the programmes currently being introduced through HEIs. First Things First is HEAIDS flagship programme that provides HIV/TB and STI testing and screening services through mobile clinics accessible to universities and colleges regularly (HEAIDS, 2019). First Things First (FTF) also allows for the provision of general health and wellness services, including non-communicable diseases. Peer educators are trained across the country to mobilise students to get to know their status and provide platforms for dialogues. The National Department of Health provides free condoms. The campaign aims to upsurge access to HIV Counselling and Testing (HCT programme) for students and staff at HEIs. Thus, the campaign aims to raise the uptake of HIV and Testing counselling programmes already implemented at universities (HEAIDS, 2019). The FTF programme facilitates access to the following services: HIV education, screening referral, TB education, screening and referral, STI education, screening and referral, hypertension, diabetes and cardiovascular risk factors education, screening and referral, family planning education and awareness, condom promotion programme and male medical circumcision (HEAIDS, 2019).

Another HIV/AIDS mitigating programme is men's health and empowerment programme (Brothers for Life) which is a national campaign led by South Africa National AIDS Council and other stakeholders (HEAIDS, 2015). The HEAIDS Men`s Health programme targets male students and staff at HEIs and colleges (HEAIDS, 2019). The focus of the programme is to

address the risk for men such as male medical circumcision, multiple and concurrent sexual partners, substance use, alcohol and gender-based violence (HEAIDS, 2019). The programmes recognise that to be effective, a combination of approaches for HIV prevention is necessary and should include biomedical, behavioural and social/cultural approaches (HEAIDS, 2019). The programme focuses on six key strategies which are to reduce unplanned pregnancy, promote responsible sexual relationships, reduce multiple sexual partnerships and increase consistent condom use among young men. Also, to increase uptake and retention of eligible young men on antiretroviral drugs, the uptake of male medical circumcision and awareness, screening and referrals for cancers commonly found in men (HEAIDS, 2019).

Future Beats is another HEAIDS backed programme implemented at HEIs (HEAIDS, 2019). It is a youth development project which promotes HIV prevention through media channels such as radio and social media with its principal purpose being to create HIV/AIDS awareness through these platforms. The project themes mainly focus on social justice, human rights, poverty, unemployment, alcohol and drug use and social transformation (HEAIDS, 2019). Given the role of media in the society, it can be argued that media has an important part to play in mitigating HIV in South African HEIs. Media facilitates discussions, and through it, students can open up and debate about HIV/AIDS. It is a fact that media helps breaks the silence surrounding HIV/AIDS (HEAIDS, 2019).

Women's health and empowerment programme are also implemented as an HIV response plan (HEAIDS, 2019). This is an advocacy, mass media and mobilisation programme that addresses gender inequalities by encouraging young women to draw on their inner strengths, power and self-confidence(HEAIDS, 2019). The campaign core centres on empowering young women to stand and uphold moral values considering the pandemic (HEAIDS, 2019). The programme addresses issues such as rape, sexual violence, dual protection, breast cancer, cervical cancers and STI screening, contraception and transactional sex (HEAIDS, 2019).

The LGBTI is a programme to promote an environment conducive to appropriate HIV treatment, care, prevention services for men who have sex with men (MSM) and LGBTI (HEAIDS, 2019). The main purpose of introducing the LGBTI campaign in universities was to bridge the existing gap of sexual health needs for marginalised and stigmatised population groups. Adopting the LGBTI programme in universities promotes an enabling environment for a right-based health care system where sexual minorities can access vital health care services without the fear of the violation of their human rights (HEAIDS, 2019). This highlights the universities effort to respond comprehensively to the HIV/AIDS epidemic by creating safe and stigma-free environments for sexual minorities to seek sexual health services without fear or

discrimination (HEAIDS, 2019). The HEAIDS Alcohol and drug abuse prevention programme is also another which provides a primary prevention response to substance abuse as an HIV risk factor. It involves risk screenings and brief interventions using digital media, health clinics, trained professionals and lay counsellors (HEAIDS, 2019).

The HIV/AIDS curriculum development and research education is another programme rolled out as a strategy to respond to HIV in higher education. It focuses on building the capacity of the academic staff in all public HEIs and TVET colleges, supporting these institutions to integrate HIV/AIDS in the curricula (HEAIDS, 2019). The intention of this is to build on a pool of capacitated academics that may be called on to contribute to the development of an AIDS competent society by producing HIV/AIDS knowledgeable graduates (HEAIDS, 2019). This builds on the work conducted by HEAIDS since 2008, to incorporate the sector's HIV/AIDS response within a core mission of higher education (HEAIDS, 2015b). Despite the prioritisation of teaching HIV education by HEAIDS as part of its strategic response to HIV prevention in HEIs in South Africa, research indicates that these institutions in South Africa are not integrating HIV/AIDS education into their curricula with enough enthusiasm (HEAIDS, 2010a).

HIV/AIDS Education in Higher Education institutions

Universities teach HIV/AIDS education in various ways. Pillay & Wood (2016) note that little exists regarding curriculum integration of HIV/AIDS in international literature. The rationale behind this trend is that countries in low prevalence settings, view HIV/AIDS as a health issue rather than a social issue. The focus is on transmitting information relevant to the intended profession, and/or the reduction of stigma(Pillay & Wood (2016). Much of the literature focuses on giving a detailed rationale for curriculum integration rather than on actual examples (Pillay & Wood, 2016). Despite this, they encourage exceptional instances which are worth mentioning. Although it is difficult to quantify the extent to which HIV/AIDS is taught across the world in higher education, several surveys do suggest that it is happening. A study commissioned by the Association of African Universities (AAU) in 35 universities in the Sub-Saharan region found that HIV/AIDS was not fully incorporated into the official curriculum of most universities. However, teachers invented approaches to disseminate HIV/AIDS knowledge to students. Most teachers use interactive teaching methods such as group discussions and debates to spread HIV/AIDS knowledge among students (Association of African Universities (AAU), 2010). Information about HIV/AIDS was introduced into the curriculum using infusion, ad hoc and integration approaches, and the focus of the content was communicating HIV/AIDS material with little opportunity for experiential learning (AAU, 2010).

Recently a systematic review was conducted to assess the extent of HIV/AIDS education in HEIs' curricula (Pillay & Wood, 2016). The study suggests that HIV/AIDS was assimilated into curricula using integration into several modules, a carrier subject approach and stand-alone approaches. However, the review indicates that HIV/AIDS content was limited to health disciplines (social work, medicine, dentistry, nursing, pharmacy, psychology). The HIV/AIDS content in some subjects is reinforced by behavioural theories such as the Health Belief Model, AIDS risk-reduction model, diffusion of innovation model, social cognitive theory, stages of change model and theory of reasoned action. The review concluded that there are limited examples of how HIV/AIDS is introduced into the curriculum in international and local literature because, in most countries, HIV/AIDS is a health issue (Pillay & Wood, 2016).

Several surveys were conducted in South Africa by the Department of Higher Education and training to assess institutional to HIV/AIDS, including curricular responses. The first HEAIDS audit on HIV curriculum integration in HEIs in South Africa (2005) concluded that only 61% of the institutions sampled infused HIV/AIDS into their curriculum at the undergraduate level. The issue was integrated into curricula using the following strategies such as service-learning (53%), employing subject-specific infusion (40%), core courses (61%), offering foundational courses (38%), elective courses (39%) and short courses (26%). This study concluded that few disciplines integrated HIV/AIDS into curricula (HEAIDS, 2005). Furthermore, in 2010, a survey took place in South Africa to explicitly determine the level of HIV/AIDS incorporation into the curriculum (HEAIDS, 2010b). The study illustrated that only 14% of HEIs in South Africa already included HIV/AIDS in their curriculum; 64% of teachers have no training in this regard. Infusion was the most common approach used by teachers to integrate HIV/AIDS into curricula. The content focus was on the general nature of HIV, suggesting that a biomedical approach is utilised. The report demonstrated that there was little HIV integration into the curriculum to prepare students to become HIV-competent graduates entering the workplace (HEAIDS 2010b). Case studies at the University of Pretoria, the University of Cape Town and the University of Rhodes provided good examples of how HIV/AIDS combines into several disciplines. These case studies attempt to show how it is incorporated into each faculty with detailed characteristics of the modules describing the outcomes of HIV/AIDS, teaching strategies, assessment, integration and theoretical frameworks underpinning the content (Centre for Sexualities, Gender and HIV, 2016; Hall 2006; Rau, 2009).

Another cross-country survey conducted by UNESCO (2006) to review current HIV/AIDS content in the curricula shows that HIV/AIDS is taught at the University of Ouagadougou, University of Kinshasa, National University of Lesotho, University of Brasilia, Anton de Kom University of Suriname, Pontificia Universidad Católica Madre Maestra, University of Quisqueya and University of West Indies. The study also demonstrated that HIV/AIDS content

was taught primarily in health/medical faculties, focusing mainly on the biological and pharmaceutical aspects of HIV/AIDS (UNESCO, 2006). Similar findings from other case studies confirmed that it is treated as a health issues and taught in health-related faculties (Pillay & Wood., 2016; Knebel et al., 2008; Rohn et al., 2006; Barnes 2000; Williams et al., 2006; Balfour, Corace & Tasca, 2010; Uwakwe, 2000; Rowan & Shears, 2011; Koob & Harvan, 2003).

Apart from health-related disciplines, it should be noted that one of the faculties that have most attempted to incorporate HIV/AIDS into the curriculum is teacher education. For instance, in South Africa, an education faculty survey in 23 universities evaluated how HIV/AIDS education was provided (HEAIDS, 2010b). The investigation revealed that a wide range of interventions in teacher education organisations, ranging from stand-alone programmes to incorporation and researching HIV/AIDS in the field. The report demonstrated experiential learning and innovative pedagogy, including the various integration strategies (HEAIDS, 2010b). Holderness (2012) observed that HIV and education for pre-service teachers was offered as a short learning programme, an Advanced Certificate in Education (ACE) programme on HIV/AIDS in Teaching, a module in an ACE for school leadership, an online course and doctoral studies at the University of Western Cape. Petersen, De Beer and Dunbar-Krige (2011) describe how HIV/AIDS education is accessible through simulation games as a first-year course, and the other as part of a Postgraduate Certificate in Education (PGCE) programme. Wood (2012) reported on the evaluation of how HIV/AIDS was taught as part of a PGCE programme as a five-credit course. The study observed that students needed more in-depth learning on how to integrate HIV into their teaching subjects; how to deal with learners in a school situation and develop learning-support material–in other words, a few lectures were inadequate for learning all they needed to learn about HIV/AIDS and teaching (Wood, 2012).

Wood and Wilmot (2012) described in detail how an active learning approach in an HIV/AIDS module, covered for a PGCE programme. Still, on teacher education, Van Laren's work in mathematics education with foundation-phase student teachers provides useful insight into how participatory methods, such as drawing and metaphor work, and self-study methods can integrate a 'soft' topic like HIV/AIDS into a so-called 'hard' scientific subject (Van Laren, 2007; Van Laren, 2008; Van Laren, 2012). Webb and Gripper (2010) report the impact of a stand-alone HIV/AIDS module for in-service B Ed distance students in a biology programme. The content focused on theories on the origin, political responses in South Africa, and education policies and general information on HIV/AIDS (Webb & Gripper, 2010).

Education on HIV/AIDS is also available in faculties or disciplines other than health or teacher faculties. For instance, Craig, Xia & Venter (2004) introduced HIV/AIDS education into the

curriculum in the Department of Electric, Electronic and Computer Engineering at the University of Pretoria targeting third-/fourth-year students. In another survey conducted in four continents, Hanoi Education University in Vietnam integrated it into the Faculties of Geography, Political Science Education, Biology and Agricultural Techniques (UNESCO, 2006). Similar findings from a survey conducted at South African and African universities suggested that HIV/AIDS was infused into Human Science, Agriculture, Environmental Sciences, Natural Sciences and Educational Programmes and Dance (HEAIDS 2010b; Risner & Thompson 2005; Petersen et al. 2004).

Sexuality and gender education are another area where HIV/AIDS are integrated into curricula (Pillay & Wood, 2016). Bennett and Reddy (2009) conducted a review of South African university teaching to establish a database of information on what was taught and how. They found that HIV/AIDS is mentioned in sexual education. Similarly, in the USA, HIV/AIDS was also offered through sexuality courses. For instance, Oswalt et al. (2015) conducted a survey to ascertain pedagogy and content in sexuality education courses in US colleges and universities that concluded that most included references to HIV/AIDS (88.2%) and STIs (85.7%). In Britain, HIV/AIDS is addressed in sex education (Oerton & Bowen, 2014). Tanzania aligns sex education at the university level with public health initiatives. For example, a specific strategy for HIV/AIDS education was developed for HEIs (Mkumbo, 2013). Likewise, the Ministry of Education in China requires at least six hours of instruction on HIV annually at every level of education (including university) (Song, 2015).

There are various ways in which HIV/AIDS issues enter into universities curricula such as stand-alone, integration through infusion and incorporation into carrier subject (UNESCO, 2006). Stand-alone modules refer to those modules that focus primarily on HIV/AIDS (AAU, 2010). In literature, there are three examples of stand-alone modules in higher education (AAU, 2010). For instance, HIV/AIDS is a compulsory course as part of the general studies programmes of higher institutions, offered in other departments and as specific HIV/AIDS qualification (Centre for Sexualities and Gender and HIV, 2016; HEAIDS, 2010a; AAU, 2010; Hall, 2006; Rau, 2009).

Another common approach to HIV/AIDS education is through infusion into several modules, such as infused throughout the curriculum, integrated in most/all subjects included in the curriculum, with or without any specific mention of HIV/AIDS in subject areas (HEAIDS, 2010a; AAU, 2010; Pillay & Wood, 2016). According to the Centre for Sexualities, Gender and HIV (2016), concerning infusion into several modules, teachers do not develop a specific unit on HIV/AIDS but rather insert issues as they seem relevant in a planned and focused way in the classroom discussions and assignments. Therefore, HIV/AIDS is ‘integrated into and blended

with disciplinary subject matter in a way that is attuned to the intellectual and professional needs of the discipline and encourages learning about HIV/AIDS in the service of the primary discipline' (Centre for Sexualities, Gender and HIV, 2016). For instance, HIV/AIDS stigma is used as a basis for discussing human rights law, its counselling used to demonstrate principles of therapy in psychology or social work and as one of several critical diseases in various branches of health care (Centre for Sexualities, Gender and HIV, 2016).

The integration of HIV/AIDS into carrier subjects is another commonly used strategy to add HIV/AIDS issues to the curriculum. In this approach, HIV/AIDS combines with an existing and relevant subject, such as medicine/health, social sciences, education or one that deals with ethics or human rights. HIV/AIDS is addressed as a legitimate topic within the carrier course, sometimes as a major focus (alongside other issues) or dealt with in a more limited way (AAU, 2010; HEAIDS, 2010a; Pillay & Wood (2016); Centre for Sexualities, Gender and HIV (2016). For instance, Kwame Nkrumah University of Science and Technology in Ghana integrates HIV/AIDS into carrier subjects and research programmes since 2007 in subjects such as Nutrition, Physical Sciences, Biological Sciences Engineering, Mathematics, and The Social Sciences, Medicine (Surgery, Maternal and Child Health), Community Health (AAU, 2010). Another institution which integrated HIV/AIDS into carrier subjects is the University of Ghana, Legon at different levels, such as sub-degree, undergraduate and graduate levels in the following disciplines - Sociology, Social Work, Economics, Medicine, Nursing Psychology and Food Science (AAU, 2010).

The literature shows that the teaching of HIV/AIDS in HEIs is limited. It is primarily taught in carrier disciplines such as Medicine, Public Health, Psychology, Gender, Law, Nursing, Teaching, Dentistry, Pharmacy and Social Work (Pillay & Wood, 2016; HEAIDS,2010a). The HIV/AIDS content is mainly supported by theories of behaviour change such as the Health Belief Model, the theory of planned behaviour, stages of change model, diffusion of innovation and social cognitive theory. The content focuses mainly on scientific knowledge about HIV /AIDS and rarely emphasises affective and behavioural skills (Pillay & Wood, 2016; Wood, 2012). Integration into carrier modules, infusion into several modules and stand-alone approaches were the most commonly used strategies to integrate HIV/AIDS into the curriculum. The main reason for not teaching about HIV/AIDS in higher education curriculum is attributed to the assumption that it is regarded as a health issue, lack of faculty interest or knowledge in HIV/AIDS, and fear to dilute discipline content and limited knowledge of curriculum integration by teachers (Van Laren, 2012). Therefore, this calls for the support to assist academics to integrate HIV/AIDS into curricula (Volks & Alves, 2012).

Why Teach HIV/AIDS Education in Higher Education Institutions

There are several reasons why HIV should be integrated into the curriculum at the tertiary level. Internationally, universities are encouraged to open alternate ways of understanding and managing the 'crisis' in developing societies and prepare students to contribute towards ameliorating the socioeconomic and psychological impacts of HIV/AIDS (Van Laren et al., 2016). Thus, universities are responsible for shaping a young generation of socio-politically literate subjects and citizens, who are equipped to respond appropriately and creatively, to social problems and issues (Pillay & Wood,2016). This implies that universities assume leadership positions on various social issues within society, including HIV (Kelly and Bain, 2005).

In the absence of a cure for HIV, universities are expected to provide a solution to avert this humanitarian crisis(Leon, Baker, Salinas, and Henck, 2017). There is consensus among scholars that HIV/AIDS education is the panacea in the absence of a cure. Education is seen as a solution to mitigate HIV/AIDS as a social problem (Bor & De Neve, 2015). For education to be able to lessen instances of HIV/AIDS in tertiary institutions, it is vital to analyse its role. Given the fact that youth continue to be heavily infected by HIV worldwide, tertiary institutions by default are the hotspots for HIV transmission among young people (UNAIDS, 2018). Therefore, education is seen as a social antidote or critical enabler for prevention, care and management of HIV/AIDS (AAU, 2010) and determines the crucial role of HEIs in alleviating the consequences of HIV/AIDS to empower and protect students. Furthermore, tertiary institutions should respond to HIV because HIV/AIDS dynamics are expanding, requiring an intersectoral approach to mitigate its contributory factors and societal impact (Modeste & Adejumo, 2015). This insinuates that there is an urgent need for better HIV/AIDS education in South African universities

Previous research conducted to assess the vulnerability and impact of HIV in higher education highlighted the need for a robust intellectual response to the HIV/AIDS pandemic. HIV/AIDS has the potential to impair the smooth function of the institution in terms of human resource and student's attrition (Kelly, 2003; Kelly & Bain, 2005). Universities function as a microcosm of the larger society within which the institutions exist (Kelly, 2003). As such, institutions, therefore, feel the impact of HIV/AIDS on many different levels such as financial and social impact (Chokwe et al., 2013).

Globally university students have a high prevalence of HIV and STIs (HEAIDS, 2010c, UNAIDS, 2018; UNICEF, 2016). Students in tertiary education are vulnerable to HIV infection due to the progressive nature of most university campus wherein risky behaviours such as alcohol abuse, sexual coercion, and multiple partner sexual relationships are common and

tolerated(Daka et al., 2016). The risk is exacerbated by the unfortunate financial situation of most students which drives them to engage in behaviours such as prostitution and transactional sex in exchange for money (Muchiri et al., 2017);Mavhandu-Mudzusi and Tesfaye Asgedom ,2016). Therefore, universities must have an ethical responsibility to provide HIV/AIDS education so that they produce responsible graduates who can live, work and assist each other in communities ravaged by HIV.

According to Kelly (2003), 'universities have a special responsibility for the development of human resources'. Students in higher education are the future public servants and entrepreneurs who will play a central role in a country's development and an important target population for HIV and sexuality education (UNESCO, 2014). Such education is essential to ensure that they have the knowledge and skills to protect themselves from HIV, other STIs and unintended pregnancies (HEAIDS, 2010a). The main function of HEIs concerning HIV is to produce graduates who are well equipped to analytically engage with HIV-related societal and political issues (UNESCO, 2006).

Another reason why HEIs should respond is that prevention is critical in stemming the tide of the epidemic, and globally, an enormous amount of money is spent in response to it (Schwartländer et al., 2011). Schwartländer et al. (2011) highlight the need for more sustainable investment in prevention, which, in the long run, is much more cost-effective. Therefore, academics are expected to integrate HIV/AIDS into their curricula to deepen the understanding of graduates regarding this phenomenon, hence contributing to cost-effective HIV/AIDS prevention (UNESCO, 2014).

Volks and Alves (2012) argue that HEIs can equip students to develop a new understanding of the social issues in our country intricately intertwined with the causes and consequences of HIV/AIDS, and consequently, positive social change should ensue. Hence, as the leading thinkers in society, academics should be striving to find ways to meaningfully integrate HIV/AIDS into the curriculum and research (Van Wyk & Pieterse, 2006). There is a need for academics to help students understand that AIDS is a universal problem, affecting every one of us, not just specific demographic groups. Also, that we as humans need to understand the suffering it inflicts on those affected so that we can respond both personally and professionally in helpful ways; and that AIDS is thus an essential aspect of all academic work (Volks & Alves, 2016).

Problem Statement of the study

The university students at the institution where the study was conducted engage in sexual behaviours putting them at risk of HIV infection as confirmed by different studies conducted at the university. Recent statistics on HIV/AIDS at the university suggest there is an increase of STIs, HIV infections, termination of pregnancies referrals and unplanned pregnancies. The report indicates that students continue to engage in risky sexual behaviours as shown by an increase in the demand for emergency contraceptives (100%), more students testing positive for HIV (21%), termination of pregnancies (32%) and in the number of students treated for STIs (47%) (University of Campus Health Statistics, 2016) (Table 1.1**)**. Furthermore, a recent study at the University of Venda suggests that male students have a negative attitude towards contraceptives such as condoms and they did not use them(Raselekoane, Morwe & Tshitangano, 2016). The study by Mavhandu-Mudzusi (2014) found that there was poor management of staff and students living with HIV/AIDS, inadequate HIV/AIDS education and limited commitment by the university to support these programmes.

Table1.1: University of Venda sexual health statistics (2010-2014)

Year	Total clinic visits	STIs	Unplanned pregnancy tests			Morning after pills	Referral for TOPS	Total HIV tests	Positive HIV
			Total	Positive	Negative				
2010	6697	273	165	73	92	182	9	2943	57
2011	6695	279	148	77	71	206	11	2656	51
2012	7891	295	173	79	94	293	17	3977	71
2013	9620	354	262	104	158	343	20	4009	48
2014	10455	401	289	129	160	372	37	4087	69

Source: University of Venda Campus Health,2016

Aim and objectives

The study aimed to develop a framework to facilitate the integration of HIV/AIDS content into university curricula at the University of Venda. To meet this aim, secondary objectives were necessary including a systematic review of HIV/AIDS programmes in higher education,

analysis of the extent of HIV integration in the curriculum in various departments, assessment of knowledge, attitudes and practices of teachers towards integration and teaching of HIV/AIDS content in the curriculum as well as that of students regarding learning about HIV/AIDS at University of Venda. The findings of the study guided the development of the

Conclusion

The current study is significant because it sought to develop a scientifically formulated framework to guide universities in how to integrate HIV/AIDS into the curriculum. It is anticipated that the proposed framework may be adopted by universities in the core teaching and learning business of the university. This may assist the academics in creating space in the curricula to meaningfully integrate HIV/AIDS education and increase the scarce body of knowledge regarding HIV/AIDS education through publications of the peer-reviewed journals. Findings will improve understanding in regard to the integration of HIV/AIDS content. The study seeks to improve the knowledge base about HIV/AIDS education and assist the country in achieving the 2020 strategy for zero infections, and consequently, stop the spread of HIV in South Africa and other countries. Universities are ideal places for raising awareness and debating these issues to reduce HIV infections among young people. Also, this may assist in realising the vision of an HIV free generation as envisaged by the Department of Higher Education. The next chapter presents a systematic review of HIV/AIDS education currently offered in HEIs.

Summary

Chapter 1 presents the theoretical background of the study. It is divided into different sections. The global prevalence of Human Immunodeficiency Virus Infection (HIV) and Acquired Immunodeficiency Syndrome (AIDS) is a public health problem which requires immediate attention. South Africa continues to have many people living with HIV/AIDS, especially among young people aged 15-24. Young people, including students, are exposed to HIV because they indulge in risky sexual behaviours such as early sexual debut, non-condom use, multiple sex partnerships and unprotected sex. Treatment for HIV/AIDS prevention, support and care programmes in South African Higher Education Institutions (HEIs) have been implemented to prevent and manage HIV/AIDS in South Africa and other countries. However, to date, they are not effective, as there is an increase in new HIV infections among young people of university going age. Furthermore, this chapter discusses the rationale for HIV/AIDS education programmes in HEIs, problem statement, aim of the study and conclusion.

Chapter 2 presents the systematic review about the teaching and learning of HIV/AIDS in HEIs focusing on content, delivery methods, levels of training, models of integration and

theoretical considerations. Also, it examines peer evaluated journals and grey literature. Peer-reviewed journals were obtained from the following databases: Sabinet, Ebsco host, Science Direct and Google scholar. The study findings suggested that HIV/AIDS content was taught at both undergraduate and postgraduate level. The HIV/AIDS content of the programmes are underpinned by behavioural change theories such as the social cognitive/learning theory, theory of planned behaviour, Health Belief Model and information-motivation-behavioural model. In regard to integration approaches, four major approaches integrate HIV/AIDS content into the curriculum, such as stand-alone modules, infusion, integration into one main carrier subject and across curricula. Traditional and experiential teaching and learning methods deliver HIV/AIDS content. The systematic review findings provide a foundation for the development of the framework for the integration of HIV/AIDS content into the undergraduate curriculum.

Chapter 3 reports on content analysis, related to the extent of HIV/AIDS integration into the curricula in various departments at a selected university. A quantitative content analysis methodology interpreted 68 module descriptors which represented the sample of the study. Out of 1,979 modules examined, only 68 modules had HIV/AIDS content integrated into curricula. The findings indicated that HIV/AIDS content was mainly integrated into existing modules in health sciences disciplines. Topical analysis indicated that majority of the modules with HIV/AIDS content focus on basic facts about HIV/AIDS. The teaching and assessment methods follow traditional classroom delivery.This suggests that the integration of HIV/ AIDS into undergraduate curricula was limited. Therefore, the need to support the teachers in teaching HIV/AIDS is crucial.

Chapter 4 presents a survey conducted to assess the knowledge, attitudes and practices of students towards learning about HIV content among 340 students at a selected university. The students possessed high levels of knowledge about HIV/AIDS in some areas; however, the students also had misconceptions about HIV/AIDS. The study also suggests that most of the students support the teaching of HIV/AIDS by showing positive attitudes. Very few students reported exposure to HIV/AIDS in their studies. This research calls for support to assist teachers in integrating HIV/AIDS into undergraduate curricula to bridge the gaps in HIV knowledge among the students.

Chapter 5 assessed knowledge, attitudes and practices of teachers towards teaching and learning of HIV/AIDS content in the curriculum among 240 teachers. The study demonstrated that some teachers knew about HIV/AIDS. The study also verified that teachers had little knowledge concerning how HIV is transmitted, prevented and policy aspects. Contrary to the findings above, most teachers had positive attitudes towards the teaching and learning of

HIV/AIDS content in the curriculum. In regard to teaching, very few teach about HIV/AIDS. The study suggests that teachers used lecture methods and group discussions to educate students. In considering assessment strategies, HIV/AIDS content was assessed using written examination, tests and assignments. The current study illustrates the need to provide teachers with guidance to ensure that they integrate HIV/AIDS content into various modules.

Chapter 6 presents the proposed framework for integrating HIV/AIDS content into curricula based on the findings of the previous chapters. The model provided the structure of the framework, namely Information (Cognitive), Motivation (Affective) and Behaviour (Skills). The proposed framework consists of a list of HIV/AIDS competencies considered for inclusion into curricula at each level of study. Additionally, it discusses the implications of the framework to the HEIs.

Chapter 7 summarises the key findings and discussion in relation to relevant literature. Also, in this final chapter, the study deliberates the conclusion, strengths and limitations and makes recommendations pertaining to the study. This chapter also determines that the objectives of the study were successfully achieved.

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CHAPTER 2

A SYSTEMATIC REVIEW ON TEACHING AND LEARNING OF HIV/AIDS IN HIGHER EDUCATION INSTITUTIONS

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A Systematic Review on Teaching and Learning of HIV/AIDS in Higher Education Institutions.

ABSTRACT

Background: The mainstreaming or integration of HIV/AIDS into university curricula has been singled out as an international priority. Although there has been renewed interest regarding the importance of HIV and AIDS education, gaps in the integration of HIV/AIDS into university curricula remain. The purpose of this review was to describe the formal teaching and learning of HIV/AIDS in HEIs focusing on content, delivery methods, level of training, models of integration and theoretical considerations.

Method: We carried out a systematic review of peer-reviewed journals and grey literature. Peer-reviewed journals were obtained from the following databases: Sabinet, Ebsco host, Science Direct and Google scholar. Grey literature was acquired from the following websites: Non-governmental organisations and University websites. The inclusion criteria were: studies published in English, describing formal teaching of HIV/ AIDS in HEIs, all studies using quantitative and qualitative designs and aiming at HEIs. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist was employed to guide the reporting of methods and findings.

Results: The study established that 52 programmes were taught in 17 countries and delivered at both undergraduate and postgraduate levels. Three theories supported the HIV/AIDS content: behavioural, learning theory and theories of community influence and power. The content in higher education was integrated into four main methods: stand-alone modules, integration into carrier modules, infusion into several modules and HIV/AIDS focused qualifications and research. Several teaching strategies used a mixture of didactic and interactive teaching strategies. The evaluation methods suggest the use of traditional methods of assessment approaches.

Conclusion: This systematic review provides information for designing the proposed framework to guide the integration of HIV/AIDS into curricula.

Keywords: Education, HIV/AIDS, Systematic Review, South Africa

Introduction

Estimations are that about 36.7 million people lived with HIV in 2016 (UNAIDS, 2017). Out of these 36.7 million people, 4 million were youth aged 15-24 years old (UNAIDS, 2018). Most of these young people live in developing and middle-income countries, with 85% residing in Sub-Saharan Africa (UNAIDS, 2018). South Africa has the highest number of people living with HIV/ AIDS with nearly a third of all new HIV infections in South Africa occurring in 15-24-year olds with adolescent girls being up to eight times more likely to be infected with HIV than their male counterparts (Avert, 2018). They also have the lowest rates (14.3%) of national antiretroviral treatment exposure (Shisana et al., 2014).

In response to the HIV/AIDS crisis, the international community realised that education is an important weapon in the fight against the spread of the pandemic, with many countries introducing various curriculum strategies in the education sector (Sogren et al., 2012). Kelly and Bain (2005) point out that education ministries or departments worldwide are becoming increasingly aware that with no vaccine or cure for HIV/AIDS in sight, education can be an effective way to protect young people. The impact of HIV/AIDS on education is well documented, and this sector can develop to become a country‘s most potent weapon against this threat (Kelly, 2003). Recently, a UNAIDS report observed that knowledge gaps about HIV among young people still prevail in Sub-Saharan Africa; hence investment in HIV/AIDS education is essential in these countries (UNAIDS, 2015).

There is consensus among opinion-makers such as policymakers and academics that information is a necessary condition for changing behaviour (Dupas, 2011). Previous evidence suggests that HIV/ AIDS education increases knowledge which is a prerequisite for changing behaviour (Rink & Wong-Grünwald, 2017). Mavedzenge, Doyle and Ross (2011) suggest that HIV/AIDS education offered in schools has been effective in reducing HIV-related risk, an improved knowledge score on HIV, fewer sexual partners, delayed sexual debut and consistent condom use (Mavedzenge et al., 2011). However, despite these interventions, young people still have gaps regarding HIV knowledge and perceive themselves to be at low risk of acquiring HIV (UNAIDS, 2016). In order to change risk sexual behaviours, young people need to know the dangers and how to protect themselves (Michielsen et al., 2012).

Even though knowledge on its own is not enough to warrant behaviour change, it is the first stage in the behaviour change process (Rink & Wong-Grünwald, 2017). Furthermore, reports suggest that having the correct knowledge about HIV reduces new infection in countries most affected by the disease (UNAIDS, 2016). Without any defined cure of HIV at present, education is seen as the social vaccine.

Shisana et al. (2014) argue 'that youth in South Africa are a key population cohort for efforts to reverse the HIV epidemic, as high rates of infection occur during adolescence and early adulthood'. Therefore, engaging young people through education is key to protecting their health and addressing the HIV epidemic (Idele, 2014). A quick review of the literature indicates that a systematic review on HIV/AIDS education in higher institutions reveals only one appraisal (Pillay & Wood, 2016), which attempted to describe the status quo regarding the integration of HIV into curricula in higher education. Hence, a comprehensive review is necessary for a clearer picture of HIV education, targeting young people.

There is insufficient knowledge on the nature of the teaching of HIV content within the higher education. As there is minimal evidence from university students, the review scope was expanded. Thus, a systematic review of teaching and learning concerning HIV/AIDS was conducted to identify research published from 2010 to 2017 and critically analyse various HIV educational interventions at tertiary institutions, including effective methods of teaching, assessment strategies, models and framework, HIV/AIDS content.

Methodology

Design

The systematic review of the literature included peer-reviewed journals and grey literature and PRISMA guided the reporting of methods and finding (Knobloch, Yoon & Vogt, 2011).

Research questions

The following research questions guided this systematic review of the literature: (1) What are the key theorectical considerations that inform HIV/AIDS content (2) How is HIV /AIDS content integrated (eg stand alone, infusion, compulsory elective)? (3) What is the teaching and learning strategies used? (4) How is HIV/ AIDS content evaluated or assessed? (5) What is the HIV/AIDS content taught to students in higher education institutions? (6) What levels of education (eg postgraduate, undergraduate) of modules that include HIV/AIDS content?

Search strategy

In this review, the PICOS framework (Robinson et al., 2011) designed the search strategy. Electronic databases such as Google scholar, Sabinet, Science direct and Ebsco host were searched for articles from January 2010 to December 2018 using the Google search engine. Since HIV/ AIDS is a fast-developing field, only sources from 2010 were considered. The following search terms 'HIV, AIDS, teaching strategies, HIV education or curriculum on HIV'.

Furthermore, additional references were found by systematically examining the reference lists of relevant papers and reviews. Articles that describe the integration of HIV/AIDS content in

HEIs are not frequently published in mainstream journals and to address this challenge, grey literature from university websites and non-governmental directories was found. It is argued that grey literature is a rich source of information in systematic reviews since it can expand the body of knowledge in fields where scholarships are underdeveloped. Also, it should be noted that there is a shortage of literature regarding HIV/AIDS education. Therefore, recent peer-reviewed articles describing HIV/ AIDS curriculum education intervention in high schools and communities for young people aged 10-25 were included. Titles and abstracts were searched against the inclusion criteria, and the full text was retrieved for articles that met the criteria: studies published in English, studies describing formal teaching of HIV/AIDS in HEIs, All studies that used quantitative and qualitative designs, and aimed at Higher Education Institutions. The PRISMA checklist was employed to guide the reporting of methods and findings.

Table 2.1: Returns from Database Searches

Database	**Papers**	**Numbers of Publications relevant to research objective**
Google scholar	700	15
Sabinet	400	20
Science direct	350	10
Ebsco Host	50	7
Total	1500	57

Data Extraction and Management

Two researchers downloaded the relevant articles from these search options and classified each article using an article grid. These classifications were based on the data from articles that met the inclusion criteria were extracted relating to characteristics of the study. The information related to the study characteristics covered first author's last name and year of publication; the title of the publication; teaching and learning strategies, assessment strategies and models/framework used to integrate HIV/ AIDS content, theories that inform HIV/AIDS education and HIV concepts or content taught. The flow of studies through the selection process is presented by way of a modified PRISMA flowchart in Figure 2

Quality of the studies

The assessment of the quality of the studies is an important component of systematic reviews (Higgins et al., 2011). However, because most articles were non-peer reviewed, there was no

assessment. This means that no scientific appraisal tool evaluated the quality of the included studies.

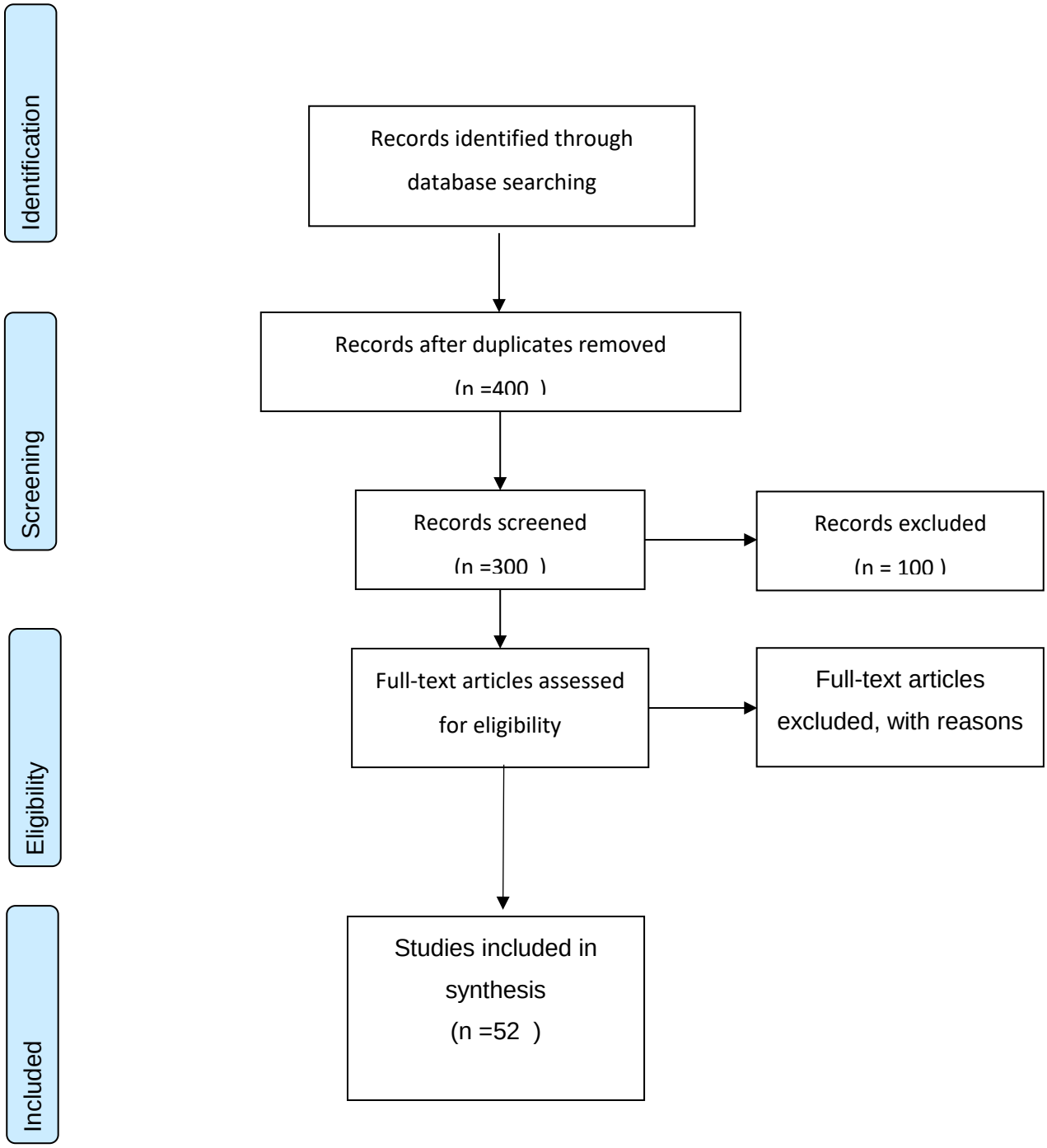

Figure 2: Prisma Flow chart on the selection of studies included for analysis.

Data Analysis

A narrative synthesis analysed the studies selected for this review. The studies were described according to the objectives: HIV/AIDS content taught to students, teaching and learning strategies, levels of education, how HIV/AIDS content was integrated, evaluated or assessed.

Results and Discussion

Identification of articles

The initial search yielded 1,500 articles (Figure 1). These were screened based on title and type of article, resulting in 300. Screening based on abstracts produced 200 articles for full-text review, and this phase in screening led to 52 articles included in the review. This included both grey and published articles. Twenty-five were course outlines sourced from university websites, and 27 were peer-reviewed articles.

Characteristics of the included studies

The studies included in the study are presented in Table 2. The majority of the studies (n=13) were in the USA (n=5), Spain (n=2), South Africa (n=17), UK (n=1), China (n=1), Cameroon (n=1), Liberia (n=1), Rwanda (n=1), Swaziland (n=1), Canada (n=2), Tanzania (n=1), Caribbean (n=1), Australia (n=1), Kenya (n= 2), Namibia (n=1), China (n=1), Ghana (n=1) and one focused on the entire African continent. Most (n=25) of the programmes were delivered in HEIs, with 11 in high schools. Due to the shortage of literature regarding HIV/AIDS education for higher education, it also included recent peer-reviewed articles which describe HIV/ AIDS curriculum education intervention in high schools and communities which target young people aged 10-25.

Table 2.2: Clustered characteristics of educational interventions

Author, Institution and country	**Title of the publication**	**Model of integration & Theoretical framework**	**Teaching Methods**	**Assessment methods**	**Level/Degree**	**Main Course Content**
Duke University, 2019 United Kingdom	HIV Specialty	Integrated into Master of Nursing programme and theory which informed the course was not mentioned	Lecturers, practicum, Online learning	Not addressed	Postgraduate	Pharmacologic Aspects of HIV/AIDS, Psychosocial, Political, Legal and Ethical Aspects of HIV/AIDS, Clinical Care and Treatment Issues in HIV/AIDS (didactic course), Clinical Care and Treatment Issues in HIV/AIDS
HEAIDS, 2010 South African Universities	Creating space for HIV and AIDS in the curriculum A Rapid Assessment of curricular responses in South African Higher	Integration through, infusion, stand-alone, bolted-on, hybrid model of Bolted-On and infusion, integration across a programme and Infusion. The theoretical framework was not addressed.	Essay, storytelling, workshop, seminars, service learning	Multiple-choice exams, tests	Postgraduate Undergraduate	Personal knowledge of HIV/AIDS, Disciplinary knowledge and HIV/AIDS, workplace knowledge and HIV/AIDS

	Education Institutions					
K. Smit M. Kruger M. Greef I. M. Kruger A. Kruger 2012 North-West University, South Africa	Critical Reflection on the Integration of HIV into the Health Science Curriculum	Curriculum was 12 credit stand-alone, compulsory to all 2nd-year health sciences students. Two theories underpinned the curricula: transformative learning theory and health Belief Model	problem-based learning	Class and Online test	Undergraduate	Reducing Stigma among healthcare professionals

HEAIDS, 2010 South African Universities	An Investigation of Graduate Competency for Managing HIV/AIDS in the Workplace	HIV/AIDS content was infused into several modules in several disciplines, and the theoretical framework was not addressed	Guest speakers, lecturers, practical	Exams and assignments	Undergraduate Postgraduate	Biomedical about HIV/AIDS and HIV/AIDS was taught in the context of specific disciplines
AAU, 2010 African Universities	The response of HEIs in Africa to the HIV/AIDS epidemic a synthesis of four sub-regional surveys in Sub-Saharan Africa	HIV was delivered using Compulsory stand-alone, integrated into carrier disciplines and the ad hoc model. The theoretical framework was not addressed	Lectures, practicum and guest speakers	Exams dissertations	Under-graduate Post-graduate	Biomedical aspect of HIV mainly offered in medical and health sciences discipline and, HIV/AIDS was taught in the context of specific disciplines
CSAG, 2016 University of Pretoria,	Integrating HIV/AIDS into the curriculum at the	Stand-alone modules, brief reference to HIV and AIDS, bolted-on integration into a	Lectures, tutorials, prescribed	Assignments, test and final examination	Under-graduate	Biomedical aspect of HIV mainly offered in medical and health and discipline-specific HIV/AIDS content

South Africa	University of Pretoria: Time for Trans-formation	'carrier' course, infusion and infusion beyond HIV. The theoretical framework was not addressed	readings, internships, projects and case studies		post-graduate	
HEAIDS, 2015 South African TVET Colleges	Baseline/ Situational Study Towards understanding HIV/AIDS teaching and learning at TVET colleges.	Models of integration used were infusion and ad hoc model and theoretical framework	lectures	Test and Exam	Under-graduate	Biomedical aspect of HIV mainly offered in life orientation
Van Laren, L., 2014. University of KwaZulu-Natal, South Africa	Beyond metaphor drawings to envisage integration of HIV/AIDS education: A	Integrating HIV/AIDS into mathematical modules and interdisciplinarity theory by Golding 2009 was used	Drawings, metaphors Research	Exam, test, reflective journals entries, Observations	Under-graduate	How to integrate HIV/AIDS into undergraduate mathematics using visual methods

	self-study in primary mathematics teacher education					
University of Free State, South Africa	Social Work Module MDB 192: The Prevention of HIV & AIDS, and Empowerment in a South African Context.	A compulsory eight credit module offered to all second-year social worker students for them to gain an academic and professional understanding of the implications of HIV/AIDS on the profession of social work. The theoretical framework was not addressed	Not addressed	Not addressed	Under-graduate	The curriculum was organised into 3 sections which cover HIV/AIDS-related topics such as facts and figures about HIV/AIDS; management and counselling; social and cultural factors in the context of HIV/AIDS in SA; the prevention of HIV/IDS and the legal, ethical and policy issues relating to HIV/AIDS
University of London,2019	Tropical Medicine Module:	This was an elective stand-alone module of 150 notation hours,	Prescribed readings, Online Moodle forum	Examination, assignments	Post-graduate	The topic or content in this module focused on understand HIV, the

United Kingdom	HIV/AIDS IDM501	and theoretical framework was not mentioned				disease, and aspects of its prevention, treatment and control
Soudien, 2014 University of Cape Town, South Africa	Responses to HIV & AIDS teaching and support services at University of Cape Town	Compulsory stand-alone Integration into carrier disciplines infusion and ad hoc model and HIV/AIDS focused qualifications. The theoretical framework was not addressed	Internships, lectures, online lectures, workshops, case study, small group discussion and research	Tests, Assignment, Dissertation	Post-graduate and Under-graduate	Covers Biomedical facts about HIV/AIDS taught in the context of specific disciplines
Pillay and Wood 2016 South Africa	A desktop review of HIV and AIDS curricular responses in the Higher Education Sector – with a particular focus on the	This was a desktop review, and concluded that HIV/AIDS was taught through stand-alone modules on HIV/AIDS, integrated into one specific 'carrier' subject and more than one module or infused throughout	Simulations, guest speaker, drawings, metaphors and case study	Exams assignments	Under-graduate and post-graduate	This was a systematic review on HIV/AIDS education in higher education content was mainly infused into medical and health sciences disciplines, covered content to reduce stigma towards HIV positive and HIV-affected people and to increase discipline-specific HIV and AIDS knowledge

	local, African and internationally published literature	the programme. The theoretical framework which informed the curricula were the AIDS risk-reduction model, diffusion of innovation model, health belief model, social cognitive theory, stages of change model, theory of reasoned action, empowerment theory, ecological systems theory and theory of gender and power				

Morisky, D.E, Rotheram-Borus, M. J,2019 University of California, Los Angeles, USA	Social and behavioural factors of AIDS/HIV: a global perspective	This was an elective module whereby HIV/AIDS was integrated into psychology health promotion module and theoretical framework	Presentation and discussions	Mid-term exam (50% and final group presentation (50%)	Post-graduate	The content focused on social and behavioural factors which influence both the transmission and prevention of HIV/AIDS throughout the world. The topic covered includes the epidemiology of the AIDS virus, the mechanisms of transmission, theoretical foundations of AIDS prevention programs, US cultural norms and HIV, behavioural models for prevention, social determinants of risk-taking behaviour and the implementation of educational programs designed to prevent HIV transmission
Sethi, A.K, 2019 University of Wisconsin, USA	Special Topics in Epidemiology: HIV/AIDS	This was an elective module whereby HIV/AIDS was infused into the Epidemiology module, and the theoretical framework was not specified	Lectures and Quiz	40% Take-home quiz and 40% In-class quiz	Post-graduate	Introduction to the principles and practice of infectious disease epidemiology specifically HIV/AIDS, aetiology, distribution and determinants of HIV/AIDS and prevention and public health control

						efforts undertaken locally, nationally and internationally
Hindmarch, S 2012 University of Toronto, Canada	POL 482H1 (F) The Politics of Disease and Epidemic: The impact of and responses to HIV in southern Africa	This was a compulsory module in which HIV was integrated into a political science fourth-year course. The theoretical framework was not mentioned	Seminar class presentation	Assignments, research paper, participation, paper proposal	Under-graduate	The module focuses on how disease and epidemic intersect with political issues and broader processes of development through consideration of HIV in Sub-Saharan African countries
Gustafson-Brown 2019 University of California San Diego, USA	AIDS: Science and Society BICD 136	HIV/AIDS was integrated into a first-year compulsory biology module and theoretical framework was not specified	Quiz, Film, lecture	Exam and quizzes	Under-graduate	Introduction for biology majors to the AIDS epidemic: epidemiology, biology, and clinical aspects of HIV infection; HIV testing and therapy; and the personal, social, economic and legal impacts of AIDS on the individual and society

Halkitis, P.N & Siconolfi, D New York University Steinhardt, USA	HIV Prevention counselling: Psycho-educational perspectives.	Integrated to into carrier module (psychology counselling) and the Biopsychosocial framework	Lecture, Field visit, Group work, Guest lectures	Assignment, research paper, homework, debate paper	Post-graduate	the history, context, biology, and epidemiology of the HIV/AIDS epidemic in the Western world; life experiences of people living with and affected by HIV/AIDS, factors that place people at risk for contracting HIV, including the synergies of mental health, substance use and sexual behaviour, theoretical paradigms to analyse HIV prevention efforts, appropriate counselling strategies for those affected by the disease
Weir S.S,2017 UNC Gillings School of Global Public Health, USA	Epidemiology & Social Aspects of HIV/AIDS in Developing Countries EPID 757:	This was a compulsory module in which HIV/AIDS was integrated into Epidemiology course at Master level. Theoretical framework not specified	Prescribed readings, Lecturers, Research	Exam, Homework, Debate paper, Research paper	Post-graduate	Concepts and frameworks in HIV prevention, care and treatment. , critical research in HIV prevention and treatment. Strategies and evaluation of interventions, student capacity to describe a local HIV epidemic, plan a strategic response to the epidemic, and evaluate the intervention, current controversies and challenges, strengthen capacity

						to argue each side of the controversy, and summarise current position on the issue
Feldman, Douglas A State University of New York, USA	Syllabus culture and AIDS (ADI)	HIV/AIDS was integrated into a compulsory anthropology undergraduate module. The theoretical framework was not mentioned	Guest speaker, Lecturers, Field visit	Midterm exam: 22%,Final Exam: 22%,Two in-class pop quizzes 10%,Class participation, research Paper: 26%	Under-graduate	This course explores the cultural, social, epidemiologic, political, psychological, philosophical, economic, public health, and public policy dimensions of HIV/AIDS on a global level, especially in the United States and Sub-Saharan Africa. The topic covered includes basics of anthropology, AIDS as a cultural and public health issue, the importance of AIDS, epidemiology of HIV/AIDS in the United States, AIDS crisis, origin of HIV/AIDS, shaping of public opinion, situation for women and children
Cook, R,2018	Biology and Epidemiology	This was a 3-credit module in which HIV/AIDS was	Syllabus Quiz Book discussion	Quizzes 25% Homework, discussions 33.33%,	Post-graduate	The content of this module focused on study designs and HIV, HIV/AIDS surveillance, virology basics and intro

University of Florida, USA	of HIV/AIDS: PHC 6009	integrated into Biology and Epidemiology module. The theoretical framework was not specified		Book Discussion 8.33%, final Project 33.33%		to biology of HIV, HIV and the immune system, HIV Care continuum, care engagement and treatment, biomedical prevention strategies, behavioural prevention strategies, HIV testing, HIV and ageing, HIV in the rural south, HIV and health disparities, substance abuse and HIV, worldwide epidemiology, of HIV/AIDS and the AIDS-free generation and HIV cure
Bangel, S Evarts, L.A, 2019 UNC Gillings School of Global Public Health, USA	Public Health Leadership Program. The AIDS Course	HIV/AIDS content was integrated into an online, optional public health module and taught from a leadership perspective. The theoretical framework was not specified	weekly online lectures, weekly online assignments	Team assignments, Peer Evaluations	Post-graduate	Multidisciplinary perspective on HIV/AIDS such as aetiology, immunology, epidemiology and impact on individuals and society

Travers, R, 2016 University of Toronto, Canada	SOC309Y1 HIV/AIDS: Social Policies and Programs (Sociology of AIDS)	HIV/AIDS content was integrated into a 3rd undergraduate sociology module and taught to all third-year students. The theoretical framework not specified	Lectures, guest speakers, Film.	Tests (80%) Small Group Presentations (20%)	Under-graduate	Political, social, cultural, and personal aspects of HIV
Norton, A 2017, Northwestern University, USA	Gender Studies 332 & Sociology 376: Sexuality, Biomedicine, & HIV/AIDS	HIV /AIDS content was integrated into 2nd and 3rd undergraduate sociology and gender module. Theoretical framework was not addressed	Class, discussion, Lectures, Self-study	reading responses 30%, Midterm Essay 25%, Final Take-Home Essay 25%,Attendance 10%	Under-graduate	The curriculum was organised into three sections. The first part of the course focused on the early years of the epidemic. Specifically, how and why public health experts struggled to understand the nature of a mysterious collection of diseases and symptoms. In Part II, it examined social movement activism in response to the lack of available effective treatments for people with HIV/AIDS. Finally, in Part III focused on sexual practices and intimacies as mediated by technological and behavioural interventions to combat

						the epidemic: HIV testing, condoms, antiretroviral therapy, pre-exposure prophylaxis and male circumcision
Miller, V, 2014 UC Berkeley, School of Public Health, USA	US Food and Drug Administration, Drug Development, Science and Health Policy PH 290.11 CCN 76363	HIV/AIDS was infused into a compulsory master's health policy and development science module, and the framework was not mentioned	Lectures, assigned readings, discussions	Tests, assignment	Post-graduate	This course focused on providing in-depth consideration of the major issues in drug development, focusing on the US Food and Drug Administration laws, regulations and guidance. Knowledge fundamental to drug development will be acquired in preparation for a possible career in the pharmaceutical or other related industries Drug development science is taught in the context of the HIV/AIDS and HCV epidemics and the influence of these on FDA and international policy
Bauler, T. J., Cole, S., Gibb, T., Van Enk, R., Lutwick, L., &	HIV/AIDS: A Case-Based Learning Module for First-Year	HIV/AIDS content was integrated into first-year medical Foundations of Immunology and	Case-based learning (CBL),scenarios, exercises, videos, presentations	Exam	undergra duate	HIV, acute retroviral syndrome, clinical progression to acquired immune deficiency syndrome, HIV diagnostics, assays used to assess stages of disease and response to

Dickinson, B. L. (2018) Western Michigan University USA	Medical Students	Infectious Disease course. The theory which informed the curricula was not mentioned				antiretroviral treatment, and highly active antiretroviral therapy
Marsiglia, F.F., Jacobs, B.L., Nieri, T., Smith, S.J., Salamone, D. and Booth, J., 2013 Arizona State University, USA	Effects of an under-graduate HIV/AIDS course on students' HIV risk.	HIV/AIDS: Science, Behaviour, and Society is an upper-division, elective, campus-wide. Theories of health behaviour informed the educational activity.	Journaling, experiential activities (e.g., AIDS Awareness Week, volunteering at a service agency, taking an HIV test, watching films, reading books, or attending plays and guest speakers	Exams, Assignments	Under-graduate	HIV/AIDS class covered basic epidemiology, virology, immunology, infectious disease principles, behavioural aspects of transmission prevention, and the social and public policy considerations of HIV and AIDS.
Jemmott et al., 2015 South Africa High school	School-Based Randomised Controlled Trial of an HIV/STD Risk-	HIV/AIDS content was integrated into Life orientation curriculum, which was delivered by teachers and peer	Interactive exercises, games, Brainstorming, role-playing, group discussions.	homework assignments	High school	This was an Information-based HIV/STD risk-reduction which focused on increase HIV/STD risk-reduction knowledge, (b) enhance behavioural beliefs that support

	Reduction Intervention for South African Adolescents	educators. The theories that informed the intervention were social cognitive theory and the theory of planned behaviour				abstinence and condom use, and (c) increase skills and self-efficacy to negotiate abstinence and condom use and to use condoms
Harrison et al., 2016 South African high schools	Gender-Focused HIV and Pregnancy Prevention for School-Going Adolescents: The *Mpondombili* Pilot Intervention in KwaZulu-Natal, South Africa	Sexuality, HIV and pregnancy prevention content were integrated into National Life Orientation Program and the theories that informed this were social learning theory (Bandura), Pedagogy of the oppressed (Freire 1994), Gender and Power Theory (Connell 1987)	Role-plays, vignettes, demonstrations	Not stated	High school	The *Mpondombili* intervention curriculum, included 15 sessions in three content areas: (1) gender-related attitudes and social norms, (2) self-efficacy, communication and negotiation skills, and (3) knowledge, attitudes and behaviours for HIV/AIDS and pregnancy prevention. Teachers led the intervention delivery, supported by the two Youth Peer Educators per session
Coffman et al., 2011,	Effects of Health Wise	This was a teacher-led curriculum initiative	lecturers	Not stated	High school	Topics covered includes myths, realities of drug use, alcohol,

South Africa High school	South Africa on condom use self-efficacy.	which followed a standard curriculum informed by ecological systems theory, Health belief model, social learning theory				cigarettes, and marijuana, self-awareness, decision making, managing anxiety and anger, conflict resolution, motivation, and avoiding risky sexual behaviour, demonstration on the correct use of a condom, planning healthy free time leisure activities, exploring free time activities, roadblocks to participating in activities, establishing connections in the community
Michielsen et al., 2012, High school Rwanda	Effectiveness of a peer-led HIV prevention intervention in secondary schools in Rwanda: results from a non-	HIV/AIDS was integrated into health education and informed by the integrated theoretical framework including aspects of the Theory of Reasoned Action, the Social Learning Theory, the Diffusion of Innovations Theory,	Theatres, sketches, quizzes, competition, poems and music	Not stated	High school	HIV/AIDS, STD, stigma, Pregnancies and family planning, condoms versus abstinence, sugar mommies, sexual violence, gender

	randomized controlled trial	and the health belief model				
Atwood et al., 2012		HIV/AIDS was integrated into Family life and HIV education curriculum by teachers and the intervention was informed by Social Cognitive Theory (Bandura, 1986; 1997) and the Theory of Reasoned Action (Ajzen & Fishbein, 1980	Role-play, Demonstration, lectures	Not stated	High school	The curriculum consists of eight modules delivered by teachers and covers information about STDs, including aetiology, detection, transmission, prevention, and the possibility of asymptomatic infection, abstinence, condom use, attitudes towards condom use, skill and self-efficacy in using condoms, beliefs about negative consequences of condoms for sexual enjoyment, and skill and self-efficacy in negotiating condom use.

Burnett et al., 2011 Swaziland High school	Evaluation of an Intervention to increase Human Immuno-deficiency Virus Testing among Youth in Manzini, Swaziland: A Randomized Control Trial	It was delivered by teacher integrated into life sciences module and designed based on protection motivation and self-efficacy theory	Group discussions, Role-playing	None	High school	This was a 13-week life skills-based HIV prevention education (LSBE) program. The programme was held over 13 half-day Saturday sessions, with 1 hour per week for each of the four curricula. The LSBE curriculum included modules, such as Understanding My Body; Romantic Relationships/Assertive Behaviour; HIV and Sexually Transmitted Infection Basics; Prevention, Treatment, and Testing of HIV; Stigma and Discrimination; and Living with HIV
Enah et al., 2010 Cameroun High school	Piloting an HIV Prevention Intervention for Cameroonian Girls	School-based on Saturday Theory of Planned Behaviour	Small group, discussions, workshop	None	High school	The curriculum had two sections and the second had 11 units. The first section focused on bodily changes during puberty and HIV information such as nature of HIV, modes of transmission, and groups at risk in Cameroon. The second part divided

						into specific units that focused on values clarification and building of specific skills
Xiaohui Gao, Yu Wu & Yukai Du,2012 China High school	Effectiveness of School-based Education on HIV/AIDS Knowledge, Attitude, and Behaviour among Secondary School Students in Wuhan, China	HIV/AIDS was infused into compulsory sexuality education, and the theoretical framework was not stated	Lecturers, Video	None stated	High school	The HIV/AIDS educational intervention consisted of two sections, namely a 30-minute lecture and a 15-minute promotional video, both of which focused on HIV/AIDS biology, epidemic situation in China, and all over the world, transmission and non-transmission modes, high-risk behaviours, preventative measures, and self-protect skills. Medical graduates taught classes
Espada, M Orgilés Morales Ballester & Huedo-Medina, 2012	Effectiveness of A School HIV/AIDS Prevention Program for	HIV/AIDS content was integrated into compulsory health education module. The curricula were informed by Social	Group games, role play, discussion groups	None	High school	The COMPAS intervention consists of five 1-hour sessions that include components shown to be effective in preventing HIV in young people. The sessions took place over 5 weeks during school hours in groups

Spain	Spanish Adolescents	Learning Theory (Bandura, 1977) and the Information-Motivation-Behavioural model (IMB) (Fisher & Fisher, 1992)				comprising 15–20 students. The session specifically focused on AIDS and health, making decisions, keeping your decisions, improving your communication concerning sex
Kaufman, C.E. Whitesell, N. R and Mitchell, C. M. USA	Effectiveness of Circle of Life, an HIV-Preventative Intervention for American Indian Middle School Youths: A Group Randomized Trial in a Northern Plains Tribe	This was classroom-based intervention mapped onto compulsory health education curriculum. The curricula were informed by Social Cognitive Theory, Theory of Reasoned Action, the Theory of Planned Behaviour	Stories, narration games, videos	None	High school	The curriculum teaches skills such as goal setting, decision making, and standing up to peer pressure. Prevention topics such as how diseases are spread, health effects of HIV, AIDS, hepatitis and other STIs, and pregnancy prevention

D'Eon, M., Proctor, P., Cassidy, J., McKee, N. and Trinder, K., 2010 University of Saskatchewan	Evaluation of an Inter-professional Problem-based Learning Module on Care of Persons Living with HIV/AIDS	Stand-alone module developed on rehabilitation framework	Problem-based learning	Not stated	undergraduate	Not mentioned
Kohi, T.W., Portillo, C.J., Safe, J., Okonsky, J., Nilsson, A.C. and Holzemer, W.L.	The Tanzania HIV/AIDS Nursing Education (THANE) Preservice Curriculum	Integrated across nursing curricula in Tanzania nursing schools and the syllabus was centred on community-based, family-centred care approach	Didactic lectures, Case-based learning, participatory teaching, role plays, videos, reference articles, guest speakers, internships, clinical site visits	Not mentioned	Under-graduate	The resulting curriculum included 12 modules that provided an overview of the many issues related to HIV from the nursing care perspective: overview of HIV; HIV prevention; counselling and testing; stigma and discrimination; care and treatment for adults, adolescents, infants, and children; symptom management; perinatal prevention of infection; issues related

Muhimbili University, Tanzania						to care in hospitals, homes, and communities; and life skills.
Oswalt, S.B., Wagner, L.M., Eastman-Mueller, H.P. and Nevers, J.M., 2015. USA colleges and Universities	Pedagogy and content in sexuality education courses in US colleges and universities.-	Integrated into several existing modules and theoretical framework was not mentioned.-	In-class movies, videos, PowerPoint, presentations, guest lectures, small group discussions, safer sex textbook, case studies, role plays, critical feedback, panel, discussions, debates, online discussions, break-out sessions, podcasting/video-casting	test/quizzes, Student discussion, student feedback, individual projects, reaction papers, student evaluations, group projects, presentation journaling, debates, service learning	Undergraduate and postgraduate	Human development, Relationships, personal skills, sexual behaviours sexual health(HIV/AIDS), society and culture
International University of Management 2019, Namibia	Certificate, Higher Certificate, Diploma, Bachelor,	HIV/AIDS focused qualifications	Not mentioned	Continuous assessment 50% Formal Examinations 50%	Post-graduate /Under-graduate	Essentials of HIV/AIDS Science, Project Management for HIV/AIDS Management, HIV and AIDS studies and Ethics of HIV and AIDS management

	Master in HIV/AIDS Management					
University of Stellenbosch, 2019,	Master in HIV/AIDS Management Postgraduate in HIV/AIDS Management	HIV/AIDS focused qualifications	Online teaching using Moodle Interactive satellite broadcasts Analyses of case studies Projects that enable students to apply the knowledge, skills and attitudes learned Compulsory one-week workshop in Stellenbosch	Continuous assessment Formal Examinations	Post-graduate /Under-graduate	The problem of HIV/AIDS, Socio-cultural aspects of HIV/AIDS, its policy and advocacy, Management in the era of HIV/AIDS. Prevention and care for people living with HIV/AIDS. Research, monitoring and evaluating of HIV/AIDS programmes
University of South Africa,2019	Master of Arts in Social and Behavioural Studies (HIV-	HIV/AIDS focused qualifications	Distance learning	Dissertation, assignment and test	Post-graduate	Research focused on HIV/AIDS Social and Behavioural aspects of HIV/AIDS.

	AIDS) (Full Dissertation) Bachelor of Social and Behavioural Studies (HIV/AIDS)					Wellbeing in the HIV/AIDS and Social care
University of KwaZulu-Natal	Masters of Medical Science in Clinical HIV/AIDS management, Postgraduate diploma in Clinical management of HIV/AIDS	HIV/AIDS focused qualifications	Not mentioned	Not mentioned	Post-graduate	Not mentioned

University of Fort Hare,2019	Post-graduate Diploma in Clinical HIV/AIDS Management	HIV/AIDS focused qualifications	Formative Assessment Portfolio of evidence (primary tool) Completion of clinical logbooks Case development and presentation Tutorial attendance (tutorials are compulsory) Oral assessment for students with special needs. Block evaluation by students. Completion of assignments and class activities.	Lectures Demonstration Practicals	Post-graduate	Epidemiology and natural history of HIV, 3 credits, Clinical assessment and management of HIV infected adults and children, 10 credits., Infection control, two credits, Basic clinical assessment, diagnosis, treatment and care of HIV/AIDS and other opportunistic conditions, 35 credits, Initiating Antiretroviral Treatment and Chronic Management of HIV, 10 credits, Dermatological manifestations of HIV, 2 credits. Pharmacy Dispensing Course

			Final three-hour written examination. Practical examination.			
University of Ghana, 2019	Master of Arts/Master of Philosophy In HIV/AIDS Management	HIV/AIDS focused qualifications	Course work, dissertation and seminar presentation	Online Distance learning	Post-graduate	Natural History and Biology of HIV/AIDS, Impact of HIV/AIDS on development, methodology of Educational Research, HIV/AIDS Policy and Advocacy, Prevention and Care for Persons Living with HIV/AIDS, Socio-cultural Aspects of HIV/AIDS, Seminar Presentation Special Topic (Youth and HIV/AIDS), Special Topic (Voluntary Confidential Testing (VCT) and Disclosure), Therapeutic Management of HIV/AIDS, Management of HIV/AIDS, Community Mobilisation and HIV/AIDS, Ethical Issues in the Management of HIV/AIDS, Planning, Monitoring and Evaluation of HIV/AIDS

University of West Indies,2019	Diploma programme in the management of HIV infection	HIV/AIDS-focused qualifications	Test Exams Assignments Practicals	Online distance learning	Post-graduate	Research Methods and Design, HIV Epidemiology and Pathogenesis, Laboratory Techniques for Diagnosis of HIV, General Management of HIV/AIDS HIV Co-Infection and Other Related Issues, HIV Health Systems Sexual and Reproductive Health
University of Zambia,2019	Master of Science in HIV medicine	HIV/AIDS-focused qualifications	Not mentioned	Not mentioned	Post-graduate	Not mentioned
University of Washington, 2019 USA	Graduate certificate in HIV and STI	HIV/AIDS-focused qualifications	Not mentioned	Not mentioned	postgraduate	Principles of HIV & STI Research, Responsible Conduct of Research: Global and Local. Principles of HIV & STI Research. A Multidisciplinary Approach Clinical Management of HIV, Prevention Research Methods for HIV and STI Advanced HIV Infection

University of Barcelona, 2019Spain	Master of Pathogenesis and Treatment of AIDS	HIV/AIDS-focused qualifications	Assignments Presentations Thesis Exams	Lecture Practicals Work placement Mobility exchange	Post-gradate	Antiretroviral Treatment, Development of Therapeutic and Preventative HIV Vaccine HIV-Related Viruses, HIV Research: Innovation and Project Management in a Responsible Research Environment
Maseno University,2019 Kenya	Diploma in HIV & AIDS Management	HIV/AIDS-focused qualifications	Assignments Presentations Exams	Lecture Online distance education	Post-graduate	Not mentioned
Jomo Kenyata University	Diploma in HIV/AIDS Management	HIV/AIDS-focused qualifications	Assignments Presentations Exams	Lecture Online distance education	Post-graduate	Introduction to HIV/AIDS Clinical Manifestations of HIV/AIDS Prevention and Control of HIV/AIDS
University of Sydney	HIV, STIs and Sexual Health	HIV/AIDS-focused qualifications	Exams Assignments Thesis projects	Lecturers Practicum	Post-graduate	Introduction - HIV, STIs and Sexual Health, Public Health: HIV, STIs and sexual health, HIV/STI Program Delivery Global Perspectives of HIV/AIDS

Theoretical considerations

The review shows that three theories reinforce HIV/AIDS education programmes, namely behavioural theories, learning theory and theories of community influence and power. A specific theory did not inform the majority (34) of the described programmes. However, most (15) of the programmes were guided by behavioural theories such as social learning theory, health belief model, AIDS risk-reduction model, diffusion of innovation model, stages of change model, theory of planned behaviour, ecological systems theory, biopsychosocial theory, theory of health behaviour, protection motivation theory, self-efficacy theory, information motivation behaviour. Only one HIV/AIDS education programme was guided by learning and behavioural theories–transformational learning theory and the Health Belief Model (Smit et al., 2016). Similarly, only one study was informed by a combination of empowerment and behavioural theories (Harrison et al., 2016). Cognitive behavioural theories such as social learning theory, the theory of planned behaviour, Health Belief Model and information-motivation-behavioural (IMB) model were the most used to inform the educational interventions in this review.

The IMB model suggests that people are more likely to protect themselves from HIV if they are well informed about sexual risks, highly motivated to protect themselves from STIs and possess the skills to practise safer sex (Fisher et al., 2006). The social learning theory posits that people acquire and maintain behavioural patterns through constant interaction between three factors: environment, personal factors and behaviour (Bandura, 1989). In this case, social learning theory assumes that the skills to engage in safer sex and the ability to use these are required to achieve behavioural change; information is needed but is not enough to change behaviour.

The Theory of Planned Behaviour suggests that specific behavioural intentions, which include a combination of one's attitudes towards performing the behaviour, his/her subjective norms about the behaviour, and his/her control beliefs are the determinants of behaviours (Ajzen, 1985). A valuable feature of the theory is that it directs attention to why people hold certain attitudes, subjective norms and perceived behavioural control. By targeting behavioural beliefs about sexual behaviour, interventions can change attitudes towards those behaviours (Ajzen, 1985). The health belief model is based on the concept that:

> A *person will take a health-related action if that person believes s/he is susceptible to the condition (perceived susceptibility), that the condition has serious consequences (perceived severity), that taking action would reduce their susceptibility to the condition or its severity (perceived benefits), and that these benefits outweigh the cost of taking action (perceived barriers). Action is taken*

> *more easily if the person is exposed to factors that prompt action (cues to action) and is confident in her/his ability to successfully perform an action (self-efficacy)* (Rosenstock et al., 1994)

According to Kirby, Laris and Rollers (2005), 'having a theoretical framework that guides programme design and evaluation is considered essential for successful programmes'. It is argued that theory-based interventions are effective in reducing HIV risk behaviours (Henny et al., 2012). The existing literature indicates that the Health Belief Model, social learning theory, the theory of planned behaviour, and (IMB) skills model are the most commonly used social cognitive theories to guide HIV-related risk-reduction efforts worldwide (Lin et al., 2010). It is argued that behavioural theories aid to understand risk and safe sexual behaviours and hence assist in those underlying principles about how people change their behaviour (Michielsen et al., 2012). Pillay and Wood (2016) argue that 'in spite of the fact that these theories refer to behavioural change, which may not be the direct aim of HIV education within a specific curriculum, they offer a way of thinking about HIV/AIDS that should influence what curriculum developers think necessary to include, and what HIV/AIDS education actually comprises'.

Current HIV/AIDS integration approaches

HIV/AIDS content in higher education is offered in four main ways: A stand-alone module, adding it into existing modules, HIV/AIDS focused qualifications and research. Eight studies described education intervention which fits the HIV stand-alone module (AAU, 2010; Bangel & Evarts, 2019; Centre for Sexualities, AIDS and Gender 2016; D'Eon et al., 2010; Ferrand, Kranzer & Johnston, 2019; HEAIDS, 2010; Pillay & Wood, 2016; Smit et al., 2016). Stand-alone modules refer to those modules that focus primarily on HIV/AIDS and may be part of the curriculum of a disciplinary area and hence that target group. For instance, all schools of education in South Africa offers a compulsory stand-alone module to all pre-service teachers and the focus on transmitting basic information about HIV/AIDS and ways to prevent HIV infection (HEAIDS 2010).

Similarly, a stand-alone compulsory module targeting pre-service teacher's education was offered at the University of Ghana (AAU, 2010). Most compulsory stand-alone modules have been implemented in the health and medical science field. At the University of Dar es Salam, Tanzania, North-West University, South Africa and the University of Saskatchewan in Canada, all first- and second-year health science students are offered mandatory stand-alone HIV/AIDS module (AAU, 2010; Smit et al., 2016, D'Eon et al., 2010). In the United Kingdom at the University of London, an elective stand-alone module for all future health professionals is offered by the Department of Tropical Medicine at master's level. (Ferrand et al., 2019).

Another independent module is offered by Gillings School of Public Health in the USA with a compulsory module that targets health leaders in the Master of Public Health programme (Bangel & Evarts, 2019).

The other types of stand-alone modules are HIV-focused qualifications. A significant number of programmes in HIV, AIDS, STI and sexual health are taught in higher education, and most of them lead to certification level, diploma, bachelors and postgraduate qualifications. In this review, about four programmes were certificates, 12 diplomas, one Bachelor, one Honours and nine masters on HIV/AIDS. For instance, in Namibia, the International University of Management offers certificates, diploma, bachelors and master's programmes in HIV/AIDS Management (IUM, 2019). Similarly, in South Africa, the University of Cape Town offers a Master of Philosophy in HIV/AIDS and Society (HIV-AIDS) (University of Cape Town, 2019). The University of South Africa also offers a Bachelor and master's degree focused on Social and Behavioural Studies (University of South Africa, 2019). At the University of Stellenbosch, the Africa Centre for HIV/AIDS Management offers two qualifications which are a master's degree in the Management of HIV/AIDS (MPhil) and Postgraduate Diploma in the Management of HIV/AIDS (University of Stellenbosch, 2019).

The University of KwaZulu-Natal Department of Medicine also offers a Masters of Medical Science in Clinical HIV/AIDS Management, and a Postgraduate Diploma in Clinical management of HIV/AIDS (University of KwaZulu-Natal, 2019) and the University of Fort Hare offers in-service Postgraduate Diploma in Clinical Management HIV/AIDS to nurses and allied health professionals (University of Fort Hare, 2019). The University of Ghana offers a two-year Master of Arts/Master of Philosophy in HIV/AIDS Management which includes course work, dissertation and seminar presentation (University of Ghana). The University of the West Indies (UWI), St. Augustine campus in Trinidad and Tobago offers a one-year graduate diploma programme in the management of HIV infection (UWI, 2019). Also, at the University of Zambia, the school of medicine offers a Master of Science in HIV medicine taught through coursework (University of Zambia, 2019)

The University of Washington offers a graduate certificate in HIV and STIs which is a 15-credit programme with coursework and a capstone project (University of Washington, 2019). In Spain, at the University of Barcelona, the School of Nursing and Physiotherapy offers the master's degree in Pathogenesis and Treatment of AIDS (University of Barcelona, 2019). In Kenya, the Diploma in HIV and AIDS management is available at Maseno University (Maseno University, 2019) and Jomo Kenyata University (Jomo Kenyata University, 2019). In India, at Indira Gandhi National Open University, a Post-Graduate Diploma in HIV Medicine is offered as a speciality to medical doctors (Indira Gandhi National Open University, 2019). In Australia,

the University of Sydney offers a Graduate certificate, diploma and Masters in HIV, STIs and Sexual Health (University of Sydney, 2019).

Stand-alone modules have merits and demerits. If the stand-alone strategy is used, it ensures that the HIV/AIDS topic becomes more prominent and legitimate. Also, it is a cost-effective system as there is no need for the training of more teachers because it is possible to recruit and train suitable teachers and will ensure evaluation of the HIV/AIDS content (Clarke, 2008). However, if the stand-alone is used, a space for this additional module needs to be created in the already overloaded higher education curriculum. Furthermore, it takes a long time to pass through university approval procedures, and students might fail to see the relevance of this module. Previous research suggests stand-alone modules are difficult to implement because it is difficult to find teachers with this speciality, and it closes opportunities for other teachers likely to be trained in this field (Clarke, 2008). The literature suggests that there is a need to adopt a holistic view of HIV/ AIDS in the curriculum; therefore, a stand-alone module, if used, needs to be supplemented by some form of curricular infusion at the programme level (Wood, 2011).

Another way of teaching HIV/AIDS education in higher education is through integrating it into existing carrier modules. This seems the most frequently used system of delivering HIV/AIDS education in the tertiary education sector. It should be noted that this has different names such as brief reference, added on, infused, integrated into carrier modules, integration across the curriculum hybrid model of bolted-on and infusion (HEAIDS, 2010a). The findings from this review revealed that 31 out of 38 reported that HIV/AIDS was integrated into existing modules. Integration into a ‘carrier’ courses is where HIV/AIDS are relevant in certain courses in the health and social sciences, education, or that deal with ethics or human rights. For instance, in South Africa, many universities indicated that HIV/AIDS is taught predominantly in health, medical sciences, social sciences and life sciences where it is easy to integrate it (Centre for Sexualities AIDS, Gender and HIV, 2016; Coffman et al., 2011; HEAIDS, 2010; University of Free State, 2019; HAICU, 2014; HEAIDS, 2015; Harrison et al., 2016, Jemmott et al., 2010; Pillay & Wood, 2016).

In the UK, at Duke University, HIV/AIDS is integrated into the Master of Nursing programme (Duke University, 2019). Similarly, universities in North America indicate that HIV/AIDS education was delivered by integrating it into carrier subjects such as public health, medical sciences, psychology, sociology, biology, anthropology, social work, political science, health education (Bauler et al., 2018; D'Eon et al., 2010; Espada et al., 2012; Gustafson-Brown, 2019; Halkitis, Figueroa & Pérez, 2019; Marsiglia & al., 2013; Oswalt et al., 2015; Morisky & Rotheram-Borus (date); Cook, 2019; Feldman, 2019; Hindmarch, 2012; Sethi, 2019; Miller &

Strobos, 2014; Norton, 2017; Travers, 2017). This approach has some advantages and disadvantages. It is technically and administratively simpler and more feasible to accomplish (UNESCO, 2006). Also, it is clear where and when to include it and who is responsible for it, needs fewer specialised teachers and assessment is facilitated (Pillay & Wood, 2016). However, despite being simple, the integration of HIV/AIDS into carrier modules means only that certain aspects of HIV/ AIDS can be included in the module, and other equally important aspects will be neglected (Clarke, 2008). In addition, the facilitator must decide what to drop to make time for HIV, may encounter resistance and may be ignored in comparison to the other learning outcomes of the module (Pillay & Wood, 2016).

Eight studies described education intervention which fits the infusion model (AAU, 2010; Bangel & Evarts, 2019; Centre for Sexualities, AIDS and Gender 2016; D'Eon et al., 2010; Ferrand, Kranzer & Johnston, 2019; HEAIDS, 2010; Pillay & Wood, 2016; Smit et al., 2016). According to Centre for Sexuality, Gender and AIDS (2016), infusion refers to how HIV/AIDS is integrated into and blended with a disciplinary subject matter in a way that is attuned to the intellectual and professional needs of the discipline and encourages learning about HIV/AIDS in the service of the primary discipline. The issues are assimilated into all modules without any specific mentioning of HIV/ AIDS in subject areas. In this approach, teachers do not develop a specific unit on HIV/AIDS but rather insert topics as they seem relevant and in a planned and focused way, in the classroom discussions and assignments (HEAIDS, 2010a).

This curriculum approach has advantages and disadvantages. According to the United Nations Educational, Scientific and Cultural Organization (2006), 'infusion in the entire curriculum is one of the favoured approaches because it does not require a revision of the structure of the curriculum or a reallocation of time between the different teachers'. Furthermore, it can cover a wide range of HIV aspects in different modules, and lectures complement each other with knowledge, skills, the sharing of responsibility promotes collaboration and students see the relevance of HIV from different perspectives (Pillay &Wood, 2016). However, the curricula approach of infusing HIV/AIDS education throughout the curriculum, across a wide range of existing subjects has generally led to fragmentation, lack of cohesion, lack of visibility and the increased likelihood that no teacher feels responsible for teaching the part of the subject assigned to him/her. Furthermore, if the infusion into several modules model is utilised then a time-consuming, thorough analysis of the existing prescribed curriculum needs to be organised to avoid duplication of HIV/AIDS content (UNESCO, 2006).

Another way in which HIV/AIDS is taught is through research. In most universities, there are centres dedicated to HIV/AIDS research (HEAIDS, 2010a). National and international agencies externally fund these HIV/TB-related research centres. In the USA, the National

Institutes of Health (NIH), funds university-based centres to study HIV-related issues. These centres are dedicated to understanding and solving the complex problems the world faces as a result of HIV/AIDS. In South Africa, the South Africa Research Medical Council has nine HIV/TB Centres based at various universities and institutions, focusing on two of the country's leading health concerns: HIV and TB. In these university-based centres, honours, masters and doctorate students work on different research topics related to HIV/AIDS seeking solutions and focusing on HIV/AIDS-related issues (AAU, 2010).

Teaching and learning strategies

Teaching methods were discussed in 51 out of 52 studies. The review indicated that the studies used several teaching strategies being a mixture of didactic and interactive teaching strategies. Most (51) studies reported use of a didactic classroom-based approach such as lectures, guest speakers, research projects, prescribed readings, class presentations, class discussions, book discussion, workshop, and seminars in the classroom. Furthermore, some studies utilise a combination of experiential and didactic methods of teaching. Only three studies reported using case-based learning and problem-based learning (Bauler et al., 2018; D'Eon et al., 2010; Smit et al., 2016). Modern interactive teaching methods such as drama, song, debates, videos, storytelling, poetry, quiz and role modelling, metaphors, drawings, debate simulations, journaling, games, brainstorming, competition, demonstration were mentioned in 15 studies. There was little emphasis on computer-based or online teaching with e-learning only mentioned in three studies (Bangel & Evarts, 2019; Ferrand et al., 2019; Smit et al., 2016). Experiential learning such as internships, field visits, taking HIV tests, volunteering, service-learning, observations were discussed in seven studies (AAU, 2010; HAICU, 2014; Halkitis et al.,(date); HEAIDS, 2010a; Marsiglia et al., 2013; Pillay & Wood, 2016; Van Laren, 2014).

The argument is that the current teaching of HIV/AIDS content using classroom-based strategies results in ineffective learning (Pillay & Wood, 2016). If using classroom-based didactic strategies, these should combine with practical experience which exposes students to engaging with the pandemic in their communities. Pillay & Wood (2016) encourage the faculty to explore the use of online strategies for HIV/AIDS education. Although in this study, lecture-based educational methods and group discussion are mostly used to teach HIV/AIDS and criticised by educational scholars. For example, Cooper, Bottomley and Gordon (2004) argue that although lecture-focused methods of education using formal lectures and case studies can be praised for their academic rigour, they do not encourage student learning through experience (Cooper et al., 2004). In addition, Pollock, Hamann, and Wilson (2011) suggest that group discussions as a teaching method require a skilled facilitator to lead the

learning experience. Senderowitz and Kirby (2006) recommend that the HIV/AIDS education programme uses a combination of strategies, such as short lectures, class discussions, small group work, video presentations, stories, live skits, role plays, risk simulations, competitive games, forced choice activities, surveys of attitudes and intentions with anonymous presentation of results and problem-solving (Senderowitz & Kirby, 2006). Interactive and participatory methods that encourage participation and discussion among teachers and students are central to the teaching and learning of HIV/AIDS among young people (HEAIDS, 2010). HEAIDS (2010b) recommends online approaches, workshop approaches and innovative and participatory approaches to HIV/AIDS teaching and learning. This means that to ensure HIV/AIDS education is delivered effectively, teacher- and student-centred learning strategies should be balanced. In other words, when teaching HIV/AIDS education, there should be a mix of didactic and experiential approaches (Senderowitz & Kirby, 2006; Smit et al., 2016).

Successful integration calls for innovative and participatory approaches to teaching and learning and enough knowledge about HIV/AIDS. It calls on HEIs to conduct faculty development workshops to train teachers to use interactive and participatory teaching methodologies to impart this knowledge to students (Wood & Wilmot, 2012). HEAIDS (2010b) suggests that HIV/AIDS should be delivered using cooperative learning and problem-based learning. Cooperative Learning, sometimes called small-group learning, is an instructional strategy in which small groups of students work together on a shared task (HEAIDS, 2010a). Problem-based learning refers to teaching skills and content through the analysis of complex and interesting real-world problems, is an approach that enables faculty to easily incorporate HIV-related issues into their course. Participatory approaches activate students' existing knowledge are valuable for opening dialogue (Freire, 1972).

Assessment strategies

The study suggests the use of summative and formative assessment approaches in this review. Sixteen studies did not report assessment methods used to evaluate the content (Atwood et al., 2012; Burnett & al., 2011; Coffman et al., 2011; D'Eon et al., 2010; Espada et al., 2012; Harrison et al., 2016; University of Zambia, 2019'; University of Washington, 2019; University of KwaZulu-Natal, 2019; IUM, 2019; Duke University, 2019; University of FreeState, 2019; Michielsen et al., 2012a; Enah et al., 2010; Gao et al., 2012; Kaufman et al., 2014; Kohi & al., 2010). However, 36 studies reported evaluation methods used to evaluate HIV/AIDS content with written examination being the most common method. Reflective journals, observations, assignments, tests, research, participation, quizzes, debate papers, book discussion, team assignments, peer evaluations, reading responses and essays were some

of the more common assessment methods. The result of this study affirms that traditional methods of assessment are still used. According to Uys and Gwele (2005), 'the purpose of the assessment is to recognise areas and skill levels and provide feedback on learning.' In the context of tertiary education, traditional evaluation methods are the norm as reflected in the use of written examinations, testing and assignments. Traditional examination-based evaluation, while praised for setting standards across a student group, is criticised for not being effective in measuring individual learning (Pollock et al., 2011). Innovative methods of assessment that encourage reflection on learning experience are required (Uys & Gwele, 2004).

Summative and formative are the common approaches used to assess students in higher education (Bloom, 1971). Summative assessment is usually employed at the end of the semester or learning experience, for instance, in an exam. In this case, students are tested as to whether they have grasped the skills according to defined standards. The main purpose of formative evaluation is to give feedback in order to improve the learning experience. According to Pillay & Wood(2016), the assessment approaches are supposed to be structured to stimulate the learning experience.

Contents of modules having HIV/AIDS component

The majority (51) of the programmes concerning HIV education focused on biomedical aspects of HIV/AIDS such as basic facts, epidemiology, prevention, stigma, social aspects and treatment. The content taught in these educational programmes is summarised in Table 2.2., HIV/AIDS education is best approached from a critical paradigm that recognises the need to challenge and change social norms, human behaviour, laws, policies and practices in societies impacted by the pandemic (Wood, 2011; Kelly, 2003). This approach assists in transforming curricula at the higher education level to make them more responsive to South African societal needs. From a holistic perspective, HIV/AIDS education can be integrated into every discipline, but this needs to be done at programme level when curricula are designed to avoid repetition and omission of knowledge and skills (Pillay & Wood, 2016). Furthermore, content should be relevant to both the discipline and the context in which the students live and work. Professionals interacting with the public must be able to deal with constraints imposed by socio-cultural norms around HIV/ AIDS and related topics (HEAIDS, 2010a).

Level of education at which modules having HIV/AIDS content are taught

HIV/AIDS content was taught in undergraduate programmes (14),17 were delivered in postgraduate programmes and ten were in high schools. About 11 articles described HIV/AIDS taught at undergraduate and postgraduate level. The level of education is related to the

academic level. Universities must decide whether they will integrate HIV/AIDS in bachelor or postgraduate degree programs, or both (Pillay & Wood, 2016). The objective is not the same for each level. Moodley maintains that the minimum norms and standards for curriculum integration should include a) an undergraduate course equivalent to four credits spread out over an entire degree, and b) a postgraduate course equivalent to four credits integrated into an existing degree, including a research project (Moodley, in press).

Conclusion

In conclusion, few HEIs integrate HIV/AIDS content into curricula. Most HIV/AIDS education programmes are informed by theories of behavioural change and taught at postgraduate and undergraduate levels. Integration of HIV/AIDS content in higher education utilises four main methods: stand-alone modules, adding to existing carrier modules, infused into several modules and HIV/AIDS focused research programmes. A combination of teaching strategies included didactic and interactive teaching strategies teach the HIV/AIDS content. The evaluation methods suggest the use of traditional methods of assessment approaches. Most programmes teach basic facts about HIV origin, transmission, prevention, treatment and care. Although there is a need to significantly increase the amount of HIV/AIDS content integrated into the curricula, the evidence gathered from this systematic review may contribute to the development of the framework that may guide teachers to integrate HIV/AIDS content into curricula in the HEIs. The next chapter presents the analysis of the University of Venda curricula to gauge the extent of the HIV/AIDS content into the curriculum.

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CHAPTER 3

ANALYSIS OF HIV/AIDS INTEGRATION IN TEACHING AND LEARNING AT A SELECTED UNIVERSITY IN SOUTH AFRICA

Submitted as: Murwira, T.S., Khoza L.B., Maputle, S.M, Mabunda, J.T., Mpeta, M. Analysis of HIV/AIDS Integration in Teaching and Learning at a Selected University in South Africa.

ABSTRACT

Introduction: Despite HIV/AIDS policies, which create space for formal teaching about the pandemic, there is evidence that to date, HIV/AIDS is not fully integrated into all the disciplines in Higher Education Institutions(HEIs). Also, there is proof that university students in South Africa are not well prepared to be HIV-competent graduates who can live and work in a society ravaged by AIDS.

Objective: The content analysis aimed to analyse the extent of HIV/AIDS integration into the curricula in various departments at a selected university in the Limpopo Province, South Africa.

Methodology: A quantitative content analysis methodology was conducted to interpret the collected 68 module descriptors for different courses which represent the sample of the study.

Results: Out of 1,979 modules examined, only 68 modules had HIV/AIDS content integrated into the curricula. The findings indicated that HIV/AIDS content was mainly integrated into existing modules in Health Sciences disciplines. Where HIV/AIDS-related content is taught in the curriculum, it is largely discretionary, unsystematic and not incorporated into the overarching structure. This suggests that it was not integrated systematically into curricula and is taught on an ad-hoc basis.

Conclusions: There was limited integration of HIV/AIDS content into the curricula. The incorporation of discipline-specific HIV/AIDS content may help students to adopt safe sexual behaviour. The information gathered seeks to assist in crafting a framework to support academics in facilitating changes in educational curricula so that they insert HIV/AIDS-related content.

Keywords: education, curricula, HIV/AIDS, higher education integration, innovation, module syllabus, undergraduate.

INTRODUCTION

HIV/AIDS content is slowly integrated into higher education curricula. However, one-third of new HIV infections still occur among young people (Association of African Universities(AAU, 2010; Higher Education Programme for HIV/AIDS (HEAIDS), 2010a; HEAIDS, 2010d). These include students attending university who are more vulnerable to HIV infection compared to the general population (HEAIDS, 2010c). Higher Education Institutions face the task of ensuring that their students receive HIV/AIDS education (Kelly, 2003; Kelly & Bain, 2005). In South Africa, these HEIs decided to integrate HIV/AIDS into the curriculum to produce HIV/AIDS competent graduates (HEAIDS, 2010a). In a bid to ensure that students in tertiary sector are appropriately prepared to live and work in a society ravaged by HIV/AIDS, the higher educator sector was singled out as having a primary role to play in responding to the impact of this disease (Kelly, 2003). For instance, the core business of universities such as teaching, research and engagement, were seen as the highest contributors towards addressing the epidemic (HEAIDS, 2010a). The assumption is that HIV education is pivotal in ensuring that students have the necessary knowledge and skills to adopt protective behaviours against HIV, other STIs and unintended pregnancies (UNAIDS, 2011).

Despite HIV/AIDS policies creating space for formal teaching about the pandemic, at present, evidence confirms that HIV/AIDS is not fully integrated into all the disciplines (Pillay & Wood, 2016). In addition, the indications are that university students in South Africa are not well prepared to be HIV-competent graduates living and working in a society ravaged by AIDS (HEAIDS, 2010d). The same report concluded that graduates strongly indicated that they need to be equipped to deal with the personal, human side of HIV/AIDS, particularly in the case of disclosure and associated stigma (HEAIDS, 2010d).

The rationale for integrating HIV/AIDS into the higher education curriculum is undeniable in South Africa and worldwide. The underlying argument in supporting this step rests on the protective effect of education. There are three main arguments to support this view. First, UNAIDS (2011) argues that education enables people to make healthy choices and is seen as 'social vaccine' against disease. Furthermore, the benefits of attaining education are obvious concerning preventing new HIV infections, promoting access to treatment and combating stigma and discrimination. This implies that education, even in the absence of HIV-specific education, offers an important measure of protection against HIV. Also, education is central to developing the values, attitudes and skills required for informed choices and adopting healthy behaviours, as well as to learning to live with HIV/AIDS in affected communities and societies. More specifically, health literacy and life skills are essential for accessing and using HIV prevention, treatment methods and services (UNAIDS, 2011).

The Association of Commonwealth Universities (ACU) (2001) underscores the need for HIV/AIDS education in higher education curricula by saying:

The role of universities as opinion formers within society, their pivotal position in the creation and dissemination of knowledge and the fostering of innovation, and their contribution to their nation's human resource capacity marks them out as an essential site for the establishment of national, regional and global responses to HIV/AIDS (ACU, 2001).

HEAIDS is prominent in the literature supporting the integration of HIV/AIDS into university curricula. Their argument hinges on the fact that since higher education assumes a unique position to shape the debate and act and generate policy concerning HIV/AIDS. In the absence of a cure, education is the best social response against the epidemic. It is argued that HEIs have an ethical and intellectual responsibility to produce graduates can deal with HIV/AIDS in their individual and professional lives, and find creative responses to this epidemic (HEAIDS, 2010a; HEAIDS, 2010d; HEAIDS, 2012).

Likewise, Crewe and Nzioka (2007) argue that HEIs should be at the forefront of fighting against the pandemic because they host sexually active young people mostly in the 18-24-year-old cohort at risk of contracting HIV, more than any other population. Given that this is the age group for many university students, it makes sense for awareness, education and intervention to take place at tertiary institutions. Another reason which necessitates the integration of HIV/AIDS into curricula is the fact that students in HEIs are the future leaders in government and private sector in terms of any country`s development. Therefore, it is imperative to target this age group concerning HIV/AIDS (HEAIDS, 2010a).

Although integration of HIV/AIDS into the curriculum has been high on academic agendas in many universities internationally, it does not guarantee an automatic curriculum change. Pillay & Woods (2016) lament the lack of published literature on best practices in high education on how HIV education is embedded in curricula. However, there are a few examples of how HEIs implement HIV/AIDS education. According to surveys conducted in South Africa, the approach to this subject depends on the institution and indicate that it is not fully integrated into the curriculum. Another study in Africa, including South Africa, echoed this sentiment which established that HEIs in Africa are very slow to devise curricular responses. A study commissioned by the AAU in 35 universities in the Sub-Saharan region found that HIV/AIDS was not part of the official curriculum of most universities, but teachers invented approaches to disseminate the knowledge to students. Most teachers used interactive teaching methods such as group discussions and debates to teach HIV/AIDS knowledge to students (AAU, 2010).

Several studies in South Africa assessed institutional responses to HIV/AIDS, including curricular responses. The HEAIDS audit at HEIs in South Africa (2005) demonstrated that 61% infused HIV/AIDS into their curriculum at undergraduate level and 53% used service learning, 40% employed subject-specific infusion of HIV/AIDS material, 61% offered core courses, 38% foundational courses, 39% elective courses and 26% short courses (HEAIDS, 2005). A survey in 2010 that evaluated the extent of HIV/AIDS integration identified that curricula did not fully integrate HIV/AIDS (HEAIDS, 2010a).

Research Problem

According to HEAIDS, there is little information available concerning **how** HEIs in South Africa integrate HIV/AIDS into the curriculum (HEAIDS, 2010a). Currently, there is a scant body of knowledge on the integration of HIV/AIDS in the curricula of tertiary education (Pillay & Wood, 2016). The bulk of HIV initiatives in higher education are *extra-curricular* rather than *curricular*. Abebe (2004) observed that staff involvement, particularly among the academic staff, in HIV/AIDS response initiatives is almost invisible. Student-based activities are most dominant, and staff involvement is typically the exception, hence undermining effectiveness and sustainability of intervention programmes.

Research on HIV/AIDS education at UNIVEN was conducted a long time ago (HEAIDS, 2005). Little is known about what is taught in modules and how. Information provided by previous surveys regarding the extent of HIV/AIDS is based on academic perceptions. The current study seeks to provide an in-depth analysis of how HIV/AIDS is integrated into curricula. Therefore, the study aimed to analyse the extent of HIV integration in the curricula in various schools at UNIVEN. Specifically, the study addressed the following research questions: 1) What are the modules which have HIV/AIDS content?, 2)What are the modules with HIV/AIDS content within departments across Schools,3) What are the teaching and learning strategies that are to teach HIV/AIDS content?, 4)Which assessment strategies used to assess HIV/AIDS content? 5) What is the outcome/objectives, competencies of the HIV/AIDS content?

METHODOLOGY

Study Setting

The University of Venda was founded in 1981 and is in the Vhembe district of the Limpopo Province, South Africa. In 2002, the Department of Higher Education and Training mandated the UNIVEN to become a comprehensive university focusing on professional and career-focused programmes. The University's academic configuration has eight schools and 59

departments offering a range of under- and postgraduate academic programmes in various subjects. The eight schools include Agricultural Sciences, Education, Environmental Sciences, Health Sciences, Human and Social sciences, Law, Management Sciences and Mathematical and Natural Sciences. It has about 15,704 students inclusive of postgraduates and undergraduates.

Furthermore, it has a staff capacity of 800 comprising of teaching staff, administrative, staff and support staff (UNIVEN, 2018). The University mission states that it 'aspires to be at the centre of tertiary education for rural and regional development in Southern Africa'. As such, 'it is anchored on the pillars of excellence in teaching, learning, research and community engagement, produces graduates imbued with knowledge, skills, and qualifications which are locally relevant and globally competitive' (UNIVEN, 2018). Table 3.1 below depicts the distribution of departments at UNIVEN.

Table 3.1: Distribution of departments in the schools

School	**Departments**
Agriculture Sciences,	**10**
Education,	**5**
Environmental Sciences,	**5**
Health Sciences,	**5**
Human & Social sciences	**8**
Law	**6**
Management Sciences	**9**
Mathematical & Natural Sciences	**9**

Study design and Methods

This study applied content analysis to examine the curricula of the modules offered in each of the 59 Departments in the eight schools at UNIVEN. The rationale for using this approach was to conduct an in-depth analysis of the extent of HIV/AIDS content integration into the various modules. The study targeted all available curriculum documents such as school modules descriptors, calendars, block books and course information on websites and course outlines and included all documents for academic programmes from undergraduate to postgraduate degrees at UNIVEN.

Sample and sampling procedure

Non-probability, purposive sampling was used to select the documents. Eight (8) calendars, one from each school were obtained from the school administration office to identify the modules/courses offered at UNIVEN. About 1,979 modules were analysed to determine whether they have HIV/AIDS content or not. Those without HIV/AIDS content were excluded from the study and 68 modules including HIV/AIDS descriptions were identified. There was an initial request for module descriptors via email, and a total of 10 module descriptors or course outlines were received. Due to the poor response, visits were made to the module facilitators to request module descriptors. In summary, a sample of 68 module descriptors or course outlines were obtained (3 Agriculture Sciences, 2 Environmental Sciences, 8 Education and 34 Health Sciences, 10 Human and Social Sciences, 7 Law, 2 Mathematical and Natural sciences and 2 Management Sciences).

Data collection instrument

A document review checklist or audit tool collected document data adapted from the previous university-based HIV/AIDS curriculum case studies in South Africa (AAU, 2010, Centre for Sexualities, Gender and AIDS, 2016; HEAIDS, 2010a; Myezwa, 2009; Rau, 2009). The information was extracted to inform the following categories/codes: name of the module, school/faculty, approaches used to integrate HIV/AIDS content, teaching and learning strategies, and purpose/content/topic, assessment strategy, credits/hours and the comment section.

Pre-Test

A pre-test assessed the validity and reliability of the checklist. This pre-test used module descriptors from selected schools. During the pre-test, the trained research assistants could practice how to record, collate and code the data from module descriptors. This allowed for further refinement of the audit tool to ensure validity. Furthermore, the audit tool was submitted to HIV/AIDS education experts for further refinement before actual data collection. Krippendorff (2018) suggests that the data collection process should be conducted by independent coders or judges well versed on the phenomenon under study to ensure the reliability of the data process. Therefore, module descriptors were analysed by trained researchers or readers who worked independently using the same procedure, and the researcher made a judgement in cases of disagreement between the two highly qualified researchers–both professional educators holding masters in curriculum studies. In addition, an instrument is considered reliable if it reproduces the same results and if it is tested more than once under the same conditions. Reliability was ensured through conducting the pre-test;

the same results obtained during pre-test data collection were also achieved during the data collection by the two independent researchers who analysed the documents.

Data collection procedure

Module descriptors were coded by two different researchers who were working independently. The module descriptors were coded and collated based on the audit tool on separate tables and analysed based on the name of the module, school/faculty, approaches used to integrate HIV/AIDS content, teaching and learning strategies, and purpose/content/topic, assessment strategy, credits/hours. Once the coding was complete, the two researchers collated the results and submitted them to the researcher. The submitted results were checked for discrepancies before analysis.

Data analysis

Data was coded, entered into an excel spreadsheet and analysed using the Statistical Package for the Social Sciences (SPSS) version 24. The descriptive analysis presented frequencies which were used to calculate the percentages for each variable. The analysis was based on a sample of 68 modules collected, reviewed and examined to gauge the extent of HIV/AIDS content inclusion into the curricula.

Ethical Approval

The study was reviewed, and full ethical clearance granted by the UNIVEN Research and Ethics Committee (SHS/17/PH/08/1506). After that, written permission was sought from teachers, head of departments and deans before collection of the data. The study focused on the analysis of curriculum documents, and no harm was inflicted on any participant. Regarding informed consent, the participants were informed about objectives of the study, the rights afforded to them, what is expected of them and the amount of time their participation would entail before they sign the consent forms. The focus and details about the research were clearly explained to the teachers, heads of department and deans. Confidentiality of the data was maintained, and the participants such as teachers, head of departments assured that personal information would not be divulged in articles for this research.

Results

Modules with HIV/AIDS Content across in each School

The initial focus of this analysis determined the complete modules with HIV/AIDS within the curriculum of each department achieved by counting all the modules with HIV/AIDS content within schools. The results are presented in Table 3.2.

Table 3.2: Modules with HIV/AIDS Content across all Schools at UNIVEN

School/Faculty Name	Modules(n)	Modules with HIV/AIDS content	%
Agriculture Sciences	306	3	4
Environmental Sciences	175	2	3
Education	264	8	12
Health Sciences	357	34	50
Human and Social Sciences	231	10	15.
Law	75	7	10
Maths and Natural Science	365	2	3
Management	206	2	3
TOTAL	**1979**	**68**	**100**

The results show that the School of Health Sciences led with 34 modules (50%) with HIV/AIDS content followed by Human and social sciences with ten modules (15%). School of education was in third position with eight modules(12%). The School of Law was in the fourth position with seven modules (10%). School of Agriculture claimed the fourth position with three modules (4%) followed by Schools of Environmental Science and Management Science which shared the fifth spot with two modules (3%) each.

Modules with HIV/AIDS content in each department across schools

The curriculum analysis also sought to determine modules with HIV/AIDS within the department across all schools. This was achieved by totalling all the modules with HIV/AIDS content within the departments, as shown in Table 3.3. In the School of Agriculture, only three departments had course/modules with HIV/AIDS content. The Department of Plant Production, Consumer Science, and Institute of Rural Development had one module (33.3%) each with HIV/AIDS content. Against all expectations, the Department of Forestry, Horticulture, Soil Science, Animal Science, Food Science and Technology, Agricultural Economics and Agricultural and Rural Engineering did not have any modules with HIV/AIDS content. In the School of Health Sciences, all the departments had modules with HIV/AIDS

content. The Department of Public Health was the front runner offering 14 modules (41%) with HIV/AIDS-related content, followed by the Department of Advanced Nursing Science with seven (20.5%) modules. The Department of Nutrition Science came third with seven modules (20.5%) and Department of Psychology five modules (14.7%) and Centre for Biokinetics, Recreation and Sport Science performed poorly with one module (2.9%).

The results also reflected that only two departments in the School of Management Sciences offer modules with HIV/AIDS content. The Department of Business Management and Tourism and Hospitality Management had each one module (50%) with HIV/AIDS content, respectively. In the School of Law, the Department of Criminal justice offered three modules (43%) with HIV/AIDS content, followed by the Department of Public Law with two modules (28.5%). The Department of Criminal and Procedure Law and Mercantile Law have one module (14.2%) each respectively. In the School of Education, all departments had modules with HIV/AIDS content. The Department of Foundations of Education offered four modules (50%) with HIV/AIDS, followed by Curriculum Studies, Early Childhood, Education Management and Professional Studies with each offering one module (12.5%) respectively.

In the school of Mathematics and Natural Sciences, only the department of Microbiology had two modules with HIV/AIDS content. Surprisingly, the Department of Biochemistry, Chemistry, Computer Science, Botany, Physics, Statistics, Zoology and Mathematics, and Applied Mathematics had no modules (0.0%) with HIV/AIDS content. In the School of Human and Social Sciences, the Centre for African Studies has the highest number of modules 3(30%) with HIV/AIDS content followed by the department of social work with two modules (20%), Department of Development Studies 1 (10%) and Communication and Applied languages 2 (20%). The Mathivha Centre for African Languages, Arts, and Culture did not have any (0.0%) modules with HIV/AIDS content. In the school of Environmental Sciences, the Department of Geography and Geoinformation Sciences and Hydrology and Water Resources each had one module (50%) with HIV/AIDS content. However, the Department of Ecology and Resource Management, Mining and Environment Geology and Urban and Regional Planning did not have (0.0%) modules with HIV/AIDS content. This is summarised in Table 3.3.

Table 3.3 Distribution of modules with HIV/AIDS content within departments across schools

School Name/Department	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
School of Agriculture			
Department Name			
Agricultural Economics & Agribusiness	24	0	0.0
Agriculture and Rural Engineering	80	0	0.0
Animal Science	43	0	0.0
Consumer Science	19	1	33.3
Forestry	21	0	0.0
Food Science & Technology	17	0	0.0
Institute of Rural Development	12	1	33.3
Horticulture Sciences	29	0	0.0
Plant Production	27	1	33.3
Soil Science	34	0	0.0
TOTAL	**306**	**3**	
School of Health Sciences			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Advance Nursing Science	120	7	20.5
Centre for Biokinetics, Recreation Sports Science	95	1	2.9
Public Health	21	14	41
Psychology	67	5	14.7
Nutrition Science	54	7	20.5
TOTAL	**357**	**34**	
School of Management			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Accountancy	40	0	0.0
Business Information System	27	0	0.0
Business Management	22	1	50
Economics	23	0	0.0
Human Resource Management & Labour Relations	30	0	0.0

Public and Development Administration	31	0	0.0
Tourism and Hospitality Management	26	1	50
OR Tambo Institute of Governance	7	-	
TOTAL	**206**	**2**	
School of Law			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Criminal Justice	14	4	57
Criminal and Procedure Law	10	1	14.2
Jurisprudence	13	0	0.0
Mercantile Law	19	1	14.2
Private Law	9	0	0.0
Public Law	10	1	14.2
TOTAL	**75**	**7**	
School of Education			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Curriculum Studies	25	1	12.5
Early Childhood Education	92	1	12.5
Education Management	45	1	12.5
Foundations of Education	25	4	50
Professional Studies	77	1	12.5
TOTAL	**264**	**8**	
School of Mathematical and Natural sciences			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Biochemistry	21	0	0.0
Botany	35	0	0.0
Chemistry	35	0	0.0
Computer Science	21	0	0.0
Physics	35	0	0.0
Statistics	67	0	0.0
Mathematics and Applied Mathematics	101	0	0.0
Microbiology	16	2	100

Zoology	34	0	0.0
TOTAL	**365**	**2**	
School of Human and social sciences			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Centre for African Studies	15	3	30
Communication and Applied languages	29	2	20
Development Studies	67	1	10
English	9	1	10
Institute for Gender and Youth Studies	19	1	10
Mathivha Centre for African Languages, Arts and Culture	28	0	0.0
Social Work	35	2	20
Media Studies	29	1	10
TOTAL	**231**	**10**	
School of Environmental Sciences			
Department Name	**Modules(n)**	**Modules with HIV/AIDS content**	**%**
Ecology and Resource Management	18	0	0.0
Geography and Geoinformation Sciences	31	1	50
Hydrology and Water Resources	30	1	50
Mining and Environmental Geology	49	0	0.0
Urban and Regional Planning	47	0	0.0
TOTAL	**175**	**2**	

Teaching and learning strategies used to teach HIV/AIDS content

The third research question focused on teaching and learning strategies for HIV/AIDS. The most common teaching methods used to deliver HIV/AIDS were the lecture method and tutorials. The department in the School of Health Sciences utilised mainly problem-based learning supplemented by lecture and tutorials as teaching methods. Whereas in the School of Education group discussion, presentation, consultation, self-study, projects, case study methods and portfolio were used. Only three departments in Health Sciences, namely Nursing, Nutrition and Sports Sciences were using experiential learning such as service-learning tours,

practical, and demonstrations. It was not clear what the teaching and learning strategies were for most modules in the School of Agriculture, Management Sciences and Environmental Sciences. Further details on the modules with HIV/AIDS are summarised in Table 3.4.

Assessment strategies used to assess HIV/AIDS content

The other focus of curriculum analysis was to elicit assessment strategies used to assess HIV/AIDS content. Written examination, tests, assignments and presentation were the most common assessment method. Modules such as Social Work, Sociology and Education generally used written examinations, tests, assignments and presentations to assess content. In contrast, all the modules in the School of Health Sciences did not assess HIV/AIDS content. One module, each in Environmental Science and Agriculture Science, assessed HIV/AIDS content. This is summarised in Table 3.4.

Learning objectives /outcomes/competencies of the HIV/AIDS content

After analysing the learning objective/ or outcomes of the HIV/AIDS content, three categories emerged: knowledge-based, attitude-based and skills-based objectives. For instance, in most departments, HIV/AIDS content focused on essential knowledge, prevention in different sectors, STIs, the impact of HIV/AIDS, epidemiology, pathogenesis, clinical manifestations, policies, treatment, counselling and testing of HIV, predisposing factors of HIV infection. The objective here was to transmit accurate HIV/AIDS content to students.

However, HIV/AIDS content is supposed to develop professional skills in relation to HIV/AIDS. For instance, in Nursing, Public Health, Nutrition and Sport Sciences, the students were expected to acquire professional HIV/AIDS competencies. Specifically, in most nursing modules, students were expected to diagnose, manage, care, treat and provide basic counselling. In public health departments, the postgraduate students were expected to develop skills in how to manage HIV/AIDS in the workplace, develop related health education/promotion preventative measures, develop HIV/AIDS surveillance tools and do research. Regarding nutrition, the students were expected to develop skills such as prevention of mother-to-child transmission, assess and counsel PLWHA. In Sports Science, the objective was to assist students to be able to apply exercise and physical techniques when managing people living with HIV/AIDS. Other skills emphasised were life skills for behavioural change. For example, social, sociology, psychology and education modules focused on providing students with life skills such as healthy relationships, safer sex practices, communication skills, condom use and negotiation skills. Comprehension of the facts and issues related to HIV/AIDS and dealing with its psychosocial impact was also highlighted. In Psychology, Education and

Sociology, the impact of HIV/AIDS on learners, society and family was explored and how students could provide ongoing support for the infected and affected. This is summarised in Table 3.4.

The teaching of courses with HIV/AIDS is at both undergraduate and graduate levels. The undergraduate level had a total of 53 (78%) courses and postgraduate levels 15 (22.6%) with HIV/AIDS content. Most modules with HIV/AIDS content were at first-year level followed by the second year, spread over the third year and very few in the fourth year. At the postgraduate level, most courses, including HIV/AIDS content, were in the Department of Public Health. Also, most modules with HIV/AIDS content were compulsory modules, whereas a few were electives. In the School of Education, about four stand-alone modules are a pre-requisite to Bachelor of Education degrees. This means that these modules are core courses which are pre-requisites for the award of the degree in those departments where they feature.

Furthermore, HIV/AIDS is integrated into a compulsory English communication skills module for all first-years and a pre-requisite for graduation. The year the courses are taught is indicated by the first number in the code identifying each course, and the first digit signifies the year. For example, where a number is 1640 or 1843, it means the module is taught in the first year. Courses with 5,6,7 are postgraduate modules. This is summarised in Table 3.4.

Table 3.4 Summary of modules with HIV/AIDS content

School	Modules	Assessment	Teaching and learning strategies	Summary of contents, objective, outcomes, competencies
Health Sciences				
Public Health	**14** (3 Undergraduate &11 Postgraduate)	Assessment not defined	Problem-based learning Lecturer Tutorial Group discussions	**NCH 1541** Community Health and Community Assessment: The module deals with basic knowledge about HIV/AIDS, transmission, prevention, treatment, and to assist the affected communities **NCH 1641** Environmental Health and Occupational Health: Deals with HIV/AIDS as an occupational hazard in the context of health promotion at work in the context of HIV/AIDS **HNI 5541** International Health issues: HIV/AIDS is infused in contemporary international health themes such as migration, politics, population growth, human rights and globalisation.

				PHC 5641 National, Regional and International Health Issues: HIV/AIDS is infused in contemporary international health themes such as migration, politics, population growth, human rights and globalisation **PHC 5542** Environmental and Occupational Health: The module incorporates HIV/AIDS as an occupational health hazard and how organisation across the globe must respond by developing policies that aim to prevent and care for the infected and affected **PHC 5543** Communicable and non-communicable diseases: Deal with the control of common communicable and non-communicable disease in the region. HIV/AIDS is taught in the context of non-communicable diseases that require urgent attention : **PHC 5541** Health Promotion and Education: This module focuses on understanding health behaviours and developing health

				promotion and education programmes, including HIV/AIDS for different setting such as schools, workplaces and communities using behavioural theories **MOH6542** Occupational Health: Deals with a range of occupational health issues affecting employees globally. The students are expected to institute policies, public health programmes to mitigate these health issues such as HIV/AIDS **MHE 6542** Health Education: This module focuses on developing public health education programmes, and this includes for HIV/AIDS for different setting such as schools, workplaces and communities **MRP 6541** Introduction to Public Health: Deals Basic knowledge HIV/AIDS epidemiology, its impact at national, society and community level for master's students **MEP 6542** Health Promotion: This module focuses on developing health promotion and education programmes including HIV/AIDS

				for different setting such as schools, workplaces and communities for master's students **MCC6542** Disease Control: Deals with HIV/AIDS Epidemiology and research as a non-communicable disease in the region. This targets master's students who are expected to develop surveillance tools and develop control plans to eradicate these diseases **MNM6542** Non-Communicable: Deals with Introduction to epidemiology and research, common communicable and non-communicable disease in the region. STIs, HIV/AIDS and analysis of research reports related to HIV, STIs, HIV/AIDS **NCH 3641** International Community Health issues: HIV/AIDS is integrated into themes such as women in development, gender and health, War disaster, women's health, men's health, substance abuse, disability, child abuse

Nursing	7 Undergraduate)	Assessment not defined	Problem-based learning Practicals Tours lectures	**NGI 1841** Introduction to PBL, Life skills and Professional Practices. The module focuses on the nurses' roles and professional competence in dealing with HIV/AIDS **NGI 1842** Community Health Assessment and Family Health. The objective of the module is teaching students HIV/AIDS (immunity, disease process, impact, physical, social and psychological effects, policies and HIV/AIDS programmes). **NGF 1843** Biological sciences: The module teaches students about epidemiology, pathogenesis, clinical manifestations, prevention and control of diseases according to body systems related to HIV/AIDS, STIs and TB **NG1 2843** Integrated nursing professional practice. The focus of the modules is about teaching HIV/AIDS immunity, disease process, impact, physical and psychological effects, policies and programmes **NGI 3844** Integrated Nursing Professional Practice: The focus of the modules is about teaching HIV/AIDS immunity, disease

				process, impact, physical and psychological effects, policies and HIV/AIDS programmes **NPH 2843** Pharmacology for Health Sciences: It focuses on the treatment of HIV/AIDS, STIs and TB **NMW 3842** Science Midwifery: The objective of the module is teaching 3rd-year students on HIV management during pregnancy, labour and postnatal, HIV management in children. The pre-service training/workshops PMTCT (3-day workshop-management of a pregnant woman who is HIV positive, antiretroviral therapy infant feeding) **NMW 4843** Science Midwifery: The objective of the module is teaching students on HIV management during pregnancy, labour and postnatal, HIV management in children. The pre-service training/ workshops PMTCT (3-day workshop-management of a pregnant woman who is HIV positive, antiretroviral therapy, infant feeding). Postgraduate students Honours research Midwifery and HIV/AIDS

Nutrition	**7**(6 Undergraduate & 1 Postgraduate**)**	Assessment not defined	Problem-based learning Service learning	**RNT 2841** Nutrition in growth and development: The objective of the module is teaching students about nutrient requirements in all stages of the lifecycle with emphasis on infant feeding considering prevention of mother-to-child transmission **RNT 3841** Nutrition and Disease Prevention: This module examines how nutrition contributes to disease prevention, including HIV/AIDS patients. Also covered in this module is the HIV virus, transmission, prevention and treatment of drugs and nutrient interaction **RPH 3844** Public Health Nutrition: The objective of the module is teaching students about the relationships between nutrition and HIV/AIDS, TB, Malaria. Students learn about different strategies that are employed to deal with the epidemic **RNI 4882** Integrated Nutrition: Public Health Nutrition: All final students attend a pre-service workshop for five days on breastfeeding and two days on PMTCT and nutrition for people living with HIV/AIDS. During the internship of six months, students engage in hands-on activities in various practical settings

				RNI 4883 Integrated Nutrition: Community Nutrition: All final students attend a pre-service workshop for five days on breastfeeding and two days on PMTCT and nutrition for People living with HIV/AIDS. During the internship of six months, students engage in hands-on activities in various practical settings **RCN 3842** Nutritional Programming: The objective of the module is to examine the prevention of mother-to-child transmission of HIV **RPH 5641** Advanced Topics in Public Health Nutrition: The focus of the module is to equip students on how to manage people living with HIV using nutrition interventions
Psychology	5(5 Undergraduate**)**	Assessment not defined	Problem-based learning Group discussion Lectures tutorial	**BPS 1841** Introduction to learning Principles and Life skills: HIV/AIDS is taught in the context of Life skills, sexually transmitted infections, and trauma **BPS 2844** Mental Health: The module incorporates HIV/AIDS, including history, transmission, and management. The module focuses on the relationship between HIV/AIDS and onset of mental health illness and how to offer psychological support to clients

				BPS 3841 Advance Research Methodology: HIV/AIDS is covered when discussing ethics and working with human subjects in relation to true experimental designs and clinic trials **BPS 3842** Community Psychology: The module focuses on how to deal with psychosocial HIV/AIDS in the community **BPS 4844** Ethics, Professional Practice and Management: The objective of the module is to teach students the assessment, basic short -term supportive counselling, psychoeducation to victims who are traumatised conditions including HIV/AIDS
Sports and Biokinetics	1 **(**Undergraduate)	Assessment not defined	Problem-based learning Tutorials Lectures practicals	**KEP 3842** Basic Exercise Physiology: This module focuses on the practical application of exercise and physical activity in the management of people living with HIV/AIDS
Education				

Curriculum studies	1 Postgraduate	Test Exam assignment	Group discussion, presentation portfolio	**HIV 4611** HIV/AIDS education. Deals with Basic HIV/AIDS facts, modes of transmission, prevention, treatment, impacts and pastoral role of educators in preventing HIV/AIDS in the school
Early childhood	1Undergraduate	Test exam	Presentation, Group discussion, Case study	**HIV4521** HIV/AIDS for the teachers: Deals with Basic HIV/AIDS facts, modes of transmission, prevention, treatment, impacts and pastoral role of educators in preventing HIV/AIDS in the school
Education management	1Undergraduate	Test Exam	Consultation, self-study, projects portfolio	**HIV 4621** HIV/AIDS for the teachers: Deals with basic HIV/AIDS facts, modes of transmission, prevention, treatment, impacts and pastoral role of educators in preventing HIV/AIDS in the school
Foundations of Education	4 Undergraduate	Tests assignments	Presentation, Group discussion, Case study	**ELF 1521** Life Skills Learning Programme: Deals with basic HIV/AIDS, sexuality education, reproductive health, HIV/AIDS education policy and life skills for first-year Bachelor students **ELF 2521** Life Skills Learning Programme: Deals with basic HIV/AIDS, sexuality education, reproductive health, HIV/AIDS education policy and life skills for second-year Bachelor students

				ELF 3641 Life Skills Learning Programme: Deals with basic HIV/AIDS, sexuality education, reproductive health, HIV/AIDS education policy and life skills for third-year Bachelor students **HIV 101** HIV/AIDS for educators: This was a stand-alone module which focuses on focused primarily or exclusively on basic information about HIV/AIDS and ways to prevent HIV
Professional studies	1 Undergraduate	Tests presentations	Presentation, Group discussion, Case study	**HIV 5621** HIV/AIDS for the teachers: Deals with basic facts such as epidemiology, and pastoral role of educators in preventing HIV/AIDS in the school
Agriculture				
Consumer science	1 Undergraduate	Not specified	Not specified	**FEC 2642** Nutrition Related Diseases: The module focuses on Nutrition-related disease and how nutrition contributes to the control of HIV/AIDS

Rural development	1 Postgraduate	Assignment Exam	Lecture, presentations	**IRD 5631** Contemporary issues in Rural Development: HIV/AIDS is taught/discussed part of contemporary issues that affect rural development in Sub-Saharan Africa
Plant production	1 Undergraduate	Not specified	Not specified	**AGR 1631** Agriculture and Humankind: Agriculture and HIV/AIDS the relationship and its impact
Environmental science				
Geography &Geo information science.	1 Undergraduate	Assignments	Lecture, presentations	**GEO 2642** Themes on the Geography of Africa: The module focuses on the impact of HIV/AIDS on human characteristics of Africa, population dynamics, settlement patterns
Rural Water Supply and Sanitation	1 Undergraduate	**Not specified**	**Not specified**	**HWR 2541** Rural Water Supply and Sanitation: The modules focus on the complex relationship between rural water sanitation and HIV/AIDS

Human and social sciences				
Youth and Gender Studies	1 Undergraduates	Not specified	**Not specified**	**YID 1540** Youth and Health: HIV/AIDS contents integrated into the module are basic facts about HIV, STI, impact, prevalence prevention, treatment, care and support and vulnerability of young people
Social Work	2 Undergraduates	Test Assignment exams	Lecture, presentations	**SCW 4742** Special problems Areas in Social Work: HIV/AIDS components which are basic knowledge about HIV/AIDS, transmission, impact, stigma and prevention **SCW 3642** Social Problems: HIV/AIDS is taught in the context of divorce, rape, family violence and child abuse
Sociology	3 Undergraduates	Test Assignment exams	Lecture, presentations	**SOC 1641** Introduction to sociology/Social institutions: Deals with Basic knowledge about HIV/AIDS, transmission, prevention how it affects social institutions such as families and communities **SOC 2641** Medical sociology: Deals with medical and social aspects of HIV/AIDS

				SOC 2643 Family sociology: Deals with the impact of HIV on the family as a social institution
Media Studies	1 Undergraduate	Not specified	**Not specified**	**MST 3541** Media Law and Ethics: Deals with reporting of HIV in the media and professional ethics
English and Communication skills	2 Undergraduate	Assignments exam	Lecture, presentations	**ECS 1541** English Communication Skills: Basic knowledge about HIV/AIDS is infused in comprehension and assignment topics. **ECS 1641** English Communication Skills: Deals with basic knowledge about HIV/AIDS and how it is infused in comprehension and assignment topics for all first-year university students
Development Studies	1 Undergraduate	Not specified	Not specified	**POL 3542** Human Security and Development: This module focuses on how HIV/AIDS affects every sphere of human security in Africa and globally
Mathematical and Natural Sciences				

Microbiology	**2** (1Undergraduate & 1Postgradate)	Not stated	Presentation, Group discussion, Case study	**MBY 2624** Virology: HIV virus is discussed as part of a myriad of viruses. The content focuses on nature and general characteristics of HIV viruses discussed in detail **MBY 5503** Role of Microorganisms in Disease: The module focuses explicitly on the role of microorganisms in disease and the content focus epidemiology, transmission, clinical presentations, diagnosis, treatment and prevention and control of viruses including HIV
Management Sciences				
Tourism	1 Undergraduate	Not specified	Lecture method	**TMA 1541** The Tourism Industry: Profile and Behaviour: Deals with factors that affect the arrival of tourist in South African context, including HIV/AIDS
Economics	1 Undergraduate	Not specified	**Not specified**	**ECO 1542** Economics: Deal with economic Impact of HIV on productivity and economic growth
Law				

Criminal Justice	3 Undergraduate	Not specified	**Not specified**	**CRM 1541** Fundamental Criminology: Basic knowledge about HIV/AIDS, confidentiality and legal aspects of HIV/AIDS **CRM 1641** Individual Crime studies: Basic knowledge about HIV/AIDS, confidentiality, ethics, stigma and legal aspects of HIV/AIDS **CRM 3541** Criminology: HIV/AIDS is taught in the context of sexual harassment, being a victim and discrimination based on HIV status
Criminal and Procedure Law	1 Undergraduate	Not specified	**Not specified**	**GEL 4531** Gender and Law: HIV is discussed in themes such as gender, discrimination, violence and the law, sexual orientation and sex work
Public Law	2 Undergraduate	Not specified	**Not specified**	**MED 3641** Medical Jurisprudence: Negligence and its implication in the context of HIV **VIC 2541** Victimology: HIV/AIDS is taught in the context of sexual harassment, being a victim and discrimination based on HIV status

Mercantile Law	1 Undergraduate	Not specified	**Not specified**	**LAB 2641** Labour Law: HIV/AIDS issues are discussed in the context of unfair labour practice, such as the denial of treatment, unemployment, termination, disclosure

Discussion

The study established that HIV/AIDS content was minimally integrated into only 68 modules out of the 1,979 modules examined. These findings corroborate the surveys conducted by the Association of African Universities (2010), HEAIDS (2010a), HEAIDS (2010c) which also determined that there is minimal HIV/AIDS content in the curricula. Furthermore, this corroborates a recent systematic review by Pillay and Wood (2016), which indicated that HIV/AIDS content is not fully integrated into curricula globally (Pillay et al., 2016). These findings show that little progress has been made regarding the integration of HIV/AIDS content into curricula since the previous studies from 2005 to 2010 (HEAIDS, 2010a; HEAIDS, 2010d; HEAIDS, 2005; HEAIDS, 2010b), which indicated that most HEIs neglected the integration of HIV/AIDS content.

The results revealed that the teaching of courses with HIV/AIDS persuasion at the UNIVEN cuts across various departments and schools both at undergraduate and postgraduate levels. Some courses are core, and others are optional. Surprisingly, the School of Mathematical and Natural Science had only two courses with HIV/AIDS content. Similar findings were also reported in that HIV/AIDS content in HEIs is in all disciplines at the undergraduate and postgraduate programme level (AAU, 2010; Koob & Harvan, 2003; Rowan and Shears, 2011). This exposes the notion that HIV/AIDS is meant for specific disciplines, as it can be integrated into any discipline. HEAIDS (2010) recommends that HIV/AIDS content should be taught at all levels of learning from the entry level so that students grow ‘with filters’ as they progress. Clarke (2008) argues that ‘that while it is very important that students learn about the specific aspects of the pandemic that will impact on their professional practice, the inclusion of HIV/AIDS in only one module may limit the student’s understanding of the complex nature of the pandemic‘. This means that lack of cross-curriculum integration may mean that students forget what they have learnt since the other modules do not reinforce it (Clarke, 2008). Also, it is argued that HIV/AIDS content should be part of all modules and compulsory at all levels because it affects everyone. All graduates are expected to be HIV-competent from entry to exit level.

The findings also showed that HIV/AIDS content is mainly taught within departments in the School of Health Sciences. Similar to other studies, this study reported that HIV/AIDS content was mostly integrated into Health Sciences degrees (AAU, 2010; HEAIDS, 2010d; HEAIDS, 2005; HEAIDS, 2015; Pillay & Wood, 2016). This is not surprising since the trend both nationally and internationally is that HIV/AIDS issues are health issues rather than social issues. More so, health, medical and allied health disciplines are expected by their respective degree councils to equip students with HIV/AIDS competences (Wood, 2011).

Teaching and learning strategies used are as follows: lectures, group discussions, presentations, case studies, self-directed study, class discussion, presentations, consultations, projects, problem-based learning, tutorial, skills training, and work-based learning and debates. The most common teaching methods used to deliver HIV/AIDS was the lecture method and tutorials as opposed to limited experiential learning opportunities found in some Health Sciences disciplines. Similar findings in other studies suggested that classroom-based teaching strategies were mostly used (Rau, 2009; HEAIDS, 2010a). This contrasts with a study conducted in South African HEIs that concluded that service learning was the most widely used strategy used by teachers to teach HIV/AIDS knowledge (HEAIDS, 2005). In another survey in 35 African universities, the conclusion was that most teachers used interactive teaching methods such as group discussions and debates to disseminate HIV/AIDS knowledge to students (AAU, 2010). In this study, the use of lecture methods and group discussions can be attributed to very few teachers trained in HIV/AIDS education and curriculum development.

According to Pillay and Wood (2016), didactic lectures need to be supported by experiential learning/service learning that allows students to interact with the reality of HIV/AIDS in their communities/professions. Kelly (2002) alludes that it is crucial that programmes on be interactive and participative. The researcher agrees with Kelly because it is easy for the students to understand when they have a space to participate in the discussion, particularly for sensitive issues like HIV/AIDS. The nature of the teaching methods must be such that students are engaged in the learning content. Examples of teaching methods are discussions, group work, the involvement of the students, weekly reflections, group activities, critical reflection on own life and experiences, role-play plus reflection, investigative project work and the involvement of people living with HIV/AIDS(PLWHA) is vital to all preventive education programmes (Kelly, 2002).

In regard to HIV/AIDS content taught, it mainly focuses on basic facts about HIV/AIDS, prevention, transmission, treatment and support. This implies that the biomedical approach was used, mainly teaching scientific facts about HIV/AIDS. Furthermore, though the HIV/AIDS education advocate a broad content of such programmes, reflecting the three main components (knowledge, skills and attitudes), only the knowledge aspect seems to be somehow adequately covered in the curriculum. The current content of HIV/AIDS content in the curriculum also falls far short of the characteristics of effective content of sexuality and HIV/AIDS education curriculum, which require that such content to address multiple sexual

psychosocial risk and protective behaviours, including knowledge, perceived risks, values, attitudes, perceived norms and self-efficacy (Kirby & Senderowitz, 2006).

This method has come under severe attack from scholars because it has not been effective in reducing new HIV infection among young people. It is argued that the 'curriculum content for HIV/AIDS education is best approached from a critical paradigm that recognises the need to challenge and change social norms, human behaviour, laws, policies and practices in societies impacted by the pandemic. Such an approach would help to transform curricula at higher education to make them more responsive to South African societal needs' (Pillay & Wood, 2016). HEAIDS (2010) advocates that for a student to be HIV-competent, he/she has to acquire personal knowledge, disciplinary and workplace knowledge about HIV/AIDS. Personal knowledge refers to information meant to help the student to live. Disciplinary knowledge relates to the actual discipline-specific content in relation to the subject area. Workplace knowledge and HIV/AIDS: Workplace knowledge refers to the specific set of topics and skills needed once the student graduates and begins work in a particular work setting (Pillay & Wood, 2016).

Conclusion

The study results suggest that there is only minimal inclusion of HIV/AIDS into curricula at UNIVEN. Most of the modules with HIV/AIDS content were in Health Sciences. HIV/AIDS content was mainly taught at undergraduate as compared to postgraduate and focused mainly on imparting basic scientific facts about the disease rather than helping students to be HIV/AIDS competent. This serves to suggest that there is a need to develop a framework to integrate HIV/AIDS into curricula. The findings presented here should be interpreted with caution and cannot be generalised to different HEIs because we relied on documents, and it is not clear whether HIV/AIDS content was delivered into the classroom or not. Recommendations are for more research to be done among teachers and students to ascertain how HIV/AIDS is integrated into various modules at UNIVEN. The next chapter presents the knowledge, attitude and practices of students regarding learning of HIV/AIDS.

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CHAPTER 4

KNOWLEDGE, ATTITUDES, AND PRACTICES OF STUDENTS REGARDING LEARNING OF HIV AND AIDS

Submitted as: Murwira, T.S., Khoza L.B., Maputle S.M., Mabunda,J.T., Mpeta, M. Knowledge, Attitudes, and Practices of students regarding learning of HIV/AIDS

Abstract

Introduction: Literature reports that university students possess sound knowledge about HIV transmission routes and prevention. However, student's misconceptions, attitudes and behavioural perceptions regarding HIV/AIDS remain a significant problem in South Africa. The study endeavours to assess knowledge, attitudes and practices of students regarding learning about HIV/AIDS content at a rural university in South Africa.

Methodology: The study used a cross-sectional, quantitative and descriptive method. A survey was conducted on a sample of 345 students. Self-administered questionnaires were used to gather information. Descriptive analyses used chi-square tests to test significant association with demographics.

Results: Overall, about 145 (42%) students were knowledgeable about HIV/AIDS and most 294 (85%) had positive attitudes towards HIV/AIDS education. In comparison, very few students (25.8%) indicated that they received formal education about HIV/AIDS in their studies. A multiple logistic regression analysis shows that students who were of mixed-race heritage were almost six times(OR=5.77; C.I 95% (2.93-11:38) more likely to be knowledgeable about HIV/AIDS as compared to blacks and whites. A positive attitude towards learning about HIV/AIDS was associated with being a student studying humanities and social sciences (OR=0.00, C.I 95% (0.00-0.01), environmental sciences (OR=0.00, C.I 95 % (0.00-0.00) Law (OR=0.00, C.I 95% (0.00-0.10) and management sciences (OR=0.00, C.I 95 % (0.00-0.04).

Conclusion: Most students had adequate knowledge about HIV/AIDS, although they had some misconceptions. Furthermore, the majority were positive about supporting the introduction of HIV/AIDS into the curriculum. Very few students reported that they received formal education about HIV/AIDS. The present study accentuates the need for providing more recognised HIV/AIDS content to avoid these gaps in knowledge concerning HIV/AIDS, misconceptions and negative attitudes towards HIV/AIDS education.

Keywords: Knowledge, attitudes, practices, curriculum, students, integration, HIV content.

INTRODUCTION

HIV/AIDS are a significant public health problem with far-reaching implications. University students are more vulnerable to HIV/AIDS infections compared to other non-student peers globally (Mkumbo, 2013). Kelly (2003) argues that due to the absence of a vaccine or cure for HIV/AIDS, its prevention relies on the adoption of safe sexual behaviours and, therefore, education remains the critical enabler for changing risk behaviours. Universities in South Africa were mandated to step up their efforts to respond to this epidemic (HEAIDS, 2010a), and provide ongoing and relevant education on this disease. However, reports indicate that HEIs in South Africa are not integrating HIV/AIDS education into their curricula with enough vigour (De Lange, Van Laren et Tanga, 2014). Smith et al. (2014) argue that worldwide, most HEIs offer a course with sexual health content, although they are not mandatory for graduation. This suggests that most students enrolled in health-related modules have a high chance of receiving HIV/AIDS-related education as compared to non-health-major students. Students without adequate HIV/AIDS information are those likely to engage in high-risk sexual behaviours (Smith et al., 2014).

HIV/AIDS education for university students is essential because this population is at high risk for STIs and unintended pregnancies (Mkumbo, 2013). In support, Reis et al. (2013) argue that having the correct knowledge and positive attitudes about HIV/AIDS is sufficient to ensure that youth modify their behaviours and start to use condoms to protect themselves from HIV/AIDS (Reis et al., 2013). Therefore, it is essential to educate youth about HIV/AIDS so that they can decide their sexual behaviour. Santos, Ferreira and Ferreira (2016) suggest that it is crucial to understand university students' HIV knowledge, attitudes, and practices regarding planning related to HIV education programmes in universities (Santos, Ferreira & Ferreira, 2016). Likewise, Mkumbo (2014) observes that before starting any curriculum innovation such as integration of HIV/AIDS into higher education curricula, it makes sense to explore what and how is it being done from the student's point of view (Mkumbo, 2014). Schaalma et al. (2004) emphasise that the 'involvement and participation of young people in the development and implementation of sexual health education programmes are probably the most important factor for such programmes to be successful'. For HIV/AIDS integration to be successful, the opinions of the receivers (students) of that education must be considered and acted upon (Hilton, 2003). It is thus important to assess students' knowledge, attitude and learning practices regarding HIV/AIDS before designing a framework to facilitate its integration. Knowledge, attitudes and practices held by students about a new programme such as curriculum are set and play a significant role in determining how the programme will be handled and received. Therefore, it is vital to fully determine these elements regarding the teaching and learning of HIV/AIDS.

Although university students possess knowledge about HIV/AIDS, transmission routes and prevention, the literature suggests that they still have misconceptions about this pandemic. Verulava et al. (2018) investigated knowledge, attitudes and behavioural perceptions regarding HIV/AIDS among 200 students at a Finnish university. The study concluded that students had a high knowledge of HIV/AIDS transmission but misconceptions about preventive measures (Verulava et al., 2018). Similar findings were reported among students at a Namibian university who exhibited suitable knowledge of HIV/AIDS but had some misconceptions regarding HIV transmission (De Beer et al., 2012). Similar sentiments were echoed in a study conducted by Faimau et al. (2016) at a tertiary institution in Botswana which concluded that students were well informed about HIV/AIDS. However, a significant number of students still had misconceptions regarding HIV infection and transmission (Faimau et al., 2016). Likewise, Kuete et al. (2016) reported the same findings in students at a Chinese university who were highly knowledgeable about the nature of HIV/AIDS but had misconceptions about HIV transmission routes and risk factors. Social contacts such as oral sex, mosquito bites, saliva, sweat, urine, tears, public health facilities, and physical contact were incorrectly answered as being HIV transmission routes (Kuete et al., 2016).

In Malaysia, more than half of the students had good knowledge about HIV transmission and basic facts about HIV, although misunderstandings about HIV transmission, were still prevalent HIV (Said & Ab Hamid, 2018). Thakuri & Thapa (2018) investigated 432 postgraduate students in India and suggested that the majority of them were cognizant about routes of HIV transmission and prevention, although some had misconceptions about the route of HIV transmission. The same results in a study conducted at Taif University, Saudi Arabia found that more than half of the participants were unaware of the relationship between AIDS and HIV and had misconceptions about modes of HIV transmission (Zaini & Anjum, 2015). Similar conclusions were drawn from studies conducted by Haroun et al. (2016) among 2294 university students in the United Arab Emirates (UAE), concluding that students had high levels of knowledge about HIV/AIDS transmission and demonstrated considerable misconceptions such as the spread of HIV through public toilets (Haroun, El Saleh, Wood, Mechli, Al Marzouqi & Anouti, 2016). This was also reported in Ghana by Oppong and Oti-Boadi (2013) in Ghana who concluded that 90% of students knew about HIV/AIDS, identified different modes of HIV transmission and preventive measures, although they were less familiar with the causative agent of AIDS (Oppong & Oti-Boadi, 2013). The same outcomes from a study conducted in Turkish university students concluded that information about STIs were minimal and that they knew more about modes of transmission compared to symptoms (Ekşi & Kömürcü, 2014).

Few studies conducted in HEIs have demonstrated that students support the teaching of HIV/AIDS content in their modules. A study conducted in South African Higher education vocational institutions shows that the majority (80%) students reported strong support for the inclusion of HIV/AIDS and sexuality (HEAIDS, 2015a). Another study among recent graduates in South Africa supported the fact that that HEIs should provide compulsory HIV/AIDS courses (HEAIDS, 2010d). Luwes, Meda and Swart (2016) concluded the same in students at Central University of Technology who would welcome more general information on the subject, VCT and workplace and related concerns. Somfongo (2014) conducted a phenomenology study to understand preferences and expectations regarding HIV/AIDS education among 30 students at Stellenbosch University in South Africa. All the students agreed that educating students about HIV/AIDS is necessary and supported the integration of HIV/AIDS (Somfongo, 2013).

These results were confirmed by other studies indicating that university students have a positive attitude towards the inclusion of HIV/AIDS content into their educational programmes. A study conducted by Gańczak et al. (2007) among university students in the UAE suggests that students supported the teaching of HIV/AIDS education. Most students indicated that they should be taught to protect themselves against HIV/AIDS (Gańczak et al., 2007). Likewise, a study conducted among Turkish university students indicated that there should be a stand-alone module on AIDS in their curriculum (Ungan & Yaman, 2003). In another Turkish survey conducted by Ekşi and Kömürcü (2014), students supported the idea, suggesting that they want information at university about STIs (Ekşi & Kömürcü, 2014). Nasir et al. (2008) conducted a study among Sudanese senior dental students' where the majority of the respondents supported the need for further education regarding HIV/AIDS. Also, they wanted information about the management of HIV-infected patients, clinical manifestations, psychosocial complications, treatment recommendations and fundamental HIV/AIDS issues (Nasir et al., 2008).

Lee et al. (2006), in their study of 208 student teachers at Stanford University, established that students and teachers had positive attitudes towards HIV/AIDS education. They believed that it was 'very important' to teach high school students and wanted HIV education in high school. The students specified the subject area in which they would suggest learning about HIV/AIDS, which included sexual education, global awareness or social sciences, biology and history, respectively (Lee, 2006).

The few studies which use student samples to describe their learning experiences relate to the teaching and learning practices concerning HIV/AIDS. A significant number of students reported that they learned about HIV/AIDS through non-formal sources, such as media and

health care providers compared to formal means in the literature (Centre for Sexualities, Gender and AIDS, 2016; De Beer et al., 2012; Ekşi & Kömürcü, 2014; Faimau et al., 2016; Gańczak et al., 2007; Kuete et al., 2016; Nasir et al., 2008; Oppong & Oti-Boadi, 2013; Reis et al., 2013; Said & Ab Hamid, 2018; Santos et al., 2016). Most universities offer courses on human sexuality, although not required for graduation. While health-related students may receive sexuality education in formal settings, most college students never receive formal sexual health or HIV/AIDS-related education, which may lead to increased engagement in high-risk sexual behaviours (Smith et al., 2014). Few studies conducted highlight how the students enrolled in these courses learn about HIV/AIDS.

Problem statement

Higher education institutions in South Africa are confronted with the challenge of how to effectively integrate HIV/AIDS education into curricula (De Lange, Tanga & Van Laren, 2013). Therefore, there is a necessity to understand the current procedure from the key stakeholders such as students and beneficiaries before adjusting curricula to create space for HIV/AIDS education. This study sought to assess the knowledge, attitudes and practices of students towards learning of HIV/AIDS content at a rural University in South Africa.

Study Methods

Study Design

This study took the form of quantitative survey research and employed a cross-sectional descriptive design. This design enabled specific variables (demographics, level of knowledge, attitudes and practices) to be explored concurrently and assessed quantitatively through the utilisation of a nominal scale.

Study Setting

UNIVEN was founded in 1981 in the Vhembe district of the Limpopo Province, South Africa. In 2002, the Department of Higher Education and Training mandated the UNIVEN to become a comprehensive university focusing on professional and career-focused programmes. The University's academic configuration is composed of eight schools and 59 departments offering a range of under- and postgraduate academic programmes in various classifications of the educational subject matter. The eight schools include Agriculture Sciences, Education, Environmental Sciences, Health Sciences, Human and Social sciences, Law, Management Sciences and Mathematical & Natural Sciences. It has about 15,704 students inclusive of postgraduates and undergraduates.

Furthermore, it has a staff capacity of 800 comprising of teaching staff, administrative staff and support staff (UNIVEN, 2018). The University mission states that it 'aspires to be at the centre of tertiary education for rural and regional development in Southern Africa'. As such, 'it is anchored on the pillars of excellence in teaching, learning, research and community engagement, produces graduates imbued with knowledge, skills, and qualifications which are locally relevant and globally competitive (UNIVEN, 2018).

Study Population

The target population were all senior university students from all (8) academic schools at the UNIVEN registered during the 2017-2018 academic year. The rationale for using third- and fourth-year students was that they have experience in learning at university and could provide insight into how HIV/AIDS was taught. For this study, senior students refer to those in their third and fourth year of study as summarised in Table 4.1.

Table 4.1 Distribution of the UNIVEN students according to Schools

Schools	**Total**
Agriculture	668
Environment	690
Education	575
Health	425
Human and Social Science	450
Mathematics	557
Management	672
Law	665
Total	**4702**

Source: UNIVEN Registry, 2016

Sampling

Sample size

For this study, the sample size was calculated using the formula by Slovin (1960), used when the population is known. Thus, the formula used to calculate the sample size is as follows:

$$n = \frac{N}{1 + Ne^2}$$

Whereby is the sample size, N is the study population and e is the level of precision (which is 0.05 or 5%) (Slovin, 1960). In this case, N = 4702 denotes senior university students from eight schools at UNIVEN and level of precision (e) which is +/- 0.05 of the true value from this study. The calculated sample size was 369. In anticipation of a non-response rate, the researcher increased the sample size by 20% to 443. Morton et al. (2012) observe that the non-response rate for surveys ranges from 20%-30%.

Sampling of the participants

In this study, probability sampling techniques were used to recruit the respondents. The proportional stratified random sampling method selected 443 participants and ensured the fair representation of all participants (Creswell & Poth, 2017). In this study, the sampling procedure has two stages. First, the researcher stratified the participants according to their schools or faculties and proportionally allocated them to the population size per school. Each stratum had the same sampling fraction of 443/4702. The proportional sample size of each school was determined as follows: For instance, in the school of Agriculture, it was calculated as the sample size (443) multiplied by the estimated population per school/ faculty (668) divided by the total population (4702) as shown in Table 4.2**.** Once the total sample size (443) was proportionally allocated to each school, the systematic random sampling method selected the respondents. A sampling interval of 11 was calculated by dividing the total number of students (4702) by the desired sample size (443). Every 11th student on the class lists was recruited for the study after balloting between the first ten students to get the first respondent until the required sample was achieved.

Table 4.2: Composition of the sample size in each stratum

Schools	**Estimated Number**	**Size of each stratum**
Agriculture	668	443/4702*668 =63
Environment	690	443 /4702*690= 65
Education	575	443/4702*575=54
Health	425	443/4702*425=40
Human & Social Science	450	443 /4702*450=42
Mathematics	557	443/4702*557= 52
Management	672	443/4702*672= 63
Law	665	443 /4702*665 =63
Total	**4702**	**443**

Research instrument

Data was collected from participants using a self-administered questionnaire. The questionnaire was designed based on objectives, problem statement, reviewed literature in consultation with the promoters and a statistician. The knowledge questions in the section were adapted from previous questionnaires (HIV-KQ-45 by (Carey & Schroder, 2002; De Beer et al., 2012; HEAIDS, 2010c). Items in section C for attitude were adapted from a questionnaire by Luwes, Meda & Swart, 2016). Lastly, practice items in section D were modified from a survey conducted by (AAU, 2010; Centre for Sexualities, Gender and AIDS, 2016; HEAIDS, 2010a; HEAIDS, 2010d). These were local and international publicly available survey questionnaires and desirable because of a lack of any existing instruments in the context of this study. The students' questionnaire was composed of mainly closed-ended questions in English with 46 questions. The first six items focused on demographic details, 26 on knowledge about HIV/AIDS, ten on attitudes towards the integration of HIV content and four on practices regarding the integration of HIV/AIDS content (Appendix 2). The questionnaire was as follows (Table 4.3).

Table 4.3: Structure of the questionnaire

Section A:	Item 1 to 6 focused on the demographics of the respondents.
Section B:	Items 7 to 32 focused on knowledge about HIV/AIDS.
Section C:	Items 33 to 42 focused on attitude towards HIV/AIDS education.
Section D:	Items 43 to 46 focused on teaching and learning practices regarding HIV/AIDS education.

Pre-test

Prior to the collection of data, the questionnaire was pre-tested among ten senior students to examine its reliability and validity. The final questionnaire incorporated the feedback from these participants (Appendix 2). The participants who participated in the pre-test were not included in the final study (De Vos et al., 2011). Reliability is the consistency with which an instrument measures the attribute (Polit & Beck 2012). The reliability was ensured as the questionnaires were administered to different participants at UNIVEN, and the results were consistent and stable, hence reliable (Creswell & Creswell, 2017). Regarding internal consistency, the researcher and research promoters evaluated the instrument, and a statistician confirmed it.

The questionnaire's face validity was ensured in the structure of the questions with close-ended questions enabling the respondents to choose their preferred answer without much difficulty. In addition to achieving face validity, the questionnaire had only six pages, thus complying with the advice suggested by Bruce et al., 2011) who advised that 10 to 12 pages per questionnaire are sufficient. Also, the questionnaire was developed in English and used no profane language. Polit and Beck (2012) refer to content validity as the degree to which an instrument has an appropriate sample of items for the construct being measured. The content validity is also judged based on the extent to which statements or questions represent the issue they are to measure. It is judged by the researcher, readers and experts in the field. The questionnaire was developed from the literature review and subjected to rigorous expert review by two pedagogical experts to ensure this. Also, it was verified and confirmed by a statistician.

Data collection procedure

The researcher and assistants collected the data. The questionnaire was physically distributed to the students in person. Appointments were made with the respondents at least one week before data collection. Data collection took approximately 45 minutes for each respondent.

Ethical Considerations

The study was reviewed, and full ethical clearance granted by the Research and Ethics Committee of the UNIVEN (SHS/17/PH/08/1506). Written permission was requested from students, department heads and deans prior to data collection. The study only focused on the analysis of data, and no harm inflicted on any participant in the study. Regarding informed consent, the participants were informed about the study goals, the rights granted to them, what is expected, and how long their participation would take before they sign the consent forms. The aim of the study and research details were clearly explained to the students, department heads and deans. Date confidentiality was maintained and guarantees provided to the participants that no personal information would be divulged in articles for this research. Also, background information about the students was confidential, and pseudonyms were used.

Data Analysis

Data was coded and entered into an Excel spreadsheet and analysed using the Statistical Package for the Social Sciences (SPSS) version 23. Appropriate descriptive and inferential statistics were conducted concerning the various topics covered in the questionnaire. The scoring for knowledge and attitude was adapted from a study among university students in Malaysia (Said & Ab Hamid, 2018). Analysis through descriptive statistics calculated frequencies and percentages of knowledge, attitude and practices of students regarding the learning of HIV/AIDS content. Furthermore, a descriptive analysis took place using chi-square tests to compare the percentages of correct responses by different demographics. A score of one (1) for correct answers and zero (0) for incorrect answers were assigned to evaluate knowledge. The knowledge section of the questionnaire had 26 questions, and the score range was between 0 and 26. The score overall HIV knowledge was defined as follows poor knowledge, was between 0-13 (0-50%), average 14-19 (51-74%) and knowledgeable 20+ (75%). The attitude score was determined as follows: For the level of attitude, a score of one was noted for every positive answer and zero for negative answers. The total score generated an overall score for each categorising the level of attitude. Accordingly, the level of attitude was categorised into ‘negative attitude for those who score 0-3 (0-33%), neutral for those who scored 4-6 (44-68%) and positive for those who scored 7-10 (78-100%). The level of practice was determined by the number of students who reported being taught about HIV/AIDS, teaching and learning strategies and evaluation strategies.

Results

Description of the participants

Six items assessed the demographics of the sample. Table 4.4 presents the respondents` distribution. A total of 443 questionnaires were distributed, and 345 questionnaires were returned, yielding a response rate of 77%. According to Fosnacht et al. (2017), 50% is an acceptable response rate, while 60% is a good response rate and a rate of 70% or more is very good (Babbie, 1990). Table 4.4 presents respondents` distribution according to age, gender, and race, level of study, school, and religion. The results indicate that most of the respondents were in the age group 20-29 288 (83.5%), female 227 (65.8%), of African descent 307 (89%), in the fourth year 183 (53%), school of law 53 (15.4%) and Christianity 339 (98.3%) was the most dominant religion among these respondents.

Table 4.4: Socio-demographic distribution of respondents. (n=345)

Variables	Category	Number of respondents	Percentage of respondents
Age(years)	20-29	288	83.5
	30-39	35	10.1
	40-49	22	6.4
Gender			
	Male	227	65.8
	Female	118	34.2
Race	Black	307	89
	Coloured	38	11
Level of study			
	Third year	162	47
	Fourth year	183	53
School.			
	Agriculture	30	8.7
	Education	43	12.5
	Environmental sciences	45	13
	Health Sciences	49	14.2
	Human and social sciences	42	12.2
	Law	53	15.4
	Mathematical and Natural science	33	9.6
	Management	50	14.5
Religion			
	Christianity	339	98.3
	Traditional	5	1.4

	Islamic	0	0.0
	Hinduism	1	3

Knowledge of students regarding HIV/AIDS

In this study, the knowledge of HIV/AIDS was evaluated at two levels. First, the students received 26 questions which assessed their knowledge of general aspects, modes of transmission and prevention items. For each item, the respondents indicated yes or no. Each response was coded as correct or not correct to determine the overall level of knowledge. The respondents' performance was rated from low to high, as shown in Figure 3. The figure below reports on the overall level of knowledge indicating three categories of knowledge. Therefore, a low level reflects a score of below 0-14 (≤ 50%), 'average' if the score ranges between 14-19 (51% - 74%, and 'high' if it is more than 20 (≥ 75%). Figure 2 below shows the overall HIV knowledge score of students–out of 340 students, 74 (21%) had a poor level of knowledge, 126 (37%) had average, and 145 (42%) had adequate knowledge as illustrated in Figure 3.

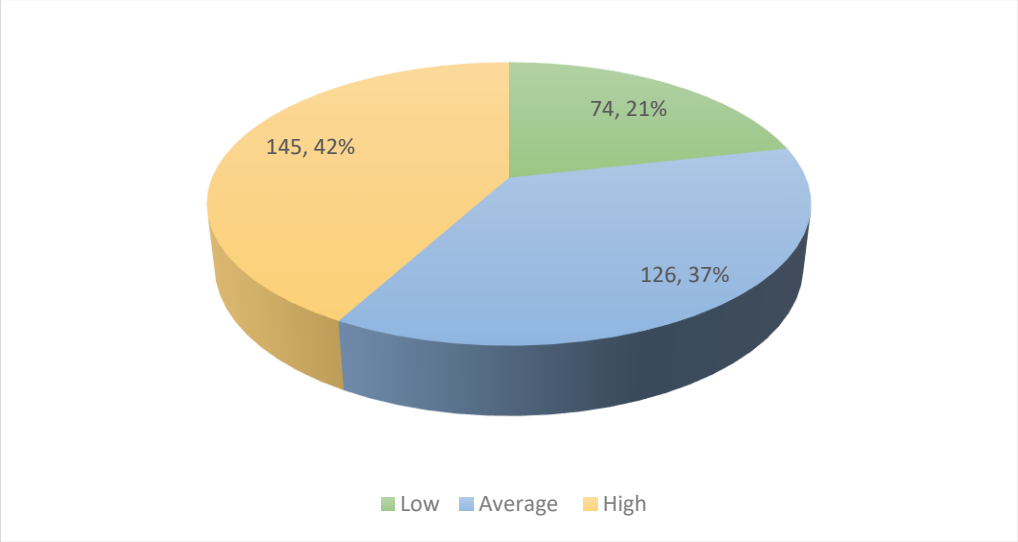

Figure 3: Students levels of knowledge about HIV/AIDS

Table 4.5 presents the responses by respondents regarding their knowledge of HIV/AIDS. The first part focused on basic knowledge about HIV, the second concerned HIV transmission, and the last on prevention. Basic HIV knowledge was assessed using 13 questions with yes and no responses. The results show that the respondents had standard knowledge for most items, with an average of 66% of respondents correctly responding to various questionnaire items. However, gaps in knowledge gaps appeared in nine items as only 203 (58.8%) answered that

HIV/AIDS are the same and 164 (47.5%) correctly answered that eating healthy foods can keep a person from getting HIV. Of note, less than half 124 (35.9%) correctly answered that eating healthy foods can keep a person from getting HIV, and only 180 (52.2%) knew that antiretroviral drugs treat HIV infections. Also, some respondents had misconception about the following items: 169 (49%) responded correctly in that AIDS is an infectious disease caused by a bacteria, and 200 (58%) stated that an individual could contract HIV from an AIDS patient and 126 (36.5%) stated being bitten by a mosquito that has the virus.

Table 4.5: Student responses to HIV/AIDS knowledge questions *(n=345)*

	Correct Response		**Incorrect response**	
	N	%	N	%
Statements regarding General knowledge about HIV/AIDS				
HIV/AIDS is the same thing	203	58.8	142	41.2
There is a cure for AIDS.	238	69	107	31
AIDS is caused by HIV	273	79.1	72	20.9
A person can get HIV by sharing a glass of water with someone who has HIV.	164	47.5	181	52.5
To prevent HIV infection, a condom must be used for every round of sex.	330	95.6	15	4.3
It is possible to get HIV when a person gets a tattoo.	276	80	69	20
Eating healthy foods can keep a person from getting HIV.	124	35.9	221	64.1
All pregnant women infected with HIV will have babies born with AIDS.	160	46.4	185	53.6
One can reduce the risk of HIV by having fewer sexual partners.	261	76	84	24.3
Antiretroviral drugs can cure HIV infection.	180	52.2	165	47.8
A healthy-looking person can also be infected with HIV.	277	80.3	68	19.7
AIDS is an infectious disease caused by bacteria.	169	49	179	51
Using alcohol or drugs before or during sex can increase a person`s risk of getting HIV.	289	83.8	56	16.2
Statements regarding how HIV/AIDS is transmitted				
Sexual intercourse	305	88.4	40	11.6
Using a dirty toilet seat	172	49.9	173	50.1
Sharing a needle to inject drugs with someone who is HIV positive	329	95.4	16	4.6
Hugging someone with AIDS	200	58	145	42
Having vaginal sex without a condom	320	92.8	25	7.2
Getting bitten by a mosquito that is carrying a virus	126	36.5	219	63.5
Having anal sex without using a condom	289	83.9	56	16.2

Statement regarding prevention measures				
Proper condom use	257	74.5	88	25.5
Screening blood before transfusions	309	89.6	36	10.4
Get tested and know your partner's HIV status	300	87	45	13
Limit Sexual Partners	329	95.4	16	4.6
Taking Pre-exposure Prophylaxis medication	286	82.9	59	17
Taking Post-exposure prophylaxis medication	320	92.8	25	7.2

Knowledge of HIV transmission was assessed using seven questions with yes and no responses. For questions about how HIV is transmitted, the seven items were answered by 72% of the respondents correctly. Most students correctly answered that HIV is transmitted through sexual intercourse, sharing a needle to inject drugs with someone who is HIV positive, having vaginal sex without a condom and having anal sex without using a condom. However, there were gaps on two items as only 172 (49.9%) answered correctly asserting that using a dirty toilet seat does not transmit HIV and more than half, 219 (63.5%) incorrectly stating that by a mosquito carrying a virus transmits HIV.

Knowledge of HIV prevention was assessed in six questions with yes and no responses. For questions about preventing HIV/AIDS (Table 4.5), most responded correctly (87%) that to prevent transmission of HIV condoms must be used correctly, screen blood before transfusion, get tested and know your partner's status, limit sexual partners, take pre-exposure prophylaxis and post-exposure prophylaxis medication. (Table 4.5).

Factors associated with knowledge about HIV/AIDS among students

When Multiple Logistic regression was computed, the age, gender, level of study, the field of study and religion were some of the variables not significantly associated with knowledge. However, race was significantly associated as being coloured or of mixed race were almost six times more likely to be knowledgeable about HIV/AIDS as compared to blacks and whites (OR=5.77; C.I 95% (2.93-11:38). This is summarised in table 4.6.

Table 4.6: Multivariate analyses of factors associated with knowledge about HIV/AIDS among students.

Variable	Knowledgeable (%)	Not knowledgeable (%)	MLR-OR (95%CI)	Chi-Square	MLR-P-value
Age					
18-25 years	89.6	10.4	***		
26-35 years	74.3	25.7	1.92(0.57- 6.49)	0.122	0.290
36-45 years	95.5	4.5	0.27(0.02-1.62)		0.123
Gender					
Male	55.5	44.5	***		
Female	72.9	27.1	0.65(0.32- 1.33)	0.117	0.240
Race					
Black	91.3	8.7	***		
Coloured	54.1	45.9	5.77(2.93- 11.38)	0.000	0.000
Level of study					
Third Year	48.7	51.3	***		
Fourth Year	43.2	56.8	1.89(0.84-4.28)	0.404	0.124
Field of study					
Agriculture	93.3	6.7	***		
Maths and Natural Sciences	81.8	18.2	3.08(0.45-20.9)		0.250
Health sciences	75.0	25.0	10.91(1.7-70)		0.012
Human and Social sciences	70.0	30.0	7.5(1.3-43.09)		0.023

Environmental Sciences	65.5	34.5	5.74(0.94-35.25)	0.002	0.059
Law	76.5	23.5	6.5(1.02-41.4)		0.047
Education	93.8	6.25	1.56(0.18-13.1)		0.684
Management	75.0	25.0	9.06(1.3-62.52)		0.025
Religion					
Christianity	79.4	20.6	***	0.005	
Traditional	20.0	80.0	14.41(1.18-175)		0.036
Hinduism	100	0	1		

*** reference group

Attitude of students regarding teaching and learning of HIV/ AIDS.

The respondents were provided with ten statements to test their attitudes towards formal teaching of HIV/AIDS and indicated their level of agreement or disagreement on a five-point scale, ranging from 'Strongly Agree' to 'Strongly Disagree'. For reporting purposes, strongly agreed and agreed were merged, and disagree and strongly disagree were also combined (Table 6)**.** Figure 5 shows the attitude categories at three levels; these are the overall level of students' attitude towards teaching and learning about HIV/AIDS in the curriculum. In these questions, scores ranged from 0-3 negative attitudes, 4-6 neutral, and positive 7-10 positive. Therefore, out of 340 students, 2 (1%) were negative, 49 (14%) neutral and 294 (85%) had positive attitudes respectively, as illustrated in Figure 4.

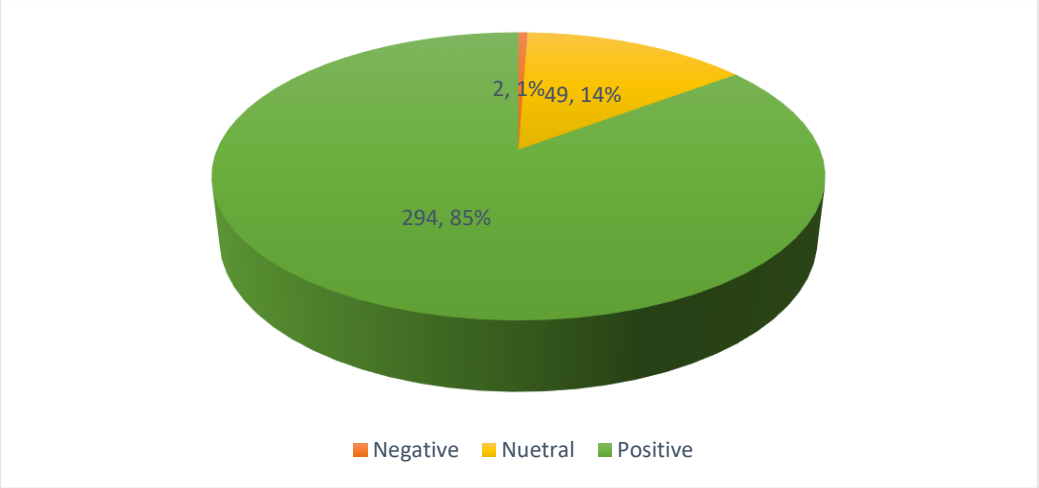

Figure 4: Student level of attitude towards teaching and learning of HIV/AIDS

Most students, 341 (98.8%) strongly agreed or agreed that HIV/AIDS issues should be taught in all HEIs. Also, 337 (98%) strongly agreed or agreed that if a specific course on HIV/AIDS was offered at their school, they would be interested in taking it. The majority, 341(98.8%) of the students strongly agreed or agreed that HIV/AIDS content should be taught to all students at UNIVEN whereas 332(96.2%) strongly agreed or agreed that being taught about HIV/AIDS it will help reduce the spread of HIV at UNIVEN. About 268 (77%) of the students strongly disagreed or disagreed that campus health clinics only should provide HIV education. Regarding the current situation, most teachers 255 (73.9%) felt that HIV/AIDS should not be integrated into the university curriculum.

Most students, 293 (84.9%) believe that HIV/AIDS should not be taught in health sciences degree programmes only whereas about 293 (84%) of the teachers strongly disagreed and disagreed that teaching HIV/AIDS is a waste of time. However, few students possessed negative attitudes compared to those who strongly agreed and agreed 130 (38.2%) that HIV/AIDS issues should be taught in classes and endorsed by campus health promoters. About 90 (26.4%) were in favour that the status quo should remain because students have been taught a lot about HIV/AIDS in primary and secondary education; hence the subject should not be integrated into the university curriculum. Furthermore, 77 (23%) felt that there is no link between their modules and HIV/AIDS content, hence would not want to have it in their modules and 52 (15%) feel that it should be part of Health Sciences degree programmes only and teaching HIV/AIDS wastes time (Table 4.7).

Table 4.7: Student responses to attitude questions towards the teaching of HIV/ AIDS (N=345)

		N	%
I believe that HIV/AIDS issues should be taught in all HEIs.			
	Strongly Agree/ Agree	341	98.8
	Strongly Disagree/Disagree	4	2
If a specific course on HIV/AIDS were offered at my school, I will be interested in taking it.			
	Strongly Agree/ Agree	337	98
	Strongly Disagree/Disagree	5	2
I support that HIV/AIDS content should be taught to all students at UNIVEN.			
	Strongly Agree/Agree	341	98
	Strongly Disagree/Disagree	4	2
I believe that if I am taught about HIV/AIDS, it will help reduce the spread of HIV at UNIVEN.			
	Strongly Agree/Agree	332	96
	Strongly Disagree/Disagree	13	4
I am interested in acquiring further knowledge on HIV/AIDS education.			
	Strongly Agree/Agree	333	96
	Strongly Disagree/Disagree	12	4
I feel that HIV/AIDS education should be the responsibility of the UNIVEN Campus HIV/AIDS Unit and should not be taught in modules.			
	Strongly Agree/Agree	130	38
	Strongly Disagree/ Disagree	215	62
I feel that the status quo should remain because students have been taught a lot about HIV/AIDS in primary and secondary education, and the			

subject should not be part of the university curriculum.			
	Strongly Agree/Agree	90	27
	Strongly Disagree/Disagree	255	73
I feel that the there is no link between my modules and HIV/AIDS content, hence wouldn't want to have it in my modules.			
	Strongly Agree/Agree	77	22
	Strongly Disagree/Disagree	268	78
I feel that HIV/AIDS should be taught in Health Sciences degree programmes only.			
	Strongly Agree/Agree	52	15
	Strongly Disagree/Disagree	293	85
I feel that teaching about HIV/AIDS is a waste of time.			
	Strongly Agree/Agree	52	15
	Strongly Disagree/Disagree	293	85

Factors associated with attitudes about teaching HIV/AIDS among students

When Multiple Logistic regression was computed, age, gender, level of study and religion were some variables not significantly associated with attitudes towards learning about HIV/AIDS. Only one field of study was significantly associated with positive attitudes towards learning about HIV/AIDS. Being a student studying humanities and social sciences (OR=0.00, C.I 95 %(0.00-0.01), environmental sciences (OR=0.00, C.I 95 %(0.00-0.00), Law (OR=0.00, C.I 95 %(0.00-0.10) and management sciences (OR=0.00, C.I 95 %(0.00-0.04) were significant factors associated with positive attitudes towards learning about HIV/AIDS.(See Table 4.8)

Table 4.8: Multivariate analyses of factors associated with attitudes towards learning about HIV/AIDS among students

Variable	Positive (%)	Negative (%)	MLR-OR (95%CI)	Chi-Square	MLR-P-value
Age					
18-25 years	83.0	17.0	***		
26-35 years	100	0	1	0.004	0.003
36-45 years	100	0	1		0.004
Gender					
Male	96.0	4.0	***	0.000	
Female	77.4	22.6	5.54(1.55-20.69)		0.011
Race					
Black	80.0	20.0	***	0.000	
Coloured	97.2	2.8	0.13(0.0.15-1.11)		0.062
Level of study					
Third Year	79.9	20.1	***	0.003	
Fourth Year	91.2	8.8	1.52-46.89		0.015
School					
Agriculture	40.4	59.6	***		
Maths and Natural Sciences	100	0	1		
Health Sciences	100	0	1		

Human and Social sciences	82.5	17.5	0.00(0.00-0.01)	0.000	0.000
Environmental Sciences	98.3	1.7	0.00(0.00-0.00)		0.000
Law	73.5	26.5	0.01(0.00-0.10)		0.000
Education	100	0	1		0.000
Management	96.4	3.6	0.00 (0.00-0.04)		0.000
Religion					
Christianity	85.8	14.2	***	0.859	
Traditional	80.0	20.0	7.4(0.16-334)		0.299
Hinduism	100	0	1		

******* reference group

Practices regarding learning of HIV/AIDS into curricula

Eighty -(25.8%) of the 345 participants indicated that they learned about HIV in their modules. However, 256 (74.2%) reported that they received no formal education about HIV/AIDS issues in their modules. From this analysis, it indicates that the integration of HIV/AIDS content is still deficient in different schools.

Teaching strategies used to deliver HIV/AIDS content

The students who reported that HIV/AIDS was integrated into the curriculum could indicate how from a list of teaching methods presently in use. Seventy-nine (88%) stated that the lecture method was used, followed by class discussion, 59 (66%), group work 68 (76%) and self-study 69 (77%). Problem-based learning was the least used method with 56 (62%) students indicating that it applied as illustrated in Table 4.9.

Table 4.9: Teaching method commonly used to teach HIV/AIDS content ***(N=89)***

Teaching method commonly used to teach HIV/AIDS content	**Yes**	**%**	**No**	**%**
Lectures	79	88	10	12
Discussions	59	66	30	34
Group work	68	76	21	24
Self-study	69	77	22	25
Problem-based case study (PBL)	56	62	44	38

Assessment methods

The students who integrated HIV/AIDS into the curriculum could indicate this from a list of assessment methods commonly applied to assess students regarding HIV/AIDS content in modules. Written examination, assignments and tests were the most frequently used methods to assess HIV/AIDS content. According to Table 10 below, students indicate that written examination 69 (77%), assignments 70 (78%) and tests 82 (92%) were typical for testing about HIV/AIDS. Oral presentation 52 (58%) was the least used method, according to the students. This is summarised in Table 4.10

Table 4.10: Assessment methods used to assess HIV/AIDS content ***(N=89)***

Evaluation method commonly used to assess HIV/AIDS content.	**Yes**	**%**	**No**	**%**
Written Examination	69	77	22	25
Assignments	70	78	19	21
Tests.	82	92	7	8
Oral Presentation.	52	58	37	42

Discussions

HIV knowledge of students

The study found that only 145 (42%) of students had adequate knowledge, 21% had poor and 37% had average understanding of HIV/AIDS. The scores in this study were similar to that conducted by Smith et al., (1998) in which South African university students scored less than 50% in a knowledge-based questionnaire. However, the present results are not comparable with findings across the globe in different studies which suggested university students were

knowledgeable about HIV/AIDS. For instance, in similar studies by Friedland et al., (1991), Ichharam and Martin (2002) and Reddy and Frantz (2011), South African university students had high scores related to knowledge of HIV/AIDS. Recent studies in South African universities suggest that students generally in higher education have high levels of knowledge about HIV/AIDS (HEAIDS, 2010c; Mbelle et al., 2014), and regional (De Beer et al., 2012; Faimau et al., 2016; Mkumbo, 2013; Terry et al., 2006) and Balfour et al., 2010; Durongritichai, 2012; Ekşi & Kömürcü, 2014; Gańczak et al., 2007; Haroun et al., 2016; Kuete et al., 2016; Nasir et al., 2008; Reis et al., 2013; Said & Ab Hamid, 2018; Smith et al., 1998; Smith et al., 2014; Terry et al., 2006; Thakuri & Thapa, 2018; Zaini & Anjum, 2015).

The difference in knowledge levels between the present study and others could be due to the difference in socio demographical features, particularly the study participants' education levels and the indicators used to measure the level of knowledge. These findings point out the need for the provision of HIV/AIDS education, focusing on tertiary education in South Africa. This low-level knowledge among students can be attributed to a lack of meaningful formal HIV education in schools and universities, which facilitates the risk of unsafe sexual practices. Hence, this study advocates formal teaching of sexuality and HIV/AIDS education at university to ameliorate the risky sexual practices exhibited by students.

The study also established that more than half (58.8%) of the students knew the difference between HIV/AIDS. Moreover, 69% of the students mentioned that there is no cure for HIV/AIDS. This corroborates studies conducted in South Africa (HEAIDS, 2010c; Reddy & Frantz, 2011), Ethiopia (Mulu, Abera & Yimer, 2014) and Nigeria (Adefuye et al., 2009; Oguamanam, 2012) where students scored high on these variables. The research also indicated that students demonstrated some knowledge of the correct modes of transmission, basic facts and prevention of HIV/AIDS. Awareness about HIV among students is explained by the aggressive awareness campaigns and educational programmes implemented by private and public stakeholders in South Africa. However, they had misconceptions, such as getting HIV through mosquitoes and a dirty toilet. This is in line with similar studies conducted in South African universities (Friedland et al., 1991; HEAIDS, 2010c; Ichharam & Martin, 2002; Mbelle et al., 2014) which suggests that South African universities do have the correct knowledge about HIV/AIDS but not detailed information; therefore, misconceptions exist. Other studies also reported similar findings in a South African survey on youth aged 15-24 (Shisana et al., 2002; Shisana et al., 2009; Shisana et al., 2014) which suggest that although students were aware of HIV/AIDS, they lacked detailed knowledge. This can be attributed to a non-reduction of the high levels of HIV transmission in South Africa. A recent UNAIDS report (2014) stated that most youths did not know the modes of HIV transmission and were poorly informed about how they could protect themselves against infection. The same study revealed

that half of all youth in the countries surveyed had mistaken beliefs about the transmission of the virus (UNAIDS, 2014).

Given the fact that South African youth have the largest HIV profile, they ought to have a better understanding of HIV/AIDS since adequate knowledge is easily translated into safer sexual practices. Durongritichai (2012) argues that myths about HIV transmission can quickly develop into negative attitudes about the pandemic, thus hindering HIV prevention. In support of this, Sallar (2009) agrees that 'students with a strong belief that HIV can be contracted through casual contact exhibit negative attitudes towards HIV-positive people' (Sallar, 2009). This suggests that university students should be taught formally about HIV/AIDS in their disciplines because, in the absence of a cure, prevention is the only available method to reduce HIV prevalence rates. This can only be obtained through behavioural change, which is associated with proper knowledge about HIV (AAU, 2010; Durongritichai, 2012). These findings confirm the need for more education about HIV/AIDS transmission among students.

Attitudes of students towards teaching and learning about HIV/AIDS

The study finding suggests that most students (85%) had positive attitudes towards the formal teaching and learning about HIV/AIDS in their disciplines. This is line with similar studies conducted in South African universities (HEAIDS, 2010d; HEAIDS, 2010b; HEAIDS, 2015b; Luwes et al., 2016; Somfongo, 2013) where students agree that it should be part of the curriculum. Furthermore, similar findings were reported in international and regional studies (Herr et al., 2012; Koob & Harvan, 2003; Lee, 2006; Mkumbo, 2014; Nasir et al., 2008).

The study also reported that some students were negative about HIV/AIDS taught in their discipline. Some students suggest that HIV/AIDS should not be taught in their modules because it is a health issue. Other students objected because they already learned a lot about HIV/AIDS. The negative attitude about HIV/AIDS education is ascribed to negativity towards the disease, AIDS information fatigue and generally, minimal perceived risk of contracting it in South Africa (Reddy & Frantz, 2011). This could also be because, in South Africa, the public including, young people, have been exposed to campaigns which repeatedly educate the medical aspects of HIV/AIDS and people experience 'AIDS fatigue' (Shefer, Strebel & Jacobs, 2012).

These findings have implications for HIV prevention and call for the need for focused efforts to counteract HIV/AIDS information fatigue in an interactive manner (Mulu et al., 2014). This means students should learn about the severity, risky behaviours and behaviour in sexual health. This information helps students to assess their risk of the virus (Shefer, Strebel & Jacobs, 2012). Therefore, the information should be taught in a balanced manner free of

prejudice and stigma to reduce HIV/AIDS tiredness and negative attitudes undermining sexual health.

Practices

In this study, only 25.8% of students indicated that they were taught HIV-related information in their studies. This clearly indicates that most students leave without adequate knowledge about HIV, which may lead them to engage in high-risk sexual behaviours. Similar findings were reported at UNIVEN in that very few students are taught formally about HIV/AIDS (Mavhandu-Mudzusi & Netshandama, 2013). This is line with the surveys conducted in South African universities (HEAIDS, 2010d; HEAIDS, 2015b) where all students and new graduates who participated in the study 'argued that the HEIs did not provide them with HIV/AIDS knowledge, therefore, institutions should provide future students with compulsory courses, both within and outside'. Similar findings were also reported in Chinese college students (Song, 2015) and American students (Smith et al., 2014), in that they did not receive enough HIV and sexuality education. These findings have implications for HIV prevention and again suggest the need for focused efforts to provide students with more education about HIV/AIDS, specifically methods to prevent the spread of HIV as well as the modes of transmission (Mulu et al., 2014).

The study also showed that students were taught using a variety and combination of teaching strategies lecture method, group work, self-study and problem-based learning. The lecture method and group discussion were most frequent. A study at Rhodes University concluded that presentation and group discussion were the most commonly used methods for delivering HIV/AIDS education and reported similar findings (Rau, 2009). Likewise, a 2010 survey conducted by HEAIDS shows that the lecture method and discussion were the most commonly used teaching strategies for communicating HIV/AIDS knowledge to students (HEAIDS, 2010a). This contrasts with a study conducted in South African HEIs asserting that service-learning was the most widely used strategy used by teacher to teach HIV/AIDS knowledge (HEAIDS, 2005). In another survey at 35 African universities, most teachers used interactive teaching methods such as group discussions and debates to disseminate HIV/AIDS knowledge to students (AAU, 2010). In this study, very few teachers trained in HIV/AIDS education and curriculum development used a lecture method and group discussion.

This contrasts with a study conducted in South African HEIs in which service-learning was the most used teaching strategy for HIV/AIDS knowledge (HEAIDS, 2005). In another survey conducted in 35 African universities, most teachers used interactive teaching methods such as group discussions and debates to inform students about HIV/AIDS (AAU, 2010). The use

of lecture methods and group discussion in this study may be attributed to the fact only a few teachers trained in HIV/AIDS education and curriculum development.

However, according to this study, lecture-based educational methods and group discussion are used frequently to teach HIV/AIDS and are under severe pressure from educational scholars. For example, Cooper, Bottomley and Gordon (2004) argue that although lecture-focused methods of education, using formal lectures and case studies, can be praised for academic rigour, they do not encourage student learning through experience. Also, Pollock, Hamann and Wilson (2011) suggest that group discussions as a teaching method require a skilled facilitator to lead the learning experience. Senderowitz and Kirby (2006) recommend that the HIV/AIDS education programmes use a combination of strategies such as short lectures, class discussions, small group work, video presentations, stories, live skits, role-plays, risk simulations, competitive games, forced-choice activities, surveys of attitudes and intentions with anonymous presentation of results and problem-solving. Interactive and participatory methods encouraging participation and discussion among teachers and students are central to the teaching and learning of HIV/AIDS among young people (HEAIDS, 2010a). HEAIDS (2010a) recommends online, workshops and innovative and participatory approaches to HIV/AIDS teaching and learning. This calls on the university to conduct faculty development workshops to train teachers to use interactive and participatory teaching methodologies to teach students.

The study revealed that the students were assessed using traditional evaluation techniques. Written examination, assignments and tests were most usually used to assess HIV/AIDS content. Surveys in South Africa (HEAIDS, 2010a) have similar results with slight variations. This result confirms that traditional assessment methods are still used. In the context of tertiary education in South Africa, these methods are the norm as reflected in the use of written exams, tests and assignments. According to Uys and Gwele (2005), ‘the purpose of the assessment is to recognise areas and skill levels and provide feedback on learning’. Traditional examination-based evaluation, while praised for setting standards across a student group, is criticised for not being effective in measuring individual learning (Pollock, Hamann & Wilson, 2011). Innovative methods of assessment that encourage reflection on learning experience are required (Uys & Gwele, 2004).

Conclusion

The study concludes that most students have knowledge of HIV/AIDS, but still have misconceptions about HIV/AIDS, transmission and prevention that need to be addressed. Also, students had positive attitudes about the teaching of the subject. However, few students reported learning about HIV/AIDS in the classroom. Therefore, this study calls for the provision

of formal HIV/AIDS education at HEIs. Recommendations are that further research is conducted to assess the knowledge, attitudes and practice towards teaching and learning about HIV/AIDS among teachers. Since the teachers are the custodians of the curriculum, the knowledge gaps, attitudes and education needs of the students concerning HIV/AIDS can be examined. The next chapter outlines the knowledge, attitude and practices of teachers towards teaching and learning about HIV/AIDS at selected universities.

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CHAPTER 5

KNOWLEDGE, ATTITUDES, AND PRACTICES OF TEACHERS TOWARDS TEACHING AND LEARNING OF HIV/AIDS IN THE CURRICULUM

Submitted as Murwira, T.S., Khoza, L.B., Maputle, S.M., Mpeta, M.
Knowledge, Attitudes, and Practices of Teachers Towards Teaching and Learning of HIV/AIDS in the Curriculum.

Abstract

Introduction: South Africa continues to struggle with the high prevalence of HIV/AIDS, which mostly affects young people. The higher education sector, particularly teachers, are well placed to react to this pandemic by formally teaching students formally how to protect themselves and live and work with those affected by HIV/AIDS. Teachers knowledge, attitude and practices are the most critical indicators of their willingness to teach about HIV/AIDS education. Several studies examined the motivation to teach in primary and secondary education, very few studies have focused on the university educators. This study aimed to assess teachers' knowledge, attitudes and practices towards teaching and learning of HIV/AIDS in the curriculum.

Material and Methods: A cross-sectional quantitative survey design was conducted at a selected university in the Limpopo Province, South Africa. A questionnaire was administered to 240 teachers to assess knowledge, attitudes and practices towards teaching and learning of HIV/AIDS in the curriculum. The researcher recruited participants for the study using purposive sampling method and data was collected using self-administered questionnaires and analysed using SPSS version 23.

Results: Overall, about 177 (74%) of teachers had a high 45 (19%) or average 132 (55%) knowledge about HIV/AIDS, 212 (88%) had positive attitudes towards teaching it, and very few teachers 38 (15.8%) indicated that they taught about HIV/AIDS. Multi-logistical analysis indicates that HIV/AIDS knowledge was associated with experienced teachers with 15-19 years (OR= 58.77; 95% CI: 2.45- 407.42) and those with doctorate degrees (OR =0.00; 95% CI: 0.00- 0.46). The main reasons cited by teachers for not integrating HIV/AIDS content into their various modules was due to overcrowded curricula, lack of knowledge about curriculum integration and lack of support from management.

Conclusions: The findings indicate that teachers possessed high knowledge levels about certain aspects of HIV/AIDS, but there were misconceptions. An overwhelming majority of the teachers supported the introduction of HIV/AIDS into their modules. However, despite supporting this issue, a significant number of teachers did not incorporate HIV/AIDS content into the various modules. This fact accentuates the need to provide them with knowledge, skills and confidence to ensure that they integrate HIV/AIDS content into various modules.

Keywords: Knowledge, attitude, practices, curriculum, HIV/AIDS, education, South Africa

Introduction

Internationally, among young people aged 15-24, records indicate a high incidence of HIV new infections (UNAIDS, 2018). This report causes concern because this age range is when most young people attend university or have recently graduated (Wood, 2011). Universities have a critical role to play within this context of extensive HIV/AIDS infections. This fact illustrates the urgent need to provide students with HIV/AIDS education to mitigate the spread of the virus and the role of educators is vital (Kelly, 2000). Also, it implies that university teachers are strategically located and expected to respond to the effect of HIV/AIDS through teaching and learning (HEAIDS, 2010c; HEAIDS, 2010d).

Education has a primary role in the fight against HIV infection (DeJong, 2014). Youde (2016) states that at the centre of much of the work in combating HIV/AIDS must be the recognition of the universities pivotal roles. Integrating HIV/AIDS content into the university curriculum has the excellent potential of raising students' levels of understanding the scourge and reducing risky behaviours(Fourie & Meyer, 2016). Therefore, teachers are expected to take the responsibility of providing information about HIV/AIDS to promote awareness resulting in behavioural changes among students (Wood, 2011). Teachers are expected to be personally and professionally competent and respond to the challenges posed by HIV/AIDS (HEAIDS, 2010b).

Recent research highlights a growing recognition of the critical role that HEIs in South Africa can and should play in the role in helping students to live and cope with the multiple challenges associated with an age of widespread HIV/AIDS (HEAIDS, 2010a; HEAIDS, 2010b; HEAIDS, 2010d). The argument is that due to the destructive nature and high prevalence of HIV in South Africa, a multi-sectoral approach is essential to mitigate the impact of the disease. Defeating HIV is a massive task requiring a collective effort (Kelly, 2003; van Laren, 2012). These efforts require all citizens, including teachers, to combine their efforts and commit to alleviating the spread of HIV/AIDS (AAU, 2010). De Lange, Van Laren and Tanga (2014)and Wood (2011) argue that despite policies and the strategic framework that creates space for formal teaching on the pandemic in South Africa, there is evidence that academics do not integrate HIV/AIDS into their disciplines (De Lange et al., 2014; Wood, 2011). This means that university students in South Africa are not well prepared to be HIV-competent graduates (Wood, 2011).

Before embarking on any curriculum effort, it is important to understand the factors that impact curriculum change (Hartell, Phatudi & Mugweni, 2014). Jansen and Christie (1999) argue that any curriculum change requires a change in the knowledge, attitudes, beliefs and practices of curriculum makers who are teachers in this context. Torres (2001) agrees that there is a need

to explore teachers perceptions of the changes as their outlook is critical to how the educational initiative is implemented. Also, Bantwini (2010) argues that teachers are key stakeholders in the success of any curriculum reform and their knowledge, beliefs and perceptions have a fundamental role in the understanding of the reforms and guiding their implementation.

Van Driel, Bulte and Verloop (2007) and Cohen et al. (2004) further argue that the integration of HIV/AIDS into the curriculum is dependent on the effectiveness of those teachers who implement it, among other factors. Furthermore, the extent to which teachers integrate HIV/AIDS into the curriculum is reliant on and influenced by their knowledge and attitudes (Cohen et al., 2004). Indeed, one of the central characteristics of effective HIV/AIDS education is the teacher's knowledge, willingness and positive attitude towards teaching it (Jansen & Christie, 1999; Douglas, Laris & Lori, 2005; Kirby, 2008). It is in this context that some scholars recommend the assessment of the knowledge, attitudes and practices of teachers about teaching HIV/AIDS before engaging them (Cohen, Byers & Sears, 2012; Helleve et al., 2009; Herr et al., 2012).

A teacher's knowledge, attitude and their practices about teaching HIV/AIDS determines their willingness and ability to integrate HIV/AIDS content into the curriculum (Holderness, 2012). There are few studies which have integrated teachers' views regarding the teaching and learning of HIV/AIDS in South African higher education and beyond. A study conducted in Zambia by Siamwiza and Chiwela (1999) suggests that the teachers lacked knowledge about HIV/AIDS, were positive about teaching but did not deliver the life skills and HIV/AIDS education. Similar findings were also reported in Zimbabwe (Mugweni, Hartell & Phatudi, 2014) whereby teachers with limited knowledge of HIV, despite having positive attitude did not teach about HIV/AIDS. Other studies have shown having a positive attitude motivates teachers to teach about HIV/AIDS. A survey conducted by (HEAIDS, 2010a), among champions, deans, and head of departments of 23 universities in South Africa suggest they have a favourable attitude towards renewing the curriculum to create space for HIV/AIDS content, hence the majority of them indicated that they were teaching about it.

Problem statement

Despite HIV/AIDS policies and a strategic framework that creates space for formally teaching about the pandemic, there is evidence to date that academics do not integrate HIV/AIDS into their disciplines and do not link their discipline to the social aspects (De Lange, Van Laren, & Tanga 2014; Wood, 2011). This research is based on the findings from a previous study which concluded there was minimal inclusion of HIV/AIDS content in the curricula (Murwira et al., 2019). This suggests HIV/AIDS has not been systematically integrated into curricula and that

those who integrate it have done so on their initiative. This part of a needs assessment sought to evaluate the HIV/AIDS education requirement of the curriculum and possible content and strategies. Given the importance of the knowledge, attitudes and practices of teachers with respect to the chances of successful innovation, these perceptions must be clear at the beginning of the implementation process (Van Driel et al., 2007). Therefore, the study aimed to assess these views concerning the integration and teaching of HIV/AIDS content at UNIVEN.

Material and Methods

Study Design

The present study was quantitative in nature, using a cross-sectional survey design to assess knowledge, attitude and practices of teachers regarding teaching and learning about HIV/AIDS in the curriculum.

Study Setting

The University of Venda was founded in 1981 and is in the Vhembe district of the Limpopo Province, South Africa. In 2002, the Department of Higher Education and Training mandated that the University of Venda become a comprehensive university focusing on professional and career-focused programmes. The university's academic configuration is composed of eight schools and 59 departments offering a range of under- and postgraduate academic programmes in various classifications of the educational subject matter. The eight schools include Agriculture Sciences, Education, Environmental Sciences, Health Sciences, Human and Social sciences, Law, Management Sciences and Mathematical and Natural Sciences. There are about 15,704 students inclusive of postgraduates and undergraduates and a staff capacity of 800 comprised of teaching, administrative, staff and support staff (UNIVEN, 2018). The university mission states that it 'aspires to be at the centre of tertiary education for rural and regional development in Southern Africa'. As such, 'it is anchored on the pillars of excellence in teaching, learning, research and community engagement, produces graduates imbued with knowledge, skills, and qualifications which are locally relevant and globally competitive' (UNIVEN, 2018).

Study Methods

The target population was composed of 370 teaching staff members. Although quantitative studies are known to calculate sample size, it was not calculated in this instance because the study targeted all UNIVEN's teaching staff. Non-probability purposive sampling was used to select participants because the characteristics of the sample were predetermined during research planning (Botma et al., 2010). This population are considered experts as they are

the current facilitators of the courses and provided rich information about the content for HIV/AIDS. In addition, purposeful sampling in this context was appropriate to provide a sample with rich information about the phenomena under study.

Research Instrument

The study utilised a self-administered questionnaire to collect data. The questionnaire was developed based on previous studies (Mbelle & al. 2014, HEAIDS, 2010a; Luwes, Meda & Swart, 2016; Shisana et al., 2014). The teachers' questionnaire was in English and consisted mainly of closed-ended questions. The questionnaire had 53 items. The first 11 questions focused on demographic details, 28 items on knowledge about HIV/AIDS, nine items on attitudes towards the integration of HIV content and five on practices regarding the integration of the HIV/AIDS content (Appendix 1). The questionnaire was organised as follows in Table 5.1:

Table 5.1: Structure of the questionnaire

Section A:	Item 1 to 11 focused on the demographics of the respondents.
Section B:	Items 12 to 40 focused on knowledge about HIV/AIDS.
Section C:	Items 41 to 50 focused on attitude towards HIV/AIDS education.
Section D:	Items 51 to 55 focused on teaching practices regarding HIV/AIDS education.

Pre-test

Before collecting data, the questionnaire was pre-tested among teachers to examine reliability and validity. Ten participants were selected randomly, and the questionnaire was pilot tested, and feedback incorporated into the final questionnaire (Appendix 1). These participants were excluded from the main study (De Vos et al., 2011). The reliability is the consistency with which an instrument measures the attribute (Polit & Beck, 2013). The reliability was ensured by administering the questionnaires to different participants at UNIVEN and results were consistent, therefore, proving reliability (Creswell & Creswell, 2017).

Regarding internal consistency, the researcher and promoters evaluated the instrument, and a statistician verified it. The questionnaire`s face validity in this study was ensured by the structure of the questions which were close ended to make sure the respondents could easily choose their preferred answers. In addition to achieving face validity, the questionnaire had only six pages, thus complying to advice from Bruce et al. (2011), who suggested that 10 to 12 pages per questionnaire suffice. Also, the questionnaire was in plain English with no foul language, further ensuring face validity. Polit and Beck (2013) refer to content validity as the

degree to which an instrument has an appropriate sample of items to measure the construct. The content validity is also judged based on the extent to which statements or questions represent the issue they are supposed to measure and judged by the researcher, readership and experts in the field. The questionnaire was developed from the literature review to ensure content validity and subjected to rigorous expert review by two pedagogical experts. In addition, a statistician verified and confirmed it.

Data Collection Procedure

Data was collected by the researcher and research assistants. Data was collected in the following two ways. Given the pressure of time on teachers, they could complete the questionnaires online using Google forms as this was deemed more time efficient. Questionnaires were physically distributed to all eligible teaching staff members by the researcher assisted by research assistants. The researcher physically used the office-to-office strategy by approaching the teachers to participate in the survey. The heads of departments and relevant course coordinators were consulted to confirm cooperation by the teaching staff. Appointments were made with the respondents at least one week prior to data collection.

Ethical Considerations

The study was reviewed, and full ethical clearance granted by the University of Venda Research and Ethics Committee (SHS/17/PH/08/1506). After obtaining written permission from teachers, heads of departments and deans, data was collected. The study focused on the analysis of data, and no harm inflicted on any participant. Regarding informed consent, the participants were informed about the objectives of the study, the rights afforded to them, what is expected of them and the amount of time their participation would entail before they sign the consent forms. The teachers, heads of department and deans received a full explanation concerning the focus of the study as well as details about the research. Data confidentiality was maintained, and participants guaranteed that personal information would not be divulged in any articles concerning this research. Furthermore, background information about the teachers would remain confidential, and pseudonyms would be used.

Data Analysis

Data was coded and entered into an Excel spreadsheet and analysed using the Statistical Package for the Social Sciences (SPSS) version 23. Appropriate descriptive and inferential statistics were conducted for the various topics covered in the questionnaire. The scoring for knowledge and attitude was adapted from a study among university students in Malaysia (Said & Ab Hamid, 2018), and there were 28 questions concerning knowledge. To evaluate knowledge, we assigned a score of one (1) for a correct answer and zero (0) for incorrect

answers. The total knowledge score for each set of questions generated an overall score for each categorising the level of knowledge as follows; 'low' for respondents who scored 0-14 (≤ 50%), 'average' for those who scored between 15-20 (51% and 74%), and 'high' for those who scored more than 21 (≥ 75%). The attitude score was determined as follows: A score of one (1) was given for every positive answer in the attitude and zero (0) for negative answers. The scores were added to generate an overall score for each and categorise the level of attitude into 'negative attitude' for those who scored 0-3 (0-33%), neutral 4-6 (44-67%) and positive 7-9 (78-100%). The level of practice was determined by the number of teachers who reported that they taught about HIV/AIDS. The significance of association was determined using Multiple Logistic regression. Not Knowledgeable and Bad Attitude were used as outcome variables for the Multiple Logistic regression analysis to compare how different demographic characteristics influence attitude and knowledge. Odds ratios were computed using Multiple Logistic regression and p-values and confidence intervals generated from these.

Results

Description of the participants

A total of 370 questionnaires were distributed, and 240 questionnaires were returned, yielding a response rate of 65%. According to Fosnacht et al. (2017), 50% is an **acceptable response rate**, while at least 60% is good and a **response rate** of 70% or more is very good. About 11 items measured the demographics of the sample. Table 5.2 presents the respondents` distribution according to race, employment status, position, experience, school, departments, qualification, training in curriculum development and HIV/AIDS and teaching level. The results indicate that most respondents were males, 157 (65.4%), 153 (63.8%) below the age of 50, black 229 (95.4%), permanent teaching staff 208 (86.7%), had less than 20 years' experience of working 217 (99.4%), from school of Human Sciences 56 (23.3%), trained in HIV/AIDS education 54 (22.5%), trained in curriculum development 167 (69.6%), hold masters degrees 112 (46.7%) and doctorates 104 (43.3%) (Table 5.2).

Table 5.2: Demographic distribution of respondents. ***(n=240)***

Variables	**Category**	**N**	**%**
Age(years)	20-29	19	7.9
	30-39	50	20.8
	40-49	84	35.0
	50-59	82	34.2
	60-69	5	2.1
Gender			
	Male	157	65.4
	Female	83	34.6
Race	Black	229	95.4
	Coloured	3	1.3
	White	8	3.3
Employment status			
	Permanent	208	86.7
	Temporary	32	13.3
Position			
	Professor	83	34.6
	Ass professor	53	22.1
	Senior Lecturer	43	17.9
	Lecturer	23	9.6
	Junior lecturer	38	15.8
Experience			
	0-4	83	34.6
	5-9	53	22.1
	10-14	43	17.9
	15-19	38	15.8
	20+	23	9.6
School.			
	Agriculture	11	4.6
	Environmental sciences	19	7.6
	Law	21	8.8
	Education	3	1.3

	Health Sciences	28	11.7
	Human and social sciences	56	23.3
	Mathematical and Natural science	57	23.8
	Management Sciences	45	18.8
Trained in HIV/AIDS education			
	Yes	54	22.5
	No	186	77.5
Trained in curriculum development			
	Yes	167	69.6
	No	73	30.4
Qualification			
	Undergraduate	2	8
	Honours	22	9.2
	Masters	112	46.7
	Doctoral	104	43.3

Knowledge of teachers related to HIV/AIDS

The knowledge regarding HIV/AIDS was evaluated at two levels. First, the teachers received 28 questions to assess their knowledge about the general aspects of HIV/AIDS, modes of transmission and prevention. For each item, the respondents indicated yes, or no. Responses were coded as correct or not correct to determine the overall level. The figure below reports on the overall level of knowledge dividing the categories of knowledge into three. Low levels of knowledge are if the score is below 0-14 (≤ 50%), 'average' if the score between the range of 15-20 (51% and 74%), and 'high' if the score is more than 21 (≥ 75%). The overall HIV knowledge score of teachers was taken from 240 teachers, 63 (26%) had poor knowledge, 132 (55%) had average knowledge, and only 45 (19%) had adequate knowledge (Figure 5).

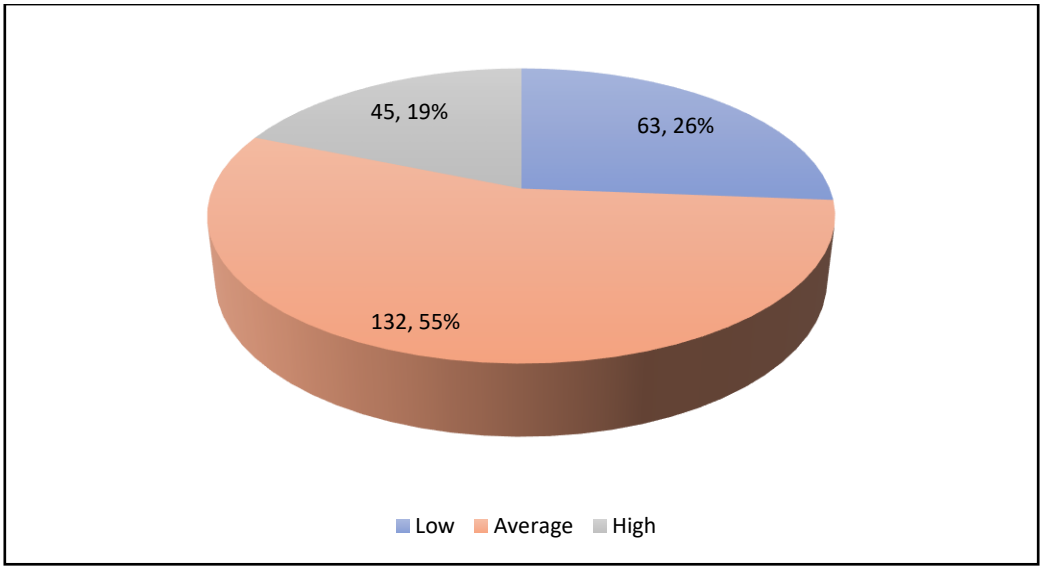

Figure 5: Teachers levels of knowledge about HIV/AIDS

Table 5.3: Teachers knowledge about HIV/AIDS (**n=240)**

	Correct response		**Incorrect response**	
	N	%	N	%
Statements regarding general knowledge about HIV/AIDS				
HIV/AIDS is the same thing.	222	92.5	18	7.5
There is a cure for AIDS.	228	95	12	5.0
AIDS is caused by HIV.	150	62.5	90	37.5
A person can get HIV by sharing a glass of water with someone who has HIV.	216	90	24	10
To prevent HIV infection, a condom must be used for every round of sex.	215	89.6	25	10.4
It is possible to get HIV when a person gets a tattoo.	149	62.1	91	37.9
Eating healthy foods can keep a person from getting HIV.	134	55.8	106	44.2
All pregnant women infected with HIV will have babies born with AIDS.	216	90	24	10
One can reduce the risk of HIV by having fewer sexual partners.	214	89.2	26	10.8
Antiretroviral drugs can cure HIV infection.	235	97.9	5	2.1
A healthy-looking person can also be infected with HIV.	232	96.7	8	3.3
AIDS is an infectious disease caused by bacteria.	215	89.6	25	10.4
Using alcohol or drugs before or during sex can increase a person`s risk of getting HIV.	175	72.9	65	27.1
Statement regarding routes of HIV transmission				
Sexual intercourse.	177	73.8	63	26.3
Using a dirty toilet seat.	170	70.8	70	29.2
Sharing a needle to inject drugs with someone who is HIV positive.	168	70	72	30
Hugging someone with AIDS.	168	70	72	30
Having vaginal sex without a condom.	179	74.6	61	25.4
Getting bitten by a mosquito that is carrying a virus.	168	70	72	30
Having anal sex without using a condom.	179	74.6	61	25.4
Statement regarding prevention measures				
Proper condom use.	169	70.4	71	29.6
Screening blood before transfusions.	176	73.3	64	26.6
Get tested and know your partner's HIV status.	181	75.4	59	24.6

Limit Sexual Partners.	205	85.4	35	14.6
Taking Pre-exposure Prophylaxis medication.	175	72.9	65	27.1
Taking Post-exposure prophylaxis medication.	173	72.1	67	27.9
Statements regarding the policy on the teaching of HIV/AIDS.				
The South African Department of Higher Education and Training (HEAIDS) have mandated that HIV/AIDS education be integrated into institutions of higher learning curricula.	106	44.2	134	55.8
Policy and strategic framework on HIV/AIDS for higher education is the policy that mandates the teaching of HIV/AIDS education.	101	42.1	139	57.9

Table 5.3 presents the respondent's replies regarding knowledge on HIV/AIDS. The first part consisted of basic knowledge about HIV with 13 questions requiring yes or no, the second part HIV transmission and the last prevention and policies. The basic HIV/AIDS items were assessed using 13 questions with yes and no responses. The results show that the knowledge level was generally high for most items, with an average of 83.4% of respondents correctly responding to various questionnaire items. However, there were gaps in five items with only 150 (62.5%) correctly answering that HIV causes AIDS and only 149 (62.1%) correctly responded that it is possible to get HIV when being tattooed. Of note, 106 (44.2%) of teachers incorrectly responded that eating healthy foods can keep a person from getting HIV. Also, some teachers had misconceptions about AIDS being an infectious disease caused by a bacterium 25 (10.4%) and using alcohol or drugs before or during sex can increase a person`s risk of getting HIV 65 (27.1%).

There were seven HIV transmission items with questions requiring yes and no responses. For questions about how HIV is transmitted (Table 3), an average of >72% of participants responded correctly. Most teachers correctly answered that HIV is transmitted through sexual intercourse, sharing a needle to inject drugs with someone who is HIV positive, having vaginal or anal sex without a condom. Also, they were correct in their answers that HIV is not transmitted by using a dirty toilet seat, hugging someone with AIDS or getting bitten by a mosquito carrying the virus.

However, knowledge gaps were noted on five items namely 63 (26.3%) who were not aware that HIV/AIDS is not only transmitted through sexual intercourse and 70 (29%) believed it is spread through dirty toilet seats. Seventy-two (30%) participants did not know that sharing a needle with someone who has HIV/AIDS could transmit the disease, 72 (30%) believed that someone could get HIV by hugging someone who is HIV positive, and 61 (25.4%) believed

that HIV/AIDS is not transmitted by having vaginal sex without a condom. Furthermore, about 72 (30%) believed that mosquitoes transmit HIV, and 61 (25.4%) believed HIV could not be transmitted by having anal sex without using a condom.

The HIV prevention issues were assessed by six questions with yes and no responses. For questions about how HIV/AIDS is prevented (Table 3), most teachers responded correctly with an average of >75% stating that to prevent transmission of HIV condoms must be correctly used, screen blood before transfusion, get tested and know your partners status, limit sexual partners, take pre-exposure and post-exposure prophylaxis medication. The following knowledge gaps concerned preventive measures. Only a few participants were not aware that proper condom use 71 (29.6%), screening blood before transfusions 64 (26.6%), getting tested and knowing your partner's HIV status 59 (24.6%), limiting sexual partners 35 (14.6%), taking pre-exposure 65 (27.1%) and post-exposure prophylaxis medication 67 (27.9%) prevent HIV/AIDS. Regarding policy items, only 106 (44.2 %) of teachers were aware that South Africa Higher education mandated that all higher education integrates HIV/AIDS. Of note, 106 (42,1%) of the teachers were aware of the mandate that encourages academics to integrate HIV/AIDS-related content into the disciplines they teach. Furthermore, regarding the actual policy, only 101 (42.1%) were not aware of it (Table 5.3).

Factors associated with knowledge about HIV/AIDS among teachers

When Multiple Logistic regression was computed, age, gender, race, employment status, academic position, the field of study, training in HIV/AIDS education and curriculum were some of the variables that were not significantly associated with knowledge. However, work experience and level of education were significantly associated with knowledge about HIV/AIDS. Those who were experienced academic with 15-19 years were more likely to be knowledgeable about HIV/AIDS than their peers (OR= 58.77; 95% CI: 2.45- 407.42). Similarly, those with more education such as doctorate degrees are more likely to be knowledgeable about HIV/AIDS compared to those with lower qualifications, even though the odds were very low (OR =0.00; 95% CI: 0.00- 0.46) (Table 5.4).

Table 5.4: Multivariate analyses of factors associated with knowledge about HIV/AIDS among teachers

Variable	Knowledgeable (%)	Not knowledgeable (%)	MLR -OR (95%CI)	Chi-Square	MLR P-value
Age					
20-29	73.68	26.32	****		
30-39	62.00	38.00	2.00(0.12-34.63)		0.633
40-49	86.90	13.10	0.99(0.03-30.38)		0.997
50-59	65.85	34.15	0.14(0.00-4.92)	0.008	0.277
60-69	60.00	40.00	1.11(0.00- 56.89)		0.975
Gender					
Male	72.61	27.39	2.94 (0.81-10.72)	0.884	0.102
Female	73.49	26.51	***		
Race					
Black	71.62	28.38	***		
Coloured	100.00	0.00	1	0.118	
White	100.00	0.00	1		
Employment status					
Permanent	73.56	68.75	1.44(2) (0.18-1.20)		0.730
Part time	26.44	31.25	***	0.569	
Academic Position					
Professor	71.43	28.57	***		
Associate Professor	78.57	21.43	1.68(0.04-79.32)		0.792
Senior Lecturer	72.73	27.27	0.02(0.00-1.16)	0.868	0.059
Lecturer	74.44	25.56	0.015(0.00-1.41)		0.070
Junior Lecturer	63.16	36.84	0.05(0.00- 13.09)		0.298
Experience					
0-4	73.49	26.51	***		
5-9	86.79	13.21	1.42(0.29-10.66)		0.731
10-14	81.40	18.60	1.12(0.11- 11.54)	0.000	0.926
15-19	26.32	73.68	58.77(2.45- 1407.42)		0.000

20 years and more	100.00	0.00	****		
School					
Agriculture	100.00	0.00	1		
Maths and Natural Sciences	96.49	3.51	0.21(0.01- 6.19)		0.368
Health sciences	82.14	17.86	0.34(0.02-4.61)		0.415
Human and Social sciences	25.00	75.00	17.51(1.23- , 247.72)	0.002	0.034
Environmental Sciences	78.95	21.05	1		
Law	57.14	42.86	1		
Education	0.00	100.00	1		
Trained in HIV/AIDS education					
Yes	75.93	24.07	0.93(2) (0.29-4.65)		0.928
No	72.04	27.96	***	0.070	
Qualifications					
1.Undergraduate degree	50.00	50.00	****		
2.Honours degree	86.36	13.64	0.12(0.00- 9.53)		0.345
3.Master's degree	52.68	47.32	0.15(0.00- 6.74)	0.045	0.331
4.Doctoral degree	92.31	7.69	0.00(0.00- 0.46)		0.017
Training in curriculum development					
Yes	69.46	30.54	1.66(0.00-8.52)		0.617
No	80.82	19.18	***	0.068	

**** reference group

Attitude of teachers related to the teaching of HIV/AIDS

To test the attitudes of respondents towards the formal teaching of HIV/AIDS, they were provided with nine statements to which they could indicate their level of agreement or disagreement on a five-point scale, ranging from 'Strongly Agree' to 'Strongly Disagree'. For reporting purposes, strongly agreed and agreed, and disagree and strongly disagree merged (Table 5.5). The figure below shows the categories of attitude in the three levels with the overall level of teachers' attitude towards teaching and learning about HIV/AIDS. Nine questions addressed attitudes about teaching of HIV/AIDS in the curriculum. Scores ranged from 0-3 negative attitude, 4-6 neutral and 7-9 positive. Therefore, out of 240 teachers, 3 (1%) had negative, 25 (11%) neutral and 212 (88%) positive attitudes, respectively (Figure 6).

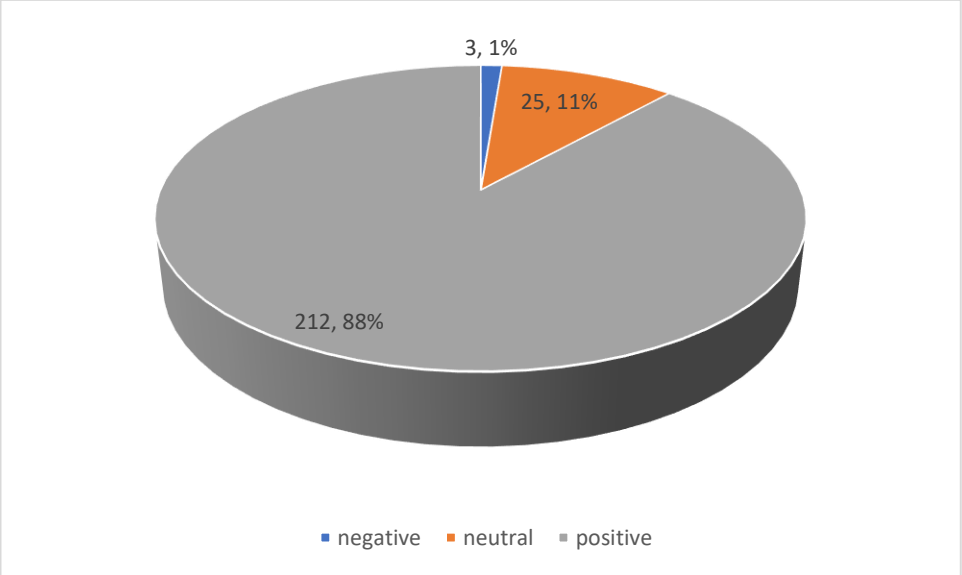

Figure 6: Teachers level of attitude towards teaching and learning of HIV/AIDS

All teachers 240 (100%) strongly agreed or agreed that HIV/AIDS is a problem affecting everyone and, therefore, students should be educated on the subject. Also, 239 (99%) strongly agreed or agreed that UNIVEN should be at the forefront of teaching formally about HIV/AIDS. The majority, 215 (89.5%) of the teachers strongly agreed or agreed that they are willing to adjust the modules to teach about HIV/AIDS, and 213 (88.8%) strongly agreed or agreed that they were willing to learn how to learn to integrate HIV/AIDS into the curriculum. About 166 (69.2%) of teachers supported teaching HIV content by strongly disagreeing or disagreeing that integrating it into the curriculum dilutes their discipline content. The data further suggests that about 174 (72.5%) teachers strongly disagreed or disagreed that the campus health clinics only provide HIV education. Regarding the current situation, most teachers 232 (96.7%)

felt that the status quo should not remain that HIV/AIDS should be integrated into the university curriculum. Along with the same line majority, 220 (91.6%) of the teachers felt that HIV/AIDS should not only be taught in Health Sciences degree programmes. About 235 (98%) of teachers strongly disagreed that teaching about HIV/AIDS is a waste of time (Table 5.5).

Table 5.5: Teachers responses to attitude questions towards the teaching of HIV/AIDS (n=240)

		N	**%**
HIV/AIDS is a problem affecting everyone and, therefore, students should be taught about HIV/AIDS			
	Strongly Agreed/Agreed	240	100
	Strongly Disagree/disagree	0	0.0
UNIVEN should be at the forefront of teaching formally about HIV/ AIDS			
	Strongly Agree/Agree	239	99
	Strongly Disagree/disagree	1	0.4
I would be willing to adjust my modules so that I teach about HIV/AIDS even if other teachers are not teaching			
	Strongly Agree/ Agree	215	90
	Strongly Disagree/ Disagree	25	10
Although I do not see any link, I am willing to learn how to integrate in order to teach students more about HIV			
	Strongly Agree/ Agree	213	88.8
	Strongly Disagree/ Disagree	27	11.25
I feel that by integrating HIV/AIDS content into my modules, I will dilute my module content			
	Strongly Agree/ Agree	74	31
	Strongly Disagree/ Disagree	166	69.2
I feel that HIV/AIDS education should be the responsibility of the UNIVEN Campus HIV/AIDS Unit and should not be taught in modules			
	Strongly Agree/Agree	66	27.5
	Strongly Disagree/ Disagree	174	72.5
I feel that the status quo should remain because students have been taught a lot about HIV/AIDS in primary and secondary education, hence the subject should not be integrated into the university curriculum			
	Strongly Agree/ Agree	8	3.3

	Strongly Disagree/ Disagree	232	96
I feel that HIV/AIDS should be taught in Health Sciences degree programmes only			
	Strongly Agree/ Agree	20	8.3
	Strongly Disagree/ Disagree	220	92
I feel that teaching about HIV/AIDS is a waste of time			
	Strongly Agree/ Agree	5	2
	Strongly Disagree/ Disagree	235	98

Factors associated with attitudes towards teaching and learning about HIV/AIDS among teachers

When Multiple Logistic regression was computed, no variable was significantly associated with attitudes concerning teaching and learning about HIV/AIDS. The results are summarised in 5.6.

Table 5.6 Multivariate analyses of factors associated with attitude towards teaching and learning about HIV/AIDS among teachers

Variable	Positive (%)	Negative (%)	MLR-OR (95%CI)	Chi Square	MLR P-value
Age					
20-29	100.00	0.00	***	0.105	
30-39	96.00	4.00	1		
40-49	100.00	0.00	1		
50-59	100.00	0.00	1		
60-69	100.00	0.00	1		
Gender					
Male	98.73	1.27	***	0.245	
Female	100.00	0.00	1		
Race					
Black	99.13	0.87	***	0.953	
Coloured	100.00	0.00	1		
White	100.00	0.00	1		

Employment status					
Permanent	99.52	0.48	6.78(0.41-109.52)		0.183
Part time	96.88	3.13	***	0.126	
Position					
Professor	100.00	0.00	***		
Associate Professor	100.00	0.00	****		
Senior Lecturer	100.00	0.00	****		
Lecturer	97.78	2.22	****		
Junior Lecturer	100.00	0.00	****		
Experience					
0-4	100.00	0.00	***		
5-9	96.23	3.77	****		
10-14	100.00	0.00	****		
15-19	100.00	0.00	****		
20 years and more	100.00	0.00	****		
School					
Agriculture	100.00	0.00	***		
Maths and Natural Sciences	100.00	0.00	****		
Health sciences	100.00	0.00	****		
Human and Social sciences	100.00	0.00	****		
Environmental Sciences	97.74	5.26	2.44(0.14- 41.23)	0.425	0.535
Law	100.00	0.00	****		
Education	100.00	0.00	****		
Management	97.78	2.22	****		
Trained in HIV/AIDS education					
Yes	72.93	27.07	1		0.444
No	71.84	28.16	***	0.530	
Qualifications					

Undergraduate	100.00	0.00	***		
Honours	100.00	0.00	****		
Masters	98.21	1.79	****		
Doctoral degree	100.00	0.00	****		
Curriculum development training					
Yes	60.23	39.77	***		
No	59.42	40.58	1	0.617	

Integration of HIV/AIDS into the curriculum

There were four questions to assess the integration of HIV/AIDS into the discipline. First, the teachers were asked to indicate whether they were teaching HIV/AIDS or not and if they were teaching, to indicate the location of the content, teaching strategies, assessment strategies and barriers to integration of HIV/AIDS into curricula. Only 38 teachers (15.8%) of the 240 participants indicated that HIV was integrated into their modules. From this analysis, it indicates that the integration of HIV/AIDS content is absent in some schools. The teachers who integrated HIV/AIDS into the curriculum had the possibility of specifying from a list of teaching practices which methods commonly apply to the modules or electives they taught. All 38 (100%) teachers reported using the lecture method. The results also point out that 24 (63%) use discussions whereas five (13.2%) use group work, 17 (45%) use self-study, 18(47.4%) use problem-based learning, one (2.6%) use videos and seven (18.4%) use experiential learning. However, none used role-play (Table 5.7).

The teachers who were integrating HIV/AIDS into the curriculum could indicate from a list those assessment methods commonly applied to evaluate students regarding HIV/AIDS content in modules. Written examinations, tests and assignments were the most common methods used to assess HIV/AIDS content. About 30 (79%) teachers indicated that they use assignment to assess the students. The survey also indicated that 26 (68%) use written examinations. Twenty-four (63%) use tests to assess students (Table 5.7).

Table 5.7: Practices regarding the teaching of HIV/AIDS content

Do you include/ teach HIV/AIDS aspects in modules	**N=240**	%
Yes	38	15.8
No	202	84.2
Teaching and learning strategies used	**N=38**	%
Lecture	38	100
Discussions	24	63
Group work	5	13.2
Self-study	17	45
Problem-based learning	18	47.4
Videos	1	2.6
Experiential learning	7	18.4
Assessment strategies	N=38	%
Written examinations	26	68
Tests	24	63
Assignment	30	79

Barriers to inclusion of HIV/AIDS content

To identify the teacher's views on structural and systematic barriers to HIV-related content integration into curricula, they were asked why HIV was not taught frequently. Analysis confirmed the main reasons for not inserting HIV content into the curriculum: an already overstretched curriculum 240 (100%), lack of academics confident and competent to teach this 214 (89.2%), lack of knowledge about HIV issues among teachers 212 (88.3%), lack of knowledge about curriculum development and integration among teachers 210 (87.5%), scepticism among the faculty about the relevance of HIV/AIDS 206 (85.8%), personal discomfort in teaching it 106 (44.2%) and 40 (16.7%) lack of management support for HIV/AIDS integration (Table 5.8).

Table 5.8: Barriers hindering HIV/AIDS integration into the curriculum. ***(n=240)***

Structural and systematic barriers to HIV-related content integration into curricula	N	%
Lack of management support for HIV/AIDS integration into the current/planned curriculum	40	(16.7%)
The curriculum is already overstretched.	240	(100%)
A lack of knowledge about curriculum development and integration among teachers.	210	(87.5%)
A lack of knowledge about the HIV issues among teachers.	212	(88.3%)
Lack of academics that are confident and competent to teach this content.	214	(89.2%)
Scepticism among faculty about the relevance of HIV/AIDS in the scope of practice of the degree or discipline.	206	(85.8%)
Negative attitudes/beliefs of academics towards HIV/AIDS.	218	(90.8%)
Personal discomfort in teaching about HIV/AIDS.	106	(44.2%)

Discussion

Teachers HIV/AIDS Knowledge

The study concluded that most teachers 177 (74%) had high 45 (19%) or average 132 (55%) knowledge about HIV/AIDS. This agrees with studies conducted internationally (Agoreyo, 2007; Choudhary & Rahman, 2014; Helleve et al., 2009; Kumar, 2015; Nur, 2012; Oni et al., 2016). Teachers who educate students about HIV/AIDS must have sufficient knowledge and, previous studies do link the willingness to teach HIV/AIDS to knowledge levels. A study conducted in Zambia by Siamwiza and Chiwela (1999) and Hartell et al. (2014) in Zimbabwe reported that teachers with limited knowledge did not teach the subject.

The reason for high levels of knowledge among staff members is attributed to the aggressive awareness campaigns and educational programmes implemented by private and public stakeholders in South Africa. Over the years, the South African government channelled resources into fighting against HIV/AIDS, hence increasing public awareness, particularly among young people. The HEIs should complement these efforts through education. It is not surprising that there is a high level of knowledge, considering the investment by the government and civil society for the prevention of HIV/AIDS in South Africa. According to the South Africa National AIDS Council (2012), an estimated 136,453 civil society organisations were working in the South African HIV response and most in HIV/AIDS awareness programmes (SANAC, 2012). This again suggests that teachers need up-to-date and accurate knowledge to teach about HIV/AIDS and recommendations are that professional development and regular workshops be conducted to improve teachers' overall knowledge.

The study also established misconceptions regarding general aspects, modes of transmission, and preventive aspects of HIV among teachers. These findings are similar to studies conducted in South Africa HEIs (HEAIDS, 2010c; Mbelle et al., 2014) which concluded that although the teachers were knowledgeable about HIV, they still had some misconceptions. The presence of misunderstandings among this highly educated population can be attributed to what scholars call alternative explanations for HIV/AIDS. Also, in most African societies, illness is mainly blamed on external sources such as witchcraft and punishment from gods (Bogart et al., 2011). Teachers must have accurate knowledge about HIV and feel comfortable educating students about this pandemic. If teachers have a role in preventing HIV/AIDS, they must be fully informed (Kelly, 2003).

The study also found out that more than half 134 (55.8%) of the teachers were not aware of the HIV/AIDS education policies in higher education, which promotes the teaching of the subject. This corresponds to a study conducted in South African colleges (Mbelle et al., 2014), Nigeria (Oyewale, 2011) and Zimbabwe (Mugweni et al., 2014) which concluded that 'there appears to be insufficient knowledge and understanding of national-level policies and guidelines'. Curriculum scholars have long argued that for a curriculum innovation to be successful, the environment should be enabling and conducive (Douglas, Laris & Lori, 2005). This is a cause for concern because contemporary literature on curriculum reform in the school environment suggests that teachers who are unaware and lack understanding behind policy and curriculum issues are generally reluctant when implementing innovations (Clasquin-Johnson, 2011). It is not surprising in South African higher education as most policies are not implemented after being enforced and lack implementation guidelines (Mbelle et al., 2014). Other scholars have attempted to explain the disparity between policy and implementation. The argument is that when teachers face a curricula reform initiative which threatens their comfort zone and makes them unsure of their intended role, they are likely to resist the change (Rowan & Miller, 2007).

Attitude towards teaching about HIV/AIDS

This study found out that majority of teachers 212 (88%) supported teaching and learning of HIV/AIDS at UNIVEN and, therefore, that HIV/AIDS content should be integrated more into the curriculum. Similar findings in South Africa (HEAIDS, 2010a; HEAIDS, 2010d, Mbelle et al., 2014), America (Herr et al., 2012) and Tanzania (Mkumbo, 2012) concluded that teachers were positive about HIV/AIDS content being infused and taught formally in HEIs. Studies conducted in South Africa (Luwes et al., 2016; Rau, 2009) concluded that teachers did favour or support the inclusion of HIV/AIDS into the curriculum. There is evidence which suggests that teachers' attitudes influence whether a curriculum reform succeeds or fails. Those with

positive attitudes attempted to adopt and adapt while teachers with negative attitudes were reluctant to execute a curriculum subject or ignored or resisted it (Bowins & Beaudoin, 2011; Mosia, 2011). In this context, successful curricular reform occurs when teachers are positive attitude about the reform (Van Driel et al., 2007). This is line with health belief model which suggests that attitudes are vital as they encourage or deter teachers in working to transform the curricula and teach about HIV/AIDS content (Rosenstock et al., 1994).

Although teachers in this study had a positive attitude towards integrating HIV/AIDS in their disciplines, about 74 (31%) felt that by integrating this content into their modules, the original content is diluted. This agrees with a study in South Africa which suggested that teachers distanced themselves from integrating HIV/AIDS into their disciplines claiming that it was a waste of time because it is already taught to students at high school and primary school and in some generic modules at university (Wood & Wilmot, 2012). The prevalence of negative attitudes towards integrating HIV/AIDS into disciplines is for several reasons. For instance, teachers perceive that HIV/AIDS is exaggerated and does not need additional teaching since students in South Africa have had this education from primary until high school (Wood, 2011). Also, some teachers do not understand what integration means and assume it is revising the curriculum which requires each discipline's professional council approval (Wood, 2012).

This situation calls for HEIs to capacitate teaching staff about curriculum integration. Although in this study, very few teachers have negative attitudes, they must have comprehensive information about HIV/AIDS as integrating it into any discipline requires current and accurate knowledge. Hence the institution's leadership should conduct regular workshops. This calls for staff capacity development workshops on a routine basis as they help to allay fears and give the necessary confidence to teach the topic.

Practices related to the teaching of HIV content

The study also found out that only 38 (15.8%) teachers across eight schools indicated that they were teaching or researching HIV/AIDS. This is line with findings from other studies which suggest that very few academics integrate HIV/AIDS into their disciplines (AAU, 2010; HEAIDS, 2010a; HEAIDS, 2005; HEAIDS, 2010b; HEAIDS, 2015). However, this contrasts with a survey conducted in the Caribbean suggesting that teachers at the University of West Indies who included HIV/AIDS content in about 23 of the 40 targeted courses in the 2003-2004 school year and developed 17 new courses, exposing nearly 1,000 students to HIV/AIDS education (UNESCO, 2006).

The study also indicated that teachers used various teaching strategies and combinations. The lecture method (100%) and group discussions (63%) were the most used strategies. This study is consistent with research conducted in Africa (Rau, 2009; HEAIDS, 2010a; HEAIDS,

2005; HEAIDS, 2010b; HEAIDS, 2015; AAU, 2010) which concluded that lecture and group discussions were the most commonly used methods for delivering HIV/AIDS education. In this study, the use of lecture method and group discussion can be attributed to very few teachers trained in HIV/AIDS education and curriculum development. Different pedagogy scholars argue that tradition classroom-based teaching does not promote deep learning despite being praised for maintaining academic rigour (Cooper et al., 2004; Wood and Wilmot, 2012; Kaur, 2011; Miller, Mcnear & Metz, 2013; Lowe, 2011; Atanga, Abgor & Ayangwo, 2015).

It is argued that interactive and participatory methods that encourage participation and discussion among teachers and students are central to the teaching and learning of HIV/AIDS among young people (HEAIDS, 2010a; Senderowitz & Kirby, 2006; UNESCO, 2014). Therefore, online and workshop approaches and innovative and participatory methods for HIV/AIDS teaching and learning are recommended. This calls for HEIs to conduct faculty development workshops to train teachers in using interactive and participatory teaching methodologies to impart this knowledge to students.

The study also shows that the most common evaluation methods used to evaluate HIV/AIDS content were written examinations, tests and assignments. The result of this study affirms that traditional methods of assessment are still used. According to Uys and Gwele (2005), 'the purpose of the assessment is to recognise areas and skill levels and provide feedback on learning'. In the context of tertiary education in South Africa, traditional evaluation methods are the norm as reflected in the use of written examinations, testing and assignments. Traditional examination-based evaluation, while praised for setting standards across a student group, is criticised for not being effective in measuring individual learning (Pollock et al., 2011). Innovative methods of assessment that encourage reflection on learning experience are required (Uys & Gwele, 2004).

Furthermore, this research indicates that HIV teaching is affected by structural and systematic barriers that disturb the teaching of HIV/AIDS education in higher education. The study revealed the two most common barriers that hinder the integration of HIV/AIDS content into the disciplines. The first is an already overloaded curriculum (240/100%). Similar findings were reported by a study in South Africa established that most teachers did not teach HIV/AIDS because the curriculum was overloaded hence there was no space for HIV/AIDS outcomes (Luwes et al., 2016). Another study conducted in South African colleges mentioned that most teachers stated that the syllabus did not have time for HIV/AIDS. This misperception could be because university teachers fail to understand curriculum integration. They assume that it is revising the entire curriculum, which results in changing the discipline focus. In this study, this

is attributed to several teachers not trained in terms of HIV/AIDS education and curriculum development.

Luwes et al. (2016) recommend that teachers should use the interdisciplinary approach theory of Golding (2009), which maintains that interdisciplinary content should not dominate disciplinary content. teachers do not need to teach in-depth knowledge about HIV/AIDS because the focus is on discipline content. The little information about HIV/AIDS taught to students in a discipline may seem minimal relative to the extent of the problem, but it makes a difference in the age of prevalent HIV/AIDS. Golding's (2009) interdisciplinary approach to integration where teachers do not need to go in-depth with an integrated subject is very applicable to the integration of HIV/AIDS education into the curriculum. This call for HEIs to train teachers on this interdisciplinary approach (Golding, 2009).

The second barrier is expressed through 214 (89.2%) of responses showing that lack of academics that are confident and competent to teach HIV is also responsible for the absence of HIV/AIDS in most disciplines. This corroborates with several studies conducted in HEIs in Africa. For instance, a study conducted in TVET colleges in South Africa concluded that the teachers did not teach HIV/AIDS because they were not trained and lacked relevant qualifications hence they were not confident (HEAIDS, 2015). In another study conducted in Ethiopia (Desalegn, Tadele & Cherinet, 2008); Kenya et al., 2007) in teacher education colleges suggest they were not competent to teach HIV/AIDS because they had no training. The participant in this study further indicated that the training was insufficient since it only covered basic HIV facts and did not cover curriculum integration. This means that the teachers have no special skills to address or teach HIV/AIDS (Desalegn et al., 2008; Nzioka et al., 2007).

Conclusion

The findings indicate that teachers were knowledgeable about HIV/AIDS and displayed positive attitudes towards integrating it into their modules. However, a significant number did not integrate HIV/AIDS content into various modules, and this accentuates the need to provide them with guidance to ensure they do so. Those who were teaching used traditional methods of instruction and assessment. The study also revealed that professional and personal reasons impact the teaching of HIV/AIDS as some teachers were not prepared to offer HIV/AIDS education; therefore, it is essential to support them on this subject. The next chapter presents the proposed framework to guide the teachers on integrating HIV/AIDS into the curriculum.

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CHAPTER 6

A PROPOSED FRAMEWORK FOR INTEGRATION OF HIV/AIDS CONTENT IN UNDERGRADUATE CURRICULUM

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A Proposed Framework for Integration of HIV and AIDS Content in Undergraduate Curriculum

Introduction

This proposed framework aims to guide teachers from different disciplines on how best to integrate HIV/AIDS content into the undergraduate curriculum. This education would equip students through formal teaching and learning programmes to contribute to the national HIV/AIDS response in their future career fields. Furthermore, the primary goal of the framework could be to produce graduates who can contend with the complexities of HIV as well as the practicalities of HIV/AIDS to promote safer sexual behaviour among students. Also, to develop a safer response and developing a coordinated response to the epidemic within the institutions of higher learning. Therefore, the framework proposed as the correct way to help facilitate the integration of HIV/AIDS content into the curricula. Tomhave (2005) defines a framework as 'a fundamental construct that defines assumptions, concepts, values, and practices and that includes guidance for **implementing** itself'. This definition stipulates further that a framework is linked to demonstrable work. From this definition, it is argued that a framework is an appropriate method to use in solving an identified problem, as it provides the implementation guide to **'how'** HEIs' teaching departments and educators could integrate HIV/AIDS content into the undergraduate curricula. The purpose of this chapter is to propose a framework to assist university educators in integrating HIV/AIDS content into undergraduate curricula. The framework was developed from the findings of the study, literature and behavioural theories.

Brief review of the study aims and findings

The subsections below report the results according to each objective and how they contributed to framework development.

Chapter 2 addressed a systematic review on teaching and learning of HIV/AIDS in HEIs with the purpose of describing how HIV/AIDS education is offered in HEIs. Based on the review, the conclusion was that this content was taught at both undergraduate and postgraduate level. Most HIV/AIDS education interventions were informed by behavioural theories for behaviour change such as social learning theory, the theory of planned behaviour, health belief model and the IMB model. Behavioural theories seek to explain human behaviour by analysing the antecedents and consequences present in the individual's environment and the learned associations he or she has acquired through previous experience (Sani et al., 2016). In this case, behavioural theories assisted in understanding the determinants of risky and safe sexual behaviours and identifying the underlying principles about how people change their behaviour (Hargreaves et al., 2016). In other words, the behavioural theories offer a clear basis from which HIV/AIDS content can be derived (Schwarzer, 2016).

Also, the findings highlighted four major integration models that can be used to integrate HIV/AIDS content into the curriculum, such as stand-alone modules, infusion, integration into one main carrier subject and integration across curricula (HEAIDS, 2018; Unesco, 2014). The current study also established that the teaching and learning methods used to provide HIV/AIDS education include lectures, guest speakers, research projects, prescribed readings, group meetings, class discussions, book discussions, conferences, classroom seminars, drama, song, debates, videos, storytelling, poetry, quiz and role modelling, metaphors, drawings, debate simulations, journaling, games, brainstorming, competition. Competence-based frameworks or models were the most widely used frameworks or models for incorporating HIV/AIDS content into undergraduate curriculum (Modeste & Adejumo, 2014; Knebel et al., 2008). Based on these results, the proposed framework was designed grounded on a competence-based framework which emphasises competencies and outcomes gained by students after exposure to HIV/AIDS content in the curriculum.

Analysis of HIV/AIDS integration in teaching and learning at a selected university in South Africa informed Chapter 3 of the study. To integrate HIV/AIDS content across an undergraduate academic curriculum programme, it was important to understand the academic curriculum and identify potential courses in each year. The first focus of the curriculum analysis was to determine the existing number of modules with HIV/AIDS content within the curriculum across all schools and departments at UNIVEN. This was achieved by counting all the modules with HIV/AIDS content within schools and departments. According to these findings, only 68 modules/courses out of 1979 had HIV/AIDS content in different disciplines in all eight schools at the university. The findings revealed that modules with HIV/AIDS content were at the postgraduate and undergraduate level.

The results showed that the School of Health Sciences was the frontrunner having 34 modules (51%) with HIV/AIDS content. Most of the modules covering HIV/AIDS content were found at first-year level 19 (27%), followed by third-year 16 (24%); second-year level 10 (14%); and fourth 9 (13%). Concerning Honours 5 (7%), Masters 6 (8%) and Postgraduate diploma 3 (4%) degrees fewer modules reflected HIV/AIDS integration. Most modules, 62 (91%), were compulsory, whereas 6 (9%) were electives. The majority of the modules 63 (94%) had HIV/AIDS content infused into the existing unit. The School of Education at the university was the only school offering stand-alone modules 5 (6%). From this analysis, HIV/AIDS competence and outcomes were not clearly defined, despite the fact that the study illustrated teaching, learning strategies, modules, degrees, topics and level of integration. The findings conclude that UNIVEN's curricula do not adequately address these issues. Where HIV/AIDS-related content is taught in the undergraduate curriculum, it is largely discretionary, unsystematic and not incorporated into the overarching structure. Therefore, the need to

develop the framework is crucial to guide curriculum developers on the critical aspects of HIV/AIDS content for inclusion at all levels of the undergraduate curriculum.

Knowledge, attitudes and practices of students regarding the learning of HIV/AIDS content formed Chapter 4 of the study which included 340 participants (students). The study indicated that about 140 (42%) had adequate knowledge about HIV/AIDS. Despite having poor knowledge, 294 (85%) had positive attitudes about being taught HIV/AIDS. Very few, 89 (25.8%) of the students indicated that they were taught formally about HIV/AIDS in their studies. In general, the current study demonstrated that there were gaps concerning student HIV/AIDS knowledge and there is a need for instruction. The study also showed that the students were taught using a variety and combinations of teaching strategies such as lecture method, group work, self-study and problem-based learning. Also, assessments used traditional evaluation techniques such as written examinations and assignments. This study accentuates the need for providing more formal content to close HIV knowledge gaps, misconceptions and negative attitudes towards this education.

Knowledge, attitudes and practices of teachers towards teaching and learning of HIV/AIDS content in the curriculum shaped Chapter 5 of the study. A total of 240 teachers participated in the study. The findings showed that 63 (26%) of the teachers had a poor level of knowledge, 132 (55%) had average knowledge, and only 45 (19%) had adequate knowledge. The fact that some teachers had knowledge gaps emphasises the need to increase their HIV/AIDS-related knowledge. Contrary to the findings above, the majority of the teachers 212 (88%) had positive attitudes towards teaching and learning of HIV/AIDS content in the curriculum. However, a low percentage, 38 (16%) indicated that they taught about HIV/AIDS. The study also revealed teaching and learning strategies such as lecture methods and group discussions. In regard to assessment strategies, HIV/AIDS content was assessed using written examinations, tests, and assignments. The teachers cited a lack of space in the (overcrowded) overstretched curricula, few academics who are confident and competent to teach it, lack of knowledge about HIV issues among teachers, lack of knowledge about curriculum development and integration among teachers, scepticism among the faculty about the relevance of HIV/AIDS, personal discomfort in teaching HIV/AIDS and lack of management support for its integration as the main reasons for not integrating HIV/AIDS content into their modules. The results of this study add to the current body of research that calls for effective ways of providing teachers with guidance to ensure they integrate HIV/AIDS content into various modules.

Theoretical models that guide HIV/AIDS education

HIV/AIDS education interventions are primarily based on social cognition and behavioural change theories. The most commonly used theories include social cognitive/learning theory (Bandura, 1989), and the health belief model (Rosenstock, 1974) and the theory of planned behaviour (Ajzen, 1991) and IMB model (Fisher et al., 2006). Pillay and Wood (2016) argue that 'in spite of the fact that these theories refer to behavioural change, which may not be the direct aim of HIV/AIDS education within a specific curriculum, they offer a way of thinking about HIV and AIDS that should influence what curriculum developers think necessary to include, and what HIV/AIDS education actually comprises'. The IMB model guided the development of the framework. The current study critically analysed IMB and found it to be more relevant to the development of the framework.

In summary, although other theories were informative, the researcher believed that the IMB theory could be most effective in guiding the development of the proposed framework on how HIV/AIDS content can be derived and delivered in a structured curriculum. It is envisaged that the proposed theory would provide the appropriate guidance in identifying effective HIV/AIDS education. Therefore, the current study identified three major components to be included in HIV/AIDS education or sexual health education; namely, cognitive, affective and skills dimensions in the curriculum.

In addition, the rationale for using IMB as behaviour theory is based on the fact it is informed by the behavioural theories which allow for the identification of the determinants of sexual behaviour. In simple terms, the IMB model may be useful for the creation of the HIV/AIDS curriculum because it is composed of critical elements needed to adopt and maintain healthy behaviours. The constructs of this model are based on relevant social and health psychology theories including the health belief model, transtheoretical model, aids risk reduction model, theory of reasoned action, the theory of planned behaviour, and the social cognitive theory. This implies that the other theories were relevant and used in conjunction with the IMB model.

The other reason for using the IMB model in this study is that it is a general model of the determinants of behaviour successfully applied to other domains of sexual health (Fisher, Fisher & Harmon, 2003). Furthermore, the model hypothesises that the acquisition of relevant IMB skills leads to the adoption of safer-sex behaviours (which may include postponing sexual involvement or appropriate use of contraceptives and condoms which is the goal of the framework). Finally, Health Canada (2003) recommended the IMB framework as a model for designing effective sexual health education programmes and used to design curricula for sexual health education (McCall, 2012). The advantage of this model is that there are only three constructs which can easily be adapted to suit the study and application of this model is

easier than that of to the more complex models (Ebrahimi Tavani & Ghofranipour, 2014). Another advantage is that the model has been thoroughly tested with HIV-preventive behaviours and shows adequate predictability (Ndebele et al., 2012). The IMB model is a conceptual, comprehensive and extendable model based on the present sources, and this makes it practicable in various fields (Ebrahimi Tavani & Ghofranipour, 2014).

Relevance of IMB model in curriculum development

The IMB model was originally developed to explain HIV risks and preventive behaviour (Fisher, Fisher & Harman, 2003). This model was proposed by Fisher and Fisher (1992), who recognised three vital constructs, which are information, motivation and behavioural skills. Information refers to awareness and knowledge about a person's medical situations and efficient strategies to manage them (Fisher et al., 2006). Motivation is a social and individual incentive to adhere to healthy behaviours (Ebrahimi Tavani & Ghofranipour, 2014). The IMB model suggests that people are more likely to protect themselves from HIV if they are well informed about sexual risks, highly motivated to protect themselves from STIs and possess the skills to practise safer sex (Fisher et al., 2006). According to this model, two cognitive and one behavioural factor determine AIDS prevention behaviour, namely: (a) information, or knowledge about transmission and prevention; (b) motivation to reduce risk, or personal attitudes about preventive behaviour, perceived normative support for HIV prevention, and behavioural intentions; and (c) behavioural skills to practice prevention, including perceived self-efficacy and the ability to negotiate AIDS prevention with a partner (Fisher et al., 2006; Fisher et al., 2003). The constructs of IMB are discussed below in relation to the current study.

Information

The first determinant of an IMB model is information and reflects the objective information (and misinformation) held by an individual regarding the specific health behaviour in question. The information construct also contains cognitive heuristic or implicit theories held by an individual such as health beliefs specific to HIV often used to guide health behaviours(Fisher and Fisher et al., 2006; Fisher, Fisher & Harman, 2003). The current study shows that students were knowledgeable about some HIV/AIDS aspects, but they also had knowledge gaps. The results show that the students were knowledgeable about most items with most students correctly responding to basic HIV/AIDS information. However, there were knowledge gaps on some items as only slightly above 203 (58.8%) answered that HIV/AIDS are the same thing, and only 164 (47.5%) correctly answered that eating healthy foods can keep a person from getting HIV. Only 180 (52.2%) answered that antiretroviral drugs could cure HIV infection. In addition,

some respondents had misconceptions on the following items: only 169 (49%) correctly responded that AIDS is an infectious disease caused by a bacteria and 200 (58%) stated that HIV could be contracted through an AIDS patient and 126 (36.5%) from a mosquito that is carrying a virus.

For questions about how HIV is transmitted, all seven questions were answered correctly by most respondents. Most students correctly answered that HIV is transmitted through sexual intercourse, sharing a needle to inject drugs with an HIV positive person, having vaginal sex or anal sex without using a condom. However, knowledge gaps were noted on two items where only 172 (49.9%) correctly answered that HIV is not transmitted through using a dirty toilet seat and more than half 219 (63.5%) incorrectly answered that a mosquito carrying a virus transmits HIV. Most students responded correctly answering that to prevent transmission of HIV condoms must be correctly used, blood screened before transfusions, getting tested and knowing partners status, limiting sexual partners, taking pre-exposure and post-exposure prophylaxis medication. The prevalence of knowledge gaps regarding HIV/AIDS can be attributed to the fact that very few students received HIV/AIDS instruction at the university.

This corroborates with recent literature which suggests that university students were informed about HIV/AIDS and at the same time, had misconceptions. A study conducted at a university in the Middle East suggests that students demonstrated some knowledge of the correct modes of transmission of HIV/AIDS. However, there were misconceptions such as getting HIV from public toilets, mosquito bites, or touching an HIV-infected person (Haroun et al., 2016).

Another study conducted among 556 Sudanese university students suggest that although the majority (97.1%) of study subjects knew about a disease called HIV/AIDS, almost half did not know the preventive measures of HIV, nearly two-thirds had misconceptions and one third did not know the mode of transmission of HIV (Elbadawi & Mirghani, 2016). Similar findings from among nursing students in India concluded that despite the overall mean score of the overall knowledge about HIV/AIDS (38.05 ± 4.91, out 0f 50) indicating a good level of knowledge among nursing students, their information about the mode of transmission and cure for HIV/AIDS was limited (Dharmalingam et al., 2015).

Similar sentiments were echoed in a study conducted by Faimau et al. (2016) at a tertiary institution in Botswana. It concluded that students had fairly good knowledge of HIV/AIDS, although a significant number of students still had misconceptions regarding HIV infection and transmission (Faimau et al., 2016). Likewise, Kuete et al. (2016) reported the same findings in students at a Chinese university who were highly knowledgeable about the nature of HIV/AIDS but had misconceptions about HIV transmission routes and risk factors. Social contacts such as oral sex, mosquito bites, saliva, sweat, urine, tears, public health facilities,

and physical contact were incorrectly answered as HIV transmission routes (Kuete et al., 2016). In Malaysia, more than half of the students had good knowledge about HIV transmission and basic facts about HIV, although misunderstandings about HIV transmission were still prevalent HIV (Said & Ab Hamid, 2018). Thakuri and Thapa (2018) investigated 432 postgraduate students in India, and their study suggests that the majority of them were cognizant about the routes of HIV transmission and prevention, although some had misconceptions about transmission. The same results were reported in a study at Taif University, Saudi Arabia, which found that more than half of the participants were unaware of the relationship between AIDS and HIV and had misconceptions about modes of HIV transmission (Zaini & Anjum, 2015). Similar conclusions were drawn from studies conducted in the UAE, where students had higher levels of knowledge about HIV/AIDS transmission but demonstrated considerable misconceptions such spreading HIV through public toilets (Haroun et al., 2016).

To develop the framework, the IMB model constructs, that is information, motivation and skills were applied to develop the HIV/AIDS student competencies. In this instance, the 'information' component of the model targets the cognitive domain to provide knowledge to support the behaviour change (Figure 1). The curriculum should ensure that students have HIV/AIDS knowledge competencies concerning HIV prevention, modes of transmission and common misconceptions about HIV/AIDS; sexual and reproductive health (sexuality and intimacy, contraceptive use for dual protection, safer sex, and sexually transmitted infections). Furthermore, it must include where to obtain sexual and reproductive health services; dangers of unprotected sex; where to obtain male and female condoms; where to access appropriate services if a person is sexually exploited; and information about positive living (good nutrition and healthy lifestyles). Also, the likely progression of disease, treatment and care options and how to prevent transmission to others, including mother-to-child transmission. Other literature suggests that university students should be competent concerning general knowledge and understanding of HIV/AIDS, including being able to respond to questions about HIV/AIDS, knowledge and understanding about the impacts of HIV/AIDS on individuals and families and condom use and prevention. They must be aware of and understand of ethical and legal issues, and the values relating to ethical conduct, as well as social context and gender issues and respect for confidentiality (HEAIDS, 2010c). Given the efficacy of the IMB model in raising levels of HIV/AIDS information among students in previous studies, it is anticipated that HIV/AIDS knowledge gaps in students will be bridged (Ndebele et al., 2012).

Motivation

Motivation to engage in healthy behaviour is the second component in the IMB model, influencing individuals' inclination to act on what they know about the behaviour (Fisher et al., 2006). Motivation is comprised of an individual's personal motivation (i.e., attitudes and beliefs about engaging or not engaging in the behaviour), as well as his or her social motivation (i.e., perceptions of social norms regarding the appropriateness of the behaviour and of the social support or social consequences for engaging in the behaviour) (Fisher & Fisher, 1992). Motivation motivates individuals to use their knowledge and understanding to avoid negative risky behaviours and maintain consistent, healthy practices and confidences (Fisher et al., 2006). This means that university students should be motivated to use HIV risk information and translate it into the desired sexual behaviour.

Students at the university where the current study was conducted had information on HIV/AIDS, but despite this, they were found to be engaging in high-risk sexual behaviours making them vulnerable to HIV infection (Shirindza & al., 2019). Similar findings were reported at the same university, which showed that sexually active students did not use a condom properly during the last sexual act (Raselekoane, Morwe & Tshitangano, 2016).

Recent statistics on HIV/AIDS at the university suggest there is an increase in STIs, HIV infections, termination of pregnancies referrals and unplanned pregnancies. The report indicates that students still engage in risky sexual behaviours indicated an increase in the demand for emergency contraceptives (100%), increases in those who test positive for HIV (21%), termination of pregnancies (32%) and in the number of students treated for sexually STIs (47%) (UNIVEN Campus Health Statistics, 2016).

Similar sentiments were reported by the different studies concluding that although students have high HIV/AIDS knowledge, they tend to have a low appreciation of the risk of HIV in general (Mbelle et al., 2018). A high prevalence level of HIV/AIDS is still reported among the university students as well as early pregnancies suggesting that there is the inadequate use of HIV/AIDS protective measures among this population (Mbelle et al., 2018). Nsubuga et al. (2015) mention that there is a wide disparity between contraceptive knowledge and use. From their findings of a study in Uganda, they reported that 75% of the youth knew that condoms prevent STDs, yet fewer than 13% of males and virtually no female (less than 1.0%) said they used condoms during sexual encounters (Nsubuga et al., 2015). A study conducted among university students in Kenya reports that they had extremely negative attitudes towards condom use. That is, 93.3% of the respondents did not use condoms, yet more than 56.0% had two or more sexual partners; the reason was that they trusted their partners (Kimamo, 2019). In a study among young people aged 15-24 in South Africa, 36.0% of them reported

that they believed they were not at no risk of contracting HIV, 35% reported being at small risk, and 12% at moderate risk while 14% reported being at high risk. These findings are significant because 67.0% of these young people reported having had sexual intercourse (Mbelle et al., 2018).

Different surveys conducted among university students report similar findings. A study conducted among 641 university students in Thailand indicated that about 111 (94%) participants perceived themselves as no or low risk. As a result, despite high levels of knowledge about HIV transmission risks, the rates of consistent condom use with vaginal, oral and anal sex were all low (43%, 18% and 33%, respectively). The low rates of consistent condom use were significantly associated with the false perception of low HIV risk (Khawcharoenporn, Chunloy & Apisarnthanarak, 2015).

Furthermore, university-based studies in Portugal demonstrate that students engage in risky sexual behaviours such as using drugs or alcohol during sexual activity, have sex with multiple and casual partners, and inconsistently use condoms (Reis et al., 2013). In another Portuguese study, 83.3% of university students at a university in Portugal reported that they were sexually active with 57.4% of male students reporting multiple sexual partnerships (Reis, Ramiro, Matos and Diniz, 2013). Another study by Tiblom Ehrsson et al. (2016) also found that the university students had an average of 2.6 sexual partners in the 12 months prior to the study, and an average of 11 sexual partners and do not know their HIV status.

Lack of knowledge about their HIV status, coupled with the misconceptions on HIV transmission among college students, is likely to increase stigma (Kingori, Nkansah, Haile, Darlington, and Basta, et al., 2017). Furthermore, the literature review suggests that graduates from South African universities do not have competencies to deal with HIV/AIDS workplace-related issues and competencies to live a healthy life (HEAIDS, 2010; HEAIDS, 2015). After graduating, students are expected to have the ability to deal with someone who is HIV positive and able to respond with empathy to both infected and affected. In the workplace, they are supposed to deal with legal and ethical issues concerning employees living with HIV, the management of performance issues related to HIV/AIDS, dealing with stigma and handle emotions(HEAIDS, 2010).

The current study proposed that there should be greater emphasis on changing the student's perceptions about HIV/AIDS by helping them to become aware of their vulnerability to HIV infection and perceive themselves to be at risk (Meda & Luwes, 2017). In order to generate more interest and motivation in HIV/AIDS education among students, recommendations are that HIV/AIDS education should be delivered using interactive pedagogies that engage the students (Wood, 2011; Ndebele et al., 2012). Some researchers argue that HIV/AIDS

education should not just focus on biological aspects and negative issues such as teenage pregnancies, STIs, sexual violence, among others (HEAIDS, 2010b). Instead, HIV/AIDS education should engage the whole person, and go beyond academic and intellectual knowledge, while including suggestions for real-life action and behaviour (Kelly, 2002). Accordingly, it is recommended that students be motivated by using more visual materials like videos and pictures during HIV/AIDS education lectures.

Students should be exposed to real, practical situations of HIV/AIDS experiences; for example, visit hospices, hospitals and other institutions where there are patients. Through personal contact with suffering, students are likely to realise the magnitude and seriousness of the HIV/AIDS problem and resolve to avoid HIV risky behaviours (HEAIDS, 2010a). The curriculum may also adopt a human rights and citizenship perspective to deal with respect and regard for others as well as tolerance and peace to foster inclusive models of belonging to combat stigma and discrimination (Pillay & Wood, 2016). Some suggested competencies are empathy towards people with HIV/AIDS and their situation, appreciating HIV/AIDS information, valuing the commitment to address stigma and discrimination, respect for privacy and confidentiality (HEAIDS, 2010c).

Behaviour(Skills)

Behavioural skills for engaging in the health behaviour is the third critical component of the IMB model and relates to the individual's objective abilities and perceived self-efficacy to enact a series of coordinated behaviours involved in the execution of the health behaviour, per se (Fisher et al., 2006). The IMB model posits that individuals need to possess skills in addition to being informed and motivated (Fisher and Fisher 1992). Findings from this study suggest that very few teachers integrate HIV/AIDS content into the curriculum and, therefore, very few students are taught formally about HIV/AIDS content. Consequently, they engage in risky behaviours because they do not have skills to avoid these situations. Those who learned non-interactive teaching methods find them ineffective in achieving behavioural change. The majority of the analysed curriculum documents analysed showed that the content emphasised knowledge and does not help students to develop skills so as to avoid risk sexual behaviours. The literature supports this, suggesting that HIV/AIDS is rarely integrated into higher education curricula even though students engage in high-risk behaviour (HEAIDS, 2015; HEAIDS, 2018). University students often struggle with their social autonomy, peer pressures and their lack of effective maturity to make positive sexual decisions, often leading to negative attitudes and behaviours contributing to their high vulnerability to HIV infections (Andrew et al., 2018).

Life skills can improve HIV/AIDS-related knowledge and self-awareness, and these positive effects can give rise to responsible citizens who take responsibility for their own lives (Clarke, Yankah & Aggleton, 2015). Example of psychosocial skills include psychosocial life and behavioural competency skills such as decision-making proficiency; critical thinking; interpersonal relationships; negotiation; conflict resolution; communication; self-awareness; stress and anxiety management; coping with pressures (e.g., peer pressure); assertiveness, as well as self-esteem and self-confidence should be emphasised in the curriculum (Somfongo, 2013).

HIV/AIDS preventive programmes with balanced knowledge, attitudes and skills related to HIV transmission have proven more effective in altering behaviour than those that concentrated on information alone (Mahat & Scoloveno, 2016). Some of the skills or content which can be infused in curriculum include the ability to counsel on HIV/AIDS, respond appropriately to questions about HIV/AIDS about biomedical and treatment information, make appropriate referrals for VCT/medical care/counselling. In addition, the skills include explaining policy and procedures for HIV/AIDS-related issues, reporting on HIV/AIDS-related issues, participating in HIV/AIDS programmes, making decision about sexual behaviour, negotiating condom use, the ability to communicate and delay sexual debut. The current study could add value to the understanding of the application of the IMB theory in the undergraduate curriculum (Table 6.1) explains the adapted IMB model).

Table 6.1: Adapted Information Motivation Behaviour Skills (IMB) Model

Information(cognitive) competencies	**Motivation(affective) competencies**	**Behavioural skills competencies**
Knowledge and understanding of • Basic facts about HIV&AIDS as a public health problem • HIV microbiology and pathophysiology, and progression of HIV infection • Gender issues in relation to HIV • The impact and magnitude of the HIV & AIDS problem on individuals, community and society • HIV prevention, modes of transmission and common misconceptions about HIV/AIDS • Sexual and reproductive health (sexuality and intimacy, contraceptive use for dual protection, safer sex, sexually transmitted infections) • HIV/AIDS treatment, discrimination, stigma • Physical development and sexuality • Youth risk behaviours • Health relationships • Safer-sex choices • Decision making • Risk and consequences of risk behaviours • Positive living (good nutrition and healthy lifestyles).	• Empathy towards people with HIV/AIDS and their situation • Appreciating HIV/AIDS information • Valuing the commitment to address stigma and discrimination • Respect for privacy and confidentiality • Valuing benefits of safer-sex practices • Valuing importance of condom use • Appreciate importance of HIV tests • Appreciating the importance of abstaining from sex	• Ability to counsel on HIV/AIDS-related issues Interpersonal (life) skills (e.g., effective listening, problem-solving) • Ability to respond appropriately to questions about HIV/AIDS issues (e.g. factual questions about biomedical and treatment information) • Ability to make the appropriate referral for VCT/medical care/counselling • Ability to explain policy and procedures on HIV/AIDS-related issues • Ability to report on HIV/AIDS-related issues • Participate in HIV/AIDS programme • Make decisions about sexual behaviour • Negotiating condom use • Ability to communicate • Ability to delay sexual debut • Ability to use condoms • Less interest in sexual activities • Ability to talk with confidence about HIV/AIDS to other people • Ability to make courageous decisions on sex • Ability to take care of one's body • Ability to resist peer pressure to engage in premarital sex

Source: Fisher et al. (2008)

The effectiveness of IMB-based interventions to promote various health behaviour changes has been widely researched. The evidence of the IMB model's effectiveness related to sexual risk reduction evident in a number of diverse populations, including young adult men, low-income women and minority youth in high school and university settings. A study in India assessed the effect of the IMB model-based intervention in a group of female college/university students. Post-testing showed a significant increase in the level of IMB skills of the experimental group of participants who underwent the three-session intervention programme as compared to the control group participants (Singh, 2003). In another study conducted in South Africa to ascertain the impact of IMB for reducing HIV risk behaviour among 259 Grade 11 learners suggests that the model was to some extent, effective in doing this (Ndebele et al., 2012). In Canada, the IMB model was used to design a sexual health education curriculum and suggested that programmes that include knowledge, attitude and skills are effective in reducing sexual behaviours (Canada, 2003). Furthermore, a meta-analysis strongly supports the need to include elements of IMB skills in interventions that target sexual risk behavioural change(Michielsen, Chersich, Temmerman, Dooms, and Van Rossem, 2012). Also, several studies indicated that when developing the HIV/AIDS intervention curriculum for HIV/AIDS-related intervention, they used elements of the IMB and this was effective in reducing risky sexual behaviours and increased condom use (Michielsen et al., 2012).

Proposed framework for integration of HIV/AIDS content in the undergraduate curriculum.

The framework emerged from the literature and analysis of the curriculum at university of Venda. The table 6.2 below depicts a framework with a list of competencies for integrating HIV/AIDS content into the undergraduate curriculum at different study levels. The study affirms that the competencies outlined in the table are not all exhaustive. It should be noted that this framework is a tool rather than a recipe. Competencies are 'often framed in terms of knowledge, skills, or attitudes and represent the goals of the learning process' (Wilson, 2016). Competency statements 'describe an expected level of performance as well as attributes needed to perform at that level' (Sawleshwarkar & Negin, 2017). Each competency was categorised as knowledge or an attitude and/or a skill according to Bloom's Taxonomy for educational objectives (Krathwohl & Anderson, 2009). Accordingly, in this case, based on behaviour change theories, knowledge, attitudes and skills are the keys to the decision to adopt or change HIV risk behaviours. For HIV/AIDS education to be effective, the current study suggests that all three must be holistically addressed by the curriculum (Modeste & Adejumo,

2014). Knowledge includes ‘the mental abilities and cognitive learning that results from didactic instruction or continuing education and/or in-service education’ (Forehand, 2017). Attitudes consist of ‘the ability to use cognitive learning, to critically think in real-life situations, and to make appropriate decisions on the spot’ (Wilson, 2016). Skills comprise the motor abilities to deliver care as well as the communicating and interacting abilities necessary to be a contributing member of the multidisciplinary team(Sawleshwarkar & Negin, 2017).

This proposed competence-based framework is not a curriculum by itself; rather, the competencies provide a framework to facilitate the process of curriculum development. Higher education institutions must decide how to teach the competencies and design their curricula accordingly to achieve those proficiencies. This hub of competencies are situational and address HIV/AIDS specific skills for different disciplines. The context for curriculum development in institutions of higher learning is specific to each institution’s internal and external setting, such as its geographical location, its societal and policy environment and job market. This framework would thus need to meet very diverse needs. Therefore, it does not seek to provide a ready-made, complete syllabus for any discipline. Instead, it presents a flexible framework: what is believed to be essential elements, HIV/AIDS content which a university or HEIs may consider teaching in its unique setting. This implies that the roadmap towards integrating HIV/AIDS content into curricula depends on the distinctive situation of each HEI. Since this framework is generic, further elaboration and local adaptation is essential.

Table 6.2: Proposed framework to facilitate the integration of HIV/AIDS content

Competency	**Cognitive(Knowledge about)**	**Affective(Attitude)**	**Skills in**
1st year of study			
	Describe the basic facts about HIV, AIDS &TB	Appreciate the information about HIV/AIDS	Provide basic information about HIV/AIDS scientific facts to others.
	Describe aetiology, pathophysiology, transmission, epidemiology, risk factors and clinical manifestations of HIV/AIDS	Relate to HIV/AIDS issues	Ability to describe the aetiology, pathophysiology, transmission, epidemiology, risk factors and clinical manifestations of HIV/AIDS.
	Describe the contributing factors in spreading of HIV.	Recognise factors that contribute to the spread of HIV	Ability to identify factors responsible for the spread of HIV
	Describe theory holism in the management of HIV/AIDS	Appreciate the importance of caring for people living with HIV/AIDS	Ability to identify care needs for people living with HIV/AIDS
	Describe AIDS disorders in relation to each component of biological sciences, anatomy, physiology, biochemistry and microbiology.	Appreciate the impact of HIV and how it impacts the patient immune system	Ability to differentiate the disorders and plan assessment, preventive and management strategies

	Describe health education and health promotion of communicable diseases and non-communicable disease, including HIV/AIDS	Appreciate the impact of HIV/AIDS in the communities	Ability to profile the epidemiology of HIV/AIDS in the communities
	Describe the basic facts, myths about HIV transmission in relation to sports	Appreciate the challenges of living with HIV and the benefits of sports to people living with HIV/AIDS	Ability to plan sports or exercise plan for people living with HIV/AIDS (PLWHA)
	Describe the consequences of unsafe sex	Acknowledge the burden of risky sexual behaviours on others	Ability to explain consequences of sex, such as pregnancy, STIs, HIV to others
	Describe common HIV/AIDS-related symptoms and their management	Demonstrate sensitivity on the impact of HIV/AIDS on the human body	Ability to describe symptoms and management for people with HIV/AIDS
	Describe local culture and beliefs in relation to HIV/AIDS and management	Display acceptance, be non-judgmental and sensitive to culture when interacting with patients living with HIV/AIDS	Ability to analyse cultural factors and beliefs in relation to HIV/AIDS and management
	Describe methods of HIV/AIDS prevention and control	Appreciate the need for prevention and control measure at different levels	Ability to differentiate the variety of control measures for the diverse populations
	Describe the treatment and medication for HIV/AIDS	Valuing the importance of medication(ARV) and adhering to it	Ability to describe treatment for people with HIV/AIDS
2nd year of study			
	Describe the impact of HIV infection on an infected individual and affected	Deal positively with people who are living with HIV/AIDS	Ability to address stigma and discrimination

	Describe safety measures to be followed in order to prevent the spread of the pandemic amongst vulnerable groups	Understand the impact of HIV/AIDS on vulnerable groups	Ability to apply leisure and recreation activities and programmes in the prevention, management and curbing spread of HIV pandemic
	Demonstrate understanding and knowledge of physical activity in people living with HIV/AIDS	Understand the complications of physical activity on PLWHA	Ability to describe the physiological, physical, psychological and social benefits of exercise in people living with HIV/AIDS.
	Demonstrate the understanding of the consequences of destructive lifestyles and hypokinetism on the health of PLWHA	Understand the consequences of sedentary lifestyle such as smoking, drinking, physical inactivity, poor diet and stress on people living with HIV/AIDS	Ability to explain how destructive lifestyles which can affect the health of PLWHA
	Assist students with information regarding population group categorised as vulnerable as well as the aetiology of HIV/AIDS pandemic	Understand complications suffered by vulnerable groups as a result of participating in leisure and recreation activities	Ability to explain the complications faced by vulnerable groups as result of participating in leisure and recreation to these vulnerable groups
	Describe the impact of HIV/AIDS on mental health.	Understanding the impact of HIV/AIDS on mental health.	Ability to promote mental health in the context of HIV/AIDS.
	Demonstrate comprehensive understanding of cultural diversity in communities with regard to HIV/AIDS	Ability to demonstrate an understanding of people infected and affected by HIV/AIDS	Ability to explain the impact of HIV/AIDS in the community.
	Demonstrate or understanding of people living with HIV/AIDS	Understanding the psychosocial needs of and issues surrounding the affected or infected	Ability to explain the needs of people who are affected or infected

	Describe nutrient requirements of people living with HIV/AIDS in different stages of the life cycle	Understand the importance of nutrients requirements for people living with HIV	Ability to describe and analyse nutrition needs for people living with HIV/AIDS
	Identify ethical principles related to the management of different systemic conditions, including HIV/AIDS	Value the importance of cultural, religion and ethical principles when managing HIV/AIDS-related conditions	Apply ethical principles when dealing with ethical dilemmas and related to HIV/AIDS.
	Discuss risk behaviours and safer-sex practices	Value the importance of safer sexual practices such as condom use abstinence, being faithful	Ability to respond to questions about HIV/AIDS
	Demonstrate knowledge and understanding scientific approach in relation to nursing in relation to HIV/AIDS	Appreciate the use of science to manage, diagnose and prevent HIV infection	Conduct clinical, assessment, diagnosis, planning, implementation and evaluation of conditions affecting the relevant human system including HIV/AIDS
	Discuss life skills and relationships in relation to HIV	Value positive/healthy relationships	Ability to make choices about sexual behaviour e.g., use condoms, abstinence, delay sexual debut
3rd year of study			
	Describe vital statistics and indicators related to HIV/AIDS	Value importance of statistics to management, prevention and control of HIV/AIDS	Use vital statistics and indicators related to HIV/AIDS in the management and control of HIV/AIDS

	Demonstrate understanding of the scope of therapeutic recreation as a service in health care delivery and HIV/AIDS awareness system	Value importance of therapeutic recreation in managing HIV/AIDS	Ability to facilitate techniques used as interventions by therapeutic recreation specialists
	Demonstrate knowledge of extent, nature, pattern and distribution of malnutrition and HIV /AIDS in South Africa	Understanding the importance of nutrition in the management of HIV/AIDS	Ability to identify and manage nutrition-related diseases, including HIV/AIDS.
	Demonstrate understanding of nutrition-related intervention to improve nutritional status and health of people living with HIV in communities	Understanding the importance of these strategies for people living with HIV/AIDS	Ability to design health messages and nutrition intervention strategies that are aimed at preventing nutrition-related diseases such as AIDS
	Discuss the psychosocial impact of living with HIV/AIDS	Respect for people living with HIV/AIDS	Ability to assist people living with HIV/AIDS
	Describe HIV stigma, its impact on people living with HIV	Display a positive attitude when dealing with HIV	Address stigma and discrimination by counselling and educating the infected and affected
	Identify support for people infected and affected	Empathy for people living with HIV	Ability to refer and advise
	Discuss legal and ethical issues to be observed when dealing with HIV/AIDS (confidentiality, disclosure, rights dilemma)	Act ethically and communicate positively with the infected.	Act ethically and professionally when dealing with the affected and infected.

4th year of study	Identify the leisure and recreational needs educational needs of Vulnerable PLWHA	Appreciate the importance of recreation to PLWHA	Prepare educational materials for persons from diverse cultural, socioeconomic
	Discuss the high risk prenatal, antenatal, labour, postnatal and neonate with HIV/AIDS	Recognise the risk	Ability to prevent HIV mother-to-child transmission and occupational exposures
	Explain and discuss the purpose of HIV counselling and motivate client to go for HIV counselling.	Value the importance of HIV counselling to successful management and treatment of HIV/AIDS	Perform HIV pre and post-test counselling (if certified and/or in accordance with local regulation or policy)
	Describe the different types of HIV tests and indication: ELISA and rapid test	Value the importance of HIV Test for successful management and treatment of HIV/AIDS	Perform HIV testing using approved tests and procedures (if certified and/or in accordance with local regulation or policy)
	Demonstrate knowledge of appropriate nutrition conceptual frameworks in relation to HIV/AIDS	Understand the importance of nutrition information for people living with HIV/AIDS	Provide appropriate nutrition and HIV/AIDS information
	Critically discuss the knowledge and policies relevant to HIV/AIDS in the workplace	Recognise the importance of policies and legislations in managing HIV/AIDS in the workplace	Ability to explain policies to colleagues in the workplace
	Critically discuss the ethical issues related to HIV/AIDS counselling and testing	Appreciating the importance of ethical principles	Apply ethical principles in relation to confidentiality

	Demonstrate knowledge of health promotion theories and prevention spread of HIV/AIDS.	Recognise the importance of transferring information.	Provide correct content for health promotion and prevention of HIV/AIDS to individuals.
	Comprehensive understanding of the psychological benefits of exercise to PLWHA.	Value the importance of leisure and recreation to PLWHA.	Ability to administer and participate in exercises with people living with HIV/AIDS.
	Analyse the burden of HIV/AIDS globally, regionally and nationally for setting up prevention and control strategies.	Recognise the burden of HIV /AIDS.	Apply principles of epidemiology, and HIV/AIDS prevention and control in the management of HIV and infection.

Implications of the framework in the institutions of higher learning

The proposed framework in this study may assist HEIs, faculties and teachers to integrate HIV/AIDS content formally into their curriculum and ensure that various academic departments can integrate HIV/AIDS-related issues into the undergraduate curricula. The proposed framework can be used or adapted by any HEIs, given that it can show how HIV/AIDS can be systematically integrated into a single module or multiple modules across an academic degree. It suggests suitable 'entry points' for quickly integrating aspects of HIV/AIDS content into existing courses for different disciplines.

This framework may contribute to the HIV/AIDS curriculum change and improvement by innovatively developing competencies and applying behaviour theories. Therefore, it can serve as a reference tool for curriculum development and reviews in HEIs. The HIV/AIDS competencies based on each level of study were developed based on Bloom taxonomy. Furthermore, behavioural theories such as the IMB model were applied to inform the competences. In other words, the proposed framework suggests a list of HIV/AIDS competencies to serve as a guide for future curriculum development.

The framework has the potential to assist students at different levels of study to be HIV/AIDS competent. The current study concluded that very few students were taught about HIV/AIDS and those who were exposed to this content only focused mainly on basic facts about the pandemic. The successful integration of HIV/AIDS could ensure that undergraduate students are taught HIV/AIDS-related content from various perspectives in each module. Furthermore, this could also ensure that HEIs produce graduates who can live and work in a world ravaged by HIV/AIDS. Such education ensures that they have the knowledge and skills to protect themselves from HIV, other STIs and unintended pregnancies. The main function of HEIs concerning HIV is to produce graduates who are well equipped to analytically engage with HIV-related societal and political issues. This could help the country to stem the spread of HIV in South Africa and other countries.

This proposed framework developed by this study lays the foundation for the integration of HIV/AIDS-related content in the undergraduate curriculum and may potentially increase knowledge about integrating HIV/AIDS into higher education curricula. Curriculum integration is not well understood, including how it applies to social issues like HIV/AIDS in HEIs. The proposed framework will help HEIs to understand the characteristics of curricular integration of HIV/AIDS.

Conclusion

This chapter presented the proposed framework for the integration of HIV/AIDS into the undergraduate curriculum. The framework outlines HIV/AIDS competencies for different levels of study in various disciplines and its adoption may assist HEIs in producing graduates who can survive and work in a world ravaged by HIV/AIDS. Such education will ensure that they have the knowledge and skills to protect themselves from HIV, other STIs and unintended pregnancies. The next chapter outlines the summary of the findings, the conclusions and the recommendations of the study.

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CHAPTER 7

General Discussion, Limitation, Recommendations and Conclusions

Summary of key findings

The thesis consists of six chapters, which guided the development of the framework to integrate HIV/AIDS content into the undergraduate curriculum. Chapter 7 presents the discussion, where the cohesion of the study is brought together and discussed. Furthermore, detailed recommendations and the limitations from the study's findings were presented and discussed.

The study aimed to develop a framework to facilitate the integration of HIV/AIDS content into the undergraduate curricula at the institutions of higher learning. The following objectives were achieved to meet the aim of the study: A systematic review of HIV/AIDS education in HEIS ; content analysis of the curricula to gauge the extent of HIV/AIDS content in the curriculum at various departments of a particular university. Two surveys to assess knowledge, attitudes and practices of lecturers and students towards integration and teaching of HIV/AIDS content in the curriculum and lastly to develop a proposed framework for integrating HIV/AIDS content into curriculum. The following is a summary of the key findings in relation to the objectives of the study.

As part of the need's assessment before the development of the framework, a systematic review (Chapter 2) analysed the gaps regarding the formal teaching and learning of HIV/AIDS in higher education. The first key finding was that HIV/AIDS in higher education was integrated into only 17 countries and mostly taught in health-related disciplines. These findings are supported by studies in South Africa and elsewhere which suggests that the integration of HIV/AIDS content in higher education is very limited and mostly taught in health sciences discipline as a health issue (AAU, 2010; HEAIDS, 2010; HEAIDS, 2010; HEAIDS, 2015; Pillay & Wood, 2016; HEAIDS, 2018).

The other key finding suggests that HIV/AIDS content was taught at both undergraduate and postgraduate level. This agrees with surveys conducted in South Africa and elsewhere, which suggest that HIV/AIDS content is integrated at all levels of study (HEAIDS, 2010; HEAIDS, 2015; Pillay & Wood, 2016). Similar findings were reported by UNESCO (2006) which established that HIV/AIDS content was infused into undergraduate programmes primarily in the medical and health sciences (UNESCO, 2006).

Most HIV/AIDS education content was informed by behavioural theories for behaviour change such as social learning theory, theory of planned behaviour, health belief model and IMB model. Existing literature indicates that the health belief model, social learning theory, the theory of planned behaviour, and IMB skills model are the most commonly used social cognitive theories that guide HIV-related risk reduction efforts internationally (Lin et al., 2010). It is argued that behavioural theories aid the understanding of risky and safe sexual behaviours

and hence assist in supporting the principle about how people change their behaviour (Michielsen et al., 2012b). The review findings are also significant because they identify that for HIV/AIDS education to be effective, it must be theory driven. Consequently, it singled out three most behavioural theories such IMB model, health belief model and the theory of planned behaviour (Rosenstock, 1974; Fisher et al., 2003; Bandura, 2005). The IMB model was adapted, and the framework developed based on this model and integrating the research findings and the literature.

In addition, the findings highlighted four major integration models used to integrate HIV/AIDS content into the curriculum, such as stand-alone modules, infusion, integration into one main carrier subject and integration across curricula, also reported in other similar studies. Eight studies described education intervention which fits the HIV stand-alone module (AAU, 2010; Bangel and Evarts, 2019; Centre for Sexualities AIDS and Gender, 2016; D'Eon et al., 2010; Ferrand et al., 2019; HEAIDS, 2010a; Pillay & Wood, 2016; Smit et al., 2016).

The review also described the curriculum development models commonly used to integrate HIV/AIDS into the curriculum and competency framework (Knebel, Puttkammer et al., 2008; Modeste & Adejumo, 2014). The proposed framework was grounded on the competence-based model, which emphasises competencies and outcomes where students gain after exposure to HIV/AIDS content in the curriculum. The proposed framework of the current study could be regarded as a directive towards a curriculum that mitigates HIV/AIDS good practice and for possible adaptation by other universities in the country.

Quantitative analysis of the curricula at the sampled university was conducted to gauge the extent of HIV/AIDS integration in teaching and learning (Chapter 3). The results of the content analysis suggest that the UNIVEN curricula do not adequately address HIV/AIDS issues. Only 68 modules/courses out of 1979 had HIV/AIDS content in different disciplines in all eight schools at the university. Where HIV/AIDS-related content is taught in the undergraduate curriculum, it is largely discretionary, unsystematic and not incorporated into the overarching structure. Similar findings in South African universities and abroad suggests the integration of HIV/AIDS content into the curriculum is limited, and it is taught on an Ad hoc basis (UNESCO, 2006; Knebel, Puttkammer et al., 2008; AAU, 2010; HEAIDS, 2010; UNESCO, 2014; HEAIDS, 2015). The findings of this content analysis verified the fact that HIV/AIDS is omitted from the curriculum; therefore, the majority of students exit without HIV/AIDS competencies despite being exposed to the risk of HIV. Therefore, the development of a framework is crucial to inform curriculum developers about the critical aspects of HIV/AIDS contents for inclusion at all levels of the undergraduate curriculum.

Chapter 4 reports on knowledge, attitudes and practices of 340 students regarding the learning of HIV/AIDS content at a selected university. Most students possessed high knowledge about HIV/AIDS, though they had misconceptions about HIV transmission routes. This is in line with other similar studies (HEAIDS, 2010c; Ichharam & Martin, 2002; Mbelle et al., 2014; Shisana, et al., 2014). The finding suggests that an overwhelming majority of the students supported the introduction of formal teaching and learning about HIV/AIDS in their disciplines. This is line with similar studies conducted in universities (Herr et al., 2012; Koob & Harvan, 2003; Lee, 2006; Mkumbo, 2014; Nasir et al., 2008; HEAIDS, 2010b; HEAIDS, 2010d; HEAIDS, 2015b; Luwes et al., 2016; Somfongo, 2013). The study indicated that very few students were taught about HIV-related information in their studies which agreed with similar findings from UNIVEN concerning the absence of formal HIV/AIDS content (Mavhandu-Mudzusi & Netshandama, 2013; HEAIDS, 2010d; HEAIDS, 2015b; Song, 2015; Smith et al., 2014).

Chapter 5 present a survey on knowledge, attitudes and practices of 240 teacher towards the teaching and learning of HIV/AIDS content in the curriculum at a selected university. The study findings showed that the majority of teachers (74%) had a high knowledge of HIV/AIDS but also had misconceptions. There were similar findings from other studies (Choudhary and Rahman, 2014; Kumar, 2015; Nur, 2012; Oni et al., 2016; Mbelle et al., 2014; Peltzer & Promtussananon, 2003; Ayranci, 2005; Mazloomy & Baghianimoghadam, 2008; Westwood & Mullan, 2007). The argument is that for teachers to teach about HIV/AIDS, they should have adequate knowledge about HIV/AIDS (HEAIDS, 2010c). This study found out that the majority of the teacher support the teaching and learning of HIV/AIDS at UNIVEN. Similar findings were also reported in other studies (HEAIDS, 2010a; HEAIDS, 2010d; Mbelle et al., 2014; Dawson et al., 2001, Herr et al., 2012; Mkumbo, 2012; Luwes et al., 2016,;Mathews et al., 2006; Rau, 2009). The study also established that teachers across the eight schools were not teaching or researching HIV/AIDS. This is line with findings from other studies which suggest that very few academics integrate HIV/AIDS into their disciplines (AAU, 2010; HEAIDS, 2010a; HEAIDS, 2005; HEAIDS, 2010b; HEAIDS, 2015). The study further indicated that HIV teaching is affected by structural and systematic barriers in higher education. The findings revealed that that the teachers were not prepared and were hindered by several structural and systematic barriers to teach HIV/AIDS. Furthermore, contrary to the literature, most teachers supported the idea of integration of HIV/AIDS into the curriculum. This articulated the need to provide teachers with guidance to ensure that they could integrate HIV/AIDS content into various modules.

Chapter 6 proposes the framework based on the findings (Chapter 2-6), literature review and theoretical framework (IMB) provided the grounding for the study. The chapter begins by describing the purpose and rationale for the framework. The IMB model and other behavioural

theories are discussed briefly as well as how the IMB was adapted and integrated with the research findings to develop HIV/AIDS competencies for students in HEIs. Also, the relevance of the IBM to curriculum development concerning HIV/AIDS education and the implication of the framework for higher education was provided in detail. Furthermore, this chapter presented the proposed framework for integration of HIV/AIDS into undergraduate curricula structured according to the IMB model, and the relevance of the IBM to curriculum development in relation to HIV/AIDS education and the implication of the framework for higher education.

In Canada, the IMB model was used to design the sexual health education curriculum and suggested that programmes that include knowledge, attitude and skills are effective in reducing sexual behaviours (Canada, 2003). Furthermore, a meta-analysis strongly supports the need to include elements of IMB skills in interventions that target sexual risk behavioural change (Michielsen et al., 2012). Furthermore, several studies showed that when developing the HIV/AIDS intervention curriculum for HIV/AIDS-related intervention, they used elements of the IMB which have been effective in reducing risky sexual behaviours and increasing condom use (Michielsen et al., 2012).

Limitations of the study

There were limitations during data collection. The study sample of 370 teachers was not reached, as only 65% of the desired sample participated. The current study included research from published works in English between January 2010 and December 2018 in the systematic review from five databases. There could be other studies published outside the timeframe, in other languages and databases that could have been missed by the researcher. Those potentially overlooked studies might have impacted the findings of this study. The sample of academics and students taking part in the survey were from only one university; hence the results of the study cannot be a true reflection of all students and teachers in HEIs. Another limitation is that only general knowledge was assessed instead of the scientific facts about HIV/AIDS.

Recommendations

In order to implement the proposed framework for integration of HIV/AIDS content into undergraduate curricula, the following recommendations were made:

Recommendations for teachers

The study findings concluded that although teachers had good knowledge about HIV/AIDS, they also had misconceptions. Teaching about HIV/AIDS requires teachers to have accurate,

up to date information about the pandemic. Therefore, recommendations are that universities provide staff development workshops to capacitate staff on current HIV/AIDS information.

Research in this study has noted that teachers were not ready to teach about HIV/AIDS. They identified a number of factors such as lack of knowledge, confidence and competences to teach HIV/AIDS as teachers must have comprehensive information about curriculum integration. The literature in the study identified several strategies that can be used to integrate HIV/AIDS into the curriculum, such as stand-alone modules, infusion into carrier subjects and integration across curricula. Therefore, it is recommended that teachers receive training in curriculum development.

The current study observed that HIV/AIDS content is delivered using didactic classroom-based teaching methods which are not effective for learning. Recommendations are that teachers need to switch from the old traditional teacher-centred methods which are teacher centred to more modern student learning which allows for active learning and increased student participation, such as field trips, online learning and research.

Recommendations for the HEIs

The literature and findings of this study suggest that the omission of key HIV/AIDS content in the curriculum is mostly because teachers lack confidence, are not competent and scared to teach about issues like HIV/AIDS. Therefore, there is a need for the HEIs experiencing this problem of failing to integrate HIV/AIDS into curricula to establish a dedicated centre which acts as a clearing house staffed by full-time HIV/AIDS academic specialists who are capable and passionate about leading HIV/AIDS curriculum innovations. Their key responsibilities would include assisting the academic staff to understand and conceptualise of the importance of HIV/AIDS education and how to prioritise it in the curriculum at university level.

The current study suggests there is insufficient knowledge and understanding of national-level policies and guidelines among most university teaching staff. The leadership of HEIs should be at the forefront to assist the academic staff in clarifying the concept of HIV/AIDS teaching.

Recommendations for the Department of Higher Education

The current study observed that for HIV/AIDS content to be integrated, there is a necessity to create conducive conditions for the incorporation of HIV/AIDS into the undergraduate curriculum in HEIs which requires the allocation of more resources according to individual HEIs needs. It is recommended that the broad spectrum of HIV/AIDS education and programming at HEIs receive this dedicated funding.

Recommendations for Academic Departments

There is a need for HEIs to conduct needs analysis to decide on how best HIV/AIDS should be taught in universities, various faculties and disciplines, including deciding whether it should be compulsory or an optional subject, and whether it should be integrated into other subjects or stand-alone as an independent subject.

The findings in this study indicate that the students were knowledgeable about HIV/AIDS. However, some students still have misconceptions in some areas of HIV/AIDS. Given the efficacy of the IMB model to raise the knowledge of students in previous studies, the suggestion is that it be used to reduce HIV/AIDS knowledge gaps among university students. For instance, students can be taught HIV transmission, risky sexual practices and risky sexual behaviours.

This study has observed that one of the barriers to teaching about HIV/AIDS was the lack of management support. It is recommended that the Head of the department should provide leadership and support with regard to the integration of HIV/AIDS at the departmental level and form a Departmental committee to integrate HIV/AIDS content at this level.

Recommendations for future studies

This study recommends other pivotal areas for further research. Firstly, it is suggested that more studies be conducted concerning the extent of HIV/AIDS coverage in the curriculum. These should be undertaken regularly because curriculum practices shift rapidly depending on the current teachers. It is vital to regularly gauge the extent of HIV/AIDS to plan for the future.

A second area that requires an in-depth qualitative study is how HIV/AIDS can be integrated into the curriculum. As noted in the study and literature above, there are many ways in which HIV/AIDS can be incorporated into the curricula such as stand-alone, integration and infusion.

Conclusion

The purpose of the study was to develop a framework that facilitates the integration of HIV/AIDS content into the undergraduate curriculum. The findings suggest that there is limited integration into HEIs curriculum in South Africa and abroad. Furthermore, the study confirmed that although students possess knowledge about HIV/AIDS in some areas, they also have some knowledge gaps, and need to be taught about HIV/AIDS. The results from the study suggested that the teachers at the university where the study was conducted were not prepared to integrate HIV/AIDS content, they had knowledge gaps regarding HIV, and very few taught the subject. Teachers need be supported to integrate HIV/AIDS content into

curricula. A framework to integrate HIV/AIDS content into the undergraduate curriculum was developed. Also, emphasis was placed on recommendations for the university, higher education, academic departments and teachers. There was a discussion related to the limitations of the study. Future work could include the implementation and validation of the framework.

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APPENDIX 1: Teachers Questionnaire

Respondent`s code (For official use only)

SECTION A: DEMOGRAPHICS

QN	Questions	
1.	**What is your age group?**	
	20-29	1
	30-39	2
	40-49	3
	50-59	4
	60-69	5
	70 or more	6
2.	**Gender**	
	Male	1
	Female	2
3	**How do you classify yourself in terms of race?**	
	Black African	1
	Coloured	2
	Indian	3
	White	4
	Other (specify)	5
4	**Employment status**	
	Permanent	1
	Temporary	2
	Others[specify]	3

5	**What is your position in the university?**	
	Professor	1
	Associate Professor	2
	Senior Lecturer	3
	Lecturer	4
	Junior Lecturer	5
	Other (specify)	7
6	**How many years have you been working at your current university?**	
	0-4	1
	5-9	2
	10-14	3
	15-19	4
	20 years and more	5
7	**In which school/faculty do you teach?**	
	Agriculture	1
	Maths and Natural Sciences	2
	Health sciences	3
	Human and Social sciences	4
	Environmental Sciences	5
	Law	6
	Education	7
	Management	8

8	**Have you ever undergone formal training on HIV/AIDS education?**	
	Yes	1
	No	2
9	**Highest academic qualification:**	
	1. Undergraduate degree	1
	2. Honours degree	2
	3. Master's degree	3
	4. Doctoral degree	4
10	**Have you undergone formal course in curriculum development?**	
	Yes	1
	No	2
11	**Which level are you currently teaching at University? (Please tick all that apply)**	
	1st Year	1
	2nd Year	2
	3rd Year	3
	4. Honours	4
	5. Masters	5
	6. PHD	6

	SECTION B:HIV KNOWLEDGE		
	INSTRUCTIONS: Please read the following statements carefully. Show whether you think the statements are correct or not about HIV/AIDS by ticking the appropriate number as follows:		
QN	**Statement**		
		1.Yes	**2.No**
12	**General statement about HIV**		
13	HIV/AIDS are the same thing.		
14	There is a cure for AIDS.		
15	AIDS is caused by HIV		
16	A person can get HIV by sharing a glass of water with someone who has HIV.		
17	To prevent HIV infection, a condom must be used for every round of sex.		
18	It is possible to get HIV when a person gets a tattoo.		
19	Eating healthy foods can keep a person from getting HIV.		
20	All pregnant women infected with HIV will have babies born with AIDS.		
21	One can reduce the risk of HIV by having fewer sexual partners.		
22	Antiretroviral drugs can cure HIV infection.		
23	A healthy-looking person can also be infected with HIV.		
24	AIDS is an infectious disease caused by bacteria.		
25	Using alcohol or drugs before or during sex can increase a person`s risk of getting HIV.		
	Statements regarding HIV/AIDS transmitted by		
26	Sexual intercourse		
27	Using a dirty toilet seat		

28	Sharing a needle to inject drugs with someone who is HIV positive		
29	Hugging someone with AIDS		
30	Having vaginal sex without a condom		
31	Getting bitten by a mosquito that is carrying a virus		
32	Having anal sex without using a condom		
	Statement regarding prevention measures		
33	Proper condom use		
34	Screening blood before transfusions		
35	Get tested and know your partner's HIV status		
36	Limit Sexual Partners		
37	Taking Pre-exposure Prophylaxis medication		
38	Taking Post-exposure prophylaxis medication		
	Statements regarding policy on teaching of HIV/AIDS.		
39	The South Africa Department of Higher Education and Training (HEAIDS) have mandated that HIV/AIDS education be integrated in institutions of higher learning curricula.		
40	Policy and strategic framework on HIV/AIDS for higher education is the policy that mandates teaching of HIV/AIDS education.		

SECTION C: ATTITUDES TOWARDS INTEGRATION AND TEACHING OF HIV CONTENT.

	The following questions refer to your own attitudes about integration of HIV content into curriculum. Please respond to the following statements based on how you agree or disagree with the assertion. AGREEMENT SCALE **1. Strongly Agree (SA)** **2. Agree (A)** **3.Disagree (D)**

	4.Strongly Disagree (SD) ***For each of the following statements, please mark the ONE response that best describes your opinion.***				
QN	**Statement**	**1** **Strongly Agree**	**2** **Agree**	**3** **Disagree**	**4** **Strongly Disagree**
41	HIV/AIDS is a problem affecting everyone and therefore students should be taught about HIV/AIDS.				
42	University of Venda should be at the forefront on teaching formally about HIV/ AIDS.				
43	HIV/AIDS content should be integrated into some of the modules that I teach.				
44	I would be willing to adjust my modules so that I teach about HIV/AIDS even if other lecturers are not teaching.				
45	Although I do not see any link, I am willing to learn how to integrate in order to teach students more about HIV.				
46	I feel that by integrating HIV/AIDS content into my modules I will dilute my module content.				
47	I feel that HIV/AIDS education should be the responsibility of the UNIVEN Campus HIV/AIDS Unit and should not be taught in modules.				
48	I feel that the status quo should remain because students have been taught a				

	lot about HIV/AIDS in primary and secondary education, hence the subject should not be integrated into the university curriculum.				
49	I feel that HIV/AIDS should be taught in Health sciences degree programmes only.				
50	I feel that teaching about HIV/AIDS is a waste of time.				

SECTION D: LECTURERS PRACTICES IN INTEGRATING OF HIV/AIDS CONTENT.

QN	Questions	Response option
51.	**Do you integrate or teach HIV/AIDS content in your modules?**	
		Yes
		No
		No

52. Which of the following teaching strategies/methods did you use or used to teach the subject of HIV/AIDS taught to the students? (You can tick more than one method).		
Teaching method	**1.Yes**	**2.No**
1. Lectures		
2. Discussions		
3. Group work		
4. Self-study		
5. Role-play		
6. Problem-based learning		

7. eLearning/online		
8. Experiential learning e.g. internships		
9. **Any Other Please specify**…….. …… ……... ……		

53. Which of the following assessment methods were used to assess students about HIV/AIDS content? (You can tick more than one method).		
Assessment methods	**1.Yes**	**2.No**
1.Written Examination		
2. Oral Examination		
3. Tests.		
4. Oral Presentation.		
5. Assignments		
6. Portfolio of evidence		

54. Why is HIV/AIDS-related content not included more into the curriculum of the degree in which you teach in? Please tick as many of the below statements you believe are applicable:

Lack of management support for HIV/AIDS integration into the current/planned curriculum	
Curriculum is already overstretched.	
A lack of knowledge about curriculum development and integration among lecturers.	
A lack of knowledge about the HIV issues among lecturers.	
Lack of academics that are confidence and competent to teach this content.	

Scepticism among faculty about the relevance of HIV/AIDS in scope of practice of the degree or discipline.	
Negative attitudes/beliefs of academics towards HIV/AIDS.	
Personal discomfort in teaching about HIV/AIDS.	

Thank you for your participation

APPENDIX 2: Students Questionnaire

Respondent`s code (For official use only)

Section A: Demographic Factors

1. Age (Please tick)

1. 18-25 years	
2. 26-35 years	
3. 36-45 years	
4. 46-55 years	
5. 56 years and above	

2. What is your gender?

Female	1
Male	2

3. Race

Black	1
White	2
Indian	3
Coloured	4

4. Which level are you in?

Third Year	1

Fourth Year	2

5. Registered in which school?

Agriculture	1
Maths and Natural Sciences	2
Health sciences	3
Human and Social sciences	4
Environmental Sciences	5
Law	6
Education	7
Management Sciences	8

6. Religion

Christianity	1
Traditional	2
Islamic	3
Hinduism	4
Other	5

	SECTION B:HIV KNOWLEDGE
	INSTRUCTIONS: Please read the following statements carefully. Show whether you think the statements are correct or not about HIV/AIDS by ticking the appropriate number as follows:

QN	Statement		
		1.Yes	2.No
	General knowledge		
7	HIV/AIDS are the same thing.		
8	There is a cure for AIDS.		
9	AIDS is caused by HIV		
10	A person can get HIV by sharing a glass of water with someone who has HIV.		
11	To prevent HIV infection, a condom must be used for every round of sex.		
12	It is possible to get HIV when a person gets a tattoo.		
13	Eating healthy foods can keep a person from getting HIV.		
14	All pregnant women infected with HIV will have babies born with AIDS.		
15	One can reduce the risk of HIV by having fewer sexual partners.		
16	Antiretroviral drugs can cure HIV infection.		
17	A healthy-looking person can also be infected with HIV.		
18	AIDS is an infectious disease caused by bacteria.		
19	Using alcohol or drugs before or during sex can increase a person`s risk of getting HIV.		
	Statements regards HIV/AIDS transmitted by		
20	Sexual intercourse		
21	Using a dirty toilet seat		
22	Sharing a needle to inject drugs with someone who is HIV positive		
23	Hugging someone with AIDS		
24	Having vaginal sex without a condom		

25	Getting bitten by a mosquito that is carrying a virus		
26	Having anal sex without using a condom		
	Statement regarding prevention measures		
27	Proper condom use		
28	Screening blood before transfusions		
29	Getting tested and treated for STI`S		
30	Limit Sexual Partners		
31	Taking Pre-exposure Prophylaxis medication		
32	Taking Post-exposure prophylaxis medication		

SECTION C: ATTITUDE TOWARDS LEARNING OF HIV/AIDS

The following questions refer to your own attitudes about integration of HIV content into curriculum. Please respond to the following statements based on how you agree or disagree with the assertion. AGREEMENT SCALE

1. Strongly Agree (SA)
2. Agree (A)
3. Disagree (D)
4. Strongly Disagree (SD)

For each of the following statements, please mark the ONE response that best describes your opinion.

To what extent do you agree with the following statements?	Strongly Agree 1	Agree 2	Disagree 3	Strongly Disagree 4
33. I believe that HIV/AIDS issues should be taught in all higher education institutions.				

34. If a specific course on HIV/AIDS were offered at my school, I will be interested in taking it.				
35. I support that HIV/AIDS content should be taught to all students at UNIVEN.				
36. I believe that if I am taught about HIV/AIDS it will help reduce the spread of HIV at UNIVEN				
37. I am interested in acquiring further knowledge on HIV/AIDS education.				
38. I feel that HIV/AIDS issues should be the responsibility of the UNIVEN HIV/AIDS Unit and should not be taught in my modules.				
39. I feel that the status quo should remain because we have been taught a lot about HIV/AIDS in primary and secondary education, hence the subject should not be integrated into the university curriculum.				
40. I feel that the there is no link between my modules and HIV/AIDS content, hence wouldn't want to have it in my modules.				
41. I feel that HIV/AIDS should be taught in School of Health Sciences programmes only at UNIVEN.				
42. I feel that learning about HIV/AIDS is a waste of time.				

SECTION C: PRACTICES OF STUDENTS REGARDING LEARNING OF HIV/AIDS AT UNIVERSITY OF VENDA.

The following questions refer to your own learning of HIV/AIDS content into curriculum. Please be honest and respond appropriately.

43. Are you taught about HIV/AIDS issues in your modules? Please tick appropriate box.
1.Yes
2. No

IF YOU HAVE ANSWERED YES, PLEASE CONTINUE WITH THE QUESTIONNAIRE

44 If HIV/AIDS issues/content were presented and discussed in your modules, in what specific modules was this material included? Please identify the modules which you are taught HIV/AIDS content, write the name of the module, code and it indicate if it is an elective or compulsory and when (year of the study and the content you are taught).

Code and name of the module Year e.g. 1st year /second	Elective/Compulsory	Content

45. Which of the following teaching strategies/methods best describes the way you were taught about the subject of HIV/AIDS? (You can tick more than one method).		
Teaching method	Yes	No
1. Lectures		

2. Discussions		
3. Group work		
4. Self-study		
5. Role-play		
6. Problem-based case study		
7. eLearning/distance learning		
8. Any Other Please specify……..		

46. Which of the following assessment methods were used to assess you about the subject of HIV/AIDS? (You can tick more than one method).		
Assessment method	Yes	No
1.Written Examination		
2. Oral Examination		
3. Tests.		
4. Portfolio of evidence		
5. Presentation.		
6. Research project.		
7. Assignments		
8. Not assessed.		

Thank you for your participation: The End

APPENDIX 3: Ethical clearance

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Mr TS Murwira

Student No:
11576134

PROJECT TITLE: **Framework to facilitate the integration of HIV/AIDS content into curricula at the University of Venda, South Africa.**

PROJECT NO: SHS/17/PH/08/1506

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof LB Khoza	University of Venda	Promoter
Prof MS Maputle	University of Venda	Co- Promoter
Dr M Mpeta	University of Venda	Co- Promoter
Dr JT Mabunda	University of Venda	Co- Promoter
Mr TS Murwira	University of Venda	Investigator – Student

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE

Date Considered: June 2017
Decision by Ethical Clearance Committee Granted
Signature of Chairperson of the Committee: .....
Name of the Chairperson of the Committee: Prof. G.E. Ekosse

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APPENDIX 3: Letter of proof reading

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01 September 2020

DECLARATION OF PROFESSIONAL EDIT

Re: PhD Thesis: A FRAMEWORK TO FACILITATE THE INTEGRATION OF HIV/AIDS CONTENT INTO UNIVERSITY CURRICULA

I declare that I have edited and proofread this document. My involvement was restricted to language usage and spelling, completeness and consistency, referencing style and formatting of headings, captions and Tables of Contents. I did no structural re-writing of the content.

Sincerely,

Marion Pfeiffer

Freelance Copy-editor and Proofreader

Intermediate Member, SfEP UK

Full member, Professional Editors Group and SAFREA

Professional EDITORS Group