

**AWARENESS AND PERCEPTIONS OF HIV/AIDS
PREVENTIVE STRATEGIES AMONG STUDENTS OF
UNIVERSITIES OF ZULULAND AND ADO-EKITI**

IBIDAYO EBUN KOLAWOLE

2010

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ZULULAND AND ADO-EKITI**

**IBIDAYO EBUN KOLAWOLE
M. Ed. (UZ), B. Ed. (Hons.) (NSUKKA), NCE (ABRAKA)**

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**PROFESSOR D. R. NZIMA
PROMOTER**

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DEDICATION

This work is dedicated to God almighty, to my family, and to the memories of my parents and brothers who would have been happy to be alive to witness this achievement.

DECLARATION

I hereby declare that the work on *“Awareness and Perceptions of HIV/AIDS Preventive Strategies among Students of the Universities of Zululand and Ado-Ekiti”* is my own work, both in conception and in execution and that the sources that I have used or quoted have been indicated and acknowledged.

I. E. KOLAWOLE

DATE

ABSTRACT

This study sets out to establish the level of awareness and perception of preventive strategies against HIV/AIDS in two African Universities, Zululand (South Africa) and Ado-Ekiti (Nigeria). Responses to a questionnaire set out in nine sections (125 items) from one thousand four hundred and sixty participants (604 from UNAD; 856 from UNIZULU) were analysed for their socio-demography, sexual activities, awareness, assessment of factors that support spread of HIV/AIDS on campus, risk assessment of students, knowledge of HIV transmission and protection, and perception of preventive strategies. One section also covered the assessment of institutional programmes on HIV/AIDS.

The socio-demography revealed that though the two institutions are located in relatively rural/remote places, the socio-economic status were completely different. While UNIZULU respondents were predominantly from rural areas, and from poor families, UNAD respondents were predominantly from middle/high class homes drawn from cities and big towns.

The pattern of their sexual activities was also different. While a small, but higher, percentage of UNAD's respondents have been sexually active from elementary schools, the majority of respondents from UNIZULU have been sexually active from high school with a large proportion being single parents. Most of UNAD's respondents became sexually active in the university although a small percentage was sexually active when they were in the primary school.

Institutional support was much better at UNIZULU though both institutions enjoyed adequate awareness of HIV. However, UNIZULU has facilities for testing and counselling,

which was not available at UNAD. UNAD respondents did not have adequate access to male condoms whereas UNIZULU did, but both institutions did not have adequate access to female condoms.

Core risk factors common to both institutions are irregular and inconsistent use of condoms, not knowing the HIV status of their partners and of themselves, multiple and concurrent sexual activities, intergenerational relationships cloaked in sex-for-money or favour trade, and having sex under the influence of alcohol or drug. While risky sexual activities were driven mainly by gender, and to a smaller proportion by marital status, number of children, where grown up and family resources, the factors that drive risk at UNIZULU were more complex and included gender, age, marital status, number of children and level of study. Indeed there was evidence that UNIZULU respondents appeared to be more sexually risky as the level of study increased while UNAD's appeared to be less risky.

Recommendations are put forward for the possible use results of this study could be put to make African university campuses sexually safe.

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LIST OF ABBREVIATIONS

ACU: Association of Commonwealth Universities

ADF: African Development Forum

AIDS: Acquired Immune Deficiency Syndrome

HIV: Human Immune-deficiency Virus

NGO: Non-Governmental Organizations

NYSC: National Youth Service

SADC: South African Development Community

SAUVCA: The South African Vice Chancellors' Association

STIs: Sexually Transmitted Infections

UNAD: University of Ado Ekiti (Nigeria)

UNAIDS: Joint United Nations Programme on HIV/AIDS

UNIZULU: University of Zululand (South Africa)

VCT: Voluntary counselling and testing

WHO: World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Preamble

Acquired Immune Deficiency Syndrome (AIDS) is recognized as the final stage of a viral infection caused by Human Immune-deficiency Virus (HIV); therefore AIDS is indicative of an underlying cellular immune deficiency (Birchall & Murphy, 1992). It was first detected among homosexuals and drug users in the USA in 1981. Since then the disease has now spread to all corners of the world. Two strains of HIV are recognized by medical experts: HIV-1 (discovered in 1983) and HIV-2 (discovered in 1986). HIV-1 is generally accepted as the cause of most AIDS cases throughout the world while HIV-2 was first discovered in West Africa and later in some Portuguese colonies and Europe and account for the infection in West Africa. With the world becoming a global village and the general mobility of people around the globe the strains can no longer be geographically delineated.

The origin of HIV/AIDS has been controversial as the claim that linked AIDS with the development of polio vaccine from chimp kidney in the Congo (Hooper, 1999) has been debunked. The rebuttal was further confirmed from laboratory investigation published in Washington Post (Brown, 2001).

The progression from infection with HIV to AIDS takes approximately 10 years, although drug intervention (antiretroviral) that aims at blocking the progression of HIV to AIDS has been successful in slowing down the progression and ultimately prolonging the life of infected

persons (Zopola, *et al.*, 2010). However, once AIDS is diagnosed a person usually dies within a year or two thereafter. Infants generally die more rapidly (Adetunji, 2000). Since there is no cure in sight, for now, most people infected with HIV ultimately progress to AIDS and eventually die. HIV/AIDS has turned out to be the greatest challenge facing the world today and remains a profound human tragedy and the most devastating pandemic in human history.

1.2 Epidemiology

AIDS has gone a long way since it was discovered, among gays, in 1981 and reached endemic level in the USA and still remains pandemic in Africa, Asia and Latin America (UNAIDS, 2000). A 1999 estimate put people living with AIDS at 36.1 million. 25.3 million was from sub-Saharan Africa. Of the 5.3 million new infections in the same year, 3.8 million were from sub-Saharan Africa even though sub-Saharan countries house only about 10% of the world's population. About 80% of the 2.8 million people who died of AIDS in 1999 came from the sub-Saharan African countries and a third of the 15-year-olds from this region were projected would die of AIDS (UNAIDS, 2000). Life expectancy was predicted by UNAIDS (2000) to be between 30 and 35 years in Botswana, Namibia, South Africa and Zimbabwe. UNAIDS estimated that HIV+ people worldwide increased to 38.6 million as at the end of 2005 with an estimated 4.1 million new infections. Death tolls were put at 2.8 million, the same level as 1999. Estimates for 2007 are 33.2 million, 2.5 million, and 2.1 million for total infected, newly infected, and fatality respectively (UNAIDS, 2007). The corresponding figures for 2008 (33.4, 2.7, and 2.0 million respectively) reveal a marginal increase in total infected and newly infected but a marginal decrease in fatality (UNAIDS, 2009). Although there appears to have been a drop in the number

of infections and fatality from the 1999 and 2006 figures, Africa still remains the epicentre of the pandemic with South Africa topping the most infected nations (at an estimated 18.1% infection rate among youths and adults between 15-49 years) (UNAIDS, 2009) and Nigeria having a third largest number of infected persons, estimated at 2.9 million (about 4% infection rate, but does vary from 1.6-6.1% depending on location) (Federal Ministry of Health, 2006). Nigeria's infection rate in 2008 is 3.1% (UNAIDS, 2009).

The apparent drop in 2007 figures was due to advances in the methodology of estimation of HIV epidemics, which resulted in adjustments to the data from a number of countries, particularly India, and countries in sub-Saharan countries (Angola, Kenya, Mozambique, Nigeria, and Zimbabwe) (UNAIDS/WHO, 2007). From the 2007 update (UNAIDS), 6 800 persons are estimated to be infected everyday and over 5 700 persons die from AIDS daily. The decline has been linked with a reduction in the number of new infections, which is 'in part due to a reduction in risky behaviours'. The tragedy of the pandemic is that the victims remain the youths between the ages of 15 and 25, the age range of over 90% of university students.

There are no doubts that resource commitments to the prevention of new infection and the management of HIV/AIDS have increased dramatically in the past five years in many countries. Studies (e.g., Mustanski, Donenberg & Emerson, 2006; Chimbiri, 2007; Ahmed, *et al.*, 2001) continue to point to the fact that many sexually active people continue to ignore the prevention strategies that minimize risks of infection. Fundamentally the most effective way of reducing HIV-related illnesses and death is still to reduce HIV infection itself, which is only possible through prevention. In this respect "focused intervention" has been suggested (Quinn,

Wawer & Sewankambo, *et al.*, 2000) whereby attention is focused on the most vulnerable youths to delay the onset of sex, promote safe sex practice, encourage staying off sex before marriage and, for the pregnant women, to prevent mother-to-child transmission. The ultimate goal should be to set up effective prevention programmes, which evidently will be cheaper to manage and reduce the rate of infection, primarily among the most vulnerable groups, but ultimately to encompass the entire population. Recent studies, however, point to the spread of infection across the entire population, through heterosexual and trans-generational sexual relationships and invariably within multiple concurrent sexual activities (Halperin & Epstein, 2007; Odu & Akanle, 2008). A change of strategy is certainly urgently necessary.

1.3 HIV/AIDS in tertiary institutions in Africa

The slow response of the African universities to the HIV/AIDS pandemic initially came under severe criticism (Asmal, 1999). The current impetus has, therefore, been generated by initiatives taken by the Association of Commonwealth University (ACU) and the South African Vice Chancellors' Association (SAUVCA) who reviewed responses to the crisis and made recommendations that higher institutions would have to join the fight against the pandemic (Chetty, 2000). The Africa Development Forum of 2000 was a strong driving force in generating an all encompassing commitment and involvement of all segments of the society in fighting the pandemic. Despite these interventions many tertiary institutions (Universities, Technikons/Polytechnics, and Colleges of Education) in Africa have not developed their HIV/AIDS policies. Except for South African universities, where almost all tertiary institutions have their policies in place, only few of the over 100 tertiary institutions in Nigeria appear to

have developed their own policies from funding provided by ACU. The current tertiary institutional response, in addition to putting policies in place, include incorporating HIV/AIDS into curricula, development and implementing awareness and education programmes, establishment of voluntary testing and counselling facilities and development of research programmes. The Association of African Universities (AAU) is providing leadership in generating debates and developing policy papers for fighting the HIV pandemic in Africa (<http://www.aau.org>).

There are relatively few scholarly articles on the prevalence of HIV/AIDS in tertiary institutions in Africa but a few from Southern Africa (e.g. Friedland, Jankelowitz, De Beer, De Klark, Khoury, Csizmada, Pandayachee, & Levy, 1991; Stremlau & Nkosi, 2001; Maharaj & Cleland, 2006; Sabone, Ntsayagae, Brown, Seboni, Mogobe, & Sebego, 2007) and Nigeria (e.g. Ibe, 2005; Aluede, Imhonde, Maliki, & Alutu, 2005; Ijadunola, Abiona, Odu, & Ijadunola, 2007) paint a grim picture. Most tertiary education students in Africa fall within the high risk group and, like adolescents/young adults, are highly sexually active.

From the authors cited in the last paragraph, certain sex cultures of universities and certain characteristics are common to all institutions. These include sexual experimentation, concurrent sexual relationships, sex-for-money (or what the I chose to call 'undercover prostitution') in difference guises, including 'sugar daddy' and 'sugar mummy' practices, unprotected casual sex, gender violence, forced sex or rape, trans-generation and trans-sexual relationships from within and outside the universities. Some of these high risk activities have underlining class connotations (between students from rich and influential families and those

from poor homes or between ordinary students and those that belong to powerful societies/unions or even cults).

The university environment therefore makes the adolescents and young adults among students even more vulnerable than they were before coming to the university. The high-risk sexual activities in the universities must have, therefore, accounted for the high rate of HIV infection reported in the few universities surveyed. The prevalence of HIV infection in the tertiary institutions may, therefore, be a scale higher than in the general population. This has grave implications for the future manpower needs of the African continent.

1.4 Modes of transmission of HIV

Three modes of transmission are generally identified: sexual, blood contact and mother-to-child. Sexual transmission could arise from heterosexual (man-to-woman or woman-to-man) and homosexual (man-to-man) relationships. Consequently having unprotected sex (vaginal, anal or oral) with an infected person could result in exchange of body fluids. Concurrent multiple sex partners, low level male circumcision and inconsistent and incorrect condom use have been identified as the predominant risk factors that have made escalation of HIV infections in Africa difficult to stem (SADC, 2006; Halperin & Epstein, 2007).

It has been established that HIV is transmitted by direct introduction of the virus into the blood stream. This could be achieved through transfusion of infected blood, sharing of injection needles (e.g. by drug injectors), accidental contact with infected blood, or bruises during sex with infected partner(s). A partner can also be infected from infected menstrual blood if a man

has unprotected sex with his infected partner during her menstrual cycle. If a pregnant woman is infected there are clear risks of transmitting the virus to the baby during pregnancy, during the delivery process or from breast milk feeding.

1.5 Prevention strategies

The fundamental indices of most national policies include prevention, public enlightenments, counselling and testing, treatment, and support for the infected and orphans of victims of AIDS. The most open demonstration of prevention strategy is the use of condoms, which, in some countries, are distributed free, but in short supply in many sub-Saharan countries. Despite the emphasis on the use of condoms, the pandemic is only marginally abating. Highlights of preventive strategies that will be examined in this study are:

- Use of condoms
- Abstinence and faithfulness in relationships
- Male circumcision
- Minimisation of multiple and concurrent sexual partners, and
- Intergenerational relationships

Literature pertaining to each of these preventive strategies will be reviewed in Chapter 3.

1.6 Statement of the problem

HIV/AIDS pandemic appears to be devastating every sector of African society and structure. The epicentre of the pandemic is located at men and women within the age bracket of 15-49 years, which incidentally constitute the most productive years of any person. The problem of

the pandemic is exacerbated by the ravaging poverty and virtual collapse of social services. Multiple factors have been identified to contribute to the rapid amplification of HIV infections in Africa, particularly Southern Africa, which houses over 30% of people infected by the virus in the world. These include (1) the protracted period that HIV has been in Africa, (2) poverty, which tends to fan the spread, (3) poor health facilities, (4) epidemic of other STIs, (5) inadequate access to condoms (and supply of defective condoms) or inconsistent use of condoms by those involved in risky sexual practice, and (6) sexual networking, including concurrent and inter-generational sexual relationships.

Decades of attention on condom use and counselling and testing has not produced any measurable success in Africa. Recently UNAIDS and her sister organizations came up to identify lack of male circumcision, the practice of concurrent sexual relationship and inconsistent condom use as the major drivers of the pandemic in Africa. These new findings then call for a need to develop new strategies to stem the spread of the virus in Africa. In the absence of a cure or a vaccine, prevention remains the cheaper option. It calls for a change of sexual behaviour among Africans. This is not an easy proposition, particularly for adults who have formed their sex habits. However, prevention intervention targeting the entire society, not just the youths, is an urgent proposition to avoid a total mortgage of the African future.

Government/NGO publicity are known to be concentrated in the cities and may not have reached rural settlements in many parts of Africa because of the limited access to radio and television, the main organs of publicity. Most of the vulnerable groups, except probably the

city dwellers, may not have benefited from the enlightenment programmes of Government. The wide publicity given to the use of condom has compromised traditional and religious values of promoting 'no sex before [marriage](#)' (i.e. virginity), 'chastity in marriage', and the role of the community and religious formations in the moral upbringing of the youths. Consequently the need for a fundamental change in our attitude to sex has been compromised. Governments that bought *hook-line-and-sinker* into promoting the use of condom as the main preventive strategy have been proved wrong. The press that has presented abstinence as an impossible proposition has also not helped matters either. The pre-eminent premium placed on the use of condoms, therefore, appears misplaced and misleading. The current thinking that circumcision and minimization of concurrent relationships are keys to stemming the spread of HIV in Africa, while still promoting abstinence, faithfulness, and consistent and correct use of condom appears to be the way to go. There are critical moral issues and traditional African values, which are on trial with the over-concentration of efforts on the use of condoms to the detriment of restoring traditional/religious values of preservation of the chastity of the African youths.

The high level of HIV infection in Africa, particularly Southern Africa, and the high cost of treatment mean that the rates of infection will increase unless effective prevention measures are employed. To create effective and culturally appropriate promotion campaign for any preventive measure, the beliefs, attitudes, and behaviours that are associated with consistent adoption of any measure need to be better identified and understood.

The universities in Africa have become the mine house for human resource generation and concentration centres of future potential drivers of government and industry. They, paradoxically, fall within the age range of the people in society that have been mostly affected by the pandemic. Any decimation of youths in tertiary institution by HIV infection constitutes a waste of investment in education and a challenge to the drive to develop future manpower base for Africa and the society. There is no tertiary institution that would not have every sector of the society represented, either as students or workers. The HIV profile of an institution could therefore reflect the picture of the wider society.

Another unique nature of undergraduates is that they also constitute the most mobile group in any society and like truck drivers, military personnel in crisis management, and migrant workers, they can be dispersal agents for the spread of HIV. In Nigeria, every graduate undertakes a compulsory one-year National Youth Service (NYSC) that takes each graduate away from his/her state of origin. If already infected while at school, s/he carries the infection along to wherever s/he serves. There is confounding evidence that university students are involved in unsafe sexual activities within a concurrent relationship and with very low perception of their vulnerability to STI and HIV infections. Okafor and Duru (2010) reported high level of sexual promiscuity among students of tertiary institutions in Imo State of Nigeria. Similar observations were reported from a number of studies carried out at Olabisi Onabanjo University, Ago Iwoye, Nigeria (Akindele-Oscar, 2009), China (Tan, *et al.*, 2006), Chile (Ferrer, *et al.*, 2007).

A study of this nature, therefore, should examine the interplay of behavioural factors, social environment, culture, religion and socio-economic status, and the African cultural attitude towards “open” discussion of sexual issues, and psychological factors which may affect the attitude of students to sex and safe sex practices, *vis-à-vis* prevention against HIV infection. Within a university setting there is, for various reasons, ‘undercover’ prostitution among students involving fellow students, staff and men and women from outside the university, who are in many cases much older than the students. This study is therefore intended to be as comprehensive as possible, in anticipation that we can come up with as total a picture as possible to provide intervention at this level for the prevention of the spread of the virus among our future educated elites.

The two Universities selected for this study were selected deliberately for the following reasons:

- UNIZULU is located in a province in South Africa where HIV infection rate is highest in South Africa (Avert, 2009), reaching up to 30% in certain places whereas UNAD is located in a State in Nigeria where infection rate is lowest in Nigeria, put at about 1.6 %. (NACA, 2008)
- UNIZULU is located in a rural setting while, even though UNAD is located some 17 km away from a state capital, it is probably one of the least cosmopolitan institutions in Nigeria.
- In both institutions students live on and off campus and therefore have contacts with the local community. Most of UNAD’s students live off campus whereas most UNIZULU students live on-campus.

- Both institutions do not have access to recreational facilities like cinemas, pubs, etc within reach. Social activities are probably limited to those organized by students or located in the nearest urban/semi urban centre of ± 20 km to the institution.
- Both Universities are not normally the first choice of many prospective students; therefore many of the students opt to attend them because their university of choice would not accept them.
- Both Universities have a little over 10 000 students on their enrolments on full time studies.
- UNIZULU is funded by national government whereas UNAD is funded primarily by State Government but receives some subvention from the national government through the National Universities' Commission.
- Curricula for both institutions are benchmarked against national minimum academic standards and accredited by an organ of the national government.
- UNIZULU students are predominantly black Africans whereas UNAD's students are all black Africans.

1.7 The research questions

The research questions this project attempts to answer are:

- 1.7.1 To what extent some selected socio-economic and demographic indices of the respondents influence their (i) knowledge of transmission of HIV/AIDS and (ii) knowledge of protection against HIV and AIDS?
- 1.7.2 How much do the students know about preventive measures that are available?

- 1.7.3 How far do students' sexual activities reflect in their perception of prevention against HIV/AIDS infection?
- 1.7.4 To what extent do the students' sexual activities in consonance with their perception of risky sexual behaviours?
- 1.7.5 Which factors drive the sexual activities of students in the two institutions?

1.8 Aims of the study

- 1.8.1 To determine how some selected socio-economic and demographic indices of the respondents influence their (i) knowledge of transmission and (ii) protection against HIV/AIDS.
- 1.8.2 To find out about students' perception of preventive strategies.
- 1.8.3 To find out the extent to which students' sexual activities contribute to the risky sexual relationships on the campuses.
- 1.8.4 To establish the factors that could influence the spread of HIV infection in the two institutions.
- 1.8.5 To establish factors that may account for any differences in the responses from the selected institutions about knowledge and perceptions of preventive strategies.

1.9 Research hypotheses

This study will be qualitative and quantitative. For qualitative description of data simple statistics like mean and standard deviations will be computed. For quantitative analyses the

following hypotheses, based on the above aims, would be tested to provide answers to the research aims in **1.8**.

Research hypothesis 1

The students' socio-economic and demographic indices do not affect their knowledge of (i) HIV/AIDS transmission and (ii) protection against HIV/AIDS infection.

Research hypothesis 2

The students do not know much about available preventive strategies.

Research hypothesis 3

The students' sexual activities do not reflect in their perception of preventive strategies against HIV/AIDS.

Research hypothesis 4

There is no relationship between the students' sexual activities and their perception of risky sexual behaviour.

1.10 Definition of terms

Circumcision: A surgical removal of the foreskin covering the head of the penis of boys to expose the end of the penis.

Intergenerational relationship: Used to describe a situation where younger girls/boys have sexual relationship with people much older than themselves (usually more than 10 years) for monetary or material benefits.

Concurrent relationship: A situation whereby a person has sex with several other people within the same space of time. The main actor may be single (may be with a steady partner) or married but goes out to strike outside sex partners outside the steady relationship.

Serial monogamy/relationships: Here a person may have several sexual relationships with a space of time but at any particular period he has only one partner and only strikes another one after the previous one has been terminated.

Sugar daddy: An elderly man usually privileged, but not necessarily rich but definitely of economic advantage over [his](#) prey, willing to tempt girls with money or materials to take advantage of her sexually and abandon her. The relationship may be short or long.

Sugar mummy: An elderly lady, like her male counterpart, willing to spend her wealth to lure young men to sexual relationships.

'Undercover prostitution': Used in this work to describe students who trade sex for money or favour, even though they are not professional prostitutes.

1.11 Method of investigation

1.11.1 Literature review

The available literature related to the aims/research questions will be reviewed.

1.11.2 Field work

A cross-sectional study design will be adopted utilizing mainly a structured questionnaire.

1.11.3 Sampling

Some semi-randomized selection of subjects was adopted. Two faculties were randomly selected from the faculties that are common to each institution. From each faculty two departments were randomly selected. Participation was then open to all students in each department in both universities, on a voluntary basis. Seven hundred questionnaires were distributed at UNAD while 1000 were distributed at UNIZULU. Participation was open to all undergraduate levels of studies (up to honours in UNIZULU because Nigeria runs 4-year undergraduate degree programmes leading to the award of honours). A sample size of ± 1400 was therefore anticipated. Further details about the instrument and sampling are presented in Chapter 4.

1.12 Instrument for data collection

A questionnaire was developed. The instrument was divided into nine sections covering different aspects of the research aims set out in paragraph 1.8. The format of the questionnaire is presented in Chapter 4.

1.13 Method of scoring

The details of scoring are presented in Chapter 4.

1.14 Method of data analysis

Basic descriptive statistics was used and presented in tables. Inferential statistics was also used to compare responses from respondents from both institutions. Tests of normality of means and equality of variances were carried out to guide as to whether parametric or non parametric ANOVA tests on the data would be carried out. For comparison of (unequal) means Mann-Whitney tests were used while Kruskal-Wallis tests were used for non parametric ANOVA. Further details are available in Chapter 4.

1.15 Value of the study

From existing literature the tertiary institutions have not come up as a focused group that has been studied systematically despite the overwhelming evidence of the risky sexual activities found among adolescents and young adults, which normally constitute the population of tertiary education institutions. It is also surprising that despite the sensitive nature of tertiary education sector to national development and the detrimental effect of fatality within this sector to human resource development of a nation, the pressure the institutions have received from policy makers is for institutions to develop HIV/AIDS policies for their institutions. The sexual culture of tertiary institutions and the fertile grounds they provide for sexual escapades from within and from outside the institutions are also a common knowledge.

It was therefore high time that systematic research work should be conducted on tertiary institutions so that both management and government would know the extent the unbridled sexual activity on campuses could drive the HIV/AIDS pandemic and the implications for the 'future leaders' of the African continent.

Summary

This study is expected to establish the background and factors that contribute to the sex profile and the risky sexual behaviours of students of two African universities within the context of HIV/AIDS pandemic and to provide recommendations of what could be done to address any problems identified. Such recommendations would be useful to the entire African university sector, in the long run.

Since the focus of any preventive strategy is hinged on behaviour change, Chapter 2 will contain highlights of the theoretical framework that relates to prevention strategies and behaviour change theories.

CHAPTER 2

THEORETICAL FRAMEWORK

2.1 Introduction

In a broad sense, the prevention of HIV infection can be thought of as applying a variety of methods to reduce risk of infection. Risk-reducing behaviours and attitudes can include practicing safer, protected sex, abstaining from sexual activity, avoidance of multiple concurrent and trans-generational sexual activity, risking being infected for money, avoidance of sex under the influence of alcohol/drug, using safer practices in intravenous (IV) drug use, abstaining from or improving the safety of other practices that may involve the exchange of blood (e.g., ear piercing, tattooing, circumcising, or even blood transfusing) and the development of self-efficacy to manage one's sexual activities.

It is generally believed that it is difficult for people to change their unhealthy behaviours, especially if they have engaged in them for a long time. Besides, even if people want to change their behaviours, sometimes the communities in which they live could make it difficult to change. Consequently, changing health behaviours is considered a complex process that cannot always depend on the individual's motivation to make a positive health change.

The ecological perspective (Gregson, Foerster, Orr, *et al.*, 2001) has been employed to understand the health problems and factors that affect groups of people and influence health in communities. Such factors include a) the individual (intrapersonal), b) the people we interact

with (interpersonal), c) the groups or organizations we belong to, d) the community we live in, e) the media we are exposed to, and f) the policies that shape our worlds. The six influences work in combination to affect a person's health and are linked in such a way that a change in one can cause changes in the others.

Since HIV/AIDS is a health problem, the above reference to the ecological perspective applies to the health condition as well. Health promotion and behaviour change theories are useful in dealing with influence change at any level in the ecological model highlighted above. These change theories are generally classified into a) individual-level, b) interpersonal-level and c) community- level theories. In the light of this, a theoretical framework that relates to health prevention strategies and behaviour change will be highlighted in the rest of this chapter.

2.2 Individual-level behaviour change theories

The fundamental goal of prevention against any chronic disease, in particular HIV/AIDS, is behaviour change. Change is central to all HIV prevention efforts as it is important for individuals to enact and sustain behaviour change for their personal benefits. Theoretical models employed in the development of behavioural intervention and the reduction of adolescent pregnancy in the past include the health belief model, the theory of reasoned action, the concept of self-efficacy derived from social learning theory and overlap of the four most commonly cited theories in HIV prevention literature originating from the USA: ***The Health Belief Model, the AIDS Risk Reduction Model, the Stages of Change, and the Theory of***

Reasoned Action. These theories postulate that the adoption of preventive behaviour is the result of rational decision-making process that involves the following components: the extent to which HIV/AIDS infection (or pregnancy) is perceived by the individual to be a problem; the individual's belief that specific actions which are under his/her control will be effective in preventing infection (or pregnancy); the value the individual places on his/her health; and the individual's self-confidence to enact preventive behaviours and the social and community skills required to engage in safe or preventive practices (Swart-Kruger & Richter, 1997). The limitations of these theories are hinged on the assumption that there is a logical pattern of decision-making and degree of control which resides in the individual. This assumption is unrealistic within the complexity of sexual relations.

Swart-Kruger and Richter (1997) suggested that since most campaigns are essentially individually oriented education and behaviour-modification programmes, apparently developed from an assumption of individual autonomy and control that rely on knowledge and use of condoms on the one hand, and the rationalization of sexual encounters through negotiation and joint decision-making about protection on the other hand, the programmes reflect an implicit acceptance of inequalities in health and a failure to recognize and challenge the social component of disease and behaviour. For any intervention to work, the causes of the conditions must be addressed along with provision of information and services. Efforts to combat unwanted pregnancy and HIV/AIDS are working against strong social, cultural, and economic norms as well as religions and gender constraints. They also ignore the complex nature of sexuality, human behaviour and the reality that has been exposed in literature that

one tends to underplay one's exposure to risk. These forces must determine the framework of sexual behaviour among adolescents and youths (Ahmad, 2002) and, within the context of this study, undergraduates. A selection of models that illustrate the framework highlighted above will be outlined. The framework for an integrated approach to behaviour change will also be included.

2.2.1 The Health Belief Model (HBM)

The Health Belief Model (HBM), one of the first theories of health behaviour, is a psychological model formulated to explain and predict why individuals engage in health-related actions that may or may not compromise their health. It remains one of the most widely recognized theories in the field of prevention. It was initially developed in the 1950's to explain the widespread failure of people to participate in prevention programmes against diseases (vaccination) and later applied to people's responses to diagnosed symptoms of illness and compliance with medical regimens (Rosenstock, Strecher & Becker, 1994). It suggests that health-related behaviours depend on four individual attitudes or perceptions about an illness: 1) the potential seriousness of an illness, 2) the person's feeling of risk from that illness, 3) the benefits they feel they will receive for taking a preventive action and 4) the barriers to taking that action. The extension of the HBM to include Bandura's concept of self-efficacy to strengthen its utility and explanatory power for a wider variety of health behaviours was proposed by Rosenstock, Strecher and Becker.

The focus of the comprehensive HBM is on disease prevention and has the following key variables:

- **Perceived threat**, which consists of two components:
 - *Perceived susceptibility*: An individual's subjective perception of being vulnerable to a health condition;
 - *Perceived severity*: An individual's evaluation of the seriousness of the illness or leaving it untreated within the context of medical and clinical consequences and possible social consequences.
- **Perceived benefits**: The beliefs about the effectiveness of strategies available to reduce threat of contracting a disease.
- **Perceived barriers**: The possible negative consequences of taking particular health actions, including physical, psychological, and cost effectiveness.
- **Cues to action**: Events that trigger action, which can either be bodily (e.g. symptoms of onset of a disease) or external (e.g. medical publicity, mass media campaigns, or a reminder from one's physician) that motivate the individual to take actions.
- **Other variables**: These include demographic (age, sex, ethnicity/race), socio-psychological (social class, peers, religion) and structural (knowledge, publicity) variables that affect an individual's perceptions and indirectly influence health-related behaviour.
- **Self-efficacy**: An individual's confidence in being able to execute successfully the behaviour change required to produce the desired outcomes. The likelihood of an individual taking an action is related to the perceived benefits of such action weighed against the perceived barriers. This was a later addition to the HBM.

The HBM has been proposed as a framework to conceptualize HIV/AIDS preventive behaviours because of its success in explaining health conditions and health related behaviours (Rosenstock, Stretcher, & Becker, 1994). The HBM is therefore built on these four core components (perceived susceptibility, perceived severity, perceived benefits, and perceived barriers). Evidently since health motivation is the central focus of HBM, the model should be a good fit for addressing problem behaviours that could evoke health concerns like high-risk sexual behaviour and the possibility of contracting HIV. The six constructs above could provide a useful framework for designing both long-term and short-term change strategies. The framework is presented in Table 1.1 (Source: NIH, 2005) and the schematic representation in Figure 1.

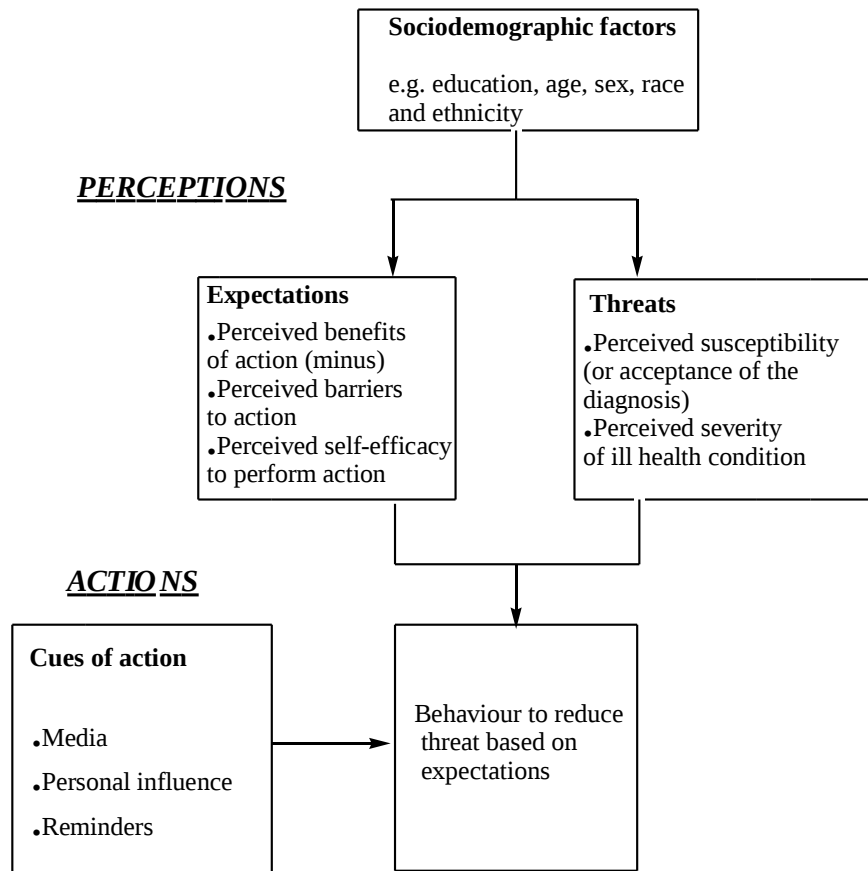
‘Cues of action’, which refers to stimuli necessary to trigger the process of healthy actions, could come from mass media campaigns (TV, newspapers or magazine articles), illness/death of a family member or friend from a particular disease, advice from others, reminder postcard from one’s physician or dentist or text messages sent to cell phones. The demographic (e.g., age, sex, race, ethnicity), socio-psychological (e.g., personality, social economic factors), and structural (e.g., knowledge about the disease, personal experience with condition) variables directly/indirectly influence health-related behaviours by affecting a person’s perception of susceptibility, severity, benefits, and barriers.

Table 1.1: Framework for adoption of Health Belief Model

Concept	Definition	Potential Change Strategies
Perceived susceptibility	Belief about the chances of getting a condition	• Defining what population(s) are at risk and their level of risk • Tailor risk information based on an individual's characteristics or behaviours • Help the individual develop an accurate perception of his/her own risk
Perceived benefits	Beliefs about the seriousness of a condition and its consequences	• Specify the consequences of a condition and recommend action
Perceived benefits	Beliefs about the effectiveness of taking action to reduce risk or seriousness	• Explain how, where, and when to take action and what the potential positive results will be
Perceived barriers	Beliefs about the material and psychological costs of taking action	• Offer reassurance, incentives, and assistance; correct misinformation
Cues to action	Factors that activate 'readiness to change'	• Provide 'how to' information, promote awareness, and employ reminder systems
Self-efficacy	Confidence in one's ability to take action	• Provide training and guidance in performing action • Use progressive goal setting • Give verbal reinforcement • Demonstrate desired behaviours

Most of the studies have, however, not employed the comprehensive version of the model except that of Winfield and Whaley (2002). One consistent finding from most of the studies carried out in the USA is that knowledge of HIV/AIDS does not predict condom use. Consequently HIV/AIDS knowledge is a necessary, but not sufficient, factor for health preventive behaviours.

BACKGROUND



Source: Rosenstock, Strecher & Becker (1994)

Figure 1.1: The schematic representation of HBM

Winfield and Whaley (2002) found that only perceived barriers was a significant predictor of condom use among African American students and the comprehensive HBM did not explain significantly more variance in condom use than the core components of the model. This finding is in agreement with similar studies in Africa (e.g., Hounton, Carabin & Henderson, 2005).

One of the criticisms that the HBM has received is the argument that the model is based on rationalistic assumptions. The argument has been that direct personalized information about

vulnerability should, when combined with information about preventive behaviours, induce behaviour change. However, HIV prevention has shown that human beings are not always rational in a concept that is best understood by the individual at the point of decision making. The decision to have sex by a young African girl is not driven only by the fear of the consequences but could be by positive motivations, such as the need for affection, and establishing a strong personal relationship, which may be absent at home or which could have been missing in her life by circumstances beyond her control. Hence as far as she is concerned she is being rational (Gage, 1998).

Researchers have been consistent in ignoring the importance of the social environment in behaviour and the strong influence socio-cultural context exerts on decision-making as major weaknesses of the HBM. Romer and Hornick (1992) provided a repository of social meaning and norms for behaviour, including sexual behaviour, to include images and interpretations that groups attach to behaviour. Norms are the social expectations that groups maintain to define appropriate behaviour. The inability of the HBM to make tangible provision for social environment where behaviour takes place has created a gap concerning its application in Africa where traditions are held in high esteem (Odutola, 2005).

Most of the other psychological theories, like HBM, are based on the assumption of a linear relationship from information to knowledge and behaviour change. However, the theory of reasoned action (e.g. Bosompra, 2001) provides a framework for linking individual beliefs, attitudes, intentions and behaviours.

2.2.2. Theory of reasoned action (TRA) and theory of planned behaviour (TPB)

The theory of reasoned action and the theory of planned behaviour are closely associated as both explore the relationship between behaviour and beliefs, attitudes and intentions. Both theories assume that *behavioural intention* is the most important determinant of behaviour. Consequently both theories will be reviewed in this paragraph.

2.2.2.1 *The theory of reasoned action*

The TRA was advanced by Fishbein and Ajzen in the 1960s to predict a variety of human behaviours on the assumption that human beings are rational and that their behaviours are under volitional control; that is, people consider the implications of their actions in a given context at a given time before they decide to engage or not to engage in a given behaviour (Ajzen & Fishbein, 1980). The theory provides a construct that relates individual beliefs, attitudes, intentions and behaviour (NIH, 2005). The TRA is built on a similar conceptual framework as the HBM but adds the construct of behavioural intention as a determinant of health behaviour. TRA specifically focuses on the role of personal intention in determining whether behaviour will occur or not. A person's intention is a function of attitude (toward the behaviour) and 'subjective norms' (i.e. social influence). The variables of the theory and the definitions taken from Fishbein et al. (1994) are:

- **Behaviour:** A specific behaviour defined by a combination of four components: action, target, context and time (e.g., steps taken to implement a sexual risk reduction strategy (action) by using condoms with casual sex partner (target) in brothels (context) every time (time)).

- **Intention:** The intent to perform behaviour is the best predictor that a desired behaviour will actually occur. To measure the intent accurately and effectively, it should be defined using the same components used to define behaviour: action, context and time.
- **Attitude:** A person's positive or negative feelings toward performing the defined behaviour.
- **Behavioural beliefs:** Behavioural beliefs are a combination of a person's beliefs regarding the outcomes of a defined behaviour and the person's evaluation of potential outcomes. These beliefs will differ from population to population depending on the norm.
- **Norms:** A person's perception of other people's opinions regarding the defined behaviour.
 - Normative beliefs are a combination of a person's beliefs regarding other people's views of behaviour and the person's willingness to conform to those views. Normative beliefs play a central role in TRA, and generally focus on individual's perception of other people, particularly influential people, would expect him/her to do. These other people may be his/her peer, family members, parents, church leaders or the society at large. Normative beliefs also vary from population to population.

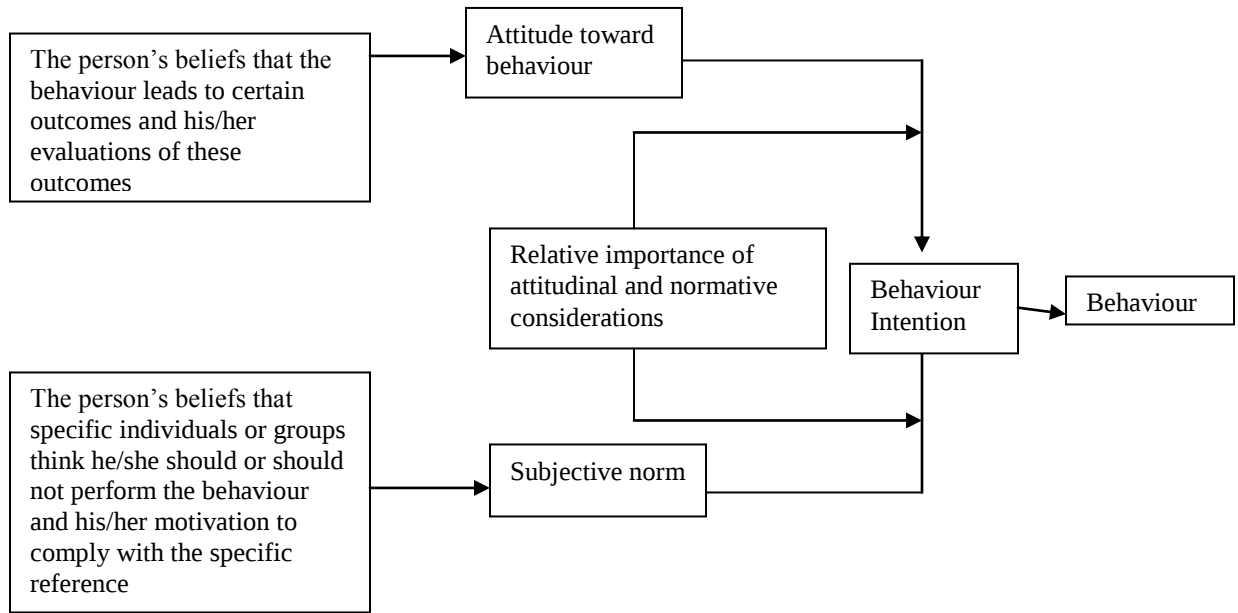
Unlike the Stages of Change model, the TRA model supports a linear process in which the individual's actual behaviour is ultimately affected by changes in individual's behavioural and normative beliefs (i.e., cognitive structures). It is strongly taken that a person's intention remains the best indicator that the desired behaviour will occur.

A framework reflecting how the variables are linked up is presented in Figure 1.2. The cognitive structures (i.e., the behavioural and normative beliefs) influence an individual's attitude and

subjective norms. Consequently, attitudes and norms shape a person's intention to perform behaviour. The influence of attitude and norm variables, and their underlying cognitive structures, on a person's intention vary. VanLandingham, Suprasect, Grandjean & Sittitai (1995), in a study on Thai males, revealed that men's perceptions of peer norms were the best predictor of condom use. In an earlier study carried out on college females in the USA, attitudinal beliefs exerted greater influence on the intent to use condoms. TRA has been explored in a number of behaviours including smoking, dieting, drinking, treatment programmes, contraception, wearing seatbelts or safety helmets, regular exercising, breastfeeding and voting.

Table 1.2: Theory of planned behaviour

Concept	Definition	Measurement approach
<i>Behavioural intention</i>	Perceived likelihood of performing behaviour	Are you likely or unlikely to perform the behaviour?
<i>Attitude</i>	Personal evaluation of the behaviour	Do you see the behaviour as good, neutral, or bad
<i>Subjective norm</i>	Beliefs about whether key people approve or disapprove of the behaviour; motivation to behave in a way that gains their approval	Do you agree or disagree that most people approve of/disapprove of the behaviour?
<i>Perceived behavioural control</i>	Belief that one has, and can exercise, control over performing the behaviour	Do you believe performing the behaviour is up to you, or not up to you?



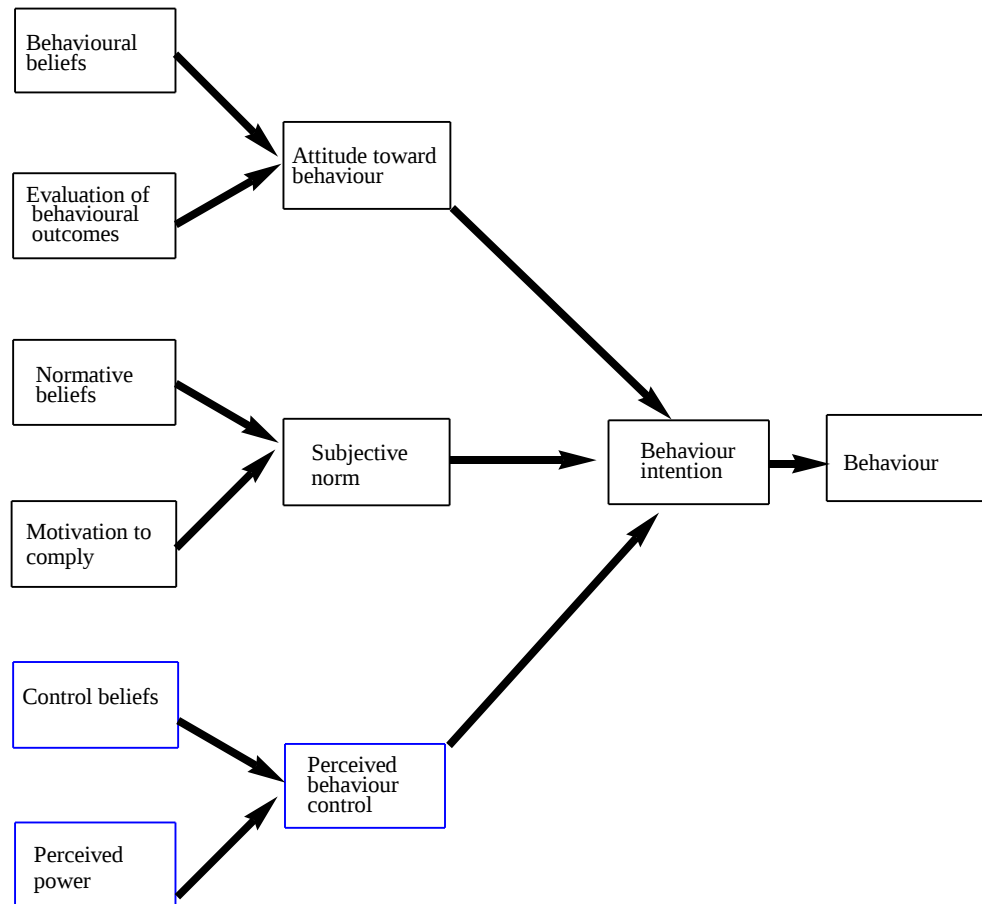
Adopted from: Ajzen, I., Fishbein, M. (1980): Understanding attitudes and predicting social behaviour. New Jersey: Prentice-Hall, Inc.

Figure 1.2: Schematic representation of the Theory of Reasoned Action

2.2.2.2 *The theory of planned behaviour*

Like TRA, the TPB posits that behavioural intention is influenced by a person's *attitude* toward performing behaviour and by beliefs about possible approval or disapproval from individuals who are important to the person (subjective norm). Both theories also assume other factors, like culture and the environment, operate through the models' constructs, and do not independently explain the possibility that an individual will behave in a certain way. However, the TPB incorporates additional construct, perceived behavioural control (Figure 1.3), which has to do with people's beliefs that they can control a particular behaviour. The inclusion of this construct was to account for situations where individual's behaviour is influenced by factors beyond his/her control. It was then suggested that individual's perceptions about

controllability might have an important influence on behaviour. Table 1.3 presents a summary of the TPB along with a scheme that combines TRA and TPB in Figure 1.3 (NIH, 2005).



Source: NIH, 2005 (The blue boxes represent the improvement of TPB on TRA)

Figure 1.3: Theory of reasoned action (black) and theory of planned behaviour (the entire figure) combined

The TPB explains how *behavioural intention* determines *behaviour*, and how *attitude toward behaviour*, *subjective norm* and *perceived behavioural control* influence *behavioural intention*. It also shows that attitudes toward behaviour are shaped by beliefs about what performing the behaviour entails and the outcomes of the behaviour. Compliance with subjective norms is

affected by social standards and motivation to comply with them. The existence of negative or positive factors that make it easier or difficult to perform or reject the behaviour influence perceived behavioural control. One could then conclude that the existence of a chain of beliefs, attitudes, and intentions drives behaviour.

2.3 The stages of change model (Trans-theoretical model)

This model, also known as trans-theoretical model, was developed in the 1980s targeting cessation of smoking by Prochaska and DiClenmente (1983). The model initially posits that behaviour change occurs as a gradual process which an individual or group would pass through when changing behaviour: *pre-contemplation*, *contemplation*, *action*, and *maintenance*. The rationale behind 'staging' people was to tailor therapy to a person's needs at his/her particular point in the change process. Since the initial proposition, a fifth stage (*preparation for action*) has been incorporated into the model, as well as ten processes that help predict and motivate individual progression through the stages. Rather than the concept of a linear transverse through the stages, the stages are no longer perceived to be linear, rather as components of a cyclical process that varies for each individual.

Prochaska, DiClemente and Norcross (1992) described the following stages and processes:

- ***Pre-contemplation***: Individual has the problem (whether s/he recognizes it or not) and has no intention of changing; e.g. not even thinking about using condoms.
 - Processes: Consciousness raising (information and knowledge);
 - Dramatic relief (role playing);

- Environmental re-evaluation (how problem affects physical environment).
- **Contemplation:** Individual recognizes the problem and is seriously thinking about changing; e.g. recognizes the need to use condoms
- Processes: Self-re-evaluation (assessing one's feelings regarding behaviour).
- **Preparation for Action:** Individual recognizes the problem and intends to change the behaviour within the next month; e.g. thinking about using condoms in the next month. Some behaviour change efforts may be reported, such as inconsistent condom usage but the defined behaviour change criterion has not been reached (i.e. consistent condom usage).
- Processes: Self-liberation (commitment or belief in ability to change)
- **Action:** Individual has enacted consistent behaviour change for less than six months; e.g. using condoms consistently for less than six months.
- Processes: Reinforcement management (overt or covert rewards);
- Helping relationships (social support, self-help groups);
- Counter-conditioning (alternatives for behaviour);
- Stimulus control (avoid high-risk cues).
- **Maintenance:** Individual maintains new behaviour for six months or more; e.g. using condoms consistently for six months or more.
- A sixth stage has been introduced in the literature: **relapse**, where an individual becomes stuck at one stage, while others relapse and recycle to previous stage several times; e.g. giving up with condom use.

Like all behaviour change models, the Stages of Change Model emphasizes the importance of cognitive processes and use of Bandura's concept of self-efficacy. For any intervention to be successful it should target appropriate stage of an individual/group when some vulnerability is identified. Movement through the stages by individual/group is usually not linear.

Specific cognition, including self-efficacy and decision balance, [i.e. perceived advantages (*pros*) and disadvantages (*cons*) of the behaviour] are associated with movement through the stages. Individuals may cycle back and forth across the stages before attaining and retaining the maintenance stage. The model describes the roles, attitudes and beliefs, self-efficacy, and decision balance play as individuals move through the stages. Janis and Mann developed a decision-making model which proposes that a balance sheet of comparative gains and losses is 'critical' to the decision-making process. Consequently at pre-contemplation stage the *cons* of the preventive behaviour are higher than the *pros* and self-efficacy is low, whereas at maintenance stage the *pros* are higher than the *cons* and self-efficacy is high. A number of studies revealed that measures of *pros* and *cons* were useful in distinguishing between people at different stages of change and that the *cons* for changing problematic behaviours were higher than the *pros* for people in pre-contemplation, while the *pros* were higher than the *cons* for people in the action stage. The framework for the adoption of this model is presented in Table 1.3 (NIH, 2005).

Table 1.3: Framework for adoption of Stages of Change Model

Stage	Definition	Potential Change Strategy
<i>Pre-contemplation</i>	Has no intention of taking action within the next six months	Increase awareness of need for change; personalise information about risks and benefits
<i>Contemplation</i>	Intends to take action in the next six months	Motivate; encourage making specific plans
<i>Preparation</i>	Intends to take action within the next 30 days and has taken some behavioural steps in this direction	Assist with developing and implementing concrete action plans; help set gradual goals
<i>Action</i>	Has changed behaviour for less than six months	Assist with feedback, problems solving, social support, and reinforcement
<i>Maintenance</i>	Has changed behaviour for more than six months	Assist with coping, reminders, finding alternatives, avoiding slips/relapses (as applicable)

2.4 The AIDS-risk reduction model (ARRM)

The ARRM was introduced in 1990 to organize concepts related to the HBM, self-efficacy theory, and theories seeking to explain the role of interpersonal processes and emotions in behaviour (Gibson, Catania & Peterson, 1991). Consequently, the ARRM is a conceptual strategy created to help ascertain the role of these concepts as they relate to behaviour change. This model is a synthesis of broader perceptual and attitudinal constructs included in the other models discussed earlier in this chapter and in the social cognitive theory. While the ARRM was developed to examine sexual behaviours, "with minor modifications, it is also of relevance to other HIV risk behaviours" (Catania, Kegeles & Coates, 1990:67). The ARRM acknowledges that change is a process an individual must undergo with different factors affecting movement. The further an intervention helps a client to progress on the stage continuum the more likely s/he is capable to exhibit change. This model is developed

specifically for HIV perception. According to ARRM, there are three distinct stages associated with behavioural change: labelling, commitment and enactment. During the labelling stage, the influences postulated to have the most effect are: *transmission knowledge, susceptibility, aversive emotions, and social influences.*

The stages and the hypothesized factors that influence the successful completion of each stage follow:

STAGE 1: Recognition and labelling of one's behaviour as high risk:

Hypothesized influences

- Knowledge of sexual activities associated with HIV transmission;
- Believing that one is personally susceptible to contracting HIV;
- Believing that having AIDS is undesirable;
- Social norms and networking.

STAGE 2: Making a commitment to reduce high-risk sexual contacts and to increase low-risk activities:

Hypothesized influences

- Cost and benefits;
- Enjoyment (e.g. will the changes affect my enjoyment of sex?);
- Response efficacy (e.g. will the changes successfully reduce my risk of HIV infection?);
- Self-efficacy;

- Knowledge of the health utility and enjoyment of a sexual practice, as well as social factors (group norms and social support), are believed to influence an individual's cost and benefit and self-efficacy beliefs.

STAGE 3: Taking action on the commitment to change:

This stage involves three phases: *Information seeking, obtaining remedies, and enacting solutions*. Depending, phases may occur concurrently or phases may be skipped.

Hypothesizing influence

- Social networks and problem-solving choices (self-help, informal and formal help);
- Prior experiences with problems and solutions;
- Level of self-esteem;
- Resource requirements of acquiring help;
- Ability to communicate verbally with sexual partner;
- Sexual partner's beliefs and behaviours.

In addition to the above stages and influences, Catania *et al.* (1990) identified other internal and external factors that might motivate individual movement across the stage continuum. Such factors as high level of distress over HIV/AIDS or alcohol and drug use can blunt emotional states, which may hinder or facilitate the labelling of one's behaviours. External factors ('cues of action'), such as highlighted under HBM, may also cause people to examine and change their sexual activities. Consequently successful progression through the three steps highlighted above depends on the influence of many other psychosocial and psycho-educational factors

(Conner, Stein & Longstone, 2005) such as knowledge regarding HIV transmission routes, symptoms, self-efficacy or confidence in one's ability to perform risk-reducing behaviours (e.g. Murphy, Durako & Moscicki, *et al.*, 2001). Self-efficacy was hypothesized as a predictor of both commitment to behavioural change at Stage 2 and actual behaviour change at Stage 3 among people already in Stage 1. Literature reveals that high-risk seeking leads to an increased risk for contracting HIV. Furthermore, it has been theorized that due to the cognitive and behavioural components of risk seeking, cognitively based AIDS prevention programmes would not be as effective for high-risk seekers as they apparently are for low-risk seekers. This implies that mechanism of behavioural change differs for the two groups, implying that intervention and prevention strategies should also be adaptive.

2.5 Interpersonal-level theories

This level concerns not only the characteristics of the individual but also the individual's relationships with other people. These theories look at how people interact and learn from others and the importance they place on such interactions.

2.5.1 Social inoculation theory

A more comprehensive and generally more effective conceptualization for prevention programmes would include careful consideration of each relevant level of intervention in terms of targeting change of the person, social network, organization, and community levels. Social inoculation theory emphasizes behavioural rehearsal, where youths become "immunised" by

practicing resisting future peer pressure to engage in risky behaviour (Flora, Jackson & Moccoby, 1985).

Social inoculation theory is based on the belief that young people lack the negotiating skills to resist unhealthy behaviour arising from peer pressure and other influences. The theory therefore proposes a range of techniques, which it claims, can *inoculate* young people from such pressure. However, if this theory is correct, the reverse might also apply and render people immune to positive peer influence. It is also possible that this theory overstates the importance of overt, articulated peer pressure and underestimates the power of more subtle and common unspoken social pressures that we internalize as the fear to be different.

2.5.2. Cognitive-social learning theory

The Cognitive-Social Theory (CST) evolved from research on Social Learning Theory (SLT). SLT asserts that individuals learn not only from their own experiences, but by observing the actions of other people and the benefits of such actions. Bandura (1989, 1990, 1994) updated SLT by adding self-efficacy and renamed it CST (NIH, 2005). The adoption of Cognitive-Social (Learning) Theory in this section is meant to retain this historical antecedent.

The major thrust of Cognitive-Social Learning Theory lies in its recognition of the dynamic reciprocal process in which social/environmental factors, personal factors (psychological/affective) and human behaviour itself exert influence upon each other to

determine and predict future health behaviour. Consequently what a person does in any given situation depends on the interactive effects of these influences, with a primary focus on social cognitive factors. A cognitive-social learning framework therefore acknowledges that people learn from a variety of experiences, by observing the actions of others.

Self efficacy is the cornerstone of the cognitive-social learning theory. Self-efficacy has been linked to health promoting and health impairing behaviour. Positive self-efficacy gives assurance and confidence and promotes positive behaviour. Thus three main factors affect the likelihood that an individual will change behaviour: *self-efficacy*, *goals*, and *outcome expectancies*. Adoption of perceived self-efficacy to buy and use condoms correctly could predict safer sex in adolescents/youths. The social learning theory thus compensates for some of the weaknesses of the HBM, particularly in giving better recognition to the social environment in which behaviour takes place. Some of the constructs employed in Cognitive-Social Learning theory are presented in Table 1.4 (NIH, 2005).

2.6 Integrated approach

As it has been highlighted most behaviour change theories applied to HIV/AIDS are borrowed from disease prevention strategies and most of them focus on behaviour change of the individual. A major weakness of this approach is divesting decision-making about prevention from the environment and cultural setting. Consequently theories have been developed to

improve on theories that focus on the individual by incorporating external factors. A major paradigm shift is to adopt an integrated theoretical framework to prevention against HIV/AIDS.

The socio-cognitive theories highlighted in this Chapter deal with three fundamental factors: *behaviour, personal factors, interpersonal factors* and *processes*. The key cognitions and evaluations inherent in these theories are essentially: vulnerability to a health risk, perceived severity of the health outcome, likelihood that changed behaviour would protect against the risk, capacity to change one's behaviour effectively, cost-benefit associated with risky behaviour, perceived emotional and social consequences of health-related behaviours, and perceptions about social norms. Behaviour or intention to behave in a particular way is influenced by these variables.

The transposition of these socio-cognitive theories, which work in the West, to Africa has been met with limited success. Even though these theories recognize factors beyond the individual's control they tend to pay premium on personal processes and the subjective aspects of social influences, neglecting the objective aspects of social influences and the distal societal and cultural context. AIDS researchers in Africa have called attention to the need to incorporate objective social, economic, environmental and political factors into the root causes of HIV pandemic in Africa. More recent health intervention models like PRECEDE-PROCEEDE and PEN-3 recognise these extensions to the existing socio-cognitive theories.

Table 1.4: Cognitive-Social Theory

Concept	Definition	Potential change strategies
<i>Reciprocal determinism</i>	The dynamic interaction of the person, behaviour, and the environment in which the behaviour is performed	Consider multiple ways to promote behaviour change, including making adjustments to the environment or influencing personal attitudes
<i>Behavioural capacity</i>	Knowledge and skill to perform a given behaviour	Promote mastery learning through skills training.
<i>Expectations</i>	Anticipated outcomes of a behaviour	Model positive outcomes of healthy behaviour
<i>Self-efficacy</i>	Confidence in one's ability to take action and overcome barriers	Approach behaviour change in small steps to ensure success; be specific about the desired change
<i>Observational learning (modelling)</i>	Behavioural acquisition that occurs by watching the actions and outcomes of others' behaviour	Offer credible role models who perform the targeted behaviour
<i>Reinforcements</i>	Responses to a person's behaviour that increase or decrease the likelihood of reoccurrence	Promote self-initiated rewards and incentives

Eaton, Flisher and Aarø (2003) aptly captured the interactive effects of these extensions by proposing three levels of influence: *within the person*, *within the proximal context* (interpersonal relationships and physical and organisational environment) and *within the distal context* (culture and structural factors). Personal factors include 'cognitions and feelings relating to sexual behaviour and HIV/AIDS as well as thoughts about one's self (such as self-efficacy and self esteem)'. The proximal contexts comprise 'interpersonal relationships and the physical and organisational environment'. The distal context includes 'culture and structural factors'. Culture comprises aspects such as traditions, the norms of the larger society, the social discourse within society, shared beliefs and values, and variations in such factors across subgroups and segments of the population. Structural factors include 'legal, political, economic

or organisational elements of society'. The importance of cultural and structural factors and the neglect of such factors in health behaviour research have been recognised as major handicaps to full blown adoption of the health models in Africa.

Summary

In this chapter some risky sexual behaviour that could expose youths, including university students, to HIV infection are identified. The difficulty for individuals to change risky habits in the face of contradictory ecological factors has also been highlighted. Because HIV/AIDS is a health problem some of the numerous behaviour change theories relevant to health prevention strategies are outlined. In the review of these change theories it is evident that a number of inter-penetrating factors could enhance or impede behaviour change in the individual. Consequently, an 'integrated approach', whereby environmental and cultural factors (external factors) are recognized as key ingredients that should be accommodated in the behaviour change continuum should be adopted, particularly in Africa.

In Chapter 3, I will be presenting literature review on some key prevention strategies against HIV as well as reviewing the risky behaviours among adolescents/youths and university students within the context of the unique environmental and cultural setting of a university campus.

CHAPTER 3

LITERATURE REVIEW

3.1. Introduction

The sex culture in a university setting has been highlighted in Chapter 1. The demography of any university is very complex having under the same roof men and women whose ages cut across teenage adolescents and young adults to grown up adults. Much elderly people are often found within the university community as well. Within the same community are found workers whose demography is similar to that of the students. An immediate layer of contrasting constitutions are communities that surround the university campuses that patronise them for different intentions on a daily basis. The choice of what to include and what not in this chapter is therefore not easy. However, taking into cognisance the sex culture of the university community and the interplay of internal and external forces, some activities that constitute risky practice and some preventive strategies that may be considered relevant to this work have been selected. These include adolescent sexuality and implications for spread of HIV and AIDS on campuses, intergenerational sexual relationships (because of the complex generational mix within and outside the university campus), concurrent sexual relationship (which is common within the university and in the general African society), male circumcision (because of the recent surge of interest as a preventive strategy and the fact that UNIZULU is located at a Province where circumcision is low whereas UNAD is located in a State where circumcision is over 80%), abstinence, fidelity and faithfulness and a profile of campus sexuality.

3.2. Adolescent sexuality and implications for spread of HIV/AIDS on University campuses

A significant number of university students are adolescents and young adults in their teens. Adolescence is a very important phase in life marked with unique sexual and behavioural characteristics which includes exploration, experimentation and discovery. Sexual behaviour and/or drug/alcohol use is often a part of this exploration (Kaufman, Clark, Manzini & May, 2004; Kalichman, Simbayi, Kagee, Toefy, Joose, Cain & Cherry, 2006; Connor, Gray & Kypri, 2010). The first phase of adolescence is predominantly the relinquishing of childhood; the second phase, the structuring of what will become adulthood. During the latter phase the patterns are subject to modification, but except in extreme cases, not subject to abandonment. It is during the second phase that adult behavioural patterns of adaptation take shape. Many undergraduates enter tertiary institutions during the late adolescence, as teenagers, carrying with them residual traits of early adolescence and/or childhood. In Nigeria it is not uncommon for adolescents as young as 14 to gain admission to University. Only the oldest university, University of Ibadan, still holds to the minimum age of 16 years to be admitted to university. In South Africa, most first year students are more matured and already attain age 18 years before going to university.

Adolescence is a period of transition and the challenges, turmoil, disturbance and conflict that go with it are carried by undergraduates to the university, where parental, community, and even religious support are either absent or minima and where the unique cultural environment could be in conflict with traditionally and religiously driven controls back home. The period of

adolescent is often marked by mixed messages from media (Brown, 2002; Martino, Collins, Elliot, Kanouse & Berry, 2009; Martino, *et al.*, 2009), internet (Kanuga & Rosenfeld, 2004), family (Davis & Friel, 2001) adults and the environment (Hare & Villarruel, 2007), which often lead to confusion and contradiction. In a typical traditional African society, adolescents are urged to remain abstinent while surrounded by images on television (Collins, Elliot, Berry, Kanouse, Kunkel, Hunter & Miu, 2004), movies and magazines of glamorous people having sex, smoking and drinking. Girls are expected to remain virgins (e.g., Weiss, Whelan & Gupta, 1996) and be submissive to men (Zelaya, *et al.*, 1997) while boys are pressured to prove their manhood through sexual activities and aggressiveness (Weiss, Whelan & Gupta, 1996). There are cultural, religious or moral restrictions to young people having access to information about their bodies and health risks that can help keep them safe.

The biological transformations that attend both physical and emotional changes in adolescents, driven by hormonal changes, generate conflicting signals of a child in transition to adulthood. Generally sexual drive increases with the onset of puberty at adolescence, influenced by testosterone levels in adolescent males. In females adrenal androgens are related to sexual motivation and some aspects of sexuality. However, primarily social processes influence sexual intercourse in females. It is therefore evident from the foregoing that a unique sexuality evolves in adolescents, driven by both biological and social factors (See Kipke, 1999).

In their book on adolescent sexuality, Gullotta, Adams and Montemayor (1991:1) provided a summary of their scan on adolescent sexuality as including: “dating/puberty rituals, hormone

fluctuations, individual differences, masturbation, contraception, sexual decision making, sex roles, desired/undesired pregnancy, abortion, adoption, adolescent parents, sex versus degrees of love, sexual orientation, sexual experimentation, maladaptive reactions to sexual experiences, sexual attractiveness, physical/sexual attributes, sex in relation to marital status, sexual victimisation, media- and zeitgeist-driven influences, sexually associated diseases, sex education, the role of socialisers in sexual control and expression, and ethnic, socioeconomic status (SES), religious, and demographic factors affecting adolescent sexual activity". The advent of contraception (the pill) in the 60s and 70s would have contributed to the sexual adventures of youths because the likelihood of unwanted pregnancies seemed lower.

3.3. The use of condoms

Research has shown that the majority of HIV/AIDS cases all over the world, particularly in sub-Saharan Africa, are due to heterosexual transmission and mostly among adolescents and young adults (UNAIDS, 2000-2010). The effectiveness of latex condoms in preventing sexual transmission of HIV is not in doubt. In fact the ability of latex condoms to prevent transmission of HIV in 'real life' studies of sexually active couples as well as in laboratory studies is also not in contention (Davis & Weller, 1999). Traditionally condoms came to limelight as a contraceptive device; a barrier used during heterosexual relationship to prevent unwanted pregnancy but later became an important component in the prevention of STDs, including HIV. Latex condoms cover the penis and provide an effective barrier to exposure from genital secretions such as semen and vagina fluids, blocking the pathway of sexual transmission of HIV infection. It can

also prevent the incidence of injuries to the penis and vaginal tracts during sex that can enhance blood contacts.

The 'Safe Sex' guidelines (www.aidsinfo.net.org) suggest that sexual transmission of HIV can be avoided or minimized if condoms are used consistently and correctly during sexual intercourse. Several studies have shown that adolescents and young adults continue to engage themselves in risky sexual behaviour (e.g., Banerjea & Baer, 2006) despite their access to lots of information on risks of unprotected sexual relationships and the need to be able to negotiate the use of condom even in difficult circumstances such as when under the influence of alcohol or drugs (Bazargan, Kelly, Stein, Husaini & Bazargan, 2000; Lewis, Lee, Patrick & Fossos, 2007; Sabone, *et al.*, 2007).

The use of condoms in Africa, particularly in Nigeria, Ghana and South Africa are hindered by cultural and religious constraints because of its association with contraception. A number of Africans also associate condom with a lack of trust between partners (Oshi, Ezugwu & Oshi, 2007). Some of the other factors that make the use of condoms unpopular among Africans include: interruption of foreplay during sexual relationship, generation of suspicion within a relationship, the association of carrying condom with prostitution and promiscuity, wrong impression created that a man or woman that carries condom about is 'asking for sex', loss of enjoyment of sex, male dominance in a relationship that robs the female partner the strength to negotiate the use of condom, religious and cultural constraints, where sex is seen as traditionally made for procreation, the reluctance of co-players to accept responsibility for the

removal of the condom where partners may not want to touch each other's genital fluids and the association of the use of condom with casual sex only, particularly with known prostitutes (Sabone, *et al.*, 2007).

In addition to sexual abstinence and mutual fidelity, the use of condom is, however, a major device and an important component in the prevention of STDs and HIV. Although the use of condom as a method of prevention is becoming more popular in many African countries, but a large gap remains between knowing and using them correctly and consistently (e.g., Mustanski, Donenberg & Emerson, 2006; Chimbiri, 2007; Ahmed, *et al.*, 2001). Condoms are highly effective in preventing pregnancies and slowing the spread of HIV and some other sexually transmitted infections. When used correctly and consistently, male condoms can provide as much as a 94% reduction in risk of HIV transmission (Holmes, Levine & Weaver, *et al.*, 2004) but could vary between 60 and 96% (Davis & Weller, 1999). Condoms have therefore been promoted as a major public health strategy to combat unwanted pregnancies and the rising rates of STIs, including HIV/AIDS.

Many literature findings indicate the widespread knowledge of condoms among youths, but knowledge alone does not determine use. Studies show that despite universal awareness and knowledge that consistent and correct use of condoms largely protects against infection with STIs and HIV, the level of condom use is relatively low among sexually active adolescents/youths and among undergraduates in Nigeria (e.g., Onoh, *et al.*, 2004; Olaseha, Ajuwon, *et al.*, 2004; Asekun-Olarinmoye, 2009), Botswana (e.g., Sabone, *et al.*, 2007), African-

Americans (e.g., Adefuye, Abiona, Balogun & Lukobo-Durrell, 2009) and South African (e.g., Kalichman, Simbayi & Cain, *et al.*, 2009) for example.

3.3.1 Condom failure

It is hard to show that condom promotion has had any serious effect on HIV epidemic, particularly in Africa; except the 100 % condom policy in Thailand which has led to the decrease in the number of HIV and sexually transmitted diseases (Nelson, *et al.*, 1996). Increased use of condoms could fail to reduce disease transmission in three different ways: by increasing the number of transmissions as a result of failure; condom promotion appeals more strongly to risk-averse individuals who contribute little to epidemic transmissions, and could reflect the decision of individuals to overlook safer strategy such as partner selection, or fewer partners or even abstinence.

To 'condomise', at times, sends wrong messages especially to the youths who are not even matured for sexual engagements. A vigorous condom-promotion policy could therefore increase rather than decrease unprotected sexual exposure. It may also encourage unintended sex and greater sex activities among youths especially university students. Continuous promotion on the use of condoms may affect behavioural adaptation in response to other interventions that may affect HIV transmission. However, as far as the spread of HIV is concerned, the use of condoms still remains one of the most effective preventive measures against the scourge.

Condom failure has been widely reported for both family planning (Davis & Weller, 1999; Spruyt, et al., 1998; Richens, Imrie & Copas, 2000), and STD/HIV prevention among men who have sex with men (Stone, 1999) or the general population, including adolescents (Ahmed, *et al.*, 2001; Crosby, *et al.*, 2005). Success rate could be as low as 60% (among men who have sex with men) and as high as 96% (among stable married couples). A study on condom failure among adolescent students of the University of Georgia, Atlanta revealed that adolescents often experience condom failure, which could be associated with testing positive for STDs (Crosby, Diclemente, Holtgrave, & Wingood, 2002). Similar studies in three US cities (Atlanta, Providence and Miami) revealed about 33% reported condom failures among adolescents 15-21 years old within a period of 90 days (Crosby, *et al.*, 2005). Recent findings reported up to one in three failure rates among high risk South African men (Kalichman, Simbayi & Cain, *et al.*, 2009). Furthermore, studies have also found no evidence that condom use has played any primary role in HIV decline in generalized primarily heterosexual epidemics (Richens, Imrie & Coppas, 2000), such as those in Southern Africa. This is because most HIV transmission in South Africa occurred in more regular relationships in which consistent use of condom had proved difficult, hence there is no evidence of HIV reduction in such populations.

The tendency worldwide, and in Africa, is that people are likely to use condom during casual and commercial sex. Condoms are therefore seldom used consistently in longer term relationships in which there is a sense of commitment and trust, which in many instances may be misplaced and in marriage (Chimbiri, 2007). The success in Thailand was built on enforced consistent and correct use of condoms in all commercial sex establishments, free distribution of

condoms in brothels, massage parlours and among sex workers and their clients who were compelled to use them. Brothel that failed to comply could be closed (Cohen, 2003). Consistent use of condoms has also been effectively promoted in organized brothels in some African countries (Abidjan, Senegal, Harare and Uganda) (Hallet, *et al.*, 2006). Despite these demonstrable successes the use of condoms has proved much more challenging for people in ongoing longer-term relationships to consistently use condoms (Hearst & Chen, 2004). However, Hearst and Chen concluded that condoms are highly effective when used correctly and consistently, yet no country can boast of total prevention and eradication of HIV/AIDS by means of condom promotion only. They further explained that the success also recorded in Uganda on the prevention and reduction of HIV infection was not based totally on condom promotion but also on promoting abstinence, delaying sexual activity among adolescents and encouraging faithfulness in a single partner relationship. Thus, increase in the use of condoms was not totally responsible for the decline of AIDS among Ugandans.

There are now signs that governments are waking up to the need to promote abstinence, rather than continuing to promote condoms only. On the 15th March, 2008, BBC reported that Zambia banned the distribution of condoms in schools. Minister Andrew Mulenga explained that promotion of use of condoms was encouraging young people to have premarital sex and that students should be advised to abstain from sex as a measure to fight the disease instead of being urged to use condoms which, according to him, promotes immorality.

3.3.2 The use of condoms among university students

Developing and maintaining safe sexual behaviour among the youths should be emphasized. University students should understand HIV prevention and transmission and develop humanistic attitudes. University students are usually sexually adventurous, hence the need for latex condoms. Research indicates that tertiary education students generally do not practice correct and consistent use of condoms (e.g., Onoh, *et al.*, 2004; Olaseha, Ajuwon, *et al.*, 2004; Asekun-Olarinmoye, 2009), Botswana (e.g., Sabone, *et al.*, 2007), African-Americans (e.g., Adefuye, Abiona, Balogun & Lukobo-Durrell, 2009) and South African (e.g., Kalichman, Simbayi & Cain, *et al.*, 2009). In a study carried out among Nigerian undergraduate youths, Anugworm (no date) found that condoms were used more for the purpose of avoiding pregnancies and sexually transmitted infections than for the purpose of avoiding HIV infection. However, there is a general consensus that using condom consistently and correctly entails rational use of information, de-sensitization to aversion to use condom, education and communication materials, and availability and accessibility of condom. The 2003 Nigerian Demographic and Health Survey data show that among men aged 15-19 and 20-24 years, the proportion reported ever used condoms was merely 9.8 % and 30 % respectively. Similar trends are found all over the world (e.g. Donenberg & Pao, 2005). Inconsistent condom use among youths has been found mostly as a result of lack of cooperation between partners to use condom, which could improve if partner communication skills could be developed (Greig & Koopman, 2003).

In Southern Africa issues such as poverty, lack of education and resources, and gender inequalities make it difficult to implement successful behaviour change, especially where

heterosexual contact has become the most common mode of transmission of HIV virus (Madu & Peltzer, 2003). Despite the increase in the knowledge of the risks involved in unprotected sex, South African youths often ignore using condoms. A survey conducted among 261 youths on condom use, showed that only one-half of rural sexually active adolescent participants reported using condoms within the past 30 days (Taylor, *et al.*, 2003). The availability and cost of condoms and the distance to acquire condoms might be a problem in South Africa, especially for youths living in the rural areas. Eaton, Flisher and AarØ (2003) also confirmed that 75 studies conducted between 1990 and 2000 in South Africa revealed that 50% of youths are sexually active by age 16 and most young people use condoms inconsistently, if at all.

Nigeria's prevalence rate of HIV looks low, but then over 5 million people infected is one of the highest in the world (UNAIDS, 2002; FMOH sentinel survey report, 2003). Many Nigerian youths, like their counterparts elsewhere, engage in high-risk sexual behaviour with consequences such as unwanted pregnancy, unsafe abortion, sexually transmitted infections and high prevalence of HIV (UNAIDS, 2002; Koniak-Griffin, Lesser, Uman & Nyamathi, 2003). Condom remains unavailable or unaffordable to many Nigerian youths. People were not used to condom, they then remain reluctant to use it coupled with some other reasons such as misperceptions of efficacy, perceived effects on sexual satisfaction, and fear of being seen as promiscuous for buying condoms (Avert, 2005).

3.4. Concurrent multiple sexual partners

While circumcision can be used to explain the disparity between infection rates in West Africa and Southern African region, it cannot be used to rationalize the disparity between Southern

Africa and Europe and America where majority of males are not circumcised. 'Multiple concurrent partnerships by men and women with low consistent condom use, and in the context of low levels on male circumcision' (SADC, 2006), has been identified by researchers (Halperin, & Epstein, 2007; Kalichman, *et al.*, 2007; Hannah, Pfeiffer, Torian, & Sackoff, 2008) and SADC as the two major driving forces in the exacerbation of the pandemic in Africa, more so in the Southern African regions.

Concurrency in sexual relationship has been defined by many authors as 'sexual relationships that overlap in time' (Adimora, *et al.*, 2003; HELLERINGER & KOHLER, 2007). It refers to people who have high levels of sexual partner turnover and concurrency; that is, having more than one sexual partner during the same period of time. Epidemiologists have observed that in Africa men and women often have more than one sexual partner at the same time. Sometimes, they have two or more concurrent sexual partners that can overlap for months or even years (Halperin, & Epstein, 2007). This pattern differs from that of serial monogamy that is more common in the West, or the one-off casual and commercial sexual encounters that occur everywhere (Morris, 2002; (Halperin & Epstein, 2004)). In their mathematical modelling, Morris and Kretzchmar (1997) compared the spread of HIV in two populations, where the norm of one is serial monogamy and the other is longer term concurrency. The total number of sexual relationships was similar yet HIV transmission was much more rapid with longer-term concurrency, and the resulting epidemic was projected to be ten times greater than in serial monogamous relationships. Quinn, *et al.* (2000) further established that the viral load and infectivity in concurrent relationships is much higher than the 'acute infection' window period

(typically about three weeks long) after HIV infection. This is because as soon as one person in a network of concurrent relationships contracts HIV, everyone else in the network is exposed to risk because of the combined effects of sexual networking and the acute infection spike in viral load whereas in serial monogamy, virus only traps within a single relationship for months or years (Pilcher, Tien & Eron, 2004).

Many people involved in multiple sexual relationships find it difficult to change and may not see any convincing reasons to change their behaviour because of a number of social, cultural, and economic reasons. Many Africans go into polygamous relationships because of fame, wealth or power. Many African young girls and women, because of poverty or greed, fall prey to the intrigues of richer and privileged men and go into multiple relationships for money or for position (Smith, 2007; Lewis, Lee & Patrick, 2007; Sabone, *et al.*, 2007). Such women lack the power to negotiate timing for sex or for use of condom.

The sustained high prevalence of HIV/AIDS in Africa is thus associated with concurrent multiple sexual partnerships among Africans, single or married. For example HIV has been present in Asia for two decades yet the spread rate is still limited (Park, *et al.*, 2010). Except for prostitutes, very few Asian women have concurrent sexual partners whereas a large proportion of African women do (Morris, 2002). In this study on the sexual networks in Uganda, Thailand and USA, Morris (2002) discovered that Ugandan men report fewer life-time sexual partners than Thai and USA men who engage in one-off encounters with prostitutes. However, HIV rates remain very high in much of Eastern and Southern African countries. Even though these regions

account for only 3% of the global population yet 50% of global HIV cases are located in the region. This is probably as a result of concurrent multiple sexual partners involving males and females among other reasons. Infection rates in South Africa, Botswana, Zimbabwe and Western Kenya range from 20-40% in 2003, roughly an order of magnitude higher than anywhere else in the world (UNAIDS, 2003). Jewkes, *et al.* (2006) declared, in their studies, that those that engaged in multiple concurrent sexual partners are regarded as heavy carriers of the epidemic, especially in cases where the males are much older than the females.

Shelton, *et al.* (2004) confirmed that without multiple sexual partnerships, HIV epidemic would not have occurred and that partner reduction, which serves as a way of preventing the spread of HIV, was being neglected. Partner reduction is the potential centre-piece of a unified ABC approach, which is regarded as good common sense and good epidemiology. For example the decline of HIV prevalence among pregnant women in Uganda (Genuis & Genuis, 2005), Thailand (Cohen, 2003), Ethiopia (Tsegaye, *et al.*, 2002), Zambia (Fylkesnes, *et al.*, 2001) and Tanzania (Kwesigabo, *et al.*, 1998) was due to change in behaviour which included sexual partner reduction and fidelity in monogamy by men, especially older men. Fewer sex partners remain the key to curbing HIV. Thom (2008) also identified reduction in multiple sexual partnerships (and male circumcision) as the cornerstone of HIV prevention strategy in Africa if any positive impact is to be made on the pandemic.

Although it is obvious from the above analyses that multiple sexual partners is an important risk factor in the spread of HIV (e.g. Chen, *et al.*, 2007; Mishra, *et al.*, 2007), a few studies in sub-

Saharan Africa have found no association between concurrency and HIV prevalence level (Lagarde, *et al.*, 2001; Hellenringes & Kohler, 2007). Multiple concurrent relationships are often associated with mobility, particularly labour-related mobility in Africa that necessitates people to have different partners at different locations (Coffee, Lurie & Garnett, 2007).

3.5. Male circumcision and HIV prevention

Circumcision involves a surgical removal of the foreskin covering the head of the penis of a boy to expose the end of the penis. In many cultures this process is done within a week of a child's birth. In some cultures, for example in the Eastern Cape of South Africa, it is a traditional ceremony of initiation of young men to adulthood. Consequently, within the context of traditional practice, male circumcision is not practised primarily to insure a child or young men against STIs or HIV. However, research has shown that circumcised men are less at risk of sexually transmitted infections (Weiss, Quigley & Hayes, 2000; Szabo & Short, 2000). Thus male circumcision, as a preventive strategy against HIV transmission, is of recent interest to researchers and epidemiologists. Decrease in the risk of infection and continued low HIV prevalence rates among people that traditionally practice male circumcision have been noticed by numerous studies (e.g. Halperin & Bailey, 1999; WHO, 2006). The prevailing compelling epidemiological evidence from the studies cited above shows that male circumcision provides significant protection against HIV infection and that circumcision of boys seems to lower the risk for a number of sexually transmitted infections and diseases.

Male infants, worldwide, are therefore circumcised for various medical, social or religious reasons (Rennie, Muula & Westreich, 2007). It is a common practice in many cultures. Outside of the USA, Canada, Australia and South Korea, circumcision is restricted mainly to specific cultural and religious groups. A unique feature of male circumcision is that it occurs almost exclusively in infancy or early childhood in the United States and most of West Africa. In countries like Cameroon and Nigeria, and in Kenya and Congo, it is more or less a birth ritual where male children are circumcised on the eighth day of birth. In other parts of sub-Saharan Africa, it is a rite of passage performed at adolescence or even on older men (Hellsten, 2004; Weiss, *et al.*, 2008). Male circumcision is therefore associated with various cultural factors, including religious sacrifice, rites of passage into adulthood, and promotion of hygiene. When performed in adequate clinical settings, neonatal circumcision does not pose any risk to health and safety of a child to an extent that the society can question the parents' rights to decide what is in their child's best interest on the basis of their own social or religious values (Benatar & Benatar, 2003). Others have countered this position by holding on to the medical principle of 'do no harm' (Fox & Thomson, 2005).

The earliest documentary evidence for circumcision is from Egypt (Genesis, 17:11), which places the origin of the rite among the Jews in the age of Abraham, who lived around 2000 BC. However, many studies have also observed that most men living in the East and Southern Africa, the regions with the highest prevalence of HIV, are not circumcised. According to a seminal study that examined the biologic mechanisms of the foreskin tissue, (Donoval, *et al.*, 2006) concluded that HIV-1 targets cells in the foreskin tissue of men as the inner mucosal

surface of the human foreskin contains a high density of Langerhans cells, primary target cells for sexual transmission of HIV, that make it highly susceptible to HIV infection.

Male circumcision as a preventive strategy of HIV/AIDS transmission has been a subject of interest to many researchers and epidemiologists (USAID, 2003). Decrease in the risk of infection and continued low HIV prevalence rates among people that traditionally practice male circumcision have been noticed by numerous studies. Thus, research bodies such as HIV/AIDS and reproductive health program professionals, are now more interested in male circumcision.

Sexually transmitted diseases like syphilis, gonorrhoea, and genital herpes infection are linked with uncircumcised status. In their research, “Male circumcision and HIV Infection: 10 years and counting”, Halperin and Bailey (1999) concluded that: lack of male circumcision was one of the main causes of many regional discrepancies in rates of HIV infection and it was time for the international health community to add male-circumcision services to the current limited armamentarium of AIDS prevention measures in countries with a high prevalence of heterosexually transmitted HIV/STDs.

In the study of risk factors for HIV infection among 422 men who visited commercial sex workers in Nairobi and Kenya, Cameron and colleagues (1989) found that uncircumcised men had an 8.2-fold increased risk of sero-conversion compared with circumcised men. A subsequent study carried out on four cities in sub-Saharan African countries, Benin (Cotonou),

Cameroon (Yaoundé), Kenya (Kisumu) and Zambia (Ndola) by Auvert, *et al.* (2001) established an association between HIV infection and non-circumcision.

The probability of female-to-male transmission of HIV-1 is reported to be very low (as rare as one per 9000 acts of unprotected vaginal intercourse in the absence of facilitating risk factors) hence a widespread heterosexual AIDS epidemic is unlikely. However, where genital ulceration is facilitated by uncircumcised status high STDs are common and provides an ideal situation for an explosive epidemic of HIV infection. These observations might therefore explain the sustenance of the pandemic in Southern African region where male circumcision is not the norm as against West African region where male circumcision appears to be the norm in most cultures.

A study in Malawi (Ngalande, Levy, Kapondo & Bailey, 2006) has revealed very useful information about the disadvantages of uncircumcision sourced directly from different groups within the population, which included: tearing of foreskin during sex when an uncircumcised man has sex; 'the uncircumcised can harbour husks and sperms trapped within the foreskin and so get diseases easily'; women fear becoming victims of uncircumcised men's poor hygiene, which may lead to transmission of infection; uncircumcised men are at greater risk of not being clean and of carrying diseases because of poor hygiene after sex; the foreskin acts as a barrier to early detection of dirt, sores, abrasions or ulceration, infectious organisms and infection with STIs; circumcised men experience fewer abrasions during sex and because of the lower sensitivity of circumcised penis, it was generally believed that circumcised men go longer

before ejaculating thus providing more pleasure for him and giving more pleasure to his partner.

The awareness about the relative effectiveness of circumcision as a potential weapon to combat HIV infection is growing in some countries in East and Southern Africa. Male circumcision is increasingly being recommended by traditional healers while a number of private clinics that specialise in male circumcision, run by people with minimum or no medical training, are sprouting up in Tanzania, western Kenya, Rwanda, Uganda and South Africa. Many young men and adolescents in east and southern Africa are increasingly opting for circumcision in regions where traditionally they have avoided the practice. About 23% of non-Muslim Ugandan men, not belonging to any traditionally circumcising ethnic group, reported that they were circumcised and 60% of uncircumcised men from western Kenya stated that they would prefer to be circumcised (Bailey & Poulussen, 1999).

The enthusiasm of USAID and other sister organizations to adopt male circumcision as a preventive strategy against HIV infection has arisen from the positive outcomes of a number of recent randomized studies carried out in Africa (WHO/UNAIDS, 2007).

Gray, Kigozi, Serwadda and Makunbi (2007) in their analysis on male circumcision for HIV prevention in young men in Rukai, Uganda concluded that circumcision could be recommended for HIV prevention in men on the following grounds: 1) Male circumcision reduces man's risk of penile cancer. It reduces risks of some sexually transmitted diseases, (STDs) including cancrroids,

herpes, and syphilis. 2) It eliminates problems such as *phimosis* (narrow foreskin opening) and *balanitis* (infected foreskin). 3) Reduces the risk of cervical cancer among female partners of circumcised men. Circumcised men are less likely to harbour the human papilloma virus (HPV), which causes cervical cancer, a major killer of women in sub-Saharan Africa. 4) Enhances easy penetration in heterosexual and easy insertion of male condom (USAID, 2003).

The first randomized controlled intervention trial to test the hypothesis that male circumcision might provide protection against HIV-1 infection, where a total of 3 274 uncircumcised men in South Africa aged 18-24 years were randomised to a control revealed that male circumcision provides 60-75% protection against acquiring HIV infection (Auvert, *et al.*, 2005; Williams, *et al.*, 2006; McNeil, 2007). A similar study carried out over 24 months at Rakai, Uganda on 4 996 uncircumcised HIV-negative men aged 15-49 years produced 'as-treated efficacy' of 55% without behavioural dis-inhibition (Gray, *et al.*, 2007). Bailey, *et al.* (2007), in another randomised controlled trial study on male circumcision among young men in Kisumu, Kenya, reported a risk reduction of 53-60% among circumcised men. The authors suggested that appropriate, voluntary, safe and affordable circumcision services should be integrated with other preventive interventions to curb the spread of HIV and AIDS.

The prevailing compelling epidemiological evidence from the studies cited above shows that male circumcision provides significant protection against HIV infection and that circumcision of boys/men seems to lower the risk for a number of sexually transmitted infections and diseases.

Both UNAIDS (2005-7) and its affiliated bodies as well as SADC (2006) have recognized circumcision as one of the most urgent pressing preventive strategies that need to be exploited in tackling HIV pandemic in areas of Africa that do not normally undergo circumcision. Weiss, Quigley & Hayes (2000), in a review article, have eloquently advanced convincing analysis why circumcision is the key to effective control of HIV infection since all other preventive strategies, including condom usage, and testing and counselling, have not succeeded in significantly reducing the rate of infection in Southern and Eastern African countries. On the contrary the rate of infection in West Africa, where up to 80% of the population is circumcised, has been very slow and remains less than 6% in the region. However, male circumcision does not provide 100% protection against HIV infection. Circumcised men can still be infected with the virus and if HIV-positive, can infect their sexual partners. Circumcision only minimizes the chances of a man contracting HIV virus by about 60% (WHO/UNAIDS, 2007). Thus, the expected numbers of male HIV infections averted by a large-scale male circumcision programme would eventually translate into fewer infections in women and men.

3.5.1 The ethics of male circumcision

A lot of debates has generated in favour and against the adoption of male circumcision as a strategy against HIV infection. A major concern has to do with what is often referred to as 'ethical baggage' of male circumcision, premised on the right of consent normally vested in the individual concerned. There are also disagreements as to whether there are sufficient evidences, on the basis of current data, to justify wide scale adoption of circumcision as a preventive strategy. However, it is also evident that no existing protective device has been

proved to be 100% effective, condom use included. Hence it has been argued that any positive impact on reduction in female-to-male transmission would contribute to the overall reduction in spread of the pandemic, in the long run.

Some framework has been proposed, based on age of the person to be circumcised, and the long-term and short-term effects assessed (Rennie, Muula & Westreich, 2007); these are: neonatal, preadolescent, and adult circumcisions. The intention is to examine exactly the right age (soon after birth, just before sexual debut, or at some point after sexual debut) to focus if circumcision would be adopted as a preventive strategy. There are arguments for and against each point from medical, public health and ethical perspectives.

In neonatal circumcision, the strategy is to circumcise a male child soon after birth as done in most of West African countries and in USA, with its attendant advantages. Studies have shown that protection is greater when circumcision is done early in life because of the thickening of the foreskin of the penis as one grows older. The foreskin in newly born babies is thin and healing is faster, usually within a week. The risk of having sex with a partially healed penis in adults (risk compensation), with an attendant enhanced risk of infection, is averted completely. In terms of cost, neonatal circumcision could be integrated into existing reproductive health clinics and postnatal care programmes for babies. The risk of missing school, if done at adolescent is averted and long hospital admission (Cassell, *et al.*, 2006), in case of adults, are avoided. Consequently, the programme is cheaper to run and is accessible to all male children born into a country. Coverage could therefore be essentially universal. The right of consent is

vested in the parents, just like in all other decisions taken on children before they reach the age of reason.

One major reservation for neonatal circumcision is that the impact on the HIV pandemic is delayed and would only be felt between 10 and 20 years later. It, however, provides some level of hope that those children circumcised at birth have the probability of being infected with HIV (and other STDs) significantly minimized.

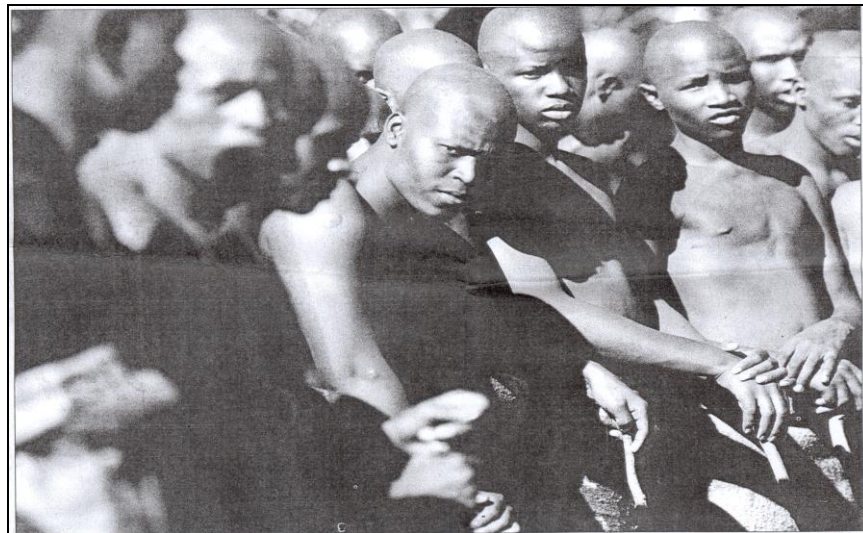
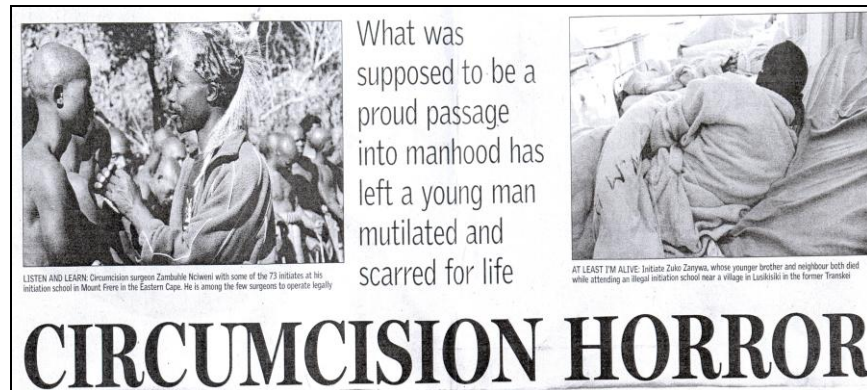
In pre-adolescent circumcision, where circumcision is practiced as a rite of passage from boyhood to manhood, it can be assumed that the procedure would be feasible and acceptable, when adopted as a HIV prevention strategy. The adoption would simply involve incorporating a new rationale into an existing practice. A model that integrates HIV-prevention into pre-adolescent circumcision traditions has been successfully implemented on a small scale in Kenya (Grant, Brown & Michen, 2004). One major challenge of adopting large-scale preadolescent circumcision would be the need to modify some traditional practices (e.g., utilizing the same ritual knife among a number of initiates, which poses HIV transmission risk) to align them with good health practices. Secondly such practice would also be complemented with counselling services that discourage initiates from being involved in sexual activities when the penis is not completely healed or giving up other preventive strategies. On ethical grounds, at pre-adolescent, a child's consent may be very important, particularly when the surgery is irreversible

There are advantages and disadvantages of adopting preadolescent circumcision. Offering circumcision to boys at school may lead to lower uptake of services than promoting neonatal services because of the implications of having to stay away from school for the surgery. Adequate facilities may not be available in rural areas to provide the service. Risk compensation could also be a problem. However, preadolescent circumcision could realize benefits quickly by immediately reducing the rate of infection among this high-risk group, particularly if the procedure is combined with HIV counselling and education among this vulnerable group who are at the fringe of sexual activities.

In adults there are some advantages associated with adult circumcision including having an immediate individual and epidemiological benefits, like in preadolescents (but not in neonatal) circumcisions. The problem of [assent](#) and parental consent is also removed. However, concentrating circumcision effort on adults who have been sexually active means missed opportunities for HIV prevention. In the circumstance where health budgets are thin, the logistic of implementation is complex. The issue of which adults should be offered the services, within the highest risk groups, like truck drivers, soldiers, and teachers, would have to be addressed. Accessing the facilities within the health care system may be very costly and of less efficiency in terms of the number of interventions needed to make any meaningful epidemiological impact. Absenteeism from work for the surgery by adults could have economic implications.

The fundamental issue with male circumcision, irrespective of the age when the surgery is done is that the procedure should be safe, culturally acceptable (where it is a cultural practice), rights of the individual respected and combined with counselling and testing services. A number of fatalities have been reported from a number of schools of circumcision in Eastern Cape of South Africa, where the procedure is managed by traditional practitioners (See Figure 1.4). It is therefore very important that the capacity of traditional practitioners to practice under safe environment when circumcision is adopted under national health programme should be addressed decisively.

Kahn, Marseille and Auvert (2006) estimated cost-effectiveness for a hypothetical cohort of 1000 newly circumcised South African adult men in the general population and concluded that adult male circumcision would likely be cost-effective HIV prevention strategy, even when it has such a low coverage. It was estimated that over 20 years large net savings would be generated after adjusting for HIV infection averted (HIA) medical costs, put at \$181 in programme cost per HIV prevented. This is obviously much cheaper than all other available interventions which have mixed data on effectiveness, and therefore cost effectiveness uncertain. Male circumcision is therefore considered to be economically inexpensive medical intervention for HIV. If the projection from this study is anything to go by, male circumcision would even be more cost effective when administered post-natal.



(Source: Sunday Times (South Africa) of 19 July 2009)

Figure 1.4: An example of a newspaper report on the abuse of traditional circumcision

3.6. Abstinence, fidelity and faithfulness

Abstinence has been variously defined as (i) postponing sex, (ii) never having had vaginal/anal sex, and (iii) secondary abstinence, refraining from having further sexual intercourse, if previously sexually active (Dlamini, *et al.*, 2008). The first two are classified as primary abstinence and the last is classified as secondary abstinence. Even though abstinence is the most effective preventive strategy against HIV/AIDS and other venereal diseases, very few

people can sustain secondary abstinence for a long period once they become sexually active (Ott, Pfeiffer & Fortenberry, 2006; Kabiru & Ezeh, 2007; Tumwesigye, Ingham & Holmes, 2008).

Because children mature faster and are more exposed to sex at a relatively young age, through various forms of the media (Kanuga & Rosenfeld, 2004; Collins, *et al.*, 2004; Martino, *et al.*, 2009), and because of the high level of infidelity in relationships among adults in the larger society, it is difficult to sell abstinence to youths. Young people are under immense pressure from peers, older men and women, poverty and the need to meet the demands to keep up with fashion and passion of a capitalist society. The false reliance of youths on condoms for protection against infection and pregnancy may also have contributed not just to the spread of HIV/AIDS but to the sustenance of the pandemic in sub-Saharan Africa. Secondary abstinence may not be particularly easy to sell to undergraduates as well, most of who were already sexually active before coming to the university.

Despite the difficulty in selling this strategy to people who have already started having sex, it is a strategy that could be sold to young children and adolescents within a sexuality education curriculum and reinforced by community involvement. The USA has adopted an 'abstinence – only sexuality education' for about two decades, however, the success has been questionable. The findings reflect no significant impact on teen sexual activity and in rates of unprotected sex among adolescents (Trenholm, *et al.*, 2008). Delay of onset of sex until marriage or until a girl/boy is matured to understand the implications of giving up their chastity and accepting responsibility for such action is, however, a logical choice.

In reference to an article in a National periodical, Newsweek, by Noble in 1991 titled “There is no safe sex” the author made reference to the fact that condoms were not foolproof in preventing HIV infection. The author argued that the combination of abstaining from sex until marriage and fidelity in monogamy thereafter provides our only hope against the further spread of HIV. He suggested that abstinence and mutually faithful sexual relationship with uninfected persons are the only guaranteed methods of preventing the sexual transmission of HIV.

It took almost two decades later before the truth of Noble’s claim was established. Condom indeed has failed, particularly in Africa, to stem the spread of the HIV and AIDS pandemic. This submission agrees with the position of the South African Bishops Conference on July 30, 2001 (Southern Cross) titled “A message of hope”. The call from the Bishops was simple: “Abstinence is the only way”. The Bishops insisted that the only answer to overcoming AIDS and build up a new, happy, and healthy South Africa, Botswana, and Swaziland was to abstain from sex before marriage and be faithful to one’s spouse in marriage. The Bishops gave four bases for their position: condoms go against human dignity, condoms change the beautiful act of love into a selfish search for pleasure, condoms do not guarantee 100% protection against HIV/AIDS and condoms might even be one of the main reasons for the spread of HIV/AIDS.

Closely linked with abstinence is the issue of virginity, which is of cultural value to Africans. The Zulus have an extant long-standing custom of testing virginity in young girls. The attempt to resuscitate this culture in 2002 was met with criticism from the national press, as constituting

the abuse of the rights of the girls. The campaign of abstaining from sex before marriage from the Church is not incongruent with this cultural practice. Maintaining virginity until marriage keeps girls free from contact with people with HIV, reduces or restrains the girls from early sex, i.e. abstaining from sex until they are ripe for sex (at marriage or matured enough for them to appreciate the consequences of their action) and brings about self esteem and pride to the girls (Cullinan, 2001).

The African people are noted for their highest level of morality, family life, community life, sociability and solidarity. This is clearly demonstrated through the African way of communal lifestyle, where everybody is each other's keeper and the protection and upbringing of youths are vested in the community. Sex is understood in the African society as sacred and its abuse is considered to be a threat to society. Western education and civilization have eroded into these age long order and now sex has been bastardised and what should be a channel of life has become a channel of death. In the Western part of Nigeria (where UNAD is located) and among the Zulu people (where UNIZULU is located), virginity was traditionally a thing of pride when a girl keeps away from sex until the first night of marriage. In essence there is no contradiction between Noble's prescription, the Church's teaching and the traditional practice about abstinence until marriage (among Africans). Poverty, the collapse of family life, permissiveness and mismanagement of civilization, individual rights and exploitation have contributed to the collapse of traditional and religious values.

3.7. Intergenerational relationship

It has been identified that higher prevalence of HIV infections in young women is attributable to young women being involved in sex with older male partners (Geiselhart, Gwebu & Krüger, 2008). This type of relationship comes under different guises. In most cases the older adult males have economic advantage over the younger female; such older seducers are often referred to as 'sugar daddies' (SADC, 2006). This situation could be reversed, particularly in cities, where rich women also seduce young men with money for sex; i.e. 'sugar mummies'! Such instances were reported in Sunday Times in South Africa in 2007, but the phenomenon is common in many African cities. It is important to mention at this stage, within the context of this study, that the practice of 'sugar daddies' and 'sugar mummies' is rampant among students of tertiary institutions (Oshi, Ezugwu & Oshi, *et al.*, 2007; Kelly & Parker, 2000), where students are driven by either greed, passion, or poverty to solicit relationships with richer/influential older men or women for favours/material benefits.

3.8. Tertiary institution students

The focus of this study is on undergraduates, most of who fall within the age bracket that constitutes the epicentre of those mostly at risk of HIV/AIDS infection (Whiteside & Sunter, 2000). Previous studies have revealed that university students, like most educated teenagers/youths, have adequate awareness and knowledge about the risk factors associated with HIV/AIDS. Their unique sexual behaviours dominated by experimentation, concurrency and risk taking are also well documented. Like all youths they perceive themselves as invincible to infection and rationalize their behaviour within the socio-cultural contexts the students find

themselves and those that exist in the wider society. Thus despite relatively high levels of knowledge there is no concomitant behavioural change noticeable among university students.

3.8.1. South African universities

Except for a study undertaken at the University of Durban – Westville, (now a campus of the University of KwaZulu-Natal) (Stremlau & Nkosi, 2001), which revealed an infection rate of 26% for female students and 12% for male students between the age bracket of 20-24, only limited studies on HIV/AIDS have been undertaken on tertiary education students in South Africa to ascertain the infection rate. In a SAUVCA-commissioned study, Chetty (2000) estimated HIV infection levels in tertiary institutions at 25% for undergraduates, 11% for postgraduates, and 24.5% for technikon students. His projection to 2005 was 33%, 21% and 36% respectively. However, a recent survey, carried out during the course of this study, on South African universities (Dell, 2010) is probably the first comprehensive of such studies on Universities in South Africa. Dell reported a much cheering prevalence of 3.4% among university students, much lower than national prevalence rate among 15-24 years old put at 11% in 2008 but dropped to 8.6% in the survey under reference.

Chetty and Michael (2005) suggested that HIV/AIDS affects all categories of people that make up the university community: students, academic staff, clerical staff, administrative staff and support staff. The consequences of this are grave for the system and include illness, death, trauma, reduced work capacity (for staff) and studies (for students). Universities lose students and staff through death. Increase in absenteeism affects productivity. Critical skills that sustain

the institution are depleted and the cost of replacement and retraining fresh recruits stifle progress and distort the finances of the institution. Dell's report revealed that the highest prevalence among service staff in South African Universities was recorded for KwaZulu-Natal Province placed at 20.3%. UNIZULU is located in this Province.

At national level the pandemic reduces population projections and life expectancy, increases child mortality, places burden on health care, generates large number of orphans and increases the need for poverty assistance. In this scenario the highest prevalence is among people in the 15-49 year cohort with major differences for males and females. The prevalence among South African women, 25-39 years of age, was estimated to be 17.7 % in 2002. The corresponding estimate for men was 12.8 % (Phaswana & Peltzer, 2005). Evidently AIDS deaths occur predominantly among workers (and youths, including students in tertiary education institutions) in their prime and in their most productive years.

Certain risk factors and patterns were revealed in finding answers to the question (Eaton, et al., 2003): "Why is it that South African youth in the 1990s continue to practice unsafe sex despite the concerted efforts of educational and HIV prevention campaigns to influence their behaviour? In their review they addressed three types of sexual risk behaviours that have received attention in South Africa: being sexually active (as opposed to abstinence or delay of onset of sexual activity), having many partners (either serially or concurrently) and practising unprotected sex (which includes inconsistent or incorrect use of condoms). The summary of their findings are: At least 50% of young South Africans are sexually active by age 16, and

probably 80% are by 20; boys report earlier sexual debut than do girls; black youth are more likely to start sexual activity in their teens than are other ethnic groups; the majority of school-going adolescents reported having one or two partners in their lifetime, and over 60% of university students reported no partner or one partner in the last year; while it appears that most youths are not promiscuous a persistent minority had more than four partners per year (1-5% of women and 10-25% of men); between 10-30% of sexually active youths have more than one sexual partner at a given time, with more men than women engaging in concurrent relationships and majority of sexually active youths use condom inconsistently, if at all (overall estimate of 50-60% of youths in the studies (range 23-85%) report not using condoms at all).

The age reviewed in the above studies was 14-35 years old. At least 80% of university students in South Africa (and Nigeria) will fall into this cohort. The observation of promiscuous behaviour among school-going youths as against the abstinence/monogamous behaviour among university students sounds contradictory, except if most school-going learners end up not continuing their education to university level or if intervention in the university has positive impact in adoption of positive and safer sexual relationship. The latter is most unlikely, considering the unique university culture.

Campbell, Foulis, Maimane and Sibiya (2005) unpacked the 'social context' that shapes the efficacy (or lack of) of HIV-prevention programmes using studies conducted at the peri-urban community of Ekuthuleni in KwaZulu-Natal Province as a case study. In the study they highlighted three dimensions of social context which undermine the effectiveness of youth HIV-

prevention efforts in the marginalised South African communities in which the pandemic flourish. These contexts are: material-political, symbolic and institutional-network. Material-political context included access to money, jobs and political influence; symbolic context refers to the web of social representations into which youths insert HIV prevention messages, and institutional-network context included the extent to which public sector, private sector and civil society networks are supportive of the well-being of youths in general, and HIV prevention efforts in particular. Some of the outcomes of this study reveal:

- Young people in the study had accurate knowledge about HIV transmission and prevention. However, they were driven by negative curiosity to experiment with sex “which we were told is very nice” by their parents who themselves had sex when they were young.
- Youths are driven by fatalism and bravado, yielding to the urge to prove that “they were not afraid to die”.
- Youths complained of information overload, “If you are going to tell us about HIV/AIDS, we know that already; tell us something new. We are tired of all this AIDS talk all the time”
- Poverty has driven girls to depend on sexual partners for money or clothing and this have limited their power to negotiate for condom use.
- Social determinants of HIV-transmission like poverty, peer pressure and gender norms are mismatched by emphasis on awareness raising and abstinence that are sold to the youths, without addressing the social roots of the pandemic.

- Youth's sexuality is stigmatised by adults in judgmental language as 'bad behaviour', 'immorality', 'wrong doing' or 'evil', even though the adults indulge in the same sexual vices now and when they were much younger.
- Peer influence as an important determinant of sexual behaviour.
- Most youths in Ethukuleni had little education and few skills, and job prospects were poor and support from family was poor. Some parents lacked confidence to advise their children with more education than they had and others feared children involved in crime and drugs.
- 'Dual leadership' system involving elected political leaders and hereditary traditional chiefs within the same community led to conflicting signals to HIV prevention: the former promoting condoms while the latter promote abstinence backed up by virginity testing.

Eaton, Flisher & AarØ (2003) and Campbell, Foulis, Maimane & Sibiya (2005) appear to provide framework to understand the risk factors within a university community in South Africa, more so in a rural-based university like Zululand that draw a substantial number of her students from rural communities like Ekuthuleni. In therefore understanding the impact of university unique environment on the sexual profile of university students, one needs to adopt the framework proposed by Eaton, et al. (2003) and examine the distal, proximal and personal factors of risk that fan the spread of HIV infections in the university.

3.7.2. Nigerian Universities

HIV infection in Nigeria is relatively low (4-6%) but the demography of the epicentre is not different from that of South Africa. The probability is high that infection rate in the tertiary

institutions in Nigeria may also be higher than in the general population. An unpublished study by Ibadin and Enabulele on 1020 students of University of Edo State (Nigeria) revealed a 4.3% sero-prevalence in male and 2.3% in female undergraduates. Although this data might not have been validated, it does reveal a lower sero-prevalence than in the Durban-Westville study. However, a lower prevalence in females than males is at variance with the world trend. The authors could not explain this observation either. A number of studies carried out at tertiary institutions in different parts of Nigeria cover diverse areas of HIV/AIDS and generated very disturbing data. There are numerous articles published on HIV/AIDS in tertiary institutions located in different parts of Nigeria, particularly in the Southern part of the country (e.g., Aluede, Imhonde, Maliki & Alutu, 2005; Odu & Akanle, 2008; Okonkwo, Fatusi & Ilika, 2005; Peltzer, Olatunji & Morakinyo, 2003; Momoh, Asagwara, Meriamu, 2007, and a number of older articles, some dated over 20 years).

Most Nigerian students have good knowledge and awareness of preventive strategies of HIV. However, risky sexual activities still persist. A number of factors were identified as affecting risky sexual behaviours among students. In Nigeria, like in other countries, studies have revealed that younger students tend to take more precautions against infection than older students. Thus students' age tend to affect their knowledge about the consequences of HIV/AIDS infection. Secondly it is well documented that more women are infected globally than men, despite their having higher perceived self-efficacy about practising safer sex, including more positive attitudes towards the use of condom, than men. However, some Nigerian women's success in refusing unwanted intercourse has been attributed to their

economic independence and strong lineage ties (Orubuloye, Caldwell & Caldwell, 1993). This observation is particularly important as it is generally accepted that disempowerment of women and poverty contribute to their vulnerability.

HIV/AIDS epidemic and its context are not static and are known to be subject to rapid changes. The topography of Nigerian university landscape changes too rapidly and so the risky sexual relationship that fan the embers of HIV infections. The tertiary educational system has been turbulent as a result of incessant work stoppages by academic and non-academic trade unions within the system. For example for four months in 2009, the unions were on strike, which kept the students away from studies and, in many cases, forcing students to embark on a number of risky ventures including prostitution and crime.

In a recent publication, Ijadunola, Abiona, Odu and Ijadunola (2007) reported that Nigerian undergraduates underrated their risk of contracting HIV/AIDS. In a study based on randomly selected tertiary institutions in South West of Nigeria the authors found that 77% (277) of the study group (405) returned little or no risk responses even though 30.1% reported a past history of at least one STI; 60.0% had a history of multiple sexual partners and 20.5% had had at least four life time sexual partners. About 41% reported a history of unprotected sexual intercourse in the month preceding the survey and about 25% reported symptoms of STIs in the 6 months preceding the survey. Only 5% of the students reported having ever had a voluntary counseling and testing (VCT) for HIV.

In a similar study conducted on 450 first year students of Obafemi Awolowo University, Ile-Ife (also South West of Nigeria) Peltzer, Olatunji and Morakinyo (2003) found relatively low HIV/AIDS perceived susceptibility and perceived barriers among the respondents. They also reported that the age of sex debut was negatively related to high risk sexual behaviour, which might be related to the number and type of sexual partners, history of sexually transmitted diseases and frequency of sex with increasing age. The mean age of first intercourse in this group was 17.4 years, much higher than the 14.86 years reported for high school girls in the Eastern Cape of South Africa (Buga, Amoko & Ncayiyana, 1996).

A study by Owuamanam, Ogunsanmi and Osakinle (No date) carried out on students drawn from The Federal Polytechnic, Ado Ekiti, National Open University, Ondo and University of Ado Ekiti (788 students) revealed that many undergraduates demonstrated adequate awareness/knowledge about HIV/AIDS (91.0%) and preventive strategies like use of condoms, avoidance of anal sex and unprotected sex whereas many did not have close relatives or friends who have been infected or died from AIDS. The three institutions covered by this study did not provide adequate strategies for awareness and reduction of infection. They also reported inadequate health facilities, especially for HIV/AIDS testing and counselling.

A study on perceptions of peers' behaviour regarding sexual health decision making among females undergraduates (aged 15-24 years) of two tertiary institutions in Anambra State (Eastern Nigeria) by Okonkwo, Fatusi and Ilika (2005) revealed that majority of the respondents came from homes with formally educated parents (91.2% of mothers and 93.9% of fathers).

About 80% of the respondents indicated that their age mates were already sexually active and 92% indicated that most of their friends had regular sexual partners. It is worrying though that only 58.5% of the study group indicated that condom use was common among their friends, which might reflect that a high proportion of undergraduates engage in risky sexual behaviour. The study also reveals that the respondents' friends use a combination of condoms and other contraceptive methods for concurrent protection from sexually transmitted infections and pregnancy. This reveals that pregnancy prevention is of greater concern among undergraduates than STDs or HIV/AIDS. This study reveals the dilemma that confronts the generation of Nigerian youths: to remain abstinent as tradition and religion demand or to become sexually active as the case is with majority of their peers. Premarital and extramarital sex have become two major risk factors that the complex landscape of Nigerian university system may have to live with for a long time, particularly as these two practices are driven by poverty and greed among the students and fragrant misuse of economic power to exploit female youth by the middle and upper class of the society or even the rich or powerful among the student population.

Smith (2007) posits that marriage could be an HIV/AIDS risk factor as men acquire HIV from outside of marriage and infect their wives. He referred to the practice as 'double standard for extramarital sexuality', rooted in economic, social and moral contexts and 'shaped by economic inequality, gender disparities, and powerful and contradictory moralities' among Nigerians. The location of his study, Owerri (Eastern Nigeria), houses four colleges and universities, with a student population of close to 100 000. This provides a large concentration of educated young

women who married men favour for illicit extramarital affairs. Owerri, like all towns and cities with large concentration of students, is a breeding ground for infidelity.

The prevalence rate of HIV infection among Nigerian undergraduates is unknown (Oshi, Ezugwu, Oshi, Dimkpa, Korie & Okperi, 2007). However, the undergraduate period has been identified as a period of high-risk sexual behaviours given that most undergraduates are adolescents or youths or slightly older and are known to be sexually more active than the general population. Studies have revealed that awareness of HIV/AIDS among Nigerian youth, particularly undergraduates have not translated to positive behavioural change. For example, a 100% HIV/AIDS among respondents drawn from a Nigerian university only revealed a 5% of condom usage during casual intercourse with persons they were meeting for the first time (Adedimeji, 2003). When this is compounded with a social malaise where possession of multiple sexual partners is the norm among youth in the universities, it becomes a matter of immense concern. The concern really is why awareness among undergraduate youth has not been matched with behavioural change despite the fact that these youth are educated and enlightened (unlike the Ekuthuleni community referred to earlier). This then takes us back to what Eaton, *et al.* (2003) mentioned earlier that we need to examine the distal, proximal and personal factors of risk that fan the spread of HIV infections in the university.

In what appears to be a unique University environment in Nigeria, the work of Oshi, *et al.* (2007) appears to capture how distal, proximal and personal factors play in favour of intractable spread of HIV infection. The qualitative study, using in-depth interviews, was conducted on 90

students drawn from three institutions (Institute of Management and Technology, University of Nigeria, and Abia State University) located in Eastern Nigeria. Apart from 13.9% of the students, all the students came from families whose parents are either secondary school teachers/head teachers/lecturers, graduate level middle class civil servants/self employed, retired/disengaged civil servants, and families of senior civil servants/rich businessmen/women. The minority 13.9% referred to above come from families of petty traders and artisans like carpenters, mechanics, etc. What is clear in the socio-demography of the students is that even though there are economic disparities most of the families are reasonably placed to support their children in the university.

The findings of this study are summarised below:

- The frequency of sexual activity among the female students in the study group was relatively high, up to ten times in four weeks, with 11 of the 13 female students who had sexual intercourse more than 10 times in four weeks coming from poor socio-economic background (parents were rural farmers, petty traders and artisans).
- By contrast, six of the seven males who had more than ten sexual intercourses in four weeks were from the higher socio-economic backgrounds.
- A high propensity to have multiple sexual partners is also reported. Approximately 69% of males and 37% of females had one or two sexual partners in four weeks prior to interviews, with females more likely to have more than two sexual partners compared to males. For example 25.6% of females had more than five sexual partners compared to 8.9% of males.

This last observation appears to contradict the general notion that males are more promiscuous than females in the general population. Some of the findings, following focus group discussions, reveal the following:

- As part of the usual campus life, males are more likely to keep two girlfriends at a time.
- Those males that keep three or more girlfriends may belong to campus confraternity groups (cults), which for them could be display of machoism that perceives having many girlfriends as a mark of superiority of their members over other cult groups in the rivalry for the control of the social life on the campus.
- Having much money on campus was also recognised as a factor in having multiple sexual partners among male students. Girlfriends need financial support to ease out the economic hardships students face. Many girls do not care whether their boyfriends have other girls as long as they are given money.

Consequently it is evident that economic and financial considerations play more important roles for female students. Having multiple sexual partners has become a survival mechanism for many female students. Some of the ladies interviewed conceded that they would be willing to have casual sex with anybody who was willing to pay their price. Some even confessed that they have regular clients and often went to hotels or their homes to service their clients.

Poverty and the current economic hardship in Nigeria were cited by a number of respondents as constituting factors for their involvement in “undercover prostitution” that play out on our university campuses. A number of (female) students resume for studies with just enough

money to take them back to school; others could hardly keep up with their basic needs because of the economic hardships. Consequently the girls have devised strategies to juggle their studies with some money-making by exchanging sex for cash. Under this climate the low condom usage (12% for males and 5% for females) reported in this study should not be surprising. The higher prevalence of HIV among undergraduate girls reported by Ibadin and Enabulele could be understandable in this circumstance.

The risky behaviour of females stems from differences in negotiating power based on money and on social constructs of men's domineering power over women where females are expected to submit to the wish of men in the act sex. Female students tend to submit to the dictates of the piper, in many instances the 'big men' from outside the campus or the rich campus boys alluded to above. While economic hardship has already been mentioned, it is paradoxical that 85.6% of the sexually active respondents, despite their confessions to being engaged in sex-for-money business, felt that HIV infection is a problem mainly for prostitutes and promiscuous persons but did not rate their lifestyle as highly risky.

Summary

In this Chapter I explored the numerous factors that promote HIV infections in our universities and have included some key preventive strategies. The pros and cons of condom use and circumcision have been reviewed. The negative impact of concurrent sexual relationship is examined while the central role male circumcision could play in the minimisation of infection has been articulated. I have also examined some of the 'cultural setting' prevalent on

university campuses that create a unique environment for the spread of the infection. While the attributes of Nigerian Universities and South African universities may be similar, the character appears different just as prevalence also differs. It is hoped that through this study I will be able to uncover the real underlying factors that drive rate of infection in both countries' tertiary institutions.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

The details of the rationale behind the chosen methodology for this work are presented in this Chapter. These include methods of data collection, the sampling procedure and research instruments and how they relate to the aims and objectives of the present study. The validity and reliability of the overall instrument as well as the techniques for data analysis are also presented.

4.2 Research design

Research design encompasses the approach and nature and amount of primary and secondary-based research one undertakes and the instrument for data analysis. Three major design approaches are common: exploratory, causal, and descriptive. Others are experimental and historical approaches. Notwithstanding the design approach one common main concern is the collection of the correct data to use.

Exploratory design, essentially investigatory, is usually conducted at the preliminary stage of any research exercise, especially when a problem, product or service is new. The initial findings of an exploratory work can inform a full research plan. The approach could be informal, creative and driven step by step in an evaluative way. This design can utilize a full range of data types and analysis can employ descriptive statistics, intuition, hunches, guesses or judgment.

In a causal design relationships between the cause and effect of events in a research study can be established. Data analysis involves hypothesis testing and correlation. This design can utilize two data types: ratio data for correlation and ordinal data for rank correlation.

The most widely used approach is the descriptive design. It can be used to profile consumers, customers, or businesses. It can be used to gauge opinion or perceptions. Analyses of data to support such research can be wide and varied, incorporating descriptive measures, inferences, hypothesis testing and special statistical tests.

This work is a comparative study of the level of awareness and perceptions of HIV/AIDS preventive strategies among two African Universities (from South Africa and Nigeria) located in a relatively rural setting. It is a cross-sectional study. The research design is basically descriptive because certain variables cannot be controlled. These research variables are said to be inherently non-manipulative. Another reason for choosing a descriptive design for this study is because the research problem being investigated is a present status of events in a natural setting which is only reasonably evaluated using a descriptive approach. In a cross – sectional study, either the entire population or a random sample thereof is selected for data collection, which is then used to answer research questions of interest to the researcher.

Descriptive studies provide accurate quantitative information about certain population characteristics and ascertain the existence of associations among variables. However, the subjects in this study will not be subjected to any experimental treatment hence the choice of a

descriptive approach. Apart from these, descriptive study is often used to identify causes retrospectively. For example, to study individual knowledge and perceptions cannot be done in isolation, but in relation to the perceptions of others within a defined population. We intend to target two population sets, first to examine each set in its own right and second to compare responses between the two population sets. Specifically the two population sets are pooled from the University of Zululand (South Africa) and University of Ado – Ekiti (Nigeria). Data collected from this cross – sectional studies will be subjected to both descriptive and inferential statistical analyses as will be described later.

4.3 The sampling design and population

This study is confined to the study of awareness, knowledge and perceptions of preventive strategies of HIV/AIDS among undergraduates drawn from the Universities of Zululand (UNIZULU) and Ado Ekiti (UNAD). The target population was drawn from two randomly selected faculties and four academic departments. The two faculties are Science (and Agriculture) and Education (UNIZULU) and Science and Education (UNAD). Departments of Chemistry and Biochemistry, and Science Education and Educational Psychology & Special Education (Guidance & Counselling at UNAD) were randomly selected respectively from both Faculties. The expectation was to use all students in the Departments that were randomly selected but where the class was large, simple random selection was also employed to select the students that would participate in the study. Out of 1000 and 700 questionnaires distributed at UNIZULU and UNAD respectively, 903 (90.3% response) and 607 (86.7% response) were returned. After cleaning up and eliminating questionnaires that contained

three or more blank sections, 854 (85.4 %) and 606 (86.6 %) respondents from UNIZULU and UNAD respectively were included in this study. The number of questionnaires assigned to each department/faculty is roughly proportional to the total number of students offering programmes selected from each faculty. Random selection of subjects was only necessary in Educational Psychology and some first year classes with large intakes.

Table 4.1 contains the departments and faculties in the two universities and the number of participants in each department/faculty that completed the questionnaires. Over 75% response obtained from each department is considered high and reflects the enthusiasm of the students to participate. The relatively large sample size and the adoption of simple random selection should strengthen the validity of this study.

4.4 Method of data collection

The use of questionnaires for data collection in epidemiological studies of this nature is well documented for its rapidity and cost effectiveness. Questionnaire was adopted because of the potential effect of social desirability on responses due to the delicate nature of the research topic. Data collected by use of questionnaires are also more easily amenable to analyses. The adoption of questionnaire for data collection is therefore justifiable within the context of the research problems being targeted and because of the size and spread of the study population.

Table 4.1 Distribution of participants

University	Faculty	Department	Total (% response)		Valid response (%)		
UNIZULU	Science	Biochemistry	152 (180; 84.4%)		143 (79.4%)		
		Chemistry	47 (50; 94.0%)		34 (68.0%)		
	Education	Science Education	296 (330; 89.7%)		294 (89.1%)		
		Educational Psychology	408 (440, 92.7%)		385 (87.5)		
UNAD	Science	Biochemistry	105 (130, 80.8%)		105 (80.8%)		
		Chemistry	98 (110, 89.1%)		98 (89.1%)		
	Education	Science Education	141 (160, 88.1%)		141 (88.1%)		
		Guidance & Counselling	260 (300, 86.7%)		260 (86.7%)		
TOTAL			1507		1460		
Study Level			1	2	3	4	TOTAL
Total questionnaires returned (%)			398 (26.5)	515 (34.3)	316 (21.0)	273 (18.2)	1502 (100%)
Total valid (%)			383 (26.2)	513 (35.1)	294 (20.1)	270 (18.5)	1460 (100%)

*Number of questionnaires distributed for each level is given in parentheses. % response is average for each Department.

4.4.1 Construction of the questionnaire

The questionnaire was divided into nine sections. Section A contained ten items that covered the biographical data of the respondents. Section B also had 10 items that solicited for the respondents' sexual activities. There were 10 items in Section C on the institutional programmes on HIV/AIDS. Sections D, E, F, G, H, and I are on awareness, factors that support the spread of HIV/AIDS on campus, risk assessment of students, knowledge of HIV/AIDS transmission, knowledge of protection against HIV/AIDS infection, and perception of preventive strategies respectively. They contained 16, 20, 25, 20, 20 and 15 items respectively. The variables like age, level of studies, marital status, number of children born, religion, environment where the respondents grew up, family household resources, amount of money available to respondents while at school and the estimated income of both parents are variables covered in Section A that are anticipated would define the sexual history of undergraduates. The questionnaire is presented in Appendix A.

Apart from the items in sections A and B (the socio-demographic information and sexual activities), all other items were ranked on a scale of 5. The items were adapted from various published questionnaires including from the Nelson Mandela/HRSC Study of HIV/AIDS (2002) and some developed by the researcher to suit the study. The content validity of the questionnaire was established by having it read and corrected by the researcher's promoter and a second lecturer. The Cronbach Coefficient Alpha was computed to determine the internal consistency reliability and construct validity of the instrument using SPSS Statistic 17. Cronbach's alphas for sections C - I are 0.795, 0.830, 0.697, 0.784, 0.746, 0.760, and 0.837

respectively. When computed for all items from Section C to I, Cronbach's alpha was 0.886 (N = 125).

4.4.2 Validity and reliability

The use of questionnaires in studies of this nature has its advantages and disadvantages. Two major advantages are the preservation of privacy and the efficacy of the method in collecting data cheaply and widely. Two major disadvantages include the problem of lack of literacy in a study that warrants covering a wide spectrum of population and the inability to probe responses. Other concerns of self-reports of sexual behaviour include intentional misrepresentation and inaccurate recall. These concerns are likely to be minimized in the study of this nature where the target population is drawn from relatively matured university students and with enhanced public awareness campaign on HIV/AIDS in the past decade. However, the need to develop a valid and reliable instrument is paramount. Consequently, in addition to the internal consistency measure alluded to above we carried out a test – retest reliability study wherein we administered the same questionnaire to 25 students selected from diverse tertiary educational institutions (College of education, Universities, and Polytechnics) during 2008 Christmas vacation twice at 10 days interval. All the students were on vacation in a rural town, about 50 km from UNAD when they were invited to participate in the pilot study.

4.5 The Relationship of questionnaire to the aims of the study

Section A on biographical data provides information about the age, sex, level of study, marital status, number of children, religion, environment where they grew up, family resources, stipend while at school, and the estimated income of parents. Responses to items in this

section would assist in evaluating the prognoses of the respondents *vis-à-vis* their sexual profile, and factors that militate for and against risky sexual behaviours and attitudes to preventive strategies in both universities. This would assist in putting their responses to Section B (on sexual activities) in context, which would be useful in addressing all the aims.

Section B is on the sexual activities of respondents, including onset of sexual activities, number of sexual partners since first experience, sexual orientation, discussion of HIV with partners, knowing HIV status of partners/self, frequency of condom use, when they best enjoy sex, and sex-for-money, which would reveal the level of risky behaviours or preventive measures they adopt in their sexual activities. Combined with responses from Section A, it would be possible to reasonably contextualize the socio-economic and demographic indices of the students. Research question 1.7.4 will be answered from responses in this section.

Section C comprised of items that elicit information on institutional programmes on HIV/AIDS including sources of information, policy, distribution of condoms, HIV/AIDS testing and counselling facilities, and inclusion in curricula. Responses in this section would help in profiling the environment that may promote or prevent risky sexual behavior of students while on their campuses. Research question 1.7.5 will be partially answered from responses in this section.

Section D contained items on awareness about HIV/AIDS covering sources like sexuality education, fresher's orientation, internet, TV, friends, etc. Taken on its own, and cross-

tabulated with selected items from Sections A and B, it would be possible to further answer research questions 1.7.4 and 1.7.5.

Section E comprised items that dealt with factors that support the spread of HIV/AIDS on campus. Some of the items included free distribution of condoms, religious activities, 'sugar daddies/mummies, sex for money/marks, availability of HIV counselling and testing facilities, students not knowing their HIV status, freedom to have multiple sex partners, fear to go for testing, poverty, etc. Responses to the items in this section would facilitate answers to research questions 1.7.4 and 1.7.5.

Section F contained items that would make it possible to have an insight into the risk assessment of students and covered a wide range of items on abstinence, condom use, and alcohol for sex; religious injunctions and faithfulness in relationship; STDs, culture, multiple sexual relationships, rape, campus barbers, cultism and political activism. Research questions 1.7.2 and 1.7.4 would be answered from responses in this section.

Section G is on knowledge of HIV/AIDS transmission and contained different methods of transmissions and misconceptions about modes of transmission including unprotected sex, body sweats, having sex with menstruating partners, mother-to-child transmission, sex with rich people, etc. By cross-tabulation of selected items in Sections A and B with responses in this section answers could be found to research questions 1.7.1 -1.7.3.

Section H covered knowledge of protection against HIV/AIDS infection, many of which are inherent in the previous sections but pulled together here with a few new items like use of condom when having sex with casual partner, trusting God for protection no matter the number of unprotected sex encounter, avoidance of social situations which might lead to forced sex, change of reckless sexual behaviour, remain a virgin until marriage and avoiding friends who could influence you into undertaking risky sex. Again responses here can reinforce answers to research questions 1.7.1-1.7.4.

Section I was on perceptions of preventive strategies and contained items to identify the most important strategies to avoid HIV infection and contained some items already covered in other sections as well as a few new ones like undertaking HIV test before marriage, circumcision, avoiding the company of alcoholics/drug users, and avoiding having sex with any one you cannot negotiate safe sex with. Responses in this section can contribute to the achievement of all the aims either directly or through cross-tabulation. Answers to research question 1.7.5 will be partly achieved from identification of risk-promoting and risk-averting variables extracted from responses. For answers to research question 1.7.5 to be fully obtained there would be the need to recode some of the responses and categorize the total scores for each item into 'High', 'Middle', and 'Low' scores for the purpose of carrying out analyses of variance (ANOVA) for the categorized data and comparison of means (t-test) on responses from both campuses.

4.6 Procedures for administration of the research instrument

Formal consent for conducting the study was obtained from my promoter. Each questionnaire contains a cover page that contains instructions for respondents, the purpose of the study, a pledge of confidentiality, and a provision for each respondent to sign a sentence of consent.

The Heads of the selected Departments were approached to seek permission before the administration of the questionnaires. Lecturers in charge of the modules/courses attended by targeted students were also approached to identify a convenient time for administration. Field workers were recruited from postgraduate students outside the Departments being surveyed and in some cases with the assistance of the lecturers or under the supervision of the researcher. Permission was sought from the Deputy Vice Chancellor at UNAD who also linked us up with three lecturers to coordinate the administration of the instrument. Postgraduate students were then recruited by the coordinators for field work in both campuses. Administration of the questionnaires was done under classroom setting. However, some students (at UNIZULU) took away the questionnaire and returned them later. Some never did!

4.7 Scoring procedures

Section A

1. The age range is scored **1** for “15-18 years”, **2** for “19-21 years”, **3** for “22-24 years”, **4** for “25-30 years” and **5** for “30 years or older”.
2. “Male” and “Female” are scored **1** and **2** respectively.
3. Levels are scored **1** for “1st year”, **2** for “2nd year”, **3** for “3rd year” and **4** for “4th year” respectively.
4. Marital status is scored **1** for “Single”, **2** for “Married”, **3** for “Divorced” and **4** for “Widows”.

5. Number of children: **1** for “None”, **2** for “One”, **3** for “Two” and **4** for “More than two”.
6. Religion: **1** for “Christianity”, **2** for “Islam”, **3** for “Traditional” and **4** for “Others”.
7. Where grown up: **1** for “Village/rural area”, **2** for “Town/semi urban area”, **3** for “Big town” and **4** for “Capital city”.
8. Family household resources: **1** for “Not enough”, **2** for “Just enough”, **3** for “Have most things”, **4** for “More than enough”
9. Money for upkeep on campus: **1** for “Not enough”, **2** for “Just enough”, **3** for “Enough”, and **4** for “More than enough”.
10. Estimate of income for (a) Dad and (b) Mum: **1** for “High income” (above R7500; N150 000 for Nigeria), **2** for “Medium income” (R2500 -7499; N50 000 – 140 980 in Nigeria), **3** for “Low income” (below R2 500; N50 000 for Nigeria) and **4** for “No income”

Section B

1. **1** for “When I was in the elementary school”; **2** for “When I was in the high school”; **3** for “My first year in the university”; **4** for “After my first year in the university”; **5** for “I have never had sex”.
2. **1** for “None”; **2** for “1”; **3** for “2”; **4** for “4” and **5** for “More than 3”.
3. **1** for “Heterosexual”; **2** for “Homosexual”; **3** for “Bisexual”; **4** for “Celibate”.
4. **1** for “Always”; **2** for “Sometimes”.
5. **1** for “Yes for all of them”; **2** for “Yes for some of them”; **3** for “No for all of them”.
6. **1** for “Yes”; **2** for “No”.
7. **1** for “Always”; **2** for “Sometimes”; **3** for “Not at all”.
8. **1** for “Yes”; **2** for “No”.
9. **1** for “When I am relaxed”; **2** for “After an all-night party”; **3** for “After a good alcoholic drink”; **4** for “After a shot of drug”.
10. **1** for “A business man”; **2** for “A lecturer”; **3** for “A senator/minister/commissioner”; **4** for “A brilliant course mate”; **5** for “All of the above”; **6** for “None of the above”.

Sections C – I

1 for “Strongly agree”; **2** for “Agree”; **3** for “Undecided”; **4** for “Disagree”; **5** for “Strongly disagree”. Many of these codes were reversed for purposes of statistical analyses; whereby the highest rating reflected the most positive attributes.

4.8 Data analysis

A template for data entry on to SPSS (Statistical Package for Social Scientists) Statistics 17.0 was created. Appropriate ‘cleaning’ on the data was effected prior to analysis and excluding all questionnaires that were returned with up to three sections blank. Recoding and categorisation were done before carrying out inferential statistical analyses.

The socio-demographic characteristics of the population were presented, to show their age on entry to university and current age, sex, level of studies, marital studies, number of children, religion, type of location where they grew up, household resources, adequacy of funds available to respondents while on campus, and estimates of parents’ incomes. These were presented in tables. Basic descriptive statistics was employed. The relationship between the independent variables (age, sex, level of studies, etc) and the various dependent variables (sexual activities, risky sexual behaviours, knowledge of HIV transmission/protection, and perceptions of prevention) were examined and tested by some inferential statistics like Chi-Square Tests, ANOVA (one-way) for parametric and non parametric data set and t-tests. Cronbach’s alpha was computed to establish the internal consistency and the reliability of scales

The socio-demographic characteristics of the students from each institution were related to their awareness, knowledge, risk assessment and perceptions. The variability was determined

by calculating the means and standard deviations of responses. The means of responses to each of Sections C-I were computed for each campus to establish variability of responses and any statistical difference utilizing t-test. The sums of responses for each of Sections C-I were also be categorized into “High”, “Medium”, and “Low” for the purpose of employing one-way ANOVA to establish levels of statistical difference between both campuses.

Summary

In this Chapter I have endeavoured to justify the use of descriptive research design in a cross-sectional study of this nature, utilizing a questionnaire as the instrument for data collection. The sampling procedure is provided and the administration of the questionnaires at both UNIZULU and UNAD is described. The structure of the questionnaire, the internal consistency reliability and construct validity (Cronbach’s alpha is 0.7-0.84 for sections C – I) are also described, highlighting in which ways the instrument answers the research questions. The procedure for administering the questionnaires, the scoring of responses, the data analyses using SPSS Statistics 17.0 software for both descriptive and inferential statistics, and the research hypotheses are also presented.

CHAPTER FIVE

DATA COLLECTION, ANALYSIS, PRESENTATION AND DISCUSSION OF RESULTS

5.1 Introduction

The highlight and rationale of research methodology, data collection, collation, and methods of data analysis were presented in Chapter four. In this Chapter the results and their discussion are presented. Presentation and discussion of data would be in two major parts: descriptive discussion of data collected for each section of the questionnaire related to the appropriate research aims as well as discussion of results from inferential statistical analyses to test the research hypotheses.

5.2 Administration of the instrument

I coordinated the administration of the instrument (Appendix A) at UNIZULU, assisted by postgraduate students as field assistants for each faculty. The administration at UNAD was coordinated by a Senior Lecturer in Social Sciences assisted by postgraduate students recruited to cover each faculty as well. The administration was preceded by initial briefing of field assistants. The questionnaires were administered to 1700 undergraduates drawn from the Faculties of Education and Science; Departments of Educational Psychology & Special Education (Guidance & Counselling), Science Education, Biochemistry, and Chemistry of the Universities of Zululand (South Africa) and Ado-Ekiti (Nigeria). One thousand, five hundred and ten of the questionnaires were returned of which 1460 were selected for this study. Those rejected were

either returned blank or left three sections of the questionnaires blank. The distribution of the final study sample is presented in Table 5.1.

Table 5.1: Distribution of respondents in the valid questionnaires

University	Faculty	Department		Valid response	Percentage
UNAD	Science	Biochemistry		105	7.19
		Chemistry		98	6.71
	Education	Science Education		141	9.66
		Guidance & Counselling		260	17.81
UNIZULU	Science	Biochemistry		143	9.79
		Chemistry		34	2.33
	Education	Science Education		294	20.14
		Educational Psychology		385	26.37
TOTAL				1460	100
Study Level	1	2	3	4	TOTAL
Total valid (%)	383 (26.23)	513 (35.14)	294 (20.14)	270 (18.49)	1460 (100%)

5.3 The pilot study

The 23 participants in the pilot studies (Table 5.2 a) were not drawn from any of the participating institutions. Except for section G, which yielded Cronbach's alpha (0.5 for pre-test

and 0.4 for post-test) the internal consistency was between 0.6 and 0.9 for the other sections. Independent t-test (2-tailed at P -value <0.05) on the means of pre-test and post-test for sections B to I did not yield any significant difference (P -value in each case was >0.05).

Table 5.2 a: Age and level of studies of respondents selected for the pilot studies

Characteristics	Distribution	Pre-test N = 23	%	Post-test N = 22	%
Gender	Male	17	73.9	17	77.3
	Female	6	26.1	5	22.7
Age in Year 1	15-18 years	4	17.4	3	13.6
	19-21 years	15	65.2	15	68.2
	22-24 years	4	17.4	4	18.2
Age now	15-18 years	1	4.3	1	4.5
	19-21 years	5	21.7	4	18.2
	22-24 years	13	56.5	12	54.5
	25-30 years	4	17.4	5	22.7
Level of study	1st year	2	8.7	2	9.1
	2nd year	7	30.4	8	36.4
	3rd year	8	34.8	6	27.3
	4th year	6	26.1	6	27.3

5.4 Reliability analysis for primary scales

The reliability analysis was run under “item” and “scale if item deleted” mode for sections C to I. This analysis yielded validity coefficient of each item and the reliability coefficient of the whole scale. The reliability of the primary scale and internal consistency of the data were deduced from this analysis. The alpha values for the pilot tests and the study instrument are presented in Table 5.2 b and Appendix B. The scale ‘if item deleted’ estimate of internal reliability of a scale is assumed acceptable if greater than 0.70 (Nunnally, 1998). George and Mallery (2003) also proposed the following ‘rule of the thumb’: “ >0.9 , excellent; >0.8 , good;

>0.7, acceptable; >0.6, questionable; >0.5, poor; and <0.5, unacceptable". These agree with an earlier suggestion by Kaplan and Saccuzzo that coefficients of ≥ 0.7 are categorised as good, 0.5-0.7 as satisfactory, and 0.5 as poor. Based on these generalisations, the primary scales used for Sections C to I have good to excellent internal consistency. Even though the alpha appears weak in Section G for the pre-test/post-test measures the reproducibility of responses is considered good, producing ± 0.1 differences between pre-test and post-test alphas. The large sample sizes for UNAD, UNIZULU and the entire sample (ALL) appear to have eliminated the low alpha recorded in Section G in the pre-test/post-test measurements.

Table 5.2 b: Cronbach's Alpha from pilot (pre-test) and the study population for scales

Section (No. of Items)	Pre-test N = 23	Post-test N = 22	UNAD N = 604	UNIZULU N = 856	ALL N = 1460
C (10)	0.693 (0.7)	0.672 (0.7)	0.816 (0.8)	0.678 (0.7)	0.786 (0.8)
D (16)	0.811 (0.8)	0.868 (0.9)	0.852 (0.9)	0.860 (0.9)	0.854 (0.9)
E (19)	0.741 (0.7)	0.787 (0.8)	0.685 (0.7)	0.755 (0.8)	0.733 (0.7)
F (25)	0.620 (0.6)	0.657 (0.7)	0.801 (0.8)	0.784 (0.8)	0.789 (0.8)
G (20)	0.495 (0.5)	0.416 (0.4)	0.743 (0.7)	0.870 (0.9)	0.836 (0.8)
H (20)	0.814 (0.8)	0.807 (0.8)	0.816 (0.8)	0.896 (0.9)	0.874 (0.9)
I (15)	0.719 (0.7)	0.805 (0.8)	0.831 (0.8)	0.920 (0.9)	0.894 (0.9)

5.5 Descriptive discussion of data for each section of the questionnaire

The distribution of respondents to Faculties and Departments are presented in Table 5.3.

Table 5.3: Distribution of respondents according to Faculty and Department

Characteristics	Distribution	No. of valid respondents					
		UNAD N = 604		UNIZULU N = 856		ALL N = 1460	
		No.	%	No.	%	No.	%
Faculty	Science	203	33.6	177	20.7	380	26.0
	Education	401	66.4	679	79.3	1080	74.0
Department	Biochemistry	105	17.4	143	16.7	248	17.0
	Chemistry	98	16.2	34	4.0	132	9.0
	Educational psychology	260	43.0	385	45.0	645	44.2
	Science education	141	23.3	294	34.3	435	29.8

5.5.1 Social – demographic characteristics of the respondents (Section A)

The socio-demographic characteristics of the respondents are presented in Table 5.4. The data from Table 5.4 were used to evaluate the socio-demographic characteristics of the respondents for the purpose of relating them to different aspects of prevention and risks pertaining to transmission and infection by HIV and AIDS covered by this study.

Gender

The percentage of males and females among the respondents (ALL) are 42.5% and 57.5% respectively. These were distributed at 26% in the Faculty of Science (and Agriculture) and 74.0% from Education. While males (48.7%) and females (51.3%) were comparable at UNAD, females' percentage was much larger (61.9%) than males' (38.1%) at UNIZULU. The relatively larger number of female participants in Education at UNIZULU reflected the prevailing demography in the Faculty.

Age

The largest number of students is in the 19-21 years cohort (48.8%, UNAD; 34.8%, UNIZULU) at

first year, while about 21% of the respondents fell within the 15-18 years bracket. The weight shifted to the 22 -24 years range at the time of data collection where an increase from 21.7% to 34.9% in the combined respondents was recorded and a reduction of the 19 – 21 years bracket to 32.1% from 40.6%. There were negligible number of students who were older than 30 at UNAD (0.2% at first year, 1.2% at current age). The corresponding figures for UNIZULU are 8.2 and 12.0% respectively. The mean age of all respondents in the first years was 21.4 ± 4.1 years (UNAD = 20.1 years; UNIZULU = 22.3 years).

Study levels

The distribution across study levels was above 20% for each of levels 1-3 but lower than 20% at level 4. The overall lower figure for level 4 was due to the disproportionate drop of this level to 14.1% at UNIZULU whereas it is much higher, at 24.7%, at UNAD. This could be rationalised on the basis of the difference in the system of education in both countries. In Nigeria degree programmes are straight 4 years post-matriculation leading to honours degrees whereas in South Africa there is an exit level after three years and continuation to honours is a choice.

Marital status

Over 90% of the respondents were single, followed by 7.1% who were married. Others were either divorced or widowed.

Table 5.4: Respondents' biographical data

Characteristics	Distribution	No. of valid respondents					
		UNAD N = 604		UNIZULU N = 856		ALL N = 1460	
		No.	%	No.	%	No.	%
Gender	Male	294	48.7	326	38.1	620	42.5
	Female	310	51.3	530	61.9	840	57.5
Age (Years): At first year Age now	15-18	146	24.2	164	19.2	310	21.2
	19-21	295	48.8	298	34.8	593	40.6
	22-24	142	23.5	175	20.4	317	21.7
	25-30	20	3.3	149	17.4	169	11.6
	Older than 30	1	0.2	70	8.2	71	4.9
	15-18	23	3.8	59	6.9	82	5.6
	19-21	176	29.1	293	34.2	469	32.1
	22-24	289	47.8	220	25.7	509	34.9
	25-30	109	18.0	181	21.1	290	19.9
	Older than 30	7	1.2	103	12.0	110	7.5
Level of study	First year	116	19.2	267	31.2	383	26.2
	Second year	185	30.6	328	38.3	513	35.1
	Third year	154	25.5	140	16.4	294	20.1
	Fourth year	149	24.7	121	14.1	270	18.5
Marital status	Single	562	93.0	785	91.7	1347	92.3
	Married	40	6.6	64	7.5	104	7.1
	Divorced	1	0.2	5	0.6	6	.4
	Widowed	1	0.2	2	0.2	3	.2
Number of children	None	554	91.7	501	58.5	1055	72.3
	One	27	4.5	223	26.1	250	17.1
	Two	15	2.5	78	9.1	93	6.4
	More than 2	8	1.3	54	6.3	62	4.2
Religion	Christianity	492	81.5	712	83.2	1204	82.5
	Islam	95	15.7	3	0.4	98	6.7
	Traditional	15	2.5	103	12.0	118	8.1
	Others	2	0.3	38	4.4	40	2.7
Where brought up	Village/rural	70	11.6	626	73.1	696	47.7
	Town/semi urban	143	23.7	191	22.3	334	22.9
	Big town	171	28.3	26	3.0	197	13.5
	Capital City	220	36.4	13	1.5	233	16.0
Family household resources	Not enough	90	14.9	442	52.1	532	36.7
	Just enough	335	55.6	311	36.7	648	44.5
	Have most things	115	19.1	67	7.9	182	12.5
	More than enough	63	10.4	28	3.3	91	6.3
	Missing					9	
Stipend for upkeep at school	Not enough	148	24.5	569	67.0	717	49.3
	Just enough	245	40.6	180	21.2	425	29.2
	Enough	176	29.1	90	10.6	266	18.3
	More than enough	35	5.8	10	1.2	45	3.1
	Missing					7	
Parent's income <i>Dad</i> <i>Mum</i>	No response	69	12.8	318	37.4	387	27.8
	High	155	28.7	88	10.3	243	17.5
	Middle	194	35.9	62	7.3	256	18.4
	Low	117	21.7	112	13.2	229	16.5
	No income	5	0.9	271	31.8	276	19.8
	Missing					69	
	No response	63	11.5	245	28.7	308	21.9
	High	63	11.5	67	7.8	130	9.3
	Middle	177	32.2	71	8.3	248	17.7
	Low	231	42.0	192	22.5	423	30.1
	No income	16	2.9	280	32.7	296	21.1
	Missing					55	

Number of children

Of the 72.3% of all respondents without a child, 91.7% of the UNAD's respondents were without children as against 58.5% of UNIZULU's respondents. About 20% had one or more than one child of which 4.2% had more than two children. When compared with the 90% unmarried respondents who participated in this study, it seems that about 20% of the sampled population were single parents. The percentages of UNAD's respondents who had one, two or three children were 4.5, 2.5 and 1.3 respectively. Corresponding figures for UNIZULU were 26.1%, 9.1% and 6.3%. If one postulates that the number of children from unmarried respondents was a reflection of the level of unprotected sex, it could be concluded that the level of risky sexual activity among UNIZULU students was higher than among UNAD students.

Religion

Most of the respondents were Christians (82.5%), almost proportionately distributed in the two institutions. While 15.7% respondents are Moslems at UNAD, only 0.4% is at UNIZULU. On the other hand, the percentage traditionalists in UNIZULU are about 5 times those at UNAD.

Where brought up

Over 70% of UNIZULU's respondents were from villages/rural areas as against over 60% of UNAD's respondents who came from big towns and capital cities. Thus although the two institutions are located in relatively rural settings, the demography appeared to be at opposite ends of the spectrum.

Family household resources

Over 50% of UNIZULU's respondents came from families who did not have enough resources as against just about 15% for UNAD's. On the contrary about 30% of UNAD's respondents had most things/more than enough as against 10% for UNIZULU's.

Stipend for up-keeping

About 75% of UNAD's respondents had 'just enough' to 'more than enough' stipends as against about 33% of UNIZULU's respondents. Only 1.2% of UNIZULU's students [reported that they had](#) 'more than enough' as against 5.8% of UNAD.

Parents' income

UNAD's respondents' dads (64%) fell in the middle to high income bracket; only 17.6% of parents of UNIZULU's students were within this bracket. However, 45% of UNIZULU's students were either in the low income (13.2%) or no income (31.8%) cohort. The corresponding figures for UNAD were 21.7 and 0.9% respectively.

The figures for mums were relatively poorer: 43.7% (UNAD), 16.1% (UNIZULU), for middle/high income and 44.9% (UNAD) and 55.2% (UNIZULU) for low/no income. Only 0.9% of dads and 2.9% of mums were without income among UNAD's parents as against 31.8 and 32.7% for dads and mums respectively of UNIZULU's parents. Unemployment rate among dads and mums of UNIZULU's respondents was approximately equal.

It is evident from the above preliminary analysis that there are clear distinctions in the demography of students of each institution who participated in this study. The most glaring differences are found where the students were brought up as youths, the level of resources from homes, parental incomes, stipend, and single parenthood. In the subsequent analyses, it would be clearer if these differences generated any statistical differences in the responses to issues pertaining to the knowledge, awareness, prevention and transmission of HIV between the two institutions.

5.6 Knowledge of HIV and AIDS transmission (Section G) and knowledge of protection against infection (Section H)

Aim 1.8.1

To determine how some selected socio-economic and demographic indices of the respondents influence their (i) knowledge of transmission and (ii) knowledge of protection against HIV/AIDS

An outline of the respondents' socio-demographic indices from each institution has been described above. To examine how the indices influence their knowledge the mean scores for sections G and H of the questionnaire were examined.

5.6.1 Knowledge of HIV and AIDS transmission (Section G)

The level of recognition of different modes of transmission is expected to reflect the knowledge of transmission of HIV. The mean scores for section G, put against socio-demographic variables, are tabulated in Table 5.5 (Appendix C).

Evidently mean scores are high for both institutions except in those that enter university at >30 years and widows (for UNAD). UNIZULU scored higher than UNAD in all variables, indicating that though both institutions have high knowledge about different modes of transmission, UNIZULU has higher knowledge which should translate to more positive lifestyles among the UNIZULU's students. In both institutions Faculty of Science displayed slightly higher knowledge than Faculty of Education. Biochemistry scored the highest, slightly higher than Educational Psychology, Chemistry and Education Science. Education Science scored lowest at UNAD but higher than Educational Psychology at UNIZULU.

Male respondents displayed better scores than female respondents in this section. Respondents at 15-18 and 19-21 years brackets, on entry to university, showed higher knowledge than the other age groups, with 15-18 years group doing best in the two institutions. The married respondents scored higher than the singles at UNAD; this trend was reversed at UNIZULU. Those with no child were second under number of children in both institutions whereas those with one child at UNIZULU and those with more than two children at UNAD came first. The trend for religion followed: Christians > Islam > Traditional > others (for UNAD). It is difficult to place the sequence for UNIZULU as Islam that posted higher mean score had only three respondents. Otherwise, Christians were first followed by others and traditionalists last for UNIZULU.

The observation under 'Where grown up' posed an interesting trend for UNAD, where a systematic increase in mean scores was observed for those from 'villages/rural areas to capital cities'. The trend in UNIZULU was similar for those from 'villages/rural areas to big towns' and

those from capital cities least, presumably because they were negligible in number (13; 1.5 %). For both institutions those that 'Have most things' and those that had 'Just enough' pooled first and second highest. However, those that had 'More than enough' were third at UNAD while those who did not have enough at UNIZULU were third. Unlike those who grew up in a capital city, which yielded highest knowledge above, it seems that those whose family resources were more than enough at UNAD did not necessarily grow up in the capital cities. A similar trend to 'where grown up' was observed for money available as stipend for UNAD, where mean scores increased as available money increases. A similar trend was also observed for UNIZULU from 'not enough' to 'enough' and like it was observed above, those with 'more than enough' rated lowest again presumably because the number of respondent was merely 10.

5.6.2 Knowledge of protection against HIV and AIDS infection (Section H)

Data from this section are presented in Table 5.6 (Appendix C). Generally scores were higher than in section G, and generally high for both institutions. However, UNIZULU is marginally higher than UNAD except in some cases.

UNAD's mean scores were higher for respondents from Chemistry, Educational Psychology and Science Education, those within 22-24 years on entry to university, those in the 4th year of study, married respondents, those with more than two children, and those who had more than enough stipend. The substantial improvement in the knowledge of protection against infection is interesting particularly in circumstances where UNIZULU did much better in section G. One would therefore expect that this outcome would play out in the respondents' prioritization of preventive strategies (Section I).

Other trends include males recording better mean score than the females. At age on entry to university the 15-18 years group showed highest score for UNAD whereas this fell on 19-21 years group for UNIZULU. The second highest for UNIZULU were those in the 15-18 years group whereas this fell on the 22-24 years group for UNAD. The core of those who had highest knowledge of protection fell within 15-24 years age bracket for both institutions. It is interesting that the 'age now' revealed that the 15-18 years group had lost first position at UNAD to become the fourth in this variable whereas this group retained the first position at UNIZULU. One expects that students within this age group came fresh from high schools and proceeded to the university. Those at UNIZULU would have spent about 8-10 months of studies in their first year when the survey was done because of the South African calendar that runs from February to December. For Nigeria the school calendar runs from September-June and therefore the UNAD's first year students would have spent barely 2-3 months in the University before the survey and the impact of exploitation of fresh students by senior students common in many Nigerian universities and the unbridled perception of freedom from family control would have robbed on their sense of judgement.

First level respondents recorded highest score for UNAD as against second level respondents for UNIZULU. The other levels for each institution increased for UNAD but decreased for UNIZULU. Could these be that the UNIZULU respondents became more permissive as they advanced in their studies while UNAD's became more responsible with their sexual lifestyles? Single respondents had more knowledge than the married ones for both institutions. Divorced and widowed respondents are too few to make any tangible deduction but in both cases the

knowledge was apparently high. Those with no children posted the second highest mean scores for UNAD and UNIZULU, whereas UNAD's highest was from those with more than two children that of UNIZULU was from those with one child. Christians from UNAD had highest scores followed by Islam and traditional in that sequence. UNIZULU Moslems were too few (3 respondents) but most positive, otherwise those who belonged to 'others' and Christians would have been the highest and second highest respectively for the institution.

Those from capital cities, those who had most things from family resources and those who had more than enough stipends score highest in UNAD as against those from town/semi urban areas, those who had most things from family resources and those with just enough stipends at UNIZULU. These were followed by those from towns/semi urban areas, those with more than enough family resources and those with just enough stipends for UNAD and those from village/rural areas, those with just enough family resources and those who had enough stipends for UNIZULU. It is evident that while 'where grown up' played a positive influence on respondents from UNAD the level of mean score from those of UNIZULU parallels that for respondents from towns/semi urban, higher than those from big towns and just a little lower than those from capital cities from UNAD. Thus 'where grown up' had no discernible difference for UNIZULU respondents. However, socio-economic differences appeared to play some roles, particularly at the level of those who claimed to have more than enough from family resources as well as from stipends.

It could be concluded that age, sex, marital status, number of children, level of education and economic and environmental factors influence the respondents' knowledge of transmission and protection but the trends in some of these variables did not follow a particular direction. Similar observations were reported from a study on Chinese college students where students returned inconsistent levels of knowledge of HIV/AIDS with significant differences due to gender, residence, rural/urban origin, and levels of study (Li, *et al.*, 2004). In a study carried out in Madagascar (Lanouette, *et al.*, 2003), level of education did not associate with level of knowledge whereas age did, with younger respondents recording better mean scores. There was no significant difference in mean scores for men and women.

5.7 Students' perception about preventive strategies (Section I)

Aim 1.8.2

To find out about students' perception of preventive strategies

To address this aim the mean scores of responses for section I (Table 5.7) were computed and ranked for each institution.

While UNAD's first three topmost rankings are '*Avoid sharing injection needles/blades*', '*Undertaking HIV test before marriage*', and '*Avoid any social gatherings which might lead to forced sex*', the corresponding ones for UNIZULU are '*Using condom correctly and always*', '*Abstaining from/avoiding sex altogether*', and '*Avoid sharing injection needles/blades*'.

The difference in the scale of emphasis placed on different strategies by the two institutions was likely to be a reflection of the emphasis placed on preventive strategies by the societies

where the institutions are located. Nigeria is a very religious country and many Churches and Mosques emphasize abstinence and faithfulness rather than use of condom. The low ranking of *abstinence* (12) and *faithfulness* (8) could reflect the difficulties encountered by youths within the university environment in keeping to the above religious injunctions. Where condoms are used, particularly among students, it seems that they are used to prevent pre-marital pregnancies rather than for prevention against infection. This reflects in the very low premarital parenthood in UNAD even though sexual activities in both campuses were not significantly different.

A recent publication (Abiodun & Balogun, 2009) has raised contradictions in the life of the Nigerian undergraduates who would prefer to commit abortion to using contraception, on the excuse of side effect but without reconciling Christian/Islamic ethics that go against abortion and without appreciating the greater risks associated with illicit abortion. The significance of this study is how it could relate to the low single parenthood found among UNAD's respondents that could also have been as a result of wide scale abortion. We have no information on the relative abortion rate in South Africa (where abortion is legalised) and in Nigeria (where abortion is illegal) to make further comparisons.

However, the top three strategies identified by respondents from both institutions are critical to prevention. The two institutions seem to agree on the lowest rated strategies: '*Circumcised men are less at risk of HIV infection*' (15), '*Avoid the company of heavy alcohol drinkers*' (14) and '*Avoid the company of any known drug users*' (13). What is evident here is the awareness

that being circumcised does not necessarily provide full proof prevention. This is not surprising because incidences of HIV infection are well documented in Nigeria despite the fact that most males were circumcised at birth.

On the other hand, the importance of circumcision, as another means of protection, is just being rolled out in South Africa, particularly in KwaZulu - Natal Province where UNIZULU is located. The campaign for male circumcision carries a caveat that it is not 100 % full proof and therefore should be adopted to supplement other prevention strategies.

The avoidance of alcoholic drinkers and drug users are also rated rather low. This could reflect either the wide scale usage of alcohol (in particular)/drugs by many students in either institutions or a perception that students are matured enough to discriminate against negative influence within social relationships rather than to avoid social interactions with certain segments of students' population. From the above it can be concluded that the respondents are sufficiently knowledgeable about available preventive strategies.

It is also noteworthy that UNAD ranked abstinence 12th and both institutions ranked delay of sex until marriage 13th (UNAD) and 11th (UNIZULU) while faithfulness ranked 8th and 10th respectively. Both rated knowing the HIV status of partners 7th and UNIZULU rated undertaking HIV test before marriage 6th. None of the strategies is rated lower than 2.5 of a maximum of 5.0; the minimum overall is '*Circumcised men are less at risk of HIV infection*', which pooled an average of 2.85.

It is evident from the above that abstinence is not popular among these respondents, and expectedly so, since university students have been identified as falling into the age group of youths that are known to have intense passion for sexual activities. Respondents from both institutions appear unanimous that social discrimination as a result of alcohol or drug use might not be necessary in avoiding HIV infection.

Table 5.7: Means of rankings as measures of perception of preventive strategies*

Variable	Mean scores	UNAD (N=604)	UNIZULU (N=856)	ALL (N=2460)
Using a condom correctly and always	Mean Std. Deviation	4.2268 (5) 1.01230	4.5946 (1) 1.00078	4.4425 (2) 1.02142
Abstaining from/avoiding sex altogether	Mean Std. Deviation	4.1275 (12) 1.11315	4.4346 (2) 1.16996	4.3075 (5) 1.15636
Undertaking HIV test before marriage	Mean Std. Deviation	4.3924 (2) .93752	4.2897 (6) 1.24823	4.3322 (3) 1.13088
Delaying sexual relationship until marriage	Mean Std. Deviation	4.1192 (13) 1.97556	4.1893 (11) 1.31627	4.1603 (11) 1.62159
Keeping to one faithful sex partner	Mean Std. Deviation	4.1821 (8) 1.08813	4.2523 (10) 1.29664	4.2233 (9) 1.21483
Circumcised men are less at risk of HIV infection	Mean Std. Deviation	3.1672 (15) 1.29171	2.6227 (15) 1.45703	2.8479 (15) 1.41621
Avoid company of heavy alcohol drinkers	Mean Std. Deviation	3.4735 (14) 1.32746	3.6647 (14) 1.49571	3.5856 (14) 1.43115
Avoid company of any known drug users	Mean Std. Deviation	3.6374 (13) 1.26018	3.8189 (12) 1.44972	3.7438 (13) 1.37694
Knowing the HIV status of partners	Mean Std. Deviation	4.1887 (7) 1.08088	4.2815 (7) 1.23172	4.2432 (8) 1.17218
Insist on screened blood for transfusion	Mean Std. Deviation	4.1805 (9) 1.20070	3.8984 (12) 1.37656	4.0151 (12) 1.31363
Avoid having unprotected sex with partners with open injury on their penis/vagina	Mean Std. Deviation	4.2748 (4) .98948	4.3400 (4) 1.18868	4.3130 (4) 1.11072
Avoid having many sexual partners at the same time	Mean Std. Deviation	4.1424 (10) 1.09556	4.2558 (9) 1.31521	4.2089 (10) 1.22999
Avoid having sex with anyone you cannot negotiate your safety from infection with	Mean Std. Deviation	4.2020 (6) 0.98020	4.3236 (5) 1.16044	4.2733 (7) 1.09079
Avoid any social gatherings which might lead to forced sex	Mean Std. Deviation	4.3278 (3) 0.89692	4.2675 (8) 1.19831	4.2925 (6) 1.08391
Avoid sharing injection needles/blades	Mean Std. Deviation	4.5447 (1) 0.85207	4.4159 (3) 1.20910	4.4692 (1) 1.07741

*Ranking is in parentheses ().

The ranking of HIV testing before marriage first by UNAD and condom use first by UNIZULU was very interesting. The Nigerian society cherishes marriage and raising children within marriage

setting. Prevention against any infection in marriage, by use of condom, for example, would militate against procreation, which is considered the most important reason for getting married. Reservations for taking precautions against infection that could militate against procreation is therefore understandable. The adoption of ascertaining the HIV status of one's partner before marriage within the Nigerian society could therefore be understood in this light and seen as a precautionary measure. On the other hand promotion of condom use is very strong in South Africa (and condoms are made available generously to students at UNIZULU), thus the mentality that the use of condom is the answer to preventing HIV infection is rife within the society where UNIZULU is located. Secondly, as observed earlier, there is a disproportionate number of single parents among the UNIZULU respondents which could be a reflection that procreation outside marriage may be more tolerated within the South African society. Single parenthood is also a reflection of inconsistent or non-use of condoms despite the wide promotion of their usage.

A further consideration of the mean of total scores for each socio-demographic variable, presented in Table 5.8 (Appendix C) makes it possible to assess how these variables contribute to the overall perception of each institution. Like in knowledge of protection against infection, UNAD recorded slightly higher mean scores for respondents from Biochemistry, Educational Psychology, males, 22-24 years, 2nd- 4th year levels, divorced, more than two children, Christianity, big/capital cities, more than enough family resources and more than enough stipends than the corresponding scores for UNIZULU. These trends tend to provide positive relationships between knowledge of protection against infection and perception of preventive

strategies and thus strengthened the evidence that UNAD respondents appeared to link knowledge of prevention with perception of preventive strategies, which from this study has not translated to less sexual risk.

However, on the whole UNIZULU had a marginal advantage over UNAD and Science recorded better mean scores than Education for both universities. In both faculties UNIZULU was better. Biochemistry was the most positive department for both institutions but UNAD is slightly higher in this department and Educational Psychology while UNIZULU is higher in Chemistry and Science Education. Scores from female respondents were higher than from males.

The respondents from 15-18 years bracket recorded the highest in UNAD and decreased progressively as age increased. However, those at 25-30 years group had the highest mean score at UNIZULU. The scores decreased from 15-18 to 22-24 years thereafter. At the time of data collection the trend had changed for UNAD with scores increasing from 15-18 years to 25-30 years except for the 22-24 years bracket that had a lower mean score than other groups. A gradual decrease in mean scores was observed for UNIZULU from 15-18 years to 22-24 years followed by an increase at 25-30 years group.

Third level respondents had highest mean scores for UNAD as against first year for UNIZULU. Fourth level and second level came second for UNAD and UNIZULU respectively. Consequently while positive perception reflected at senior levels at UNAD it seems to decline at UNIZULU.

The mean score of UNIZULU's respondents who were unmarried was higher than the corresponding score from UNAD; but the married respondents from UNIZULU recorded the highest mean score, if the rather few widows and divorcees from UNAD are excluded. The unmarried UNAD's respondents scored higher mean than the married ones. There did not seem to be any direct correlation between the number of children and perception of preventive strategies. The highest mean score of all was from respondents who had more than two children (from UNAD) as against those with one child coming highest for UNIZULU. Those without any child came second for UNAD but came fourth for UNIZULU. It is therefore difficult to relate perception of preventive strategies with scores recorded respondents' number of children. Christians among the UNAD's respondents recorded the highest mean score whereas traditionalists did at UNIZULU. The freak higher score for Islam at UNIZULU was ignored because of the rather small number (3) of respondents.

The scenario from 'where grown up', 'family resources' and 'money for stipend' for UNAD linked those from capital city, having more than enough family resources and more than enough stipend with higher knowledge of protection. The lowest from each set of variables were from those from villages/rural areas, those with not enough family resources and those with not enough stipends respectively. However, for UNIZULU this trend was different as those from towns/semi urban areas, those that had most things and those with enough stipends scored highest from each sub-variable. This was followed by those from rural areas, those who did not have enough family resources and those without enough stipends respectively. It

therefore seems that socio-economic parameters as well as gender, level of study, and academic discipline played some roles in the perception of preventive strategies.

5.8 The contribution of sexual activities to risky sexual relationships

Aim 1.8.3

To find out the extent students' sexual activities contribute to the risky sexual relationships on the campuses.

To address this aim one needs to highlight the sexual activities of the respondents (Section B).

5.8.1 Sexual activities of respondents (Section B)

The sexual profile of the respondents is summarised in Table 5.9 (Appendix C) and briefly described.

Sexual debut

About 14% of the respondents from UNAD had sex for the first time in the primary school as against only 7.8% of UNIZULU's. However, the weighting changed dramatically at the high school where 52.7% of UNIZULU's respondents had sex for the first as against 30.0% of UNAD's. A total of 33.2% of UNAD's respondent had sex for the first time in the University. Only 19.2 of UNIZULU's had sex for the first time in the university. A slightly higher percentage of the respondents from UNAD (21.3%), when compared to UNIZULU (19.0%), had never had sex.

The trend presented above reveals that predominant sexual experience among UNAD's respondents started while in the university while at UNIZULU this was at the high school. The

relatively higher proportion of single parents among UNIZULU's respondents could be explained by this trend, resulting from young boys and girls engaging in sex at an age they knew very little about reproductive principles. It also reflected that boys and girls got exposed to risky sexual activities at a relatively earlier age among UNIZULU students.

The UNAD's scenario is a bit different, in the sense that by the time majority of respondents engage in their first sex, they were already sufficiently matured to understand the working of their body, accept responsibility for their action and hence take appropriate precautions against pre-marital parenthood. As would be seen later, since other attributes of risky sexual activities between the two institutions are comparable, sexual debut appears to be one critical factor that accounted for big differences between the South African students and the Nigerian students.

Table 5.10: Gender and sexual debut

		No response (%)	Elementary School (%)	High School (%)	1 st year in University (%)	After 1 st year (%)	Never had sex (%)	Missing (%)	Total
Gender	Male	5 (0.81)	110 (17.89)	302 (49.11)	63 (10.24)	43 (6.99)	92 (14.96)	-	615
	Female	13 (1.56)	42 (5.05)	324 (38.99)	152 (18.29)	103 (12.39)	197 (23.71)	-	831
Total		18 (1.23)	152 (10.41)	626 (42.88)	215 (14.73)	146 (10.00)	289 (19.79)	14 (0.96)	1460

The risk of infection, through unprotected sex, 'starting at their teens' has been identified as one of the factors that drive the spread of HIV and AIDS in South Africa (Eaton, Fisher & Aarø,

2003). It has also been suggested that at least 50% of South African youths are sexually active by 16 years, with boys being active at an earlier age than girls. A mean age of 18 years for sexual debut has been reported from a study on one Nigerian university (Ibe, 2005), which might have been underestimated for the whole country as in a number of traditional settings young girls at 12-13 years do get married (Momoh, Moses & Ugiomoh, 2006). This study confirms that more boys (110) than girls (42) had sex in the elementary school but more girls (324) than boys (302) had sex in the high school. More girls than boys also reported having sex during their period of studies in the university (Table 5.9, Appendix C). Consequently, most of the respondents would be sexually active at completion of their studies, which agrees with similar conclusion drawn on College students in the USA (Lewis, Lee, Patrick & Fossos, 2007). Eighty percent of the respondents (Table 5.10) were already sexually active at the time of conducting the study.

Number of sexual partners

It is interesting that the percentage of those that did not have any sexual partner (20.6% for both institutions) almost tally with those that had not had sex (21.3% for UNAD; 19.0% for UNIZULU). Monogamous relationship is about a third of respondents from each institution (31.0%, UNAD; 33.3%, UNIZULU). The percentages of UNAD's respondents who had 2 or 3 sexual partners are higher (17.6% and 10.4%) than for UNIZULU's respondents (14.3% and 8.4%) respectively. On the other hand, UNIZULU recorded 22.9% and UNAD 18.8% of respondents that had more than three partners. One could therefore identify the extent of multiple sexual relationships as another distinct factor that distinguishes the two institutions,

and thus a major risk factor. A similar range of percentages (13.4% of females and 17.8% of males) for college students in the USA that had sexual intercourse with 3 or more partners within one year had been reported (ACHA, 2005) but it was not explicit whether the relationships were concurrent or serial.

In Chapter 2 I alluded to the sexual profile of Nigerian undergraduates that tilts in favour of those who had sufficient money to pay the bills, including payment of fees, for expensive materials and so on. The reversal of trend for those who had more than three partners for UNAD could have been dictated by the cost implication of keeping many girls at a time. Higher concurrent sexual relationships among UNIZULU's respondents could also be considered as putting them at higher risk than at UNAD.

Sexual orientation

Most of the respondents are heterosexuals (UNAD, 93.9%; UNIZULU, 87.8%). Of the remaining 12.2% of UNIZULU's respondents, 8.4% are celibates, more than three percentage times than that of UNAD.

Discuss HIV with partner before sex

About 42% of UNAD's respondents always discussed HIV with partners before sex compared with 40.8% for UNIZULU. Both figures are comparable. However, the major difference is from those who sometimes did (45.6%, UNAD; 54.4%, UNIZULU). These constituted a pointer to good proportions of likelihood of exposure to risk, having sex with partners whose HIV status

you didn't know. The larger number of UNIZULU's respondents who 'sometime' discussed HIV before sex made another difference between the two institutions.

Know the HIV status of partners

A little over a third, with UNIZULU having a marginal higher percentage, of the whole respondents knew the HIV status of their partners, leaving about 65% of them exposed to possibility of contacting the virus by having sex with partners whose status they did not know. BRespondents from both institutions are at risk in this respect. The critical difference is the big difference between UNAD (29.2%) and UNIZULU (36.6%) who said 'No to all of them' since 'Yes to some' drew 19.8% and 19.5% for UNAD and UNIZULU respectively.

Know own HIV status

About two thirds of all respondents reported knowing their HIV status, leaving almost a third who were oblivious of their status. This is an indication that students of UNIZULU did not take advantage of the existence of VCT facility on campus and UNAD's students could be victims of such facility not being freely available to them. About 35% of students who did not know their HIV status within any tertiary institution constitute major concern.

Use of condom in the last three months

A little over a third of the respondents (37.5%, UNAD; 43.1%, UNIZULU) reported that they always used condom in the last three months leaving a whopping 57-63% of all respondents who could have engaged in risky sexual activities (excluding those who were in monogamous relationships, the celibate and those who had never had sex), thus corroborating the previous

observations from literature that undergraduates undertake risky sexual activities (Onoh, *et al.*, 2004; Olaseha, Ajuwon, *et al.*, 2004; Asekun-Olarinmoye, 2009; Sabone, *et al.*, 2007; Adefuye, Abiona, Balogun & Lukobo-Durrell, 2009; Kalichman, Simbayi & Cain, *et al.*, 2009).

Use of condom in the last sex

About 56% from both institutions responded 'Yes'. Over 30% responded 'No'. When we combined these responses with responses for use of condom in the past three months, it became clearer that the level of risky sexual relationships was quite high among the respondents. This observation agrees with previous studies that established that undergraduates, like many adolescents and young adults, engage in risky sexual practice (Cooper, 2002; Lewis, *et al.*, 2007; Sabone, *et al.*, 2007; Kenyon & Badri, 2009; Asekun-Olarinmoye & Oladele, 2009).

When sex is best enjoyed

Apparently majority of UNIZULU's respondents (83.9%) enjoyed sex best when they were relaxed as against a much lower percentage for UNAD (68.2%). This trend was further corroborated by a much higher percentage (21.5%) of UNAD's respondents who enjoyed sex best under the influence of alcohol or drug or after a party (which might imply being drunk as well); the corresponding figure for UNIZULU was 10.2%. In both USA (e.g., Lewis, Lee, Patrick & Fossos, 2007) and Africa (e.g., Sabone, *et al.*, 2007) for example, risky sex has been associated with alcohol/drug consumption prior to the act.

Who could you have sex for money/favour?

In Chapter 2 a reference was made to 'undercover prostitution'. This item is to indirectly engage this practice whereby students engaged in sex-for-money/favour while studying in the university. From the figures recorded it seems that this practice was limited to a minority of students, but appeared more common in Nigeria than in South Africa. While 64.8% of UNAD's respondents would not be involved in any of the options, 81.7% of UNIZULU's would not. However, more of UNIZULU respondents reported being involved in all (14.1%) as against 8.5% for UNAD. The most attractive of the options to respondents from both institutions was having sex with a brilliant course mate, presumably to secure assistance with studies. The second most attractive to UNIZULU's respondents is having sex with business men whereas UNAD's would go for a senator/minister... or a banker. About 3.0% and 2.6% (UNAD and UNIZULU respectively) would go for their lecturer, presumably to secure extra marks. It seems that UNAD's respondents had a more ready access to bankers and top Government officials because their campus is located a mere 18 km from a state capital as against UNIZULU that is located at over 100 km from the provincial capital.

One major difference between the two institutions that could explain the apparent disparity could be linked with the accommodation policy of both institutions. While most of UNIZULU's students are accommodated in the university residences, UNAD does not provide accommodation on campus, except for few residences that are built by private businesses. Consequently most UNAD's students live off-campus, predominantly in the Ekiti State capital and the surrounding locality.

Sex in exchange for money or favour, multiple sexual partners and low and inconsistent use of condom in males and females were well-documented for Nigerian undergraduates (e.g., Odu & Akanle, 2008; Smith, 2007). This has also been identified as one of the factors that militate against the adoption of preventive measures against HIV infection at the university of Botswana (Sabone, *et al.*, 2007). These risks, as revealed from this study, are also very common among South African students.

Investigations on the proximate social factors of sexual activities in South Africa that exert influence on individuals and couples revealed the critical roles played by contextual factors for adolescents' behaviour, those factors that are particularly detrimental (McPhail & Campbell, 2001). In a study to explore the impact of communities on adolescents' sexual behaviour, Kaufman, Clark, Manzini & May (2004) highlighted how geographical differentials and social inequality created during apartheid also defined the demography of HIV/AIDS. Studies in the USA (e.g., Kirby, 2001) identified 'multiple levels of influences on risky sexual behaviour among the youth' to include communities, families, schools, and peers.

A review of literature on the impact of communities on adolescent sexual behaviour (Kirby, 1999), suggested that adolescents who engaged in risky sexual activities live in communities noted for high levels of crime, high residential turnover, extreme rates of poverty, elevated unemployment rates, and low educational levels. Other studies (in Brazil), (Gupta, 2000), found involvement in religion, exposure to TV, and education have statistical significance on adolescents' sexual initiation and use of contraceptives. Among black South African women

aged 15-49 during apartheid era, Haufman (1998) found evidence that community-level economic status and migration patterns affected use of contraceptives.

What this analysis reveals is that the structure of opportunity and normative context of a local community can affect sexual behaviour of adolescents indirectly. Young people who spent their spare time 'hanging out' are more likely to engage in risky sexual activities than those that grew up in communities that provide activities to positively engage them. In a similar vein adolescents who live in a community pays premium to children going to school are likely to see education as an expectation or as a vehicle to future stability and therefore limit engaging in risky sexual relationships. On the other hand those who live in a community where peers work and earn a living would be motivated by such employment opportunities, and minimise engaging in risky sex.

The predominant number of UNIZULU's respondents who had sex for the first time in the high school, and coming from under-resourced communities, could be a victims of their predominantly rural origin, high level of poverty/unemployment, high level of illiteracy within the communities they came from, and negative peer influence (See Eaton, Fisher & AarØ, 2003).

In summary, it is evident that lots of risky sexual activities go on in the two institutions for different reasons, which could include desperation to succeed in studies as well as survival, probably hinged on greed. Intergeneration sexual relationship with people out of or within the

campus, multiple sexual relationships, not knowing the HIV status of self and partners, substantial number of students not using condoms regularly or not using them at all, and having sex under the influence of alcohol/drugs are clear risk factors. This study reveals that both male and female respondents 'enjoy sex after an all night party' (Male, 43; Female, 36), 'after a good alcoholic drink' (Male, 68; Female, 30) and 'under a shot of drug' (Male, 12; Female, 12). These pose another set of threats to safe sex on university campuses. Studies in Botswana (Sabone, *et al.*, 2007), USA (Lewis, Lee, Patrick & Fossos, 2007; Cooper, 2002), China (Tan, *et al.*, 2007) and South Africa (e.g., Kenyon & Badri, 2009), for example, identified all or most of the factors listed above as common risky behaviours among university/college students.

5.9 Factors that drive the spread of HIV infection

In examining the factors that drive the spread of HIV infection on campuses it is necessary to examine the level of institutional support as well as the level of awareness programmes that respondents were exposed to.

Aim 1.8.4

To establish the factors that could influence the spread of HIV infection in the two institutions.

5.9.1 Institutional programmes on HIV and AIDS (Section C)

Table 5.11 (Appendix C) allows us to examine how some selected demographic variables provide ideas of the level of institutional support for fighting the HIV and AIDS pandemic. The

mean scores from each institution out of a maximum of 50 were about 29 (UNAD) and 36 (UNIZULU), which is considered medium for UNAD but high for UNIZULU.

An examination of the scores of each institution on each item of Section C reveals that UNIZULU scored higher in each item. With availability of HIV/AIDS information on campus being scored highest by UNAD followed by occasional awareness programmes by NGOs and inclusion of topics on HIV/AIDS in some modules in some courses/modules, it seems that UNAD provides some awareness media on campus, presumably with involvement of NGOs.

While distribution of free condoms for men ranked second at UNIZULU it ranked eighth at UNAD. Provision of testing and counselling facilities ranked first at UNIZULU but sixth at UNAD. Both institutions ranked free distribution of female condoms ninth and everybody is left to live independent lifestyle tenth. The students' representative council appeared to do more poorly at UNAD (7th) than at UNIZULU (5th). The institutional policy came 5th at UNAD as against 6th for UNIZULU. The impact of involvement of religious groups in awareness is also revealed for UNAD where it scored 4th as against 8th for UNIZULU.

One could therefore identify some areas that require improvement in each institution. Apparently both institutions have policies but it did not appear that the policies were widely publicised among students of both institutions. UNAD needs to improve on existing testing and counselling facilities, if any, to the benefit of students. Attention needs to be paid to availability

of female condoms in both institutions and male condoms at UNAD. UNAD also needs to involve the students' representative council in any HIV/AIDS awareness programmes.

The implication of UNIZULU enjoying better institutional support than UNAD could be due to a rather slow response of Nigerian universities to the pandemic and the poor funding that is available to institutions in Nigeria to provide support services to fight the scourge. It seems that the Nigerian Universities authorities bury their own 'heads deeper in the sand' than the ostriches (Kelly, 2001) for too long. A recent survey (Erinosho & Tenche, 2010) revealed that only three of 37 institutions approached (of the 182 tertiary institutions in Nigeria) to supply their HIV/AIDS institutional policies for scrutiny responded. The study further revealed that about 45.1% of the institutions claimed to have facilities for voluntary counselling and testing; up to 96.2% had no access to ART. The observation of prevailing risky activities as well as the huge number of students who did not know their HIV status in both institutions is a further confirmation that African universities have been justifiably blamed for their slow and indecisive response to the pandemic (Kelly, 2001; Chetty, 2000).

5.9.2 Awareness (Section D)

Section D of the questionnaire dealt with awareness about HIV and AIDS. The data generated are presented as means of score per demographic variable in Table 5.12 (Appendix C, which also contains data for Section E).

The level of awareness was considered high for both institutions but a bit higher for UNIZULU. This might have to do with better institutional support for UNIZULU as national awareness programmes are high for both countries although South Africa has the advantage of more sophisticated technology to run her awareness programmes.

Discipline variation was observed as Education is higher than Science in both institutions; Biochemistry was higher than Chemistry at UNIZULU but reversed in UNAD, and Educational Psychology was higher than Science Education in both institutions. The Faculty of Education and the Department of Biochemistry and Microbiology at UNIZULU offer core modules on HIV/AIDS whereas Chemistry Department does not offer such core module. At UNAD HIV/AIDS is only covered, as part of a course, under the General Studies Programme and offered by all students. The higher scores from respondents from Education and Biochemistry & Microbiology could therefore be ascribed to the effective incorporation of HIV/AIDS into Faculty/Departmental curriculum.

UNAD is, however, higher from responses of people with two children and those who live in big towns. The levels of awareness are higher in females than in males and highest at 25-30 years age bracket in both institutions (on entry to university) followed by 19-21 years age group. Excluding >30 years, only one respondent at UNAD, 19-21 years group was higher than the 15-18 years group and 22-24 years group was the lowest at both UNAD and UNIZULU. This trend was marginally altered under 'age now' as the 19-21 years group showed the greatest awareness in both institutions, revealing some of the impact of institutional support for those

15-18 years group on entry to university. A measure of increase in awareness as level of study increased from level 1 to 4 is observed for UNIZULU and to some extent for UNAD except for the swap between 2nd year and 3rd year. While single students showed greater awareness at UNIZULU, married students did at UNAD. Those who had one or two children demonstrated greater awareness than those with none or with more than two in both institutions.

Traditional religion topped the list at UNAD while 'others' topped it at UNIZULU. Christianity was second in both. Islam was few at UNIZULU (3) but came 3rd at UNAD. It seems as if those who belonged to 'non-conventional' religious groups demonstrated more awareness than those who belonged to the main stream religions organisations like Christians and Islam. Some of the 'others', though not listed, could include Hindu, for example, which could go for an Indian religion rooted in traditional practices. Could this suggest that traditional religions and religions that are tied up with tradition provide better forum to generate awareness or could this be due to traditional discipline that is routed in religion?

'Where grown up' presented a trend that suggested that respondents from big towns (1st) and capital cities (2nd), which constituted about 65 % of UNAD's respondents, demonstrated better awareness than the other groups. However, the few (13) that came from capital cities from UNIZULU demonstrated the highest awareness from this group while the second were those that came from towns/semi urban areas. Those that came from villages/rural areas came 3rd. Those from 'big towns' (only 26, 3%) were last.

While it appears that family resources and level of stipend played prominent roles in level of awareness at UNAD, where awareness increased as family resources and stipend increased, a marginal distortion to this trend was observed for UNIZULU. At UNIZULU the trend in family resources was 'Have most things' > 'More than enough' > 'not enough' > 'just enough' while for stipend it was 'Just enough' > 'More than enough' > 'Enough' > 'Not enough'.

The impact of HIV and AIDS on families in South Africa has been well researched. From three in-depth studies involving HIV positive people in three Provinces, three major areas of impact were identified: '(a) the impact on the family and household structures, (b) the impact on the socio-economic and emotional dimensions of family life, and (c) the strategies employed by individuals and families in trying to cope with HIV and AIDS related challenges' (Smit, 2007). The researcher is not aware that a similar study has been done in Nigeria, where many respondents had never seen any victim of HIV and AIDS. In the light of these findings one would expect that the level of awareness of UNIZULU respondents, who are predominantly from the very poor families hit by the pandemic, should demonstrate greater awareness as has been observed in this study.

5.9.3 Factors that support spread of HIV and AIDS on campus (Section E)

Despite the high level of awareness demonstrated above, the level of assessment of factors that support the spread of HIV infection from both institutions was medium. UNIZULU appeared higher from the mean scores of all the variables (Table 5.12, Appendix C).

When mean scores for awareness are compared with the mean scores for factors that support spread of HIV and AIDS it is also obvious that it was only in few cases that trends in both institutions follow the same sequence: the institutions (UNIZULU > UNAD), Faculty (Education > Science), gender (female > male), 3rd year of study > other levels, marital status (married > single), Educational Psychology > Science Education (for UNIZULU only), 25-30 y > other age ranges (for UNIZULU), one child > others (UNAD) and two children > others (for UNIZULU), where grown up : big town > others (UNAD); capital city > others (UNIZULU) and stipend (have most things > others (UNAD), Just enough > others (UNIZULU). Some level of convergence was observed between awareness and factors that support spread of infection in both institutions.

5.10 Risk assessment of students (Section F)

The means of scores for respondents' risk assessment of students are presented in Table 5.13, Appendix C). A similar trend, putting UNIZULU ahead of UNAD as in the previous discussion, is also observed in this section. UNIZULU was rated high in all variables and sub-variables except for divorcees, those from capital cities, those with more than enough for family resources and for stipend where they rated medium. UNAD was rated lower in all variables and sub-variables but higher in faculty, biochemistry, educational psychology, female, age groups covering 15-24 y, levels 1 and 2 of studies, single respondents, respondents with no child, Christianity, where grown up (excluding 'villages/rural areas'), family resources (excluding 'not enough'), and stipend (excluding 'not enough'). In all other cases UNAD scored medium.

A good assessment of risk should translate to better attitude to adopting preventive measures; thus one would then expect that UNIZULU students should be able to avoid risk taking better than UNAD. However, studies have shown that such is usually not the case as students and youths are known to have so much knowledge about HIV and AIDS which they do not translate to positive use in the sexual activities (Ijadunola, Abiona, Odu & Ijadunola, 2007).

Aim 1.8.5

To establish factors that may account for any differences in the responses from the selected institutions about knowledge and perceptions of preventive strategies.

From the discussion of information drawn from data generated for Sections A and B, certain fundamental factors could be easily identified. Some of these factors are common to both institutions and some are unique.

From the socio-demographic data it is obvious that there were distinct areas of difference between UNAD and UNIZULU that could be hidden from the history that both institutions are located in relatively rural areas. Some of these include about two years mean age difference between UNAD (mean age: 20.1 years) and UNIZULU (mean age: 22.3 years). It was also mentioned earlier that sex debut for a small percentage of UNAD respondents was from elementary school while a substantial percentage of UNIZULU respondent were already sexually active from high school. Most UNAD respondents only became sexually active in the university. It was also observed that some socio-economic factors like family resources,

stipends, where they grew up as children that set both institutions at the opposite end of the scale. UNAD had a good number of respondents from middle and high income families with unemployment at the barest minimum for both parents, many of them from big towns and capital cities. At the other end we have predominant number of UNIZULU respondents brought up in villages and rural areas and by low income or no income parents (or without parents).

However, certain factors appeared to define a bottom line of sexual activities for both institutions: multiple concurrent sexual relationships by both gender, not undergoing HIV testing and counselling, not knowing the HIV status of partners, inconsistent condom use and sex under the influence of alcohol or drugs. A small percentage of respondents from both institutions owned up to being involved in sex-for-money/favour, thus implying the concept of 'undercover prostitution' mentioned earlier in this thesis as well as inter-generational sexual relationships. It was also observed that the institutional support structures are different, with UNIZULU having a much better and effective support facilities than UNAD. Awareness, knowledge (of transmission and infection) and perception of preventive strategies are good for both campuses but the scale of risky sexual behaviours observed from their responses did not reveal that they translate their good knowledge to good use for their personal protection.

In addition to the above highlight, the Mann-Whitney non-parametric test on equality of means for all items in Sections C to I was carried out, in anticipation that the trend in statistical significance would make it possible to identify some key variables that promote safe sex (from Section C and D) and those that contribute to risk.

For those variable where $P < 0.05$, the null hypothesis fails and such factor is taken as not contributing significantly to either positive or negative factors. Where $P > 0.05$, the null hypothesis is accepted and such factors would contribute to the sexual risk promotion or risk aversion of each institution differently. The data is presented in Table 5.14. Since the items cover the entire spectrum of activities, attempts would be made to group them appropriately. Three groups could be drawn from Table 5.14: Those that promote positive lifestyles, those that promote negative lifestyles and those that are built on misconceptions.

Table 5.14: Mann-Whitney non-parametric test on equality of means

Item No.	SECTION						
	C	D	E	F	G	H	I
1	0.000	0.263	0.000	0.000	0.421	0.000	0.000
2	0.000	0.843	0.000	0.002	0.000	0.000	0.000
3	0.000	0.000	0.443	0.960	0.000	0.000	0.247
4	0.000	0.000	0.000	0.000	0.006	0.002	0.000
5	0.000	0.032	0.253	0.622	0.173	0.008	0.000
6	0.824	0.000	0.000	0.000	0.000	0.000	0.000
7	0.038	0.188	-	0.032	0.000	0.000	0.000
8	0.000	0.000	0.004	0.000	0.000	0.000	0.000
9	0.000	0.000	0.398	0.000	0.000	0.041	0.000
10	0.003	0.000	0.018	0.000	0.000	0.000	0.000
11		0.204	0.103	0.000	0.000	0.591	0.000
12		0.011	0.000	0.000	0.000	0.000	0.000
13		0.051	0.002	0.000	0.000	0.003	0.000
14		0.928	0.000	0.000	0.057	0.014	0.032
15		0.000	0.000	0.000	0.000	0.049	0.584
16		0.000	0.000	0.888	0.002	0.000	
17			0.000	0.000	0.234	0.002	
18			0.009	0.000	0.619	0.073	
19			0.000	0.000	0.001	0.403	
20			0.000	0.564	0.000	0.580	
21				0.000			
22				0.269			
23				0.083			
24				0.000			
25				0.000			
TOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: The first column should be read as sequence of items in each Section, e.g., for Section C, 1 should be read as corresponding to item C1, etc. Those items that contribute are in red.

Those that promote positive sexual lifestyles:

D1: *Sexuality education in the high/secondary school*

D2: *During orientation in the university*

D7: *Non-Governmental Organization activities on campus*

D11: *Television/radio advertisements*

D13: *Friends*

D14: *Government programme*

F3: *I stick to only one faithful partner*

F5: *I use condom every time I have sex*

H11: *By knowing the HIV status of partners before marriage*

H18: *By keeping the cultural value of remaining a virgin until marriage*

H19: *By not engaging in sex-for-money trade under any circumstance*

H20: *By avoiding friends who can influence you into undertaking risky sex*

I3: *Undertaking HIV test before marriage*

I15: *Avoid sharing injection needles/blades*

The six awareness items (D1, D2, D7, D11, D13 and D14) could be taken as those that would impact on each institution positively but not necessarily to the same extent. F3, F5, H11, H18, H19, H20, I3 and I15 are factors that measure the level of recognition of risk that they could be exposed to on their campuses and recognising them is good if doing so they keep to the positive and avoid occasions that could expose them to risk (e.g., F22). I3 and I15 are items ranked first and second by UNAD but ranked third and sixth by UNIZULU on perception of preventive strategies. The rejection of the null hypothesis showing that these items do not play equally to both campuses is therefore justified. They are, however, positive attributes to safe sex.

Those that reflect negative lifestyles

C6: *Everyone is left to live independent lifestyle on campus*

E3: *Freedom to have many sexual partners*

E5: *Many students have sugar daddies*

E9: *Sex for money and material things*

E11: *Difficulties to buy condoms*

F16: *I have had a few sexually transmitted infections in the past*

F20: *Having several sexual partners is normal in our society*

F22: *I can be raped*

G1: *Unprotected sex with infected partner(s)*

G17: *A healthy looking person*

G18: *People with previous record of sexually transmitted infections (STIs)*

Many of the items above are taken as core drivers of risky sexual activities on the campuses. As mentioned earlier, E5 and E9 are more common in Nigeria than is obvious in South Africa. One would also imagine that E11 may be more of a problem at UNAD than at UNIZULU, since UNIZULU had sponsors for free distribution of condoms. The positive response in

recognising that HIV could be transmitted through a healthy looking person (and through G1 and G18) is also important in averting risk.

Those that reflect misconceptions

G5: *Insect bites or domestic animal bites*

G14: *Body sweats from an HIV-positive person*

Obviously one would readily notice some evidence for misconception of transmission (G5, and G14). The type of misconception inherent from items G5 and G14 often leads to discrimination against those known to be HIV+ among students. This makes openness about one's status difficult particularly if one is HIV+.

5.11 Discussion of results from inferential statistical analyses

5.11.1 Assumptions for each statistical test chosen

To make applications of certain statistical analyses admissible, certain assumptions should be met. The large sample size and the combination of stratified random selection of faculties and departments, and simple randomisation adopted in the selection of respondents (in large classes) provides sufficient confidence to assume that the sample is random. However, there is a compelling need to examine the assumptions for each statistic used and to test such assumptions to establish whether the analysis being employed would produce valid results.

Chi-square tests are non-parametric tests and do not require assumptions about shape of the underlying distribution. It can be used with small sample size and the distribution varies according to the number of degrees of freedom. The expected frequency for each category

should be at least one and no more than 20% of the categories should have expected frequencies less than five.

The use of ANOVA to compare population means for a completely randomised design requires that the following assumptions hold.

- Samples drawn from different populations are randomised and independent;
- Populations from which the samples are drawn are approximately normally distributed;
- Populations from the samples drawn have the same variance.

The implications of the above assumptions is that if the null hypothesis is true, it implies that all the samples have been selected from the same population and if any serious violation of any one of these assumptions occurs, the appropriateness of the ANOVA and its resulting inferences become questionable.

5.11.2 Testing the assumptions

Normality test: The statistical validity of many tests commonly used such as t-test and ANOVA depends on the extent to which the population complies with the assumptions highlighted in 5.6.1. To enable decisions to be made whether to use non-parametric or parametric methods it was necessary to carry out two tests on the data: test of normality of means and test of equality of variances. The Kolmogorov-Smirnov and Shapiro-Wilk tests [was carried out](#) for comparing the mean scores of each item on the instrument and comparing data from both institutions. The null hypothesis for equality of means was rejected and thus alternative hypothesis that the means are different was accepted. For the equality of variances, the **Levene's test** was run. In both tests significance was <0.05 ; thus

both means and variances were also not equal. The implication of this observation is that conclusions drawn from parametric ANOVA tests may be questionable. In some cases, both parametric and non-parametric tests for both t-test and analysis of variance were carried out. Only data for non-parametric t-tests for means and ANOVA are included in this thesis. The Chi-square data were obtained from cross-tabulation analysis. In both *Chi-square*, comparison of means and ANOVA the 0.05 level of confidence was used to reject or accept each null hypothesis.

5.12 Socio-demographic characteristics and knowledge about HIV/AIDS

Two aspects of knowledge are implied here: knowledge of transmission (Section G) and knowledge of prevention (Section H). Seven independent variables are selected for cross-tabulation analysis: gender, age, level of study, marital status, religion, where they grew up, and family household resources. In order to analyse the data created on SPSS statistical package and the relationship between the independent variables (gender, age, etc) and the dependent variables (knowledge of HIV/AIDS transmission, Section G, and knowledge of protection against HIV/AIDS infection, Section H) *Chi-square* tests (cross tabulation) and One-way ANOVA (parametric and non-parametric) were used to test the significance differences between the students' demographic data and knowledge of transmission and protection.

The summary of mean scores from sections G and H is presented in Table 5.15. The mean scores of knowledge of protection (Section H) are slightly higher than those of the knowledge of transmission (Section G) for each institution. However, even though scores for UNIZULU were marginally higher than scores for UNAD, UNAD's responses generated

lower standard deviations, which implied that the responses from UNAD were more homogeneous than for UNIZULU.

Table 5.15: Summary of scores from Sections G and H

Section	Institution	N	Min. score	Max. score	Mean	Standard deviation
Knowledge of HIV/AIDS transmission (Section G)	UNAD	604	0.00	120	75.5821	10.92268
	UNIZULU	856	0.00	120	77.4474	15.32966
	ALL	1460	0.00	120	76.6760	13.70640
Knowledge of protection against HIV/AIDS infection (Section H)	UNAD	604	0.00	100	78.6821	11.28766
	UNIZULU	856	0.00	100	79.4112	16.28336
	ALL	1460	0.00	100	79.1096	14.42806
Valid N for ALL (list wise)		1460				

Research question 1.7.1

To what extent do some selected socio-economic and demographic indices of the respondents influence knowledge of transmission and protection of HIV and AIDS?

Hypothesis 1:

H_0 : *“The students’ socio-economic and demographic indices do not affect their (i) knowledge of HIV/AIDS transmission; (ii) knowledge of protection against HIV/AIDS infection”.*

5.12.1 Chi-square tests on knowledge of HIV/AIDS transmission

Considering Chi-square analysis (from cross tabulation):

ALL: The asymptotic significances for gender, age, level of study, marital status, religion, where grown up and family’s household resources are >0.05 . The null hypothesis was

therefore accepted; that is, the variables listed here did not have any significant effect on respondents' knowledge of HIV/AIDS transmission over the entire population.

UNAD: The significance for all the variables is >0.05 , except for 'where grown up' ($\chi^2 = 21.462$, $df = 6$, $Sig. = 0.002$). Consequently the null hypothesis was rejected for '*How would you describe where you grew up as a young boy or girl?*' and accepted for all the other variables; that is, knowledge of HIV/AIDS transmission was affected by where the UNAD's respondents grew up but not affected by other variables.

UNIZULU: At $P < 0.05$, the null hypothesis is accepted for all variables except '*What is your age now?*' ($\chi^2 = 16.685$, $df = 8$, $Sig. = 0.034$) and '*What is your marital status?*' ($\chi^2 = 13.045$, $df = 6$, $Sig. = 0.042$). Thus age and marital status had significant effects on knowledge of transmission.

From these observations, it seems that age, marital status and where grown up had significant effects on knowledge of HIV transmission.

5.12.2 Chi-square tests on knowledge of protection against HIV/AIDS

The results from *Chi-square* analysis data is summarised below:

ALL: There are significant relationships between the variables and knowledge of protection against HIV/AIDS infection except in '*How old were you in your first year in University?*' ($\chi^2 = 23.739$, $df = 8$, $Sig. = 0.003$), in which case the null hypothesis was rejected for this sub-variable but accepted for all the other variables; that is, age on resumption in the first year

at university had significant effect on knowledge of protection against HIV/AIDS infection among all respondents.

UNAD: Here the null hypothesis is rejected in two variables '*How old were you in your first year in University?*' ($\chi^2 = 15.995$, $df = 8$, $Sig. = 0.042$) and '*Which of these best describe where you grew up as a young boy or girl?*' ($\chi^2 = 21.462$, $df = 6$, $Sig. = 0.002$) and accepted for all other variables. Thus in addition to age at first year of study, responses from UNAD also revealed that where grown up as a child had significant effect on knowledge of protection against infection.

UNIZULU: Like UNAD, the null hypothesis is rejected in the same set of variables, '*How old were you in your first year in University?*' ($\chi^2 = 22.408$, $df = 8$, $Sig. = 0.004$) and '*Which of these best describe where you grew up as a young boy or girl?*' ($\chi^2 = 37.691$, $df = 6$, $Sig. = 0.000$) and accepted for the other variables.

It could therefore be concluded that only two of the variables: '*How old were you in your first year in University?*' and '*Which of these best describe where you grew up as a young boy or girl?*' have any effect on the knowledge of protection against HIV/AIDS infection.

5.12.3 Analysis of variance on knowledge of HIV/AIDS transmission

One-way ANOVA and non-parametric K tests for several independent samples were done. While references were made to data from One-way ANOVA, only data for the non-parametric tests are presented in Tables 5.16 a.

ALL: Statistical significant relationships are observed for '*How old were you in your first year in University?*' ($F\text{-ratio} = 3.094$, $df = 2$, $Sig. = 0.046$) and '*How old are you now?*' ($F\text{-ratio} = 3.169$, $df = 2$, $Sig. = 0.042$) from One-way ANOVA (parametric) tests on relationships between the first 9 items in Section A and the categorised total scores for Section G, thus the null hypothesis is rejected in these two cases and accepted for the other relationships; that is, only these two variables would have any significant contribution to knowledge of HIV transmission in the whole respondents.

However, from the non-parametric data four variables, including the two variables above, have significant statistical relationships: '*How old are you in your first year in the University?*', '*How old are you now?*', '*What is your marital status?*', and '*How many children do you have now?*'. Thus it could be concluded that the null hypothesis is rejected in these four variables in the entire population and thus have significant effect on knowledge of HIV transmission.

UNAD: The significance is >0.05 in all variables, in both One-way ANOVA and non-parametric tests, leading to the acceptance of the null hypothesis for UNAD. This implies that all the variables considered in this analysis, curiously, did not have significant effect on the knowledge of transmission of HIV/AIDS among the respondents in this institution.

UNIZULU: It is only in '*How old are you now?*' ($F\text{-ratio} = 3.281$, $df = 2$, $Sig. 0.038$), from the One-way ANOVA, that significant relationship was observed, which reflects the rejection of the null hypothesis for this variable only. In all other variables significance was >0.05 leading to the acceptance of the null hypothesis. However, the same set that showed significant statistical relationship for the non-parametric tests in the entire population were

also significant in UNIZULU. Other variables had no statistical significance and therefore did not have effect on knowledge of transmission.

Thus it could be concluded that the null hypothesis was rejected in the four variables identified under ALL and UNIZULU but not for UNAD. The implication is that age, marital status, and number of children have significant effects on knowledge of HIV/AIDS transmission, but all other variables did not for UNIZULU's respondents while all variables tested did not have effects on the UNAD's respondents' knowledge on transmission.

5.12.4 Analysis of variance on knowledge of protection against HIV/AIDS infection

The data for non-parametric tests are presented in Table 5.16 b. From One-way ANOVA, statistically significant relationships were found between '*Which of these best describes where you grew up as a young boy or girl*' in ALL ($F\text{-ratio} = 3.474$, $df = 2$, $Sig. 0.031$), UNAD ($F\text{-ratio} = 6.614$, $df = 2$, $Sig. 0.001$), and UNIZULU ($F\text{-ratio} = 4.398$, $df = 2$, $Sig. 0.013$), and '*How old were you in your first year in University*' in ALL ($F\text{-ratio} = 3.160$, $df = 2$, $Sig. = 0.043$) but not in UNAD and UNIZULU and knowledge of protection against HIV/AIDS infection. The null hypothesis may therefore be rejected for each of these relationships and accepted for the other variables.

Corresponding analysis using the non-parametric tests reaffirm significant statistical relationships for '*How old were you in your first year in University*' in UNIZULU and ALL, '*How many children do you have?*' for UNIZUL and ALL, '*What is your religion?*' for UNAD and '*Which of these best describes where you grew up as a young boy or girl*' in ALL, UNAD and UNIZULU as well as an additional variable, '*How would you describe your family's household resources?*' for ALL.

Table 5.16 a: Results from ANOVA using non-parametric test on selected characteristics and knowledge of transmission Section G (Only those with significant effects are listed)

Independent variables		Knowledge of HIV/AIDS transmission		
		UNAD	UNIZULU	ALL
How old were you in your first year in University?	Chi-Square	.661	6.030	7.570
	df	2	2	2
	Asymp. Sig.	.719	.049	.023
How old are you now?	Chi-Square	.446	7.289	7.596
	df	2	2	2
	Asymp. Sig.	.800	.026	.022
What is your marital status?	Chi-Square	.888	7.159	7.000
	df	2	2	2
	Asymp. Sig.	.641	.028	.030
How many children do you have?	Chi-Square	.838	7.328	7.132
	df	2	2	2
	Asymp. Sig.	.658	.026	.028

Evidently age, family resources and the environment where respondents grew up as youths, number of children and family resources appear to have significant effects on the respondents' perception of prevention against HIV infection; other variables do not. Religion also does for UNAD only.

Non-parametric t-test was run for the equality of means of total scores for Sections G and H using the Mann-Whitney t-test. The results are tabulated in Table 5.17. With a significance of 0.000 in each case the null hypothesis is rejected, thus the mean scores from the two institutions are not equal.

Table 5.16 b: Results from ANOVA obtained from non-parametric tests on selected characteristics and knowledge of protection against HIV/AIDS infection (Section H)

Independent variables		Knowledge of protection against HIV/AIDS		
		UNAD	UNIZULU	ALL
How old were you in your first year in University?	Chi-Square df Asymp. Sig.	2.755 2 .252	6.265 2 .044	9.944 2 .007
What is your marital status?	Chi-Square df Asymp. Sig.	2.363 2 .307	2.372 2 .305	3.692 2 .158
How many children do you have?	Chi-Square df Asymp. Sig.	2.174 2 .337	8.163 2 .017	9.727 2 .008
What is your religion?	Chi-Square df Asymp. Sig.	7.725 2 .021	.180 2 .914	3.008 2 .222
Which of these best describes where you grew up as a young boy or girl?	Chi-Square df Asymp. Sig.	11.394 2 .003	6.096 2 .047	7.327 2 .026
How would you describe your family's household resources?	Chi-Square df Asymp. Sig.	4.908 2 .086	.986 2 .611	5.974 2 .050

Table 5.17: Mann-Whitney t-test for equality of means (Total scores)

	Institution	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
GTOTAL	UNIZULU	856	783.54	670710.50	213109.500	395819.500	-5.725	.000
	UNAD	604	655.33	395819.50				
	Total	1460						
HTOTAL	UNIZULU	856	767.99	657401.00	226419.000	409129.000	-4.047	.000
	UNAD	604	677.37	409129.00				
	Total	1460						

5.13 Knowledge of preventive measures

Research question 1.7.2

How much do the students know about preventive measures that are available?

Hypothesis 2

H_0 : The students do not know much about available preventive strategies

Cross tabulation of selected items under demographic data (Section A) against Sections H and I (categorised) was carried out to establish which factors contribute to these perceptions. The summary of mean rankings of perception of preventive strategies is in Table 5.18.

5.13.1 The relationship between demography and perception of preventive strategies

It is important to explore how the socio-demographic indices of the respondents in both institutions influence their perception of preventive strategies. To achieve this, each item in Section A was cross tabulated against total score. One-way ANOVA was also carried out on each item in Section A against categorised scores of Section I. The data generated from these analyses are tabulated in Tables 5.19 a-c and 5.20.

Table 5.18: Summary of scores from Sections H and I

Section	Institution	N	Min. score	Max. score	Mean	Standard deviation
Knowledge of protection against HIV/AIDS infection (Section H)	UNAD	604	0.00	100	78.6821	11.28766
	UNIZULU	856	0.00	100	79.4112	16.28336
	ALL	1460	0.00	100	79.1096	14.42806
Perception of preventive strategies (Section I)	UNAD	604	0.00	105.00	61.1871	9.55579
	UNIZULU	856	0.00	75.00	61.6495	13.17968
	ALL	1460	0.00	105.00	61.4582	11.81461
Valid N for ALL (list wise)		1460				

ALL: Statistically significant relationships are observed for only '*Age at first year in university*' and '*Marital status*' on perception of preventive strategies.

UNAD: Only *'Age at first year in university'* gave a statistically significant relationship. *Religion* probably does at significance of 0.051.

UNIZULU: Statistically significant relationship is observed for *'Marital status'* and *'Which of these best describes where you grew up as a young boy or girl'*.

In all other variables the null hypothesis is rejected and accepted for age, marital status and where the respondents grew up. Consequently only these three sub-variables have significant contributions to the perception of respondents of preventive strategies against HIV/AIDS.

From the data generated from One-way ANOVA, while UNAD gave two statistically significant relations between *'What is your religion'* ($F\text{-ratio} = 3.719, df = 3, Sig. = 0.011$) and *'How would you describe your family's household resources?'* ($F\text{-ratio} = 3.445, df = 3, Sig. = 0.017$), and perception of preventive strategies, neither UNIZULU nor ALL produced any statistically significant relations. Consequently none of the factors appears to contribute to the overall perceptions of preventive strategies against HIV/AIDS except the two above for UNAD.

Corresponding non-parametric ANOVA tests, employing Kruskal-Wallis test, yielded the data presented in Table 5.20. Two variables *'What is your religion?'* and *'How would you describe your family's household resources?'*, identified as significant in One-way ANOVA are the same variables that were significant from the non-parametric test for UNAD.

Table 5.19 a: Cross tabulation of selected variable on perception of protective strategies (ALL)

Variable	Perception of protective strategies against HIV infection					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
Age at first year in university				16.351 ^a	8	.038
15-18 years	11	18	281			
19-21 years	9	55	529			
22-24 years	9	26	282			
25-30 years	0	15	154			
Older than 30	1	11	59			
Marital				18.172 ^a	6	.006
Single	30	109	1208			
Married	0	13	91			
Divorced	0	3	3			
Widowed	0	0	3			

Table 5.19 b: Cross tabulation of selected variable on perception of protective strategies (UNAD)

Variable	Perception of protective strategies against HIV infection					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
Age at first year in university				16.168 ^a	8	.040
15-18 years	2	8	136			
19-21 years	1	29	265			
22-24 years	2	11	129			
25-30 years	0	3	17			
Older than 30	0	1	0			
Religion				12.514 ^a	6	.051
Christianity	3	36	453			
Islam	2	14	79			
Traditional	0	1	14			
Others	0	1	1			

For UNIZULU three new variables are statistically significant: *'How old were you in your first year in University?'*, *'How many children do you have?'* and *'Which of these best describes where you grew up as a young boy or girl?'* and four new ones for ALL: *'How old are you now?'*, *'What is your marital status?'*, *'How many children do you have?'* and *'How would you describe your family's household resources?'*. In each of these variables the null

hypothesis is rejected. Thus all the above variables would have effects on perception of preventive strategies against HIV/AIDS infection.

Table 5.19 c: Cross tabulation of selected variable on perception of protective strategies (UNIZULU)

Variable	Perception of protective strategies against HIV infection					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
Where grown up				13.304 ^a	6	.038
Village/Rural area	13	56	557			
Town/semi urban area	9	12	170			
Big town	3	3	20			
Capital city	0	2	11			
Marital				19.541a	6	.003
Single	25	64	696			
Married	0	6	58			
Divorced	0	3	2			
Widowed	0	0	2			

It can therefore be concluded that the following variables did not have effect on perception of preventive strategies against infection: gender, level of studies, and amount of money available for upkeep.

Table 5.20: Kruskal-Wallis Test (ANOVA non-parametric test) for Section I*

Independent variables		Perception of preventive strategies against HIV/AIDS infection		
		UNAD	UNIZULU	ALL
How old were you in your first year in University?	Chi-Square df Asymp. Sig.	1.604 2 .448	7.192 2 .027	5.934 2 .051
How old are you now?	Chi-Square df Asymp. Sig.	2.520 2 .284	3.643 2 .162	6.047 2 .049
What is your marital status?	Chi-Square df Asymp. Sig.	3.980 2 .137	4.018 2 .134	7.356 2 .025
How many children do you have?	Chi-Square df Asymp. Sig.	3.901 2 .142	15.731 2 .000	13.219 2 .001
What is your religion?	Chi-Square df Asymp. Sig.	7.019 2 .030	2.226 2 .329	1.086 2 .581
Which of these best describes where you grew up as a young boy or girl?	Chi-Square df Asymp. Sig.	3.838 2 .147	6.421 2 .040	1.886 2 .389
How would you describe your family's household resources?	Chi-Square df Asymp. Sig.	9.643 2 .008	.414 2 .813	6.702 2 .035

*The corresponding data for Section H is in Table 5.14 b

T-test for equality of means for the total scores and for each item in Sections H and I was conducted using non-parametric tests and the results are given in Table 5.21 a-c.

At $P < 0.05$, the hypothesis for the equality of means is rejected and alternative hypothesis accepted; thus the means are statistically different for the total scores of both sections.

Table 5.21 a: Mann-Whitney Test for means of total scores in Sections H and I

		Ranks			Non-parametric t-test			
Institution		N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Knowledge of protection against infection	UNIZULU UNAD Total	856 604 1460	767.99 677.37	657401.00 409129.00	226419.000	409129.000	-4.047	.000
Perception of preventive strategies	UNIZULU UNAD Total	856 604 1460	772.00 671.68	660836.00 405694.00	222984.000	405694.000	-4.483	.000

Examination of Tables 5.21 b and c reveals that the null hypothesis is rejected for all the items except for *'By knowing the HIV status of partners before marriage'*, *'By keeping the cultural value of remaining a virgin until marriage'*, *'By not engaging in sex-for-money trade under any circumstance'*, and *'By avoiding friends who can influence you into undertaking risky sex'* (in Section H) and *'Undertaking HIV test before marriage'* and *'Avoid sharing injection needles/blades'* for Section I. Thus for these variables, where the null hypothesis is rejected, the means of the ratings from the institutions are statistically different.

These five variables reflect positively on what the respondents knew about preventive strategies but might enjoy expression differently in each institution.

Table 5.21 b: Mann-Whitney Test for means of item scores in Section H

Institution	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
By knowing the HIV status of partners before marriage	UNIZULU UNAD Total	856 604 1460	734.93 724.22 729.575	629103.50 437426.50 1066530.00	254716.500 437426.500 437426.500	-.537	.591
By keeping the cultural value of remaining a virgin until marriage	UNIZULU UNAD Total	856 604 1460	745.49 709.26 727.375	638137.00 428393.00 1066530.00	245683.000 428393.000 428393.000	-1.794	.073
By not engaging in sex-for-money trade under any circumstance	UNIZULU UNAD Total	856 604 1460	737.58 720.47 729.025	631365.00 435165.00 1066530.00	252455.000 435165.000 435165.000	-.836	.403
By avoiding friends who can influence you into undertaking risky sex	UNIZULU UNAD Total	856 604 1460	735.12 723.95 729.535	629264.50 437265.50 1066530.00	254555.500 437265.500 437265.500	-.554	.580

Table 5.21 c: Mann-Whitney Test for means of item scores in Section I

Institution	Ranks			Non-parametric t-test			
	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Undertaking HIV test before marriage	UNIZULU UNAD Total	856 604 1460	739.82 717.29 728.555	633284.00 433246.00 1066530.00	250536.000 433246.000 433246.000	-1.157	.247
Avoid sharing injection needles/blades	UNIZULU UNAD Total	856 604 1460	734.58 724.72 729.65	628799.00 437731.00 1066530.00	255021.000 437731.000 437731.000	-.547	.584

5.14 Sexual activities of students

Research question 1.7.3

How far do students' sexual activities reflect in their perception of prevention against HIV/AIDS infection?

Research Hypothesis 3

H_0 : *The students' sexual activities do not reflect in their perception of preventive strategies against HIV/AIDS.*

The sexual activities of the respondents are tabulated in Table 5.9 (Appendix C). The information provided here would be helpful in relating the respondents' sexual activities to their perceptions of preventive strategies (Section I). Research question 1.7.3 will be addressed. Thus simple means for Section I, cross tabulation and One-way ANOVA of each variable in Section B (sexual activities) with Section I were computed and analysed.

Examination of Tables 5.22 a-c reveals a number of statistically significant relationships between the variables on sexual activities and perception of preventive strategies.

These include '*When did you have sex for the first time?*', '*How many sexual partners since first experience?*', '*What is your sexual orientation?*', '*Do you know the HIV status of your partner(s)?*', '*When do you best enjoy having sex with your partner(s)?*' and '*Who of the following would you have sex with for money or a favour?*' for ALL.

Only three variables have significant relationships for UNAD, '*What is your sexual orientation?*', '*When do you best enjoy having sex with your partner(s)?*' and '*Who of the following would you have sex with for money or a favour?*' and four for UNIZULU, '*How many sexual partners since first experience?*' '*What is your sexual orientation?*', '*When do you best enjoy having sex with your partner(s)?*', and '*Who of the following would you have sex with for money or a favour?*'.

Table 5.22 a: Cross tabulation of sexual activities on perception of preventive strategies (UNAD)

Variable	Perceptions of preventive strategies against HIV infection					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
What is your sexual orientation?				18.446	6	.005
Heterosexual	3	47	500			
Homosexual	0	2	3			
Bisexual	1	1	14			
Celibate	1	1	13			
Did you use condom during your last sexual intercourse				9.249	4	.055
No response	2	5	46			
Yes	2	25	294			
No	0	19	169			
When do you best enjoy having sex with your partner(s)?				16.164	8	.040
No response	2	2	55			
When I am relaxed	2	30	356			
After an all-night party	0	6	32			
After a good alcoholic	0	10	60			
After a shot of drug	0	0	14			
Who of the following would you have sex with for money or a favour?				29.900	14	.008
No response	0	0	12			
A business man	0	4	11			
A lecturer	1	1	16			
A senator/Minister/Commissioner	0	2	42			
A banker	0	0	21			
A brilliant course mate	0	5	45			
All of the above	0	11	40			
None of the above	4	27	357			

The null hypothesis is rejected in all the variables listed above and they therefore have statistical effects on perception of preventive strategies, leaving four variables that could be considered not to have effect on the entire respondents, *'Do you discuss HIV with your partner(s) before having sex?'*, *'Do you know your own HIV status?'*, *'How often did you use condom in the last three months?'* and *'Did you use condom during your last sexual intercourse?'*. A reference to Table 5.9 (Appendix C) would confirm that these four variables constitute areas where respondents recorded higher percentages of not keeping to available preventive strategies.

Table 5.22 b: Cross tabulation of sexual activities on perception of preventive strategies (UNIZULU)

Variable	Perceptions of preventive strategies against HIV infection					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
How many sexual partners since first experience				22.182	10	.014
No response	0	0	4			
None	11	12	153			
1.00	3	26	255			
2.00	6	15	101			
3.00	0	2	70			
More than 3	4	18	173			
What is your sexual orientation?				34.582	8	.000
Heterosexual	2	0	3			
Homosexual	19	59	646			
Bisexual	0	2	11			
Celibate	1	4	9			
	3	4	62			
When do you best enjoy having sex with your partner(s)?				26.467	8	.001
No response	1	1	44			
When I am relaxed	12	48	591			
After an all-night party	1	8	32			
After a good alcoholic	1	5	22			
After a shot of drug	0	4	6			
Who of the following would you have sex with for money or a favour?				33.039	14	.003
No response	0	0	4			
A business man	0	3	30			
A lecturer	0	7	15			
A senator/Minister/Commissioner	0	1	9			
A banker	0	1	5			
A brilliant course mate	2	3	38			
All of the above	0	8	27			
None of the above	19	45	617			

Table 5.22 c: Cross tabulation of sexual activities on perception of preventive strategies (ALL)

Variable	Perceptions of preventive strategies against HIV infection					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
When did you have sex for the first time?				19.811	10	.031
No response	0	2	16			
Elementary school	2	14	136			
High School	9	61	556			
First year in University	4	16	195			
After year in University	0	13	133			
Never had sex	14	18	257			
How many sexual partners since first experience				18.925	10	.041
No response	0	1	13			
None	14	22	263			
1.00	5	40	424			
2.00	6	22	199			
3.00	0	10	124			
More than 3	4	30	273			
What is your sexual orientation?				49.520	8	.000
Heterosexual	2	0	3			
Homosexual	22	106	1146			
Bisexual	0	4	14			
Celibate	2	5	23			
	4	5	75			
Do you know the HIV status of your partner(s)?				13.413	6	.037
No response	2	7	131			
Yes for all of them	6	33	370			
Yes for some of them	2	15	212			
No for all of them	12	45	332			
When do you best enjoy having sex with your partner(s)?				23.988	8	.002
No response	3	3	99			
When I am relaxed	14	78	947			
After an all-night party	1	14	64			
After a good alcoholic	1	15	82			
After a shot of drug	0	4	20			
Who of the following would you have sex with for money or a favour?				42.323	14	.000
No response	0	0	16			
A business man	0	7	41			
A lecturer	1	8	31			
A senator/Minister/Commissioner	0	3	51			
A banker	0	1	26			
A brilliant course mate	2	8	83			
All of the above	0	19	67			
None of the above	23	72	974			

5.15 Sexual activities and perception of risky sexual behaviours

Research question 1.7.4

To what extent do the students' sexual activities congruent with their perception of risky sexual behaviours?

Research hypothesis 4

H_0 : *There is no relationship between the students' sexual activities and their perception of risky sexual behaviour.*

5.15.1 *Perception of risky sexual behaviour*

To address these problems we carried out cross tabulations of each item on sexual activities against the risk assessment of respondents (Section F). The results are presented in Tables 23 a-c.

Significant statistical relationships are observed for UNAD in the following: *'When did you have sex for the first time?', 'How many sexual partners since first experience', 'Do you know your own HIV status?', 'How often did you use condom in the last three months?', 'When do you best enjoy having sex with your partner(s)?', 'Who of the following would you have sex with for money or a favour?'*. Five of these variables exhibit statistical significance, excluding *'Do you know your own HIV status?'* for both UNIZULU and ALL. Consequently the null hypothesis is rejected and the six variables could be considered to have significant relationship with perception of risky sexual behaviour.

Results from One-way ANOVA gave essentially the same set of variables as *Chi-square* tests except that UNIZULU has an additional variable that exhibited statistically significant relationship: *'Do you discuss HIV with your partners before having sex?'* ($F\text{-ratio} = 3.455$, $df = 2$, $Sig. = 0.032$). This result reinforces the conclusions reached with cross tabulation data.

Table 23 a: Cross tabulation of sexual activities (Section B) against risk assessment of students (Section F) **UNAD**

Variable	Risk assessment of students					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
When did you have sex for the first time?				38.669	10	.000
No response	1	3	3			
Elementary school	0	50	36			
High School	1	75	104			
First year in University	1	52	65			
After year in University	1	31	49			
Never had sex	3	31	94			
How many sexual partners since first experience				38.918	10	.000
No response	1	5	4			
None	3	30	90			
1.00	1	65	119			
2.00	0	52	53			
3.00	1	30	31			
More than 3	1	60	51			
Do you know your own HIV status				9.716	4	.045
No response	1	5	3			
Yes	4	143	230			
No	3	91	118			
How often did you use condom in the last three months?				19.551	6	.003
No response	1	11	19			
Always	2	89	124			
Sometimes	0	88	86			
Not at all	2	44	107			
When do you best enjoy having sex with your partner(s)?				28.064	8	.000
No response	1	20	38			
When I am relaxed	2	141	245			
After an all-night party	1	23	14			
After a good alcoholic	0	42	28			
After a shot of drug	0	9	5			
Who of the following would you have sex with for money or a favour?				64.793	14	.000
No response	2	3	7			
A business man	0	12	3			
A lecturer	0	10	8			
A senator/Minister/Commissioner	0	24	20			
A banker	0	11	10			
A brilliant course mate	0	19	31			
All of the above	0	33	18			
None of the above	5	128	255			

Table 5.23 b: Cross tabulation of sexual activities (Section B) against risk assessment of students (Section F) **UNIZULU**

Variable	Risk assessment of students					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
When did you have sex for the first time?				32.310	10	.000
No response	0	2	9			
Elementary school	2	33	31			
High School	6	141	299			
First year in University	3	22	72			
After year in University	0	8	57			
Never had sex	1	46	114			
How many sexual partners since first experience				21.827	10	.016
No response	0	1	3			
None	1	43	132			
1.00	7	76	201			
2.00	2	31	89			
3.00	1	21	50			
More than 3	2	82	111			
How often did you use condom in the last three months?				15.228	6	.019
No response	0	10	27			
Always	5	85	252			
Sometimes	3	87	136			
Not at all	5	50	134			
When do you best enjoy having sex with your partner(s)?				35.806	8	.000
No response	0	13	33			
When I am relaxed	10	178	463			
After an all-night party	1	19	21			
After a good alcoholic	1	19	8			
After a shot of drug	1	5	4			
Who of the following would you have sex with for money or a favour?				62.935	14	.000
No response	0	0	4			
A business man	2	5	26			
A lecturer	0	13	9			
A senator/Minister/Commissioner	1	3	6			
A banker	0	2	4			
A brilliant course mate	0	22	21			
All of the above	1	22	12			
None of the above	5	181	495			

Table 5.23 c: Cross tabulation of sexual activities (Section B) against risk assessment of students (Section F) **ALL**

Variable	Risk assessment of students					
	Count			χ^2	df	Asymp. Sig (2-sided)
	Low	Medium	High			
When did you have sex for the first time?				43.420	10	.000
No response	1	5	12			
Elementary school	2	83	67			
High School	7	216	403			
First year in University	4	74	137			
After year in University	1	39	106			
Never had sex	4	77	208			
How many sexual partners since first experience				42.448	10	.000
No response	1	6	7			
None	4	73	222			
1.00	8	141	320			
2.00	2	83	142			
3.00	2	51	81			
More than 3	3	142	162			
How often did you use condom in the last three months?				27.065	6	.000
No response	1	21	46			
Always	7	174	376			
Sometimes	3	175	222			
Not at all	7	94	241			
When do you best enjoy having sex with your partner(s)?				62.641	8	.000
No response	1	33	71			
When I am relaxed	12	319	708			
After an all-night party	2	42	35			
After a good alcoholic	1	61	36			
After a shot of drug	1	14	9			
Who of the following would you have sex with for money or a favour?				95.766	14	.000
No response	2	3	11			
A business man	2	17	29			
A lecturer	0	23	17			
A senator/Minister/Commissioner	1	27	26			
A banker	0	13	14			
A brilliant course mate	0	41	52			
All of the above	1	55	30			
None of the above	10	309	750			

5.16 Factors that drive sexual activities in the two universities

Research question 1.7.5

Which factors drive the sexual activities of students in the two institutions?

Research hypothesis 5

H_0 : *The factors that drive sexual activities of students in the two universities are not different.*

5.16.1 Factors that drive sexual lifestyles

Some of the factors has been were covered under Aim 1.8.5. To identify the factors that drive sexual activities on the respective campuses the socio-demographic variables were cross tabulated against the sexual activities variables and layered with the University variable. Those variables that have significant relationship ($P < 0.05$) are taken as factors that have effect on the corresponding risky sexual behaviour in the sexual activities. The data is presented in Table 5.24 a-b.

For UNAD gender is a major factor for all risky behaviours except in *'Do you know the HIV status of your partners?', 'Did you use condom in the last three months?'* and *'Did you use condom during your last sexual intercourse?'*. Other variables identified for UNAD are *'How old are you now?'* (for *sex debut*), level of study (for *sex debut* and *sex for money/favour*), marital status (for *condom use in the past three months*, *when do you best enjoy sex?* and *sex for money or favour*), where grown up (for *sexual debut*, *'Do you know the HIV status of your partners?'*, and *'Do you know your own HIV status?'*), number of children (*'How many sexual partners since sexual debut?'*, *condom use in the past three months*, and *when do you best enjoy sex?*), family resources (for *do you know the HIV status of your partners?* and *do you know your own HIV status?*), how old were you in your first year (*condom use in the past three years*) and religion (*sex for money/favour*) and stipend (*how many sexual partners and do you know your own HIV status?*)

Table 5.24 a: χ^2 2-tailed significances from cross tabulation of Section A against Section B for UNAD*

VARIABLES	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
A0	.000	.000	.643	.046	.001	.408	.381	.133	.009	.038
A1	.185	.790	.000	.066	.511	.644	.003	.121	.692	.464
A2	.020	.161	.000	.585	.182	.421	.301	.946	.233	.854
A3	.001	.509	.095	.574	.431	.410	.515	.422	.193	.042
A4	.379	.630	.902	.100	.640	.393	.001	.202	.009	.013
A5	.138	.005	.296	.367	.819	.340	.001	.640	.026	.239
A6	.489	.760	.000	.093	.602	.883	.515	.230	.120	.000
A7	.023	.146	.866	.230	.027	.005	.300	.714	.816	.790
A8	.886	.142	.028	.742	.033	.000	.528	.945	.954	.240
A9	.389	.005	.094	.359	.341	.000	.535	.332	.717	.083

Table 5.24 b: χ^2 2-tailed significances from cross tabulation of Section A against Section B for UNIZULU

VARIABLES	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
A0	.000	.000	.284	.039	.000	.000	.001	.004	.000	.000
A1	.000	.000	.137	.000	.227	.031	.001	.000	.000	.172
A2	.000	.000	.040	.000	.000	.000	.000	.000	.000	.023
A3	.000	.418	.095	.000	.023	.001	.001	.000	.004	.072
A4	.003	.001	.000	.651	.042	.077	.000	.003	.022	.374
A5	.000	.000	.000	.000	.000	.018	.000	.000	.000	.419
A6	.080	.191	.013	.779	.025	.841	.622	.909	.861	.810
A7	.104	.405	.001	.391	.009	.908	.075	.167	.024	.076
A8	.270	.095	.406	.832	.000	.119	.324	.872	.834	.088
A9	.016	.411	.004	.483	.363	.967	.743	.619	.089	.818

*See questionnaire (Appendix A) for keys to variable labels.

For UNIZULU the factors are more complex in the sense that gender, age at first year, age now, are factors for all the risk factors except *'Do you know the HIV status of your partners and sex for money* where age now is not a factor. Level of study is a factor for all risks except *number of sexual partners* and *sex for money/favour*. Marital status is a factor for *sex debut*, *number of sexual partners*, *knowledge of HIV status of partners*, *condom use in the past three months*, *condom use in the last sex*, and *when sex is best enjoyed*. Number of children is a factor for all variables of risk except *sex for money/favour*. Where grown up is a factor for *knowledge of HIV status of partners* and *when sex is best enjoyed?* Family

resources and stipend are factors for *knowledge of HIV status of partners* and *sex debut* respectively.

The risk factors of UNAD appear to be driven by one predominant factor, gender, which is a factor in six risky activities. Marital status, number of children and where grown up contribute to three factors each while level of study, family resources and stipend contribute to two each. The impact of religion and age appear minima at one factor each. UNIZULU's risky sexual activities appear to be driven by a more complex web of factors and at greater impact than UNAD. Gender and age now drive nine factors each, number of children has effect on eight, age at first year and level of study drive six, where grown up drives two and religion, family resources and stipend only have effects on one factor each. The UNIZULU scenario reveals interplay between pre-entry and post-entry factors routed in active sexual activities prior to entering university (manifested in adolescent sexuality and high single parenthood) and an environment far removed from centres of relaxation on campus, which leaves sex as the most practical alternative. For UNAD the undercover prostitution that has been widely reported among Nigerian undergraduates are driven by gender, either as women that offer their bodies for money/favour or by male pimps that recruit them for the trade.

Summary

This Chapter focused on presentation of results and the analyses of data extracted from both descriptive and inferential statistical analyses. Evidence was provided for good internal reliability of instrument using pre-test/post-test analysis as well as on the entire

study population. The results obtained from the analyses are fully discussed and the results of hypothesis testing presented.

Chapter 6 will cover the main findings of the study and suggestions for using the findings to formulate prevention strategies to suit the university system, conclusion and suggestions for further studies.

CHAPTER 6

MAIN FINDINGS, POSSIBLE APPLICATIONS FOR UNIVERSITY SYSTEM, CONCLUSIONS, LIMITATIONS, AND SUGGESTIONS FOR FURTHER WORK

6.1 Introduction

Both Universities of Ado Ekiti (UNAD) and Zululand (UNIZULU) share certain things in common such as their locations in relatively rural areas and the predominance of black African students. However, there are some differences in their locations that need to be highlighted. UNAD is located relatively close to Ekiti State capital (about 18 km). On the other hand UNIZULU is located some 250 km from a provincial capital, 170 km from an outstanding sea port and commercial nerve centre of Durban and, like UNAD, about 18 km from the highly industrialised Richards Bay.

Secondly, because of a difference in educational system of both countries, only one University in Nigeria defines a minimum age for admission to it as 16 years; otherwise it is not unusual to find a 14-15-year olds being admitted to some universities. The official age to start school is 6 years but private schools do admit children at 5 years after a pre-school stint of two years. Nigeria operates a 6:3:3:4 system of education whereby a child spends six years in the Primary (Elementary) School, three years in the Junior High School, and three years in the Senior High School followed by four years in the University leading to the award of honours degree. This gives a total of 12 years of education before proceeding to the University. On the other hand South Africa operates a strict age limit to start elementary school (7 years) followed by 12 years of elementary and high school education before proceeding to the University. This imposes a minimum age of about 18 for a South African

child to enter university as against 15-16 years for the Nigerian child. In this chapter the highlights of the findings of this study will be presented.

6.2 Socio-demographic data

The disparity in education system highlighted above played out in the average age of the respondents, which was 20.1 years for UNAD and 22.3 years for UNIZULU. Another disparity had to do with the male-to-female ratio in the two institutions: UNAD (48.7% Male, 51.3% Female); UNIZULU (38.1% Male, 61.9% Female). With the established consistent findings that females tend to know better and adopt more positive attitude to sexual relationships, it also played out that UNIZULU posted better average scores in most fields covered in this study.

An interesting finding was the discovery that a small but higher percentage of UNAD's respondents were already sexually active in the elementary school. However, over 52.7% respondents from UNIZULU were already sexually active in the High School (against 30.0% of UNAD's) while substantial number from UNAD (33.2%) became active only when they entered the university. It is observed that while 41.5% of UNIZULU students already had one or more than two children only 8.3% of UNAD's were parents. Substantial numbers of UNIZULU respondents were single parents, which could be interpreted as a measure of unprotected risky sexual activities among UNIZULU students.

The socio-economic factors played out clearly and put the institutions at the opposite end of the scale. This reflected in their socio-economic indicators. Majority of UNAD's respondents came from big towns and capital cities, while those from of UNIZULU were from rural areas.

About half of UNIZULU respondents came from under resourced families as against about a third of UNAD's that claimed to come from middle/high class families. Most parents of respondents from UNAD gainfully employed whereas close to half of parents of UNIZULU students are either on low income or no income at all.

Certain variables, however, appear to be common to both institutions, irrespective of their geographical and social differences. Many of them claimed to be engaged in multiple concurrent sexual relationships but at much higher proportion at UNAD. Many of them did not discuss HIV with partners before while over 65% did not know the HIV status of their partners and about a third of their own status. Condom use was erratic and inconsistent, with over 50% at risk. Consequently, inconsistent condom use is also a common phenomenon.

Furthermore it was observed a little over 20 % of UNAD respondents and a tenth of UNIZULU's would have sex after a party or under the influence of alcohol or drugs. The above picture, though not totally new, is frightening coming from the universities.

6.3 Institutional support

Institutional support from UNIZULU was much better than at UNAD even though level of awareness at UNAD was good. The overall mean score on institutional support for UNAD was classified medium whereas it was high for UNIZULU. Inadequate publicity of the HIV/AIDS policy of both universities was evident. For UNAD, testing and counselling facilities, involvement of student representative council in awareness programme and accessibility to male and female condoms were critical. For UNIZULU involvement of NGOs

and religious groups in HIV/AIDS awareness programmes, and availability of female condoms need further attention.

6.4 Awareness, knowledge and prevention

The ratings for awareness, knowledge, risk assessment and perception of preventive strategies are high for both institutions but relatively higher at UNIZULU. However, the level of risky activities demonstrated by students from both institutions did not appear to be congruent with the high scores from these assessments. The ratings of different sections appear to relate to age, gender, level of study, discipline, where brought up, family resources, stipend and to some extent religion.

6.5 Research Questions and hypothesis testing

6.5.1 Hypothesis 1

H_0 : *“The students’ socio-economic and demographic indices do not affect their (i) knowledge of HIV/AIDS transmission; (ii) knowledge of protection against HIV/AIDS infection”.*

Combination of variables that have significant relationships on knowledge (transmission and protection) for both campuses revealed that the following variables are important: *‘Which of these best describe where you grew up as a young boy or girl?’*, *‘What is your age now?’*, *‘What is your marital status?’*, *‘How old were you in your first year in university?’* and *‘Which of these best describe where you grew up as a young boy or girl?’*

Other variables that have effect on one campus or the other were: *‘How many children do you have now?’*, *‘What is your religion?’* and *‘How would you describe your family household resources?’* These variables reflect that most of the respondents have acquired some high

level of knowledge about HIV/AIDS transmission and protection before gaining admission to university.

6.5.2 Research Hypothesis 2

H₀: The students do not know much about available preventive strategies

The following core preventive measures were identified by the respondents: UNAD's top three are '*Avoid sharing injection needles/blades*', '*Undertaking HIV test before marriage*' and '*Avoid any social gathering which might lead to forced sex*' while those of UNIZULU are '*Using condom correctly and always*', '*Abstaining from/avoiding sex altogether*' and '*Avoid sharing injection needles/blades*'. The lowest rated measures by both institutions are: '*Circumcised men are less at risk of HIV infection*', '*Avoid the company of heavy alcohol drinkers*' and '*Avoid a company of any known drug user*'. Other variables found to have significant effects on knowledge of preventive strategies are: '*Age at first year in university*' and '*What is your marital status?*' '*Which of these best describe where you grew up as a young boy or girl?*', '*What is your religion?*' and '*How would you describe your household resources?*' for UNAD and '*How old were you in your first year in university?*', '*How many children do you have?*' and '*Which of these describe where you grew up as a young boy or girl?*' for UNIZULU.

Most of these factors also evolved before respondents gained admission to the university.

6.5.3 Research Hypothesis 3

H₀: The students' sexual activities do not reflect in their perception of preventive strategies against HIV/AIDS.

Statistically significant relationships were observed between the following variables and perception of protective strategies for ALL, UNAD and UNIZULU: *'When did you have sex for the first time?'*, *'How many sexual partners did you have since first experience?'*, *'What is your sexual orientation?'*, *'Do you know the HIV status of your partner(s)?'*, *'When do you best enjoy having sex with your partner(s)?'*, *'Who of the following would you have sex with for money or favour?'* Thus their sexual activities did not reflect the high mean scores both institutions recorded on perception of preventive strategies. It is significant that the variables identified here are variables that evolved while in the university, which constitute measures of the respondents' sexual lifestyles while on campus.

6.5.4 Research hypothesis 4

H_0 : *There is no relationship between the students' sexual activities and their perception of risky sexual behaviour.*

Significant effects are observed for the following variables: *'When did you have sex for the first time?'*, *'How many sexual partners since first experience?'*, *'Do you know your own HIV status? How often did you use condoms in the past three months?'*, *'When do you best enjoy having sex with your partner?'*, *'Who of the following would you have sex with for money or favour?'*, *'And do you know your HIV status?'* In all these variable substantial percentage of respondents owned up to contravening them, hence there is no relationship between their sexual lifestyles and their perception of risky sexual behaviour, even though they knew what these risks were.

6.5.5 Hypothesis 5

The factors that drive sexual activities of students in the two universities are not different

While gender was found to be the main driver of risky sexual activities at UNAD, the core drivers at UNIZULU were more complex but most importantly gender, age, level of study, marital status and number of children.

6.6 Recommendations for formulation of prevention strategies for University system

The targets of intervention should focus on those risky activities that students are prompted to adopt by virtue of their being away from home and in many cases by peer pressure and those that would focus on lifestyle change to give up negative lifestyles that were cultivated prior to entering the university.

It is evident from the number of variables that enhanced knowledge of prevention and the socio-demographic data that many undergraduates already established their sexual lifestyles before coming to university, some as early as while in the elementary school. A sizeable percentage, particularly in UNAD, became sexually active while in the university. This study does not probe into how respondents cut their sexuality life but those that started in the university would have taken advantage of 'freedom to have many sexual partners' or yielded to the pressure that survival places on them and lured into 'undercover prostitution' by being engaged in 'sex for money or favour'. In essence there is the need to develop strategies by individual institutions to fit the circumstances of their environment and help students to adopt options that would not compromise their protection against infection.

Some of the risks that have been identified in this work include: Concurrent multiple sexual relationships; sex for money or favour (which could be as a result of insufficient money to

meet the needs of poor students, to make up for academic weakness, greed or through peer influence); intergenerational sexual relationship (through 'sugar daddy/mummy' syndrome); involvement in casual sex without protection; irregular and inconsistent use of condoms; difficulties to buy condoms (probably at UNAD, where free condoms are not distributed); many students did not know their HIV status (non-availability of facilities at UNAD or because undertaking tests is too expensive); many students did not bother to know the HIV status of partner(s); many students did not discuss HIV with partners, even casual ones, before engaging in sex; engagement in sex after a party and under the influence of alcohol or drugs; substantial number of respondents lost their virginity in the university not necessarily within a committed relationship but probably through exploitation and sex-for-money/favour activities, and the conviction of students that they are invulnerable to infection

6.6.1 Promotion of responsible sexual lifestyles on campuses

At policy and academic level

All African Universities must have, by now, put in place a functional HIV and AIDS policy, backed up by management and with adequate funding allocated to provide resources. This, in reality, is not the case, particularly in many Nigerian universities.

Not much research work has been done to establish the level of HIV prevalence in African universities, except a recent survey on South African universities (Dell, 2010), referred to earlier. The disconcerting aspect of this report was the revelation that up to 20.3 % of University service workers in KwaZulu-Natal, where UNIZULU is located, are HIV positive. This is much higher than national levels. Furthermore this study revealed that 'HIV

prevalence increased as students grew older', involvement in inter-generational relationship and prevalence of stigma to HIV. A similar trend was observed from this work that UNIZULU respondents appeared to become more risky in their sexual activities than the UNAD's who appeared less risky as their level of education increased.

A reference was made in Dell's report to a 'global push for evidence-based prevention' supported by UNAIDs and other agencies, code-named 'Know your epidemic'. The implication of this call is that each institution is expected to conduct focussed research on establishing the level of epidemic to put in place appropriate response ('Know your epidemic' and 'Know your response').

Each university should incorporate HIV and AIDS into their curriculum, where the science as well as the social impact would be adequately covered. UNIZULU's Biochemistry Department runs a fairly comprehensive module on HIV and AIDS and all Education students offer a core module on HIV and AIDS as well. There was also evidence that HIV/AIDS is accommodated in curricula at UNAD. Many Nigerian universities cover HIV and AIDS under the General Studies programme, compulsorily offered by all students. The Open University of Nigeria offers a comprehensive programme as well (Ambe-Uva, 2007).

At Management support level

- There is need for university managements to support research into HIV and AIDS and dissemination of results widely, including within the university community.

- There is need to provide resources for counselling, guidance and mentoring of students and staff on all issues pertaining to transmission and prevention of HIV infection and provide support to the infected and affected.
- In both research and support structures, staff and students should participate actively in the actualisation of the set targets.

Structural support

- Each University should have facilities for HIV testing and counselling and services provided free or at affordable costs and managed by professionally competent hands that may operate on regular scheduled visits if permanent engagement may be too expensive. This could be built into the medical services levy in the student's fees. This would avert the problem the students encounter in establishing their HIV status.
- Each University should put in place policies to control the use of alcohol and possession of drugs on campus. This will help in those universities that operate on-campus residences (like UNIZULU) but not UNAD that operate off-campus privately run residences. (Dell's report above surprisingly found that 'there was no link between habitual drinking and HIV prevalence'!)
- The reality on the ground is that most students (about 80 % of respondents in this study) are sexually active while in the university, it is important to address the problem of inaccessibility to condom by providing them for free (NGOs can help in this regard) or at subsidized costs in the health clinic or designated places (e.g. residences) on campus. Such places could be located off-campus for a university like UNAD.
- To help students to take appropriate decisions when confronted with risky circumstances it is important that the universities adopt a rather intellectual approach to guiding

students by adopting a combination of Health Belief Models that are available. It is important that students know the 'threats' they face, the 'benefits' of avoiding taking negative steps and develop 'self-efficacy' in implementing appropriate behaviour change (lifestyle change) as well as handle negotiations for safe sex which are necessary to remain safe. The University system should be able to set up templates that can provide 'cues to action' to constantly remind students what to do in certain circumstances of risk.

- Poverty comes out strong from this study and has implications for inter-generational sex, concurrent multiple sexual relationship and 'under cover prostitution'. The victims of poverty are mostly women. Institutions should set up a programme to identify such students and put a special programme in place to offer support. NGOs could be involved in seeking help for such students. This problem is minimised at UNIZULU because of the existence of the students' loan scheme but no such luxury is available in Nigeria. The problem of pimps facilitating prostitution in Nigeria is a major challenge that Nigerian universities should tackle decisively.

6.7 Conclusions

This study involved 1460 students drawn from Universities of Ado Ekiti (Nigeria) and Zululand (South Africa), covering two faculties and four academic departments. Even though the two institutions have a lot in common, being predominantly black universities and being located in relatively rural environments, their socio-demography is distinctly different. While the sexual risk levels are essentially comparable, the factors that promote such risks appear to be different in a number of ways. With over 70 % of the respondents being sexually active by the first year in university, and many of them, particularly at UNIZULU, already single parents the focus of intervention should be prevention of HIV infection

through promotion of safe sex rather than abstinence. The magnitude of sexual activities taking place in universities predominantly among students who live in residences (like UNIZULU) or with people outside the campus, those who have the means to pay the bill (like at UNAD), will continue to be a big problem to manage by the universities.

6.8 Limitations of the study

Although this study was carried out on large sample size (1510), the distribution was restricted to only two universities, two faculties (Education and Science) and four departments (Educational psychology & Special Education, Science Education, Biochemistry & Microbiology, and Chemistry). The two universities were selected because they are state/provincial universities, located away from big cities and which are usually not the first choice of institutions for many of the students admitted to study there. To extrapolate findings to the university systems in South Africa and Nigeria could be questionable without a follow-up similar studies in institutions located in larger urban cities and across the entire states or geopolitical zones of both countries and in some other selected African countries. However, the findings could constitute a baseline data for each African university to embark on focussed research that speaks to its unique environment.

6.9 Recommendations for further work

- There is an urgent need for institutions in Africa to embark on research work to establish the level of HIV infection in the Universities.
- Since between 44-54% of intakes to universities are already sexually active, it would be to the interest of universities to provide HIV intervention programmes to high schools within their immediate domain to enable learners acquire adequate skills to manage

their sex life while the focus for undergraduates should be on lifestyle changes, promotions of preventive strategies, particularly consistent use of condoms, reduction of concurrent multiple relationships, and 'secondary abstinence' (Tumwesigye, Ingham & Holmes, 2008).

- It is observed that concurrent multiple sexual relationships, sex-for-money/favour and inconsistent use of condoms are the three main areas of risk exposures identified from this work. Universities can conduct research work to establish the extent, the background and the reasons why intelligent and educated undergraduates should engage in such frivolities. This way the institutions would be able to provide psychological and counselling support to students rooted in findings of empirical research.
- Finally it may be interesting to do a comparative study on the sexual lifestyles of students who live in residences and those who live off campus to establish which promotes more risks and the factors that drive such risks. This could then facilitate a focussed intervention.

Summary

The main findings from both descriptive and inferential statistical analyses are presented in this chapter. Some recommendations are also put forth for using some of the findings to formulate HIV/AIDS policies for institutions. Suggestions are made for an integrated approach to promoting responsible sexual activities on university campuses where management, staff and students are involved.

REFERENCES

- Abiodun, M. O. & Balogun R. O. (2009). Sexual activity and contraceptive use among young female students in tertiary educational institutions in Ilorin, Nigeria. *Contraception*, 79: 146-149.
- Adedimeji, A. (2003). Perceptions of HIV/AIDS infection and condom use among undergraduates in a Nigerian university. Nigeria's contributions to Regional and Global Meetings on HIV/AIDS/STIs, 1986-2003. Lagos NIMR.
- Adefuye, A. S., Abiona, T. C., Balogun, J. A. & Lukobo-Durrell, M. (2009). HIV sexual behaviours and perception of risk among college students: implications for planning interventions. *BMC Public Health*, 9:281-293.
- Adetunji, J. (2000). Trends in under-5 mortality rates and the HIV/AIDS epidemic. *Bulletin of the World Health Organisation*, 78(10): 1200-1206.
- Adewole, D. & Lawoyin, T. (2004). Knowledge, attitude of HIV/AIDS and sexual risk behaviour among unmarried male youths of the University of Ibadan, Nigeria. *International Conference on AIDS*, 15: 11-16.
- Adimora, A. A., Schienbach, V. & Martinson, F, et al. (13 authors) (2001). Concurrent sexual partnerships and HIV prevalence in five urban communities of sub-Saharan Africa, *AIDS*, 15: 877-84.
- Adimora, A. A., Schoenbach, V. J., Martinson, F. E., Donaldson, K. H., Stancil, T. R. & Fullilove, R. E. (2003). Concurrent partnerships among rural African Americans with recently reported heterosexually transmitted HIV infection. *Journal of Acquired Immune Deficiency Syndrome*, 34(4): 423-429.
- African Development forum (2000). The African consensus and plan of action: leadership to overcome HIV/AIDS. (3-7 December, 2000, Addis Ababa, Ethiopia).
- Agbarakwe, E. (2007). Preventing HIV/AIDS among students of Tertiary Institutions in Nigeria. [http://hivaidslearninghouse.unesco.org/ev.php?ID=7781-1D2=Do discussion](http://hivaidslearninghouse.unesco.org/ev.php?ID=7781-1D2=Do+discussion) Accessed April 10, 2008.
- Aggleton, P., Rivers, K, Gibney L, Diclemente R. & S. Vermund (eds.) (1996). Behavioural Interventions for Adolescents in *Preventing HIV infection in Developing countries*, New York. Plenum Publications.
- Ahmad, Q. M. (2002). Sexual Behaviour changes for HIV: Key approaches. *JK – Practitioner*, 9(4): 219-222.
- Ahmed, S., Lutalo, T., Wawer, M., Serwadda, D., Sewankambo, N. K., Nalugoda, F., Makumbi, F., Wabwire-Mangen, F., Kiwanuka, N., Kigozi, G., Kiddugavu, M. & Gray, R. (2001). HIV incidence and sexually transmitted disease prevalence associated with condom use: a population study in Rakai, Uganda. *AIDS*, 15:2171-2179.
- AIDS infoNet (2010). Fact Sheet Number 153, www.aidsinfonet.org (Assessed September 11, 2010).
- Airhihenbuwa, C. O. (1995). *Health and culture: Beyond the western paradigm*. Thousand Oaks: Sage.
- Ajzen, I. and Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. New Jersey: Prentice_Hall, Inc.
- Ajzen, I. & Driver, B. L. (1991). Prediction of leisure participation from behavioural, normative, and control beliefs: an application of the theory of planned behaviour. *Leisure Science*, 13: 185-204.
- Akindele-Oscar, Y. (2009). Condom use and multiple sex among sexually active undergraduates in a Nigerian University. The African Symposium: An Online Journal of African Educational Research Network, 9(2): 29-34.
- Aluede, O., Imbonde, H. O., Maliki, A. E. & Alutu, A. N. G. (2005). Assessing Nigerian university students' knowledge about HIV/AIDS. *Journal of Social Sciences*, 11(3): 207 -213.

- Alutu, A. N. G. (2002). *Psychological dimension of people living with HIV/AIDS in Africa Benin-City Nigeria*: Mindex Publishing Company.
- American College Health Association (ACHA) (2005). National College Health Assessment reference group data report, Fall 2004. Baltimore American College Health Association (taken from Lewis, et al., 2007).
- Ambe-Uva, T. N., Combating HIV/AIDS epidemic in Nigeria: Responses from National Open University of Nigeria (NOUN), 2007, *International Review of Research in Open and Distance Learning*, 8 (3): 1-21.
- Anugworm, E. E. No date. Perceptions of AIDS among University students in Nigeria; implications for AIDS prevention programmes. <http://www.codesria.org/links/publications/aids/anugworm.pdf> accessed: 06 July 2005.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55: 469-80.
- Asekun-Olarinmoye, E. O. & Oladele, E. A. (2009). Condom use among undergraduates of Osun State, Nigeria: Implication for sexually transmitted infections (STIs)/HIV prevention. *Research Journal of Medical Sciences*, 3(6): 179-187.
- Asmal, K. (1999). Address at the tertiary institutions against AIDS conference, Benoni, 1 October 1999. www.polity.org.za.
- Auvert, B., Sobngwi-Tambekou, J., Cutler, E., Nieuwoudt, M., Lissouba, P., Puren, A. & Taljaard, D. (2009). Effect of male circumcision on the prevalence of high-risk human papillomavirus in young men: results of a randomized controlled trial conducted in Orange Farm, South Africa. *Journal of Infectious Diseases*, 199(1): 14-19.
- Auvert, B., Taljaard, D., Lagarde, E., Sobngwi-Tambekou, J., Sitta, R., & Puren, A. (2005). Randomised controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 trial. *PLoS Medicine*, 2(11): e298.
- Anvert, B., Buvé, A., Largade, E., Kahindo, M., Chege, J., Rutenberg, N., Musonda, R., Laourou, M., Akam, E. & Weiss, H. A. (2001). Male circumcision and HIV infection in four cities in sub-Saharan Africa. *AIDS*, 15 (suppl 4): S31-S40.
- Avert (2005). HIV/AIDS in Nigeria. <http://www.avert.org/aids-nigeria.html>, (Accessed 20 July, 2005).
- Avert (2009). South African HIV & AIDS statistics. <http://www.avert.org/safricastats.htm>, (Accessed 07 September, 2010).
- Bailey, R. C., & Poulussen, R. (1999). *Phase I and II of a trial intervention integrating male hygiene and circumcision with reproductive health in Nyanza Province, Kenya*. Chicago: University of Illinois at Chicago School of Public Health.
- Bailey, R. C., Moses, S., Parker, C. B., Agot, K., Maclean, I., Krieger, J. N., Williams, C. F., Campbell, R. T. & Ndinya-Achola J. O. (2007). Male circumcision for HIV prevention in young men in Kisumu, Kenya: A randomised controlled trial, *The Lancet*, 369: 643-656.
- Bandura, A. (1989). Perceived self-efficacy in the exercise of control over AIDS infection. In V. M. Mayes, G. W. Albee & S. F. Schneider (Eds.), *Primary Prevention of AIDS: Psychological Approaches* (pp128-141). London: Sage Publications.
- Bandura, A. (1990). Perceived self-efficacy in the exercise of control over AIDS infection. *Evaluation and program Planning*, 13: 9-17.

- Bandura, A. (1994) A social cognitive approach to the exercise of control over HIV infection. In R. J. Diclemente and J.L. Peterson (Eds), *Preventing AIDS: Theories and methods of behavioural interventions* (pp. 25-29) New York: Plenum.
- Banerjee, R. & Baer, J. (2006). Self-perception is not enough: Developing effective HIV/STD prevention in Adolescents. Internet URL: <http://sswr.confex.com/sswr/2006/technoprogram/p4201.HTM>. Accessed: 14 January 2006.
- Bazargan, M., Kelly, E. M., Stein, J. A., Husaini, B. A. & Bazargan, S.H. (2000). Correlates of HIV risk-taking behaviours among African-American college students: The effect of HIV knowledge, motivation, and behavioural skills, *Journal of National Medical Association*, 92: 391-404.
- Benatar, M. & Benata, D. (2003). Between prophylaxis and child abuse: the ethics of neonatal male circumcision. *American Journal of Bioethics*, 3: 35-48.
- Berry, S. (2005) HIV/AIDS education and young people, from AIDS educational and research trust. www.avert.org/aidsyoun.htm Retrieved on April 2, 2006.
- Billy, J. O. G. & Udry, J. R. (1985). Patterns of adolescent friendship and effects on sexual behaviour. *Social Psychology Quarterly*, 48: 27-41.
- Birchall, M. A. & Murphy, S. M. (1992). *HIV Infection and AIDS* (pp 1-5). London: Churchill Livingstone.
- Bosompra, K. (2001). Determinants of condom use intentions of university students in Ghana: An application of the theory of reasoned action. *Social Science and Medicine*, 52: 1057-1069.
- Bradley, G. & Wildman, K. (2002). Psychosocial predictors of emerging adults risk and reckless behaviours. *Journal of Youth Adolescence*, 31: 253-65.
- Brieger, W. R., Delano, G. E., Lane, C. G., Oladepo, O. & Oyediran, K. A. (2001): The West African youth initiative project: Outcome of a reproductive health education programme. *Journal of Adolescent Health* 29(6): 436 – 446.
- Brown, D. (2001). 'Polio vaccine-AIDS theory refuted', *Washington Post*, Page A09 (26 April 2001).
- Buga, G. A. B., Amoko, D. H. A. & Mcayiyana, D. J. (1996). Adolescent sexual behaviour, knowledge and attitudes to sexuality among school girls in Transkei, South Africa. *East African Medical Journal*, 73: 95-100.
- Burt, M. R. (1980). Cultural myths and supports for rape. *Journal of Personality and Social Psychology*, 38: 217-230.
- Cameron, D. W., Simonsen, J. N., D'Costa, L. J., Ronald, A. R., Maitha, G. M., Gakinya, M. N., Cheang, M., Ndinya-Achola, J. O., Piot, P., Brunham, R. C., & Plummer, F. A. (1989). Female to male transmission of human immunodeficiency virus type 1: Risk factors for sero-conversion in men. *The Lancet*, 334: 403-407.
- Campbell, C., Foulis, C. A., Maimane, S. & Sibiya, Z. (2005). The impact of social environments on the effectiveness of youth HIV prevention: A South African case study. *AIDS Care*, 17(4): 471-478.
- Carmel, S. (1991). The health belief model in the research of AIDS related preventive behaviour. *Public Health Reviews*, 18: 73-85.
- Cassell, M. M., Haperin, D. T., Shelton, J. D. & Stanton, D. (2006). Risk compensation: the Achilles' heel of innovation in HIV prevention? *British Medical Journal*, 332: 605-607.
- Catania, J. A., Kegeles, S. M., & Coates, T. J. (1990). Towards an understanding of risk behaviour: An AIDS risk reduction model (ARRM). *Health Education Quarterly*, 17(1): 53-72.

- Catania, J.A., Coates, T. J. & Kegeles, S. (1994). A test of the AIDS risk reduction model: Psychosocial correlates of condom use in the AMEN cohort survey. *Health Psychology*, 13(6): 548-55.
- Centre for Disease Control and Prevention HIV/AIDS Surveillance Report, 2001, 13 (No 2).
- Centre for Disease Control and Prevention, Pathfinder (1995). HIV/AIDS and College students. Downloaded from http://www.aegis.com/PUBS/CDC_FACT_SHEETS/1995/CPATH003.html on 09 July 2008
- Chen, T. J., Chen, Y. C., Hwang, S. J. & Chou, L. F. (2007). International collaboration of clinical medicine research in Taiwan, 1990-2001: A bibliometric analysis, *Journal of Chinese Medical Association*, 70: 110-116.
- Chetty, D. & Michel, B. (2005). Turning the tide: A strategic response to HIV/AIDS in South African higher education: *HEAIDS program report 2002-2004*. SAUVCA, Pretoria, SunnySide.
- Chetty, D. (2000). Institutionalizing the response to HIV/AIDS in the South African University sector: A SAUVCA Analysis. *SAUVCA Occassional Publication and Reports 2*.
- Chimbiri, A. M. (2007). The condom is an 'intruder' in marriage: Evidence from rural Malawi. *Social Science & Medicine*, 64: 1102-1115.
- Coffee, M., Lurie, M. N. & Garnett, G. P. (2007). Modelling the impact of migration on the HIV epidemic in South Africa. *AIDS*, 21(3): 343-350.
- Cohen, J. (2003). HIV in Asia: Thailand and Cambodia. *SCIENCE*, 301: 1658-1662. www.sciencemag.org.
- Conner, B. T., Stein, J. A. & Longstone, D. (2005), Are cognitive AIDS risk-reduction models equally applicable among high- and low-risk seekers? *Personality and Individual Differences*, 38: 379-393.
- Collins, R. L., Elliot, M. N., Berry, S. H., Kanouse, D. E., Kunkel, D., Hunter, S. B., & Miu, A. (2004). Watching sex on television predicts adolescent initiation of sexual behaviour. *Pediatrics*, 114, e280-e289.
- Connor, J., Gray, A. & Kypri, K. (2010). Drinking history, current drinking and problematic experiences among university students. *Australia and New Zealand Journal of Public Health*, 34(5): 487-494.
- Cooper, M. L. (2002). Alcohol use and risky sexual behaviour among college students and youth: Evaluating the evidence. *Journal of studies on alcohol: Supplement No. 14*: 101-117.
- Crosby R. A., Diclemente R. J., Hohgrave D. R. & Wingood G. M. (2002). Design, measurement, and analytic considerations for testing hypothesis relative to condom effectiveness against non-viral STIs. *Sexually Transmitted Infections*, 78: 228-31.
- Crosby R. A., Holtgrave D. R. DiClemente R. J., Wingood G. M. & Gayle J. A. (2003). Social capital as a predictor of adolescents Sexual risk behaviour: a state-level exploratory study, *AIDS and behaviour*, 7(3): 245-252.
- Crosby, R. A., DiClemente, R. J., Wingood, G. M., Salazar, L. F., Rose, E., Levine, D., Brown, L., Lescano, C., Pugatch, D., Flanigan, T., Fernandez, I., Schlenger, W. & Silver B. J. (2005). Condom failure among adolescents: implications for STD prevention, *Journal of Adolescent Health*, 36: 534-536.
- Cullinan, K. (September 30, 2001). Virginty festival honours girls who say no. *Sunday Times* (South Africa), pg. 12.
- Davis, E. C. & Friel, L. V. (2001). Adolescent sexuality: Disentangling the effects of family structure and family context. *Journal of Marriage and Family*, 63: 669-681.
- Davis, K. R. & Weller, S. C. (1999). The effectiveness of condoms in reducing heterosexual transmission of HIV. *Family Planning Perspectives*, 31(6): 272-279.
- Davis, M. L. & Villarruel, A. (2007). Cultural dynamics in HIV/AIDS prevention research among young people. *Journal of Association of Nurses of AIDS care*, 18(2): 1-4.

- Dell, S., South Africa: Less HIV in universities than nationally, 2010, <http://www.universityworldnews.com/article.php?story=20100409204852226&mode=print> (Downloaded on 23 June 2010).
- DiClemente, R. J., Forrest, K. A., & Mickler, S., (1990). College students' knowledge and attitudes about AIDS and HIV preventative behaviours. *AIDS Education and Prevention*, 2: 201-212.
- Dlamini, S., Taylor, M., Mkhize, N., Huver, R., Sathiparsad, R., de Vries, H., Naidoo, K. & Jinabhai, C. (2008). Gender factors associated with sexual abstinent behaviour of rural South African high school going youth in KwaZulu-Natal, South Africa. *Health Education Research*, doi:10.1093/her/cyn041 (Assessed from her.oxfordjournals.org on 12 November, 2010).
- Donenberg G. R. & Pao, M. (2005) Youths and HIV/AIDS: Psychiatry's role in a changing epidemic. *Journal of the American Academy of child and Adolescent psychiatry*, 44: 728-747.
- Donoval, B. A., Landay, A. L., Moses, S., Agot, K., Ndinya-Achola, J. O., Nyagaya, E. A., MacLean, I. & Bailey, R. C. (2006) HIV target cells in foreskins of African men with varying histories of sexual transmitted infections. *American Journal of Clinical Pathology*, 125: 386-391.
- Eaton, L., Flisher A.J., & Aarø, L. E. (2003). Unsafe sexual behaviour in South African. *Social Science and Medicine*, 56: 149-165.
- Epstein, H. & Kim, J. (2007). Fighting back against gender violence in South Africa. *New York Review of Books*, www.mybooks.com.
- Erinosho O. A. & Marietu, T. (No reference). Nigeria's Institutions of higher learning and the HIV/AIDS, http://works.bepress.com/cgi/viewcontent.cgi?article=1005&context=marietu_tenuche, Accessed__on 23 June 2010.
- Everett, S. A., Warren, C. W. & Santelli J. S. (2000). Use of birth control pills, condoms and withdrawal among U.S. high school students, *Adolescent Health*, 27: 112-118.
- Fazecas, A, Senn, CY & Ledgerwood, D. (2001). Predictors of Intention and extension of the theory of planned behaviour. *Canadian Journal of Behavioural Science*, 33: 103-17.
- Federal Ministry of Health Nigeria (2003). National HIV sero-prevalence sentinel survey technical report, *Federal Ministry of Health, Abuja*.
- Federal Ministry of Health, Abuja, Nigeria (2006). *Revised Policy-programme and strategic plan of action*.
- Ferrer, L., Cianelli, R., Guzman, E., Cabieses, B., Irarrázabal, L., Bernales, M. & Araya, A. (2007). Chilean University students: knowledge and concern about HIV/AIDS, *Journal of the Association of Nurses in AIDS care*, 18(5): 51 – 56.
- Fishbein, M., Middlestadt, S. E., and Hitchcock, P. J. (1994). Using information to change sexually transmitted disease-related behaviours. In R.J. DiClemente and J.L. Peterson (Eds.), *Preventing AIDS: Theories and methods of behavioural interventions* (pp. 61-78). New York: Plenum Press.
- Flood M. (2003) Lust, trust and latex: Why young heterosexual men do not use condoms? *Culture, Health and Sexuality*, 5: 353 – 69.
- Flora, J. A., Jackson, C. & Moccoby, N. (1985, October). Indicators of societal action to promote health. Paper presented at a symposium of indicators of health promotion behaviours, University of California, Los Angeles.
- Flora, J.A & Thoresen, C.E. (1998) Reducing the risk of AIDS in adolescents. *American Psychologists*, 43: 965-970.

- Ford K. & Norris, A. E. (1995). Factors related to condom use with casual partners among urban African-American and Hispanic males. *AIDS Education and Prevention*, 7(6): 494-503.
- Fox, M. & Thomson, M. (2005). A covenant with the status quo? Male circumcision and the new BMA guidance to doctors. *Journal Medical Ethics*, 31: 463-469.
- Fylkesnes, K., Musonda, R. M., Sichone, M., Ndhlovu, Z., Tembo, F. & Monze, M. (2001). Declining HIV prevalence and risk behaviours in Zambia: evidence from surveillance and population-based surveys. *AIDS*, 15: 907-916.
- Gage, A. J. (1998). Sexual activity and contraceptive use: the components of the decision-making process. *Studies in Family Planning*, 29: 154-165.
- Gagnon, J. H. & Simon, W. (1973). *Sexual conduct: The social sources of human sexuality*. Chicago: Aldine.
- Gayle, H. D., Keeling, R. P., Garcia-Tunon, M., Kilbourne, B. W., Narkunas, J. P., Ingram, F. R., Rogers, M. F. & Curran JW (1990). Prevalence of the human immunodeficiency virus among University students. *The New England Journal of Medicine*, 323: 1538 – 1541.
- Geiselhart, K., Gwebu, T. D. & Krüger, F. (2008). Children, adolescents and the HIV and AIDS pandemic: Changing inter-generational relationships and intra-family communication patterns in Botswana. *Children, Youth and Environments* 18(1): 99-125.
- Genesis 17:11. 'From now on you must circumcise every baby boy when he is eight days'. Good news Bible, Bible Society of South Africa, 2nd Ed. (1996).
- Genuis, S. J. & Genuis, S. K. (2005). HIV/AIDS prevention in Uganda: why has it worked? *Postgraduate Medical Journal*, 81: 615-617.
- George, D. & Mallery P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.
- Gibson, D. R., Catania, J. A., Peterson, J. L. (1991). Theoretical background. In Sorensen, J. L., Wermuth, L., Gibson, D. R., Choi, K. H., Guydish, J. R., & Batki, S. L. (Eds.) *Preventing AIDS in IV Drug Users and Their Sexual Partners*. New York: Guilford Press.
- Godbold, L. C., & Pfau, M. (2000). Conferring resistance to peer pressure among adolescents: Using inoculation theory to discourage alcohol use. *Communication Research*, 27: 411-437.
- Gotzsche, M. H. (1988). Condoms to prevent HIV transmission do not imply truly safe sex. *Journal of Infectious Diseases*, 20: 233-234.
- Grant, E., Brown, J., Michen, K., Grant, A., Manuthu, E. & Njeru, J. (2004). 'Seizing the day': right time, right place, and right message for adolescent reproductive sexual health. Lessons from the Meru of Eastern province, Kenya. *International Journal of Men's Health*, 3: 189-196.
- Gray, H. R., Kigozi, G., Serwadda, D., Makunbi, F. & et al. (19 authors) (2007). Male circumcision for HIV prevention in young men in Rakai, Uganda: a randomized trial, *The Lancet*, 369: 657-666.
- Green, L. W. & Kreuter, M. W. (1999). *Health promotion planning: An educational and ecological approach* (3rd ed.). Mountain View, CA: Mayfield.
- Gregson, J., Foerster, S., Orr, R., Jones, L., Benedict, J., Clarke, B., Hersey, J., Lewis, J. & Zotz, K. (2001). System, environmental, and policy changes: Using the social-ecological model as a framework for evaluating nutrition education and social marketing programs with low-income audiences. *Journal of Nutrition Education*, 33: S4-S15.
- Greig F.E. & Koopman C. (2003). Multilevel analysis of women's empowerment and HIV prevention quantitative survey results from a preliminary study in Botswana. *AIDS and Behaviour*, 7(2): 195-208.

- Gullotta, T. P., Adams, G. R. & Montemayor, R. (Eds.) (1991). *Adolescent Sexuality: Advances in Adolescent Development*, 5: 1-2, SAGE Publications.
- Gupta, N. (2000). Sexual initiation and contraceptive use among adolescent women in North East Brazil. *Studies in Family Planning*, 31(3): 228-238.
- Hallett, T. B., Aberle-Grasse, J., Bello, G., Boulos, L-M., Cayemittes, M. P., A., Cheluget, B., Chipeta, J., Dorrington, & 21 other authors. (2006). Declines in HIV prevalence can be associated with changing sexual behaviour in Uganda, urban Kenya, Zimbabwe, and urban Haiti. *Sexually Transmitted Infections*, 82: i1-i8.
- Halperin, D. & Epstein, H. (2004). Concurrent sexual partnerships help to explain Africa's high HIV prevalence: Implications for Prevention. *The Lancet*, 363: 4-6.
- Halperin, D. T. & Epstein, H. (2007). Why is HIV prevalence so severe in Southern Africa. *The Southern African Journal of HIV Medicine*, 19:25.
- Hanenbergh R. S., Rojanapithayakorn W., Kunasol P. & Sokal D. C. (1994). Impact of Thailand HIV control programme as indicated by the decline of sexually transmitted diseases, *The Lancet*, 344: 243 – 245
- Hannah, D. B., Pfeiffer, M. R., Torian, L. V. & Sackoff, J. E. (2008). Concurrent HIV/AIDS diagnosis increases the risk of short-term HIV-related death among persons newly diagnosed with AIDS, 2002-2005. *AIDS Patient Care and STDs*, 22(1): 17-28.
- Hare, M. L. & Villarruel, A. (2007). Cultural dynamics in HIV/AIDS prevention research among young people. *Journal of Association of Nurses in AIDS Care*, 18(2): 1-4.
- Harris, L., & Associates, Inc. (1986). *American teens speak: Sex, myths, TV, and birth control*_(Planned Parenthood poll). New York: Author.
- Harrison R. Circumcision makes comeback in AIDS - hit Swaziland. *Reuters News Service*, 24 February, 2006.
- Hearst, N., Chen, S. (2004) Condom promotion for AIDS prevention in the developing world. Is it working? *Studies on Family Planning*, 35: 39-47.
- Hein, K. & Hurst, M. (1988). Human immunodeficiency virus infection in adolescents: a rationale for action. *Adolescent Paediatrics and Gynaecology*, 1, 73-82.
- Helleringer, S., & Kohler, H. P. (2007). The structure of sexual networks and the spread of HIV in sub-Saharan Africa: evidence from Likoma Island (Malawi). *University of Pennsylvania Population Aging Research Center*, Working paper series 06-02.
- Hellsten, S. K. (2004). Rationalising circumcision: from tradition to fashion, from public health to individual freedom – critical notes on cultural persistence of the practice of genital mutilation. *Journal of Medical Ethics*, 30: 248-253.
- HIV and AIDS in Nigeria (2010). <http://www.avert.org/aids-nigeria.htm>
- Holmes, K. K., Levine, R. & Weaver, M., (2004): Effectiveness of condoms in preventory Sexually Transmitted Infections. *Bulletin of the World Health Organization*, 82: 454 – 461.
- Hooper, E. (1999). *The river: A journey to the source of HIV and AIDS*. Little, Brown & Co.
- Hossain, M. B., Kabir, A. & Ferdous, H. (2006 – 2007). Knowledge of HIV and AIDS among tertiary students in Bangladesh, *International Quarterly of Community Health Education*, 26(3): 271-85.
- Hounton, S. H., Carabin, H. & Henderson, N. J. (2005). Towards an understanding of barriers to condom use in rural Benin using the Health Belief Model: A cross sectional survey, *BioMed Central Public Health* 2005, 5:8 <http://www.biomedcentral.com/content/pdf/1471-2458-5-8.pdf>. (Re-accessed on 27 2010).

- Ibe, S. N. (2005). HIV/AIDS awareness study of fresh students in tertiary institutions in Rivers State of Nigeria. *Journal of Applied Science and Environmental Management*, 9(1): 11-13.
- Ijadunola, K. T., Abiona, T. C., Odu, O. O. & Ijadunola, M. Y. (2007). College students in Nigeria underestimate their risk of contracting HIV/AIDS infection. *The European Journal of Contraception & Reproductive Health Care*, 12(2): 131-137.
- Jemmott, J. B. Jemmott, L. S. & Fong, G. T. (1992). Reduction in HIV risk-associated sexual behaviour among black male adolescents: Effects of an AIDS prevention intervention, *American Journal of Public Health*, 82: 372-377.
- Jewkes, R., Dunkle, K., Koss, M. P., Levin, J. B., Nduna, M., Jama, N. & Sikweyiya (2006). Rape perpetration by young, rural South African men: Prevalence, patterns and risk factors. *Social Science and Medicine*, 63(11): 2949-2961.
- Jichuan, C. (2003). Investigation on knowledge, practice about STDs and AIDS among Ningde normal school student. *Chinese Journal of Health Education*, 19 (11): 853-854.
- Johnson, E. H., Gant, L., Hinkle, Y. A., Gilbert, D., Willis, C. & Hoopwood, T. (1992). Do African-American men and women differ in their knowledge about AIDS, attitudes about condoms, and sexual behaviours? *Journal of National Medical Association*, 83: 49-64.
- Kabiru, C. W. & Ezeh, A. (2007). Factors associated with sexual abstinence among adolescents in four sub-Saharan African countries. *African Journal of Reproductive Health*, 11(3): 111-132.
- Kahn, J. G., Marseille, E & Auvet, B. (2006) Cost-effectiveness of male circumcision for HIV prevention in a South African settings. *PLOS Medicine*, 3: e517.
- Kalichman, S. C., Simbayi, L. C., Kagee, A., Toefy, Y., Jooste, S. Cain, D. & Cherry, C. (2006). Association of poverty, substance use, and HIV transmission risk behaviour in three South African communities. *Social Science & Medicine*, 62: 1641-1649.
- Kalichman, S. C., Ntseane, D., Nthomang, K., Segwabe, M., Phorano, O. & Simbayi, L. C. (2007). Recent multiple sexual partners and HIV transmission risks among people living with HIV/AIDS in Botswana. *Sexually transmitted Infections*, 83: 371-375.
- Kalichman, S. C., Simbayi L. C., Cain, D. & Jooste, S. (2009). Condom failure among men receiving sexually transmissible infection clinic services, Cape Town, *South Africa Sexuality Health*, 6(4): 300–304.
- Kalichman, S. C., Tannenbaum, L., & Nachimson, D. (1998). Personality and cognitive factors influencing substance use and sexual risk for HIV infection among gay and bisexual men. *Psychology of Addictive Behaviours*, 12: 262-271.
- Kanuga, M. & Rosenfeld, W. D. (2004). Adolescent sexuality and the internet: The good, the bad, and the URL. *Journal of Pediatric Adolescent Gynecology*, 17: 117-124.
- Kaufman, C. E. (1998). Contraception use in South Africa. *Demography*, 35(4): 421-434.
- Kaufman, C. E., Clark, S., Manzini, N. & May, J. (2004). Communities, opportunities, and adolescents' sexual behaviour in KwaZulu-Natal, South Africa. *Studies in Family Planning*, 35(4): 261-274.
- Kelly, J. (1996). Using condoms to prevent transmission of HIV: Condoms have an appreciable failure rate. *British Medical Journal*, 312: 1478-1483.
- Kelly, J. A. & Murphy D. A. (1992) – Psychological Interventions with AIDS and HIV: Prevention and Treatment. *Journal of consulting and clinical Psychology* 60: 576 – 585.
- Kelly, J. A., Hoffman, R. G., Rompa, D. & Gray, M. (1998). Protease inhibitor combination therapies and perceptions of gay men regarding AIDS severity, and the need to maintain safer sex. *AIDS*, 12: F91 – F95.

- Kelly, K. & Parker, P. (2000). Communities of practice: Contextual mediators of youth response to HIV/AIDS. Pretoria: *Department of Health* (Sentinel Site Monitoring and Evaluation Project for the Beyond Awareness Campaign).
- Kelly, M. J. (2001) Understanding and expanding the response of universities in Africa to HIV/AIDS wsaint@worldbank.org.
- Kelly, M. J. (2001). Challenging the challenger: Understanding and expanding the response of universities in Africa to HIV/AIDS. *Washington: ADEA Working group on Higher Education*, World Bank.
- Kelly, R., Kiwanuka, N., Wawer, M. J., Serwadda, D., Sewankambo, N. K., Wabwire-Mangen, F., Li, C., Konde-Lule, J. K., Lutalo, T., Makumbi, F. & Gray R. H. (1999). Age of circumcision and risk of prevalent HIV infection in rural Uganda. *AIDS*, 13: 399-405.
- Kenyon, C. & Badri, M. (2009). The role of concurrent sexual relationships in the spread of sexually transmitted infections in young South Africans. *The South African Journal of HIV Medicine*, Summer 2009: 29-36.
- Kershaw, T. S., Ethier, K. A., Nicola, L. M., Lewis, J. B. & Lokovics, J. R. (2003). Misperceived risk among female adolescents: Social and psychological factors associated with sexual risk accuracy. *Journal of Health Psychology*, 22: 523-32.
- KidHealth, <http://www.kidsHealth.org> (2007).
- Kipke (editor). 1999. Adolescent development and the biology of puberty: Summary of a workshop on new research. National Academy Press, Washington DC, downloaded from: <http://www.nap.edu/catalog/9634.html> on 20 November 2010.
- Kirby, D. (1999). Sexuality and sex education at home and school. *Adolescent Medicine*, 10:195–209.
- Kirby, D. (2001). Emerging answers: Research findings on programs to reduce teenage pregnancy. Washington DC: The National Campaign to Prevent Teen Pregnancy.
- Koniak-Griffin, D., Lesser, J., Uman, G. & Uyamathi, A. (2003). Teen pregnancy, motherhood, and unprotected sexual activity. *Research in Nursing & Health*, 26: 4-19.
- Kotchick, B. A., Shaffer, A., Forehand, R. & Miller, K. S. (2001) Adolescent sexual risk behaviour: a multi-system perspective. *Clinical Psychology Review*, 21: 493-519.
- Kuruvila, M., Venugopalan, P. P. & Kumar, S. K. S. (1997). KAP study on HIV/AIDS among first year MBBS students. *Indian Journal of Dermatology, Venereology and Leprology*, 63: 225-228.
- Kwesigabo, G., Killewo, J., Godoy, C., Urassa, W., Mbena, E., Mhalu, F., Biberfeld, G., Wall, S. & Sandstrom, A. (1998). Decline in the prevalence of HIV-1 infection in young women in the Kagera region of Tanzania. *Journal of Acquired Immune Deficiency Syndromes & Human Retrovirology*, 17(3): 262-268.
- Lagarde, E., Auvert, B., Carael, M., Laourou, M., Ferry, B., Akam, E., Sukwa, T., Morison L., Maury, B., Chege, J., N'Doye I., Buve, A. (2001). Concurrent sexual partnerships and HIV prevalence in five urban communities of sub-Saharan Africa, *AIDS*, 15(7): 877-884.
- Lanouette, N. M., Noelson, R., Ramamonjisoa, A., Jacobson, S. & Jacobson, J. M. (2003). HIV- and AIDS-Related Knowledge, Awareness, and Practices in Madagascar. *American Journal of Public Health*, 93(6): 917-919.
- Lee, A. & Tsang, C. K. (2004). Youth risk behaviour in a Chinese population: A territory-wide youth risk behavioural surveillance. *Hong Kong Public Health*, 118: 88 – 95.
- Lewis, M. A., Lee, C. M., Patrick, M. E. & Fossos, N. (2007). Gender-specific normative misperceptions of risky sexual behaviour and alcohol-related risky sexual behaviour. *Sex Roles*, 57: 81-90.

- Li, X., Lin, C., Gao, Z., Stanton, B., Fang, X., Yin, Q. & Wu, Y. (2004). HIV/AIDS knowledge and the implications for health promotions among Chinese college students: geographic, gender and age differences, *Health Promotion International*, 19(3): 345-256.
- Lollis, C. M., Johnson, E. H., & Antoni, M. H. (1997). The efficacy of the Health Belief Model for predicting condom usage and risky sexual practices in university students. *AIDS Education and Prevention*, 9(6): 551-563.
- Madu, S. N. & Peltzer, K. (2003). Factor structure of condom attitudes among black South African University students. *Social Behaviour and personality*, 31: 265-274.
- Maharaj, P. & Cleland, J. (2006). Condoms become the norm in the sexual culture of college students in Durban, South Africa. *Reproductive Health Matters*, 14(28): 104-112.
- Martino, S. C., Collins, R. L., Elliot, M. C., Kanouse, D. E. & Berry, S. H. (2009). It's better on TV: Does television set teenagers up for regret following sexual initiation? *Perspectives of Sexual Reproductive Health*, 41(2): 92-100.
- McNeil, D. (2007). Circumcision's anti-AIDS effect found greater than first thought. *New York Times*, Feb 23.
- MacPhail, C. & Campbell, C. (2001). 'I think condoms are good but, aai, I hate those things': condom use among adolescents and young people in a Southern African township. *Social Science and Medicine*, 52(11): 1613-1627.
- Miller, B., Christopherson, C. R., & King, P. K. (1993). Sexual behaviour of adolescence: In *Adolescent Sexuality* (Eds. T P Gullotta, G R. Adams, & R. Montemayor), Chapter 3, pp 57-76.
- Mishra, V., Hong, R., Assche, S. B. & Barrerre, B. (2009). The role of partner reduction and faithfulness in HIV prevention in sub-Saharan Africa: Evidence from Cameroon, Rwanda, Uganda and Zimbabwe. USAID DHS Working papers, 2009.
- Momoh, S. O., Asagwara, C. G. & Meriamu, U. M (2007). Male gender roles and sexuality: Implications for university girls' HIV/AIDS awareness in a Nigerian university. *Journal of International Women's studies*. 8: 148-152.
- Momoh, S. O., Moses, A. I. & Ugimoh, M. M. (2006). Women and the HIV/AIDS epidemic: The issue of school age Girls' awareness in Nigeria. *Journal of International Women's Studies*. 8: 212-218.
- Morris, M. A. (2002). Comparative study of concurrent sexual partnerships in the United States, Thailand and Uganda. *American Sociology*, Association Annual meeting. Published Abstracts, Anaheim, California.
- Moses, S., Bailey, R. C. & Donald, A. R. (1998). Male circumcision: Assessment of health benefits and risks. *Sexually Transmitted Diseases*, 74: 368-373.
- Munoz-silva, A., Sanchez-Garcia, M., Nunes, C. & Martins, A. (2007). Aids prevention in late adolescent college students from Spain and Portugal. *Journal of the Royal Institute of Public Health*, 121: 673-681.
- Murphy, D. A., Durako, S. J., Moscicki, A. B., Vermund, S. H., Ma, Y., Schwatz, D. F. & Muenz, L. R. (2001). No change in high-risk behaviours over time among HIV-infected adolescents in care: Role of psychological distress. *Journal of Adolescent Health*, 29(3): 57-63.
- Mustanski, B., Donenberg, G. & Emerson, E. (2006). I can use a condom, I just don't: The importance of motivation to prevent HIV in adolescent seeking psychiatric care. *AIDS Behaviour*, 10: 753-762.
- National Agency for the Control of AIDS (NACA) (2008). National HIV/AIDS prevention plan, 2007 – 2009, page 13.
- National Institute of Health (2005). Theory at a glance: A guide to health promotion practice, 2nd Ed.

- Nelson K. E., Celentano D. D., Eiumtrakol S., Hoover D. R., Beyrer C., Suprasert S., Kuntolbutra S. & Khamboonruang C. (1996). Changes in sexual behaviour and a decline in HIV infection among young men in Thailand. *The New England Journal of Medicine*, 335:297-303.
- Nelson Mandela/HSRC study of HIV/AIDS (2002). South African National HIV prevalence behavioral risks and mass media house hold survey. Cape Town, *Human Sciences Research Council*.
- Nemours Foundation Kids Health (2007) www.kidshealth.org/page/manager Circumcision.
- Ngalande, R. C., Levy, J., Kapondo, C. P. N. & Bailey, R. C. (2006). Acceptability of male circumcision for prevention of HIV Infection in Malawi. *AIDS and Behaviour*, 10(4): 377-385.
- Nunnally, J. C. (1978). *Psychometric Theory* 2nd ed. New York: McGraw Hill.
- Odu, B. K. & Akanle F. F. (2008). Knowledge of HIV/AIDS and sexual behavior among the youths in South West Nigeria. *Humanity & Social Sciences Journal*, 3 (1): 81-88.
- Odu, O., Asekun-Olarinmoye, E., Bamidele, J., Egbewale, B., Amusan, O., Olowu, A. (2008). Knowledge, attitudes to HIV/AIDS and sexual behaviour of students in a tertiary institution in south-western Nigeria. *European Journal of contraception and Reproductive Health Care*, 13(1): 90-96.
- Odutola, A. B. (2005). Developing Countries Must Invest in Access to Information for Health Improvements. *Journal of Medical Internet Research*, 5(1), e5.
- Okafor, H. C. & Duru, N. E. (2010). Sexual promiscuity among female undergraduate in tertiary institutions in Imo State: an issue for healthy living. *Edo Journal of Counselling*, 3(1): 100-109.
- Okonkwo, P. I., Fatusi, A. O. & Ilika A. L. (2005). Perception of Peers' behaviour regarding sexual health decision making among female undergraduates in Anambra state, Nigeria. *Journal of African Health services*, 5 (2): 107-113.
- Olaseha, I. O., Ajuwon A. J. & Onyejekwe O. C. (2004). Reproductive health, knowledge and use of contraceptives among the adolescents' mothers in a sub-Saharan community of Oyo State, Nigeria. *African Journal of Medicine and Medical Science*, 33(2): 139 – 143.
- O'Leary, A., Goodhart, F., Jemmott, L. S. & Boccher-Lattimore, D. (1992). Predictors of safer sex on the college campuses: A social cognitive theory analysis. *Journal of the American College of Health*, 40: 254-263.
- Onoh, H. E., Mbah, A. U., Chukwuka, J. C. & Ikeme, A. C., (2004). HIV/AIDS awareness and sexual practices among undergraduates in Enugu, Nigeria. *Nigeria Postgraduate Medical Journal*, 11(2): 121-125.
- Orubuloye, I. O., Caldwell, J. C. & Caldwell, P. (1993). African women's control over their sexuality in an era of AIDS: A study of the Yoruba of Nigeria. *Social Science and Medicine*, 37(7): 859-872.
- Oshi, S. N., Ezugwu, F. O., Oshi D. C., Dimkpa U., Korie F. C. & Okperi B. O. (2007). Does self perception of risk of HIV infection make the youth to reduce risky behaviour and seek voluntary counselling and testing services? A case study of Nigerian Youth. *Journal of Social Sciences*, 14(2): 195-203.
- Ott, M. A., Pfeiffer, E. J. & Fortenberry, J. D. (2006). Perceptions of sexual abstinence among high-risk early and middle adolescents. *Journal of Adolescent Health*, 39: 192-198.
- Owuamanam, T. O., Ogunsanmi, J. O. & Osakinle, W. E. O. (No date). Non-regular education and intervention on HIV/AIDS awareness and educational training strategies in Nigeria: Implications for counselling. Source: http://wikieducator.org/images/5/56/PID_.pdf.
- Park, L. S., Siraprapasiri, T., Peerapatanapokin, W., Manne, J., Niccolai, L. & Kunanusont, C. (2010). HIV transmission rates in Thailand: evidence of HIV prevention and transmission decline. *Journal of Acquired Immune Deficiency Syndromes*, 54(4): 430-436.

- Peltzer, K. (2003). HIV/AIDS/STD knowledge, attitudes, beliefs and behaviours in a rural South African adult population. *South African Journal of Psychology*, 33: 250-260.
- Peltzer, K., Mpofu E., Baguma, P. & Lawal, B. (2002). Attitudes towards HIV-antibody testing among University Students in four African Countries. *International Journal for the advancement of counselling*, 24: 193-203.
- Pelzer, K., Olatunji, B. Y. & Morakinyo, O. (2003). Factors affecting behaviours that address HIV risk among Nigerian university students. *Ife Psychologia*, 11(2): 1-8.
- Petchesky, R. P. & Judd, K. (eds.) (1998). Negotiating reproductive rights: Women's perspectives across countries and cultures. New York: Zed Books Ltd.
- Phaswana-Mafuya, N. & Peltzer, K. (2005). Perceived HIV/AIDS impact among staff in tertiary institutions in the Eastern Cape, South Africa. *Journal of Social Aspects of HIV/AIDS*, 2(2): 277-285.
- Pilcher, C. D., Tien, H. C. & Eron, J. J., Vernazza, P. L., Leu, . S.Y, Stewart, P. W., Goh, L. E. & Cohen, M. S. (2004). Brief but efficient: acute HIV infection and the sexual transmission of HIV. *Journal of Infectious Diseases*, 189: 1785-1792.
- Prochaska, J. O. & DiClemente, C. C. (1983). Stages and processes of self-change smoking: Towards an integrated model of change. *Journal of Consulting and Clinical Psychology*, 51(3): 390-395.
- Prochaska, J. O., DiClemente, C. C. & Norcross, J. C. (1992). In search of how people change. Applications to addictive behaviors. *American Psychologist*, 47(9): 1102-14.
- Quinn, T. C., Wawer, M. J., Sewankambo, N., Serwadda, D., Li, C., Wabwire-Mangen, F., Meehan, M. O., Lutalo, T. & Gray, R.H. (2000). Viral load and heterosexual transmission of Human Immunodeficiency Virus type 1. Rakai project study group. *The New England Journal of Medicine*, 342: 921-929.
- Rennie, S., Muula, A. S. & Westreich, D. (2007). Male circumcision and HIV prevention: ethical, medical and public health tradeoffs in low-income countries. *Journal of Medical Ethics*, 33: 357-361.
- Richens, J., Imrie, J. & Copas, A. (2000). Condoms and seat belts: the parallels and the lessons. *Lancet*, 355: 400-403.
- Rojanapithayakorn, W. & Hanenberg, R. (1996). The 100% condom program in Thailand. *AIDS*, 10: 1-7.
- Romer, D. & Hornik, R. (1992). HIV education for youth, the importance of social consensus in behavior change. *AIDS Care*, 4: 285-301
- Rosenstock, I. M. (1990). The Health Belief Model: Explaining health behaviour through expectancies. In K. G. Glanz, F. M. Lewis, & B. K. Rimmer (Eds.), *Health behaviour and health education* (pp. 39-62). San Francisco: Jossey-Bass.
- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). The Health Belief Model and personal health behaviour. *Health Education Quarterly*, 15:175-183.
- Rosenstock, I., Strecher, V., & Becker, M. (1994). The Health Belief Model and HIV risk behaviour change. In R. J. DiClemente & J. L. Peterson (Eds.), *Preventing AIDS: Theories and Methods of Behavioural Interventions* (pp. 5-24). New York: Plenum Press.
- Sabone M., Ntsayagae E., Brown M. S., Seboni N. M., Mogobe K. D. & Sebegu M. (2007). Perceptions of undergraduate students not participating in HIV/AIDS prevention activities in Botswana. *International Nursing review*, 54: 332-338.
- SADC (2006). Step up the pace of HIV prevention in Africa. *A SADC publication*.
- Sands, T., Archer, J. & Puleo, S. (1998). Prevention of health-risk behaviours in college students: Evaluating seven variables. *Journal of College Student Development*, 39(4): 331-342.

- Science in Africa, (2007). Mass male circumcision – What will it mean for women? *Africa's first on-Line science magazine*, Merck.
- Shelton, J. D., Halperin, D. T., Nantulya, V., Potts, M., Gayle, I. T. & Holmes K. K. (2004). Partner reduction is crucial for balanced “ABC” approach to HIV prevention. *British Medical Journal*, 328: 891-894.
- Shreedher J. (1994). “India’s condom quality row flares up” *World’s AIDS*, 36: 1.
- Smit R. (2007). Living in an Age of HIV/AIDS: Implications for families in South Africa. *Nordic Journal of African studies* 16(2): 161-178.
- Smith, D. J. (2007). Modern marriage, men’s extramarital sex, and HIV risk in Southeastern Nigeria. *American Journal of Public Health*, 97(6): 997-1005.
- Sonenstein, F. L., Pleck, J. H., & Ku, L. C. (1989). Sexual activity, condom use, and AIDS awareness among adolescent males. *Family Planning Perspectives*, 21: 152-158.
- Spruyt, A., Steiner, M. J., Joanis, C., Glover, L. H., Piedrahita, C., Alvarado, G., Ramos, R., Maglaya, C. & Cordero, M. (1998). Identifying condom users at risk for breakage and slippage: Findings from three international sites. *American Journal of Public Health*, 88: 239-244.
- Stine, G. J. (1995). *Aids Update: 1994 - 1995*. New Jersey, Prentice Hall, Englewood Cliffs.
- Stone, E. (1999). Correlates of condom failure in a sexually active cohort of men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*, 20(5): 495-501.
- Stremlau, J., & Nkosi, N. (2001). The AIDS crisis in South African Universities http://www.idrc.ca/en/ev-5398-201-1-DO_TOPIC.html (Accessed on 22 May 2008).
- Swart-Kruger, J. & Richter, L. M. (1997). Aids related knowledge, attitudes, and behaviour among South African street youth: Reflections on power, sexuality and the autonomous self. *Social Science and Medicine*, 45(6): 957-966.
- Szabo, R. & Short, R. V. (2000). How does male circumcision protect against HIV infection? *British Medical Journal*, 320: 1592-1594.
- Tan, X., Pan, J., Zhou D., Xie C., Wen X. & Hong, Y. (2007). HIV/AIDS Knowledge, Attitudes and Behaviors among Undergraduate Students in China. *Journal of US-China Medical Science*, 3(5): 39-46.
- Taylor, M., Dlamini, S. B., Kagoro, H., Jinabhai, C. C., & de Vries, H., (2003) – Understanding high school student’s risk behaviours to help reduce the HIV/AIDS epidemic in Kwa Zulu Natal, South Africa. *Journal of School Health*, 73: 97-100.
- The NEMOURS Foundation (2007). Kids Health Circumcision: 6th August www.kidshealth.org/page/manager.
- Thom, A. (2008). Circumcision, fewer sex partners the key to curbing HIV. <http://themercury.co.za/index.php?fArticleId=4399428> (Accessed May 15 2008).
- Thorenses, C. E. & Eagleston, J. (1985). Counselling for health. *The Counselling Psychology*, 13: 15-87.
- Timberg, C. (2005). In Swaziland, science revives an old rite; circumcision makes a comeback to fight AIDS. *The Washington Post*, 26 December.
- Trenholm, C., Devaney, B., Fortson, K., Clark, M., Quay, L. & Wheeler, J. (2008). Impacts of abstinence education on teen sexual activity, risk of pregnancy, and risk of sexually transmitted diseases. *Journal of Policy Analysis and Management*, 27(2): 255-276.

- Tsegaye, A., Rinke de Wit, T. F., Mekonnen, Y., Beyene, A., Aklilu, M., Messele, T., Abebe, A., Coutinho, R., Sanders, E. & Fontanet, A. L. (2002). Decline in prevalence of HIV-1 infection and syphilis among young women attending antenatal care clinics in Addis Ababa, Ethiopia: Results from sentinel surveillance, 1995-2001. *Journals of Acquired Immune Deficiency Syndromes*, 30: 359-362.
- Tumwesigye, N. M., Ingham, R. & Holmes, D. (2008). The dynamics of secondary abstinence among unmarried young people: analysis of event history calendar data from Kabale and Mukoko districts in Uganda. *The African Statistical Journal*, 6: 67-85.
- UNAIDS (2000). Monitoring the AIDS pandemic: HIV and AIDS in the Americas, an epidemic with many faces.
- UNAIDS (2001). HIV/AIDS in Africa. Retrieved on August 22, 2003 www.unaids.org/factsheets/files/fs-africa.htm.
- UNAIDS (2002). Nigeria: Epidemiological Fact sheets, 2002 update. www.unaids.org/html/pub/publications/factsheetsoi/nigeriaenpdf.pdf.
- UNAIDS (2003). AIDS epidemic update 2003. Geneva: UNAIDS <http://www.unaids.org/unaid/EN/Resources/publications/corporate>, and publications/aids and epidemic+ update (Accessed June 22, 2004).
- UNAIDS (2005). *National HIV/Syphilis sero-prevalence sentinels survey in Nigeria*.
- UNAIDS (2007). Global summary of the AIDS epidemic, December 2007, *2007 AIDS Epidemic Update*.
- UNAIDS (2008). Safe male circumcision and comprehensive HIV prevention programming: guidance for decision-makers on human rights, ethical and legal considerations. Geneva: UNAIDS.
- UNAIDS (2006), Report on the Global AIDS Epidemic: *Executive summary*, Geneva: UNAIDS <http://www.unaids.org/en/hivdata/2006globalreport/default.asp>.
- UNAIDS (2009). AIDS epidemic update, December 2009.
- USAIDS: Bureau for Global Health Sup. (2003) www.usaid.gov Male circumcision and HIV prevention.
- USAIDS: Male Circumcision and HIV prevention. (2003). Bureau for Global Health: US Agency for International Development: www.usaid.gov.
- VanLandingham, M. J., Suprasect S., Grandjean, N., and Sittitai, W. (1995). Two views of risky sexual practices among Northern Thai males: The Health Believe Model and the Theory of Reasoned Action. *Journal of Health and Social Behaviour*, 36: 195-212.
- Weiss, H. A., Halperin, D., Bailey, R. C., Hayes, R. J., Schmid, G. & Hankins, C. A. (2008). Male circumcision for HIV prevention: from evidence to action? *AIDS*, 22: 567-574.
- Weiss, H. A., Quigley, M. A., & Hayes, R. J. (2000). Male circumcision and risk of HIV infection in sub-Saharan Africa: a systematic review and meta-analysis. *AIDS*, 14(15): 2361-2370.
- Weiss, E., Whelan, D. & Gupta, G. R. (1996). Vulnerability and opportunity: Adolescent and HIV/AIDS in the developing world. Washington DC: International centre for research on women.
- Weller, S. C. (1993). Meta-analysis of condom effectiveness in reducing sexually transmitted HIV. *Social Science Medicine*, 36: 1635-1644.
- Whiteside, A. & Sunter, C. (2000). AIDS: The challenge for South Africa. *Human and Rousseau*, Cape Town.
- Williams, B. G., Lloyd-Smith, J. O., Gouws, E., Hankins, C., Getz, W. M. & Hargrove, J., de Zoysa, I., Dye, C. & Auvert, B. (2006). The potential impact of male circumcision on HIV in Sub-Saharan Africa. *PLOS Medicine*, 3: e262.

- Willemse, I. (1994). Statistical Methods and financial calculations, 2nd Ed.: Juta & Co Ltd.
- Winfield, E. B. & Whaley, A. L. (2002). A Comprehensive Test of the Health Belief Model in the Prediction of Condom Use among African American College Students. *The Journal of Black Psychology*, 28(4): 330-346.
- World Bank (2000). Intensifying action against HIV/AIDS: Responding to the development crisis. Washington D.C.: World Bank.
- World Health Organization (2006). Statement on Kenyan and Ugandan trial findings regarding male circumcision and HIV: Male circumcision reduces the risk of becoming infected with HIV, but does not provide complete protection. <http://www.who.int/mediacentre/news/statements/2006/s18/en/>. (Downloaded on 14 May 2008).
- World Health Organization & UNAIDS (2007). New data on male circumcision and HIV prevention: Policy and programme implications. Available from: http://www.unaids.org/en/policies/HIV_Prevention/male_circumcision.asp. (Accessed, Jan 24, 2008).
- Zelaya, E., Marin, F. M., Garcia, J., Berglund, S., Liljestrand, J. & Persson, L. A. (1997). Gender and social differences in adolescent sexuality and reproduction in Nicaragua. *Journal of adolescent Health*, 21: 38-46.
- Zolopa, A. R., Andersen, J., Komarow, L., Sanne, I., Sanchez, A., Hogg, E., Suckow, C. & Powderly, W. for the ACTG A5164 study team. (2009). Early antiretroviral therapy reduces AIDS progression/death in individuals with acute opportunistic infections: a multicentre randomized strategy trial. *PLoS One*, 4(5): e5575.

**APPENDIX A: QUESTIONNAIRE
UNIVERSITY OF ZULULAND
REPUBLIC OF SOUTH AFRICA**

**FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY & SPECIAL EDUCATION**

Studies on: “Awareness of HIV/AIDS Preventive Strategies among Students of the Universities of Zululand and Ado-Ekiti ”

Instructions for Respondents

There are concerns about the number of HIV/AIDS infections in Africa among people within the age group of 14-30 years, where most of you fall and efforts are being put in place at national and continental levels to develop a number of preventive strategies. This is particularly important because university students are future leaders of our continent. You are therefore being approached to complete this questionnaire to help us contribute to the formulation of such policies that will help in averting the current trend of the HIV/AIDS pandemic. The value of the data we collect depends on how seriously you take the problem and the level of honesty you put into completing the questionnaire.

Many of the items relate to sexual matters and it is possible that you may feel a bit uncomfortable but we believe that you are all matured students who should be comfortable with discussing sexuality matters. In this respect we assure you that any information provided will be treated with absolute confidentiality.

You will also observe from the title of this study that your institution and a second institution from another African country are involved. It is therefore noteworthy that the data collected will be used to provisionally assess the level of awareness of preventive strategies in South African and Nigerian Universities with predominantly black students.

This questionnaire has been designed in a way that **you and the information you provide cannot be linked with you**. Feel free therefore to provide very honest data.

- Please **do not write your name** on this questionnaire.
- You are not being graded in this exercise; i.e. there is no right or wrong answer.
- Any honest answer you provide to each of the question is acceptable to us.
- Please take your time to answer all the questions carefully and truthfully. Please mark one answer and **DO NOT mark two options to any one item**.

Thank you for your help.

Kindly sign this statement:

“I agree to participate in this study voluntarily, on the assurance that any information I provide will be treated confidentially”.

QUESTIONNAIRE

				Official use
1	University	A	UNIZULU	
		B	UNAD	
2	Faculty	A	SCIENCE	
		B	EDUCATION	
3	Please indicate your department	A	Biochemistry	
		B	Chemistry	
		C	Educational Psychology	
		D	Science Education	
4	Sex	A	Male	
		B	Female	
SECTION A: BIOGRAPHICAL DATA (For Sections A and B, please mark (X) against which of the options provided best describes you)				
Check which of the options of each of A1-A10 best describes you				
A1	How old were you in your first year in University?	A	15-18 years	
		B	19-21 years	
		C	22-24 years	
		D	25-30 years	
		E	Older than 30	
A2	How old are you now?	A	15-18 years	
		B	19-21 years	
		C	22-24 years	
		D	25-30 years	
		E	Older than 30 years	
A3	What level of study are you now?	A	1 st year	
		B	2 nd year	
		C	3 rd year	
		D	4 th year	
A4	What is your marital status?	A	Single	
		B	Married	
		C	Divorced	
		D	Widowed	
A5	How many children do you have?	A	None	
		B	One	
		C	Two	
		D	More than two	
A6	What is your religion?	A	Christianity	
		B	Islam	
		C	Traditional	
		D	Others (specify)	
A7	Which of these best describes where you grew up as a young boy or girl?	A	Village/Rural area	
		B	Town/semi urban area	
		C	Big town	
		D	Capital city	
A8	How would you describe your family's household resources?	A	Not enough	
		B	Just enough	
		C	Have most things	
		D	More than enough	
A9	How would you describe the amount of money available for your upkeep on the campus?	A	Not enough	
		B	Just enough	
		C	Enough	
		D	More than enough	
A10	Please indicate the work of your parents and provide an estimate of		Dad	

	their income?	Work		
		Income		
			Mum	
		Work		
		Income		

SECTION B: SEXUAL ACTIVITIES

	Indicate your sexual experience and activities. Please be honest.			Official use
B1	When did you have sex for the first time?	A	When I was in the elementary school	
		B	When I was in the high school	
		C	My first year in the University	
		D	After my first year in the University	
		E	I have never had sex	
B2	How many sexual partners have you had since your first sexual experience?	A	None	
		B	1	
		C	2	
		D	3	
		E	More than 3	
B3	What is your sexual orientation?	A	Heterosexual (sex between men and women)	
		B	Homosexual (Gay or lesbian)	
		C	Bisexual (sex with both men and women)	
		D	Celibate (No intention to have sex for life)	
B4	Do you discuss HIV with your partner(s) before having sex?	A	Always	
		B	Sometimes	
B5	Do you know the HIV status of your partner(s)?	A	Yes for all of them	
		B	Yes for some of them	
		C	No for all of them	
B6	Do you know your own HIV status	A	Yes	
		B	No	
B7	How often did you use condom in the last three months?	A	Always	
		B	Sometimes	
		C	Not at all	
B8	Did you use condom during your last sexual intercourse	A	Yes	
		B	No	
B9	When do you best enjoy having sex with your partner(s)	A	When I am relaxed	
		B	After an all-night party	
		C	After a good alcoholic drink	
		D	After a shot of drug	
B10	Who of the following would you have sex with for money or a favour?	A	A business man	
		B	A lecturer	
		C	A Senator/Minister/commissioner	
		D	A banker	
		E	A brilliant course mate	
		F	All of the above	
		G	None of the above	

SECTION C: INSTITUTIONAL PROGRAMMES ON HIV/AIDS

For Sections C to I, **SA** = Strongly Agree; **A** = Agree; **U** = Undecided; **D** = Disagree; **SD** = Strongly Disagree

	Indicate what the Management of your institution has in place for HIV/AIDS awareness and prevention	SA	A	U	D	SD	Official use
C1	There is HIV/AIDS information on campus						
C2	My University has an HIV/AIDS policy						
C3	Topics on HIV/AIDS are included in some of our courses/modules						

C4	There is free distribution of condoms for men						
C5	There is free distribution of condoms for women						
C6	Everyone is left to live independent lifestyle on campus						
C7	There are occasional awareness programmes by NGOs on campus						
C8	There is an HIV/AIDS testing and counselling clinic on campus						
C9	The student representative council runs HIV/AIDS awareness programmes						
C10	The faith groups run awareness programmes						

SECTION D: AWARENESS

	<i>Indicate the sources of your awareness about HIV/AIDS</i>	SA	A	U	D	SD	Official use
D1	Sexuality education in the high/secondary school						
D2	During orientation in the university						
D3	Seminars/open lectures						
D4	A course/module that includes topics on HIV/AIDS						
D5	Student body activities on HIV/AIDS						
D6	AIDS campaign by University						
D7	Non-Governmental Organization activities on campus						
D8	Religious programmes on HIV/AIDS						
D9	Internet						
D10	Parents'/relatives' guidance and counselling						
D11	Television/radio advertisements						
D12	Newspapers/magazines						
D13	Friends						
D14	Government programme						
D15	AIDS-related death or illness						
D16	HIV/AIDS testing and counselling clinics						

SECTION E: FACTORS THAT SUPPORT SPREAD OF HIV/AIDS ON CAMPUS

	<i>Rate which of the following aid the spread of HIV/AIDS on your campus or other campuses</i>	SA	A	U	D	SD	Official use
E1	Free distribution of condoms						
E2	Non-distribution of free condoms						
E3	Freedom to have many sexual partners						
E4	Religious activities moderate sexual activities						
E5	Many students have sugar daddies						
E6	Many students have sugar mummies						
E8	Casual sex with sex workers						
E9	Sex for money and material things						
E10	Sex for marks with lecturers						
E11	Difficulties to buy condoms						
E12	Not compulsory for students to test for HIV						
E13	Many students don't know their HIV status						
E14	HIV test centres are not available						
E15	HIV tests are available at the campus health centre/clinic						
E16	HIV tests are too expensive for students						
E17	HIV tests are free in my institution						
E18	Unwillingness/fear to go for HIV tests						
E19	Poverty						
E20	The exploitation of new students as sex partners by senior students						

SECTION F: RISK ASSESSMENT OF STUDENTS

	<i>Assess your personal risk of being infected with HIV</i>	SA	A	U	D	SD	Official use
F1	I have more than one sexual partner at the same time						
F2	I abstain from sex						
F3	I stick to only one faithful partner						
F4	I keep to Biblical/Islamic law of no sex before marriage						
F5	I use condom every time I have sex						

F6	I only use condom to prevent pregnancy						
F7	I can be infected with HIV if my partner is not faithful						
F8	Alcohol helps me to enjoy sex						
F9	Pretty girls/handsome boys cannot have HIV						
F10	Having sex with a stranger/sex worker occasionally without a condom is not a big risk						
F11	I can never be infected with HIV						
F12	Use of condom for sex is not enjoyable						
F13	God is always in control						
F14	It is not convenient to use condom always						
F15	When I run out of money I can have sex for money without condom						
F16	I have had a few sexually transmitted infections in the past						
F17	If I need a few marks to pass my exam, I can have sex with my lecturer						
F18	I am willing to have sex with a brilliant course mate to help with assignments/exams						
F19	It is normal in my culture to force a woman to have sex against her wish						
F20	Having several sexual partners is normal in our society						
F21	At campus weekend parties, it is normal for students to have sex with anybody that provides them with free drinks						
F22	I can be raped						
F23	Difficult to identify one who has HIV						
F24	Campus barbers/salon may not sterilize their instruments						
F25	Cult members or members of students representative council enjoy more sexual partners						

SECTION G: KNOWLEDGE OF HIV/AIDS TRANSMISSION

<i>HIV can be transmitted through:</i>		SA	A	U	D	SD	Official use
G1	Unprotected sex with infected partner(s)						
G2	Transfusion of unscreened blood						
G3	Infected mother to a child during birth						
G4	Sharing of blade/injection needles						
G5	Insect bites or domestic animal bites						
G6	Intravenous drug use (injection of drugs)						
G7	Men having sex with men						
G8	Having unprotected heterosexual sex with many partners						
G9	Sharing the same room or bed with an HIV positive person						
G10	Having sex with a menstruating partner						
G11	Having sex with a partner with an open injury on penis/vagina						
G12	Kissing						
G13	Use of public toilets						
G14	Body sweats from an HIV-positive person						
G15	Oral sex						
G16	Incorrect/inconsistent use of condom						
G17	A healthy looking person.						
G18	People with previous record of sexually transmitted infections (STIs)						
G19	Rich people/sugar daddies/sugar mummies						
G20	Breast feeding by HIV-positive mother						

SECTION H: KNOWLEDGE OF PROTECTION AGAINST HIV/AIDS INFECTION

<i>How can HIV infection be prevented?</i>		SA	A	U	D	SD	Official use
H1	By consistent use of condoms is effective against HIV infection						
H2	By using condom when I have sex with a casual partner						
H3	By abstinence from sex totally						
H4	By being faithful to my partner						
H5	By keeping to one partner at a time						
H6	By trusting God for protection, no matter how many persons one has sex with						
H7	By keeping to my religion which is against the use of condom						

H8	By keeping to my culture which is against the use of condom						
H9	By reducing the number of my sexual partners						
H10	By knowing the HIV status of partners before having sex						
H11	By knowing the HIV status of partners before marriage						
H12	By avoiding sharing toilets with people living with HIV/AIDS						
H13	By avoiding shaking hands with people living with HIV/AIDS						
H14	By avoiding any social situations which might lead to forced sex.						
H15	By having good knowledge of HIV/AIDS which helps in taking the right decisions against infection						
H16	By changing one's sexual behaviour if one has lived a reckless sex life						
H17	By keeping religious teaching that discourages having sex before marriage						
H18	By keeping the cultural value of remaining a virgin until marriage						
H19	By not engaging in sex-for-money trade under any circumstance						
H20	By avoiding friends who can influence you into undertaking risky sex						

SECTION I: PERCEPTION OF PREVENTIVE STRATEGIES

The most important strategies/methods to avoid infection by HIV/AIDS virus is -----		SA	A	U	D	SD	Official use
I1	Using a condom correctly and always						
I2	Abstaining from/avoiding sex altogether						
I3	Undertaking HIV test before marriage						
I4	Delaying sexual relationship until marriage						
I5	Keeping to one faithful sex partner						
I6	Circumcised men are less at risk of HIV infection						
I7	Avoid company of heavy alcohol drinkers						
I8	Avoid company of any known drug users						
I9	Knowing the HIV status of partners						
I10	Insist on screened blood for transfusion						
I11	Avoid having unprotected sex with partners with open injury on their penis/vagina						
I12	Avoid having many sexual partners at the same time						
I13	Avoid having sex with anyone you cannot negotiate your safety from infection with						
I14	Avoid any social gatherings which might lead to forced sex						
I15	Avoid sharing injection needles/blades						

THANK YOU FOR YOUR HELP. Kindly check that you have responded to all items before returning the questionnaire. (I E Kolawole)

APPENDIX B: RELIABILITY STATISTIC

Item	Cronbach's Alpha (if item deleted)		
SECTION C: Institutional programmes on HIV/AIDS	UNAD	UNIZULU	ALL
There is HIV/AIDS information on campus	.797	.628	.761
My University has an HIV/AIDS policy	.782	.638	.755
Topics on HIV/AIDS are included in some of our courses/modules	.804	.658	.762
There is free distribution of condoms for men	.787	.629	.742
There is free distribution of condoms for women	.791	.668	.773
Everyone is left to live independent lifestyle on campus	.836	.726	.812
There are occasional awareness programmes by NGOs on campus	.804	.654	.778
There is an HIV/AIDS testing and counselling clinic on campus	.801	.645	.753
The student representative council runs HIV/AIDS awareness programmes	.780	.640	.751
The faith groups run awareness programmes	.805	.642	.771
SECTION D: Awareness			
Sexuality education in the high/secondary school	.849	.857	.851
During orientation in the university	.842	.855	.847
Seminars/open lectures	.848	.855	.850
A course/module that includes topics on HIV/AIDS	.845	.853	.847
Student body activities on HIV/AIDS	.836	.854	.844
AIDS campaign by University	.839	.850	.843
Non-Governmental Organization activities on campus	.845	.855	.848
Religious programmes on HIV/AIDS	.840	.853	.845
Internet	.844	.852	.846
Parents'/relatives' guidance and counselling	.844	.850	.845
Television/radio advertisements	.848	.849	.846
Newspapers/magazines	.847	.849	.845
Friends	.845	.853	.847
Government programme	.843	.851	.845
AIDS-related death or illness	.844	.853	.846
HIV/AIDS testing and counselling clinics	.837	.850	.842
SECTION E: Factors that support spread of HIV/AIDS on campus			
Free distribution of condoms	.677	.748	.723
Non-distribution of free condoms	.675	.740	.717
Freedom to have many sexual partners	.668	.734	.712
Religious activities moderate sexual activities	.688	.769	.748
Many students have sugar daddies	.660	.738	.713
Many students have sugar mummies	.668	.737	.714
Casual sex with sex workers	.655	.730	.706
Sex for money and material things	.654	.730	.706
Sex for marks with lecturers	.656	.730	.706
Difficulties to buy condoms	.678	.745	.725
Not compulsory for students to test for HIV	.668	.749	.726
Many students don't know their HIV status	.661	.744	.719
HIV test centres are not available	.675	.754	.727
HIV tests are available at the campus health centre/clinic	.700	.753	.733
HIV tests are too expensive for students	.694	.757	.734
HIV tests are free in my institution	.697	.754	.733
Unwillingness/fear to go for HIV tests	.666	.745	.721
Poverty	.670	.748	.725
The exploitation of new students as sex partners by senior students	.667	.741	.720
SECTION F: Risk assessment of students			
I have more than one sexual partner at the same time	.788	.773	.777

I abstain from sex	.803	.784	.791
I stick to only one faithful partner	.797	.777	.783
I keep to Biblical/Islamic law of no sex before marriage	.802	.785	.791
I use condom every time I have sex	.804	.783	.790
I only use condom to prevent pregnancy	.814	.797	.802
I can be infected with HIV if my partner is not faithful	.797	.783	.787
Alcohol helps me to enjoy sex	.787	.770	.774
Pretty girls/handsome boys cannot have HIV	.790	.773	.777
Having sex with a stranger/sex worker occasionally without a condom is not a big risk	.793	.775	.780
I can never be infected with HIV	.798	.774	.781
Use of condom for sex is not enjoyable	.792	.771	.777
God is always in control	.796	.784	.787
It is not convenient to use condom always	.788	.768	.774
When I run out of money I can have sex for money without condom	.781	.762	.767
I have had a few sexually transmitted infections in the past	.784	.772	.775
If I need a few marks to pass my exam, I can have sex with my lecturer	.780	.762	.767
I am willing to have sex with a brilliant course mate to help with assignments/exams	.781	.760	.766
It is normal in my culture to force a woman to have sex against her wish	.781	.767	.770
Having several sexual partners is normal in our society	.786	.767	.773
At campus weekend parties, it is normal for students to have sex with anybody that provides them with free drinks	.785	.777	.780
I can be raped	.816	.792	.800
Difficult to identify one who has HIV	.801	.788	.792
Campus barbers/salon may not sterilize their instruments	.798	.786	.791
Cult members or members of students representative council enjoy more sexual partners	.802	.781	.787
SECTION G: Knowledge of HIV/AIDS transmission			
Unprotected sex with infected partner(s)	.726	.859	.823
Transfusion of unscreened blood	.722	.860	.824
Infected mother to a child during birth	.729	.862	.826
Sharing of blade/injection needles	.722	.859	.822
Insect bites or domestic animal bites	.741	.870	.835
Intravenous drug use (injection of drugs)	.739	.862	.829
Men having sex with men	.744	.863	.830
Having unprotected heterosexual sex with many partners	.723	.858	.822
Sharing the same room or bed with an HIV positive person	.729	.863	.827
Having sex with a menstruating partner	.738	.864	.829
Having sex with a partner with an open injury on penis/vagina	.723	.859	.823
Kissing	.737	.866	.831
Use of public toilets	.727	.867	.830
Body sweats from an HIV-positive person	.731	.868	.832
Oral sex	.765	.871	.842
Incorrect/inconsistent use of condom	.722	.862	.824
A healthy looking person.	.750	.873	.839
People with previous record of sexually transmitted infections (STIs)	.734	.864	.829
Rich people/sugar daddies/sugar mummies	.731	.864	.829
Breast feeding by HIV-positive mother	.730	.865	.829
SECTION H: Knowledge of protection against HIV/AIDS infection			
By consistent use of condoms is effective against HIV infection	.818	.891	.871
By using condom when I have sex with a casual partner	.815	.891	.870
By abstinence from sex totally	.808	.889	.867
By being faithful to my partner	.804	.887	.865
By keeping to one partner at a time	.812	.891	.870

By trusting God for protection, no matter how many persons one has sex with	.811	.893	.871
By keeping to my religion which is against the use of condom	.817	.894	.873
By keeping to my culture which is against the use of condom	.815	.894	.872
By reducing the number of my sexual partners	.817	.895	.874
By knowing the HIV status of partners before having sex	.805	.888	.865
By knowing the HIV status of partners before marriage	.802	.888	.865
By avoiding sharing toilets with people living with HIV/AIDS	.814	.893	.872
By avoiding shaking hands with people living with HIV/AIDS	.807	.891	.869
By avoiding any social situations which might lead to forced sex.	.806	.894	.871
By having good knowledge of HIV/AIDS which helps in taking the right decisions against infection	.802	.887	.864
By changing one's sexual behaviour if one has lived a reckless sex life	.806	.892	.870
By keeping religious teaching that discourages having sex before marriage	.804	.892	.869
By keeping the cultural value of remaining a virgin until marriage	.804	.889	.866
By not engaging in sex-for-money trade under any circumstance	.802	.889	.865
By avoiding friends who can influence you into undertaking risky sex	.801	.887	.864
SECTION I: Perception of preventive strategies			
Using a condom correctly and always	.828	.913	.888
Abstaining from/avoiding sex altogether	.822	.913	.886
Undertaking HIV test before marriage	.818	.913	.886
Delaying sexual relationship until marriage	.840	.913	.892
Keeping to one faithful sex partner	.813	.914	.885
Circumcised men are less at risk of HIV infection	.845	.933	.909
Avoid company of heavy alcohol drinkers	.826	.917	.891
Avoid company of any known drug users	.822	.916	.889
Knowing the HIV status of partners	.816	.912	.885
Insist on screened blood for transfusion	.817	.916	.888
Avoid having unprotected sex with partners with open injury on their penis/vagina	.815	.910	.882
Avoid having many sexual partners at the same time	.809	.911	.882
Avoid having sex with anyone you cannot negotiate your safety from infection with	.811	.910	.882
Avoid any social gatherings which might lead to forced sex	.808	.910	.881
Avoid sharing injection needles/blades	.816	.911	.883

APPENDIX C: Tables

Table 5.5: Mean scores for knowledge of HIV and AIDS transmission

VARIABLE		UNAD		UNIZULU	
(N: UNAD; UNIZULU)		Mean	SD	Mean	SD
	University (N: 604; 856)	75.5828	10.92268	77.4474	15.32966
Faculty	Education (N: 401; 679)	75.2618	9.97240	76.4124	15.23390
	Science (N: 203; 177)	76.2167	12.59390	81.4181	15.08707
Department	Biochemistry (N: 203; 177)	77.9143	13.55339	82.1608	13.98926
	Chemistry (N: 98; 34)	74.3980	11.26416	78.2941	18.95853
	Educ. Psychol.(N: 250; 385)	76.5308	9.35254	76.3143	15.47267
	Science Educ. (N: 141; 294)	72.9220	10.66843	76.5408	14.94073
Gender	Male (N: 294; 326)	75.6259	11.18337	78.4540	14.68718
	Female (N: 310; 530)	75.5419	10.68752	76.8283	15.69339
Age on entry to University	15-18 y (N: 146; 164)	76.1027	10.98885	81.4573	15.10062
	19-21 y (N: 295; 298)	75.8441	9.97835	77.5403	14.88316
	22-24 y (N: 142; 175)	74.6479	12.87760	74.5657	17.07404
	25-30 y (N: 20; 149)	75.1000	8.81327	76.0872	14.67160
	>30 y (N: 1; 70)	65.0000	-	77.7571	12.63127
Age now	15-18 y (N: 23; 59)	73.7826	6.66031	82.0847	9.55977
	19-21 y (N: 176; 293)	76.6761	10.80226	79.3174	15.24340
	22-24 y (N: 289; 220)	74.9654	11.04279	74.9318	17.68754
	25-30 y (N: 109; 181)	75.6330	11.47756	75.4972	14.50886
	>30 y (N: 7; 103)	78.7143	11.05613	78.2718	12.88120
Level of study	1 st year (N: 116; 267)	73.9224	13.14743	76.9026	14.11199
	2 nd year (N: 185; 328)	75.8108	9.76640	78.0427	16.17502
	3 rd year (N: 154; 140)	76.4610	8.80889	79.3714	15.14598
	4 th year (N: 149; 121)	75.6846	12.24474	74.8099	15.53347
Marital status	Single (N: 562; 785)	75.5836	10.90099	77.7834	15.36093
	Married (N: 40; 64)	76.0250	11.34423	73.8906	14.65813
	Divorced (N: 1; 5)	73.0000	-	64.2000	5.63028
	Widowed (N: 1; 2)	60.0000	-	92.5000	6.36396
No. of children	None (N: 554; 501)	75.6697	11.04311	77.4750	16.23718
	One (N: 27; 223)	73.7778	7.99679	78.5785	14.14952
	Two (N: 15; 78)	74.4000	9.21799	76.7308	12.60764
	More than two (N: 8; 54)	77.8750	14.61347	73.5556	14.58310
Religion	Christianity (N: 492; 712)	75.9085	11.20926	77.7346	15.43959
	Islam (N: 95; 3)	74.4211	9.79859	87.0000	8.71780
	Traditional (N: 15; 103)	73.2667	7.54479	75.1553	15.25711
	Others (N: 2; 38)	68.0000	7.07107	77.5263	13.42192
Where grown up	Village/Rural area (N: 70; 626)	73.4714	9.45580	76.9872	14.92091
	Town/semi urban area (N: 143; 191)	74.7483	10.09007	79.2042	16.48397
	Big town (N: 171; 26)	75.4620	11.70483	79.3846	14.10837
	Capital city (N: 220; 13)	76.8909	11.15138	69.9231	17.36597
Family resources	Not enough (N: 90; 442)	74.4444	12.13326	76.0860	15.55728
	Just enough (N: 335; 311)	75.6060	10.39749	78.6752	14.94379
	Have most things (N: 115; 67)	76.3130	11.23931	81.5224	15.35278
	More than enough (N: 63; 28)	75.3651	11.03704	74.1786	14.51195
Money for stipend	Not enough (N: 148; 569)	74.7095	11.59654	76.4464	15.45784
	Just enough (N: 245; 180)	75.4122	10.73514	79.6556	15.49241
	Enough (N: 176; 90)	76.3011	10.06863	80.8111	11.17370
	More than enough (N: 35; 10)	76.8571	13.33316	70.2000	18.28053

^a 1-33 (Low); 34-67 (Medium), 68-100 (High).

Table 5.6: Mean scores of knowledge of protection against HIV and AIDS infections

VARIABLE		UNAD		UNIZULU	
(N: UNAD; UNIZULU)		Mean	SD	Mean	SD
	University (N: 604; 856)	78.6821	11.28766	79.4112	16.28336
Faculty	Education (N: 401; 679)	78.8180	10.17026	79.0736	14.87650
	Science (N: 203; 177)	78.4138	13.24432	80.7062	20.81831
Department	Biochemistry (N: 203; 177)	80.0190	15.59030	81.0000	20.50799
	Chemistry (N: 98; 34)	76.6939	9.94563	79.4706	22.35558
	Educ. Psychol.(N: 250; 385)	80.7115	9.27432	78.8831	13.85939
	Science Educ. (N: 141; 294)	75.3262	10.83809	79.3231	16.13259
Gender	Male (N: 294; 326)	79.0884	10.37714	79.6534	15.89948
	Female (N: 310; 530)	78.2968	12.09224	79.2623	16.52818
Age on entry to University	15-18 y (N: 146; 164)	79.3425	12.06216	80.1951	20.49117
	19-21 y (N: 295; 298)	78.5492	10.55807	80.3389	14.83067
	22-24 y (N: 142; 175)	78.6479	11.67965	78.0457	15.07941
	25-30 y (N: 20; 149)	77.5000	12.15037	78.3624	14.89160
	>30 y (N: 1; 70)	50.0000	-	79.2714	16.89689
Age now	15-18 y (N: 23; 59)	77.0435	9.49391	81.2542	15.17665
	19-21 y (N: 176; 293)	79.3239	11.72410	80.4300	17.73703
	22-24 y (N: 289; 220)	78.3945	11.41743	78.7773	15.86503
	25-30 y (N: 109; 181)	79.0367	10.25321	78.5304	14.81461
	>30 y (N: 7; 103)	74.2857	16.26565	78.3592	15.96679
Level of study	1 st year (N: 116; 267)	79.0948	10.23462	79.8464	13.58525
	2 nd year (N: 185; 328)	78.0270	11.10642	80.1402	16.74083
	3 rd year (N: 154; 140)	78.7143	12.40689	79.5000	17.58781
	4 th year (N: 149; 121)	79.1409	11.15131	76.3719	18.62442
Marital status	Single (N: 562; 785)	78.9555	11.15232	79.8115	15.84620
	Married (N: 40; 64)	75.0250	12.81123	74.6406	20.49186
	Divorced (N: 1; 5)	70.0000	-	72.2000	17.09386
	Widowed (N: 1; 2)	80.0000	-	93.0000	1.41421
No. of children	None (N: 554; 501)	79.0578	11.16813	79.6208	17.30156
	One (N: 27; 223)	72.5185	11.87878	80.3946	14.56351
	Two (N: 15; 78)	74.5333	10.77608	78.5769	11.46029
	More than two (N: 8; 54)	81.2500	12.79230	74.6111	18.57917
Religion	Christianity (N: 492; 712)	79.5386	10.59995	79.6601	16.45912
	Islam (N: 95; 3)	75.2105	14.00676	93.6667	1.52753
	Traditional (N: 15; 103)	72.6000	8.85438	77.1456	16.72230
	Others (N: 2; 38)	78.5000	7.77817	79.7632	10.87381
Where grown up	Village/Rural area (N: 70; 626)	74.5429	10.05591	79.2141	15.23645
	Town/semi urban area (N: 143; 191)	79.0909	9.42495	81.4921	16.65055
	Big town (N: 171; 26)	78.4854	10.80215	69.8846	30.80302
	Capital city (N: 220; 13)	79.8864	12.79486	77.3846	12.73799
Family resources	Not enough (N: 90; 442)	77.4667	10.12084	78.1109	16.17728
	Just enough (N: 335; 311)	78.2597	11.54974	80.9839	15.71407
	Have most things (N: 115; 67)	80.2348	12.59026	82.4179	18.01863
	More than enough (N: 63; 28)	79.4921	8.15351	74.6786	19.31235
Money for stipend	Not enough (N: 148; 569)	78.0000	12.60385	78.5975	16.25484
	Just enough (N: 245; 180)	78.6694	10.31675	81.9278	14.73264
	Enough (N: 176; 90)	78.4489	11.73214	81.0222	17.49862
	More than enough (N: 35; 10)	82.8286	8.97541	74.0000	14.75730

^a 1-33 (Low); 34-67 (Medium), 68-100 (High).

Table 5.8: Mean scores of perception of preventive strategies

VARIABLE		UNAD		UNIZULU	
(N: UNAD; UNIZULU)		Mean	SD	Mean	SD
	University (N: 604; 856)	61.1871	9.55579	61.6495	13.17968
Faculty	Education (N: 401; 679)	61.1372	9.15771	61.4080	12.54185
	Science (N: 203; 177)	61.2857	10.31999	62.5763	15.38838
Department	Biochemistry (N: 203; 177)	63.0762	11.06336	63.0490	14.96067
	Chemistry (N: 98; 34)	59.3673	9.13065	60.5882	17.16960
	Educ. Psychol.(N: 250; 385)	62.2462	9.35946	62.2000	12.00039
	Science Educ. (N: 141; 294)	59.0922	8.42946	60.3707	13.16612
Gender	Male (N: 294; 326)	60.9932	8.43849	60.4601	14.26895
	Female (N: 310; 530)	61.3710	10.51680	62.3811	12.41995
Age on entry to University	15-18 y (N: 146; 164)	61.9110	10.01855	62.1220	16.45846
	19-21 y (N: 295; 298)	61.0576	8.93286	61.4631	12.48650
	22-24 y (N: 142; 175)	61.0352	10.18441	60.2686	14.32913
	25-30 y (N: 20; 149)	60.1500	9.41038	63.0805	8.91060
	>30 y (N: 1; 70)	36.0000	-	61.7429	11.97423
Age now	15-18 y (N: 23; 59)	60.6957	8.07034	62.5085	14.34353
	19-21 y (N: 176; 293)	61.7784	10.86550	62.0341	14.53122
	22-24 y (N: 289; 220)	60.7855	9.09034	60.7818	13.49269
	25-30 y (N: 109; 181)	61.5688	8.66385	61.7624	10.54482
	>30 y (N: 7; 103)	58.5714	12.14986	61.7184	12.04031
Level of study	1 st year (N: 116; 267)	60.4828	11.40670	62.6629	12.46795
	2 nd year (N: 185; 328)	60.3297	9.75206	61.1951	14.28901
	3 rd year (N: 154; 140)	62.2338	8.53351	61.1857	12.24486
	4 th year (N: 149; 121)	61.7181	8.64235	61.1818	12.63659
Marital status	Single (N: 562; 785)	61.2224	9.55155	61.6025	13.47295
	Married (N: 40; 64)	60.4500	9.88641	62.5000	9.33503
	Divorced (N: 1; 5)	66.0000	-	55.8000	10.03494
	Widowed (N: 1; 2)	66.0000	-	67.5000	4.94975
No. of children	None (N: 554; 501)	61.3141	9.58896	61.1377	15.07219
	One (N: 27; 223)	58.0741	9.28575	62.6547	9.93139
	Two (N: 15; 78)	61.2000	8.21323	62.0000	8.56602
	More than two (N: 8; 54)	62.8750	10.24608	61.7407	11.50748
Religion	Christianity (N: 492; 712)	61.8150	9.04212	61.4916	13.76567
	Islam (N: 95; 3)	58.2421	11.53046	69.6667	2.30940
	Traditional (N: 15; 103)	60.8667	8.34837	61.9223	10.38163
	Others (N: 2; 38)	49.0000	11.31371	63.2368	8.16861
Where grown up	Village/Rural area (N: 70; 626)	58.4143	7.96640	61.8546	11.62630
	Town/semi urban area (N: 143; 191)	61.4056	7.85093	61.9895	16.15745
	Big town (N: 171; 26)	61.3099	8.87978	54.3077	21.68275
	Capital city (N: 220; 13)	61.8318	11.28436	61.4615	10.12106
Family resources	Not enough (N: 90; 442)	58.2000	11.86554	61.0995	13.41570
	Just enough (N: 335; 311)	61.2209	9.36193	62.0418	12.85759
	Have most things (N: 115; 67)	62.6000	9.25354	64.2537	12.43936
	More than enough (N: 63; 28)	62.4762	5.91296	59.3214	15.77164
Money for stipend	Not enough (N: 148; 569)	59.9459	11.61385	61.3040	13.32003
	Just enough (N: 245; 180)	61.0245	8.22577	62.2167	13.51898
	Enough (N: 176; 90)	61.8920	9.71625	62.9778	11.88898
	More than enough (N: 35; 10)	64.0286	6.85774	56.9000	12.64428

Table 5.9: Sexual activities of respondents

Characteristics	Distribution	Number and percentage of valid responses					
		UNAD N = 604		UNIZULU N = 856		TOTAL N = 1460	
		No.	%	No.	%	No.	%
Sexual debut	No response	7	1.2	11	1.3	11	1.2
	Elementary school	86	14.3	66	7.8	152	10.5
	High school	180	30.0	446	52.7	626	43.3
	First year at university	118	19.7	94	11.5	215	14.9
	After first year	81	13.5	65	7.7	146	10.1
	Never have sex	128	21.3	161	19.0	289	20.0
	Missing	4		10		14	
Number of sexual partners	No response	10	1.7	4	0.5	14	1.0
	None	123	20.6	176	20.6	299	21.6
	1	185	31.0	284	33.3	469	32.3
	2	105	17.6	122	14.3	227	15.7
	3	62	10.4	72	8.4	134	9.2
	More than 3	112	18.8	195	22.9	307	21.2
	Missing	7		3		10	
Sexual orientation	No response	0	0	5	0.6	5	0.4
	Heterosexual	550	93.9	724	87.8	1274	90.3
	Homosexual	5	0.9	13	1.6	18	1.3
	Bisexual	16	2.7	14	1.7	30	2.1
	Celibate	15	2.5	69	8.4	84	6.0
	Missing	18		31		49	
Discuss HIV with partner before sex	No response	70	12.7	36	4.8	106	8.2
	Always	231	41.8	303	40.8	534	41.2
	Sometimes	252	45.6	404	54.4	656	50.6
	Missing	51		3		164	
Know HIV status of partners	No response	99	19.0	41	6.3	140	12.0
	Yes to all	166	31.9	243	37.6	409	35.0
	Yes to some	103	19.8	126	19.5	229	19.6
	No for all	152	29.2	237	36.6	389	33.3
	Missing	84		209		293	
Knows own HIV status	No response	9	1.5	4	0.5	13	0.9
	Yes	377	63.0	580	68.4	957	66.2
	No	212	35.5	264	31.1	476	32.9
	Missing	6		8		14	
Use of condom in the last three months	No response	31	5.4	37	4.7	68	5.0
	Always	215	37.5	342	43.1	557	40.7
	Sometimes	174	30.4	226	28.5	400	29.3
	Not at all	153	26.7	189	23.8	342	25.0
	No response	31		62		93	
Use of condom during last sex	No response	53	9.4	40	5.0	93	6.9
	Yes	321	57.1	438	55.2	759	56.0
	No	188	33.5	316	39.8	504	37.2
	Missing	42		62		104	
When sex is best enjoyed	No response	59	10.4	46	5.9	105	7.8
	When relaxed	388	68.2	651	83.9	1039	77.2
	After all night party	38	6.7	41	5.3	79	5.9
	After good alcoholic drink	70	12.3	28	3.6	98	7.3
	After a shot of drug	14	2.5	10	1.3	24	1.8
	Missing	35		80		115	
With whom could have sex for money or favour	No response	12	2.0	4	0.5	16	1.1
	A business man	15	2.5	33	4.0	48	3.3
	A lecturer	18	3.0	22	2.6	40	2.8
	A Senator/Minister....	44	7.3	10	1.2	54	3.8
	A banker	21	3.5	6	0.7	27	1.9
	A brilliant course mate	50	8.3	43	9.0	93	6.5
	All of the above	51	8.5	35	14.1	86	6.0
	None of the above	388	64.8	681	81.7	1069	74.6
	Missing	5		22		27	

Table 5.11: Institutional programmes on HIV and AIDS against selected variables from
Section A

VARIABLE			UNIVERSITY ^a	
			UNAD (N)	UNIZULU (N)
	University	Mean SD	28.9884 (604) 7.90563	35.8061 (856) 6.08053
Faculty	Education	Mean SD	29.2569 (401) 8.05986	36.4462 (679) 5.96571
	Science	Mean SD	28.4581 (203) 7.58333	33.3503 (177) 5.90468
Department				
	Biochemistry <i>N</i> = 248	Mean SD	27.4000 (105) 6.95120	34.0350 (143) 5.42739
	Chemistry	Mean SD	29.5918 (98) 8.08950	30.4706 (34) 6.97283
	Educ. Psychol.	Mean SD	28.7654 (260) 7.60428	36.7247 (385) 6.15825
	Science Educ.	Mean SD	30.1631 (141) 8.79499	36.0816 (294) 5.69355
Gender				
	Male	Mean SD	28.8741 (294) 8.12873	35.6166 (326) 5.95859
	Female	Mean SD	29.0968 (310) 7.69968	35.9226 (530) 6.15702
Age on entry to University				
	15-18 y	Mean SD	29.2808 (146) 8.49076	34.5366 (164) 6.64193
	19-21 y	Mean SD	29.1661(295) 7.75669	35.7114 (298) 5.60759
	22-24 y	Mean SD	28.4507 (142) 7.34034	35.7486 (175) 6.70261
	25-30 y	Mean SD	28.2500 (20) 9.88819	36.8926 (149) 5.65463
	>30 y	Mean SD	25.0000 (1)	37.0143 (70) 5.36627
Age now				
	15-18 y	Mean SD	31.3478 (23) 8.84518	33.5254 (59) 7.34696
	19-21 y	Mean SD	29.3636 (176) 8.02237	35.7440 (293) 5.69721
	22-24 y	Mean SD	28.4394 (289) 7.78246	34.9727 (220) 6.55773
	25-30 y	Mean SD	29.2569 (109) 7.58215	36.9116 (181) 5.31799
	>30 y	Mean SD	30.2857(7) 11.48498	37.1262 (103) 5.96835
Level of study				
	1 st year	Mean SD	30.1379 (116) 8.16237	35.3521 (267) 5.93540
	2 nd year	Mean SD	29.2054 (185) 8.06973	35.8811 (328) 6.37041
	3 rd year	Mean SD	29.2532 (154) 7.64452	35.6429 (140) 5.68612
	4 th year	Mean SD	27.5503 (149) 7.63211	36.7934 (121) 5.98459

^a Maximum score = 50; 1-16 (Low), 17-32 (Medium), 33-50 (High).

Table 5.12: Mean scores as measures of awareness (D) and Factors that support spread of HIV and AIDS on campus (E)

VARIABLE			UNAD		UNIZULU	
University	(N: UNAD; UNIZULU)		D ^a Max.=80	E ^b Max=100	D Max.=80	E ^a Max=100
	University (N: 604; 856)	Mean SD	58.2467 11.62446	46.1639 9.52023	60.1811 11.93280	50.1998 11.71817
Faculty	Education (N: 401; 679)	Mean SD	58.5037 10.90255	47.0524 8.50087	60.6613 12.04919	50.7216 11.70334
	Science (N: 203; 177)	Mean SD	57.7389 12.94642	44.4089 11.08140	58.3390 11.32015	48.1977 11.59106
Department	Biochemistry (N: 203; 177)	Mean SD	56.9143 13.85649	44.1619 11.92212	58.9650 11.61132	47.4965 11.15251
	Chemistry (N: 98; 34)	Mean SD	58.6224 11.90211	44.6735 10.15831	55.7059 9.71886	51.1471 13.04801
	Educ. Psychol. (N: 250; 385)	Mean SD	59.7192 10.07089	46.6769 7.92018	61.7922 12.40058	51.6649 11.94385
	Science Educ. (N: 141; 294)	Mean SD	56.2624 12.00752	47.7447 9.46980	59.1803 11.42529	49.4864 11.28191
Gender	Male (N: 294; 326)	Mean SD	58.0612 11.67344	45.9218 10.02951	59.5184 12.21945	49.8098 11.20772
	Female (N: 310; 530)	Mean SD	58.4226 11.59394	46.3935 9.02101	60.5887 11.74608	50.4396 12.02554
Age on entry to University	15-18 y (N: 146; 164)	Mean SD	57.3425 12.58923	45.3219 9.08575	59.7988 12.37461	49.7561 10.36519
	19-21 y (N: 295; 298)	Mean SD	58.7424 11.69400	46.2271 9.38550	60.5570 10.01540	48.3423 11.63402
	22-24 y (N: 142; 175)	Mean SD	58.1479 10.59904	46.7113 10.10623	59.1943 13.45136	51.2514 11.65030
	25-30 y (N: 20; 149)	Mean SD	58.8000 10.59096	46.7000 10.20887	60.6980 11.92074	52.1611 12.87679
	>30 y (N: 1; 70)	Mean SD	47.0000 -	62.0000 -	60.8429 14.33111	52.3429 11.66425
Age now	15-18 y (N: 23; 59)	Mean SD	58.0870 11.33744	46.3913 6.94615	60.2542 9.09261	49.1864 8.97789
	19-21 y (N: 176; 293)	Mean SD	58.6250 11.53956	45.5511 8.68876	60.5085 11.65944	48.6689 11.60374
	22-24 y (N: 289; 220)	Mean SD	58.0346 11.93874	46.4706 10.16598	59.5682 11.41456	49.8545 11.53699
	25-30 y (N: 109; 181)	Mean SD	58.1193 10.86936	46.2661 9.38245	60.1326 12.91055	52.2652 12.31739
	>30 y (N: 7; 103)	Mean SD	60.0000 15.70563	46.5714 12.98534	60.6019 13.49825	52.2427 12.11826
Level of study	1 st year (N: 116; 267)	Mean SD	61.3879 10.00849	46.0690 9.55963	60.5019 10.59521	49.5918 11.17000
	2 nd year (N: 185; 328)	Mean SD	57.9459 11.16318	46.5243 8.44037	60.3232 11.90402	50.2012 12.25902
	3 rd year (N: 154; 140)	Mean SD	58.2987 11.05608	46.8247 8.57579	60.1071 13.78024	50.3929 11.89565
	4 th year (N: 149; 121)	Mean SD	56.1208 13.38005	45.1074 11.48568	59.1736 12.58086	51.3140 11.23613
Marital status	Single (N: 562; 785)	Mean SD	58.0356 11.72618	46.0534 9.47427	60.2841 11.72015	50.0166 11.67812
	Married (N: 40; 64)	Mean SD	60.8750 9.85585	47.2500 9.67087	59.2813 14.35985	52.6250 12.23643
	Divorced (N: 1; 5)	Mean SD	74.0000 -	70.0000 -	58.2000 14.93988	49.0000 11.89538
	Widowed (N: 1; 2)	Mean SD	56.0000 -	41.0000 -	53.5000 0.70711	47.5000 7.77817

No. of children	None (N: 554; 501)	Mean SD	58.0812 11.72711	45.9404 9.51168	59.9162 11.87809	49.6926 11.74637
	One (N: 27; 223)	Mean SD	59.6667 10.37008	49.0741 7.26914	60.3901 11.93320	50.4260 11.84139
	Two (N: 15; 78)	Mean SD	64.0667 7.60138	48.4667 11.64270	61.1538 11.21464	51.7436 11.14187
	More than two (N: 8; 54)	Mean SD	54.0000 12.55843	47.5000 11.95229	60.3704 13.58592	51.7407 11.71547
Religion	Christianity (N: 492; 712)	Mean SD	58.2602 11.52123	45.7093 9.41609	60.1615 12.30796	49.8104 11.83605
	Islam (N: 95; 3)	Mean SD	58.0105 12.26437	48.0526 10.25149	52.3333 4.72582	54.0000 10.58301
	Traditional (N: 15; 103)	Mean SD	59.6667 12.05148	49.6667 5.87570	59.7282 10.05592	51.4757 11.44625
	Others (N: 2; 38)	Mean SD	55.5000 9.19239	42.0000 9.89949	62.3947 9.42550	53.7368 9.61048
Where grown up	Village/Rural area (N: 70; 626)	Mean SD	57.1143 11.38591	47.3571 9.05064	59.9665 11.94148	49.8722 11.56794
	Town/semi urban area (N: 143; 191)	Mean SD	58.0070 11.21210	45.8182 8.68189	60.9634 11.70127	51.8115 10.91528
	Big town (N: 171; 26)	Mean SD	58.9591 11.02956	46.3450 9.80775	57.6923 14.42711	44.7308 17.73935
	Capital city (N: 220; 13)	Mean SD	58.2091 12.42703	45.8682 9.97787	64.0000 8.68907	53.2308 12.26210
Family resources	Not enough (N: 90; 442)	Mean SD	56.7111 12.03669	45.5556 10.21357	60.1290 11.04861	50.2557 11.86604
	Just enough (N: 335; 311)	Mean SD	58.3433 11.42268	46.1970 9.22620	59.6334 12.97395	50.5949 11.33265
	Have most things (N: 115; 67)	Mean SD	58.3913 12.35065	46.6783 10.12860	62.3582 10.67098	48.2388 10.57454
	More than enough (N: 63; 28)	Mean SD	59.7460 10.80019	46.1429 8.96023	60.3571 15.83062	47.8571 13.86099
Money for stipend	Not enough (N: 148; 569)	Mean SD	57.2365 10.84483	45.1824 10.16332	59.8067 12.36154	50.3743 11.74384
	Just enough (N: 245; 180)	Mean SD	58.3633 11.19987	46.5143 9.59833	61.1611 10.39992	50.6056 10.56795
	Enough (N: 176; 90)	Mean SD	58.5795 12.81893	46.4545 8.89739	60.2778 11.81793	49.5556 13.55647
	More than enough (N: 35; 10)	Mean SD	60.0286 11.56182	46.4000 9.30907	60.8000 11.42901	42.1000 8.04777

^a Awareness: 1-26 (Low), 27-53 (Medium), 54-80 (High); ^b Factors that support spread of HIV and AIDS on campus: 1-33 (Low), 34-67 (Medium), 68-100 (High)

Table 5.13: Mean scores as measures on risk assessment of students

VARIABLE		UNAD		UNIZULU	
(N: UNAD; UNIZULU)		Mean ^a	SD	Mean ^a	SD
	University (N: 604; 856)	84.0298	15.44613	87.5853	15.34903
Faculty	Education (N: 401; 679)	84.3017	13.84472	87.0943	15.38953
	Science (N: 203; 177)	83.4926	18.22667	89.4689	15.08764
Department	Biochemistry (N: 203; 177)	85.7048	18.46823	89.9021	14.93993
	Chemistry (N: 98; 34)	81.1224	17.75275	87.6471	15.79199
	Educ. Psychol.(N: 250; 385)	86.9962	13.61254	88.0753	15.10405
	Science Educ. (N: 141; 294)	79.3333	12.90330	85.8095	15.68867
Gender	Male (N: 294; 326)	82.2415	15.65867	83.9877	14.88189
	Female (N: 310; 530)	85.7258	15.07175	89.7981	15.22605
Age on entry to University	15-18 y (N: 146; 164)	85.0068	14.72202	89.4329	16.08304
	19-21 y (N: 295; 298)	83.9966	15.74791	86.2517	15.88025
	22-24 y (N: 142; 175)	83.4718	15.71045	86.7657	15.38648
	25-30 y (N: 20; 149)	82.1500	14.89357	88.9128	14.20598
	>30 y (N: 1; 70)	68.0000	-	88.1571	13.08682
Age now	15-18 y (N: 23; 59)	80.6957	14.83373	91.5424	15.17635
	19-21 y (N: 176; 293)	86.5170	15.08754	86.3549	16.94523
	22-24 y (N: 289; 220)	83.3599	15.85728	87.0591	14.77352
	25-30 y (N: 109; 181)	82.4495	14.58404	88.7017	14.31780
	>30 y (N: 7; 103)	84.7143	18.48165	87.9806	13.23245
Level of study	1 st year (N: 116; 267)	84.1121	16.76994	85.6105	14.92204
	2 nd year (N: 185; 328)	86.9405	13.50772	88.4451	16.34893
	3 rd year (N: 154; 140)	82.9545	14.48476	88.0071	14.75922
	4 th year (N: 149; 121)	81.4631	17.06962	89.1240	13.82182
Marital status	Single (N: 562; 785)	84.4644	15.50055	87.7631	15.38195
	Married (N: 40; 64)	78.5750	13.69239	86.2188	14.28671
	Divorced (N: 1; 5)	63.0000	-	76.2000	20.57183
	Widowed (N: 1; 2)	79.0000	-	90.0000	24.04163
No. of children	None (N: 554; 501)	84.5794	15.55304	87.5788	16.31724
	One (N: 27; 223)	76.9630	12.65969	87.7758	14.17789
	Two (N: 15; 78)	77.6000	15.25872	88.3974	12.51528
	More than two (N: 8; 54)	81.8750	8.42509	85.6852	14.64398
Religion	Christianity (N: 492; 712)	84.6585	15.86069	87.9157	15.64744
	Islam (N: 95; 3)	82.3368	13.28141	88.3333	16.04161
	Traditional (N: 15; 103)	74.9333	11.88917	86.3981	13.81555
	Others (N: 2; 38)	78.0000	2.82843	84.5526	13.54811
Where grown up	Village/Rural area (N: 70; 626)	76.9000	13.31900	87.3818	15.51844
	Town/semi urban area (N: 143; 191)	84.5455	14.77089	88.7906	14.75370
	Big town (N: 171; 26)	83.1170	15.71767	87.8846	15.96077
	Capital city (N: 220; 13)	86.6727	15.61091	79.0769	12.73094
Family resources	Not enough (N: 90; 442)	78.2667	16.60432	86.3439	16.47989
	Just enough (N: 335; 311)	85.0269	15.05168	89.2412	13.95857
	Have most things (N: 115; 67)	84.9391	15.24092	90.0746	13.90151
	More than enough (N: 63; 28)	85.1746	14.81884	81.3214	13.25548
Money for stipend	Not enough (N: 148; 569)	82.3851	16.54864	86.9807	15.72983
	Just enough (N: 245; 180)	84.4776	15.35764	89.5000	12.67977
	Enough (N: 176; 90)	84.4943	15.02683	89.4111	15.86310
	More than enough (N: 35; 10)	85.5143	13.26067	74.5000	16.76140

^a 1-41 (Low), 42-83 (Medium), 84-125 (High)