

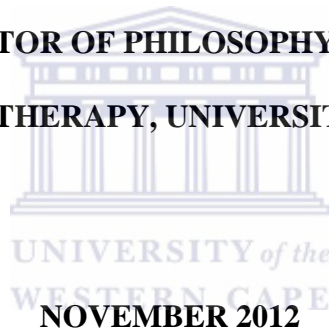
**THE EFFECT OF A SPORTS-BASED HIV PREVENTION PROGRAMME ON HIV-
RISK RELATED BEHAVIOURS AMONG HIGH SCHOOL LEARNERS**

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FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (PHYSIOTHERAPY) IN THE
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ABSTRACT

Background

The Human Immunodeficiency virus (HIV) has become a global public health challenge amid the growing concern of adolescent risky sexual behaviour, influenced by biological and psycho-social factors. There is an increasing demand for adolescent sexual risk reduction interventions, especially in sub-Saharan Africa which remains the hub of HIV epidemic worldwide. Sport-based HIV prevention programme has been identified as one of the interventions, in addition to other approaches to provide young people with appropriate HIV knowledge and skills to either delay or reduce risk-taking behaviour. Despite the potential of sport-based programme for sexual risk reduction, there is limited information on how to adapt it to meet adolescent needs in terms of design, contents, and delivery. This information is necessary to provide sufficiently strong evidence to support widespread implementation of sport-based programme, especially in rural African schools. Therefore, the study aimed to measure the impact of a sport-based HIV prevention intervention in the reduction of HIV-related sexual risk behaviour among rural high school learners aged 13-18.

Method

The overall study design was a concurrent mixed method, utilizing both the quantitative and qualitative approach. The population for the quantitative and the qualitative studies was made up of two high schools in a predominantly “Coloured” community in Ceres. Two classes each were randomly selected from grades 8-10 in both intervention and control school. The intervention was developed through a process of focus group discussions with the Grassroot Soccer (GRS) staff and it was guided by the Social Cognitive Theory. The intervention was delivered to grade 8-10 learners by GRS peer facilitators using the GRS *generation skillz curriculum* that consists of 12-week sessions in the intervention school. Quantitative data

were analysed with multivariate statistical techniques and qualitative data with thematic analysis approach.

Results

The data that assessed the behavioural and protective factors to understand why learners in rural schools engage in risky sexual behaviour showed that about 27.2% of the learners reported being sexually active. Of the sexually active learners, 48.7% reported engaging in sex by 14 years or younger and nearly 42.2% reported multiple sexual partners with significant higher proportion of boys than girls. Nearly 55.2% of the sexually active learners reported irregular condom use and 46.3% did not use a condom at the last sexual encounter. The majority of the learners (87%) did not know their HIV status. Being male (OR = 6.60; 95% C I = 1.62 – 26.84) and peer influence (OR = 3.01; 95% CI = 1.97-4.60) were the strongest predictors of reporting sexual intercourse and early sexual activities before the age 15 respectively. Though the knowledge of HIV was low, those with greater knowledge of HIV were more likely to use a condom at last the sexual encounter (OR = 1.22; 95% C I = 1.03-1.44). The learners who participated in sport-based intervention were 1.43times likely to report higher self-efficacy to refuse sex compared to the control group (OR = 1.43; 95% C.I = 1.07-1.92).The process evaluation indicated that the sport-based intervention was well received among the learners as it gave them free space to freely express themselves.

Conclusion

The findings have shown that sport-based intervention can be successfully implemented in school and is a promising approach to reduce risks associated with risky sexual behaviour in learners. However, the quality of the programme delivery was hampered by irregular session's schedule and language of instruction. The process suggests for a longer exposure

period and because of social-cultural diversity, learners must be provided with the ownership of the programme in schools.



DECLARATION

I declare that **“The effect of a sports-based HIV prevention programme on HIV-risk related behaviours among high school learners”**

AW Awotidebe

Signature.....

November 2012



Witnesses

.....

Professor J Phillips

.....

Professor W Lens

DEDICATIONS

I dedicate this work to Almighty God.

He is the greatest and to Him belong all the praises.



Acknowledgements

In no order of importance, I would like to thank my parents, Mr. & Mrs. Awotidebe for their love, prayer and support over the years. A special gratitude goes to my supervisor, Professor Julie Phillips, for her moral and financial support and guidance throughout my entire sojourn in South Africa. I also extend my sincere appreciation to all members of her family in Ceres for their hospitality and care. Through thick and thin, you have always believed in me, I will be forever grateful to you ma. A word of thanks to Professor W Lens for the role he played and assistance rendered in the success of this project. I wish to express my sincere gratitude to the Dynamic of Building a Better Society project for giving me UWC/VLIR fellowship to undertake this study and the Grassroot Soccer for their technical assistance in implementing the programme. To Professor M Lacante for her assistance during my short stay in Belgium, thank you. My sincere gratitude goes to my entire family (Sister Shola, Bro Maruf, Rasheedat, Sariyu, Sikiru, Semiu, Rukayat, Kehinde, Taiwo, and Ayomide Muiz) for their unwavering support, thank you all. I also appreciate the effort of Hajia Basirat Lawal for standing by me day and night, without your prayer, love and support; I will not be writing this memoir. Forever, I would be grateful to my uncle, Ademola Rabiou for showing me the right path all the way from Nigeria and your support in South Africa will never elude my memory. And to all member your family, especially sister Halimah Rabiou, Almighty Allah will reward you abundantly-*Jazakallah kaeran*. Without the *active* participation of teachers and learners in Ceres, this study will not have been possible, thank you all. Lastly, but not the least, the entire staff of UWC physiotherapy department and all my entire friends, this space is too little to mention all your names, you are all wonderful. Finally, every member of *Dua Forum* in Cape Town, I say *Jazakallah Kaeran* to all of you and your family.

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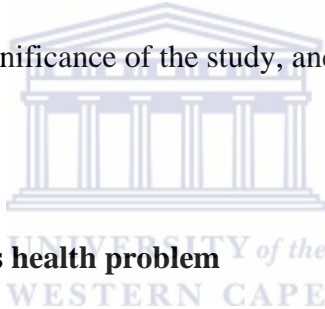


CHAPTER ONE

INTRODUCTION

1.1 Introduction

The chapter provides a background to the growing concern of the HIV and AIDS epidemic in sub-Saharan Africa, especially among young people aged 15-25. It also illuminates behavioural and psychosocial factors that increase vulnerability of young people to HIV infection and relevant interventions that have demonstrated positive impacts on the lives of youth. In addition, how to annex the potential of sport in a response to modifying positive behaviour change in youth is briefly discussed. The chapter ends with description of the broad aim, specific objectives, significance of the study, and description of terms.



1.2 HIV and AIDS: a serious health problem

The Human Immunodeficiency Virus (HIV) epidemic remains an increasing challenge to public health efforts in recent years. It has also brought to the fore the debate over taking stock of numerous evaluation studies and how to effectively map out the best preventive interventions to save the next generation of youth from the scourge of the HIV epidemic. The good news is that HIV infection is on the decline, but the current prevalence of HIV infection is unacceptable and remains a daunting challenge to human development, especially in sub-Saharan Africa where the HIV rate is highest (United Nations Joint Programme on HIV/AIDS, 2010). In 2010, the United Nations Joint programme on HIV/AIDS (UNAIDS) estimated that about 34 million people were living with HIV infection; more than two-thirds of these people were living in sub-Saharan Africa (UNAIDS, 2010a). Although UNAIDS (2010) reported that the HIV prevalence is on the decline in some African countries that were

earlier declared high epidemic zones, including South Africa, Zambia, and Zimbabwe; the proportions of people living with HIV infection in these areas are still unimaginable. For instance, in 2010 the South Africa Sentinel Surveillance (2010) reported that HIV prevalence among women attending ante-natal clinic (ANC) was 30.2% [CI: 29.4-30.9]. This result suggests that South Africa has one of the highest rates of HIV infection in the world. In addition to that, the data from the same study showed that 300,000 annual deaths were attributed to HIV infection and an estimated 2.2 million AIDS orphans in 2010. Furthermore, the prevalence of HIV infection in other African countries including Swaziland, Lesotho, Mozambique, and Botswana is not showing an appreciable decline (UNAIDS, 2010a).

More importantly, there is an overwhelming consensus that young people appear to be at the receiving end of HIV prevalence. For example, the United Nations Joint Programme on HIV/AIDS (UNAIDS) estimated that young people between the ages of 15-24, accounted for about half of the new cases of HIV infections worldwide (UNAIDS, 2010a). In addition, the South Africa Sentinel Surveillance study in 2010 reported that the HIV prevalence in the same age group among pregnant women attending antenatal care (ANC) was 21.8% in 2010. With respect to gender distribution of HIV prevalence, out of the reported 5.4 million young people living with HIV infection in 2007, 59% were girls and 41% were boys (UNAIDS, 2007). For this reason, United Nations Children Fund (2011) posited that gender inequality in terms of access to preventive services might be largely responsible for higher rate in girls. Thus, these figures highlight that youth are one of the channels for HIV infection spread and also accentuate the urgency to address their vulnerability to HIV infections in order to further reduce the rate of HIV infection in young people.

Faced by this challenge, the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) has in numerous forums and discourses advocated for more efficient and evidence-informed HIV interventions to curtail HIV infection in youth. Therefore, one of the goals of UNGASS is to *“ensure an HIV-free future generation through the implementation of comprehensive, evidence-based prevention strategies, responsible sexual behaviour, including the use of condoms, evidence and skills-based youth specific HIV education, mass media interventions, and the provision of youth-friendly health services* (UNGASS, 2006).

It is fair to say that much progress has been made, but the efforts to curtail the scourge of the HIV epidemic especially among the youth in various preventive strategies are being hampered by the failure to understand factors influencing youth sexual behaviour. Given the current state of the HIV epidemic in sub-Saharan Africa, the continent remains the hub of generalized HIV epidemics driven mainly by heterosexual intercourse (UNAIDS, 2010b). The factors that increase the propensity of youth to early risk-taking behaviour can be categorized into biological, psychological, and social influence of adolescent sexual risk behaviours (Irwin & Millstein, 1986). First, increased level of testosterone following a transition from childhood to adolescence unfortunately increases the urge for early sexual activity in young people (Udry, Billy, Morris, Groff, & Raj, 1985). This is because when young people start having sex at early age, they are more likely to contract sexually transmitted infections (STIs) including HIV infection because they do not use protection (Brieger, Delano, Lane, Oladimeji, & Oyediran, 2001). In addition, young girls have also been found to have immature epithelial tissue around the vagina and cervix which predisposes them to abrasion for easy transmission of HIV and other sexually transmitted infections (Soto-Ramirez, 1996). Furthermore, the recent studies examining the psychological influence of developmental transition of adolescent sexual behaviour observes that young

people have a less developed cognitive system compared to adults, and this interferes with the capability to make clear and correct decisions especially in complex sexual relationships (Somerville, Jones, & Casey, 2010; Steinberg, 2008).

In addition to the effect of the psychological influence of adolescent development on early sexual activity, there is a strong evidence of a range of social influences (family and peers) on adolescent sexual behaviour. For instance, access to accurate HIV education, positive peer influence, and parental support favour positive sexual behaviour and lack thereof increases their susceptibility to risky sexual behaviours (DiClemente, Crittenden, Rose, Sales, Wingood, Crosby, & Salazar, 2008; Sieverding, Adler, Witt, & Ellen, 2005; Rai, Stanton, Wu, Li, Galbraith, Cottrell, & Rai, 2003). Similarly, adolescents who enjoy healthy parental support and a close relationship are less likely to engage in risky sexual behaviour compared to those who do not (DiClemente et al., 2008; Ream & Savin-Williams, 2005). More importantly, if parents communicate freely about sex-related matters in a non-judgmental way as opposed to victim blaming, the children are less likely to engage in risky sexual behaviour (Vesely, Wyatt, Omar, Aspy, Kegler, Rodine, & Marshall, 2004; Borawski, Ieveres-Landis, Loveyreen, & Trapl, 2003). Moreover, Silverdin, Adler, Witt, & Ellen (2005) and Collazo (2004) reported that young people are more likely to have sex or initiate sex early if they believe most of their friends have had sex. The same applies to those perceive their friends having an unfavourable attitude towards having sex are more likely to be sexually abstinent.

Findings suggest that young people's own psychological attributes such as self-efficacy to abstinence and safer sex are strongest predictors of risky sexual behaviours (Collazo, 2004;

Sionean, DiClemente, Wingood, Crosby, Cobb, Harrington, & Davies, 2002; DiIorio, Dudley, Kelly, Soet, Mbwar, & Potter, 2001). Specifically, if young people have positive attitudes towards abstinence, they are more likely to delay initiating sex early (O'Sullivan, & Brooks-Gunn, 2005), but less likely to initiate sex early if they have favourable attitudes towards sex (Silverdin, Adler, Witt, & Ellen, 2005; Meier, 2003).

Finally, besides the physiological and social factors that increase vulnerability to HIV-related risk behaviours, lack of access to youth-friendly HIV education and other preventive measures including condom promotion in sexually active youth have been noted to increase youth's vulnerability to HIV infection (United Nations Children's Fund, UNICEF, 2011). These factors combined together highlight the vulnerability of young people to risky sexual behaviour makes them susceptible to the risk of HIV. All of these factors that increase the risk and vulnerability to HIV infection and other sexually transmitted infections calls for promising approaches and appropriate youth-friendly interventions.

Youth-based intervention programmes must be relevant and acceptable to youth and have a good prospect of assisting youth to adopt safer sexual behaviours. The common outlook of youth-based intervention must be able:

1. to provide young people with adequate and age specific comprehensive sexuality education in schools, health clinics, community, and religious institutions;
2. to strengthen youth social protection programmes and economic opportunities to reduce adolescent vulnerability to sexual risk behaviour;

3. to engage young people and communities for collaborative activities that modifies the social environment to promote healthy behaviour in youth;
4. to expand policies and legislations that increase access to preventive health facilities including VCT, male circumcision, condom promotion, and other measures that reduce vulnerability to HIV;
5. to strengthen monitoring and evaluation programmes in accessing adolescent data and provide detailed information on cost effectiveness of adolescent interventions (United Nations Children Fund, 2011).

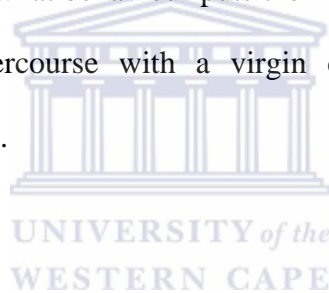
So far, there are numerous studies that provide strong evidence to reducing risks associated with adolescent risky sexual behaviour including HIV and STIs. But the question is to what extent can the intervention apply current and best evidence using a robust design to reduce risky sexual behaviours in youth?



One approach to modify positive behaviour change is the promotion of abstinence-only interventions to delay sexual intercourse in young people. Although this approach can be effective in reducing risks associated with risky sexual behaviours, to what extent can young people remain abstinent? In spite of the assumed effectiveness of the abstinence-only interventions and its preferred approach to other more comprehensive strategies (Rector, 2002), two recent reviews of programme effectiveness suggest that several abstinence –only interventions are impracticable and ineffective to modify behaviour in youth (Underhill, Operario, & Montgomery, 2007; O’Relly, Medley, Dennison, & Sweat, 2006). For this reason, researchers have suggested more comprehensive approaches that do not only promote abstinence in young people but also make condom promotion a priority (UNICEF, 2011; UNAIDS, 2010c; Underhill, Operario, & Montgomery, 2007; Kirby, 2007). These reviews

suggest that comprehensive programmes to reduce the frequency of unprotected sex, reducing the number of sexual partners, increasing condom use, and a delay in initiation of sexual intercourse in young people.

In spite of general effectiveness of comprehensive programmes, access to health services and life skills programmes is limited especially for girls, and a large number of young people are still being exposed to risky sexual behaviour. For example, one recent study shows that many young people lack the appropriate HIV knowledge necessary for protection against HIV infection (Dolata & Ross, 2010). Thus, the misconception of HIV in young people is very rife, and many still do not know what behaviour puts them at risk. For example, many young people believe that sexual intercourse with a virgin can cure one of HIV infection (UNICEF/UNAIDS/WHO, 2002).



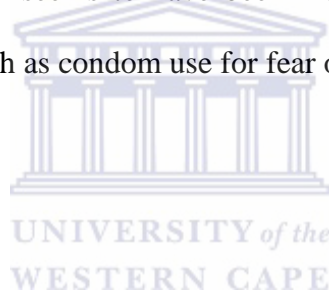
Notwithstanding the effectiveness of condoms to reduce HIV infection by 80-90% (UNAIDS, 2010c), most interventions do not support condom promotion in young people (Clarke, 2010). In effect, condom use among youth is inconsistent and irregular and this increases the risk of HIV infection (Clark, Brasseur, Richmond, Getson, D'Angelo, 1998). Not surprisingly, the most recent review of adolescent behaviour in sub-Saharan Africa shows that a number of youth reported sexual activity before age 15 (Doyle, Mavedzenge, Plummer, & Ross, 2012), and that many of the young people have a higher risk of contracting HIV because they engage in multiple relationships and low condom use. In addition, there is an increasingly high proportion of young people, especially girls, involved in cross-generational and concurrent sexual relationships (Mah & Halperin, 2010; Halperin & Epstein, 2004; Kelly, Gray, Sewankambo, Serwadda, Wabwire-Mangen & Wawer, 2003).

These observations above underscore the urgency to prioritise young people's needs in order to reduce the scourge of HIV worldwide. With no cure for HIV in sight, the best and current evidence suggests that behaviour change through the use of various educational, peer mentorship and life skills programmes may be essential in promoting abstinence and delaying early sexual activity (Coates, Richter & Caceres, 2008).

In response, school-based HIV prevention intervention remains one of the potential strategies to strengthen youth's capacity for positive behaviour change before they enter their period of first sexual experience (Schenker & Nyirenda, 2002). A systematic review of school-based sex-education interventions found 65% of the studies reviewed had a positive impact on youth by increasing their knowledge and self-efficacy to abstain from sex or reduce the number of sexual partners (Ross, Dick, & Ferguson, 2006). Thus, school-based HIV prevention programmes are increasingly receiving a wider coverage to equip young people with life skills to motivate for positive behaviour change. A study of the public opinion on sex education in schools found overwhelming support for the promotion of sexuality education as a way to reduce teen pregnancies and STIs (Bleakley, Hennessy, & Fishbein, 2006). This recommendation is based on the number of studies in sub-Saharan Africa which found significant effect in the outcomes related to behaviour including the *MEMA Kwa Vijana* in Tanzania (Doyle et al., 2010), *Healthwise* (Smith et al., 2008) and *Stepping Stone* (Jewkes et al., 2008) in South Africa, and *I choose life* in Kenya (Miller, Mutungi, Facchini, Barasa, Ondieki, & Warria, 2008). The strength of school-based interventions is drawn from social science theories including social cognitive theory (Bandura, 1986), theory of reasoned action (Ajzen, 1991) and traditional belief system (Aaro et al., 2006). Overall, the evidence regarding school-based HIV prevention programmes, especially in developing countries has been overwhelming. Interventions clearly demonstrate significant positive results in reducing

risky sexual behaviours (Harrison, Newell, & Hoddinott, 2010; Kirby, 2007; Kirby, Laris, & Roller, 2006; Gallant & Maticka-Tyndale, 2004).

More recently, Underhill, Montgomery, and Operario (2007) noted that abstinence-plus interventions that promote abstinence and condom use in sexually active youth remain the mainstay of HIV prevention strategies in youth. Although the proportion of schools providing access to HIV education and life skill programmes in Africa is increasing lately, the number stays abysmally low. For instance, HIV life skills are not part of the curriculum in most schools in Africa (Rutenberg, Kehus-Alons, Brown, Macintyre, Dallimore, & Kaufman, 2011), and where HIV education seems to have been included, they do not address more complex preventive measures such as condom use for fear of community backlash (Gallant & Maticka-Tyndale, 2004).



Despite the potential of abstinence-plus programmes to reduce risky sexual behaviour, the majority of school-based interventions, especially in sub-Saharan Africa, are sensitive to address all the issues around condom use in order not to incur the wrath of the community (Pettifor et al., 2005). Because of this, many of these school-based programmes exclusively favour abstinence-only interventions which have been shown to have limited potential to effect positive sexual behaviour change (Kirby, 2007; Underhill, Montgomery, & Operario, 2007). Another problem observed is that most school-based interventions rely heavily on classroom style of learning and didactic lessons making it less attractive for young people to actively participate in the programme (World Health Organisation, 2004). Similarly, findings were reported by Smith, Kippax, Aggleton, and Tyrer (2003) and Schenker and Nyirenda

(2002) that most teachers lack adequate skills and wherewithal to engage young people in sex-related discussions.

These observations call for scaling up more participatory school-based interventions that are youth-friendly and culturally accepted. Furthermore, it is increasingly recognised that interventions that prevent or reduce risky sexual behaviour in young people cannot rely on a single intervention but rather on a combination of interventions that are evidence-informed and tested with robust intervention designs (Mavedzenge, Olson, Doyle, Chagalucha, & Ross, 2011). In addition, as of 2002, this view to engage young people also through a novel and participatory programme using sport for gaining insight about HIV and AIDS was shared by United Nation Task Force on Sport. Sport is thus seen as an untapped potential to mobilise young people to give them free space to embrace open discussion on HIV and make healthier choices with regards to their sexual behaviour (Koss & Alexandrova, 2005; United Nations, 2003).

However, sport-based HIV prevention interventions especially in schools are new, albeit the popularity of sport participation in young people, thus the strength of evidence to support sport-based intervention is weak. This is because there is paucity of sport-based HIV interventions especially in sub-Saharan Africa, and the few available relies on non-randomised studies as well as non-curriculum based studies where it is difficult to link the specific intervention to outcomes (Deva et al., 2010; Maro, Roberts, & Sorensen, 2009; Clark, Friedrich, Ndlovu, Neilands, & McFarland, 2006). These limitations make it difficult to include sport-based HIV intervention as part of the available HIV prevention strategies in young people. These observations underscore the need to contribute to the development of

youth-friendly, sport-based HIV prevention intervention in order to reduce adolescent risky sexual behaviour that exacerbates vulnerability to HIV infection. There is no knowledge of a sport-based intervention study conducted in South Africa, specifically in rural areas, using sport as a tool to modify behaviour change in young people; such a contribution is made the main aim of this study.

1.3 Research question

In high school learners who participated in a 12-week sport-based HIV prevention life skills programmes, what is the effect of the intervention on the HIV-related risky sexual behaviour among rural high school learners compared to learners from the control school?



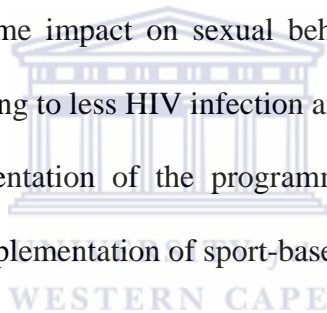
1.4 The overall objective of the study

The overall objective of the study is thus to measure the impact of a sport-based HIV prevention intervention in the reduction of HIV-related sexual risk behaviour among rural high school learners.

1.4.1 Specific objectives

1. To assess the behavioural and protective factors that could contribute to risk and vulnerability to HIV infection among high school learners:
 - a. Sexual behaviour including age of sexual debut, number of sexual partners, consistency of condom use, and condom use at last sexual encounter.

- b. Mediating factors for HIV reduction including HIV-related knowledge, sex communication skills, self-efficacy, sex negotiation skills, peer norms, and time perspective.
2. To contribute to the development of a sport-based HIV prevention intervention to reduce sexual risk taking among high school learners:
 - a. A review of the literature on interventions that have demonstrated the best evidence in reducing risk taking behaviours among high school learners
 - b. Building consensus on participants' needs and preferences about sport-based HIV prevention interventions.
3. To implement the sport-based HIV prevention intervention over the prescribed period.
4. To measure the programme impact on sexual behaviour and mediating factors for HIV prevention contributing to less HIV infection among high school learners.
5. To report on the implementation of the programme in order to contribute to the improvement of future implementation of sport-based programmes.



1.5 Significance of the study

Young people have emerged as the new face of the HIV prevention revolution worldwide. Many of the achievements recorded in reducing the HIV epidemic have been attributed to efforts made to modify sexual behaviour patterns in youth. An evidence-informed HIV prevention intervention would serve as a cutting edge to halt or reduce about half of the new cases of HIV infection in youth (UNAIDS, 2008). The United Nations Children's Fund (UNICEF), together with their partners, continues to highlight the need to increasingly put in place proven HIV prevention strategies that continue to:

- increase young people's knowledge of HIV transmission and prevention

- encourage abstinence from sexual intercourse in non-sexually active youth
- promote correct and consistent use of male and female condoms in sexually active youth
- improve free communication and negotiation for safe sexual behaviours

It is important to recognize that there is no “one size fits all” strategy to prevent sexual and other transmission of HIV infection in young people. There is a strong argument that supports the combination of many proven HIV prevention strategies to stem HIV infection in young people. Thus, there are increasing calls to scale up many evidence-informed HIV prevention interventions and innovative approaches that are youth-friendly (UNICEF, 2011). And to increase the potential of reducing risky sexual behaviour in adolescents, school-based HIV prevention programmes coverage needs to be taken to rural areas, especially in developing countries (Kirby, Laris, & Rolleri, 2006). The study was therefore conducted to provide sufficiently strong evidence to support widespread implementation of sport-based HIV prevention in rural African schools.

1.6 Description of terms

Sport: “all forms of physical activity that contribute to physical fitness, mental well-being and social interaction, such as play, recreation, organized or competitive sport, and indigenous sports and games” (United Nations Inter-Agency Task Force on Sport for Development and Peace, 2008)

Sport-based HIV programme: organised sport-led activities supported by HIV and AIDS messages to improve HIV knowledge, life skills, safe and conducive environment and access to HIV preventive services (United Nations Inter-Agency Task Force on Sport for Development and Peace, 2008)

School: School is any formal or informal educational institution providing training or education to youth who are younger than 25 years.

Sub-Saharan Africa: Eastern and Southern Africa, West and Central Africa; Djibouti and the Sudan.

Adolescence: Adolescence is classified into:

1. **Early adolescence:** young people between the age of 10-13
2. **Middle Adolescence:** young people between the ages of 14-16
3. **Late Adolescence (emerging adulthood):** young people between the ages of 17-21 (Fieldman & Elliott, 1990).

Risky sexual behaviour: defined as early initiation of sexual intercourse, unprotected sex or sex with multiple partners (Center for Disease Control and Prevention, 2008).

HIV risk factors: are factors associated with a likelihood that an individual may become infected with HIV e.g. unprotected sex, multiple partnerships, lack of condom use, sex before age of 15 (UNAIDS, 2007).

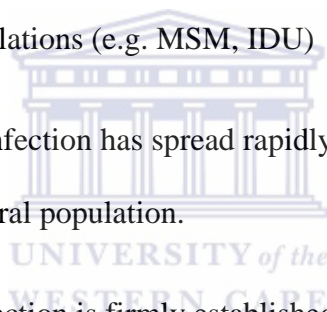
HIV vulnerability factors: are factors outside the control of an individual that reduce his or her capacity to avoid HIV infection e.g. lack of HIV knowledge and skills (UNAIDS, 2007)

Mediating factors: are factors that discourage risky sexual behaviours or encourage factors that prevent those risky sexual behaviours e.g. HIV knowledge, communication and negotiation skills (Kirby, 2007)

Low level epidemics: HIV infection may have existed for many years, it has never spread to significant levels in any sub-populations (e.g. MSM, IDU)

Concentrated epidemics: HIV infection has spread rapidly in a defined sub-population but it is not well established in the general population.

Generalised epidemics: HIV infection is firmly established in the general population.



1.7 Abbreviations used in the thesis

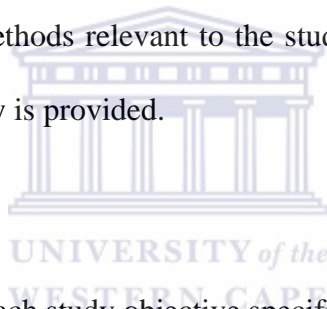
AIDS:	Acquired Immune Deficiency Syndrome
ANC:	Antenatal clinic
CDC:	Centers for Disease Control and Prevention
GRS:	Grassroot soccer
HIV:	Human Immunodeficiency Virus
IDU:	injecting drug user (or use)
MSM:	men who have sex with men
NGO:	nongovernmental organization
SSA:	Sub-Saharan African
SRH:	Sexual and Reproductive Health
STDs:	Sexual Transmitted Diseases
STIs:	Sexual Transmitted Infections
UNAIDS:	United Nations Programmes on HIV/AIDS
UNFPA:	United Nations Population Fund
UNGASS:	United Nations General Assembly Special Session on HIV/AIDS
UNESCO:	United Nations Educational, Scientific and Cultural Organisation
UNICEF:	United Nations Children's Fund
WHO:	World Health Organisation

1.8 Outline of the thesis

Chapter One provides a background to the study, a composite view of adolescent risky sexual behaviours, the gap in adolescent HIV prevention interventions, and the overall and specific study objectives as well as the significance of the study.

Chapter Two presents a review of the relevant literature to understand the current HIV epidemics as well as risk and vulnerability factors to HIV infection in young people. Furthermore, school-based HIV prevention interventions, best evidence around the sport-based HIV programme, and the theoretical framework underpinning HIV prevention interventions in youth are explored.

Chapter Three addresses the methods relevant to the study. An overview and rationale for the methodology used in the study is provided.



Chapter 4-7 attempt to address each study objective specifically as listed below:

In **Chapter Four**, the behavioural and psycho-social factors that could contribute to risk and vulnerability of HIV infection among high school learners were reported.

In **chapter Five**, the criteria to build consensus on participants' needs and preferences about sport-based HIV prevention interventions were reported.

Chapter Six reports on the impact of the sport-based intervention on risky sexual behaviours and psychosocial factor of behaviours contributing to HIV among high school learners.

Chapter Seven reports on the process undertaken in the implementation of the sport-based intervention to rural high school learners and challenges involved in the implementation pertaining to facilitators' perception, satisfaction, relevance, and quality.

In **Chapter Eight** an overall discussion of the study to link findings and models used to the literature are presented. It also recommends issues of concern for future consideration.

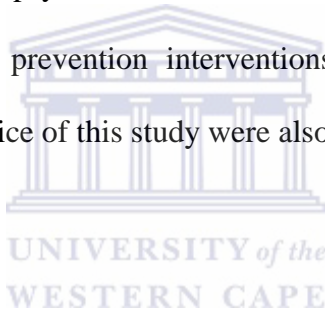


CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction to the chapter

In this chapter, an extensive review of the literature was conducted to present the trend and pattern of HIV prevalence in sub-Saharan Africa among young people. The prevalence and predictors of risky sexual behaviour in young people in order to assist in the implementation of the sport-based intervention were also presented. In addition, several intervention activities contributing to behaviour change in young people were reviewed as well as the impact of those studies on behavioural and psycho-social outcomes. As a point of departure, a brief review of the sport-based HIV prevention interventions was conducted and theoretical frameworks underpinning the choice of this study were also illustrated.



2.2 Overview of HIV epidemiology in young people: current trends

The world population continues to increase at an alarming rate, as well as the proportion of youth. The global population in 2011 was 7.0 billion and that proportion is expected to reach 9.3 billion by 2050, with major contributing countries from Asia, Africa, Oceania, and Latin America (United Nations Population Fund, UNFPA, 2012). Young people below the age of 25 years accounted for 43% of the world population (UNFPA, 2012), however about 50% of them live below US\$2.0 dollar a day (UNFPA, 2012). For example, the International Labour Organisation estimated that the proportion of unemployed youth between the ages of 15 to 24 years increased to 81 million in 2008 fuelling a further question of how representative the proportion of youth reaching their full potential is?(International Labour Organisation, 2010).

Moreover, in 2007 alone, about 71 million young people were out of school and more than 50% of them were girls (UNESCO, 2010). According to the same study, 13 out of 100 young people between the ages of 15 to 24 in developing nations are illiterate. Studies show that economically disadvantaged youth, especially girls, are more likely to have lower school enrolment, higher adolescent fertility rate and lower knowledge of HIV/AIDS prevention techniques (United Nations, 2011). These factors compromise the need to negotiate for safer sex which then increases the vulnerability of boys and girls to HIV infection.

Generally, there have been some extraordinary efforts in response to the adolescent risky sexual behaviour worldwide. Globally, there are a noticeable decline in the new HIV infection rate and this is linked to the falling rate of new infections in young people (UNAIDS, 2010a). The success achieved is attributed to a wide range of activities in schools, communities, and health clinics aimed at delaying sexual activity or promote condom use in those that are sexually active. Buoyed by this sense of hope to reducing HIV infection to the barest lowest level, United Nations and other organisations continue to advocate for effective and robust intervention strategies to halt the scourge of HIV infection especially in young people. For instance, one of the declarations of Millennium Development Goals (MDGs) is to ensure that HIV infection in young people is reduced to the barest minimum proportion, if not totally halted by 2015(United Nations Millennium Declaration, 2000). Similarly, in 2001 the United Nations General Assembly Special Session on HIV and AIDS (UNGASS) declared that by the end of 2010, effort should be made to reduce the prevalence of HIV infection in young people by 25 percent.

However, despite the collective efforts of UNAIDS and its partners (WHO, UNICEF, UNDP, UNFPA, USAIDS), the prevalence of HIV infection among youth in sub-Saharan Africa is still high. Overall, the prevalence of HIV in young people is declining though not at a pace that is desirable. Admittedly, HIV infection in young people is driven by modifiable behaviours. There is no doubt that there are increasing opportunities using varied proven HIV prevention programmes to further reduce new rate of HIV infection in youths. While the interventions to reduce HIV risks vary, so also are the HIV epidemic in young people from one setting to another.

UNAIDS in 2010 reported that the new cases of HIV infection has fallen by one-quarter in the last decade especially in 22 countries in sub-Saharan Africa. However, the prevalence of HIV infection among young people between the ages of 15-24 varies between continents (UNAIDS 2008). Comprehensive HIV epidemiological surveillance by UNAIDS and WHO have identified four types of epidemics for HIV: low-level, concentrated, generalized, and hyper-endemic epidemics (UNAIDS/WHO, 2000). Countries with low-level epidemics have an HIV prevalence in the general population below 1% and does not exceed 5% in sub-populations, especially the key population at higher risk of HIV infection (UNAIDS 2010). In concentrated epidemics, most especially in the key population at higher risk of HIV acquisition (i.e. injecting drug users, men who have sex with men, sex workers), HIV prevalence is on the rise but has not spread rapidly in the general population. Many countries from Central and Eastern Europe, East Asia and Pacific, Latin America and the Caribbean, and Middle East and North Africa fall into these categories (UNICEF, 2011). In countries within these classifications, HIV infection in young people is spreading rapidly among youth who engage in sex work. For example, in a study conducted in Ghana, the result shows that HIV prevalence among sex workers is 40% compared to 3% in the general population

(Asamoah-Adu et al., 2001). The situation is not different in Eritrea where 24% of sex workers aged 20 to 24 interviewed were found to be HIV positive (Eritrea Ministry of Health, 2001). In generalized epidemics, HIV prevalence is well defined in the general population with greater than 1% prevalence among pregnant women attending antenatal clinics (UNICEF, 2011; UNAIDS/WHO, 2009). A number of countries in sub-Saharan Africa (SSA), Haiti, and Papua New Guinea fall into this category where heterosexual intercourse is by far the most defining HIV transmission route (UNICEF, 2011). The continent with the highest number of HIV infection is sub-Saharan Africa, where about 50% of the new cases of HIV are youth between the ages of 15-24 (UNAIDS, 2006).

The total number of people living with HIV is decreasing, but the same cannot be said of youth and children. The proportion of children living with HIV rose to 2.5 million at the end of 2009 (UNAIDS 2010a). Young people living in sub-Saharan Africa make up more than 80% of all cases of reported youth HIV prevalence worldwide (UNAIDS 2010d). About 72% of the estimated number of young people in SSA between 15-24 years living with HIV are girls, which means HIV is predominantly female (UNAIDS, 2010d). This increase in progression of HIV prevalence among girls may be due to a higher proportion of young girls (27.6%) compared to 0.7% boys of the same age in sexual relationships with older partners (Shisana et al., 2008). Although, significant numbers of people living with HIV are in sub-Saharan Africa, the burden of infection varies from country to country.

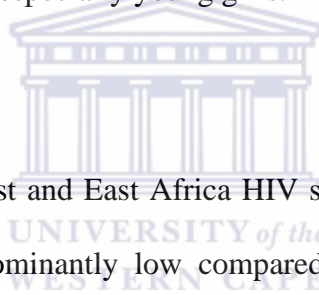
In 2009, out of the countries surveyed, Southern Africa represents 34% of the total number of cases of HIV infection and by extension 31% of new cases of HIV worldwide (UNAIDS, 2010a). While the previous findings reported a 25% decrease in HIV prevalence in some selected countries, a comparison of HIV prevalence within the continent showed that

Southern Africa countries compared to other countries in the region have the highest prevalence of HIV. For instance, the prevalence of HIV in the adult population was found to be highest in Swaziland (25.9%), 24.8% in Botswana, and 23.6% in Lesotho. The impact of HIV in the sub-region is again increasing as the number of deaths attributable to the HIV epidemic continues to increase. Therefore, out of all the HIV-related deaths recorded in 2009, 72% of these are said to represent the global estimates (UNAIDS, 2010a). In looking at the HIV prevalence rate in South Africa using the Sentinel Surveillance data from women attending antenatal clinics across the country, the national prevalence was reported to be 30.2% (South Africa Sentinel Surveillance, 2010). However, HIV prevalence differs by province, population group, and age group. The province with the highest number of people living with HIV was Kwa-Zulu Natal (39.5%) and the lowest in Northern Cape (18.5%). In addition, data from the study demonstrated that the rate of HIV infection among young people between the ages of 15-24 has increased from 21.7% in 2009 to 21.8% in 2010. According to this data, the prevalence of HIV in those aged 10-14 years increased from 7.9% in 2009 to 9.7% in 2010. This shows that HIV prevalence among young people is still a public health issue. Shisana, Rehle, Simbayi, Parker, Jooste, Pillay-van Wyk et al. (2009) using more representative data from a population-based household survey reported the HIV prevalence among youth aged 15-24 was 8.6%, a significant decrease from 10.3% in 2005 survey. However, the authors reported that HIV prevalence among women showed that prevalence of HIV is still high among the female adolescent youth.

Along the same line, findings from East Africa show that the rate of HIV infection is decreasing in the region. Hallett, Stover, Mishra, Ghys, Gregson, & Boerma (2010) notes that in the region, 3.4 new cases of HIV per 1000 persons reported annually demonstrated a significant decline. However, the data from Tanzania corroborated the findings of Shisana et al. (2008) that prevalence among females is yet to show any appreciable decrease, and there

was a slight increase from 6% in 2003 to 6.3% in 2007 (Tanzania Commission for AIDS, 2007).

In Kenya, the data from the National HIV and AIDS Sentinel Surveillance in 2006 showed that HIV prevalence has reduced sharply from 14% in the 1990s to 5% in 2006 and deaths attributed to HIV/AIDS has reduced by 29%. Overall, all reports of national HIV prevalence shows that HIV prevalence is decreasing in the sub-region including Tanzania (Hallet et al., 2010) and Kenya (Kenya Sentinel Surveillance of HIV and AIDS, 2006). These findings call the attention of policy-makers, educators, curriculum developers to continue to scale up HIV prevention interventions in youth especially young girls.



The recent findings from the West and East Africa HIV surveillance studies show that HIV infection in this region is predominantly low compared to other sub-regions (UNAIDS, 2010a). The prevalence of HIV is below 2% in the Republic of Benin, Burkina Faso, Gambia, and Senegal. However, the prevalence is relatively high in Cameroon (5.3%), Nigeria (3.6%) and 3.4 % for Cote d'Ivoire (UNAIDS, 2010a). Furthermore, for young girls and boys age 15 to 24 in 2007, HIV prevalence is less than 1% in the region except Cote d'Ivoire with prevalence of 2.4% in adolescent girls (UNAIDS 2008a). It is increasingly being recognised that the compensatory effect of male circumcision which is widely practiced in these regions may be attributed to low HIV infection in the general population (Lowndes et al., 2008). In effect, most studies noted that medical male circumcision can reduce the risk of being infected by 60% if carried out by experts under a hygienic environment (UNAIDS/WHO, 2007; Auvert, Taljaard, Lagarde, Sobngwi-Tambekou, Sitta, & Puren, 2005). Though, the authors warned that this approach can only be effective if used together with safer sex

practices. Another reason why HIV is low is linked to the predominantly HIV-2 strain in these regions which is found to have lower transmissibility rate compared to HIV-1 strain which is predominant in Southern Africa (Poulsen et al., 1997).

Although HIV epidemics present a diverse distribution in the proportion of HIV cases across the continent, the factors that predict risky sexual behaviours in youth is the same across the continent.

2.3 Predictors of risky sexual behaviours in young people

Over the years, society has downplayed the rate of adolescent sexual risk behaviours until it became apparent that young people remain the cornerstone for many negative health consequences, including HIV infection of unsafe sexual practices (Zimmer-Gembeck & Helfand, 2008). Thus, as adolescents' health is increasingly becoming a menace to public health, studies have shown that these negative consequences are modifiable by interventions once youth's vulnerability to risk taking is understood (Kirby, 2002).

Most frequently, behaviour includes interaction between individuals; individuals interact within their social and physical environment in which they live (Bronfenbrenner, 1979). Nearly all young people will go through the normal development of their sexual behaviour and they will be influenced by a range of individual and environmental factors that may likely compromise the ability to lead a healthy sexual life (Kirby, 2007). Failure to modify these factors might increase the vulnerability to HIV infection via the propensity for engaging in adolescent risky sexual behaviour at an early age for unprotected sex and multiple sexual partners (UNAIDS, 2008b).

2.3.1 Biological influences

First, adolescence has been highlighted as a period with initiation of risky sexual activity which may often be more pronounced in adulthood (Park, Mulye, Adams, Brindis, & Irwin, 2006). As young people are transiting from childhood to adolescence, they carry along certain biological attributes which appear to increase their vulnerability to a myriad of risky behaviours (Udry, Billy, Morris, Groff, and Raj, 1985). These biological attributes such as genetic predisposition, hormonal influence, age of menarche, gender, and brain functioning combined together are largely responsible for initiation of early sexual activity in adolescents (Miller, Norton, Fan, & Christopherson, 1998; Resnick et al., 1997). In terms of age of menarche, young girls who start menstrual bleeding at a later age will start sexual activities late, and as such they delay the risk of HIV infection and vice versa (Baumeister, Flores, & Marin, 1995). Another attribute of the biological aspect of sexuality that increases early sexual activity in youth is genetic predisposition, and this has a genetic marker in some families. For instance, Adger (1991) reported that children whose parents abuse alcohol have a higher propensity to also abuse alcohol compared to those whose parents do not. Alcohol intoxication will lower inhibitions and increase the probability of risky sexual behaviour, also among adolescents. Udry, Billy, Morris, Groff, and Raj (1985) also illustrated that the tendency for early age of sexual intercourse, especially in boys, was positively related to higher level of testosterone hormone in adolescence. This observation could explain why adolescent boys have more sexual partners than girls do (Tubman, Windle, & Windle, 1996). In addition, Gardener and Steinberg (2005) noted that brain structures, which allow people to make rational decisions or judgments, are less developed in young people, thereby predisposing to increased risky behaviour. Similarly, Somerville, Jones, and Casey (2010), and Steinberg (2007), also further observed that because of youth's slow maturation of those brain structures, they are less likely to control their emotion and develop coping skills. As a

consequence of weaker control of emotions and less coping skills, young people are less likely to deal in a rational way with relational issues, including risky sexual behaviour (Rose, Koo, Bhaskar, Anderson, White, & Jenkins, 2005). Gender is another biological attribute that has been found to increase the tendency for early sexual activity in youth. Because girls have, in general, a greater longing for inter-personal connection and are more amenable for social bonding, they are more at risk for unsafe sex than boys (Feldman, Turner, & Araujo, 1999).

2.3.2 Family influences

The second predictor of adolescent sexual behaviour is the quality of the relationship between parents and child. There is no doubt that parents remain the primary agents of positive behaviour change and promotion of adolescent well-being (Coley, Votruba-Drzal, & Schindler, 2009). Young people learn from their parents, and when denied that opportunity, they are more vulnerable to risk taking behaviour as a result of lack of parental support and supervision, lack of parent-child communication and parental monitoring.

Non-randomised studies report that perceived parental closeness or warmth are strongly associated with reduced adolescent risky sexual behaviours, specifically delaying the ages of the first sexual activity (Ream & Savin-Williams, 2005; Ramirez-Valles, Zimmerman, & Juarez, 2002). Young people without the parent closeness or warmth have a higher chance of starting sexual intercourse early. However, the effect is stronger in girls than for boys, because of the close relationship between mothers and daughters (Ream & Savin-Williams, 2005). Similarly, the quality of the mother-child relationship has been shown to be positively correlated with delayed initiation of sexual activity especially in girls (Rose et al., 2005).

Neutral results also exist, Roche, Mekos, Alexander, Astone, Banden-Roche, & Ensminger (2005) and DiIorio, Dudley, Soet, & McCarty (2004) found no significant difference between parental closeness/warmth and change in adolescent risky sexual behaviour. These findings suggest balance of warmth and love to youth and boys may be less amenable to change over time if parents continue to spend more time on girls.

Furthermore, a number of studies found positive association between parent monitoring and a lower tendency for risk taking behaviours in adolescents (DiClemente et al., 2008; Sieverding, Adler, Witt, & Ellen, 2005; Rai et al., 2003). In the same way, they are more likely to initiate sexual activity earlier when parental monitoring or supervision is lacking (Rosenthal, van Ranson, Cotton, Biro, Mills, & Succop, 2001). For example, in one longitudinal study of American youth in two ethnic minority groups, youth whose parents are oblivious of their activities have a higher risk of having more than one sexual partner (Miller, Forehand, & Kotnick, 2000). Similarly, a study in four African countries show that young people who are less monitored have increased odds of being sexually active compared to those who are monitored (Biddlecom, Awugabo-Asare, & Bankole, 2009). In addition, lack of parental monitoring and supervision has been found to also increase the frequency of sexual intercourse and other risky sexual behaviour (Huebner & Howell, 2003; Benda, 2002). However, some studies found parent monitoring to be less protective against risky sexual behaviours for girls than for boys (Sneed, Strachman, Nguyen, & Morisky, 2009; Borawski, Levers-Landis, Lovegreen, & Trapl, 2003).

Another characteristic within the family unit that has been shown to be associated with decreased risk of sexual behaviour is parental marital status. As expected, living with both parents might offer some protection against adolescent risky sexual behaviour because of

constant monitoring and parental connectedness. Therefore, when a child lives with one or two parent(s), he or she is less likely to engage in risky sexual behaviour compared to those who lives farther away from his or parent(s) (Jemmott & Jemmott, 1992). However, Baumeister, Flores, & Marin (1995) observed that adolescents from a single family are more likely to engage in risky behaviour compared to those from two-parent household.

In summary, these findings above show that young people will have less chance to engage in risky sexual behaviour such as early initiation of sex, multiple sexual partners, and frequency of unsafe sex if they have a healthy relationship with their parents. In addition, findings also suggest that boys and girls would react differently to parental approaches to reduce the risks associated with adolescence. For instance, behaviour change interventions will need to intensify parental support and monitoring for boys than would for girls (Ream & Savin-Williams, 2005; Rose et al., 2005). Lessons learnt from this review indicate that for youth-focussed evaluations, parent-guided interventions are likely to be more successful in modifying behaviour change in young people than interventions without parents' involvement.

2.3.3 Peer influences

In addition to physiological and family factors' vulnerability to risk-taking behaviour in youth is friends' sexual behaviour. In adolescence, youth's sexual behaviour is influenced by the nature or the quality of friendship they keep, especially friends' sexual behaviours or friends' attitude towards sex. Several studies found that young people who have friends who are sexually active are more likely to have sex too (Sieverding, Adler, Witt, & Ellen, 2005;

Collazo, 2004; Flores, Tschann, & Marin, 2002). Similar findings were reported by Marin, Coyle, Gomez, Carvaja, & Kirby (2000) that teens whose friends had sex are more likely to initiate sexual activity early. Similarly, they are more likely to engage in unsafe sex and have more than one sexual partner if they believe most of their friends are having sex (Nahom et al., 2001). However, not all studies found a significant relationship between a youth's sexual behaviour and the sexual behaviour of friends they keep. Villarruel, Jemmott, Jemmott, and Ronis, (2004), Rucibwa, Modeste, Montgomery, and Fox (2003), and Bachanas et al. (2002) found no evidence of significant association.

Furthermore, approval of friends' sexual activities or belief in friends' permissive attitude towards sex has also been reported to be positively related to young people's own sexual behaviour. For instance, young people are less likely to engage in early sexual activity if they have less belief in friends' permissive attitudes to sex (Santelli, Kaiser, Hirsch, Radosh, Simkin, & Middlestadt, 2004; O'Donnell, Myint, & O'Donell, 2003). Conversely, some studies found no association between perception of friends' attitudes to sex and youth's own sexual behaviour (Bersamin, Todd, Fisher, Hill, Grube, & Walker, 2005; DiIorio, Dudley, Soet, & McCarty, 2004; Mitchell, Tanner, & Raymond, 2004).

In summary, youth's involvement in risky sexual behaviours depends to a large extent on the nature of friends they keep. A number of studies have emphasized the role of peers in moderating the effect of exposure to risky sexual behaviour. Positive peer influence such as less permissive attitude towards early sexual intercourse has also been associated with less risky sexual behaviours. However, very few studies found no link between peer influence and adolescent sexual behaviours.

2.3.4 Other determinants of adolescent sexual behaviours

Adolescent sexual behaviour is also influenced by factors which mediate for behaviour change in young people and these include HIV knowledge, self-efficacy, sexual communication, and negotiation skills.

HIV knowledge is one of the most frequently cited outcomes of behaviour change in literature. Many interventions provide acquisition of HIV knowledge skills as a necessary requisite that motivates for behavioural change. Studies have demonstrated that lack of a basic knowledge of HIV fuels misconception about HIV transmission and could contribute to higher risk taking behaviour in adolescent (White, Chen, & Atchison, 2008; Herek, Widaman, & Capitulo, 2005). In another study, it was found that greater knowledge of HIV among youth increases the demand for HIV testing and consistent condom use (Bruine de Bruin, Downs, Fischhoff, & Palmgren, 2007; Haile, Chamber, & Garrison, 2007). However, the impact of HIV knowledge on sexual behaviour is not clear-cut. Some studies also found no association between HIV knowledge and sexual behaviour (Phillips & Malcolm, 2006; Dudley, O'Sullivan, & Moreau, 2002).

Furthermore, the most significant factor that modifies behaviour change is self-efficacy. In his social cognitive theory, Bandura (1977) defined self-efficacy as the perception of one's ability to perform a certain action efficiently and effectively. Given the significance of this factor, various studies have found that youth with higher self-efficacy regarding sexual abstinence have a stronger protection against engaging in risky sexual behaviours. Along the same line, Sionean et al. (2002) found that youth with higher self-efficacy are more likely to negotiate for safer sex. Moreover, if young people have higher self-efficacy, they are more likely to resist peer pressure (DiIorio et al., 2001) and show a stronger tendency not to have

sex (Collazo, 2004; Faryna & Morales, 2000). These findings show that the most significant changes occur in adolescent sexual behaviours in relation to self-efficacy.

Owing to adolescents' decreased ability to make rational decisions in complex sexual relationships, many interventions provide sexual communication and negotiation skills to reduce risk taking behaviour including refusing sex and using condoms. Of the interventions that provide these skills, sexual communication and negotiation skills were associated with safe sexual behaviours (Metzler, Biglan, Noell, Ary, & Ochs, 2000; St Lawrence, Brasfield, Jefferson, O'Bannon, & Shirley, 1995)

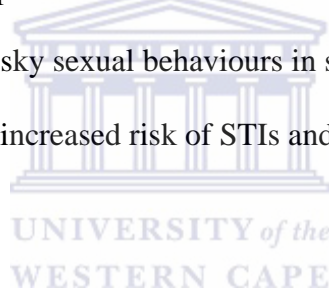
2.4 Prevalence of adolescent sexual risk behaviours

Besides providing information about predictors of adolescent sexual risk factors, the review of literature is expanded to include the burden of risky sexual behaviour in young people. This is necessary to provide a response to those who underplay its significance and whether it is also fair to continue to promote abstinence-only interventions in youth.

The leading way of contracting HIV and other sexually transmitted infections in young people is through engaging in risky sexual behaviour, but it is preventable (CDC, 2008). Given the importance of adolescent sexual behaviour and the risk of acquiring STIs and HIV infection, it is pertinent to illustrate the prevalence of such behaviours to guide in designing HIV prevention interventions in youth. Against this background, the rapid spread of HIV in youth has been linked to early sexual activity, multiple sexual partners, frequency of unsafe sex, inconsistent condom use and not knowing the partner's and one's own HIV status

increase the propensity for sexually transmitted diseases and unplanned pregnancy in youth (Doyle, Mavedzenge, Plummer, & Ross, 2012; Sawers & Stillwagon, 2010; Kirby, 2007; Jewkes et al., 2006).

In a systematic review of adolescent sexual behaviour in sub-Saharan Africa, patterns of risky behaviours vary by gender and countries, but evidence suggests that a decline in the prevalence of adolescent sexual behaviour is evolving (Doyle, Mavedzenge, Plummer, & Ross, 2012). Notable examples of adolescent sexual behaviour is sex before the age of 15, frequent sexual activity, multiple sexual partners, inconsistent condom use and not knowing about one's own and the sexual partner's HIV status. For this reason, quantitative evidence on the prevalence of adolescent risky sexual behaviours in sub-Saharan Africa is illustrated to depict the behaviour that leads to increased risk of STIs and HIV infection in youth.



First, sexual contact remains the major route of contracting sexually transmitted infections, including HIV infection. Although not an ideal preventive measure in sexually active youth, abstaining from sexual intercourse no doubt is the safest behaviour strategy to avoid being infected. Thus far, several studies showed that young people have a lesser risk of contracting HIV and STIs if they delay sexual intercourse until they become older and wiser (Upchurch & Kusunoki, 2004; Upchurch, Mason, Kusunoki, & Kriechbaum, 2004). This is because they are more likely to practice safe sex including using condoms (Yarber & Milhausen, 2002). This does not only mean abstaining from vaginal sex but also anal sex as well, which is also a risk for contracting STIs (CDC, 2001). With a sizeable proportion of adolescents already sexually active, the majority reported never to have had sex, and the proportions vary across the African countries. For example, national surveys in 32 African countries among young

people found that the percentage of youth who reported not to have engaged in sex range from 97% in Niger to 33 % in Cote d'Ivoire among females and in males from 23% in Namibia to 88% in Ethiopia (Mishra, Agrawal, Alva, Gu, & Wang, 2009). A South African study among grade 11 learners in Kwa-Zulu Natal between the ages of 15-21 also found about 42% reported to have engaged in sexual intercourse in the last 6 months at the time of the survey (James, Reddy, Taylor, & Jinabhai, 2004). The patterns between females and males show that with the exception of Ghana, females are significantly more likely to delay sexual activity compared to males of the same age (Mishra et al., 2009).

Second, age of first sex or sexual debut measured by the percentage of youth who have had sex before the age of 15 years, is increasingly becoming a public health problem in young people because of the increased risk of acquiring sexually-transmitted infections and HIV (Doyle, Mavedzenge, Plummer, & Ross, 2012). Specifically, when young people initiate sex early, they are more likely to have multiple sexual partners and rarely use condoms (Harrison, Cleland, Gouws, & Frolich, 2005). Jemmott (2005) as well as Gottsege and Philliber (2001) argue that young people who abstain from sex have a lesser risk of acquiring STIs. Consistent with this, Asiimwe-Okiror, Opio, Musinguzi, Madraa, Tembo, & Carael (1997) report that a decline in HIV prevalence in Uganda in the early 1990s was attributed to the decline in the proportion of young people having sex early. This is because engaging in sex at an early age is marked with inconsistent condom use which increases the risk of sexually-transmitted infections (UNAIDS, 2008b). However, the proportion of young people who are having sex before the age of 15 is declining but still high and nationwide surveys in selected African countries show the variation among young people from different countries (Doyle, Mavedzenge, Plummer, & Ross, 2012). Another nationwide representative survey of young

people in six African countries shows that, the median age of first sex is between 16.2 - 18.6 years in girls and 15.8 - 18.6 years in boys (Zaba, Pisani, Slaymaker, & Boerman, 2004). However, the median age varies across the continent. In females, the median age ranges from 15.8 years in Niger to 21.5 years in Rwanda, and among males from 16.6 years in Kenya to 22 years in Niger (Mishra et al., 2009). In a South African study, the median age of first sex among young men aged 15-26 from rural Eastern Cape is 14.7 years (Jewkes et al., 2006). Simbayi, Chauveau, and Shisana (2004) examined the racial variation among the young people in South Africa; they found median age at first sex to be 16.5 years in Blacks and 17.5 years among Whites, Coloureds and Indians. Despite the regional variations in the prevalence of adolescent sexual behaviour, the evidence suggests that overall median age of first sex is lower in a region where early marriage is part of the cultural practices of people, especially in West and East Africa, compared to Southern Africa (Wellings et al., 2006; Mensch, Grant, & Blanc, 2005). To illustrate the urban-rural variation in median age of first sex among young people, Voeten, Egesah, and Habbema (2004) reported that the median age is 15.7 years in rural areas and 16.5 years in urban areas. In addition, the prevalence of adolescent sexual behaviour among young people in selected African countries is mixed. A higher percentage of young girls compared to boys indicated having had sex before the age of 15 years in West Africa and the opposite trend was reported in East and Southern Africa (Doyle, Mavedzenge, Plummer, & Ross, 2012). For example, Table 2.1 shows the proportion of young people in few selected African countries who had sex before the age of 15. The percentages range from 7.4% to 26% among girls and 3.9% to 31.3% among boys. Among young people in West Africa (see the left part of Table 2.1), with the exception of Benin, significantly more girls compared to boys had sex before the age of 15. On the contrary, in East and Southern Africa (see the right part of Table 1), significantly more boys had sex before the age of 15. Further evidence shows that among young women between the ages of 15-24 years, the proportion of

young girls who have engaged in sexual activity is higher in rural areas compared to urban areas (Doyle, Mavedzenge, Plummer, & Ross, 2012) In a South African national behavioural and household survey, 11.3% of boys aged compared to 5.9% girls aged 15-24 had sex before the age of 15 (Shisana et al., 2008). Similar findings were reported by Pettifor, O'Brien, Macphail, Miller, and Rees (2009), they found that 18% of boys and 8% of girls reported early sexual intercourse before their fifteenth birthday.

Table 2.1: The percentage of young people who reported sex before the age of 15 years

Countries	Female %	Male %	Countries	Female %	Male %
Cameroon	18.0	11.5	Kenya	14.5	30.9
Ghana	7.4	3.9	Tanzania	11.4	13.0
Mali	26.0	10.6	Uganda	11.8	13.9
Nigeria	20.3	7.9	Malawi	14.1	18.0
Cote d'voire	20.4	16.7	Namibia	9.8	31.3
Benin	16.0	23.8	Zambia	17.5	27.2

Source: Mishra et al. (2009).

Moreover, multiple sexual partners has been identified as one of the risk factors for acquiring HIV infections and other sexually transmitted infection (Mah & Halperin, 2010; Morris, Kurth, Hamilton, Moody, & Wakefield, 2009; Doherty, Minnis, Auerswald, Adimora, & Padian, 2007; WHO, 2007). It is highlighted as a major driver of the HIV epidemic, especially in Southern Africa (Halperin & Epstein, 2004). In addition, more than one sexual

partner increases the risk of exposure to HIV infection in uninfected individuals (Morris et al., 2009; Pilcher et al., 2004). Consistent with this, the risk of contracting STIs and HIV infection is reduced when young people have fewer sexual partners, compared to those who have more sexual partners (Jemmott, 2005; Gottsegen & Philliber, 2001). Given the significance of multiple sexual partners to the increased risk of sexually transmitted infections, many studies have assessed the proportion of young people who reported having had multiple sexual partners. In a study conducted in Tanzania among young people aged 10-19 years, about 42% of those who are sexually active reported to having had multiple sexual partners in the last 12 months (Exavery, Lutambi, Mubyazi, Kweka, Mbaruku, & Masanja, 2011). A study in South Africa found 31% of the participants to have had multiple sexual partners (Kalichman & Simbayi, 2011). Numerous other studies have also found a high percentage of young people to have had multiple sexual partners and that overall males are more likely to be in multiple sexual relationships compared to females (Doyle et al., 2012; Mishra et al., 2009; Gregsson et al., 2002). For example, the number of adolescents between the ages of 15-24 who reported to have had two or three sexual partners range from 1% in Senegal to 28% in Cote d'Ivoire among females and among males from 5% in Ethiopia to 48% in Cote d'Ivoire (Mishra et al., 2009). Furthermore, the patterns across the African countries show that the proportion of youth with more than one sexual partner is higher in the city compared to rural areas (Doyle et al., 2012). In terms of level of education, females in the city with better education are more likely to report higher sexual partners compared to their rural-dwelling counterparts (Doyle et al., 2012). Further evidence suggests that, overall trends show a decline in the proportion reporting multiple sexual partners over time in boys compared to girls (Mishra et al., 2009). Similar results were found in Nigeria and Zambia. However, overall trends found no evidence of decreased progression in the proportion of youth in multiple sexual partners (Doyle et al., 2012).

Studies also emphasize the consistent and correct use of condoms as one of the safest sex practices to prevent sexually transmitted infections and unplanned pregnancy in youth (WHO, 2007). Further findings show that when condom use is regular, it has between 80-90% protective effectiveness against HIV infection (United States Agency for International Development, 2005; Hearst & Chen, 2004). Accordingly, it is acknowledged that most people use condoms at first sexual intercourse even with casual partners, but it becomes irregular over time in the relationship (Tavory & Swider, 2009). Thus condom use at last sexual encounter is a strong indicator for measuring adolescent sexual risk behaviours. Overall, the proportion of youth who reported using condoms in their last sexual encounter is low (Hearst & Chen, 2004). Studies have found numerous reasons for not using condoms and these include lack of sexual pleasure (Kabiru, Beguy, Undie, Zulu, & Ezeh, 2010; Tavory & Swider, 2009), religious practices (Bond & Dover, 1997), condoms' ineffectiveness to prevent HIV (Kabiru et al., 2010) and fear of being labeled as promiscuous (Macphail & Campbell, 2001) among others. Significantly more boys are more likely to have used condoms at last sex encounter compared to girls (Doyle et al., 2012; UNICEF, 2011). In a nationwide behavioural and house survey by Shisana et al. (2008), the percentage of youth aged 15-24 who used condoms at last sexual encounter was 87.4% in boys compared 73.1% in girls. In a few selected African countries, among the young people between the ages of 15-24 who reported sexual intercourse with more than one partner, the proportion of those who used condoms at last sexual encounter ranged from 27% in Benin to 51% in Swaziland among girls and 45% from Benin to 67% in Kenya among boys (UNICEF, 2011). The rural-urban variation shows that condoms are less used among young people in rural areas compared to urban youth (Doyle et al., 2012; Adair, 2008). Adair (2008) suggests that this variation could be as a result of limited access to condoms in rural areas. In addition, a major systematic review of adolescent sexual behaviour by Doyle et al. (2012) found increasing condom use to be higher among

those with higher level of education compared to those with lower education. Overall, a nationwide survey in selected African countries show that among young people, access to condoms and its use is increasing though not encouraging.

Consistent with above risky sexual behaviour, awareness of one's HIV status is also linked to behaviour change. The primary aim of screening with a diagnostic test is to detect the disease condition at its earliest stages among healthy individuals and intervene in those with the disease. Part of the principles of screening is that the condition must be treatable and facilities for treatment should be available (Wilson & Jungner, 1968). Given the significant HIV prevalence among youth and with no cure in sight, voluntary counseling and testing (VCT) is one of the strategies to not only prevent further spread of HIV infection but also to commence early medical care in those with the disease (UNAIDS, 2000). In addition, knowledge of HIV status can greatly increase access to prevention of mother-to-child-transmission of HIV services in adolescent pregnant girls (UNAIDS, 2000). Furthermore, when people know their status, they are more likely to adopt safer sex practices including condom use (Fortenberry, Brizendine, Katz, & Orr, 2002). Thus far, the proportion of young people aged 15-24 who know their HIV status in selected African countries range from 5% in Ethiopia to 48% in Kenya among females and from 5% in Ethiopia to 31% in Kenya among males (UNICEF, 2011). This shows that significantly more females know their HIV status compared to males of the same age. Similar findings are found in a study conducted in a South Africa behavioural survey conducted in 2005 and 2008 (Shisana et al., 2008). All the studies found HIV testing to be higher among youth in urban setting and with higher education (Doye et al., 2012; Hutchinson & Mahlalela, 2006). Conversely, the results of the systematic review from Doyle et al. (2012) shows that the proportion of youth between the ages of 15-19 in Nigeria and Ethiopia who have had sexual intercourse and tested for HIV is higher among males.

2.4.1 Summary of the findings for predictors of adolescent sexual behaviour

High proportions of young people between the ages of 15-24 in sub-Saharan Africa are sexually active and have increasing odds of contracting STIs, including HIV infection. Data from several studies among young people in selected countries in sub-Saharan Africa emphasize that some of them are at the risk of HIV because of early sexual intercourse, multiple sexual partners, low condom use and HIV testing. In spite of the variation in the proportions of adolescent sexual behaviour across the continent, at least some patterns among the youth are evident. These will be summarized below:

- First, significantly, more females are likely to abstain from sex-related activity compared to males of the same age.
- Second, among those that reported sexual intercourse before the age of 15, the overall median age of first sex among the females is lower in West Africa compared to Southern Africa. This could be a result of early marriage practices in a predominantly Muslim West Africa.
- Third, those who reported early sex are more likely to be residing in rural areas with low education and less likely to practice safe sex.
- Fourth, youth who reported having sex with more than one partner are more frequently residing in urban areas and more likely to be males.
- Lastly, condom use among youth is significantly associated with higher level education and condom use is less common among rural youth.

However, there are some important caveats to using results drawn from various data. First, most results are based on cross-sectional data from surveys so that it is not allowed to interpret links or associations as being causal. Second, reports on sexual behaviour are prone to social desirability bias especially among females. This could have led to an under-

estimation of the true sexual behaviour. Nevertheless it is important that HIV prevention interventions in young people must be based on all available information regarding the patterns of adolescent sexual risk taking with respect to family structures, rural versus urban setting, level of education, socio-economic status, gender, and age group.

2.5 Sexual risk reduction programmes

Concerning the high rate of HIV infection and its associated risks among young people, there is increasing evidence that the only realistic hope for reducing the maladaptive consequences of adolescent risk taking is through behaviour change interventions. The primary goal is to build up young people's skills to be able to make informed decisions and have maximum control over their health (WHO, 1998). Behaviour change strategies that draw from a range of social science theories of behaviour including cognitive-behavioural theory, persuasive communication, motivating interviewing, peer education and diffusion of innovation theories to modify behaviour (Coates, Richter, & Caceres, 2008). Therefore, effective behaviour change interventions emphasize provision of comprehensive knowledge of HIV transmission and prevention, building HIV skills and encouragement of safer sex approaches (UNICEF, 2011; Coates, Richter, & Caceres, 2008). In the light of different studies that have looked into the potential of behavioural HIV prevention interventions, results of various observational studies (National Center in HIV Epidemiology and Clinical Research, 2007; Bowtell, 2005) and experimental studies (Noar, 2008; Lyles 2007) have shown some promising outcomes. Overall, UNAIDS (2010) and Kirby (2007) suggest that effective behavioural strategies must increase the knowledge about HIV infection, lower the frequency of risk of sexual behaviour, and modify other variables that affect behaviour such as attitude and self-efficacy concerning risk avoidance.

In conducting HIV prevention interventions, the potential to promote healthy behaviour strategies and reduce risks associated with HIV infections vary in terms of programme curriculum characteristics, contents, and approaches used to deliver the programme.

Curriculum-based HIV prevention interventions are effective programmes developed to promote the health of adolescents. The programmes draw on social theories and have been rigorously piloted, using a set of activities and implemented in a planned and organized manner as a result of programme evaluations. In addressing this, Kirby, Laris, and Rolleri (2006) suggest 17 characteristics of effective curriculum-based interventions summarized in Table 2.2.

Table 2.2: Characteristics of curriculum-based studies

The process of developing the curriculum	The contents of the curriculum itself	The implementation of the curriculum
1. Involved multiple people with different backgrounds in theory, research, and HIV education to develop the curriculum 2. Assessed relevant needs and asset of target group 3. Used a logic model approach to develop the curriculum that specified the health goals, the risk and protective factors affecting those behaviours, and the activities addressing those risk and protective factors. 4. Designed activities consistent with community values and available resources.	<i>Curriculum goals and objectives</i> 1. Focused on clear health goals-the prevention of STD/HIV and /or pregnancy. 2. Focused narrowly on specific behaviours leading to these health goals (e.g. abstaining from sex or using condoms), gave clear messages about these behaviours, and address situations that might lead to them and how to avoid them. 3. Addressed multiple sexual psychosocial risk and protective factors affecting sexual behaviour (e.g. knowledge, perceived risk, attitudes,	1. Secured at least minimal support from appropriate authorities such as ministries of health, school or community organisations. 2. Selected educators with desired characteristics (whenever possible), trained them and provided monitoring, supervision and support. 3. If needed, implemented activities to recruit and retain youth and overcome barriers to their involvement, e.g., publicise the programme, offered food, or obtained consent. 4. Implemented virtually all activities with reasonable fidelity.

Activities and teaching methodologies

4. Created a safe social environment for youth to participate.
5. Included multiple activities to change each of the targeted risk and protective factors.
6. Employed instructionally sound teaching methods that actively involved the participants, that helped participants personalize the information, and that were designed to change each group of risk and protective factors.
7. Employed activities, instructional methods and behavioural messages that were appropriate to the youths' culture, developmental age, and sexual experience.
8. Covered topics in logical sequence.

Source: Kirby, Laris, & Rolleri (2006).

This prototype provides an index for evaluating the quality of HIV intervention conducted to promote positive and healthy adolescent behaviours. Interventions which promote behaviour change delivered to young people have been met with success when they include all or part of these characteristics. However, even with effective curriculum-based interventions, chances are there that the interventions might not be effective in modifying behaviour if the programme does not promote knowledge of and HIV skills in its implementation (Kirby, Laris, & Rolleri, 2006).

Consistent with the curriculum-based intervention framework, a vast majority of interventions for improving adolescent health is through school-based health education programmes. This approach is based on the concept of schools engaging families and members in and around the school community to promote adolescent health (WHO, 1998). The reason for using school as a setting for health education is associated with increasing numbers of school enrollment and this factor alone makes school-based interventions easily accessible to a large number of school-going youth before initiating sexual activity (Kaaya, Mukoma, Flisher, & Klepp, 2002). For example, four in five of youth aged 10-15 are in school (UNESCO, 2005). In addition, schools have link to learners through their families and communities. This encourages community commitment, buy-in, and ownership of the intervention programmes (Galant & Maticka-Tyndale, 2004). Schools have well-documented and organized structures that promote a more positive and creative learning culture for tackling social issues including health problems. In spite of the fact that a number of youth who are outside the school system will be missed (Maticka-Tyndale & Brouillard-Coyle, 2006), school-based interventions remain the best approach for reaching young people.

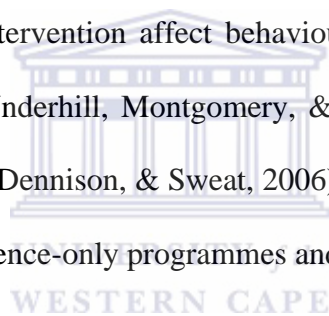
A number of school-based interventions to promote healthy behaviour in adolescents have been conducted in both developed and developing countries. Mavedzenge, Doyle, and Ross (2011) reviewed school-based interventions that seek to reduce HIV-related risk behaviour. All the school-based interventions reviewed were mainly teacher-led programmes and few were interventions using older, trained peer educators. Many of the school-based interventions reviewed aimed to increase the knowledge of HIV transmission and develop a positive attitude towards healthy behaviour. Accordingly, more than 60% of the school-based interventions reviewed had a positive effect on at least one measure of sexual behaviour in terms of abstaining from sex, condom use, and decreased multiple partnerships. Within this

review, findings suggest that no study with strong designs reported negative effect on behaviour (e.g. increasing sexual partners).

Harrison, Newell, Imrie, and Hoddinott (2010) published a systematic review of HIV preventions in South African youth aged 15-24. Among the five school-based interventions, four were delivered by teachers and they found that interventions improved knowledge of HIV and attitude towards HIV prevention. These results are consistent with previous reviews of school-based interventions which resulted in similar findings (Kirby, Laris , & Rolleri, 2006; Ross, Dick, & Ferguson, 2006). However, for all the school-based interventions reviewed, there is not enough evidence to suggest that the programmes have an impact on the HIV and STI infection. Nonetheless, one programme (*Stepping Stones*) which was conducted in rural South Africa for in- and out-of school youth had a significant impact on Herpes Simples Virus-2 (Jewkes et al., 2008). School-based interventions are not always effective due to frequent change in programme schedules and student/learners absenteeism.

Furthermore, compared to non-curriculum-based interventions, more successful school-based interventions are curriculum-based, delivered by trained teachers or trained older youth in a participatory fashion. The debate has intensified whether young people should be taught sexuality education either in school, clinics, or in the communities in order to prevent HIV, STIs and teenage pregnancy (Walgate, 2004). Reactions to the prospect of school-based sexuality education are mixed.

On one hand, the proponent of abstinence-only intervention emphasizes sexual abstinence as the only available strategy to prevent sexually-transmitted infections including HIV infection and strong opposition to safe sex practices such as condom use (Rector, 2002). Consistent with this, abstinence-only programmes are required to teach the benefits of abstaining from all sexual activity and harm of risky sexual behaviour in young people who have not had sex before and sexually active youth (Human Rights Watch, 2002). A number of reviews have examined the effectiveness of abstinence-only programmes to prevent risks associated with sexual behaviour including STIs and pregnancy in teenagers in both developing and industrialized nations (Kirby, Laris, & Rolleri, 2006; O'Reilly, Medley, Dennison, & Sweat, 2006; Underhill, Montgomery, & Operario, 2007). However, there is still lack of robust evidence that abstinence-only intervention affect behavioural change in youth. The results from four systematic reviews (Underhill, Montgomery, & Operario, 2007; Kirby, Laris, & Rolleri, 2006; O'Reilly, Medley, Dennison, & Sweat, 2006) show that no evidence was found for an association between abstinence-only programmes and the following outcomes.



1. biological outcomes including prevalence of HIV infection and STIs
2. behavioural outcomes including frequency of sex, number of sexual partners and condom use
3. pregnancy rates

Overall, there is no strong evidence to conclude that abstinence-only programmes have a significant impact on sexual behaviour including refraining from any sex-related activities. Furthermore, studies have shown that school-based sexuality programmes do not promote early sexual debut or increased sexual activities in adolescents (Alford, Cheethman, & Hauser, 2005; Fawole, Asuzu, Oduntan, & Brieger, 1999).

Abstinence-plus or comprehensive programmes acknowledge the fact that some proportions of youth will become or stay sexually active. Thus, comprehensive programmes emphasize that abstaining from all sex-related activities is indeed the best option to prevent STIs and teenage pregnancy, but also recommend condom use and other safe sex practices in sexually active youth (Underhill, Montgomery, & Operario, 2007). The contents of the interventions include sexual abstinence, pregnancy prevention, and HIV knowledge, communication about condoms, condom promotion and marketing. Comprehensive programmes are diverse in settings from schools (Coyle, Kirby, Marin, Gomez, & Gregorich, 2004) to community-based interventions (Dancy, Crittenden, & Talashek, 2006). A number of studies have assessed the impact of abstinence-plus HIV prevention programmes on sexual behaviour in both developing and developed countries. Despite the mixed evidences reported, the findings of most studies are very encouraging. A major systematic review by Kirby, Rolleri, and Laris (2006) found that about half of all the studies reviewed had a positive impact on adolescent sexual behaviour. For example, findings from the review show that 40% of the abstinence-plus programmes delay initiation of sexual intercourse and 30% reduce the frequency of unsafe sex. In addition, 41% of the programmes reduced the number of sexual partners and increased condom use. The majority of the studies in this review that assessed the impact of the programme on mediating factors for sexual risk behaviour found positive effect on behaviours. For example, the majority of the studies that measured comprehensive knowledge of HIV and STD found a significant increase in HIV knowledge. Furthermore, more than half of the studies increased perceived risk of HIV and self-efficacy to refuse sex. About two-third of the studies found a significant increase in positive attitude towards condoms and two-fifth reduced perception of peer norms to have sex. Seventy three percent of the programmes improve communication about sex with parents or partners.

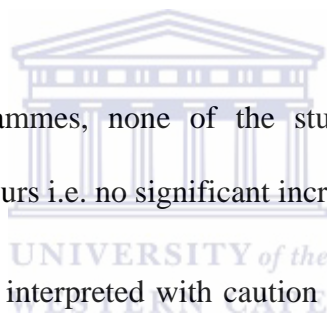
A more recent review of abstinence-plus programmes among young people in high income countries (Underhill, Operario, & Montgomery, 2007) found the same mixed evidence on behaviour. More specifically, abstinence-plus programmes delay initiation of sex (Coyle et al., 2004; O'Donnell et al., 2002) and reduce frequency of unprotected sex (Villaruel, Jemmott, & Jemmott, 2006; Jemmott, Jemmott, & Fong, 1998). In addition, DiIorio et al. (2006), Sikkemma et al. (2005), Villaruel et al. (2004) and Jemmott, Jemmott, Fong, and Hines (2004) found that comprehensive programmes increase condom use in young people. Consistent with other studies, a majority of the studies reviewed by Underhill, Operario, and Montgomery (2007) reported increased knowledge of HIV/AIDS. Although, few of the studies lack evidence for reduced risks associated with sexual behaviour, about 70% of the studies found protective effects on behaviour among young people (Underhill, Operario, & Montgomery, 2007; Kirby, Laris, & Rolleri, 2006).

Finally, one study evaluated the cost effectiveness of conducting abstinence-plus programmes on preventing and reducing risks associated with sexual behaviour in young people (Wang, Davies, Robins, Collins, Coyle, Baumler, 2000). The authors found that for every \$US 1 invested, more than \$US 40 are saved on the medical and social cost of managing the risks.

2.5.1 Summary of sexual risk reduction programmes

Generally, the objectives of adolescent sexual risk reduction interventions are to delay initiation of sexual intercourse which is seen as a more reliable and an effective way to reduce risk. Interventions also recognised adolescent sexual activity and that the promotion of condom use would have been more meaningful than promoting abstinence. Findings from the studies reviewed showed that several sexual risk reduction interventions were effective in reducing risk, though to a varied degree. These will be summarized below:

- Abstinence-only interventions do not stop adolescents from initiating sexual activity.
- None of the two programmes either abstinence-only or abstinence-plus demonstrates reduction in incidence of HIV infection and STIs.
- About 70% of the of the comprehensive programmes have a protective effect on adolescent risk taking behaviour by delaying the initiation of sex, reducing the frequency of unsafe sex, reducing the number of sexual partners and increasing condom use.
- The majority of the studies found increased knowledge of HIV transmission and prevention and more than 50% of the interventions increased positive attitudes towards condoms, self-efficacy to refuse sex and communication about sex between parents or partners.
- In comprehensive programmes, none of the studies reviewed report significant negative effect on behaviours i.e. no significant increase in all sexual behaviour.



However, the findings should be interpreted with caution because some biases which could either exaggerate or lower the programme effect were not controlled for. First, information on the methods used to assign participants into treatment and control group is incomplete or inaccurate and thus open to selection bias (e.g. lack of concealment of randomization process and blinding of subjects to treatment groups as well as programme assessors). Second, attrition rates reported in all the studies reviewed range from 0 to 58% but it was not clear if the loss to follow up is equal in both treatment and control group. However, if the loss to follow up is differential, this could under-estimate or over-estimates the true effect of the intervention in either group.

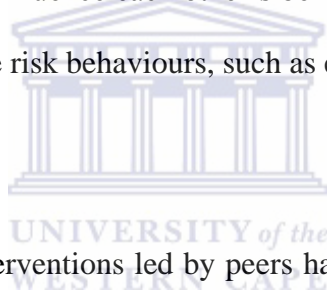
2.6 Different approaches used to deliver sexual risk reduction interventions

Addressing adolescent risk taking behaviours inevitably raises a range of questions about the delivery of youth-based HIV prevention interventions. The key aim of HIV prevention interventions is to inform young people about those behaviours that can increase or decrease their risk to sexually transmitted infections and teenage pregnancy. To ensure that the message is understood, the approach should be youth-friendly and devoid of victim blaming. Many HIV prevention programmes for young people are delivered by adults--usually teachers, or by youth themselves. Both are important, but have limitations.

A number of interventions, the majority of which were led by teachers, have been conducted in sub-Saharan African (Doyle et al., 2012; Smith et al., 2008; Maticka-Tyndale, Wildish, & Gichuru, 2007). Illustrating the importance of conducting HIV interventions among young people, Kirby, Laris, & Roller (2006) suggest that adult-led HIV interventions are the most effective to develop adolescents' skills to avoid HIV-related risks. First, all HIV prevention programmes involve the development of HIV skills and some complex topics such as gender inequality and reproductive health to facilitate behaviour change in youth. The advantage of teacher-led intervention is that teachers are closer to learners and have acquired teaching skills and methodologies, increasing their potential to effectively deliver HIV interventions especially in schools (UNESCO, 2009). However, the disadvantage of this approach is that in primary and high schools, most interventions rely on classroom style of teaching that are authoritarian, didactic and less participatory in nature (UNESCO, 2009). In addition, there are reports of male teachers sexually abusing female pupils (Plummer et al., 2007). Furthermore, many teachers lack wherewithal to discuss sex-related issues and complex sexual risk factors in the classroom (Chen, Zhao, & Dunne, 2004; Schenker & Nyirenda, 2002). Harrison, Newell, Imrie, & Hoddinott (2010) suggest that one way to tackle this is to encourage

participatory learning within the programme and include older adolescent to implement the programme (e.g. trained youth from a local NGO).

Another approach used to prevent risks associated with HIV infection in youth is peer-based interventions. Peer-based intervention provides a framework where youth with similar characteristics such as age and values undertake educational activities together in order to develop knowledge and build skills necessary for preventing HIV (UNAIDS 2007). In addition, it uses peer-to-peer interaction using participatory learning or group discussion to influence one another for positive behaviour change. The advantage of this approach is that young people are more likely to influence each other's behaviour (Shinner, 1999) and as role models (Bandura, 1977) to reduce risk behaviours, such as early initiation of sex.



A number of HIV prevention interventions led by peers have been conducted in SSA (Agha & Van Rossem, 2004; Brieger et al., 2001; Speizer, Tamashe, & Tegang, 2001), United States (DiClemente et al., 2004), and UK (Stephenson et al., 2004). A major systematic review of peer-led adolescent intervention by Kim and Free (2008) on preventing HIV infection among African youth found that about 78 % of the studies reviewed increased the knowledge of HIV/AIDS. While it is important to reduce adolescent sexual behaviour through HIV interventions, the review by Kim and Free (2008) found no impact on condom use and reduction in the number of partners. Although there is evidence of increased knowledge of and more positive attitude towards the prevention of HIV/AIDS but the overall picture shows that the peer-led approach is not effective to modify sexual behaviour in youth (Kim & Free, 2008; Ross, 2008). Clearly, the authors pointed out that the majority of the studies lacked robust design and implementation, and call on researchers to include young

people in the developmental phase of the intervention and integrate their views and health needs into project development (Kim & Free, 2008).

In addition to the school-based approach, other interventions such as clinic-based or community-based interventions have also been conducted to modify behaviour change in youth.

The UNGASS's work emphasizes the importance of access to health services to prevent or reduce risks associated with HIV in young people. Clinics play a pivotal role in providing HIV information, HIV testing and counseling, condoms promotion, and medical male circumcision (WHO, 2008). A major systematic review of clinic-based interventions in adolescents by Mavedzenge, Doyle, and Ross (2011) presents the impact of the health services on behaviour. However, the findings from this review could not be linked to the impact of the interventions as most interventions involve multiple activities where it is difficult to specifically identify which of those activities is responsible for behaviour change. In spite of the lack of clear link between interventions and behaviour, evidence suggests higher utilization of health facilities in interventions that include trained service providers and support community buy-in (Mavedzenge, Doyle, & Ross, 2011).

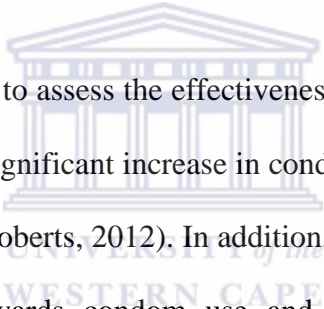
In addition, through individuals and families, communities also act as a buffer to improve the health of adolescents. People therefore need to work within the evidence-informed practice and be given a host of other opportunities to cope with changing patterns of risks associated with HIV. Community-based interventions which focus on preventing pregnancy and the risks associated with HIV/STI have met with some successes (Kirby, 2007). Many of such

interventions appear to delay initiation of sexual activity, increase condom use and reduce the rate of teenage pregnancies. Moreover, the most recent review (Mavedzenge, Doyle, & Ross, 2011) found increasing evidence for positive effects of community-based interventions, but such programmes usually include multiple activities, which makes it difficult to identify which of these activities were most effective to contributing to the success.

2.7 Addressing adolescent sexual risks through sport

In recent years, there is a growing focus on the utilization of sports towards achieving the Millennium Developmental Goals (MDGs) and specifically to contribute to the reduction of HIV infection in young people. The United Nations resolution 58/5 recognises sport participation in youth as a means to promote education, health, development and peace. Given the significance of sport in child development, the United Nations named 2005 as *The International Year of Sport and Physical Education (IYSPE)* to help achieve the MDGs (Van Eekeren, 2006). Approaches to promote sport as a driver of social development and peace recognises the uniqueness of sport in developing skills such as resiliency, self-esteem, tolerance, discipline and trust (United Nations, 2003). The combination of the aforementioned skills provides a repertoire of protective strategies in youth to avoid risky sexual behaviour. Furthermore, the sport-based approach is based on the four domains for effective HIV-prevention interventions: knowledge, life skills, a safe and supportive environment and equal access to preventive services (United Nations, 2003). The last domain holds a vital implication in ensuring that everybody has equal rights to access health services, especially among girls who are sometimes overlooked. In most countries, and particularly in Southern Africa, there are increasing numbers of NGOs and networks that are using sports as

a theme to increase HIV awareness and promote school enrollment among the youth. Examples are *Edusport Outreach International*, *Grassroot Soccer*, *Kicking Aids*, among others. In spite of the increasing participation of the NGO community in scaling up sport-based behaviour change interventions in youth, little is known about the impact of sports-based interventions in preventing HIV-related risk behaviour. There are relatively few citable and robust studies in the literature that assess the impact of sport-based intervention on adolescent sexual behaviour, thus it is extremely difficult to conduct a meta-analytic or systematic review of sport-based interventions. Against this background, the approach here will be to cite and critically review the individual sport-based HIV prevention interventions.



A recently completed programme to assess the effectiveness of life skills intervention in HIV education through sport found a significant increase in condom use at last sexual encounter in the intervention group (Maro & Roberts, 2012). In addition, the study reported increased HIV knowledge, positive attitude towards condom use and intention to safer-sex practices. However, the control group came from out-of-school street children who are not matched in opportunities with the intervention group. This systematic difference in the selection of participants could have over-estimated the true effect in the intervention group. In addition to that is the effect of differential attrition rate, as more children in the control group dropped out.

Kaufman, Welsch, Erickson, Adams, and Ross (2012) report a sport-based HIV prevention among young people in the Dominican Republic. The study finds that the intervention increases the knowledge of HIV, attitude and communication in the treatment group compared to the control group. Although, the intervention used a quasi-experimental design,

the study was not adequately powered, with a sample size less than 100 and relatively too small to detect a true effect of the intervention (Kirby, Laris, & Rolleri, 2007). In addition, they reported a differential loss to follow up (intervention = 25%; control= 56%) which could cast doubt on the validity of the findings.

Other sports-based interventions have sought to promote HIV prevention skills and awareness in young people (Delva et al., 2010; Maro, Roberts, & Sorensen, 2009; Clark, Friedrich, Ndlovu, Neilands, & McFarland, 2006). The study of Maro, Roberts, and Sorenson (2009) was aimed at promoting HIV/AIDS education for at-risk youth in Tanzania. They reported an increase in HIV knowledge, attitude towards one partner, intention to use condom and condom use. However, the participants in the control group were difficult to follow leading to attrition rate of more than 25%. Furthermore, a sport-based intervention using analytical cross-sectional survey of young people in Kenya found consistent condom use was higher in the intervention group (Delva et al., 2010). However, there was no significant effect of intervention on other measures of sexual behaviour and the choice of this design makes it difficult to causally link the intervention to the assessed outcomes. Another quasi-experimental study aimed at preventing HIV infection among primary school pupils and using soccer player intervention demonstrated increased HIV knowledge and belief in condom effectiveness (Clark et al., 2006). However, the intervention is less rigorous because (i) the possibility of cross-contamination of the intervention as both treatment and control group were recruited from the same school and (ii) a two-week intervention programme is really short for any meaningful effect to be observed. Across the five studies, none of the interventions measure biological outcomes such as incidence of HIV and HSV-2 which are two important consequences of risky sexual behaviour. Thus, only two studies measured reported sexual behaviour (sexual debut, multiple partners, condom use), only one reported significant condom use at last sexual encounter.

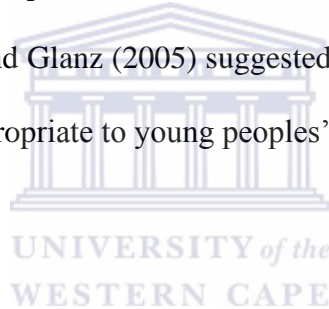
Furthermore, the selection criteria are not clear in all the five studies and could be open to selection bias. Thus, the evidence needed to recommend a large-scale implementation of sports-based HIV prevention in young people is less rigorous and robust. The lack of comparison across studies is due to a narrow scope of study methods such as sample size, non-randomised design, and differential loss to follow up as well as a short intervention period. Future sport-based research that provides for sound rigorous testing and draws from social science theories underpinning the sports-based intervention will provide big leap in increasing the level of evidence of sport-based interventions. Illustrated in Table 2.3 are the specific sport-based educational approaches to reduce risky sexual behaviours.

Table 2.3: Descriptive summary of specific sport-based intervention

Authors	Country	Participants	Intervention duration	Intervention activities and contents
Kaufman et al., 2012	Dominican Republic	Adolescents (10-20 years)	10 hours	Soccer-themed, interactive, discovery-based learning. Contents include HIV risks and knowledge.
Delva et al., 2010	Kenya	Young people (12-24 years)	Not indicated	HIV/AIDS prevention and awareness project through school outreach, movement games, and peer education.
Maro, Roberts & Sorensen, 2009	Tanzania	Youths (12-15 years)	8 weeks	AIDS life skills learning through sport sessions.
Clark et al., 2006	Zimbabwe	7th grade learners (12-14 years)	2 weeks	Interactive, game-based, peer education activities. Contents include HIV knowledge, risk and prevention messages.

2.8 Theoretical Framework underpinning the adolescent risk reduction interventions

To date, the general approach to the prevention of HIV-related risk behaviour in young people is through behavioural interventions that strengthen protective factors and reduce vulnerabilities of adolescent engaging in risky sexual behaviour. It is imperative that the interaction between specific factors such as biological, psychological, and social factors that relate to behaviour change be understood to design and plan health behaviour interventions. Therefore using this concept for an intervention's planning and implementation is akin to evidence-based practice in public health (Rimer & Glanz, 2005). The advantage is that the delivery of theory-based interventions increases the understanding of health behaviour and is more likely to be successful compared to interventions without a theoretical framework (Rimer & Glanz, 2005). Rimer and Glanz (2005) suggested that intervention must focus on at least one or multiple theories appropriate to young peoples' need and values.



The theoretical concept of behaviour explains the interaction of the individuals with physical and socio-cultural environments (Rimer & Glanz, 2005). This model of interaction is what is known as an ecological model which draws upon challenges individual face at the interpersonal level and in interaction with social systems. One challenge is at the individual level; young people may be overwhelmed by higher levels of sex hormone that increases sexual activity (Halperin, Udry, & Suchindran, 1997). The second is the perception of peer acceptance or peer rejection and its effect on sexual behaviour (Sontag & Graber, 2010). Risky sexual behaviour involves two individuals, but largely due to environmental influences, the adoption of an intervention that does not only focus on individuals but also on the societal level is most promising for sustaining and promoting safe sexual behaviour in adolescents. From the perspective of the ecological theory, human behaviour is influenced by

the characteristics of the individual (micro-level), the setting in which the individual interacts (meso-level) and a larger societal structure across the community (macro-level) (Bronfenbrenner, 1979). The central approach of the ecological model works on the premise that interventions must move beyond traditional information-provision approach at the individual level to larger socio-environmental settings (Shoveller, Johnson, Sawy & Pietersma, 2006).

At the intra-personal level, interventions attempt to increase knowledge and promote positive attitudes towards non-risky behaviour in such a way that the adoption of safe sexual behaviour is part of the individual decision-making. At the inter-personal level, interventions recognise the relationship dynamics between two people and the environment and make use of social systems as a means to modify perceived sexual norms of peers within the context of social relations in an attempt to inhibit risky sexual behaviour (Shoveller *et al.*, 2006). For instance, interventions are designed to promote communication between two partners by increasing condom negotiation skills and sex refusal skills.

Community-level influences on behaviour have to do with cultural norms among individuals, organisational policies, and rules which may hamper or promote certain behaviours (DiClemente, Salazar & Crosby, 2007). For example, programme planners will need to allay community fears that condom use among youth does not promote promiscuity as is wrongly believed by many.

Table 2.4 from Rimer and Glanz (2005) illustrates how different levels of influences impact on behaviour change.

Table 2.4: Different level of influence of an ecological perspective

Concept	Definition
<i>Intrapersonal level</i>	individual characteristics that influence behaviour such as knowledge, attitudes, beliefs, and personality traits
<i>Interpersonal level</i>	interpersonal processes and primary groups, including family, friends , and peers that provide social identity, support, and role definition
<i>Community level</i>	
Institutional factors	rules, regulations, policies, and informal structures, which may constrain or promote recommended behaviours
Community factors	social networks and norms, or standards, which exist as formal or informal among individuals, groups, and organisations
Public policy	Local, state, and federal policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management

Source: Rimer, and Glanz, (2005).

A number of HIV prevention interventions were based on social science theories of behaviour to guide the intervention programmes aimed at modifying behaviour change in adolescents. Two systematic review analyses of HIV prevention programmes in youth have outlined the most widely used theories of behaviour change (Harrison et al., 2010; Galant & Maticka-Tyndale, 2004). The most common ones include social cognitive models of behaviour change, theories of learning and pedagogy, and theories of community influence and power. To be most effective, researchers must adapt individual theories of behaviour or

combine the theories to the local context in order to increase effectiveness (Rimer & Glanz, 2005). The theories used in this intervention are discussed below.

At individual level, the most common models are Health Belief Model (HBM) and Theory of Planned Behaviour (TPB). The Health Belief Model was first used in the 1950s among a group of researchers who were trying to understand why some participants refused to participate in their study and has become the most widely applied model since (Rimer & Glanz, 2005; Austin, McNally, & Stewart, 2002). The model works on the assumption that beliefs which are either acquired or acquired or learned through peers or families can be modified through repetitive education. To change behaviour, HBM works on six constructs (see Table 2.6) of which the last two were added because of the originally limited impact on behaviour (Rimer & Glanz, 2005; Austin, McNally, & Stewart, 2002).

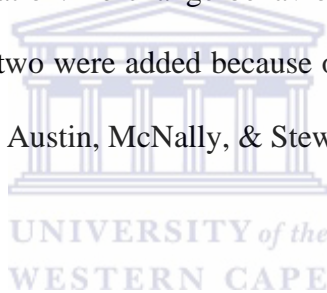


Table 2.5: Health Belief Model and its application

Concept	Definition	Application
Perceived susceptibility	beliefs about the chance of getting a condition	define population at risk and their risk level; personalise risks based on individual's attributes or behaviours and develop an accurate perception of risks
Perceived severity	beliefs about seriousness of health condition and its consequences	specify consequences of the risk and recommend action
Perceived benefits	beliefs about the effectiveness of taking action to reduce risk	explain how, where, and when to take action and positive effects to be expected

Perceived barriers	beliefs about the material and psychological costs of taking action	identify and reduce barriers through reassurance, incentives, assistance; correct information
Cues to action	strategies to 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.

In addition, the updated version which provides a comprehensive understanding of the influence of psycho-social and environmental factors on health behaviour outlined by Abraham and Sheeran (2005) is illustrated in Figure 2.1. Figure 2.1 shows the HBM’s four domains of behaviour change: threat evaluation, behavioural evaluation, health motivation, and cues to action. The first domain (threat evaluation), consists of two key beliefs, perceived susceptibility to health problem and perceived severity of the consequence of health problem. Therefore, if the threat evaluation is high, individuals are more likely to adopt health behaviour compared to when it is low. The second domain which is behavioural evaluation consists of perceived benefits and perceived barriers. Thus, Blackwell (1992) suggested that the balance between perceived benefits and barriers influences health behaviour in a certain direction. For instance, high treat evaluation together with low barriers and high perceived benefits will influence health behaviour in a positive direction (Becker, Maiman, Kirscht, Haefner, Drachman, & Taylor, 1979). However, the application of the last two domains (health motivation and cues to action) and how they influence health behaviour have received less attention (Abraham & Sheeran, 2005). The effect of cue to action (e.g. sport-based activities and persuasive communication) is influenced by demographic characteristics (age, gender, and ethnicity) and psycho-social factors including social influences. Stroebe (2000)

found that most interventions that used this model gave little attention to the impact of social influence.

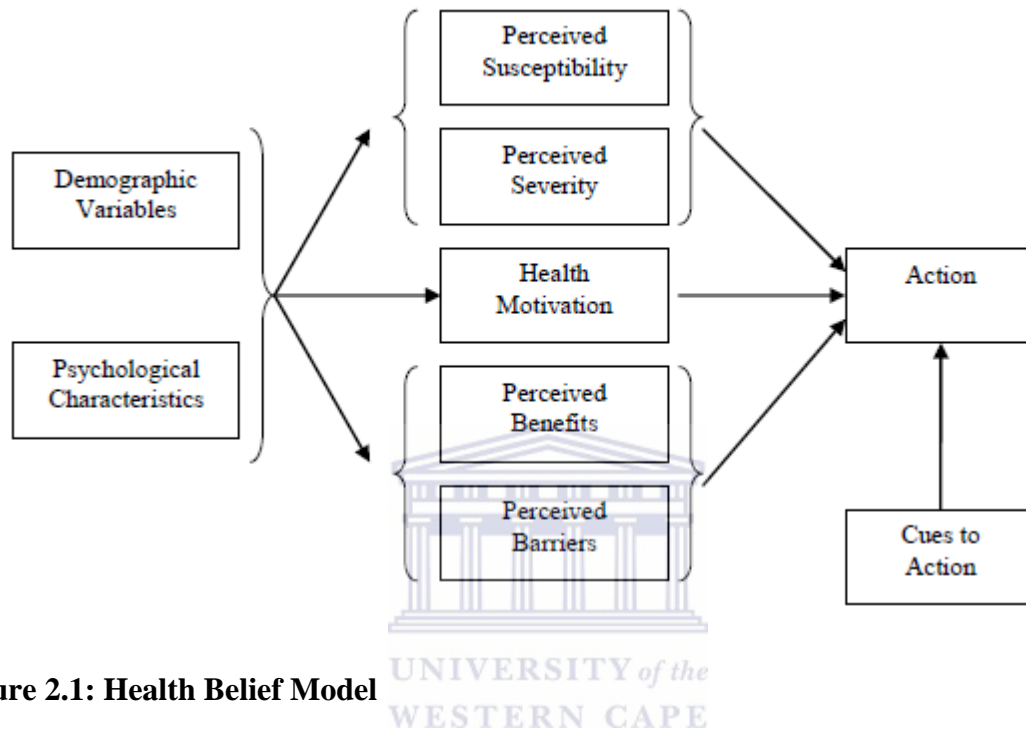


Figure 2.1: Health Belief Model

Source: Abraham and Sheeran (2005).

The second model, the Theory of Planned Behaviour (TPB) explains the interaction of behavioural intention and attitude as they relate to performing health behaviour. It was initially named the Theory of Reasoned Action before it was changed to TPB because of its inability to explain the complexity of factors that influence behaviour that is beyond individual's control (Cooke & French, 2008; Connor & Sparks, 2005; Ajzen, 1991). The TPB is based on three constructs: attitude towards behaviour (A), subjective norms (SN) and perceived behavioural control (PBC) which was later added to make up for other factors that inevitably influence behaviour (Sirur, Richardson, Wishart, & Hanna, 2009; Ajzen & Madden, 1986). The model works on the premise that behavioural intentions are an

immediate precursor to behaviour and a good predictor of behaviour (Sutton, 1997). For example, a meta-analytic review examining the intention-behaviour relationship found that intention accounted for about 28% of the variance in behaviour (Sheeran, 2002).

Table 2.6: Theory of Planned Behaviour

Concept	Definition	Measurement approach
Behavioural intention	perceived likelihood of performing behaviour	are you likely or unlikely to perform the behaviour?
Attitude	personal evaluation of the behaviour	do you see the behaviour as good, neutral, or bad?
Subjective norm	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 or/ disapprove of the behaviour?
Perceived behavioural control	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?

Source: Glanz & Rimer (2005).

The model works on the premise that, the more favourable the beliefs, attitudes and intention to perform a behaviour, the higher the probability of the behaviour. Generally, the theory of planned behaviour is a function of behavioural intention and perceived behaviour control, mathematically represented by Connor and Sparks (2005) as:

$B = w_1I + w_2PBC$ (where B is behaviour, I is behavioural intention, PBC is perceived behavioural control and w_1 and w_2 are regression weights).

In addition, Figure 2.2 gives the revised version of the model which illustrates how external variables including demographic characteristics and environment influence attitude, subjective norm, and perceived behavioural control.

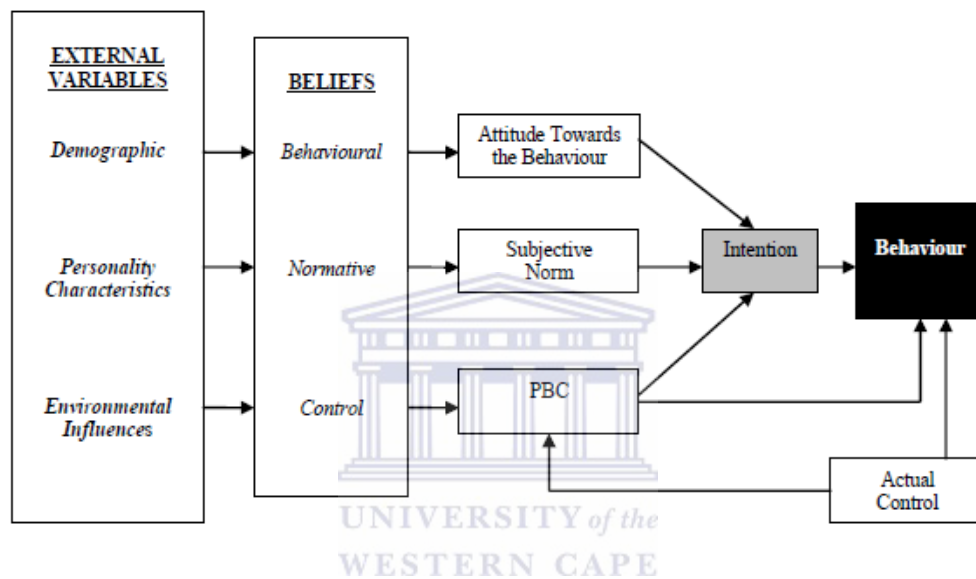


Figure 2.2: Revised Theory of Planned Behaviour Model

Source: Connor and Sparks (2005)

A review of this model reported that attitude, subjective norm, and perceived behavioural control could explain about 46% of variance in intention (Armitage & Christian, 2003). This model is used to develop an intervention based on variables (e.g. attitudes, subjective norm, and perceived behavioural control) that account for variation for in intention or behaviour (Connor & Sparks, 2005).

The last model, the SCT was renamed Social Learning Theory (SLT) following the addition of another construct, self-efficacy (Bandura, 1986). It is of the one most comprehensive theories of behaviour change establishing relationship between personal and environmental factors, and human behaviour (Redding, Rossi, Rossi, & Velicer, & Prochaska, 2000). The model is illustrated below in Table 2.7.

Table 2.7: Social Cognitive Theory

Concept	Definition	Potential change strategies
Reciprocal determinism	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
Behavioural capability	knowledge and skill to perform a given behaviour	promote mastery learning through skills training
Expectations	anticipated outcomes of behaviours	model positive outcomes of healthful behaviour
Self-efficacy (most important)	confidence in one's ability to take action and overcome barrier	approach behaviour change in small steps to ensure success; be specific about the desired change
Observational learning (modelling)	behavioural acquisition that occurs by watching the actions and outcome of others' behaviours	offer credible role models who perform the targeted behaviours
Reinforcements	responses to a person's behaviour that increase or decrease the likelihood of reoccurrence	promote self-initiated rewards and incentives

Source: Glanz and Rimer (2005).

The social cognitive theory is a multi-faceted cognitive-behavioural and emotional model of behaviour change using six constructs that have been effective (Lorig et al., 1999). The basic concept addresses the dynamic interactions between behaviour, personal and environmental factors. This would facilitate the correct implementation of skills to strengthen cognitive and behavioural capability. Such skills improve self-efficacy (the most important factor in behaviour change) to overcome barriers and facilitate role modelling in order to bring about a desired behaviour.

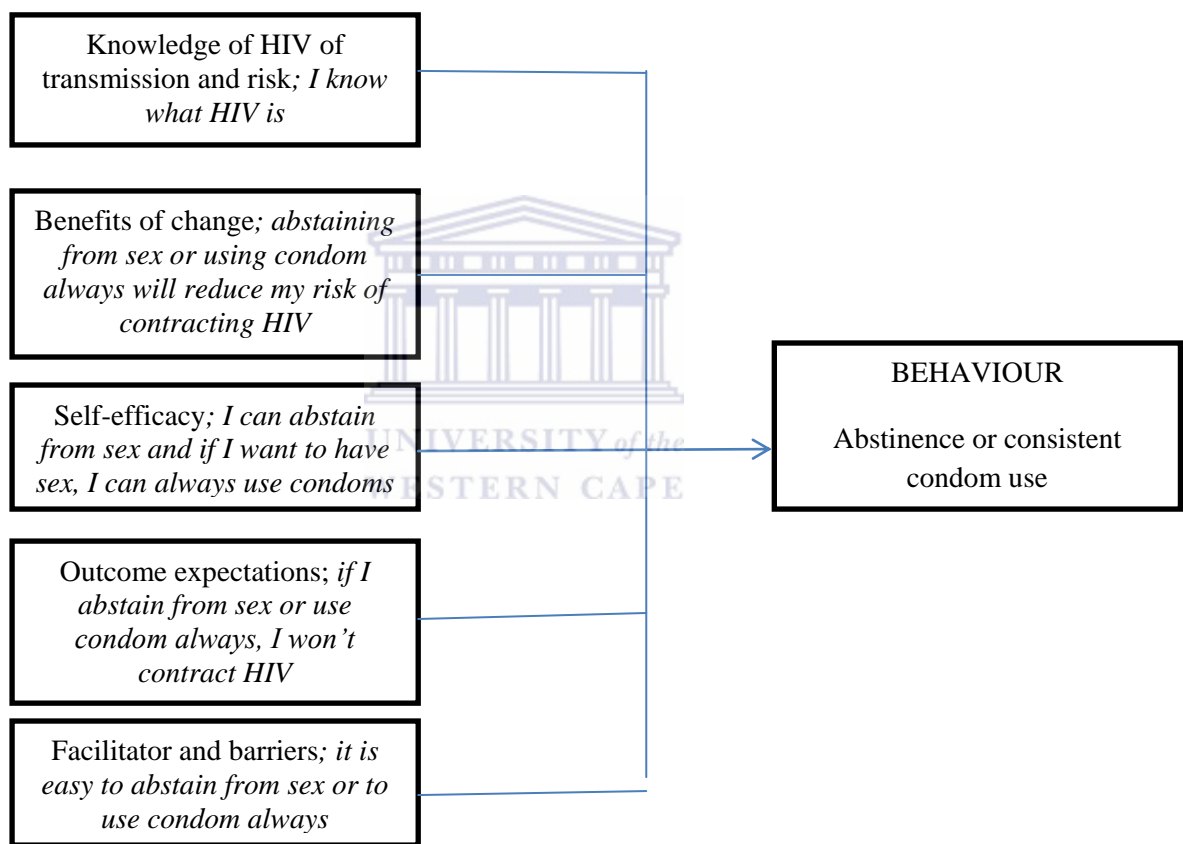


Figure 2.3: Application of social Cognitive Theory

Table 2.8 : Summary of Theories: focus and key concepts

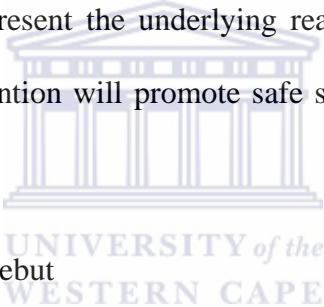
Ecological level	Theory	Focus	Key concepts
Individual level	Health Belief Model	individuals' perception of the threat posed by a health problem, the benefits of avoiding the threat, and factors influencing the decision to act	perceived susceptibility perceived severity perceived benefits perceived barriers cues to action self-efficacy
	Theory of planned behaviour	individuals' attitudes towards a behaviour, perceptions of norms, and beliefs about the ease or difficulty of changing	behavioural intention attitude subjective norms perceived behavioural control
Interpersonal level	Social Cognitive Theory	personal factors, environmental factors, and human behaviours exert influence on each other	reciprocal determinism behavioural capability expectations self-efficacy observational learning reinforcements

The use of multiple theories in prevention interventions to address multiple domains of adolescent influences (biological, psychological, social) on behaviour will be more effective in reaching the youth than the use of a single theory. However, the previous sport-based interventions (Delva et al., 2010; Maro, Roberts, & Sorensen, 2009; Clark, Friedrich, Ndlovu, Neilands, & McFarland, 2006) provided social cognitive theory to booster programme effectiveness. In addition, the curriculum (GRS) which the current study was adapted from used social cognitive theory to develop their curriculum; we also extended the model to guide

our intervention. This approach is relevant and summarized below are intervention goals to strengthen skills to delay or reduce risk in the intended population:

- increase knowledge of HIV transmission in order to reduce risk-taking behaviour
- improve attitudes and beliefs towards safe sexual behaviour (such as condom use)
- increase inter-personal communication on HIV between partners
- promote life skills to promote condom negotiation and sex refusal skills
- promote learners perception of social norms
- modify gender roles
- improve access to availability of condoms

The following specific goals represent the underlying reason for conducting this study. If these goals were met, the intervention will promote safe sexual behaviour among the study participants by:

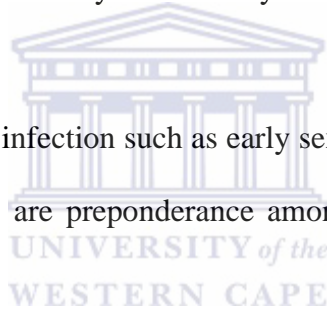
- 
- delaying onset of sexual debut
 - decreasing number of partners
 - increasing condom use
 - decrease the frequency of sexual intercourse and promote secondary abstinence

2.9 Chapter summary

This chapter reviewed the relevant literature pertaining to the prevalence of HIV and adolescent sexual risk behaviours among the youth aged 15-24. Also reviewed were factors that influence adolescent risk taking behaviours such as biological, psychological, and social influences of risky sexual behaviours. Moreover, several sexual risk reduction intervention programmes and approaches to delay or reduce risks were also reviewed. Lastly, as a point of

exit, relevant theoretical frameworks underpinning several risk reduction interventions in youth were also reviewed. The summary is highlighted below:

- there is a decline in the prevalence of HIV infection worldwide, but the proportion of youth living with HIV in sub-Saharan Africa accounted for 80% of youth prevalence globally.
- in sub-Saharan Africa, the prevalence of HIV in Southern Africa is the highest compared to other sub-continent countries.
- adolescent sexual risk behaviour is influenced by biological, psychological, and social factors which increase youth's disposition to HIV risk.
- adolescent males are significantly more likely to engage in risky sexual behaviour compared to females.
- risks associated with HIV infection such as early sexual intercourse, irregular condom use, and low HIV testing are preponderance among youth in rural areas than their urban counterparts.
- abstinence-only HIV prevention interventions are rarely effective, wealth of evidences support implementation of abstinence-plus interventions and have been shown to be more effective and relevant for reducing adolescent risks.
- more than 75% of the HIV-prevention interventions were implemented by teachers, but success has been marred by teachers' workload, over-reliance on didactic approach and not participatory.
- there are increasing calls to scale up a more participatory intervention approach using older adolescents.
- the most cited social theories guiding the interventions are social learning /cognitive theory, health belief model, and theory of reasoned action.



From this chapter, it is evident that youth in rural areas have more HIV prevention needs than those living in urban setting because of their higher disposition to HIV risks. Moreover, most HIV-prevention interventions that target youth are not participatory and too didactic. The current study is designed to address these two highlighted gaps. The next chapter will therefore describe the methods used to reach the study objectives as outlined in the previous chapter.

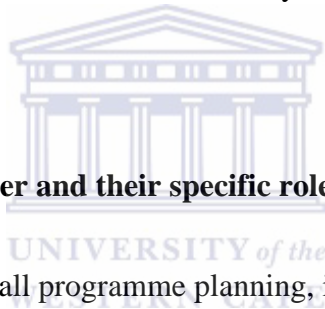


CHAPTER THREE

METHODOLOGY

3.1a. Overview of the chapter

This chapter explores the methodological framework used in this study. First the research questions that guided the study are outlined again and then the chapter starts with a broad description of the research setting in which the intervention took place. This is followed by a description of the participants and sampling method used in the study. Furthermore, the chapter describes the study design, method of data collection, and statistical data analysis. In addition, an ethical statement and limitations of the study are also explained.



3.1b. Intervention team member and their specific roles

Researcher: coordination of overall programme planning, implementation and evaluation.

Supervisor: Ensured programme delivery and coordinated focus group discussion sessions

GRS managers: provided information and resources used in the programme e.g. peer facilitators, curriculum, and materials.

Master Coaches: monitored how intervention was delivered in school

Peer facilitators: programme implementation in school for 12 weeks.

3.2 Research questions

The overall goal of the sport-based HIV prevention programme is to reduce the factors that are associated with increased risk of HIV infection in high school learners. In high school learners who participated in a 12-week sport-based programme, what is the effect of a sport-based HIV prevention intervention on the HIV-related risky sexual compared to those learners from control school?

1. It is hypothesised that compared to the learners in the control school, learners in the sport-based HIV prevention programme group would have:
 - reduced risky sexual behaviours
 - increased HIV knowledge
 - increased self-efficacy to sexual abstinence and condom use
 - increased sex communication skills
 - increased sex negotiation skills

3.3 Research Setting

The setting for the study was the town of Ceres that is situated in Witzenberg Local Municipality of the Western Cape Province, about two-hour drive from the City of Cape Town. The key sub-regions around the area include Wolseley, Tulbagh, Op-die-Berg, and Prince Alfred Hamlet. According to the 2001 population census, population in the Ceres was estimated at 83,567 and mainly Afrikaans speakers. From the 2001 population census, the predominant population group in Ceres was Coloured (63%) and others include White (31%), Black (5.3%), and Indian/Asian (0.7%). The name is derived from the Roman goddess of

fertility because of its rich fertile soil, making the area the main hub of agricultural produce in South Africa. There are four high schools and the majority of the learners are children of farm workers from the neighbouring towns. The basis for choosing this setting was the limited access to HIV prevention programmes in rural schools in South Africa (Personal Communication with Grassroot Soccer in November 15, 2009).

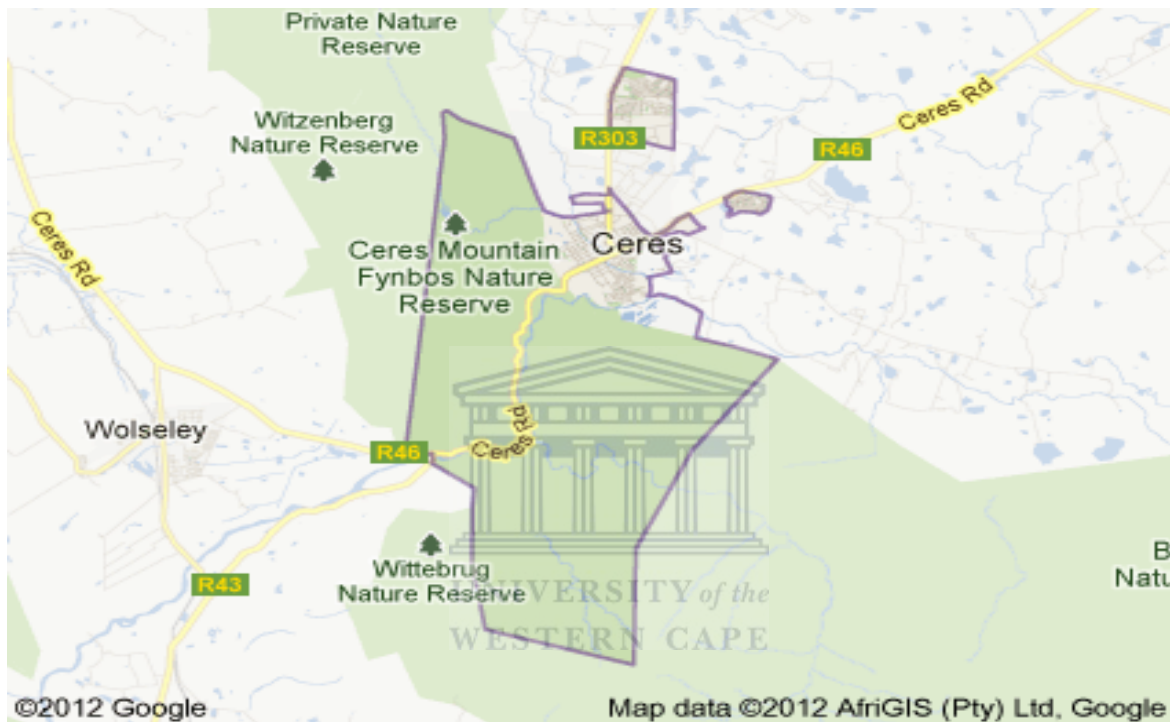


Figure 3.1: Map of Ceres, retrieved November 20, 2012 from www.maps.google.com

3.4 Research Design

The overarching study design was quasi-experimental to examine the impact of a sport-based intervention on HIV-related risky sexual behaviours and mediating outcomes of risky sexual behaviour, utilizing both the quantitative and qualitative approach. This was a concurrent embedded strategy of mixed method research (Creswell, 2009). The predominant method is quantitative. A qualitative study approach was used to explore study objective(s) that cannot

be achieved with a quantitative design (Morse, 1991). This methodological approach provides a broader perspective from the two data sources (i.e., questionnaires and face-to-face interviews) and an overall composite evaluation of the research objectives (Creswell, 2009). The combination of a qualitative and quantitative research methodology is fast becoming a preferred method to evaluate public health interventions (Tashakkori & Teddlie, 2003). This is because it increases the overall robustness of the methodological practices and provides broader insights compared to findings from a single method (Barbour, 2001). Thus in this study, the results from the two data sources will not be transformed or integrated together in the analysis phase but will be interpreted separately.

The quantitative data include standardised measures of risky sexual behaviours and mediating factors for preventing HIV to assess the factors that could contribute to risk and vulnerability of HIV infection among high school learners. The qualitative approach used focus-group discussions with GRS staff to inform the programme implementation and delivery. In addition, in-depth interviews were done among peer facilitators who implemented the programme to explore their views on and acceptability of the sport-based intervention in school and recommendation for future evaluation

3.5 Population and Sample

The potential study population comprises of four high schools in Ceres. The class size ranges from 40 to 60 learners with approximately 3000 learners in the four high schools. However, only two high schools agreed to participate in the study. Those schools that declined did not give reasons why they chose not to participate in the study. The two schools are predominantly from "Coloured" communities, and attract more learners from farm settlements

in the Ceres area. The schools are about 10 kilometres from each other and have learners from the age of 13 years in grades eight to twelve. The study sample consisted of learners from grades 8-10, as grade 12 learners were excluded from the study following the Western Cape Education Department guidelines not to include learners in their final year of study and grade 11 learners were busy preparing for the exams at the time of baseline data collection.

For this study, the primary unit of randomisation is at the level of classroom. This means individual learners could not be randomised as this would have disrupted the normal academic programme since intervention took place during the school hours. To minimise the disruption to academic work, two classrooms each were randomly selected from grades 8-10. Overall, two high schools were randomly allocated to the intervention and comparison group, six classes two from each grade were randomly selected for the study. Of the approximate 510 eligible learners who consented to participate in the study, 430 learners (Intervention group = 250, control group = 180) completed the baseline survey (Figure 3.2). The final sample thus consisted of 430 high school learners representing 204 males (47.4%) and 226 females (52.6%) of predominantly (94.2%) “Coloured learners”. For the follow-up measure after four-weeks, 340 learners completed the post evaluation measure (Intervention = 215, control = 145).

The sample for the qualitative study comprises purposively selected GRS staff and programme facilitators. They gave insight on the sport-based intervention implemented in the school. It was not clear why there was a higher attrition rate in the control school; however the data show a differential loss to follow-up in the intervention (14.8%) and control (37.8%) respectively.

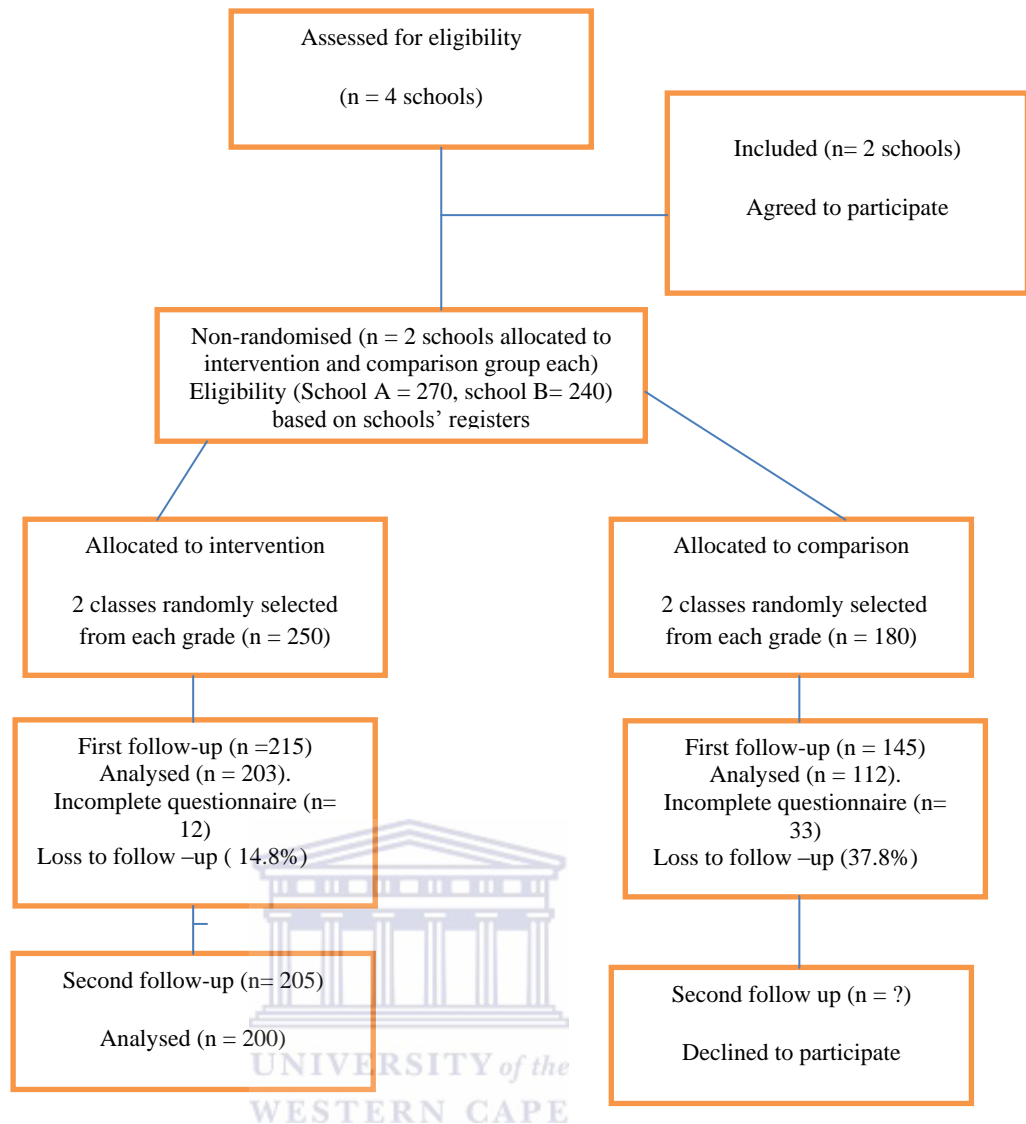


Figure 3.2: Summary of study participants

3.6 Methods of data collection

The study incorporated both quantitative and qualitative data as outlined under the research design.

3.6.1 Quantitative data

This was collected by means of a self-administered questionnaire. This questionnaire consisted of several sections adapted from existing studies as it is (Appendix 7):

(a) Demographic questionnaire

This self-constructed scale measured demographic and socio-economic characteristics of the learners. Age was measured on a continuous scale for ease of analysis and interpretation (e.g. mean age). Categorical variables were used for grade (1 = grade 8; 2 = grade 9; 3 = grade 10) and population group ('Coloured', 'White', 'Black', Indian/Asian). Socio-economic status was measured on the basis of household items, frequency of vacation, and number of people sleeping in one room (Boyce, Torsheim, Currie, & Zambon, 2006). The SES was categorised into three levels (Low, Middle, and High). This is deemed to be more reliable than asking for parents' income from children who have no such details.

(b) Sources of information on HIV/AIDS

This self-constructed scale sought to obtain data on important sources of information on HIV/AIDS. The variables measured include most important sources of information HIV/AIDS, sexual education, preferred sources of information on these topics and if they have ever attended classes on these topics.

(c) HIV- KQ-18

The HIV-KQ-18 is a self-administered questionnaire (Carey & Schroder, 2002) that measures the knowledge of HIV transmission, prevention, and misconception about HIV infection. It consists of 18 items dichotomised into 1 = 'True' and 0 = 'False or Don't Know'. A total score for each participant was constructed on a continuous scale by adding the number of correct answers ranging from 0 to 18 with higher scores indicating more knowledge of

HIV/AIDS in heterosexuals with low level of education (Cronbach's alpha coefficient = 0.75-0.89).

(d) Sexual behaviours

Sexual behaviours were assessed using a self-administered questionnaire adapted from the subscale "*sexual activity*" of the Youth Risk Behaviour Surveillance System (YRBSS) developed by the Center for Disease Control and Prevention (CDC). The YRBSS has been utilised among adolescents both in developed and developing nations including South Africa (Reddy, James, & McCauley, 2003). This scale was used to measure the age of first sexual intercourse, condom use at first and last sexual contacts, and number of sexual partners. The learners were requested to report whether they were sexually active (0 = No, 1 = Yes), age of sexual debut (0 = \leq 14 years, 1 = $>$ 14 years), lifetime sexual partners (0 = one sexual partner in the past 12 months, 1 = more than one sexual partners in the past 12 months), consistency of condom use (0 = sometimes/Never, 1 = Always) and condom use at last sexual contact (0 = No, 1 = Yes).

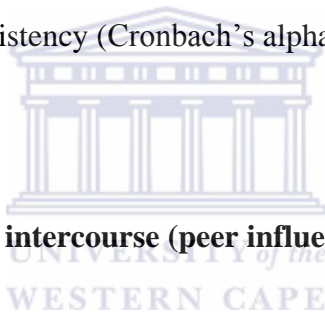
(e) Sexual communication and negotiation skills

Learners responded to a series of questions assessing sexual communication and negotiation skills, adapted from the Assertive Sexual Communication Scale (Deiter, 1994). Learners rated each item using a 5-point Likert scale ranging from strongly agree to strongly disagree across 11 items (internal consistency, $\alpha = 0.93$). Examples of items are: 'I would want to

know if my partner has ever had a HIV test’, ‘Most of the time we do what my partner wants to do’. Higher scores indicate higher skills for communication and negotiation skills.

(f) Self-efficacy to refuse sex

This scale was designed to assess sexually active and sexually inexperienced learners’ self-efficacy to refuse sex (Basen-Engquist et al., 1999). The scale consists of 4 items with a 5-point Likert scale ranging from *Very sure* to *Not very sure*. An example of items is: ‘...imagine your partner, he or she wants to have sex but you don’t feel ready, how sure are you could keep from having sex until you feel ready. Higher scores indicate higher perceived ability to refuse sex. Internal consistency (Cronbach’s alpha) was 0.70.



(g) Peer norms about sexual intercourse (peer influence)

This measure from Basen-Engquist et al. (1999) assessed with four items the influence of perceived peer sexual activities on one’s own sexual behaviours. Each item was scored as 1 for ‘None’ and 5 for ‘All’ response. Item scores were then added together across the 4 items and total average scores ranging from 1 to 5, with higher scores indicating greater possibility of being influenced by friend’s sexual behaviour (Cronbach’s alpha = 0.78). Examples of items are: ‘How many of your friends believe people of your age should wait until they are older before having sex?’, and ‘how many of your friends believe it is okay now for people of your age to start having sex?’

(h) Time perspective scale

Zimbardo Time Perspective Inventory (short form) was used to collect present time perspectives (hedonistic and fatalistic) and future time perspective (Zimbardo & Boyd, 1999). The measure was used to determine the impact of time perspective as a predictor of risky sexual behaviour among the participants. Measure consists of three sub-scales (present hedonistic, present fatalistic and future perspective). Future orientation was expected to be a negative predictor and present orientation a positive predictor of risky sexual behaviour. Answers are given on a five-point Likert scale across 27 items ($\alpha = 0.80, 0.74, 0.81$ respectively).

3.6.2 Reliability and validity

A final draft of the questionnaire was translated into Afrikaans and back translated into English by a linguist in Afrikaans language. A pilot study was conducted to pre-test the questionnaire before the final version was adopted for use. The pilot study was conducted among a group of 30 learners in a high school with a similar demographic profile as the intended study participants. This was done to determine the clarity of the wording and the time it would take to complete the questionnaire. Needed changes were made before it was administered. To assure of the reliability of the questionnaire, its internal consistency was calculated using the procedures described by Pallant (2010).

It was found that the time taken to complete the questionnaire ranged from 30 to 45 minutes and completion was somewhat slower among Grade 8 learners. This means that Grade 8 learners would need between 35 to 50 minutes to complete the questionnaire. In addition, reliability of scales was checked by calculating the internal consistency (Cronbach's alpha coefficient) to see how the scales adapted are relevant to the setting in the intended population group. This is to determine the extent to which the items that make up the scale

are all measuring the underlying attributes. The results indicated that the instruments were relevant to the setting, with Cronbach's alpha coefficient values above .70 (DeVellis, 2003). The "Attitude towards condoms" scale was dropped because of a very low reliability score (see Table 3.3).

Table 3.1: Psychometric description of scales

Variables	Range of scores	No of items	Cronbach' alpha	Means (SD)
Knowledge	0-18	18	0.73	8.37(3.06)
Self-efficacy	1-5	4	0.82	3.42(1.23)
Communication	1-5	4	0.81	4.28(0.86)
Peer influence	1-5	4	0.70	2.41(0.91)
Negotiation	1-5	7	0.70	3.39(0.83)
Present Time		15	0.71	
<i>Fatalistic present</i>	1-5	5		2.72(0.78)
<i>Hedonic present</i>	1-5	10		2.80(0.61)
Future Time	1-5	11	0.75	3.42(0.69)

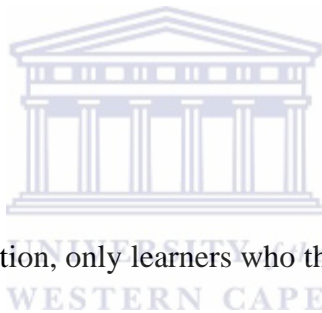
** we combined the two presents(fatalistic and hedonic).

3.6.3 Administrative procedure

Following the ethical clearance of the research proposal by the Senate Research Grant and Study Leave Committee of the University of the Western Cape (Appendix 1), the principals

of the two participating schools were contacted for permission to run the study in their schools (Appendix 2). After permission was obtained from the principals and the Western Cape Education Department (Appendix 3), written informed consent were sought from parents (Appendix 4) and learners (Appendix 5) stating clearly the objective of the study and learners' right to withdraw at any stage of the study. All the learners who returned the signed parent and learner consent forms thus form the sample for the study.

One week prior to the commencement of the study, visit was made to the schools for a meeting with the schools' officials and for a programme briefing in all the selected classes. This allowed for communicating the background of the intended programme, the main activities, the trained peer-educators, intervention duration, contents of the programme, and baseline data collection.



On the day of baseline data collection, only learners who themselves and whose parent(s) had given consent were allowed to participate in the study. Questionnaires were distributed during a Life Orientation period in each selected class. At the beginning of each session, the researcher informed the learners about the study and their rights to withdraw at any stage again. All the instructions needed to complete the questionnaire were available on the cover of the questionnaire and the researcher also provided detailed instructions on how the questionnaire should be filled out. Learners were informed that they should not write their names on the questionnaire except the numeric code given (first letter of first name and data of birth). This is to achieve anonymity and also to link specific questionnaires with subsequent measures (e.g. post-test 1 measure and post-test 2- measures).

Once the questionnaire for baseline assessment was completed, the learners in the intervention group were informed of the date and time the intervention would start.

3.6.4 Qualitative data

Qualitative data was collected by means of in-depth interviews and focus group discussions. Focus-group discussions were done with key informants in GRS to reach consensus with respect to the intervention programme. In-depth interviews were done after the intervention was implemented to gain insight into the programme facilitators' views regarding the intervention.

Two focus-group discussions (FGD) with six informants (4 programme managers and 2 site facilitators) at GRS were conducted in English at the GRS headquarter in Cape Town and for approximately one hour for each discussion. The focus group discussion was facilitated by the researcher and thesis's supervisor. The participants were informed about the aim of the discussions and that there were no right or wrong answers. The facilitator guided the discussions to permit and encourage full participation from all the members. Their responses were recorded on paper and transcribed verbatim by the researcher.

Two weeks after the implementation of the programme, in-depth interviews were done with the two programme facilitators in English at the Khayelitsha Football for Hope Centre and lasted for approximately one hour each. The in-depth interview was facilitated by the researcher. The programme facilitators were informed about the aim of the interview and were encouraged to give their honest opinion about the intervention implemented in Ceres. Their responses were recorded on tape and transcribed verbatim by the researcher.

3.6.5 Trustworthiness of qualitative data

Trustworthiness in qualitative data is measured by its credibility which in qualitative research is determined by the match between constructed realities of the participants and the reality presented by the researcher (Lincoln & Guba, 1985).

To ensure the process is more rigorous and trustworthiness of the process, we ensure:

1. Credibility (internal validity) by providing each member (member check) with the summary of discussions after the sessions. Secondly, the draft was given to a colleague, who was not involved in the study for his view. Issues raised were integrated into the written notes.
2. Dependability (reliability) was achieved by ensure that the trail including methodology, data analysis, meeting notes, personal notes, summaries of discussions around sport-based intervention to meet adolescent needs were transparent and made easier for any researcher who wants to adapt the process to own setting.
3. To ensure transferability (external validity) of the process, the detail description of the target population and setting to which the sport-based intervention is intended to be adapted were described.
4. Confirmability- the degree to which a neutral researcher can provide a balanced opinion in a non-judgmental way to collaborate our results was considered (Lincoln & Guba, 1985). A neutral party who was not involved with the study was provided with the transcripts, analysis notes, process notes, personal notes, summaries of results for his opinion.

3.7 Data analysis

Both sets of data were analysed separately and each analysis was used to address specific objectives.

3.7.1 Quantitative data

A codebook was developed by defining and labelling each of the variables and assigning numbers to each of the responses in the questionnaire. Data was then captured on a spreadsheet using the 2010 Word Excel office and then imported into the Statistical Package for the Social Sciences (SPSS) version 20.0 to analyse the data.

The first part of data analysis focused on which mediating factors of behaviour will be associated with adolescent risky sexual behaviours. Descriptive analyses expressed as percentages for categorical variables and means for continuous variables to summarize the mediating factors for HIV prevention and rate of adolescent sexual behaviours among the participants. The Chi-square test and independent-test test were used to assess gender differences in adolescent sexual behaviour and selected mediating factors respectively. Furthermore, separate binary logistic analyses were performed to assess which of the selected mediating factors will be associated with each of sexual intercourse, early sexual debut, multiple partnerships, and condom use at last sexual encounter. Thus, stepwise procedure (Pallant, 2010) approach was used to demonstrate which of the mediating factors has the greatest predictive power to predict sexual behaviours in the model. Statistical significance was set at an alpha level of 5%.

The second part of the analysis focused on the assessing changes in sexual behaviours and mediating factors for HIV prevention following intervention. Only the learners who completed the baseline survey and post-intervention survey were included in the analysis. For categorical variables (sexual behaviour), Pearson Chi-square test was used to assess the changes in sexual behaviour outcomes between intervention and control group, and paired t-test to assess changes in mediating factors for HIV prevention collected at baseline and post-intervention in learners exposed to sport-based intervention. A one-way repeated measures ANOVA was used to assess the within-group differences on mediating factors measured at three different time periods in learners who took part in the intervention programmes (baseline, post-test1 and post-test2). If a significant difference exists among the three points, follow-up post-hoc comparisons using paired t-test was conducted to find out which pair wise group are significantly different from one another (Time1 vs. Time2; Time 1 vs. Time 3; Time2 vs. Time3). Furthermore, difficult logistics made it impossible to collect three-month post intervention survey in control school. We cannot perform repeated measures for the control group because pre- and post-test measure from control group could not be matched. To adjust for this and observed baseline differences between the two groups, a binary logistic regression test (Forward-Stepwise) was performed to assess the intervention effects of sport-based HIV prevention intervention on reported sexual behaviours and mediating factors for HIV prevention such as knowledge, self-efficacy, peer influence etc. To measure the effect of the intervention on selected sexual behaviours and mediating factors for HIV prevention, we entered the study condition (Intervention =1, Control = 0) as dependent variable and sexual behaviours and mediating factors outcomes were entered into the model as co-variates. The odd ratios were interpreted as overall treatment effect.

3.7.2 Qualitative Analysis

Thematic analysis was used for qualitative data. The analysis of the in-depth interviews and focus group discussions started with transcribing word for word the information from the notes and tape recorder. The transcripts were read through by the researcher to identify main issues that were dominant. The data were coded in themes to identify the dominant themes. To ensure trustworthiness, themes were discussed with GRS staffs and programme facilitators. In addition, thesis's supervisors read through the transcripts and generated themes to ensure confirmability. These were compared to the researchers identified themes to identify the strength of the sentiments and complexities. There were no disagreements between the researcher and supervisors' generated themes, therefore the main and sub-themes were categorized. To build a more credible process regarding in-depth interviews, field notes and programme facilitators' log books were used to compliment the themes identified and to facilitate interpretation of the findings. In addition, themes were substantiated with quotes from interview participants that best represent their views.

3.8 Ethical Consideration

Following the ethical clearance of the research proposal by the Senate Research Grant and Study Leave Committee of the University of the Western Cape (Appendix 1), the principals of the two participating schools were contacted for permission to run the study in their schools (Appendix 2). After permission was obtained from the principals and the Western Cape Education Department (Appendix 3), written informed consent were sought from parents (Appendix 4) and learners (Appendix 5) stating clearly the objective of the study and learners' right to withdraw at any stage of the study.

The GRS staff and programme facilitators also consented to voluntarily participate in the focus-group discussions and in-depth interviews respectively.

Participation in the study was voluntary and they were allowed to withdraw from the study at any time without having to give a reason. Anonymity was ensured in a way that at no time did information linked to individual was requested. Learners were assured of strict confidentiality of information provided. Participants were treated with respect and dignity. The findings of the study will be made available to the participants, relevant stakeholders and the Western Cape Departments of Health and Education.

3.9 Summary of the chapter

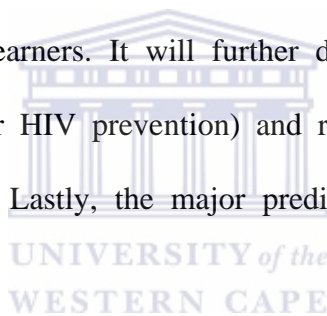
The setting for this study was in two rural high schools in Ceres among grade 8-10 learners aged 13-18. The method of data collection involved both quantitative and qualitative data. The quantitative data were collected by means of self-administered questionnaire before and after the intervention. The quantitative data were analysed by means of descriptive and inferential statistics to determine which mediating factors were associated with adolescent risky sexual behaviours and to measure changes in outcome measures. The qualitative data were collected by means focus-group discussions and in-depth interviews to gain insight into intervention planning and delivery respectively. Ethical consideration was also described. The results of both analyses are presented in the next chapters.

CHAPTER FOUR

BEHAVIOURAL AND PROTECTIVE FACTORS CONTRIBUTING TO RISK AND VULNERABILITY OF HIV

4.1 Introduction

This chapter contains the results of the statistical analysis that attempted to answer the first objective of the study, i.e. to assess the behavioural and protective factors that could contribute to risk and vulnerability of HIV infection among high school learners. This chapter will therefore outline the prevalence of adolescent risky sexual behaviour, including age of sexual intercourse, multiple sexual partners, consistency of condom use and its use at last sexual intercourse among the learners. It will further describe the relationship between protective (mediating factors for HIV prevention) and risk factors for adolescent sexual behaviours among the learners. Lastly, the major predictors of adolescence sexual risk behaviours will be presented.



4.2 Demographic characteristics of study population

As shown in Table 4.1, a total of 430 learners aged 13 to 18 participated from two schools in this survey, 204 males (47.4%) and 226 girls (52.4%). The average age for the learners was 15.21 years (SD = 1.08) and distribution of ethnic group showed that the participants were predominantly (94.4%) from the Coloured population group. Because of missing data, the number of respondents may vary for different questions.

Sixty one percent of the participants reported teachers as the main source of information on sexual education and reproductive health compared to 29.6% as mothers being the main source of information. Learners were asked about *their preferred source of information* on

sexuality education and reproductive health, and mothers (58%) and teachers (47.9%) were the most reported preferred source of information. Overall, communication with parents on sexually-related subjects was poor with only 23.1% of the learners reporting that it was easy. A much higher proportion of girls (28.1%) compared to boys (17.6%) reported easier communication.

Table 4.1 Demographic characteristics of the participants

Characteristics	Total population (n, %)	Male (n, %)	Female (n, %)
Age (M = 15.21, SD= 1.08)			
< 15 years	117 (28.4)	55 (13.4)	62 (15)
> 15 years	295 (71.6)	136 (33)	159 (38.6)
Population group			
African	10 (2.4)	5 (1.2)	5 (1.2)
Coloured	386 (94.4)	184 (45)	202 (49.4)
White	8 (2)	5 (1.2)	3 (0.8)
Indian	3 (0.7)	2 (0.5)	1 (0.2)
Others	2 (0.5)	2 (0.5)	0
Grade			
8	155 (36.1)	75 (17.5)	80 (18.6)
9	160 (37.3)	70 (16.3)	90 (21)
10	114 (26.6)	59 (13.8)	55 (12.8)
SES			
Low	139 (33.4)	71 (17.1)	68 (16.3)
Medium	211 (50.7)	90 (21.6)	121 (29.1)
High	66 (15.9)	39 (9.4)	27 (6.5)
Source of sexual information*			
Mothers	126 (29.6)	52 (12.2)	74 (17.4)
Teachers	260 (61)	116 (27.2)	144 (33.8)
Preferred source of sexual info*			
Mother	233 (58)	103 (25.6)	130 (32.4)
Teachers	192 (47.9)	80 (20)	112 (27.9)
Ease of communication re sex			
Not Easy	323 (76.9)	164 (39)	159 (37.9)
Easy	97 (23.1)	35 (8.3)	62 (14.8)

* at least two most cited sources were selected

4.3 Prevalence of sexual risk behaviour

The percentage of learners reporting sexual behaviours is shown in Table 4.2. Overall, 27.2% of the learners reported to have had sexual intercourse at the time of the survey. This proportion was significantly higher among boys than girls [Boys = 33.8% vs. Girls = 21.3%; χ^2 (n = 416) = 8.29, p<0.05]. The number of sexually active participants who reported early sexual intercourse before the age of 15 years was significantly higher among boys (60.6%) than girls (31.90%): (χ^2 (113) = 9.05, p = 0.003). Among the sexually active learners, the results show that 31.8% of the girls and 50% of the boys had more than one partner, but the association is only marginally significant at the .066 level. For condom use at last sexual intercourse, about 50.80 % of the boys reported condom use, and 41.3% of girls reported condom use, but the association between gender and condom use is not significant (Table 4.2). Furthermore 41.9% of the girls and 47.2% of the boys said that they always used condoms. The proportion of participants who knew their HIV status was low (13.4% of the boys and 12.7% of the girls).

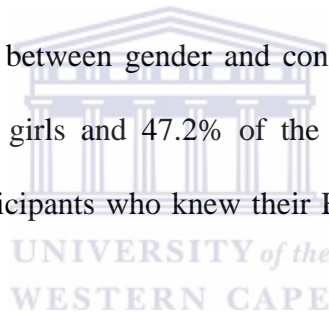


Table 4.2 Prevalence of sexual risk behaviours in the entire participants

Variable	N	Male (%)	Female (%)	Total (%)	χ^2	P
Sexual Intercourse						
Active	113	33.8	21.3	27.2	8.29	.004
Inactive	303	66.2	78.7	72.8		
Early sex debut						
Before 15 years	55	60.6	31.9	48.7	9.05	.003
After 15 years	58	39.4	68.1	51.3		
Multiple life partners						
One partner	59	50	68.2	57.8	3.39	.066
More than one	43	50	31.8	42.2		
Condom use last sex						
Yes	57	50.8	41.3	53.3	0.95	.33
No	50	49.2	58.7	46.7		
Consistency*						
Irregular	53	52.8	58.1	55.2	0.27	.60
Always	43	47.2	41.9	44.8		
HIV Testing						
Yes	54	13.4	12.7	13	0.041	.84
No	360	86.6	87.3	87		

*consistency of condom use

4.4 Mediating (protective) factors

Mediating or protective factors examined in this study included HIV knowledge, self-efficacy,

Independent t-test was conducted to compare the mean values of what we called mediating (protective) factors for HIV prevention for males and females (Table 4.3). For HIV knowledge, mean scores indicated no difference between males ($M= 8.34$, $SD=3.03$) and females [$M=8.39$, $SD=3.11$; $t(425) = 0.16$, $p = .87$]. Comparison of gender difference for self-efficacy to refuse sex (scores range from 1 to 5) shows that females (Mean=3.55, $SD=1.24$) score significantly higher than males [Mean = 3.25, $SD=1.22$; $t(391) = 2.42$, $p=.02$]. For peer influence, the results show that, compared to males ($M = 2.60$, $SD = 0.94$; $t(397) = 4.00$, $p = 0.000$), females ($M = 2.55$, $SD = 0.90$) are significantly less strongly influenced by friends' sexual behaviour. For negotiation skills score, there was a significant difference in the mean scores for males (Mean=3.23, $SD=0.77$) and female [Mean = 3.54, $SD=0.86$; $t(335) = 3.43$, $p = .001$]. The results suggest females have significantly higher negotiation skills compared to males (Table 4.3). No statistical differences were found for communication skills and time perspectives between males and females

Table 4.3 Gender differences in the mean mediating factors scores for the entire participants

Variable	N	Male	Female	df	t-value	p-value
		M(SD)	M(SD)			
HIV Knowledge	431	8.34(3.03)	8.39(3.11)	425	0.16	.87
Self-Efficacy	396	3.25(1.22)	3.55(1.24)	391	2.42	.02
Communication	383	4.29(0.94)	4.35(0.79)	347.3	1.83	.07
Peer Influence	402	2.60(0.94)	2.25(0.90)	397	4.00	.000
Negotiation	339	3.23(0.77)	3.54(0.86)	335	3.43	.001
Fatalistic	350	2.75(0.83)	2.69(0.73)	348	0.70	.49
Hedonic	323	2.77(0.68)	2.82(0.54)	267.6	0.83	.41
Future	317	3.35(0.74)	3.48(0.64)	315	1.65	.10

ns= not significant at $p < 0.05$

Independent-samples t-tests was performed to test whether there was a statistically significant difference in the mean scores of the mediating factors for HIV prevention for both non-sexually active boys and girls (see Table 4.4) and sexually active learners (see Table 4.5). As shown in Table 4.4, there was a significant difference in peer influence scores for boys ($M = 2.42$, $SD = 0.81$) and girls ($M = 2.02$, $SD = 0.74$, $t = 4.37$, $p = 0.000$). Similarly, there was a statistically significant difference in negotiation skills scores for boys ($M = 3.18$, $SD = 0.76$) and girls ($M = 3.62$, $SD = 0.83$, $t = 4.24$, $p < 0.05$). As in the total group, girls score higher for negotiation skills and lower for peer influences. No significant differences were found for the rest of the mediating factors for HIV prevention.

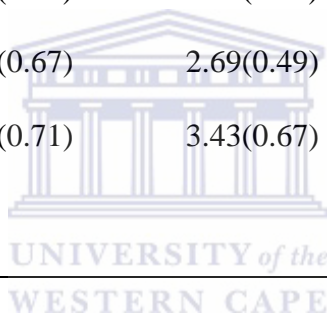
Table 4.4: Gender differences in the mean mediating factors scores for non-sexually active group

Variable	N	Male M(SD)	Female M(SD)	df	t-value	p-value
HIV Knowledge	302	8.29(2.84)	8.42(3.21)	300	0.34	nsns
Self-Efficacy	283	3.31(1.20)	3.59(1.24)	281	1.88	ns
Communication	273	4.16(0.95)	4.34(0.82)	271	1.65	
Peer Influence	284	2.42(0.81)	2.02(0.74)	282	4.37	0.000
Negotiation	245	3.18(0.76)	3.62(0.83)	243	4.24	0.000
Fatalistic	254	2.75(0.79)	2.72(0.72)	252	0.31	ns
Hedonic	234	2.71(0.70)	2.87(0.55)	232	1.89	
Future	231	3.32(0.75)	3.48(0.64)	229	1.78	ns

Independent-samples t-tests were also conducted to test differences in mean scores on mediating factors for sexually active learners. As shown in Table 4.5, no significant differences were found on any of the mediating factors outcomes.

Table 4.5 Gender differences in the mean mediating factors scores for sexually active group

Variable	N	Male M(SD)	Female M(SD)	df	t-value	p-value
HIV Knowledge	112	8.60(3.34)	8.47(2.62)	300	0.23	ns
Self-Efficacy	100	3.28(1.23)	3.38(1.23)	281	0.40	ns
Communication	99	4.26(0.89)	4.40(0.66)	271	0.90	ns
Peer Influence	105	3.00(0.75)	3.18(0.92)	282	1.08	ns
Negotiation	82	3.44(0.75)	3.26(0.92)	243	0.98	ns
Fatalistic	90	2.78(0.91)	2.58(0.80)	252	1.06	ns
Hedonic	82	2.90(0.67)	2.69(0.49)	232	1.58	ns
Future	78	3.46(0.71)	3.43(0.67)	229	0.21	ns



4.5 Predictors of sexual risk behaviours

Furthermore, bivariate logistic regression was performed to assess the factors that were associated with being sexually active among the learners (Table 4.6). All the selected covariates were fitted into the logistic regression model to predict which of the predictors has the greatest likelihood to predict being sexually active among the entire learners. The *Hosmer-Lemeshow Goodness of Fit Test* indicated support for model to reliably predict sexual intercourse ($\chi^2 = 5.77$, $p = 0.67$). The **B** values provided give the direction of the relationship between selected mediating factors and sexual risk behaviours. The strongest predictor of reporting sexual intercourse was peer influence with odds ratios of 3.01. This

indicates that when an adolescent perceives his or her friend to be sexually experienced, the odds that he or she will have sexually intercourse increases by 3.01 times (OR = 3.01: 95% CI = 1.97-4.60).

Table 4.6 Logistic regression predicting likelihood of reporting sexual intercourse

Variable	B	S.E	Wald	df	p	Odd Ratio	95% C.I's OR
Gender	-0.39	0.33	1.42	1	0.23	1.48	0.78-2.00
HIV Knowledge	-0.04	0.05	0.47	1	0.50	1.04	0.93-1.15
Self-efficacy	-0.12	0.14	0.72	1	0.40	1.13	0.85-1.50
Communication	-0.21	0.21	1.04	1	0.31	1.24	0.82-1.87
Peer Influence	1.10	0.22	26.14	1	0.000*	3.01	1.97-4.60
Negotiation	-0.23	0.22	1.09	1	0.30	1.25	0.82-1.91
Fatalistic	-0.30	0.34	0.01	1	0.93	0.97	0.49-1.89
Hedonic	0.52	0.46	1.30	1	0.26	1.68	0.69-4.08
Future	0.12	0.35	0.12	1	0.73	1.13	0.57-2.22

Illustrated in Table 4.7 is the logistic regression to assess the possibility of a number of factors predicting the likelihood of learners reporting sexual activities before and after the age of 15 years. The *Hosmer-Lemeshow Goodness of Fit Test* indicated the model was able to reliably predict early sexual activities ($\chi^2 = 4.05$; $p = 0.85$). The Wald statistics indicated that only gender was statistically significant in the model. Thus gender ($B = -1.89$, $p = 0.01$) was a significant predictor of early sexual intercourse in adolescent. In the model, female was used

as reference for gender, thus male adolescents were about 6.60 times (OR = 6.60: 95% CI = 1.62- 26.84) more likely to report early sexual experience compared to females.

Table 4.7: Logistic regression predicting likelihood of reporting early sexual debut

Variable	B	S.E	Wald	df	p	Odd Ratio	95% C.I's OR
Gender	1.89	0.72	6.94	1	0.01*	6.60	1.62-26.84
HIV Knowledge	-0.09	0.10	0.87	1	0.35	0.91	0.74-1.11
Self-efficacy	0.22	0.28	0.62	1	0.43	1.25	0.72-2.18
Communication	0.31	0.37	0.72	1	0.40	1.36	0.66-2.81
Peer Influence	0.64	0.42	2.31	1	0.13	0.53	0.23-1.20
Negotiation	0.72	0.43	2.76	1	0.09	2.06	0.88-4.81
Fatalistic	0.28	0.62	0.22	1	0.65	1.32	0.38-4.49
Hedonic	-0.18	0.09	0.04	1	0.84	0.83	0.14-4.87
Future	-0.47	0.64	0.55	1	0.46	0.62	0.17-2.19

Table 4.8 shows the results of a bivariate logistic regression analysis for predicting condom use at last sex among the study participants. The results indicate that only HIV knowledge (B = 0.20, p = 0.02) was a significant predictor of condom use at last sex. In other words, learners who have greater knowledge of HIV transmission and prevention are 1.22 times more likely to use condoms (OR =1.22: 95% CI = 1.03- 1.44).

Table 4.8 **Logistic regression predicting likelihood of reporting condom use at last sex**

Variable	B	S.E	Wald	df	p	Odd Ratio	95% C.I OR
Gender	-0.54	0.52	1.08	1	0.30	0.58	0.21-1.62
HIV Knowledge	0.20	0.09	5.23	1	0.02*	1.22	1.03-1.44
Self-efficacy	-0.21	0.23	0.87	1	0.35	0.81	0.52-1.26
Communication	0.27	0.32	0.72	1	0.40	1.31	0.70-2.43
Peer Influence	0.38	0.33	1.32	1	0.25	1.47	0.76-2.82
Negotiation	0.05	0.33	0.03	1	0.87	1.05	0.55-1.99
Fatalistic	-0.32	0.61	0.27	1	0.60	0.73	0.22-2.41
Hedonic	-1.39	0.91	0.23	1	0.13	0.25	0.04-1.49
Future	0.48	0.62	0.60	1	0.43	1.62	0.48-5.48



As shown in Table 4.9, no variables fitted in the model were statistically related to reporting multiple sexual partners among the learners.

Table 4.9 Logistic regression predicting likelihood of reporting lifetime multiple partners

Variable	B	S.E	Wald	df	p	Odd Ratio	95% C.I OR
Sex	-0.79	0.54	2.17	1	0.73	0.45	0.16- 1.30
HIV Knowledge	0.07	0.08	0.73	1	0.85	1.07	0.92- 1.25
Self-efficacy	-0.16	0.24	0.44	1	0.68	0.85	0.54- 1.36
Communication	-0.08	0.32	0.08	1	0.39	0.92	0.49- 1.72
Peer Influence	0.60	0.33	3.27	1	0.48	1.82	0.95 – 3.51
Negotiation	-0.13	0.33	0.16	1	0.21	0.88	0.46- 1.68
Fatalistic	0.28	0.62	0.20	1	0.65	1.32	0.39-4.49
Hedonic	-0.18	0.90	0.04	1	0.84	0.83	0.14-4.87
Future	0.05	0.64	0.54	1	0.46	0.62	0.17-2.19



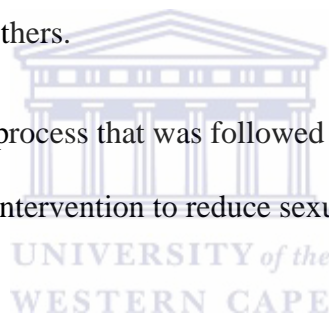
4.6 Summary of chapter

The findings from this study highlight the following key messages:

1. More than one-quarter (27.2%) of rural high school learners aged 13-18 years were sexually active and among those who were sexually experienced, less than half used condom at last sexual encounter.
2. The burden of risky sexual behaviour including age of first sexual intercourse before 15 years and multiple sexual partners were much greater in boys than girls of the same age.

3. Peer influence was strongly associated with being sexually experienced among the learners and boys are significant more likely to be influenced by their friends' sexual behaviour compared to girls.
4. Though the overall HIV knowledge was abysmally low, greater HIV knowledge remained a protective factor for condom use at last sex.
5. 87% of the participants did not know their HIV status.
6. Communication with parents on sex-related topics was generally poor and more difficult for boys.
7. The primary source of HIV education and reproductive health was through teachers, however, the majority of the learners said they would have preferred to receive the information from their mothers.

The next chapter will outline the process that was followed to contribute to the development of a sport-based HIV prevention intervention to reduce sexual risk takings among rural high school learners.



CHAPTER FIVE

CONTRIBUTION TO A SPORT-BASED HIV PREVENTION INTERVENTION

5.1 Introduction

This chapter contains the results of the qualitative analysis that attempted to answer the second objective of the study, i.e. to contribute to the development of a sport-based HIV prevention intervention to reduce risky sexual behaviour among rural high school learners. The process was guided by a review of relevant literature around adolescent risk taking reduction interventions (page 18-70) and focus-group discussions with GRS staff (detailed description of methodology from 71-86) to build consensus on participants' needs and preference for sport-based HIV prevention intervention.

The focus groups were facilitated by the researcher and thesis supervisor. The groups were relaxed and were encouraged to fully participate in the discussions.

5.2 Emerging themes

Table 5.1 outlines the themes yielded from the thematic analysis of the focus group discussions that are deemed important for needs and preferences of the intervention programme. Verbatim quotes were presented in italics to highlight individual views and suggestions.

Table 5.1: Description themes important for needs and preferences

1. Description of the problem
 2. Clear intervention goal and objective
 3. Development of curriculum-based intervention
 4. Intervention activities
 5. Timeline for the intervention
 6. Organisational support
 7. Language and cultural differences
-

Verbatim quotes will be used to further illustrate the themes outlined above.

5.2.1 Description of the problem

It is important to have a clear definition of problem(s) the intervention is seeking to address in order to have attainable and realistic objectives completed within the shortest time frame. In addition to that, the problems have to be clear and concise for any meaningful collaboration to take place. In our first meeting, the first question raised was around the problem statement.

‘Your study sounds very interesting, in principle, we are not opposed to sharing our materials or experience. We just want to better understand the thinking behind the study and make sure it will ultimately benefit Grassroot Soccer and the youth whose lives we’re trying to change?’(D)

5.2.2 Intervention goals and objectives

Once we had a clear idea of the problem we wanted to address, it was much easier to discuss the overall goal of the intervention and specific and measurable objective for our project.

SMART format (specific, measurable, attainable, realistic, and timely) was used to set an objective that will be accomplished within our resources:

Intervention goal

To reduce HIV-risk related behaviour among the intended participants aged 13-19.

Objective

By mid-2011, provide a 12-lesson sport-based intervention programme among the grade 8, 9, and 10 learners aged 13 -19, to increase HIV knowledge and build skills to reduce risk taking behaviour.



5.2.3 Developing curriculum-based intervention

Before the consultation with the GRS staff, it was planned to use GRS curriculum as a basis for developing a new youth-based HIV prevention curriculum which will be guided by existing literature on adolescent sexual behaviour. However, there was a concern about the feasibility of developing a new HIV-prevention curriculum to be used in the intended setting. This is capital intensive and time consuming.

Why evaluate a new curriculum that is yet to be developed, rather than an existing, established, theory-based programme?(A)

There were suggestions to use an existing GRS *generation skillz curriculum*, which has received overwhelming support from the United States Agency for International Development (USAID) and United States President's Emergency Plan for AIDS Relief (PEPFAR). In addition, it has been piloted in many sites in Western Cape among youth aged 13-18 and used in various FIFA youth projects in South Africa (Fuller, Junge, Decelles, Donald, Jankelowitz & Dvorak, 2010). Thus, we felt no rationale to develop a new curriculum. The detailed information about the development of this curriculum has been previously described (Grassroot Soccer, 2010).

5.2.4 Description of GRS curriculum and activities

The *generation skillz curriculum* is a youth-based HIV-prevention interactive programme developed by Grassroot Soccer (GRS) for young adults. The GRS is a South African HIV prevention social network that uses 'the potentials of soccer to educate, inspire, and mobilise communities to stop the spread of HIV and AIDS'. Since 2002, the organisation has been at the forefront of HIV prevention efforts in over 19 countries, mainly in Southern Africa, and it plans to reach more than one million with HIV life skills by 2014. The programme is a peer-led intervention delivered by trained young peer educators often called *skillz coaches*. The selection and training of peer educators (*skillz coaches*) was facilitated by the Grassroot Soccer-our, our collaborating partner.

The manual has 11 core sessions (Figure 4.1) using interactive soccer-based languages, themes, and activities that are delivered by trained peer educators to provide comprehensive HIV prevention and life skills education to bring about behaviour change. The *generation skillz curriculum* interventions are facilitated in schools by trained *skillz coaches* and *master coaches* from GRS. Three peer educators per class usually conduct each activity and they are

gender mixed to handle some topics that are gender sensitive. The topics covered in the manual include HIV information, building healthy friendship, abstinence, condom use, building resilience, avoiding risky sexual behaviour, care for people living with HIV, violence against women, and gender norms.

The GRS *generation skillz curriculum* draws on several theories of behaviour change including Theory of Planned Behaviour (Ajzen, 1991) and Social Cognitive Theory (Bandura, 1986) (see page 64) which build on developing HIV knowledge and life skills as well as promoting safer sexual behaviours.

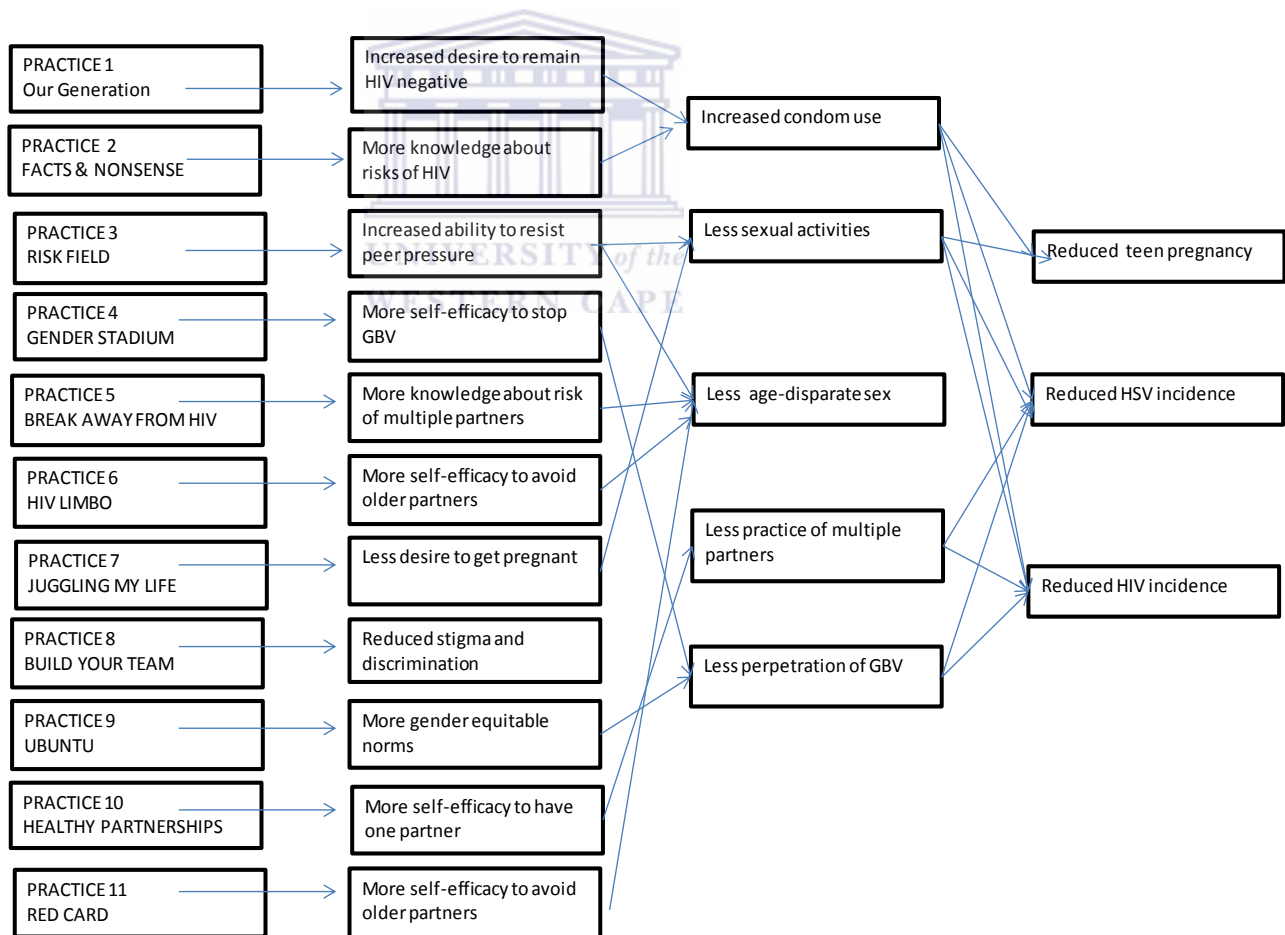


Figure 4.1: GRS generation skills activities culled from www.grassrootsoccer.org

5.2.5 Selection and training of the Grassroot Soccer coaches

The initial plan was to select grade 11 learners with leadership qualities and train them as peer facilitators to implement the programme among eighth, ninth, and tenth grade in the intervention school. Unfortunately, information emerged from the discussions with the GRS peer facilitators indicated we might have to reconsider our stand. The issue that came out was the age of those that will be selected as peer facilitators.

If peer facilitators are much younger, this made it difficult to act like a person they can trust and ask for help. But if they are older, they look more credible and children look up to them as someone they relate to.(B)

Even if there are some grade 11 learners above 17 years, there seemed to be more important information that suggests we cannot train grade 11 as peer facilitators during the school hours to avoid disruption to their class work.

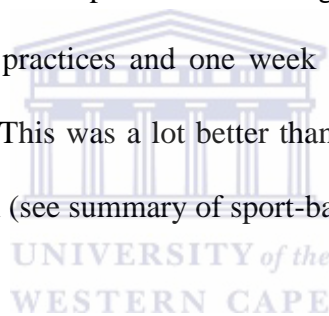
If you go to schools to run programme to train grade 11 and grade 11 to train grade 8, 9, and 10. The feedback we usually get is that no, you cannot do the programme during school hours, it has to be after school's hours which is understandable because we do not expect grade 11 to get out of their class to come and teach other learners during school's period, what about their own period?(C)

Peer facilitators are selected based on their previous experiences with implementing the same programme in and around Cape Town and their 'ability' to speak both English and Afrikaans

was an added advantage. In addition, technical support and supervision are provided by onsite supervisors and master coaches. The training of coaches on how to implement the HIV prevention intervention to youth is facilitated by Grassroot Soccer (www.grassrootsoccer.org). The facilitators are between the ages of 20 to 25 and have undergone rigorous GRS selection and training programmes.

5.2.6 Intervention timeline

Having agreed that the programme is going to be facilitated by GRS *coaches*, we were uncertain how much of training will be enough for the intervention to make an impact and how much time will be allotted to each practice? It was agreed that the sessions will run for 12 weeks, 11 weeks for all the practices and one week for debriefing session for overall summary of what are discussed. This was a lot better than previous sport-based studies that used shorter intervention duration (see summary of sport-based studies on page 55).



We were also uncertain if the selected grade learners are likely to stay behind for the training? There was an agreement that the programme should be implemented during school hours to ensure high participation rate.

I think it should be during the school because at the same time, it depends on how long the period in school but for me an ideal time will be during the school because at that time you get those kids. (D)

The choice of implementing the intervention after school hours is also feasible but there was a concern around provision of foods and transport for the learners. This will depend on the

budget and other logistics. However, this does not in any way increase participation rate as one member of the group commented.

Though after school, we might have foods for them, transport for them but if a learner doesn't want to stay behind you can't force them, but during school, you are going to get them (B).

If the lessons are too long, the learners will get bored easily and will not fully participate in the activities. We then decided to implement the programme during Life Orientation period during school hours.

5.2.7 Organisational support and rewards

For interventions to be effective, it must enjoy support from either the school or community in which the programme will take place. In addition to that, what will learners receive in return for participating in the programme and how are they going to be rewarded. Having gained the support of the school to conduct the intervention, we also felt it was important to reward the learners for taking part in the programme to ensure its sustainability. Grassroot Soccer agreed and promised to provide training manuals, T-shirts, books, and posters to increase participation rate.

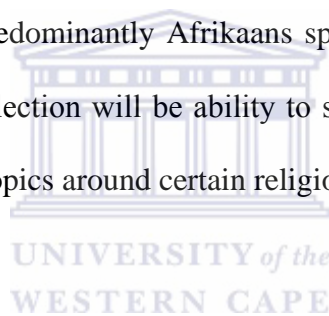
5.2.8 Barriers to programme participation

A number of barriers that could limit the chance of learners from participating in the programme were highlighted and these included time of the training, transportation, language and cultural differences as well as study cost.

The pinnacle of every intervention programme is built on available resources. Therefore a thorough and comprehensive financial plan was prepared including list of all expenses and revenues. This included bursaries/ scholarship, stipends for peer facilitators, study manuals, cost of transportation to and from the intervention sites etc.

5.2.9 Language and cultural diversity

The *generation skillz curriculum* was developed and piloted in English in few selected schools in Western Cape and most student in high schools understand English language, for these two reasons, we decided the intervention will be delivered in English. However, we did not know how English language is used by various ethnic groups, especially among the intended participants who are predominantly Afrikaans speakers. It was agreed that part of the requirements for coaches' selection will be ability to speak both languages. In addition, intervention activities excluded topics around certain religious beliefs and sexual orientation.



5.3.0 Programme delivery

The intervention was delivered in school using the English version of Grassroot Soccer *generation skillz* curriculum consisting of 11 practice sessions (Figure 4.1). Each of these 11 practices is based on game-based activities including open discussions about HIV, demonstrations, soccer-themed activities, group tasks and individual experiences with people living with HIV and AIDS among others . The detail of the 89-page *generation skillz* manual for programme delivery and activities is available at www.grassrootsoccer.org.

5.3.1 Summary of chapter

From this chapter, it is evident that the young people in schools have different needs and for programme to be effective, sport-based intervention must be tailored towards criteria highlighted below to meet their needs and preference:

Factors that increase participation

- clear definition of the problem(s) the intervention seek to address
- clear intervention goal and objectives
- a youth-appropriate and curriculum-based intervention
- trained peer facilitators who are few years older than the intended participants
- appropriate timeline for intervention
- game-based interactive activities
- gaining organisational and school's support

Barriers to participation

- In appropriate timeline for the intervention
- language and cultural differences
- too long sessions

The next chapter will present the empirical results of the impact of the sport-based HIV prevention intervention on HIV-risk related behaviours among the rural high school learners.



CHAPTER SIX

IMPACT OF SPORT-BASED HIV PREVENTION INTERVENTION ON HIV-RISK RELATED BEHAVIOUR

6.1 Introduction

The chapter contains the results of the statistical analysis that attempted to answer the fourth objective of the study, i.e. to measure the impact of a sport-based HIV intervention on HIV-risk related behaviour. This chapter will therefore report on the changes in sexual behaviour after the implementation of the programme. In addition, the chapter will report on the changes in mediating (protective) factors for HIV prevention before and after the intervention.



6.2 Demographic characteristics of participants *of the* WESTERN CAPE

Table 6.1 shows the percentage of learners who completed the pre-intervention and post-intervention surveys. The average age of the learners was 15.21 and ages ranged from 13 to 18 years. The analysis of the demographic differences using Pearson Chi square shows that the two schools were equally distributed in terms of age-group, gender, population group, grade and socio-economic status. The majority of the learners in the two schools were predominantly from “Coloured” population group. Therefore, ethnicity was not included in any part of the analysis.

Table 6.1 Socio-demographic characteristics of learners at baseline and post-intervention survey

	Intervention		Control	
	pre-test	post-test	pre-control	post-control
Age (Years): N	244	199	172	108
13-14	25.8%	25.1%	31.4%	24.1%
15-18	74.2%	74.9%	68.6%	75.9%
Gender: N	252	202	178	109
Male	49.6%	50%	44.4%	45%
Female	50.4%	50%	55.6%	55%
Population: N	238	200	174	112
White	2.5%	2.5%	1.1%	2.7%
Coloured	92.4%	93.5%	96.6%	96.4%
Black	4.2%	4.0%	0.6%	0.9%
Indian	0.4%	-	1.1%	-
Others	0.4%	-	0.6%	-
Grade: N	254	203	179	112
Eight	31.9%	32%	41.3%	30.4%
Nine	35.4%	34%	41.3%	38.4%
Ten	20.8%	34%	17.3%	31.2%
SES: N	250	200	178	-
High	31.2%	30%	36.6%	35.8%
Average	51.8%	50.2%	48.8%	46.7%
Low	17%	19.8%	14.5%	17.5%

a Chi-square p value, intervention group versus control group. The intervention-control differences were at both baseline and post intervention were not significant different using chi-square at $p < 0.05$ i.e. both groups come from the same population.

6.2 Sexual risk behaviours

Table 6.2a shows the results of baseline differences for sexual behaviour between intervention and control groups. The chi-square analysis of difference shows that the group differed in their sexual behaviour at baseline. The learners in the intervention group are more likely to have engaged in sexual intercourse. However, learners in the control group are more

likely to have had more than one sexual partner and always using condoms. Owing to the differences in sexual behaviour between the groups at baseline, adjustment was made for those baseline variables found to be different in treatment effect analysis.

Table 6.2a: Baseline Differences between intervention and control groups for sexual behaviour

Variables	Intervention	Control	χ^2	<i>p</i>
Sexually Active				
N	245	174		
Yes	32.2%	20.7%	6.82	.01*
No	67.80%	79.3%		
Age of sexual debut				
N	79	36		
≤ 14 years	51.9%	44.4	0.55	ns
> 14 years	48.1%	55.6%		
Lifetime Partners				
N	69	35		
One	63.8%	42.9%	4.14	.04*
More than one	36.2%	57.1%		
Condom use at...				
N	74	35		
Yes	54.1%	51.4%	0.07	ns
No	45.9%	48.6%		
Condom consistency				
N	65	33		
Always	44.6%	75.8%	8.58	.003*
Irregular	55.4%	24.2%		

As shown in Table 6.2b, a chi-square test was conducted to evaluate the exposure effects of sport-based intervention on sexual behaviour among the participants that took part in the programme. The test indicates there were no significant changes between the pre-test and post-test measures of sexual behaviour. However, results did not significantly increase the risky sexual behaviour among the learners.

Table 6.2b: Exposure effect of sport-based HIV intervention on sexual behaviour

	Pre-intervention (%)	Post-intervention (%)	χ^2	<i>p</i>
Sexually Active				
N	245	199		
Yes	32.2	30.7	.13	.72
No	67.8	69.3		
HIV Testing				
N	243	181		
Yes	13.6	20.4	3.54	.06
No	86.4	79.6		
^aLifetime Partners				
N	69	54		
One	63.8	57.4	.52	.47
More than one	36.2	42.6		
^aCondom use at..				
N	74	60		
Yes	54.1	53.3	.01	.93
No	45.9	46.7		
^aCondom consistency				
N	65	60		
Always	44.6	50.0	.36	.55
Irregular	55.4	50.0		

^a Analysis excluded non-sexually active learners.

6.3: Mediating factors

A repeated measure (paired t-test) was performed to evaluate the impact of the sport-based intervention on the mediating factors scores among the learners who participated in the programme after four weeks (Table 6.3). Regarding HIV knowledge, the results indicates a statistically significant increase in HIV knowledge scores from pre-test (Mean = 8.04, SD = 2.88) to post-test [Mean = 9.52, SD = 3.08; $t = 5.28, p = 0.000$]. For self-efficacy, the results of paired t-test also showed that there was a significant increase in the self-efficacy scores from pre-intervention (Mean = 3.36, SD = 1.23) to post-intervention [Mean = 3.74, SD = 1.16; $t = 3.36, p = 0.001$]. Similarly, the results show significant increase in the negotiation skills scores from pre-test (M = 3.38, SD = 0.83) to post-test (M = 3.59, SD = 0.81; $t = 2.38, p = 0.02$). Regarding other mediating outcomes for HIV prevention, no significant exposure effects were found on communication and time perspective scores.

However, no statistically significant differences were found for mediating outcomes in control group.

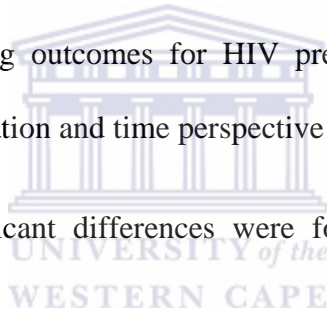


Table 6.3: Intervention differences between intervention and control group for mediating variables

Variables	¹ pre-interv	² post-inter	<i>p</i> ₁	pre-control	post-control	<i>p</i> ₂
Knowledge	8.04(2.9)	9.52(3.1)	.000	8.85(3.3)	9.03(3.6)	>.05
Self-efficacy	3.36(1.2)	3.74(1.2)	.001	3.50(1.2)	3.41(1.1)	>.05
Communication	4.28 (0.8)	4.36(0.9)	>0.05	4.29(0.9)	4.49 (0.7)	>.05
Negotiation	3.38(0.8)	3.59(0.8)	.02	3.40(0.8)	2.54(0.8)	>.05
Fatalistic	2.7(0.8)	2.63(0.8)	>.05	2.74(0.8)	2.73(0.8)	>.05
Hedonic	2.79(0.6)	2.8(0.5)	>.05	2.81(0.6)	2.81(0.5)	>.05
Future	3.46(0.7)	3.43(0.7)	>.05	3.37(0.7)	3.48(0.6)	>.05

*P*₁: p-value for intervention group; *p*₂= p-value for control group. 1 and 2 Pre-intervention and post-intervention

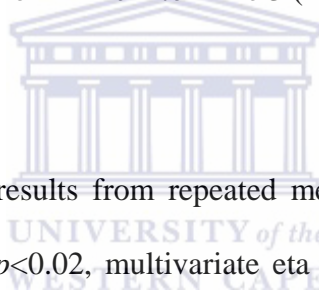
6.4 Long-term effect of intervention on mediating factors

Learners were followed up for four months to evaluate the long-term effect of sport-based intervention on those mediating factors. As shown in Table 6.4 repeated measures ANOVA tests were conducted to assess the effect of intervention on changes in mediating outcomes overtime (baseline, posttest, and at three-month follow-up) among the learners that received the intervention. If the ANOVA test was significant, a post-hoc comparison using paired t-test was conducted to compare the paired scores at Time1, Time2, and Time 3.

Regarding the HIV knowledge, a one-way repeated measures ANOVA test to compare scores at baseline (T1), following the intervention (T2) and three month follow-up (T3) showed an overall significant effect for time, $F(2) = 72.57$, $p < 0.000$, the multivariate partial eta squared = .45 indicated a large effect size. A paired t-test revealed statistically significant increase in knowledge from Time 1 ($M=8.14$, $SD= 2.96$) to Time 2 [$M= 9.49$, $SD= 3.06$; $t(191) = 7.27$,

$p < 0.000$], and from Time 2 ($M = 9.54$, $SD = 2.98$) to Time 3 [$M = 10.60$, $SD = 2.26$; $t(165) = 5.01$, $p < 0.000$]. See Table 6.5

From Table 6.4, a one-way repeated measures ANOVA to compare self-efficacy scores at Time 1, Time 2, and Time 3 indicated a significant effect for time, $F(2) = 6.63$, $p < 0.002$, multivariate eta squared = .09 indicated moderate effect size. A paired t-test conducted show a statistically significant increase in self-efficacy scores from Time 1 ($M = 3.34$, $SD = 1.22$) to Time 2 [$M = 3.75$, $SD = 1.17$; $t(167) = 3.56$, $p < 0.000$] and from Time 1 ($M = 3.35$, $SD = 1.27$) to Time 3 [$M = 3.72$, $SD = 1.03$; $t(170) = 3.60$, $p < 0.000$]. The test indicated no significant difference in self-efficacy scores from Time 2 to Time 3 (Table 6.4).



Similarly for negotiation skills, results from repeated measures ANOVA show an overall significant effect, $F(2) = 4.07$, $p < 0.02$, multivariate eta squared = .07 indicated moderate effect size. However, a paired t-test shows only a statistically significant increase in negotiation scores from Time 1 ($M = 3.43$, $SD = 0.88$) to Time 3 ($M = 3.73$, $SD = 0.74$, $t = 3.96$, $p = 0.000$). No significant changes were observed between Time 2 and Time 3.

A one-way repeated measure ANOVA showed no significant differences for communication and time perspective scores for time (Table 6.4).

Table 6.4: One-way repeated measure ANOVA with post-hoc tests

HIV KNOWLEDGE		^a F(2)= 72.57		p=0.000, Pa Eta sq=.45
	Mean (SD)		Mean (SD)	t-test
Baseline	8.14 (2.96)	Post-test1	9.49 (3.06)	t(199)=7.27,p<0.000 ^b
Baseline	8.07 (2.81)	Post-test2	10.48 (2.17)	t(196)=12.42,p<0.000 ^b
Post-test1	9.54 (2.98)	Post-test2	10.60 (2.26)	t(165)=5.01, p<0.000 ^b
SELF-EFFICACY		^a F(2)=6.63		p=0.002,pa Eta Sq=.09
Baseline	3.34(1.22)	Post-test1	3.75(1.17)	t(167)=3.56, p<0.000 ^b
Baseline	3.35(1.27)	Post-test2	3.72(1.03)	t(170)=3.60, p<0.000 ^b
Post-test1	3.73(1.17)	Post-test2	3.72(1.01)	t(147)=0.10, ns
COMMUNICATION		^a F(2)=0.24		p=0.78,pa Eta Sq=.004
Baseline	1.68(0.80)	Post-test1	1.65(0.87)	t(145)=0.36, ns
Baseline	1.69(0.80)	Post-test2	1.74(0.84)	t(166)=0.76, ns
Post-test1	1.65(0.85)	Post-test2	1.61(0.75)	t(128)=0.57, ns
NEGOTIATION		^a F(2)=4.07		p=0.02,pa Eta Sq=.07
Baseline	3.48(0.79)	Post-test1	3.60(0.80)	t(137)=1.62,ns
Baseline	3.43(0.88)	Post-test2	3.73(0.74)	t(138)=3.96, p<0.000 ^b
Post-test1	3.66(0.78)	Post-test2	3.78(0.73)	t(134)=1.90, ns
FUTURE		^a F(2)=0.70		p=0.5,pa Eta Sq=.014
Baseline	3.53(0.64)	Post-test1	3.53(0.72)	t(97)=0.04, ns
Baseline	3.52(0.68)	Post-test2	3.53(0.69)	t(115)=0.23, ns
Post-test1	3.48(0.72)	Post-test2	3.49(0.70)	t(138)=0.39, ns
PRESENT HEDONIC		^a F(2)=0.77		p=0.47,pa Eta Sq=.016
Baseline	2.76(0.57)	Post-test1	2.81(0.52)	t(130)=0.82, ns
Baseline	2.76(0.57)	Post-test2	2.77(0.54)	t(123)=0.14, ns
Post-test1	2.80(0.51)	Post-test2	2.78(0.52)	t(119)=0.20, ns
PRESENT FATALISTIC		^a F(2)=0.50		p=0.61,pa Eta sq=.009
Baseline	2.68(0.72)	Post-test1	2.61(0.81)	t(138)=0.83, ns
Baseline	2.69(0.77)	Post-test2	2.65(0.84)	t(140)=0.51, ns
Post-test1	2.60(0.80)	Post-test2	2.59(0.79)	t(135)=0.02, ns

a= ANOVA , b = paired t-test.

6.5 Programme effects of sport-based intervention on sexual behaviours and mediating factors.

Binary logistic regression analysis was conducted to assess the impact of the intervention on sexual behaviour and mediating outcomes between the intervention and control groups. This was done to adjust for differences in baseline variables between the intervention and control groups and unmatched control group data (see Table 6.5). The result shows that only self-efficacy made a statistically significant contribution to the model ($B = 0.26$, $SE = 0.11$, Wald $(1, 287) = 5.55$, $p = 0.018$). This indicated that participants who received sport-based intervention were 1.43 times likely to report higher self-efficacy to refuse sex compared to the control group.



Table 6.5 Treatment status predicting change in sexual behaviours and HIV knowledge, self-efficacy, peer influence, communication, and negotiation

	B	sig value	Odds ratio (95% C.I) Treatment main effect ^a
Sexual behaviours			
Lifetime sexual partners	-0.38	0.45	0.69 (0.26-1.82)
Condom use consistently	-1.08	0.11	0.34 (0.09- 1.26)
Condom use at last sex	0.51	0.43	1.66 (0.47-5.89)
Mediating factors			
HIV knowledge	0.04	0.50	1.04 (0.94-1.15)
Self-efficacy	0.26	0.018*	1.43(1.07-1.92)
Communication	0.42	0.09	1.53 (0.93-2.49)
Negotiation	-0.13	0.53	0.88 (0.58-1.32)
Peer influence	0.27	0.12	1.32 (0.93-1.85)
Fatalistic	0.20	0.32	1.23 (0.83-1.82)
Hedonic	-0.10	0.75	0.91 (0.50-1.64)
Future	0.03	0.89	1.03 (0.66-1.60)

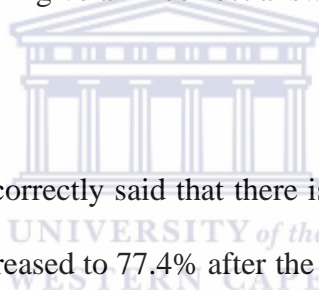
^aIntervention group are the reference group, * p<0.05.

6.6 Descriptive analysis for individual HIV knowledge items.

More detailed analysis of HIV knowledge before and after the intervention compares for each knowledge-item the number of correct and incorrect answers before and after the participants received the sport-based intervention. For each item, the correct answer is in bold. In this study, there was no cut-off point to say HIV knowledge is high or low (personal correspondence with the authors of the HIV-KQ-18 scale, August, 2010). Thus, we found it necessary to describe a comprehensive divergent view of participants on HIV knowledge.

Chi-square test was performed to compare the patterns of response of each HIV knowledge statement (dichotomized: “True” or “False/Don’t Know”) before the intervention to four months after the intervention (see Table 6.6). Few examples are illustrated below:

At baseline, 46.2% of the learners correctly said coughing or sneezing do not spread HIV. Although the proportion of correct responses increased to 48.2% post intervention, we see in Table 6.7 that 39% (18.0%/46.2%) of those 46.2% who were correct before the intervention gave an incorrect answer after the intervention. Of the 53.8% of the participants who gave an incorrect answer before the intervention, 37% (20%/53.8%) of them gave a correct answer after the intervention but 33.8% still give an incorrect answer.



Similarly, 63.6% of the learners correctly said that there is no vaccine that can cure HIV. In the same way, this proportion increased to 77.4% after the intervention, we now see that 11% (7.2% of 63.6%) of the 63.6% who were correct before the intervention now gave an incorrect answer after the intervention. Of the 36.4% who gave an incorrect answer before the intervention, 58% (21% of 36.4%) of them now gave a correct answer after the intervention.

With regard to the use of female condoms, 73.8% before the intervention correctly said that female condoms can prevent HIV. Although this proportion increased to 79.5% after the intervention, however we now see that 12% (9.2% of 73.8%) of the 73.8% who were correct before the intervention now gave an incorrect answer after the intervention. Of the 26.2% who gave an incorrect answer before the intervention, 57% (14.9% of 26.2%) of the 26.2% now gave a correct answer.

Table 6.6: Examination of individual knowledge-item

Coughing or sneezing doesn't spread HIV*			
BASELINE (%)	POST INTERVENTION (%)		
	True	False	Total
Coughing or sneezing doesn't spread HIV*			
True	28.2	18.0	46.2
False	20	33.8	53.8
Total	48.2	51.8	100
You can get HIV by sharing water			
	True	False	Total
True	3.1	12.6	15.7
False	8.4	75.9	84.3
Total	11.5	88.5	100
.. can't get HIV if you withdraw before climax			
	True	False	Total
True	6.8	18.1	24.9
False	12.4	62.7	75.1
Total	19.2	80.8	100
..can get HIV from anal sex*			
	True	False	Total
True	39.7	22.2	61.9
False	13.4	24.7	38.1
Total	53.1	46.9	100
shower after sex can prevent HIV			
	True	False	Total
True	1.6	8.9	10.5
False	4.7	84.7	89.5
Total	6.3	93.7	100
all positive pregnant women will give birth to HIV+ baby*			
	True	False	Total
True	19.5	22	41.5
False	8.2	50.3	58.5
Total	27.7	72.3	100
HIV+ will show signs of AIDS immediately*			
	True	False	Total
True	11.7	27.4	39.1
False	7.6	53.3	60.9
Total	19.3	80.7	100
There is a vaccine that cure HIV*			
	True	False	Total
True	15.4	21	36.4
False	7.2	56.4	63.6
Total	22.6	77.4	100
Deep kissing can cause HIV*			
	True	False	Total

True	8.7	15.2	23.9
False	9.6	66.5	76.1
Total	18.3	81.7	100
can't get HIV if you have sex during period	True	False	Total
True	2.1	13.3	15.4
False	11.2	73.4	84.6
Total	13.3	86.7	100
Female condoms can prevent HIV*	True	False	Total
True	64.6	9.2	73.8
False	14.9	11.3	26.2
Total	79.5	20.5	100
Natural skin works better than condoms	True	False	Total
True	1.5	13.4	14.9
False	3.7	81.4	85.1
Total	5.2	94.8	100
Can't get HIV if you take antibiotics	True	False	Total
True	0.5	5.8	6.3
False	5.8	88	93.7
Total	6.3	93.7	100
..multiple partners increases risk of HIV	True	False	Total
True	71.9	16.3	88.3
False	9.2	2.6	11.7
Total	81.1	18.9	100
one week after sex, one can detect HIV*	True	False	Total
True	20.5	15.9	36.4
False	15.4	48.2	63.6
Total	35.9	64.1	100
Can get HIV sitting together in a pool*	True	False	Total
True	2.1	4.2	6.3
False	3.7	90.1	93.7
Total	5.8	94.2	100
Can get HIV through oral sex*	True	False	Total
True	41	17.5	58.5
False	20.7	20.8	41.5
Total	61.7	38.3	100
Vaseline with condoms lowers risk of HIV*	True	False	Total
True	2.6	4.1	6.7
False	10.2	83.1	93.3
Total	12.8	87.1	100

*chi-square value $p < 0.05$

6.7 Summary of chapter

The results of statistical analysis assessing changes in sexual behaviour and mediating factors for HIV prevention following the implementation of the sport-based HIV prevention intervention highlight the following key findings:

6.7.1 Net programme effects

- No statistically significant differences were seen between the intervention and control school for sexual behaviours among the learners
- There was a statistically significant change in self-efficacy to refuse sex, learners in the intervention programme were 1.43 times more likely to report higher self-efficacy to refuse sex compared to the control school
- There was no evidence of programme effect of sport-based intervention on other mediating factors of behaviours

6.7.2 Exposure effects

- There were significant increase in HIV knowledge, self-efficacy, and negotiation skills in learners who participated in the sport-based intervention
- At four months, the long-term effect of intervention was significant for HIV knowledge, indicating learners reported higher knowledge than the one reported at four weeks
- There were changes for other mediating factors in expected directions after four months, however the observed changes were not significant.

The next chapter reports on the quality of implementation of the sport-based intervention in the intervention school among the rural high school learners.



CHAPTER SEVEN

IMPLEMENTATION PROCESS OF A SPORT-BASED INTERVENTION IN RURAL HIGH SCHOOLS

7.1 Introduction

This chapter reports on the degree to which the sessions were implemented to rural high school learners and to gain facilitators' views, satisfaction, relevance, and quality of the intervention. In addition, suggestions for future implementation of sport-based HIV prevention intervention in schools are also reported

This process reports reasons for the success and failure of the programme and to assist in designing and implementing a better programme in the future. A total of 254 learners enrolled in the 11-session GRS peer education programme in the intervention school in 2011. According to our attendance register, the participation rate in the programme was between 98-100% and there was no difference in participation for male and female learners. The high rate of learners' attendance was because the programme took place during the school hours. Table 7.1 summarizes the description of the sample characteristics.

Table 7.1: Observations and description of sample participants

Gender composition of peer educators	4 males: 2 females
Age of peer educators	22-25 years
Age of participants	13-18 years
Session topics and number of observations of the session	N = 11
Number of groups in each session observed	(class seen as a group)
Number of participants per group	N = 30-42
Length of session in minutes per each session	30-45 minutes
Number of peer educators per each session	2-4

7.2 Emerging themes



Overall, a total of 66 sessions were observed with the learners (11 sessions each for all the six classes), 11 log books, and two in-depth interviews with the GRS peer educators.

Key themes emerged from the analysis of the observations by the researcher, log books and in-depth interviews. The four themes that emerged were: “Knowledge of HIV; programme delivery; challenges experienced with implementation and suggestions for future programmes”

7.2.1 Knowledge of HIV

Review of sessions’ observation by the researcher, log books, and interviews with the peer educators confirmed that HIV prevention programmes in rural schools is sorely lacking. It seems fair to assume that the knowledge of basic HIV information among the learners was

low and a significant majority of them did not know how HIV infection transmits. This view was re-iterated by one of the peer educators interviewed.

I think they really need HIV project in that school. The experience I got is that they don't have knowledge of HIV. I think we were the first people to come to them and talk to them about HIV. (Facilitator B)

Peer facilitators also cited this as a reason for the inability to complete all the topics in each session.

...as a result we had to start from the scratch, every day we couldn't finish the lesson because we had to specify the thing they didn't understand. (Facilitator A)



As a result of lack of a HIV project in the school, the knowledge of HIV transmission and prevention is disappointingly low. This observation also corroborates our findings in previous chapter.

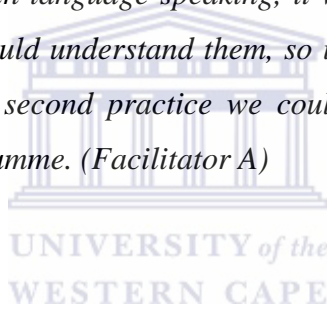
...what I have seen in that school, is that those kids, they didn't know much about HIV information, and you know most of the thing they didn't know, like ARV, they didn't know anything. They didn't know how HIV spread; it was like a shocking thing for me... likes a high school that still doesn't have much information about HIV? But we were glad that we were there to give them that basic information they lack. (Facilitator B)

7.2.2 Programme delivery

From the review of sessions' observation, each session took between 30 to 45 minutes and learners appeared very enthusiastic to participate in the programme, as the peer educators described:

..... those kids were much interested in our programme and what I have seen is that not much about life skills going on in their school, so they were so much interested in our programme (Facilitator A)

....I will talk about the first one which was a very big take off for me. The first practice, it was great because since we thought we are going to have a challenge (you know) with language speaking, it was not that bad, the kids understand us and we could understand them, so it was a great programme at first (pause) and the second practice we could see that the kids were getting used to the programme. (Facilitator A)



The majority of the learners did express their views that they enjoyed our programme more than the lessons received in class because it gives them a free space to express themselves. For instance, one of the LO teachers came to observe one of the sessions, when we noticed that the learners were not comfortable having him around, the teacher had to leave. However, peer educators cited various challenges to deliver the intervention as outlined below.

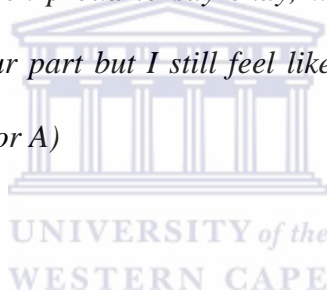
7.2.3 Challenges

Two sub-themes were identified under the theme, “challenges”. These included the language of instruction and the duration of each session.

(a.) Language of instruction

Learners appeared more attentive and responsive when the first practice was conducted in Afrikaans language by a GRS *master coach* who was present for the first week compared to when the sessions were conducted in English. Logistical difficulties made it impossible to retain the master coach who is a native Afrikaans speaker, so generally the intervention was conducted by coaches who were less versed in Afrikaans. This single factor made participation more difficult especially among the grade 8 learners as expressed by the peer educators.

..... I think it would have been best to run the programme in Afrikaans because I would have been proud to say okay, we conveyed our message. Even now, yes we did our part but I still feel like there were some certain things missing. (Facilitator A)



Few of the grade 8 learners appeared not to be interested in the programme and were less able to express themselves and some of them were chatting in inaudible non-related topics during the sessions. This caused occasional frustration among the coaches.

.... the classes behave like they are not very serious to what we are here to do. They think they know everything, I think it was one of the grade 8 classes, it was a big challenge for us making them participating in the programme, we had to like, come after them to say something.(Facilitator B)

This experience was less promising as another coach put it.

.....Okay let me talk about grade 8, okay I am going to divide them. I think we failed them because of the language, you know what I am saying. I really think those grade 8 kids would have understood better if we were speaking Afrikaans. But grade 9 & 10, definitely they got the message. (Facilitator B)

(b.) Duration of sessions

The intervention was conducted during the school hours, during the Life Orientation period. The duration for each session agreed upon with the school during the planning stage was 45 minutes. The time allotted to each session was irregular and too short to complete all the topics in each practice. This could have affected the overall quality of the programme as one coach commented.

.... the time is too short but the message doesn't get to where we want it to be because the time is too short. At times 30 minutes, at times 40 minutes, so we couldn't finish the programme, we had to come back the following day to come back and start with the practices we left the previous day.(Facilitator A)

7.2.4 Suggestions for future programmes

Peer facilitators were asked what they would do to improve on the quality of the intervention and a number suggestions of were made for the future implementation:

1. The language of instruction should accommodate the native Afrikaans speakers to improve group participation and understanding of the programme.

.....basically we could have spoken Afrikaans and we could have had much time with those kids. For them to ask questions, so that we can respond to whatever they want to ask. Because you could notice some wanted to ask questions, but they were struggling, so we lack a safe space by not speaking their language to make them feel comfortable about the issues of HIV and sex and stuffs (Facilitator A)

2. HIV prevention intervention among youth should be strengthened through participatory action, role-modeling, and skills-building activities rather than non-participatory and didactic learning. This observation was as a result of low knowledge of HIV prevention and transmission despite the Life Orientation curriculum in the school.

.....Life Orientation teachers are more interested in getting them done and a write a test, you know. But with our programme, the kids will know that I don't have to write a test, this is my general knowledge. This is what I must know; life is like this, if I do this, this is what is going to happen (Facilitator B).

3. Although, teachers and parents are extremely important to promotion of health adolescent health, however youth-based HIV prevention programmes must be tailored

towards building positive peer leadership to promote safer adolescent sexual behaviours.

..... the kids respect teachers, they don't just talk in front of them, so they need someone they can open up with, they can relate to, it will be much better. The advantage is that they relate better with each other because they have the same goals, they understand each other because most of the youth don't take advice from their parents, they take advice from their friends, so it will be great for peers to teach each other (Facilitator B)

4. Our finding also revealed that HIV prevention intervention in rural schools are lacking, and this add to the discussion to scale up proven HIV projects among youth in rural areas.

So I would suggest the school should always have the programme of HIV because HIV starts with the youth, in high school it is affecting the youth. Unprotected sex is high in school; teenage pregnancy is high in school, so there should be some programme like that (Facilitator A)

7.3 Conclusion

The results of process evaluation highlight the strengths and inadequacies in the current programme and made suggestions that can be used by programme planners and policy makers to address adolescent risk taking behaviour. The HIV prevention intervention was implemented in rural high school and was successfully delivered by trained peer facilitators for 12 weeks. The sessions' observations suggest that the programme was well received by the majority of the students and they demonstrated strong willingness to participate in all the practices throughout the period. The game-based activities used in the curriculum provided

strengthened participation and provided a safe space for the learners to freely discuss issues around HIV and sexual behaviour. A key aspect of the process evaluation was the low knowledge of HIV among the learners, and the reason for this was the absence of an HIV prevention project in the school. If our project was the first HIV prevention programme in the school, this would be a major achievement. However, there appears little usefulness of the Life Orientation curriculum as a medium to increase HIV knowledge and instill safer sexual practices in youth. This finding opens up a discussion around the review of the Life Orientation curriculum to critically address adolescent sexual health. Our findings also suggests that life skills for HIV prevention in schools cannot be taught as a sit-and-write-test subject but a general knowledge learned in a day-to-day real life situation. Another key aspect of this study was the lack of motivation from the learners to openly and freely discuss HIV and sexual behaviour with the teachers. The learners may feel socially constrained by the age gap and respect for the teachers to communicate openly about their sexual behaviour. This provides an important foundation for peer-leadership approach for HIV prevention in schools.

However, two key challenges are likely to affect the quality of the intervention, thus future intervention must devise different strategies. First, the sessions were conducted in English among predominantly native Afrikaans speakers; this is likely to limit the intervention effect observed among the learners. Second, though, the importance of implementing the programme during school hours was supported by the school; the time allotted was insufficient to cover all the topics in each session. This could have lessened the potential effect of the programme to impart skills to reinforce safe sexual behaviour. Despite these challenges, this process evaluation has shown that HIV prevention projects in rural schools

are few and also support the review of the current Life Orientation curriculum to address adolescent health.

7.4 Summary of chapter

This chapter provided the results of the analysis of the observations, log books and in-depth interviews to gain facilitators' views on the relevance and quality of the intervention. The next chapter will provide an overall discussion of the study.



CHAPTER EIGHT

DISCUSSION, CONCLUSION, AND RECOMMENDATION

8.1 Introduction

The main aim of this study was to measure the impact of a sport-based HIV prevention intervention in the reduction of HIV-related sexual risk behaviour among rural high school learners. This chapter thus provides an integrated discussion of the results presented in the preceding four chapters. Firstly, the prevalence of sexual risk behaviour such as sexual debut, the number of partners and the consistency of condom use, is discussed. In addition, the mediating factors for HIV reduction, including but not limited to HIV-related knowledge, sex communication skills, self-efficacy, and sex negotiation skills is discussed. Secondly, the relationship between sexual risk behaviour and the mediating factors for HIV prevention is discussed. Lastly, the impact of the sports based intervention on self-efficacy, HIV-related knowledge, sex negotiation skills and risky sexual behaviour is discussed. The chapter also provides a conclusion to the overall study and highlights the study limitations and provides recommendations for future research.

8.2 Prevalence of sexual risk behaviour

Increasingly adolescent risky sexual behaviour is one of the major challenges in an effort to reduce the prevalence of HIV infection in youth especially in sub-Saharan Africa being the worst-affected by the pandemic. Acknowledging the burden and predictors of sexual risk-taking in adolescence is crucial to HIV reduction programmes in young people. Amid the growing concern of adolescent risky sexual behaviour and paucity of HIV prevention interventions in rural areas (Doyle et al., 2010; Adair, 2008), this study focused on the

relationship between the mediating factors and risky sexual behaviour among learners in rural high schools aged 13-19 years. In this study, more than 27% of the participants reported to have engaged in sexual intercourse and among those that are sexually active, more than 48% have had sex before their fifteenth birthday. In addition, among those that are sexually active, about 42.2% reported having had sex with more than one partner in their lifetime. The possibilities of engaging in sexual risk behaviour were much higher in males, as other studies have shown (Mavedzenge, Olson, Doyle, Changalucha, & Ross, 2011; Moodley & Phillips, 2011; Jewkes et al., 2006; Pettifor et al., 2005; Abma, Martinez, Mosher, & Dawson, 2004). These findings emphasize the teen's involvement in sexual risk-taking behaviour and strong support for youth-based interventions that do not only promote abstinence but also promote safe sex programmes.



In 2008, the World Health Organization reported that more than 16 million births in adolescent girls are attributed to early sexual activity. Young people who start having sex at an early age are more likely to engage in riskier sexual behaviour, including multiple partners and irregular condom use, which predisposes them to contracting HIV infection (Harrison, Cleland, Gouws, & Frolich, 2005). Similarly, among the participants who reported being sexually active, almost 48.7% (55/115) reported sexual intercourse at age 14 years or younger and significantly higher in boys (60.6%) than girls (31.9%). These findings replicate previous studies that examined the prevalence of sexual behaviour in youth aged 15-24 in sub-Saharan Africa and found more males reported engaging in sexual activity before age 15 compared to females (Exavery et al., 2011; Doyle et al., 2010; Mishra et al., 2009; Pettifor et al., 2009; James et al., 2004; Jewkes et al., 2006; Pettifor et al., 2005).

According to Harrison, Cleland, Gouws, and Frolich (2005), when young people engaged in early sexual intercourse, they are more likely to engage in riskier sexual behaviour including having more than one sexual partner. Around 42.2% of learners in this study who were sexually active reported to have had sexual contact with more than one partner in their lifetime. A higher proportion was observed in this study compared to a study conducted in Cape Town that found 31% of the study sample to have had multiple sexual partners (Kalichman & Simbayi, 2011). This finding is not consistent with a study which found that multiple partners among youth are higher in urban areas compared to rural areas.

Furthermore, there is increasing evidence that if condom is not used during the first sexual intercourse, its use becomes irregular over time (Clark et al., 1998). Although there were no differences between males and females on condom use, among the learners who reported being sexually active, 46.3% reported no condom use at last sexual encounter and 55.2% reported irregular condom use. Compared to a previous study, they reported a higher proportion of condom use in youth (Shisana et al., 2009). The explanation for this difference could be that learners in this study are in rural areas, where there is minimal access to condoms (Adair, 2008). These findings are a reminder that significant proportions of youth in rural areas are sexually active and are at higher risk of contracting HIV because of less condom use and having more than one sexual partner. These findings demand a comprehensive school-based HIV prevention intervention that motivates delaying the age of first sexual intercourse and increased access to condoms use among the learners.

Moreover, the majority of learners in this study did not know their HIV status. Specifically, nearly 87% reported they had never undergone a HIV test before. This is a sharp difference

from a study that asserted that South Africa has one of the highest levels of HIV testing (UNAIDS, 2008). The only explanation for this inconsistency could be that learners had difficulty accessing a HIV testing service. As discussed above, it could also be the reason why condom use remained low, as reported by Fortenberry et al. (2002) that, oblivious of one's HIV status increases the possibility of engaging in risky sexual behaviour including low condom use in youth. However, with respect to gender difference in the knowledge of HIV status it was found that no significant difference exists between boys and girls. This is, however, different from the study that found that girls are more likely to know their HIV status than boys (Shisana et al., 2009). This inconsistency could be due to methodological difference between the two studies, as Shisana et al. (2009) study was conducted in the general population throughout South Africa. It is also possible that, because the proportions of learners who knew their HIV status in our study were low, statistical analysis might not be sensitive to detect the gender difference. Regardless whether there was a difference between boys and girls in accessing HIV services, this does not eliminate the threat that access to HIV testing in rural South African schools is limited, thus increasing HIV testing centres and various awareness campaigns on HIV testing among youth in rural areas are needed.

8.3 Mediating factors for HIV prevention

Understanding the determinants of sexual behaviour (e.g. self-efficacy, knowledge etc.) that facilitate or inhibit adolescent risky sexual behaviour is critical for developing interventions that decrease opportunities to engage in risk-taking sexual behaviour in adolescents. In addition, it also substantially enhances the resoluteness of health care providers to identify and offer support for young people at risk of HIV infection (Kirby, 2007). This study shows perceptions of peer's sexual behaviour is stronger for boys than for girls. The finding

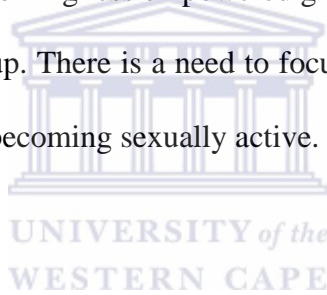
emphasizes that boys will need stronger support to reduce their chance of engaging in sexual risk behaviour than girls, because of stronger peer influence on boys to initiate early sexual activity (Macphail & Campbell, 2001). However, results show stronger association on self-efficacy and negotiation skills for girls than for boys. Thus, young girls might have stronger control than boys in engaging in sexual risk behaviours such as having fewer sexual partners (Moodley & Phillips, 2011; Jewkes et al., 2006; Pettifor et al., 2005).

To further explore the predictors of sexual risk behaviours in adolescence, results of the first part of the present study indicate that peer influence was the strongest predictor of being sexually active in adolescence. This result and similar findings found that young people perception of peers' sexual behaviour increases the propensity of being sexually experienced (Collazo, 2004; Marin et al., 2002). Page et al. (2000) were also of the opinion that adolescents are more likely to engage in certain behaviour if they think that the behaviour is typical. All of this highlights the importance of addressing these misperceptions. It should be part of any educational approach to correct these misperceptions.

Although research implies that adequate knowledge regarding HIV is important in the prevention of the disease, study investigating HIV-related knowledge has shown inconsistent findings (Pettifor et al., 2005). Similar to a previous South African study which found a linear relationship between HIV knowledge and safe sexual practices (Moodley & Phillips, 2011), the present study found HIV knowledge to be the strongest predictor of condom use at last sexual encounter. This finding suggests the need for widespread awareness programmes on HIV transmission and prevention and support for condom use in sexually experienced participants. Several researchers, however, have debated whether knowledge alone will lead

to safer sexual practices in the absence of a thorough exploration of the complex structure of adolescent sexuality (Phillips & Malcolm, 2006; Sayles et al., 2006).

Sexual communication with children has also been found to play a critical role in mediating for a positive behaviour change in youth, especially for girls (Ream & Savin-Williams, 2005; Rose et al., 2005). Although sexual communication with parents was also less difficult for girls than for boys, what is more discouraging in this study is it was abysmally low. This finding justifies the inclusion of activities that improve sexual communication with parents in order to address sexual risk behaviour in youth, especially for boys. This also points to the fact that adolescent males are becoming less empowered given the fact that sexual risk-taking behaviour is common in this group. There is a need to focus on adolescent males concerning sexuality communication before becoming sexually active.



8.4 Relationship between sexual behaviour and mediating factors for HIV prevention

Researchers also found that HIV knowledge deficits could also contribute to a higher risk of sexual behaviour in young people (White, Chen, & Atchison, 2008; Herek, Widaman, & Capitana, 2005). Alternatively, it is associated with increased condom use and HIV testing in youth (Haile, Chamber, & Garrison, 2007). The participants in this study demonstrated that no difference exists with respect to low knowledge of HIV and gender difference in HIV knowledge, though girls fared better than boys. This finding is different from a study in South Africa that found that HIV knowledge is high (Shisana et al., 2009). The difference could be attributed to the paucity of HIV projects in rural schools. It is also possible that different

measures were used to determine HIV knowledge in the two studies. It is not surprising that HIV knowledge was a significant predictor of condom use at last sexual encounter. This finding is consistent with a study that has shown that greater HIV knowledge is associated with consistent condom use (Bruine de Bruin, Downs, Fischhoff, & Palmgren, 2007). It is also fair to say that low condom use among the participants is associated with their low level of HIV knowledge. There is therefore a need to increase awareness of HIV knowledge among high school learners, especially those in rural areas.

The moderating contribution of peer influence on sexual behaviour in our finding shows that this relationship is stronger for boys than for girls. Specifically, peer influence emerged as a strong predictor for being sexually experienced among the participants. This is consistent with a study that reported that young people who have sexually experienced friends are more likely to be sexually active too (Colazo, 2004). This finding may also apply to poor sexual communication with parents among the participants in our sample, especially for boys, which suggests they may be seeking information from their mates. However, several studies have suggested the inclusion of skills-training exercises to support young people in resisting friends' pressure to engage in sexual risk behaviour (Jemmott, Jemmott, & Fong, 1998; Kipke, Boyer, & Hein, 1993). This observation also underscores the justification for peer-based education along with parental communication to increase the potential for positive behaviour change for risk reduction in youth.

In addition, our finding shows that gender, specifically being male, predicted early initiation of sexual activity by age 14 or younger. This suggests that male learners compared to female learners in this sample are 6.6 times likely to initiate sexual intercourse before the age of 15

years. This finding is consistent with the Udry et al. (1985), that a higher level of secondary sex hormone (testosterone) in young adolescent males increase disposition to early sexual intercourse. Although biological influence on behaviour is not modifiable, it strengthens the position that young people, especially boys, will require extensive emotional support in order to remain safe.

Taken together, these findings add to the discussions around adolescent sexual behaviour in several ways. Young people start engaging in sexual risk behaviours as early as 14 years or younger, and the period also offers a window of opportunity to commence age-appropriate sexuality education to either abstain from sex or practice safer sex. These findings should lend further support for comprehensive sexual health education that is still lacking in some schools (Swenson et al., 2010). Although sexual abstinence in young people has been found to be the best approach to reduce risks associated with risky sexual behaviour, unfortunately it is unlikely to make any meaningful impact especially among youth who are already sexually active (Shuey et al., 1999). However, promotion of condom use among young people has been met with stiff resistance in some countries especially among faith-based institutions. Implementing a comprehensive sexuality education along with condom promotion among youth will therefore require supportive health-related policies in school from the government. In South Africa presently, the age of consent at which young people can access HIV testing and contraceptives has been reduced to 12 years in order to eliminate threat to utilization of sexual and reproductive health. It remains to be seen if schools have well established youth-friendly health services for learners who would like to access these services. Thus, these findings are important for many reasons and assisted in developing an effective intervention for young people in rural area. First, it indicates that young people in rural areas have low knowledge of HIV; an effective school-based HIV prevention

intervention must provide HIV knowledge information supported by skill-building activities to promote sexual abstinence and encourage condom use in learners. Two, school-based intervention must be developed in a way that the intervention activities include participants communicating with parents on sex-related matters during and after the intervention. Finally, a school-based intervention must develop peer-interaction among the learners to promote safe sexual behaviour.

8.5 Impact of the sport-based HIV prevention intervention

In response to the concerns regarding sexual risk behaviour among adolescents highlighted above, a sport-based HIV prevention intervention was developed to address important mediating factors that increased the risk taking behaviour among the learners in rural high schools. The intervention was built on an established social cognitive model (Bandura, 1986) which has demonstrated intervention effectiveness for reducing risks. The intervention was developed away from usual classroom lessons to more participatory peer-based activities and within an extremely water-tight school's system. The primary objective was to evaluate the effectiveness of sport-based HIV prevention interventions on the sexual risk behaviour change and mediating factors that would reduce HIV-related risks among the learners in rural high schools. The impact of the programme on self-efficacy, HIV-related knowledge, and sexual risk behaviour will be discussed below.

8.5.1 Impact on self-efficacy

The significant role of self-efficacy in behaviour has been emphasized strongly in literature. Bandura (1977) asserts that individuals with self-efficacy are aware of the fact that they can

realise positive results of behaviour when they apply the right skills. Pettifor et al. (2004) have highlighted the significant role of self-efficacy in relation to sexual practices among adolescents. There is increasing evidence that higher self-efficacy is linked to safer sexual practices and the ability to resist peer pressure to have sex (Sionean et al., 2002; DiIorio et al., 2001).

The findings of the current study showed that the sport-based intervention implemented significantly increased self-efficacy to refuse sex among participants in the intervention school compared to control group [OR = 1.43: 95% CI = 1.07-1.92]. This suggests that participants who received the sport-based intervention are 1.4 times likely to develop self-efficacy compared participants from control school. Ross et al. (2006) asserted that the strongest protective factor that decreases the risk of HIV infection in young people is self-efficacy. It was not unexpected that the intervention increased self-efficacy because the development of the intervention was based on social learning theory which posits that when people develop self-efficacy, it brings about positive behaviour change. The finding is consistent with studies conducted in South Africa that found increased HIV knowledge and self-efficacy to be significantly associated with decreasing rate of HIV risks in young people (Magnani et al., 2005; Pettifor et al., 2005).

8.5.2 Impact on HIV Knowledge

As highlighted earlier, limited HIV-related knowledge could lead to riskier sexual behaviour among young people. In addition, better knowledge leads to increased condom use. This

study suggests that the sport-based intervention also improved HIV knowledge and negotiation skills. Thus, with increasing HIV knowledge, youth have more potential to use condoms and undergo HIV testing (Haile, Chamber, & Garrison, 2007). However, the researcher is of the opinion that the drop in HIV infection cannot always be completely attributed to increased HIV knowledge, as there is no evidence that this was associated with HIV reduction rate (Doyle et al., 2010). For this reason separate analysis was performed with learners that participated in the intervention to compare the response before and after the programme for individual knowledge items. Although, the intervention increased general HIV knowledge, this information is not enough to scale up HIV education intervention; to make an objective judgment regarding HIV knowledge change in this study, analysis of individual items is desirable. In particular, before the intervention 88.3% of the participants believed that multiple sexual partners increase their risk of HIV, but these proportions decreased to 81.1% after the intervention. It was found that of the 88.3% who gave correct response before the intervention, 18.5% (16.3% of 88.3%) of these now gave wrong response. Although there was no reason for this inconsistency; it is possible that that some learners were merely guessing rather than the impact of the intervention itself especially among grade 8 learners where programme participation was limited.

The intervention was deemed effective for several individual items, however. Of the 85.1% before the intervention who correctly rejected misconception that a natural skin condom works better than latex condom, this proportion increased to 94.8% after the intervention. Though 4.3% (3.7% of 85.1%) of who rejected this misconception before the intervention now accepted it. Overall, the finding indicates that intervention increased knowledge regarding condom use. A minimal change in knowledge regarding detection of HIV one week

after sexual intercourse (63.6% before versus 64.1% after) occurred. However, 24% (15.4% of 63.6%) of those who were correct before the intervention now gave a wrong response. The implication for this misconception is that if young people were tested for HIV one week after sex and found to be HIV negative, they continue to spread HIV during this period when they are highly infectious until when the virus can only be detected three months after sex (Colfax, Buchbinder, Cornelisse, Vittinghoff, Mayer, & Celum, 2002). However, the inconsistent patterns that emerged from the individual knowledge items scores were mixed and there is a need for a more comprehensive HIV and AIDS-related knowledge for rural high school learners.

8.5.3 Impact on sexual behaviours

To measure the impact of sport-based intervention on sexual risk behaviours of learners in rural high schools, three outcome measures were used to measure significant change over the period of the study including number of sexual partners, consistency of condom use at every sexual intercourse, and condom use at last sexual encounter. Unfortunately, the sport-based intervention found no significant impact on any of the sexual behaviour outcomes. The reason for the lack of significant impact of the intervention could be for several reasons. Firstly, it could be because of the length of exposure to the sport-based programme. It is possible that the learners needed a longer exposure to the programme before any meaningful changes can be observed. Another reason why there were no significant changes in sexual behaviour could be because the analysis only included those learners that were already sexually active. Therefore, we would not have expected significant change in sexual behaviour as Shuey et al. (1999) asserted that intervention targeting already sexually active high school learners are less effective compared to those targeting non-sexually active youth.

It is also possible because of desirability bias that is often associated sexual behaviour, the learners might have chosen to under-report or over-reports their sexual activities before and after the intervention.

8.6 Conclusion

To conclude the successes of the sports-based intervention, the lessons learnt and the challenges experienced will be outlined.

The prevalence of risky sexual behaviour among rural learners is high and many factors associated with these included poor HIV-related knowledge, lack of sexual communication with parents, and low HIV testing. Thus far, little is being done in rural areas to reduce risk-taking behaviour among the learners and this study was the first “HIV-project” in the school. To respond to this need in the school, sport-based activities were adapted from the GRS curriculum that was built on social learning theory were implemented by peer facilitators and delivered through sport-based interactive activities which reached about 260 learners with the primary aim of reducing HIV-related risk behaviour. To a large extent the sport-based activities have shown to be a promising and effective approach to build life skills needed to reduce risk-taking behaviour in youth. The intervention has shown a remarkable increase in HIV knowledge, self-efficacy to refuse unwanted sex and negotiation skills for safe sex. This is the strength of this study that would be required to justify widespread implementation of sport-based intervention in schools.

Some of the lessons learnt were that the intervention did not have significant impact on sexual behaviour. This could be associated with the use of self-report measures or the quality of the implementation of sport-based intervention, such as selection of peer educators with

different cultural background to the participants and shorter session duration among others. In spite of these setbacks, the programme was well received by the learners and continuation of this intervention which we hope will be nested within Life Orientation curriculum in all schools in South Africa will greatly reduce risk-taking behaviour in youth. Lessons learned from this study are summarized below to inform implementation of the project on a large in all schools in South Africa terms of coverage and quality.

- Firstly, this was largely a top-down intervention study with minimal support from the local gatekeepers in the community, except the school, and we could not identify a single potential NGO for collaboration prior to its implementation or using existing structures. It is important to build ownership of this programme among all the major gatekeepers in the community including schools, parents, clinics, community leaders, and youth for long-term sustainability.
- Secondly, several HIV-prevention interventions in schools are implemented and monitored by teachers; this could be because they have better skills in teaching and learning methodologies. However, the evidence that emerged from this study is that learners were reluctant to openly discuss sex-related issues while teachers were around maybe out of fear or respect. Then, how sensitive are these teacher-led interventions to needs of these young people? Unfortunately, the existing disciplinary and moralistic structure of school system might not encourage youth to express their needs. There is an urgent need to augment the existing HIV prevention projects in school with peer-led approach delivered by young adults.
- Thirdly, many of the NGOs involved in the HIV monitoring and evaluation projects have minimal outreach programmes in rural areas. Many of these pupils in rural areas who are at risk of contracting HIV are unlikely to be reached by HIV-prevention programmes let alone the out-of-school children who are likely to have greater

difficulty accessing health services. There is need for government to increase funding to NGO working in HIV project to reinforce their programme coverage in rural areas.

- Fourthly, the results of this study should put to rest the use of abstinence-only programmes in schools. While it is the most significant approach to avoid HIV infection, there was little evidence that it works. The only intervention where evidence was robust is the comprehensive interventions which appear to be more realistic. To boost risk reduction skills in youth, school-based sexuality education must include promote access to sexual abstinence, condom promotion, and HIV testing.
- Lastly, it is also important to clarify to readers between vulnerability and risk of contracting HIV. A growing body of evidence suggests that young girls have higher prevalence of HIV compared to boys of same age because of increased vulnerability such as weak cervix for easy passage of HIV virus, gender-based violence, child prostitution, and early marriage practices in some African countries. This is different from the higher risk of contracting HIV which is higher in boys because of higher sexual risk-taking behaviour compared to females. To bring a change in adolescent sexual health, intervention programmes for adolescent males must increase.

Given the constraints encountered when developing intervention, found that for this programme to be successful, it has to fit in with school's structures and administration with clear intervention goal and objectives. The intervention was developed using GRS skills-generation curriculum among high school learners. A total of six GRS coaches (peer facilitators) conducted 60 sessions reaching an average of 260 learners over 12 weeks. The

intervention sessions observed suggest that the majority of the learners were enthusiastic about the programme and enjoyed all the sessions.

However, a number of challenges were encountered during the implementation of the intervention which could have affected the outcome of study:

- Firstly, due to logistical reasons, grade 11 learners were not suitable to be trained as peer facilitators, because implementing HIV prevention intervention requires skills and the suitable age to effectively implement the programme. Therefore the programme was facilitated by GRS trained peer facilitators with a minimal understanding of the Afrikaans language. This could have caused loss of interest and enthusiasm among grade 8 learners who appeared lost at times, and reduced the chance of participating in the programme as they would have. There could have been a two-week pre-service training with the learners to promote acceptance and uptake of the programme, especially among grade 8 learners.
- Secondly, only two to three peer facilitators were available per class of average number of 35-45 learners. From sessions observed the whole class was taken as a group rather than having a sub-group within a class to increase participation among all learners. As a result of this large group, not all the learners actively participated in the programme.
- Thirdly, despite an agreement with the school that intervention will be nested within the Life Orientation period for duration of 45 minutes, the time allotted to each session was irregular and insufficient to cover all the topics in each session. A longer period of at least 45 minutes would have been sufficient to impart risk reduction skills.

- From the in-depth interview, peer facilitators suggested increased coverage of HIV prevention peer projects in all rural schools, which are sorely lacking in this area. During session observation, the learners, out of fear or respect for the teachers, would not openly discuss their sexual lives, suggesting that ownership of a HIV prevention projects by the learners through a peer-based health education in schools could be desirable. This study recommends for a more participatory approach as component of Life Orientation curriculum where HIV-related knowledge does not have to be learnt like Mathematics but a general knowledge that every pupil must acquire.
- The relevance of implementing a sport-based HIV prevention intervention in schools is gaining recognition, few known studies are found in the literature with no information on constraints that effect the implementation. The constraints highlighted above will assist the future implementation in school setting.



8.7 Recommendations

Based on the lessons learned from this study, the following recommendations are made for various stakeholders involved in youth and HIV prevention efforts:

Government

- There is an urgent need to strengthen sexuality education and comprehensive HIV-prevention programmes among young people in rural areas.
- Young people in rural areas who are at the risk of HIV infection (in this study the groups considered were sexually active youth who did not know their HIV status) required accessible and acceptable voluntary counseling and testing.

- The information on current legal age of consent for HIV testing in South Africa which is at 12 years should be widely circulated in all rural high schools to increase number of learners who know their HIV status.
- Non-governmental organisations, particularly those working on HIV and AIDS awareness projects can reach as many schools in South Africa with HIV information and awareness programmes if they receive financial and logistic support from the government.
- In order to stabilize the current HIV prevalence in young people and continue to seek a further decrease, proven HIV prevention interventions must be given increasing attention.



Schools

- The existing Life Orientation curriculum in all schools in South Africa should be reviewed to make it more participatory, less didactic, less authoritarian, and less judgemental and tailored towards the needs of young people.
- More than one-quarter of young people in rural areas are sexually active, school-based sexuality education must incorporate school-based clinics for prompt diagnosis of STIs and accessible condom use for sexually active learners.
- Young people should be provided with the control to take over the ownership of sexuality education as they better understand what their needs are.
- To achieve the best results, there must be coordinated activities between the school and health sectors to provide proven services to young people.
- School-based interventions must engage parents and community to strengthen social norms that decrease vulnerability to HIV (e.g. sport participation for girls).

- Sport participation should be made compulsory for all learners and should be nested within HIV skills-building activities and physical education in all schools must be revitalized.

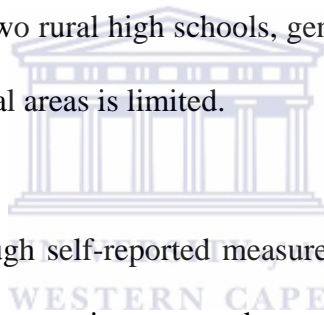
Researchers

- The current study employed quasi-experimental design in two high schools. The future sport-based intervention should employ randomized controlled trials (RCT) involving both primary and high schools using a large sample.
- The sample for this study was predominantly from one ethnic group, it was difficult to understand the sexual behaviour patterns along ethnic differences. Research is needed to better understand the effect of ethnic differences on the relationship between adolescent sexual behaviour and factors that increase the risk among young people.
- Researchers must collaborate with relevant stakeholders (e.g. school, community, NGOs) during the planning and design stage to facilitate effective implementation of the programme.
- Curriculum-based intervention programmes in schools must be operationalized and built on proven theoretical framework, so it can be extrapolated to another setting.
- In the current study, because of logistic issues, it was difficult to measure biological measures of behaviour (STIs and HIV prevalence). Future evaluation of sport-based intervention should include these rather than relying on self-reported measures.
- Finally, the findings of evaluation should be made available to relevant stakeholder by publishing it in relevant journals and conference presentations.

8.8 Limitations of the study

The findings of the present study should be interpreted in the light of the following limitations:

- Logistically we could not randomize individual learners in the schools without disrupting their school work, thus this is open to selection bias.
- Data used to report the contribution of mediating factors to sexual risk behaviour were analysed cross-sectionally, thereby limiting the ability to make causal inferences.
- This study took place in two rural high schools, generalizing the results to the general population of youth in rural areas is limited.
- Data were collected through self-reported measures, this is open to desirability bias where participants either over-estimate or under-estimate their true sexual behaviour.
- Differential loss to follow up in this study could have negative effect on the relative comparison between intervention and control group.



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