

**A community based study of the relationship between HIV  
knowledge, perceived risk and perceptions about HIV vaccines**

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**(MBChB)**

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## **DECLARATION**

Submitted in partial fulfilment of the requirements for the degree of Master of Health Promotion, in the Graduate Programme in the School of Psychology, University of KwaZulu-Natal, Durban, South Africa.

I declare that this dissertation is my own unaided work. All citations, references and borrowed ideas have been duly acknowledged. It is being submitted for the degree of Master of Health Promotion in the Faculty of Humanities, Development and Social Sciences, University of KwaZulu-Natal, South Africa. None of the present work has been submitted previously for any degree or examination in any other University.

Taiwo Olayemi Adebawale

October 2010

## **DEDICATION**

This dissertation is dedicated to my husband -Adekunle and my daughter – Oluwatumise Adesodun Adebawale.

“..... the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to them all” (Ecclesiastes 9:11, King James Version).

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It has been a real “learning curve”.

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## ABSTRACT

To date, the HIV/AIDS pandemic remains a global disaster. The sheer scale of the pandemic and the limited success of prevention programmes in controlling its spread have necessitated an urgent need for the development of a safe, effective and affordable HIV preventive vaccine. However, perceptions of HIV vaccines and the relationships between HIV/AIDS knowledge, perceived risk and existing views on HIV vaccines are minimum characteristics required to make future HIV vaccines a worthwhile public health tool. This study reports findings among representatives of the ethnic groups aged between 18 and 49 in the Rustenburg community of Bojanala district (N = 351).

The study utilized some of the data collected by the Aurum Institute of Health Research representative household survey that forms part of a range of HIV vaccine preparedness studies in the Bojanala area, Rustenburg. Descriptive statistics were applied to all items. Independent samples T- tests and Analysis of variances (ANOVAs) were used to compare means. Correlational statistics (Pearson's product moment) was used to explore relationships between pairs of variables. A standard multiple regression analyses was applied to assess and explore the factor(s) that predict the likelihood that respondents would report supportive perceptions for HIV vaccines while the hierarchical model fitted was done to control for the influence of demographic variables.

About 74% of the study participants had good knowledge of HIV/AIDS-related issues and the same percentage of respondents identified self and their community to be at risk of HIV/AIDS infection (measured as fatalism regarding risk of contracting HIV infection). Positive view-points regarding participation in vaccine trials and belief in a future HIV vaccine to protect from contracting HIV infection was reported by almost 90% of the study participants. Meanwhile, a majority (60%) had low levels of knowledge on HIV vaccines. The results of standard and hierarchical multiple regressions showed that knowledge on HIV/AIDS transmission, prevention and treatment (in particular) are the best predictors of perceptions of an HIV vaccine. Furthermore, with the exception of the duo of perceived HIV risk and perceptions of HIV vaccine, positive correlations were found among knowledge, perceived HIV risk and vaccine perceptions, as well as among these and exposure to the media. Race (being Black in particular) and low levels of education seem to be profound challenges facing HIV/AIDS related issues, particularly perceived HIV risk.

The findings from this study have implications for strategies in HIV prevention, viz. education, service delivery, advocacy and policy among others at institutional, national, regional, and global level in both public and private sectors. Political will, unprecedented collaborative effort among stakeholders and review of the existing Expanded Programme of Immunization schedule are all required to make the future HIV vaccine globally available. In addition, deductions highlight several key areas where research is urgently needed.

## ACRONYMS

AIDS:	Acquired Immune Deficiency Syndrome
ARV:	Antiretroviral (Drugs)
CADRE:	Centre for AIDS Development, Research and Evaluation
DoH:	Department of Health (South Africa)
HIV:	Human Immunodeficiency virus
IAVI:	International AIDS Vaccine Initiative
IDU:	Intravenous Drug users
MSM:	Men who have sex with men
NGO:	Non-governmental Organizations
PLWHIV:	People living with HIV
SABC:	South African Broadcast Corporation
UNAIDS:	Joint United Nations Programme on HIV/AIDS
UNDP:	United Nations Development Programme
UN:	United Nations
WHO:	World Health Organization

## DEFINITION OF TERMS

Terms relevant to this study are defined in this section.

**Keywords:** Community, HIV/AIDS, Incidence rate, Knowledge, Perceptions, Prevalence rate, and Vaccine.

### *Community*

Community has been defined as “a specific group of people usually living in a defined geographic area who share a common culture, are arranged in a social structure, and exhibit some awareness of their identity as a group” (Nutbeam, 1986). In contemporary society people usually belong to several ‘communities’, based on geography, occupation, social contact and leisure interests. But more often than not, communities are generally considered in geographical terms, although they can also be non-geographical, centered on shared beliefs or characteristics, or social class (Minkler & Wallerstein, 1997).

The definitions of community include the following: 1) Functional spatial units fulfilling sustenance needs; 2) units of patterned social interaction; 3) Symbolic units of collective identity; 4) units of people assembling to act politically and make changes (MacQueen et al., 2001; Minkler & Wallerstein, 1997). As regards HIV, it infects the individual, but individuals rarely live in isolation. Individuals are undeniably member of a household – the building block of a community. Infection and the consequences of HIV in a household have implications for other households within the various community structures to which they belong because of their interdependence. In the end, community is possibly the most affected by the epidemic. Within this study, community has been conceptualized in relation to both sexes – male and female - and all ethnic groups aged 18 - 49 within the study area.

### *HIV/AIDS*

HIV/AIDS is an acronym for the duo of “human immunodeficiency virus/acquired immune deficiency syndrome”. The latter (AIDS) is a sequel to the former (HIV) - the virus that causes the disease. Two evolutionally and genetically distinct types of the human AIDS virus have been identified: HIV-1 & HIV-2 (Hutchinson, 2001; IAVI, 2008). The virus can be transmitted through: unsafe sex; from an HIV-positive mother-to-child before or during childbirth or when breastfeeding; through infected blood. HIV/AIDS is not a single disease

entity; however, AIDS is the most commonly known and final outcome of HIV infections and so infected people have a spectrum of manifestations and eventually die.

Although AIDS is relatively new in terms of being recognized as a disease, the human immunodeficiency virus has been in existence quite possibly since 1930, and with a confidence interval of 1910-1950 (Hutchinson, 2001). The question of how it came about has been a topic for debate for many years. The most controversial of the theories was that the human immunodeficiency virus on its own is a harmless passenger virus that does not cause AIDS but that drug use, combined with HIV infection, would result in AIDS (Hutchinson, 2001). And, substantial epidemiological, virological and immunological evidence has proven this hypothesis (Hutchinson, 2001).

### ***Incidence rate***

Incidence refers to the estimate of the number of new infections of a disease that occur over a given time period (Hornby, 2006). In HIV infection, it represents the percentage of a given population who are newly infected with HIV in a given year. Incidence measures are better than prevalence measures for understanding the dynamics of HIV transmission. This is because prevalence figures represent the total number of people living with HIV who may have been infected with HIV over the past decade or more as opposed to incidence that is a measure of new infection per year (CADRE, 2006).

### ***Knowledge***

According to Oxford Advanced Learner's Dictionary, "knowledge" refers to the information, understanding and skills gained through experience or education (Hornby, 2006). It is mostly conceived as true belief plus some favoured relation between the believer and the facts (Plato, c. 429-347 BCs, in Blackburn, 2008). With regard to this study, knowledge about HIV/AIDS in terms of transmission, prevention, treatment and myths will be considered.

### ***Perception***

Drever's (1964) dictionary of psychology defines perception as a subjective process of recognizing or identifying something. It occupies a prime position in the theory of knowledge and consciousness (Blackburn, 2008). Perceptions with regard to this study refer to subjective knowledge, belief, awareness, risk and attitudes towards a phenomenon - HIV/AIDS and HIV vaccine.

### ***Prevalence rate***

Prevalence is a measure of the population that represents cases at a particular point in time (Hornby, 2006). In the case of HIV, it refers to the estimate of the proportion of a defined population (e.g. youth, pregnant women, adults, employees) who are infected with HIV at a given time. Such data may be used to model estimates of HIV prevalence in other population groups. Such estimates are crucial to developing plans to mitigate HIV infection and address effects of the epidemic (CADRE, 2006).

### ***Vaccine***

The term vaccine is usually used to describe medical products designed to stimulate the body's immune system in order to prevent individuals from getting a disease. A vaccine "teaches" the immune system to recognize and defend against a virus (such as HIV), bacteria or other disease-causing agent. Currently, all known licensed vaccines are preventive vaccines. That is, they are not cures and are not designed to help people who are sick or who already have a disease to recover (Idoko & Isa, 2005). There are two different types of vaccines: *Preventive vaccines*- designed to protect non-infected individuals with the goal of preventing infection and/or disease. These types of vaccines are known to be the most cost effective for the control and potential eradication of an epidemic. While *Therapeutic vaccines* are given to already infected individuals with the aim of modulating the immune responses that would allow for better control of the infection and would prevent the development of disease (Beers & Merck Research Laboratories, 2006; Idoko & Isa, 2005). Therapeutic vaccines could produce secondary preventive effects by decreasing the viral load levels in infected individuals and thus rendering them less infectious (Beers & Merck Research Laboratories, 2006).

This study focuses on preventive HIV vaccines – that is, vaccine that can be given to uninfected individuals to protect them against the HIV virus should they come in contact with it. This is much the same as with other familiar vaccines such as for flu, Hepatitis B or chicken pox.

# CHAPTER ONE

## BACKGROUND AND RATIONALE

### 1.1 Introduction

HIV/AIDS is unequivocally the most devastating disease we have ever faced, and it will get worse before it gets better (UNAIDS, 2001). The pandemic is on the upswing globally. Though no part of the world, aspect of life or gender is immune, its grip on Africa has been by far the deadliest and women are more severely affected than men are (UNAIDS, 2008). By the end of 2008, over 33.4 million people were living with HIV/AIDS (PLWHIV) worldwide and 2.7 million people were newly infected at a rate of about 7,500 new infections per day (UNAIDS, 2009). According to the UNAIDS Report (2009), these figures are 20% higher than those reported in 2000; a threefold higher prevalence rate than in 1990. Nearly 25 million people had died of AIDS (WHO/ UNICEF/UNAIDS, 2009), 50% above the projected figures in 1991 by the World Health Organization (WHO, 1991). AIDS orphans (defined as those who have lost either their mother or both parents) and other vulnerable children, number some 20 million worldwide and the infection continues to spread rapidly (UNAIDS, 2008). It is estimated that in the next 20 years, about 70 million people will die from AIDS, 55 million of these in sub-Saharan Africa (Emily & Jefferys, 2002; UNAIDS, 2004).

Infections among women continue to rise in many parts of the world. In 2007, women represented 50% of HIV-infected adults globally. Regionally, they comprised 67% of newly HIV-infected adults in sub-Saharan Africa (SSA), 40% in Eastern Europe and Central Asia, and 43% in Asia (UNAIDS, 2008). Worst of all, the global percentage of pregnant women living with HIV who received antiretroviral treatment to prevent HIV transmission to newborns, increased from 9% in 2004 to 33% in 2007 (UNAIDS, 2008). Sub-Saharan Africa accounts for nearly 75 percent of the total HIV infections (UNAIDS, 2009). In the sub-continent, the difference in infection rates among men and women is striking: nearly three out of four infections are among women (Shisana, 2002; Shisana & Simbayi, 2003; UNAIDS, 2006).

AIDS has posed serious demographic, humanitarian, economic and development challenges that are fundamentally different from those encountered with other health problems (Ogunbodede, 2004; UNAIDS, 2001). In too many countries of the world, the hard won gains



in human development, education, and life expectancy are being wiped out (Ellison, Parker & Campbell, 2003). Life expectancy in the sub-continent increased from 44 years in the 1950s to 59 years in the early 1990s. This has now dropped to 49 and is projected to drop further (UNDP, 2002 & 2007). According to the World Health Organization (WHO, 2008), life expectancy in SSA would be 62 years without the epidemic. As well as the human catastrophe, the epidemic has a profound impact on economic growth and development- as it is, the clock on development has taken a turn for the worse. The United Nations Programme on HIV/AIDS (UNAIDS, 2008) estimates a loss of more than 20 % of gross domestic product in the worst affected countries by 2020.

By any measure, sub-Saharan Africa has experienced the most devastating consequences of the global AIDS epidemic. While HIV/AIDS is the world's fourth biggest killer, it is the number one cause of death in sub-Saharan Africa (UNAIDS, 2009). In 2008, sub-Saharan Africa contained a little more than one-tenth of the world's population, but is home to almost 67% of all people living with HIV/AIDS, 68% of incident HIV infections in adults and 91% in children as well as 75% of world AIDS-related deaths (UNAIDS/WHO 2009). In 2008, approximately 22 million sub-Saharan Africans between ages 15 and 49 were living with HIV/AIDS (almost 10% of the adult population), while an estimated 1.9 million new infections occurred in the same year (UNAIDS/WHO 2009). It is expected that by 2010, there will be 71 million fewer people of productive age, thus expanding the elderly dependent sector (Khan, 2002).

The South African Human Immunodeficiency Virus (HIV/AIDS) epidemic has crossed into the explosive phase (the most severe in the world), having advanced well beyond high-risk groups into the general population (UNAIDS, 2008). Officially in 2008 (UNAIDS, 2009) an estimated 5.7 million people were living with HIV/AIDS in South Africa and almost 350,000 deaths occurred in that same year. Statistics show that the death rate is rising (Centre for Actuarial Research, 2006; Groenewald, Nannan, Bourne, Laubscher, & Bradshaw, 2005; Statistics South Africa, 2006 & 2008; UNAIDS, 2008). According to the South African Centre for Actuarial Research (2006) and Statistics South Africa (2008), AIDS causes half of all deaths in South Africa and a staggering 71% of deaths among those aged 15-49. Infections are most numerous among those aged 18-49 (Groenewald et al., 2005; Statistics South Africa, 2008). However, experts caution that infections are rising quickly in women, especially among pregnant women (than those found in the total adult population). UNICEF (2007)

stipulates that approximately one of ten pregnant women living in sub-Saharan Africa is infected with HIV. The country (South Africa) has the highest rate of HIV-infected pregnant women in the sub-continent, and possibly the world (UNAIDS, 2008) as evidenced by the results of antenatal surveillance from 2002 through to 2008 (DoH, 2008a & 2008b; DoH, 2009). The Department of Health's antenatal surveillance found that in 2008 the national HIV rate among pregnant women in the 15-49 years age group stood at 29.3%.

However, a critic of the reported figures for South African 2007 and 2008 national HIV prevalence rate has argued that the figures are fictitious and misleading (Dorrington & Bourne, 2008a, 2008b; Dorrington, 2009). This deduction is based on alleged 'artefact of changes' in the statistical methods that the Department of Health utilized to generate results and conclusion. Amid the considerable controversy that this laudable discovery aroused, it is important that the populace (the learned community inclusive) develops and adopts a cautious approach when approving figures. Statistics alone cannot convey the full severity of this global pandemic, though they do underscore its scope and highlight the need for an urgent response.

While behavioural modifications, behavioural-change campaigns and other interventions for the general population, aimed at preventing new infections, have proliferated in recent years, yet many people remain at risk of becoming HIV - infected (Meyer-Weitz, 2005). The curtailing or prevention of new infections has not been achieved worldwide and especially in South Africa. This high level of new infections reflects the challenge that the aforementioned interventions face (Agence France-Presse, 2004). In recent times, it was hoped that educating the masses about the dangers of unprotected sex and other sexual risk behaviours would be enough to limit risk taking. This is clearly insufficient, because the provided facts do not translate into behavioural change. Apparently, it is either because the information is not given in the way the recipients would best understand it, or we give too much information and too much responsibility is placed on the individual to bring about change. HIV/AIDS epidemic impoverishes people, households, and their community. Containing and reversing the HIV/AIDS epidemic within this decade requires dramatically increased and concerted efforts (geared towards the specific needs) in communities with increasing and/or high HIV prevalence, and in low prevalence areas where the preconditions exist for a rapid rise in HIV transmission (UNAIDS, 2001).

No doubt, prevention strategies are an essential part of an effective response to HIV/AIDS, and have helped to slow the spread of HIV in many parts of the world (Pisani et al., 2003). However, sustaining behaviour change in the long term remains a major challenge, and existing prevention strategies seem unable to stop new HIV infections. On account of the limited impact of these interventions/strategies and an unrelenting progress of the pandemic across the globe (Agence France-Presse, 2004; Ellison et al, 2003; Harrison & Myer, 2000; Kahn, 2005), the need for the development of a safe, effective and affordable HIV preventive vaccine for controlling the epidemic globally becomes necessary and crucial (IAVI, 2001; UNAIDS, 2002). Concerns have been raised that the elimination of HIV infection with a prospective vaccine would eliminate deterrents to immorality (Ellison et al., 2003). However, enthusiasts of HIV prevention have argued that such insinuation is a mere moral argument and such language, de Waal, (2003 in Ellison et al., 2003, p. 249) remarked, ‘is the mother tongue of the pathological moralizers who have stood in the way of an honest appraisal of the HIV/AIDS pandemic’.

Over the last 20 years, there have been on-going vaccine trials with HIV vaccine candidates worldwide, especially among those people assumed to be highly susceptible to the infection (Roberts, Newman, Duan & Rudy, 2005). South Africa is a signatory to this initiative and 2003 saw the birth of the first phase of HIV vaccine trials in the country. These trials are presently at different stages of development, with varying degrees of support and misgivings. However, South Africa has been adversely affected on account of negative media exposure around such trials (Meyer-Weitz, Kruger, Fielding, Latka & Churchyard, 2009a). In an HIV vaccine trial preparation process, community perceptions of an HIV vaccine is an essential first step before vaccine education and trial participation mobilization can commence. Based on previous studies on perception of HIV vaccine, the success of such a vaccine trial in any community with specific reference to trial participation is dependent on residents’ knowledge about HIV, their perceptions regarding HIV vaccines and perceived HIV risk. It should be borne in mind that the future availability of a safe and efficacious vaccine will not necessarily guarantee usage (Rudy et al., 2005; WHO/UNAIDS, 2009). In light of this, insight into existing perceptions of HIV vaccines will inform education and communication strategies that can be used to mobilize community participation in future HIV vaccine efficacy trials (Meyer-Weitz et al., 2009a).

Campbell & Cornish (2003, in, Ellison et al., 2003) and UNAIDS, (2001) points out that community level analysis has been a relatively neglected area of HIV research and thus make strong arguments for community level study especially in HIV/AIDS prevention based studies. Arguably the local communities are key mediators between the macro- and micro-society and often play a key role in enabling or constraining people to take control of their health. Moreover, it has been argued that it is at the community level that the outcome of the battle against HIV/AIDS will be decided (UNAIDS, 2001). Undoubtedly, local (geographically demarcated) communities are often the most convenient and practical targets for public health efforts. However, most of these aforementioned studies on HIV vaccine perceptions were conducted with specific groups such as intravenous drug users (IDU), men who have sex with men (MSM), adolescents, doctors, etcetera (Newman, Duan, Rudy, Roberts, & Swendeman, 2004; Priddy, Cheng, Salazar, & Frew, 2006; Kiwanuka et al., 2004). Involving the members of communities that have been disproportionately affected by HIV/AIDS in the vaccine trial preparation/planning phase is, in itself, a form of intervention. That way, local knowledge, belief/myths, and perceptions about HIV (cause, prevention, care and support efforts) and HIV vaccine are recognized, affirmed and strengthened, or discredited as appropriate. It would provide the opportunity for ownership, self-determination and empowerment; a social action course that promotes participation of people and communities towards the goals of increased individual and community control, political efficacy, improved quality of life, and social justice (Wallerstein & Duran, 2003).

The Rustenburg community where this study had been carried out is a fast growing community where HIV/AIDS has been spreading rather rapidly. According to the WHO (2008), the Bojanala district in North West Province accounts for the second highest infection rate in the “major urban category division”. In a previous qualitative study in this area, the view was expressed that preventive vaccine and a cure was the only way by which HIV/AIDS could be controlled as behavioural change for prevention seemed virtually impossible (Meyer-Weitz et al., 2009a; Meyer-Weitz, Hamilton, Kruger, Latka & Churychard, 2008a; Meyer-Weitz et al., 2008b). This study forms part of a larger cross sectional community survey regarding the feasibility of Bojanala District as a potential HIV vaccine site. The main focus of the survey was to investigate various HIV-related aspects. This study will explore the relationship between HIV knowledge, perceived risk and general perceptions about HIV vaccines at a broad based community level with adequate

representation of ethnic groups aged 18-49 within the study area. This age group is of prime importance because they consistently account for the highest prevalence, incidence and mortality rate in the last few years in South Africa (UNAIDS, 2008).

Information from the study will inform further community investigations regarding HIV vaccine perceptions and trial participation, should the site be found to be feasible for an HIV vaccine trial. The establishment of effective HIV vaccine trial sites will contribute greatly to site selection for the larger vaccine trial project, and will amount to great strides in the search for a preventive vaccine against HIV. In addition, findings will contribute to the emerging empirical evidence on the importance of perceptions of HIV vaccines in shaping the decision to participate in trials as there have been relatively few studies and published data from South Africa on perceptions of HIV vaccines among different population groups at a community level (Ellison et al., 2003; Moodley, Barnes, Van Rensburg & Myer, 2002).

## **1.2 Aims of the study**

The broad aim of the study is to investigate perceptions of HIV vaccines and the relationships between HIV knowledge, perceived risk and perceptions about HIV vaccines in the Rustenburg community in view of assessing the feasibility of the future HIV vaccine trial site in the area. To achieve this research aim, the objectives in the subsequent sub-section were set.

## **1.3 Objectives**

1. To understand what the people know about HIV in terms of transmission, prevention and treatment
2. To appraise the participant's beliefs (myths) regarding HIV and AIDS
3. To assess participant's perceived risk of contracting HIV infection
4. To evaluate participant's perceptions of HIV vaccines in terms of:
  - 1) Protection against HIV
  - 2) Responsibility for developing vaccines
  - 3) Safety of trial participation
  - 4) Socio-demographic factors (sex, age and race)
5. To explore the relationship between HIV knowledge, perceived risk and perceptions about HIV vaccines, as well as to see if there are relevant sex, race, and age trends

with respect to the aforementioned variables.

6. To determine the best predictors of HIV vaccine perceptions.

#### **1.4 Ethical considerations**

Ethical screening for the larger study (cross sectional community survey regarding the feasibility of Bojanala District as a potential HIV vaccine site) was conducted by the ethics review committee of the International AIDS Vaccine Initiative (IAVI). Ethical clearance was obtained for the study from the Ethics Committee of the University of KwaZulu-Natal (see Appendix 1). This study uses secondary data, and as such, permission has been sought from both community structure and custodians of primary data namely Aurum Institute of Health research, International AIDS Vaccine Initiative (IAVI) as well as my supervisor, Prof Meyer-Weitz in the School of Psychology, University of KwaZulu-Natal. The research proposal for this study was approved by both the School's Higher Degree committee and the Faculty of Humanities, Development and Social Sciences of the University of KwaZulu-Natal Higher Degree Committee (see Appendix 2).

#### **1.5 Structure of the dissertation**

The introductory section (**Chapter one**) introduces the context of this study. The rationale, aims and the objectives of the study are provided. Ethical considerations are also discussed.

In **Chapter two**, relevant literature regarding HIV/AIDS knowledge; risk perception; and issues around HIV vaccine perceptions are explored and discussed. The theoretical framework that informs this study, the Health Belief Model, is discussed herewith.

**Chapter three** outlines the research methodology of the study. Details of the following are given; background information on study location, research design, sampling methods, instrument development process undertaken, data collection and procedures followed, and lastly, data analysis.

The results of the statistical analysis are presented in **Chapter four**. The frequencies, descriptive and correlational statistics are presented as well as the results of the independent-samples T-tests, ANOVAs, Pearson's product moment correlation coefficient, standard multiple regression and hierarchical multiple regression, among others. Research findings are presented according to the research aims and objectives. Aspects that were investigated

include bio-demographics; socioeconomic status, awareness about HIV vaccines and sources of information; knowledge and beliefs about HIV/AIDS regarding transmission, prevention and treatment; risk perceptions, as well as perceptions about HIV vaccines and various correlations between these variables.

**Chapter five** focuses on the discussion of the findings of the study in relation to the literature with consideration of previous parallel studies.

**Chapter six** is the concluding section of the dissertation. The importance of the findings from the study within the far reaching discourse of the HIV pandemic is discussed.

In addition, strength and limitations of the study are included in this section. Implications for interventions and possible recommendations for future research are highlighted.

## CHAPTER TWO

### Literature Review and Theoretical Framework

#### 2.1 Introduction

In this chapter the following are explored: the literature that is relevant to this study, viz. nature of the HIV pandemic; knowledge and beliefs about HIV; risk perceptions; and awareness and perceptions about an HIV vaccine. Attention is paid to other issues that shape perceptions of HIV vaccines. This chapter concludes with the theoretical framework on which this study is grounded – the Health Belief Model. Its relevance and application to the study are discussed.

##### *2.1.1 The HIV and AIDS Pandemic*

The epidemiology of HIV and AIDS in South Africa are well understood, yet, there is no short answer as to why such high HIV prevalence and incidence levels have been reached in the country – particularly given that HIV emerged later than in western and central African countries which presently have much lower HIV prevalence levels (CADRE, 2006). According to UNAIDS/WHO (2009) AIDS Epidemic Update, South Africa has the largest number of HIV infected persons in the world. At the end of 2007, South Africa, with an estimated total population of 48 577 (in thousands) had above 5.7 million people living with HIV (UNAIDS/WHO, 2009).

Of this total population, adults aged 15-49, the most economically productive segment of the population in any country, accounted for 26 061 (thousands), with a prevalence rate of 18.1% of people living with HIV/AIDS. The estimated number of adults and children who died of AIDS in that same year was put at slightly over 350,000, yet a confounding estimated 248,000 of AIDS deaths occurred in the 15-49 years age group. These statistics clearly confirms the HIV epidemic has advanced well beyond the high-risk groups (viz. adolescents, MSM, IDU, and etcetera) and has percolated the general population. Current prevention efforts are: multi-media and other interventions directed at lifestyle/behavioural changes to reduce risk, condom education, education and counselling, clean needle distribution, providing of HIV treatment to reduce mother-to-child transmission, making blood/blood products safer among other measures. However this has not stopped the incidence of new



HIV infections which undoubtedly has been on the rise (Shisana & Simbayi, 2003; Simbayi, Chauveau & Shisana, 2004; UNAIDS, 2009).

There has been success in ARV therapies (drugs) development but the current ARVs are inaccessible to the majority of those affected by HIV, and do not lead to cure (UNAIDS, 2009). There is no doubt at all that ARV helps to slow down HIV-related disease progression, increase life expectancy and the quality of life for people infected with HIV/AIDS (Beers & Merck Research Laboratories, 2006; UNAIDS, 2008 & 2009), but it is contributing to increases in HIV prevalence (UNAIDS, 2009). Moreover, much of the success with ARV therapies is seen in high-income countries (Ellison et al, 2003; Phillips, Sabin, Pillay & Lundgren, 2007; Babiker et al., 2000; UNAIDS, 2009) and among a wealthy minority in low-income countries (Ellison et al, 2003; Garnett, Bartley, Grassly & Anderson, 2002). The therapies are quite complicated to administer, as they require strict adherence and medical monitoring (Beers & Merck Research Laboratories, 2006). Besides, they result in a number of significant side effects and more than 20% of all people started on ARV programmes are neither retained nor sustained after 12 months (Beers & Merck Research Laboratories, 2006; UNAIDS, 2009). Retention at 48 months was reportedly far less than three-quarters in 2008 (UNAIDS, 2009). Furthermore, the prices of the aforementioned treatments are exorbitantly high and as a result, are beyond the reach of the vast majority of people affected by HIV/AIDS in countries where there is no free access (Beers & Merck Research Laboratories, 2006; Idoko & Isa, 2005).

A global estimation in 2008 of ART needed was put at 9.7 million but only 42% of people who needed this treatment received it worldwide (UNAIDS, 2009). Sub-Saharan Africa (SSA) reportedly acquired a 44% ARV coverage, while South Africa has the largest ART initiative (UNAIDS, 2009). Worldwide, considerable progress has been made in scaling up both supply of, and access to, ARV (UNAIDS, 2009), but without a doubt, more progress is needed to achieve a near universal access. This is not an argument against HIV/AIDS treatment, but rather highlights that an overemphasis on HIV treatment rather than prevention is not necessarily developmental. It may pose a major threat to efforts aimed at preventing emergence of new infections (which is on the increase), and consequently effect increase in the eventual HIV/AIDS treatment burden.

This continuous increase in the population of people living with HIV/AIDS reflects the challenge that behavioural modifications, AIDS education and behavioural prevention campaigns face (Agence France-Presse, 2004). This is contrary to the most basic premise of all interventions that assume a willingness to prevent ill health when presented with accurate and adequate information. On account of the raging epidemic, the overwhelming human toll of AIDS, its crippling effects on health care systems and national economies and the limited success of preventive efforts (Harrison & Myer, 2000), the best critical long -time approach and hope for controlling HIV and AIDS, is the development and widespread distribution of a safe, effective and affordable preventive vaccine (IAVI, 2001; UNAIDS, 2002). This view is strongly supported by various other researchers in South Africa (Barrington, Moreno & Kerrigan, 2007; Esparza et al., 2002; Harrison & Myer, 2000; Hutchinson, 2001; Idoko & Isa, 2005; IAVI, 2008; Kahn, 2005; Kegels et al., 2006; Meyer-Weitz, et al., 2009a, 2008a; Milford, Barsdorf & Kafaar, 2007; Roberts et al., 2005; Smit et al., 2006; Tucker & Mazithulela, 2004).

The potential HIV vaccine is required to be effective, protective and affordable. Effective in being able to decrease the likelihood of HIV transmission in a cohort of HIV negative individuals should they come in contact with the virus regardless of the nutritional and health status or ethnicity of the population, and should provide a long lasting protection (Idoko & Isa, 2005). It should also be able to protect individuals against all subtypes of HIV and any route of HIV infection (Idoko & Isa, 2005; NIAID, 2005). The search for an AIDS preventive vaccine is as old as the discovery of the human immunodeficiency virus in 1983 (Emily & Jefferys, 2002; Hutchinson, 2001; IAVI, 2008). In spite of this, the development of a vaccine has proven much more difficult than originally expected (IAVI, 2008). Genetically distinct HIV subtypes have been described, and different subtypes of the virus are predominant in different regions and countries (Titti et al., 2007; UNAIDS, 2002). In most instances, HIV virus subtype B is responsible for infections in North America and Europe, while A, C, D and G are predominant in Africa (Beaten et al, 2007; Ellison et al, 2003; Hemelaar, Gouws, Ghys & Osmanov, 2006; Kiwanuka et al., 2004; UNAIDS, 2009). In addition to this genetic diversity, the HIV virus has a high mutation rate (Calarota & Weiner, 2003; Cho, 2000; Ellison et al, 2003; Klein & Ho, 2000).

The world over, animal models are established means of gaining insights into human diseases and how to prevent, treat and control them. However, in the domain of HIV/AIDS vaccine

research, there is a lack of an appropriate animal model (IAVI, 2009). The genetic variability and high mutability of the virus, as well as lack of the most relevant animal model for the HIV virus makes the development of a vaccine challenging (Calarota & Weiner, 2003; Cho, 2000; Ellison et al, 2003; Klein & Ho, 2000; IAVI, 2009). As such, the relevance of these subtypes to potential vaccine-induced protection is not clearly understood (IAVI, 2009; UNAIDS, 2002). Consequently, it is not known whether a vaccine targeted at one subtype will protect against infection from another subtype; and it is likely that a vaccine directed at a particular subtype will need to be tested in a population in which that subtype is prevalent (Ellison et al, 2003; Titti et al., 2007; UNAIDS, 2002). Given these biomedical challenges, developing a preventive vaccine that is effective in the populations with the greatest incidence of HIV (with reported considerable genetic variability in the virus) is likely to require experimental vaccines to be tested in those populations. The trials of candidate vaccines will incontestably require the recruitment of thousands of participants within a defined community structure (Heyward, MacQueen & Goldenthal, 1998; Kegeles et al., 2006).

The last two decades have featured the testing of candidate vaccine as well as an increase in the number of HIV vaccine trial sites. HIV preventive vaccine trials are not happening in a vacuum, they are happening around the world and in our own communities; particularly in communities that have been marginalized (Kegeles et al., 2006). It is therefore crucial and necessary to explore communal HIV knowledge, beliefs and risk perceptions in relation to HIV vaccine perceptions among community members, because the successful development and uptake of an HIV preventive vaccine will require long-term involvement of these communities (Kegeles et al., 2006). Furthermore, previous HIV vaccine efforts in Africa have highlighted the importance of community perceptions and attitudes during vaccine development and testing to ensure adequate representation in vaccine trials and subsequent usage (Albdelkader, 2002). This underscores the importance of understanding community perceptions of HIV vaccines as this may influence future vaccine trial participation and possible future usage.

## **2.2 HIV vaccine knowledge and perceptions**

Various studies to assess HIV vaccine knowledge across regions of the world revealed a range of responses, including low levels of knowledge about vaccines. Concepts that were

found to be confusing were “placebo, adverse reactions, and vaccine-induced ‘seropositivity’” (Koblin, Holte & Lenderking, 2000; McGrath, George & Svilar, 2001; Mills et al., 2004) while uncertainty existed about the preventive versus curative nature of a vaccine (Barrington et al., 2007; Kiwanuka et al., 2004; McGrath et al., 2001; Newman et al., 2004; Priddy et al., 2006; Roberts et al., 2005; Salazar, Holtgrave, Crosby, Frew & Peterson, 2005). Knowledge was markedly low among the high-risk population; gay, intravenous drug users (IDUs) and women at risk of acquiring HIV through heterosexual transmission (Roberts et al., 2005; Koblin et al., 1998).

Numerous studies have shown that people in developing countries are either indifferent or enthusiastic about participating in vaccine trials when knowledge of HIV vaccines increase (Barrington et al., 2007; Kiwanuka et al., 2004; Sahay et al., 2005; Smit et al., 2006). On the other hand, increased knowledge among people in developed countries was associated with less willingness to participate in an HIV vaccine trial (Barrington et al., 2007; Kiwanuka et al., 2004; Koblin et al., 2000; Sahay et al., 2005; Smit et al., 2006; WHO-UNAIDS, 2000). A similar trend was found in developed countries where increased knowledge did not translate into willingness to participate in an HIV vaccine trial. An example of this was uncovered among medical practitioners in the Western Cape, South Africa (Moodley, Barnes, Van Rensburg & Myer, 2002). This is a rather disturbing piece of report because one would expect a positive influence from knowledge on vaccine trial participation (Magkoba, Solomon & Tucker, 2002). Moreover, medical professionals do not only constitute a high risk group, but also comprise a large proportion of those generally assumed to have accurate and appropriate information on issues that have a bearing on health and well-being.

Previous studies have shown that perceptions of HIV vaccines are linked to a willingness to participate in future vaccine trials (Koblin et al 1998 & Newman, et al 2007). However, willingness to participate in a hypothetical vaccine trial may not necessarily reflect a willingness to participate in an actual trial as this is influenced by various factors (Buchbinder et al., 2004; Halpern, Metzger, Berlin & Ubel, 2001; Starace et al., 2006). Men who have sex with men (MSM) in Brazil, Italy and the United States have been found to indicate a willingness to participate in a hypothetical HIV vaccine trial because they perceived themselves to be at high risk (Barthelme et al., 1997; Hays & Kegeles (1999); Koblin et al 1998; O’connell et al., 2002; Pe’risse’ et al., 2000)

Mistrust/fear also presents as an important reason for under-enrolment, possibly due to years of racism and Western dominance (Moutsiakis & Chin, 2007). Conspiracy theories have been implicated in low vaccine trial enrolment amongst Blacks, as widespread rumour has it that AIDS is a way of killing off blacks, as it is believed that a cure exists but is being withheld by people in authority from the public, especially from the poor people, the group that account for the highest HIV infections worldwide (Hereck & Capitano, 1994; Roberts et al., 2005). Views on conspiracy theory with regards to HIV vaccines have been expressed in numerous speeches by a great many, young and old, men and women, particularly in countries and regions worst affected by the HIV/AIDS pandemic. An excerpt from a key review on HIV treatment in one of the national newspapers in South Africa was an echo of the hearts of many of the people that hold this opinion. The report in the newspaper from a young man in Lusikisiki put it thus, and I quote, “I cannot believe that with all their scientists and technicians, the people who have invented aeroplanes and went to the Moon have not found a cure for something that is killing people in the Transkei” (Sunday Times Review 2010, 2 May: 9). Other factors that may influence perceptions regarding HIV vaccines and future trial participation are knowledge about vaccine trial methodology, potential vaccine efficacy and side effects, future availability, and communication style of research staff among other things (Jenkins et al., 1998; Starace et al., 2006; Strauss et al., 2001).

There is convincing evidence regarding the relationship between HIV vaccine knowledge, beliefs/views and vaccine trial participation (Koblin et al., 1998; Newman et al., 2007; Starace et al., 2006). However, most of the previous research was not conducted on the general population, but rather among high risk groups (blacks, adolescents, medical doctors, IDUs, prison inmates and members of the armed force) (de Bruyn, Skhosana, Robertson, McIntyre & Gray, 2008; Moodley et al., 2002; Moutsiakis & Chin, 2007; Roberts et al., 2005) or in specialized populations, some of whom are not at high risk of HIV/AIDS (Barrington et al., 2007; Roberts et al, 2005). The fight against HIV/AIDS cannot be undertaken solely by an individual, community or organization. The epidemic is a global crisis which requires urgent attention and committed, sustained action by alliances of individuals, community, organizations and sectors, irrespective of whether one is ‘high-risk’, ‘low-risk’, or even ‘no-risk’. As earlier said, the epidemic in South Africa has advanced beyond ‘high-risk’ groups into the general population.

### **2.3 Knowledge and beliefs about HIV**

The information – facts or details about something that an individual has about a subject matter - is a function of the understanding and skills gained, either through education or experience on the matter (Blackburn, 2008). With regards to HIV, the understanding of the modes of transmission and HIV prevention strategies is a basic precondition for future behavioural change. More importantly, assessment of HIV/AIDS related knowledge, attitudes, beliefs, and behavioural practices can be an effective method for monitoring the effects of HIV/AIDS education campaigns on specific populations across various regions of the world (Rosenthal, 1996; Feachem, 1995). Such studies monitor not only the general pattern of change over a period of time, but may also provide vital insight into differential uptake of educational messages, as well as evidence of the need for new or different approaches to HIV/AIDS education (Feachem, 1995).

A number of behavioural change theories (Fishbein & Middlestadt, 1989; Weinstein, 1989; Catania, Kegeles & Coates, 1990; Rosenstock, 1990) posit that prior to any behaviour change individuals ought to be aware of the behaviour(s) and how it may constitute a personal health risk and possibly also a community and a health risk for a nation at large as well as understand that the risk can be reduced by either modifying risky behaviour or adopting preventative behaviours. This clearly underscores the importance and place of knowledge in the behavioural change process. Conversely, Diclemente and Peterson (1994) argues that individuals are not likely to change their behaviours in spite of being aware of their susceptibility to the condition, except when they are of the opinion that the consequences of the suggested actions outweigh the cost of performing them. Convincing evidence about this line of reasoning abounds, as previous studies have noted that though knowledge about HIV/AIDS is fairly high, this often fails to translate into substantial behavioural change (Bhattacharya, Cleland & Holland, 2000; Dladla, Hiner, Qwana & Lurie, 2001; Farmer, 1991; Kengeya-Kayondo et al., 1999; Lesch & Kruger, 2004; Ojo, 2004; Okafor & Obi, 2005; Macintyre, Rutenberg, Brown & Karim, 2004; Mwite, 2000; Sobo, 1995; Swora, 2003).

Review of research that investigates HIV/AIDS knowledge and beliefs in samples of adolescent and young adults (mainly college students) in different regions of the world, especially in Sub Saharan Africa and South Africa, have identified gaps in HIV knowledge

and beliefs, and have also revealed numerous contradictory theses and hypotheses. Different studies on HIV knowledge and beliefs, reported moderate to high levels of knowledge among representative survey respondents (Eaton & Flisher, 2000; Kincaid, Parker, Schierhout, Connolly & Pham, 2008; Macintyre et al., 2004; Shisana 2002; Shisana & Simbayi, 2003; Shisana et al., 2009). While the respondents seemed reasonably knowledgeable about HIV prevention, some disturbing levels of misconceptions and uncertainty regarding the causal agent and modes of transmission were also unearthed. These mistaken beliefs included the following: AIDS can be contacted through the sharing of a swimming pool; kissing; coughing; sneezing; sharing of plates and cups; mosquito bites; and most importantly, HIV cannot be transmitted from an infected mother to her child. The uncertainties surrounding HIV as the cause of AIDS and the myth that HIV can be cured through having sex with a virgin was profound (Shisana & Simbayi, 2002).

Lamentably, in a study that was done by Peltzer & Promtussananon (2005) among Junior Secondary School Students in South Africa, unsatisfactory levels of HIV/AIDS knowledge were found. While very poor and good levels of knowledge at opposite ends of the spectrum were reported, Peltzer and Promtussananon (2005) concluded that in a context of high and widespread HIV/AIDS prevalence rates, at least moderate levels of knowledge about HIV/AIDS is required to sustain an adequate HIV/AIDS response. In similar vein, Negi, Khandpal, Kumar and Kukreti (2006) found HIV/AIDS knowledge and beliefs of most individuals at a community level to be either superficial, and or incorrect. Furthermore, a study on a group of teachers in the south-western part of Nigeria found that a majority of them (58%) have unfounded misconceptions about HIV (Bankole & Mabekoje, 2008). This is particularly distressing because teachers are supposed to be key custodians of information whose knowledge and perceptions about HIV among other things, would go a long way to influencing the content and manner of the information they disseminate. On the whole, these mistaken beliefs certainly have strong nuances and implications in tackling HIV/AIDS and related stigma.

A number of bio-demographic variables have been found in various studies to influence people's HIV knowledge and beliefs (Anderson & Beutel, 2007; Barden-O'Fallon et al., 2004; Eaton & Flisher, 2000; Peltzer, Cherian & Cherian, 2000; Peltzer & Promtussananon, 2005 & Shisana & Simbayi, 2002). In the studies, younger students were found to be more knowledgeable about HIV/AIDS and its consequences than older people (Peltzer &

Promptussananon, 2005) and (Shisana & Simbayi, 2002). On the other hand, a direct correlation between HIV knowledge and respondents level of education, especially among young people were reported (Barden-O'Fallon et al., 2004; Eaton & Flisher, 2000). Studies among multi-race samples have shown that Whites and Asian are more knowledgeable about HIV/AIDS than Blacks and Coloured (Peltzer, et al, 2000 and Peltzer & Promptussananon, 2005). In addition, Shisana and Simbayi, (2002) found that employment status, perceived socio-economic status, a measure of household amenities and knowledge about HIV/AIDS was inextricably linked. On the contrary, Stewart et al., (2001) posit that adults (young or old), irrespective of race/ethnicity, sex or level of education, were more likely to change behaviours that endanger them to HIV/AIDS if provided with accurate information on sex, sexuality and HIV/AIDS.

Evidently, available contemporary HIV/AIDS educational campaigns and strategies are inadequate in producing accurate knowledge and sustained behavioural changes globally, and especially in South Africa. This has implications for HIV/AIDS control in South Africa as it could result in a terrifying epidemic. There is definitely a need to find the right communication channels, as well as develop appropriate messages and tools to engage communities and the general populace in HIV/AIDS prevention. HIV knowledge will be appropriately communicated, if it incorporates the community's pre-existing mental models - this refers to the entire web of knowledge that laypersons have about a particular subject (Newman, Seiden, Roberts, Kakinami & Duan, 2009). New information would then be most effectively assimilated when layered into exciting information and beliefs (Neuman et al, 2009).

## **2.4 Perceived HIV risk**

The labelling of one person's group, community, country and nation as either 'high-risk' or 'low-risk' have made a profound impact on people's sense of judgment and risk perception (Anarfi, 1993; Carael, 1995; Cohen & Trussell, 1996; Gaje & Njogu, 1994; Hulton, Cullen & Khalokho, 2000; Meekers, 1994; Nzioka, 1996; Ochalla-Ayayo & Schwarz, 1991; Reid, 1999). The so called 'high-risk' groups include but not limited to: homosexuals/gay/MSM, IDU, prostitutes, long distance truck drivers, youth, poor, marginalized, adolescent, women, while the presumed 'low-risk' groups comprise aged, married and religious persons, among others.



There is undoubtedly a relationship between bio-socioeconomic status and the development of HIV/AIDS epidemic – like any illness. However, this understanding may influence individuals' and communities' perceptions and behaviour regarding HIV, as some people can discount their own risk because they do not identify with these 'high-risk' groups. For instance, using in-depth interview among PLWHIV and opinion leaders- religious leaders and representatives from evangelical and charismatic churches - it was found that religious people, especially the married ones, considered AIDS to be a disease that affects people who disobeyed God (Ellison et al., 2003). Interestingly, a handful of these leaders felt that infection with HIV/AIDS reflected a fundamental lack of faith, and those who lack faith will succumb to the disease (Ellison et al., 2003; Klaitz, 2002). As a result, those who are religious perceived their risk of HIV infection to be rather low. Perhaps, one of the most profound socio-cultural challenges inadvertently facing perceived HIV risk and HIV prevention is religious beliefs especially when it propagates non-medical, spiritual or mystical aetiological explanations for the HIV/AIDS pandemic (Ellison et al., 2003).

Risk perception is an important component of most behavioural theories to understand and change behaviours (Fisher & Fisher, 2000; Ojo, 2004). In other words, it is an essential antecedent for adopting protective behaviour (Macintyre et al., 2004). Researchers have applied wide and varied measurements to risk perceptions, such as perceived vulnerability; perceived susceptibility; and being worried about infection (Poppen & Reisen, 1997). An important aspect of risk perception is whether perceived risk creates concern that may act as a cue to action due to cognitive dissonance (Festinger, 1957; Sweeney, Hausknecht & Souter, 2000). Cognitive dissonance on its own may be a strong motivating factor for behavioural change, particularly if individuals perceive control over the at risk behaviour (Witte, Berkowitz & Cameron, 1998). Otherwise, a rational perception of risk without a feeling of dissonance is unlikely to motivate behaviour change in any individual (Ojo, 2004). On the other hand, it has been found that dissonance might not necessarily bring about changes in behaviour among some cultures, most notably among Asians (Hoshimo-Browne et al., 2005; Kitayama, 2002; Kitayama, Snibbe, Markus & Suzuki, 2004; Kitayama & Uchida, 2007).

While it is extensively studied in sub-Saharan Africa, the concept is probably in infancy in South Africa on account of the available published studies (Lentoor, 2009). Nevertheless, a compendium of issues that is believed to inform risk perception has been identified (Caldwell, Orubuloye, & Caldwell 1999; Cleland, 1995; Hulton et al., 2000; Idele, 2002;

Isibor & Ajuwon, 2004; Macintyre et al., 2004; Newman, Williams, Massaquoi, Brown & Logie, 2008; Prohaska, Albrecht, Levy, Sugrue & Kim, 1990; Sumartojo, 2000; Williams, Newman, Massaquoi, Brown & Sakamoto, 2008). These issues include, but are not limited to, the following; fatalism, optimism bias, media misinformation and misrepresentation of HIV/AIDS and identity labelling (Akande, 2001; Meyer-Weitz et al., 2009b; Meyer-Weitz, 2005; Moore & Rosenthal, 1992; Newman et al., 2008; Prohaska et al., 1990; Stallings, 1990).

#### ***2.4.1 Fatalism and optimism bias***

Fatalism is the belief that an individual has no control over his or her life, with associated perception of hopelessness, helplessness, worthlessness, powerlessness, and social despair (Cohen-Mor, 2001; Meyer-Weitz & Steyn, 1998; Powe, 1995). A perception that there is no benefit in any disease prevention, and or curative efforts or action on the premise that “what will be will be” and nothing can be done to change a negative outcome (Powe & Weinrich, 1999; Sugarek, Deyo, & Holmes, 1988). In addition, risky behaviours and lifestyles are justified with expressions such as “after all, you have to die of something” (Fapohunda & Rutenberg, 1999; Idele, 2002). Different models of illness and disease have been used to explain perceptions about health and well-being. As seen in an African world view, events and the course of an individual’s life (for example, health, status, wealth, length of life, gender, etcetera) are assumed to be predetermined, as well as subject to control of a superior being, power, or some external forces such as fate, mediating spirits, luck or God (Underwood, 1992). It has been hypothesized that people’s belief stems from a lack of knowledge or disbelief in microorganisms as the cause of disease (Powe, 1995). Fatalism has been applied to cancer screening, and in recent times, it has been identified as a barrier to HIV/AIDS prevention in a number of studies (Akande, 2001; Fountain, 1996; Latham, 1993; Meyer-Weitz et al., 2009b; Meyer-Weitz, 2005; Meyer-Weitz & Steyn, 1998; Powe, 1995; Powe & Weinrich, 1999). Meyer-Weitz (2005), argues that fatalism in relation to protecting the self or one’s partner from HIV/AIDS emerges from the social, cultural and historical contexts in which people function.

On the other hand, optimism bias, grounded in optimistic bias theory (Eiser, 1986) refers to a magical thinking pattern whereby, many people assume that “AIDS/STDs/pregnancy/cancer/car accident etc... can’t happen to me”. This results in a systematical underestimation

of their risk in comparison to the real risk (CAIRDE, 2004; Moore & Rosenthal, 1992; Quadrel, 1993; Weinstein, 1989). It is an inherent tendency among individuals to believe that he or she is invincibly immune to a disease or condition. One of the hypothesized determinants of optimism bias include the difficulty in realizing that an illness that may affect you in later years needs to be actively prevented today, and therefore, it is treated as a very distant possibility (Moore & Rosenthal, 1992). With the advent of HIV, it has been identified as the core reason why, even with information and education, individuals would still continue to take risks and inadvertently continue to acquire and spread HIV (Macintyre et al., 2004; Ojo, 2004). A pattern of this line of thought was uncovered in a sample survey of adolescents in Kwazulu-Natal province by Macintyre et al., (2004), who, despite being aware of the cause and the route of HIV transmission, 20% of them exhibited ‘optimism bias’ associating high rates of HIV risk indicators with low levels of perceived personal risk of infection. This constitutes important food for thought, if preventive efforts against HIV/AIDS are to achieve set goals and objectives.

#### **2.4.2 The role of the media in HIV/AIDS related knowledge, perceived risk and views regarding HIV vaccines**

Mass media refers to a range of mass visual and auditory communication channels, such as radio, television, newspapers, magazines, leaflets, posters and pamphlets. The first four types are referred to as ‘mass reach’ media, whereas the latter have limited reach (Egger, Spark & Lawson, 1990). With regard to any phenomenon, the key roles of the mass media include the following (Egger et al., 1990);

- Informing - about a phenomenon
- Reminding - about the phenomenon
- Motivating – to adopt a positive approach either towards or against the phenomenon
- Providing self help
- Providing a context, and
- Providing social support.

Beyond any doubt, exposure to AIDS information through mass media may lead to high levels of awareness, which can in turn influence knowledge, self-assessed risk of HIV and preventive behaviours. However, the relevance of the mass media in achieving this feat has generated arguments and counter arguments (Bertrand & Anhang, 2006; Bertrand, O’Reilly,

Denison, Anhang & Sweat, 2006; Goldstein et al., 2005; Peltzer & Seoka, 2004; Prohaska et al., 1990; Scalway & Deane, 2002; Stallings, 1990; WHO, 2006). Given that the HIV/AIDS pandemic continues to spread apace in many parts of the world, (Scalway and Deane 2002) argues that mass media interventions are not an effective means of preventing the spread of HIV. On the other hand, a growing number of studies on the effect of mass media on HIV/AIDS related issues, (especially on knowledge) have reported a substantial improvement in knowledge, interpersonal communications regarding HIV/AIDS and changes in HIV/AIDS-related behaviours (Bertrand et al., 2006; Goldstein, Usdin, Scheepers & Japhet, 2005; Meekers, 2000; Meekers, 2005; Peltzer & Seoka, 2004; Pettifor, van der Straten, Dunbar, Shiboski & Padian, 2004; Pettifor et al, 2005a, 2005b; Scheepers et al., 2004; WHO, 2006).

Stallings (1990) argues that people's perception of risk may depend on the extent to which they have faith in the accuracy of the information being provided by the media. On the other hand, (Prohaska et al. 1990) found that neither exposure to the media and greater conviction in the accuracy of the media as a source of information about HIV/AIDS nor knowledge of the reality of HIV/AIDS affected people's risk perception. World Health Organization (2006) offers further support for this statement. The organization posits that after a lapse of over a decade and half, a consistent and significant difference in perceived HIV risk following exposure to mass media interventions has not been reported (WHO, 2006). However, this may be due as much to the paucity of good quality evaluation of existing mass media programmes as to the absence of such an impact (Bertrand & Anhang, 2006; WHO, 2006).

A recent survey among journalist in Ibadan, the largest city in Nigeria unearthed a huge credibility gap between what journalists say and the truth about HIV (Isibor & Ajuwon, 2004). From the study, it was established that only a few (about 25%) of the journalists had received proper training on HIV. The remaining majority had shocking misconceptions about HIV transmission, prevention and care e.g. people infected with HIV should be detained in hospitals following diagnosis to prevent the spread of infection to the uninfected. (Isibor & Ajuwon, 2004). Although individuals and the world have grown past the high velocity media coverage that characterized HIV/AIDS in the eighties and early nineties, some of the incorrect media messages surprisingly continue to inform people's perception of risk and HIV/AIDS. Comments such as 'you'd know if someone is HIV positive by looking at them' are still commonplace in community circles.

In spite of the vast body of criticism levelled at the mass media, it has in no doubt had a positive impact on the uptake of health services and healthy behaviours (Kaiser Family Foundation & SABC, 2007; Martinson & Hindman, 2005). For example, an assessment of the cumulative effects of exposure to multiple broadcast media programmes in South Africa (comprises Soul City; Love life, Khomanani & Takalani Sesame) revealed exciting, and also encouraging results (Goldstein et al., 2005; Kaiser Family Foundation & SABC, 2007; Taylor, Meyer-Weitz, Jinabhai & Sathiparsad, 2009). Overall, exposure was related to higher levels of impact, and the following were also reported: direct contribution to AIDS related knowledge; desirable changes in social norms; indirect effects on increasing; condom use and HIV testing, help for people who were already sick with HIV/AIDS (Goldstein et al., 2005; Kaiser Family Foundation & SABC, 2007; Pettifor et al., 2005a, 2005b). As reported by the survey result (Kaiser Family Foundation & SABC, 2007), about 93% of the population were reached; an indication of a big market success compared with an alleged 2 million adults that were not being reached by these programmes. Mass media is likely to be one of the most effective and appropriate tools for disseminating HIV/AIDS information, including information about HIV vaccine.

#### ***2.4.3 Media exposure in South Africa regarding HIV vaccines***

The mass media is very much a double-edged sword in the context of HIV infection, vaccine and vaccine trial. For many people, the media provides education and awareness about HIV and AIDS related issue. Yet South Africa- the first country in the developing world to lead the way in HIV/AIDS candidate vaccine trials - has been adversely affected on account of negative media exposure around such trials (Meyer-Weitz et al., 2009a). The media, most notably the newspaper, have been used to cast serious doubt on the prospect and value of trials and future vaccines in HIV prevention. In one of the national newspapers, it was alleged that the ongoing vaccine trials constitute a public health risk. One such argument was that HIV candidate vaccines are potentially dangerous kinds of genetically modified organism that are capable of combining with other viruses, thus setting off a “worst-case scenario”. The breakout of a virus assumed to be capable of harming people (Sunday Times 2008. 13 April: 1). Obviously such news would be greeted with a lack of enthusiasm for vaccine trials and/or for future vaccines. Against this background, HIV related knowledge plays a critical role in a realistic HIV risk assessment that may play an important role in views about HIV vaccines pertaining to future trial participation and uptake.

## **2.5 Theoretical framework of the study**

*Theory* by definition is: systematically organized knowledge applicable in a wide variety of circumstances devised to analyze, predict, or otherwise explain the nature or behaviour of a specified set of phenomena that could be used as the basis for action (Glanz, Lewis & Rimer, 1997; Nutbeam & Harris, 2002). For these reasons, behaviours are explained by theories and models which in turn are meant to result in changes in knowledge, belief, perceptions and behaviour after appropriate research - the bridge between theory and practice - and intervention. The use of theory as a foundation for research, program planning and development is consistent with the current emphasis on using evidence-based interventions in public health, behavioural medicine, and medicine (U.S. Department of Health and Human Services, 2005).

The Health Belief Model (HBM) was used as a broad framework for the study. This was developed as early as 1966, by the social psychologists, Irwin Rosenstock, Godfrey Hochbaum, and Stephen Kegels working in the US Public Health Service (Rosenstock, Stretcher & Becker, 1994). It is probably the most commonly used theory in health education and health promotion (Glanz & Rimer, 1995; Glanz, Rimer & Lewis, 2002). It has been used extensively in explaining health behaviour, with particular reference to health seeking behaviours in the areas of Tuberculosis (TB) and HIV/AIDS.

### **2.5.1 The structure of the Health Belief Model (HBM)**

It is both an explanatory and social-cognitive model that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals. The social psychologists that developed the model assumed that diverse demographic, sociological, psychological and structural variables can affect these constructs and in this way affect preventive behaviour indirectly. The HBM focuses on mitigating circumstances that affect health or the achievement of a desired health goal. It is based on the understanding that a person will take a health related action if that person:

- Believes that a disease or health condition is serious. This is often based on either medical information-cum-knowledge or it may be a function of the person's perceived impact of the disease on him/herself, as well as people

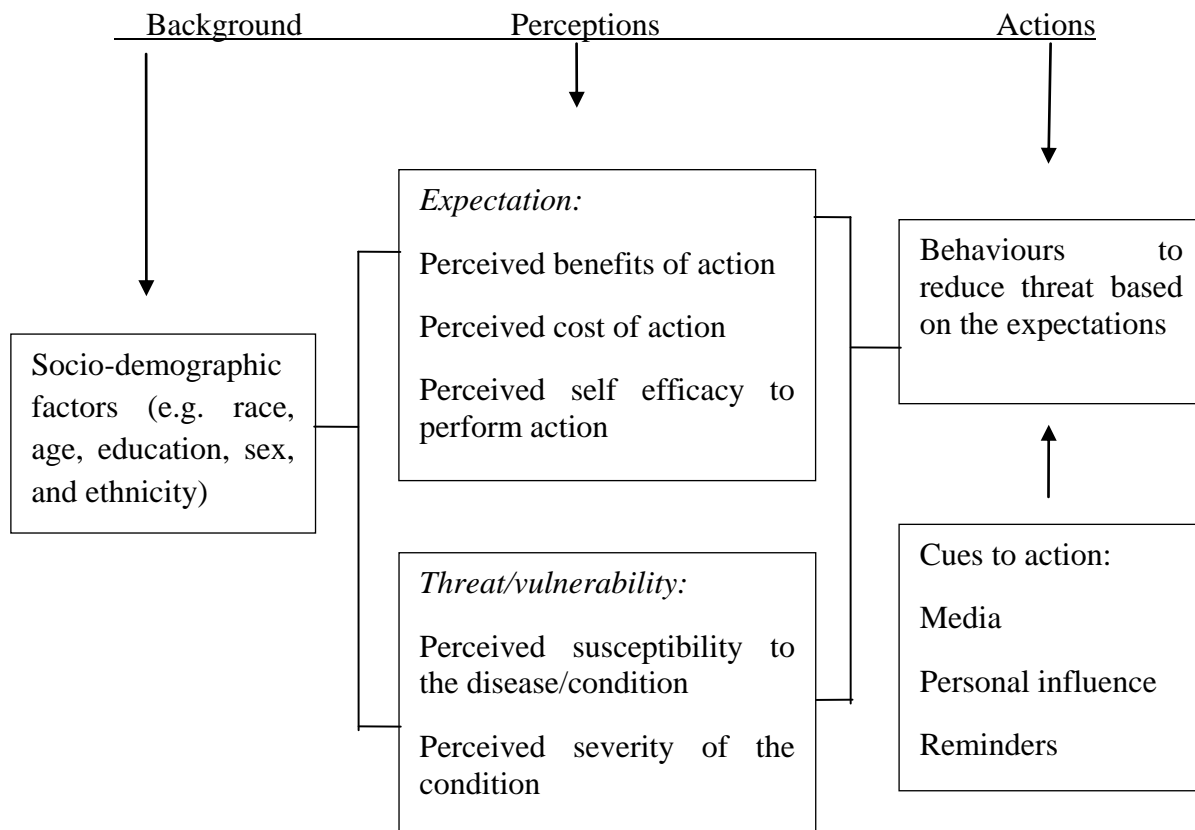
around him/her (McCormick-Brown, 1999). This is referred to as **perceived seriousness/severity**.

- Perceives himself/herself of being at risk of the disease. This concept of **perceived risk or susceptibility** is a very important determinant of behaviour change. The higher the level of a person's perceived risk, the more likely a behaviour change will be undertaken (Belcher, Sternberg, Wolotski, Halkitis & Hoff, 2005; de Wit, Vet, Schutten & Steenbergen, 2005; Chen, Fox, Cantrell, Stockdale & Kgawa-Singer, 2007). However, like perceived severity, this does not often lead to behaviour change. With HIV/AIDS, people either do not perceive their self to be at risk (Maes & Louis, 2003) or are optimistically biased about their risk (Ojo, 2004).
- Has a positive expectation (**perceived benefits**) that by taking a recommended action, he/she will avoid a negative health condition. Hence imminent behaviour changes (Frank, Swedmark & Grubbs, 2004).
- Feels that the benefit of adopting a change in behaviour outweighs the consequences of continuing the old, ill-health predisposing behaviour. Janz and Becker (1984); and Umeh and Rogan-Gibson (2001) argue that **perceived barriers** are the most significant in determining behaviour change.

The HBM has undergone a number of conceptual modifications over the years, to include the concept of cues to action and self efficacy (Bandura, 1986).

- **Cues to action:** Motivation for promoting action that may likely bring about behaviour change (Graham, 2002). The motivation can either be internal to the individual -when an individual is experiencing symptoms - or external to the individual - knows someone who has the disease or constant exposure to mass media programmes/campaign about the disease (Diclemente & Peterson, 1994; Goldstein et al., 2005).
- **Self efficacy:** Originally defined as judgment regarding personal capability (Bandura, 1977), and later conceptualized as a person's belief that he or she has the ability to exercise control over a set of skills required to complete a specific task (Maddux, Ingram & Desmond, 1995). However, (Diclemente & Peterson, 1994), argues that if an individual believes that a new behaviour is useful (perceived benefit), but does not

think he/she is capable of undertaking it; the chances are high that such behaviour might never be tried out. This structure of the HBM is represented in figure 1 and the adapted structure with constructs investigated in this study is represented in figure 2.



**Figure 1: The structure of the Health Belief Model** (adapted from Rosenstock et al., 1994)

### 2.5.2 Application of the HBM

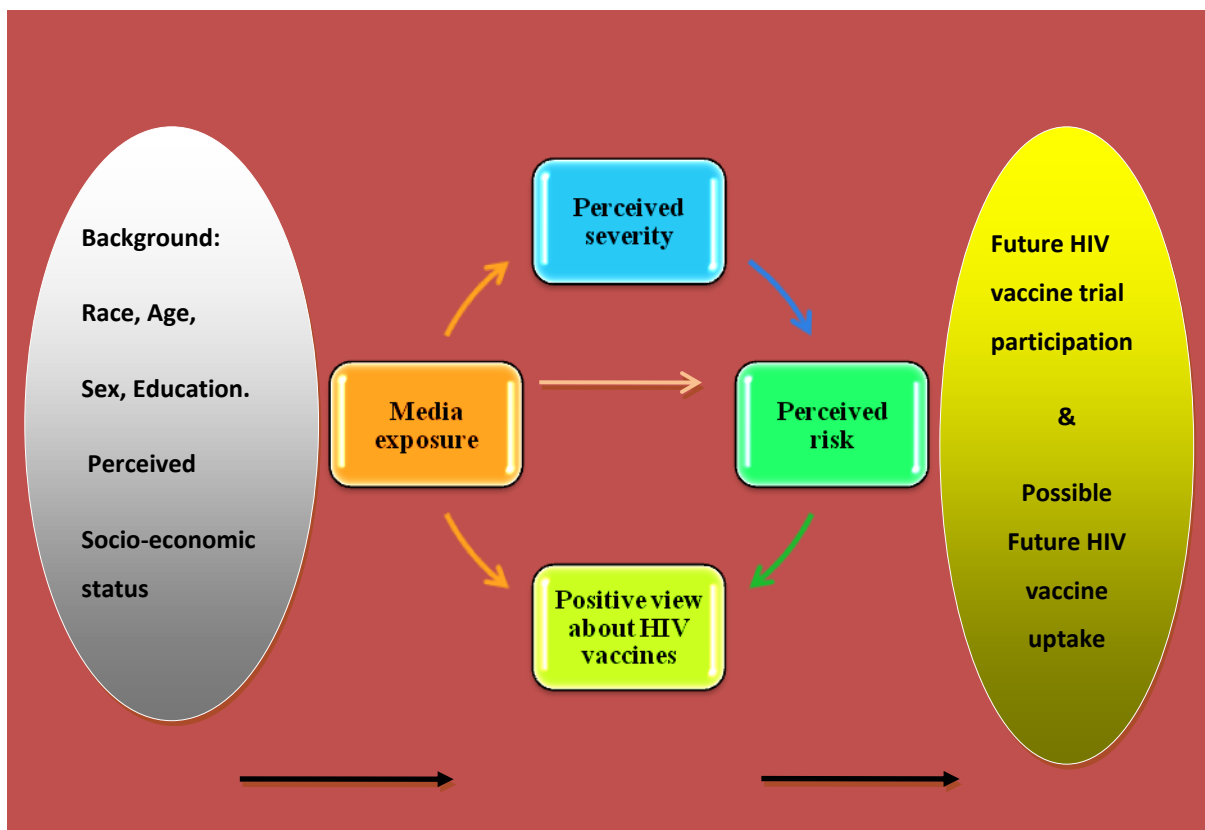
In terms of the study it can be argued that perceived severity of HIV/AIDS, perceived risk, positive views about a HIV vaccine and media exposure to HIV/AIDS related messages are likely to influence future trial participation and possibly future HIV vaccine uptake. In using the HBM as a broad framework to investigate the likelihood of participation in a future HIV vaccine trial, it is important to note that not all health constructs of the HBM were investigated in full detail, as this is only the first exploratory study and will focus on the participants' HIV-related knowledge, HIV vaccine beliefs and perceptions and perceived HIV risk. Attention was not given to perceived self efficacy or the intention to participate in a future HIV vaccine trial because the area was being assessed as a possible future vaccine trial site and care was taken not to create any expectations regarding future vaccines trials in the



area (IAVI, 2008). Therefore, questions pertaining to HIV vaccines were kept to the minimum.

As regards the HBM, the following constructs were investigated: perceived seriousness (based on HIV knowledge and outcome of infection); perceived susceptibility (perceived HIV risk); outcome expectations in terms of the perceived benefits (based on perceptions re protection from HIV and prevention of HIV infection); perceived barriers (HIV vaccine trial safety concerns) and cues to action (media exposure to HIV/AIDS and HIV vaccines related messages).

It has been argued that many other factors other than health beliefs (central tenets of HBM) inform and predict health behaviours (Plowden, 2001) and inadvertently influence health beliefs. These factors include but are not limited to; cultural practices, level of education, previous experience, family, religion, income. In view of this, in addition to the explored constructs, respondent's level of education and perceived socio-economic status (employment status, financial situation, living standard, status as social grants recipients and existence of child dependents) were also explored.



**Figure 2: Constructs investigated in the present study**

## **2.6 Conclusion**

Review of the literature shows that HIV/AIDS affects females- especially the reproductive age-group - more than males. However, emerging findings highlight the far-reaching evidence that the pandemic has indeed crossed over from the high risk groups into the general population. A variety of evidence suggests global awareness and increased knowledge about HIV/AIDS. However such understanding has not in any way stopped or decreased the occurrence of new infections, as infections continue to rise in many parts of the world, most notably in sub-Saharan Africa. In addition, a warped sense of perception of risk of acquiring HIV/AIDS is particularly prevalent among individuals and certain social groups. The advent of a potential preventive HIV vaccine has raised lively discourse on issues of HIV vaccine and vaccine trials. It is therefore worthwhile to understand the place of knowledge, beliefs, risk perceptions, and bio-demographics, among other things, as it influences and informs misgivings (if any) and arguments for or against HIV vaccine and vaccine trials among a representative community sample. The journey towards possible widespread acceptance of a prospective HIV vaccine should a breakthrough occur in HIV vaccine development in the near future is a formidably difficult one, but the potential benefits outweigh the challenges.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter outlines the research methodology of the study. Details of the following are given – study setting, background information on study location and participants. An explanation of the processes that were used in generating the data is given herewith. i.e. research design; sampling method; instrument development; data collection and procedures. It also provides information on measurements and scale construction undertaken in this current study and relevant methods used to analyze the data.

#### **3.2 Study setting**

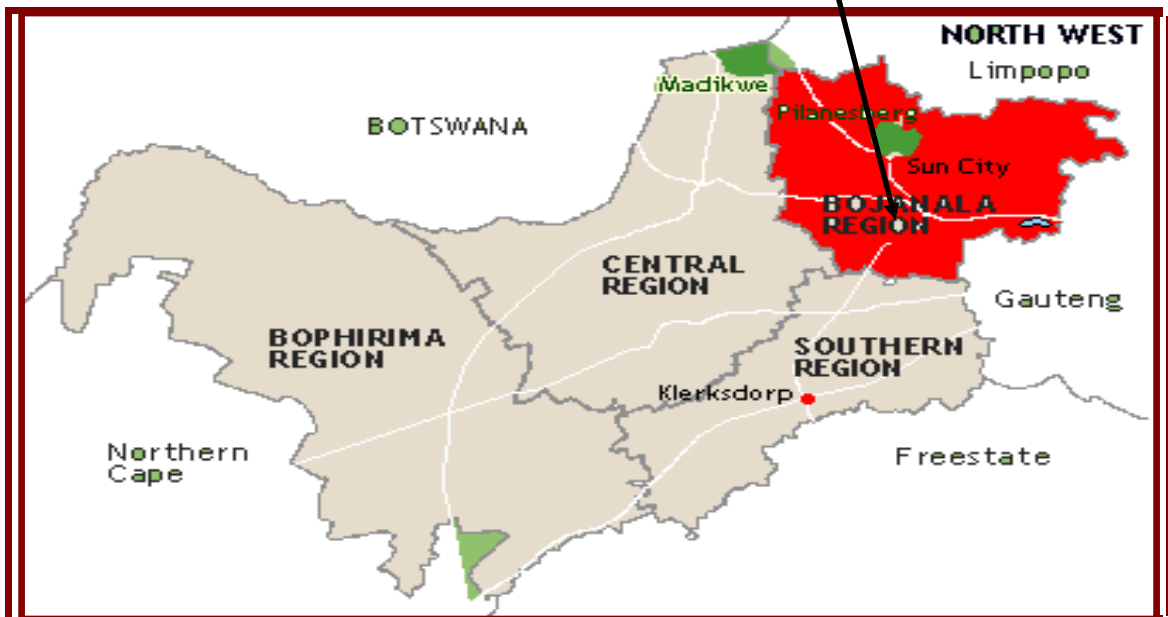
This study utilises some of the data generated by the Aurum Institute of Health Research representative household survey that forms part of a range of HIV vaccine preparedness studies in the Bojanala area, Rustenburg. Aurum Institute of Health Research in partnership with the International AIDS Vaccine Initiative (IAVI) and European Union undertook the fieldwork in August 2008.

The study that generated the data was conducted in the Rustenburg community of Bojanala District, located in North West Province, South Africa. According to the 2001 census data, the district's resident population is about 1 million, and is made up of six Municipalities, namely; Rustenburg, Moretele, Madibeng, Kgetleng Rivier, Moses Kotane, and Pilanesberg National Park District managed area. Based on the said census data, an overall majority (over 70%) of the households in the Bojanala platinum district are situated in the rural areas while only about 30% are located in the urban area. Of these 30%, almost half (46.6% and 45.4%) of the households are resident in the Rustenburg and Kgetleng Rivier Municipality respectively. Figure 3 shows the map of the study location.

The city of Rustenburg in the Rustenburg Municipality is located 166 kilometres from Johannesburg and is readily accessible by means of a well-developed road network. In the Rustenburg community, 38% of the residents are aged 15 - 34 years; 34% are within the age bracket 35 – 64 years; 16% are 5 – 14 years; 9% are 0 – 5 years; and 3% are 65 years and more.



Figure 3. Map of South Africa showing the study location



Inset shows geographical location of the study district in Northwest Province

On account of the vast amount of platinum in the area, mining industry accounts for nearly half of all employments in the municipality. Expectedly, the municipality is home to two major platinum producers - Impala Platinum and Anglo Platinum.

The Rustenburg Municipality is an exceptionally fast growing area with consequent fast growing economies and an expeditious population growth. In fact, the Municipality reported fluctuations in growth rate from 3.55% to 15.50% over the last 15 years; a figure which was at all times higher than the national growth rate. In 2007, it was presumed to be one of the fastest growing urban areas in South Africa. The population of the Rustenburg District is predominantly Setswana-speaking Batswana people, of whom the Bafokeng –Bakwena is the largest group.

In apartheid South Africa, the Bafokeng people were among those that were forcefully stripped of large portions of land on account of the notorious 1913 Land Act. However, with the demise of apartheid, the new South African government land restitution/redistribution programme moved to return land to people who were dispossessed after 1913 (the year of the first land Act), as well as to address the highly skewed ownership of land along racial lines (Royal Bafokeng Nation, 2003). The Bafokeng Nation (a main producer of Platinum and many Platinum related minerals such as chrome and vanadium), along with hundreds of others had their ancestral lands restored to them - the rightful owners (Aurum Report, 2009; Royal Bafokeng Nation, 2003). Restoration and consequential compensation for their lands having been mined by the mining companies resulted in relative prosperity for the Bafokeng Nation, compared with other tribal groups in South Africa (Aurum Report, 2009). Much of the realized monies have been used for local development projects such as schools, clinics and roads, among other things.

Health-care infrastructure within the Rustenburg Municipality is well developed (Aurum Report, 2009): it includes a regional public hospital, a psychiatric hospital, a mine hospital, three private hospitals, three Community Health Centres (CHC), 18 Primary Health Care (PHC) clinics, and 8 mobile clinics. The Community Health Centres and Primary Health Care clinics offer Voluntary Counselling and Testing (VCT) services, while several workplace health programmes, Non - Governmental Organizations (NGOs), and Aurum President's Emergency Plan for AIDS Relief (PEPFAR) programme offers activities like ill-health prevention services, treatment services, VCT and such. In the North-West Province, there are

three Anti-retroviral (ART) roll-out sites; the Rustenburg Municipality Provincial hospital is one of the three.

### **3.3 Research Design and Sampling Used**

A cross sectional survey using a randomized representative sample was used to collect the data. The objectives were to describe the community; beliefs about HIV/AIDS, including stigma, practices related to HIV testing, practices related to risky sexual behaviours, and knowledge and perceptions about an HIV vaccine (without raising future expectations). The survey comprised of a combination of interviewer and self administered questionnaires, conducted with a representative sample drawn from 600 households in the Bojanala district.

Available published community sampling methods were not suitable for a dense, urban setting such as Rustenburg, and the use of the existing statistical South African maps all alone would result in under-sampling of residents of this rapidly growing area (Aurum Report, 2009). Sampling methods such as “spin-the-pen” are supposedly time consuming (Grais, Rose & Guthmann, 2007), while “random walk” by field workers to make sample selections may result in biased outcome; which might not yield a random sample. Hence, a grid was developed for the study. To avoid under-sampling of new residents, the grid, along with the 2007 updates to the 2001 South Africa Census, was used, and this yielded a total of 142 Small Area Layers (SAL). Grobellaar (2001) posits that SAL’s are derived from geographical layers that comprise of units containing large enough populations to minimize the risk of possible identification of individuals when cross tabulations of variables are done. A minimum total population of 500 per Enumeration Area is required before the area is classified as a SAL. First it was decided that a sample of 16 SALs would be both robust and statistically powerful, and yet still be logically feasible for the 7-person field team to cover. Secondly, the STATS SA maps of the 16 SALs were obtained and updated to prevent under-sampling of people who reside in newer structures.

Following the updated maps, inhabited structures were numbered, and the number of structures per SAL was sent to the research units’ statistician at London School of Hygiene & Tropical Medicine in the United Kingdom. In each SAL, 32 dwellings were randomly drawn by the statistician, and the sampled numbers that correspond to selected structures within each SAL were mailed back to the Health research team (Aurum Report, 2009; Meyer-Weitz et al., 2009a). This method yielded 512 dwellings to be approached without replacement.

All respondents from a selected structure were counted, and one respondent was randomly selected among those aged 18-49 years. Participation in the survey was entirely voluntary; however, eligibility for participating in the study was determined by the volunteer's age, physical and mental status, and availability. Only residents that were aged 18- 49 years were considered as well as those who were both mentally and physically competent of giving informed consent for the study. Availability for interview at some time during the study period and availability during the last 7 nights on the stand – (at least 4 nights) were also yardsticks for eligibility. Aurum Institute of Health research team involved with this study had planned for a 78% (400/512) response rate; however, the achieved acceptance rate was 68.6% (351/512). i.e. realized sample n= 351 (Aurum Report, 2009).

### **3.3.1 Instrument development:**

The items in the questionnaire were developed based on theoretical frameworks underpinning a thorough literature review process and findings of qualitative studies. Cognizance was taken of the specific objectives of the study and the key questions to be answered by the research.

The questions of the survey questionnaire include bio-demographics (sex, age, marital status, and presence of primary partner in household, level of education, living standard measures including access to TV and radio, employment status, available social capital). In addition, questions were included about HIV/AIDS knowledge and beliefs, perceived risk for HIV/AIDS, perceptions and experiences pertaining to HIV/AIDS stigma and discrimination, factors influencing VCT, and VCT history and experiences with VCT centres, sources from which health care is sought for STIs, family planning services, VCT and HIV/AIDS and previous experiences with health research. Items were also included to determine community perceptions of HIV vaccines. However, for this study, only questions regarding HIV/AIDS knowledge, myths, risk perceptions and vaccine perceptions were used in the analysis in accordance to the aims and objectives of this study.

The questionnaire was prepared in English, and was translated into Setswana and Afrikaans by professional translators. The translated versions were back translated independently to English to verify the accuracy of the translations. A draft questionnaire was developed and subjected to a pilot study among 50 participants of similar background in an area that was not included in the survey before the commencement of the actual study. The pilot testing was

embarked upon after ethical clearance had been obtained, and questionnaires were completed after informed consent was obtained from the participants.

According to Terre Blanche and Durrheim (1999), pilot studies are used to identify possible problems with proposed research and, among other things; it is also used to assess the appropriateness of language and terminologies used in the questionnaire. Following the pilot testing, the instrument was amended accordingly with special focus on clarity, culturally sensitive and appropriate language and terminology. The questionnaire was then further refined on the basis of exploratory analysis to ensure validity and reliability of the research instrument. Please see Appendix 3 for the questionnaire.

### **3.3.2 Procedures and Data collection**

This study uses data collected in the 2008 representative community survey on HIV-related issues in the Rustenburg municipality, North West province. Zikmund (2003) posits that secondary data are data drawn together and recorded by someone else prior to the current needs of the researcher. Furthermore, he argues that the analysis of such data is a preliminary review of the collected data for another purpose, which serves to clarify issues in the early stages of a research effort.

Before data collection commenced, participants were informed about the aims and objectives of the study, told that participation in the study was entirely voluntary and were assured that data would remain confidential. They were also informed that they could withdraw from the study at any time should they wish to discontinue without breach of confidentiality or untoward implications. Subsequently, written informed consent was obtained from participants. The data was collected by using a combination of interviewer and self-administered questionnaires linked by an administrative number. Questionnaires were administered by 11 well - trained interviewers (7 Black and 4 white) in the respondents' language of choice. These interviewers underwent a basic training programme for fieldworkers developed by the training managers of Aurum Institute of Health Research in interviewing skills and ethics. Anonymity was ensured by the allocation of numbers to questionnaires in place of names.

The field team first administered the baseline questionnaire by reading the questions to the participants. The baseline questionnaire consisted of demographic questions; HIV/AIDS attitudes and beliefs, relationship beliefs, STIs and VCT questions. The participants were



further guided to complete the section of the questionnaire on sensitive and personal sexual behaviours by marking answers themselves. After completion of the questionnaire, the participants sealed their personal questionnaire in an envelope. In situations where participants needed further information about HIV/AIDS or needed to be supported through counselling, they were provided with HIV/AIDS health education materials and referred to the local AIDS counsellors or social workers for counselling. In addition to this, the contact details (phone no, fax no and e-mail address) of the principal investigator and Aurum Institute of Health research were also provided should participants want further information. The participants were paid R30-00 for their transport costs.

In summary, this current study is a quantitative, exploratory, cross-sectional survey using secondary data collected in a representative household survey that forms part of a range of HIV vaccine preparedness studies. For the purpose of this study, data on socio-demographics and on questions pertaining to HIV/AIDS knowledge, myths, risk perception and HIV vaccine perceptions were used in the analysis in accordance to the aims and objectives of this study.

### **3.4 Recoding, measurements development and scale construction**

The recoding that was done is explained in sections pertaining to socio-demographics, HIV/AIDS knowledge measure, perceived HIV-risk, and HIV vaccine perception. Scales were developed [HIV risk perception scale (such as fatalism regarding HIV) and HIV vaccine perception scale]. Cronbach's alpha coefficient was used to assess the inter-item reliability of the scales. Reliability is the consistency or repeatability of a measure, usually expressed as a numerical index (Polit & Hungler, 1983), while internal consistency is the extent to which items on a scale measure the same underlying construct (Pallant, 2007). The scales and measures were built according to the 2/3 rule. If respondents had validly answered 2/3 of the questions in a scale, they were counted. Those that answered less than 2/3 were sent to missing.

#### **3.4.1 Socio-demographics:**

The socio-demographic variables of the representative household survey (see Appendix 3) were used i.e. gender was classified as either male or female. Respondent's ages range from 18 – 49 years. This was grouped into 3 categories and recoded as follow; 1 = 18-24 years, 2 =

25-35 years and 3 = 36-49 years. This was done to correspond to the age categories used in the Department of Health and the HSRC HIV- prevalence data. Ethnicity was dichotomised as only 1 person each in the sample categorised themselves as either Coloured or Indian. As it stands, this variable could not appropriately be used in many of the subsequent analyses, hence the response categories were recoded as Africans (1) while retaining White (2) as the second category. Respondent's level of education ranged from no schooling all the way through to honours/masters degree/ doctorate/highest level of education attainable. Marital status included; married/living together, single with steady partner, single with multiple partners, single without a partner, single with no partner and widows or widower.

Also included were questions regarding perceived socio-economic status (i.e. employment; financial situation; the living standards of participants – measured by household amenities (TV, fridge, cell phone, telephone, electricity, private car, garden and working radio), questions about social grants; and number of dependent children. Employment was dichotomised into those employed (3, 5, 6, 7, 8, & 9 = 1) and not employed (1, 2, 4, & 10 = 0) (See Appendix 3). Dependent children, referring to either the respondent's children or other dependent children were recoded as follows: no children = 0; 1- 2 children = 1; and 3-or more children = 2. Media exposure was assessed by asking how frequently respondents listen to the radio, watch television, read newspapers, and check cell phone messages. Responses were measured on options of 1 = never; once a week = 2; few days/week = 3; and everyday = 4. High scores on media exposure indicate high frequency in regard to media exposure, while low scores indicate low frequency with regard to media exposure. For this study, only radio, television and newspapers media exposure variables were used.

#### ***3.4.2 Awareness and Sources of information about HIV vaccines:***

Awareness about HIV vaccine was assessed on options of either Yes (1) or No (2). Information about HIV vaccine via a wide range of sources was also assessed.

#### ***3.4.3 HIV/AIDS Knowledge measure:***

HIV/AIDS related knowledge was assessed on a 5-point Likert scale ranging from strongly agree, agree, uncertain, disagree, and strongly disagree. Respondents' knowledge on HIV/AIDS transmission, prevention, treatment, as well as myths was assessed. The response rate was categorical and these responses were recoded as follows: 2 = correct, 1 = incorrect (see Appendix 3). Composite knowledge index/scores were obtained for each sub-section by

adding the individual knowledge score of each item in the section. The descriptive statistics of the knowledge measures are depicted in shown in Table1 below.

Table 1  
Descriptive Statistics for the HIV/AIDS Knowledge Measures

Measurements	No. items	Min/Max	Mean	Std. Dev
HIV Transmission	9	1-18	15.9	1.66
HIV Prevention	2	1-4	3.1	0.6
HIV Treatment	4	4-8	6.8	1.17
HIV Myths	3	3-6	5.07	0.86

**High scores = correct knowledge, low score = incorrect knowledge**

#### **3.4.4 Perceived HIV- risk measure:**

Perceived HIV risk was assessed using 11 items on a 4-point scale (1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree). Responses were recoded such that a high score reflects a high level of fatalism, and a low score reflects low levels of fatalism regarding risk of contracting HIV infection. An HIV risk perception measure was obtained by summing up the respective scores on the 11 items after obtaining a satisfactory Cronbach's Alpha of  $\alpha=0.805$  which reflects a good internal consistency.

Table 2  
Descriptive Statistics for the HIV risk perception Measure

Variable	n	Min/Max	Mean	Std. Dev	$\alpha$
HIV risk perception	331	11/39	22.65	5.672	0.805

#### **3.4.5 HIV vaccine perception measure:**

Four items were used to assess HIV vaccine perceptions. The responses on these items were measured on a 5-point scale ranging from strongly agree, agree, disagree, strongly disagree, to don't know. For each of the items, responses were recoded so that Strongly Agree = 5, Agree = 4, Don't know = 3, Disagree = 2 and Strongly Disagree = 1. i.e. 1 = 5; 2 = 4; 3 = 3; and 4 = 2; 5 = 1. Measures were obtained by summing the four items after obtaining an acceptable mean inter-item correlation; ( $r=.358$ ) and a Cronbach's alpha of  $\alpha=0.692$ . The HIV vaccine perception scales contained less than 10 items; hence a low alpha value was

obtained. However, the mean inter-item correlation value of 0.358 suggests quite a strong relationship among the items. Briggs and Cheek (1986) recommend an optimal range for the inter-item correlation of 0.2 to 0.4 for measures consisting of less than 10 items.

Table 3  
Descriptive Statistics for the HIV vaccine perception Measure\*

Variable	n	Min/Max	Mean	Std. Dev	$\alpha$
HIV vaccine perception	331	2/16	9.9	3.57	0.692

\*mean inter-item correlations  $r=.358$

### 3.4.6 Predictors of HIV vaccine perceptions:

Standard colinearity diagnostics were conducted to ensure no violation of the assumption of multi-colinearity. Some degree of relationship was found between the independent variables and HIV vaccine perceptions. A high correlation ( $>.7$ ) was also found between level of education and HIV/AIDS knowledge measure (knowledge on modes of transmission, prevention, treatment and HIV/AIDS myths). In order not to violate the assumption of multi-colinearity, level of education and HIV/AIDS myths were omitted and a composite knowledge variable was formed from the scores of knowledge regarding HIV/AIDS modes of transmission, HIV prevention and HIV treatment. The composite knowledge variable alongside with race, age, sex and perceived HIV risk (measured as fatalism regarding HIV infection) used in the model yielded acceptable Variance Inflation Factors (VIF) values of less than 10 ( $<10$ ) and Tolerance values of greater than .10 ( $>.10$ ).

Standard multiple regressions:

Dependent variable: HIV Vaccine perceptions (continuous), Independent variables: Race (1 = Black, 0 = White); Age (18 – 24 = 0, 25 – 35 = 1, 36 – 49 = 2); Sex (Male = 0, Female = 1); HIV knowledge- composite of knowledge on transmission, prevention and treatment (high scores reflects good knowledge, low scores reflects poor knowledge of HIV/AIDS); Fatalism regarding HIV (high scores indicate high level of fatalism, low scores indicate low level of fatalism). The standard multiple regression model was used for exploratory purposes.

Hierarchical multiple regression (sequential regression) models were fitted to determine the best predictors of HIV vaccine perceptions. Sequential regression controlled for the possible effects of sex, age and race on the other predictors in the model:

1. Dependent variable: HIV vaccine perception measure
2. Independent variable: First entered: race, age, sex, and followed by knowledge on HIV/AIDS modes of transmission, knowledge on prevention, knowledge on treatment, perceived HIV risk (fatalism re HIV infection).

### **3.5 Data analysis:**

Quantitative research data is an objective assessment that seeks explanatory laws. According to Terre Blanche and Durrheim (1999), it makes inferences about the characteristics of the sample while measuring what it assumes to be a static reality in hopes of developing universal laws.

All statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) Software Version 15.0. Prior to data analysis, the data set was screened for errors by looking for values that fall outside the range of possible values for each variable. Frequencies were calculated for all items and presented as descriptive statistics.

In accordance with the aim of this study using secondary data, relationships between independent variables (age, sex, race, among others), and dependent variables, viz. HIV knowledge, beliefs, risk perceptions, and HIV vaccine perceptions, were first explored. Differences between groups (age and race) regarding HIV knowledge (transmission, prevention, treatment as well as HIV myths), perceived HIV risk, and HIV vaccine perceptions (all measured as continuous variables) were analyzed using Independent-Samples T-tests. One-way between-groups ANOVAs were conducted to determine whether there were significant differences in the mean score on the above continuous variables for the three age groups. These were followed by post-hoc tests where applicable, to determine where the differences between the groups were.

Using Pearson product-moment correlation coefficient, the relationship between these variables: HIV knowledge, perceived risk of contracting HIV and HIV vaccine perception (all measured as continuous variable) were explored, as well as between these variables and level of education.

Relationships between HIV/AIDS knowledge (transmission, prevention, treatment and HIV myths) and media exposure (radio, television and newspapers), perceived HIV risk and media

exposure as well as between HIV vaccine perceptions and media exposure were assessed with Pearson correlation coefficient.

In view of identifying likely trial participants and site selection for a larger vaccine trial project, a standard and hierarchical multiple linear regression models were conducted to assess and explain the factors (independent variables) that predict the likelihood that respondents would report supportive perceptions for HIV vaccines (dependent variable). The dependent variable used in the model was the HIV vaccine perception measure (HIV-vaccine will protect people from being easily infected by HIV/AIDS, it is safe to participate in medical research to develop a HIV-vaccine, a future HIV vaccine could provide total protection to people from getting HIV and HIV-vaccine development should be a government priority). The Independent variables used were – age, sex, race, HIV/AIDS knowledge pertaining to transmission, prevention, treatment and perceived HIV risk.

### **3.6 CONCLUSION**

In this chapter, details of the methodology followed in this study were given. A description of study setting and study location/participants was also provided. Methodology was discussed in terms of the research design and sampling, the instruments that were developed, including measurements and scale construction, Data collection and procedure, as well as an outline of statistical analyses that were conducted. Chapter four will include the results of the statistical analyses.

## **CHAPTER FOUR**

### **RESULTS**

#### **4.1 Introduction**

In this chapter, frequencies for all items and the major findings of the statistical analyses are presented. The results are presented according to both the aim and the objectives of this study. In all instances, correlations between variables were tested two-tailed, and statistical level of significance at  $p \leq 0.05$  was used unless otherwise stated.

#### **4.2 Socio-demographic characteristics of the sample**

Table 4.1, 4.2, and figures 5 to 8 shows the demographics of the study sample in terms of age, gender, race distribution, marital status and level of education. The majority were (Black) Africans (84.6%), followed by Whites (14.8%), Indians (0.3%), and Coloured (0.3%). The respondents comprised 139 males (39.6%) and 212 (60.4%) females; their age range from 18 – 49 years, with a mean age of 31.77 years and a standard deviation of 8.76. Most (41.9%) of the respondents were in the 25 - 35 age range; 32.2% were aged between 18 and 24 while 23.9% were 36 years or older. Approximately 40% (n= 139) of the respondents were either married or living with a partner; 119 (33.9%) were single with steady partner, 12 (3.4%) were single with multiple partners, 76 (21.7%) single with no partner and 5 (1.4%) were widows. The level of education ranges from No schooling to Honours/Masters/Doctorate; and most (61.5%) of the respondents had grade 10-12 secondary-level education indicative of basic level of literacy.

Table 4.1

Age, Gender and Race of Respondents (N= 351)

	N	%
<b>Age (years)*</b>		
18 - 24 years	84	23.9
25 -35 years	147	41.9
36 - 49 years	120	32.2
<b>Gender</b>		
Male	139	39.6
Female	212	60.4
<b>Race</b>		
Black	297	84.6
Coloured	1	0.3
Asian/Indian**	1	0.3
White	52	14.8

\*Age was recoded into 3 categories (Median = 31), Range = 18-49

\*\*Recoded for analysis as Black

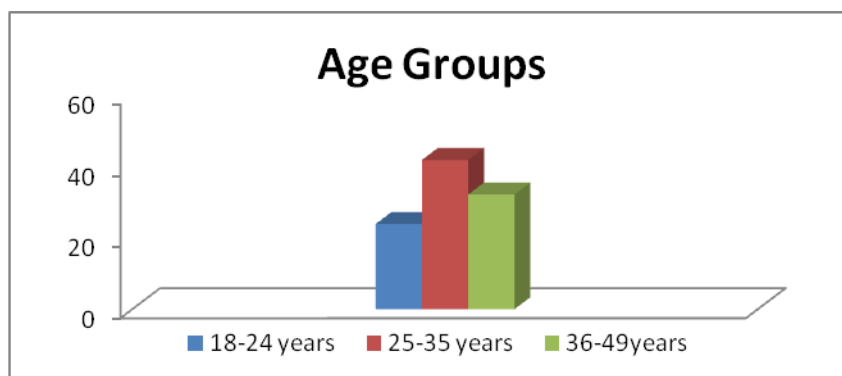


Figure 4. Age groups



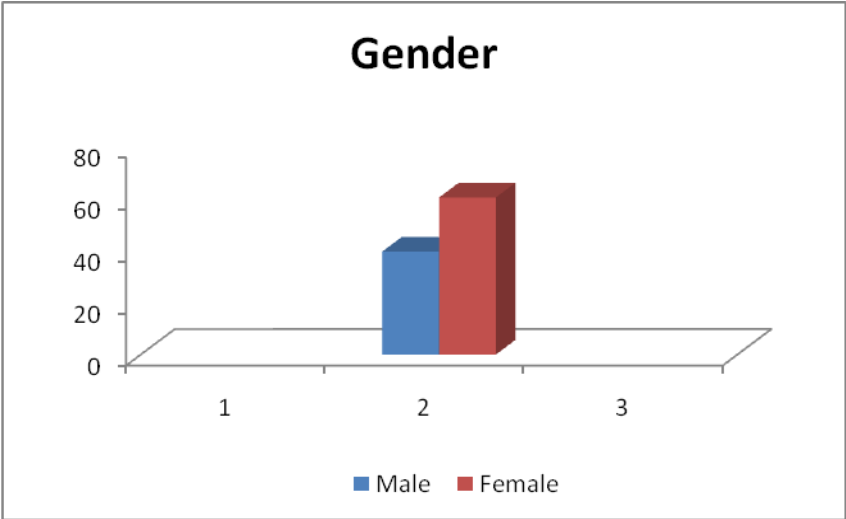


Figure 5. Gender

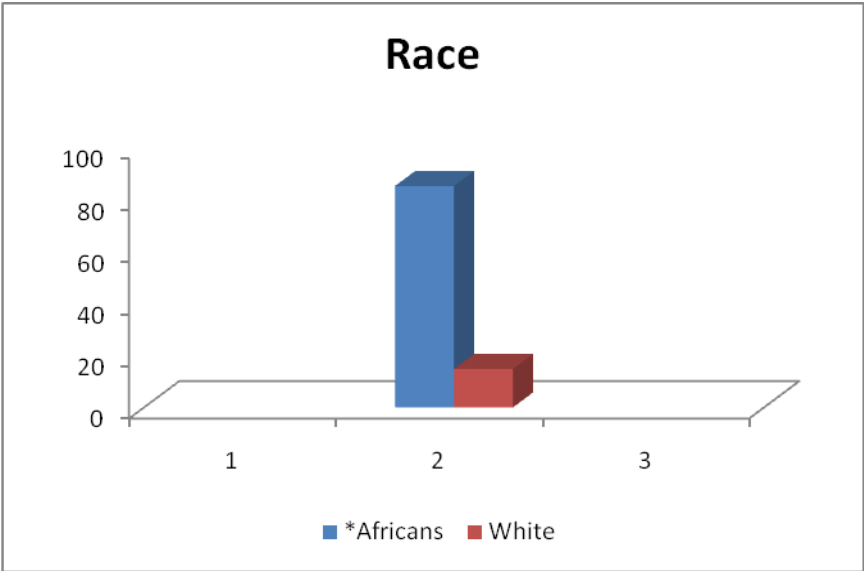


Figure 6. Race

Table 4.2

Respondents Marital Status and Level of Education

	N	%
<b>Marital status</b>		
Married	102	29.1
Living together	37	10.5
Single (steady partner)	119	33.9
Single (multiple partners)	12	3.4
Single (no partner)	76	21.7
Widows	5	1.4
<b>Level of education</b>		
No schooling	3	0.9
Grade: 4 to 5	3	0.9
Grade: 6 to 7	19	5.4
Grade: 8 to 9	39	11.1
Grade 10 to 12	216	61.5
Diplomas/Occupational cert.	58	16.5
First degree/Higher dip.	12	3.4
Honours/Masters/Doctorate	1	0.3

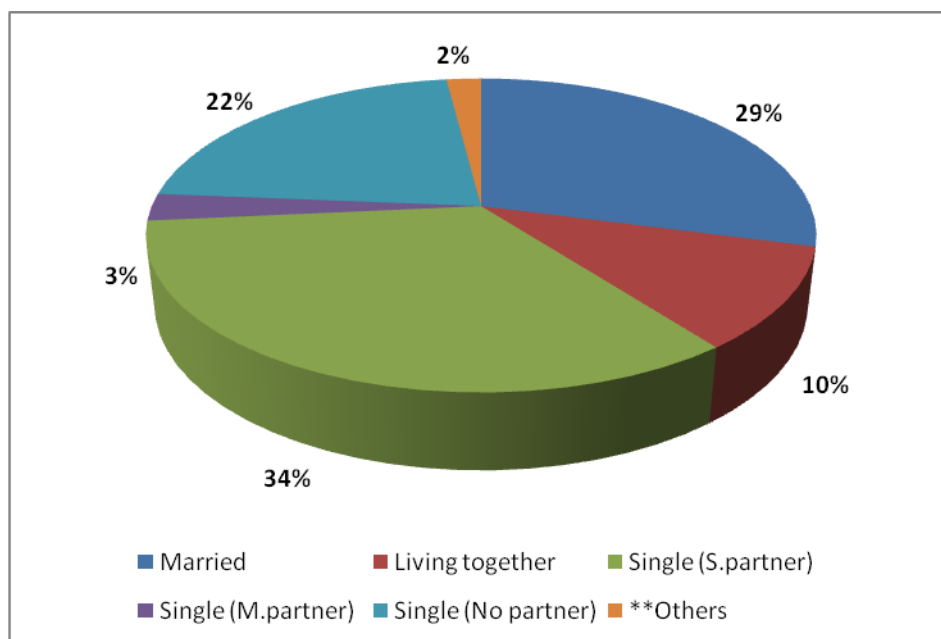
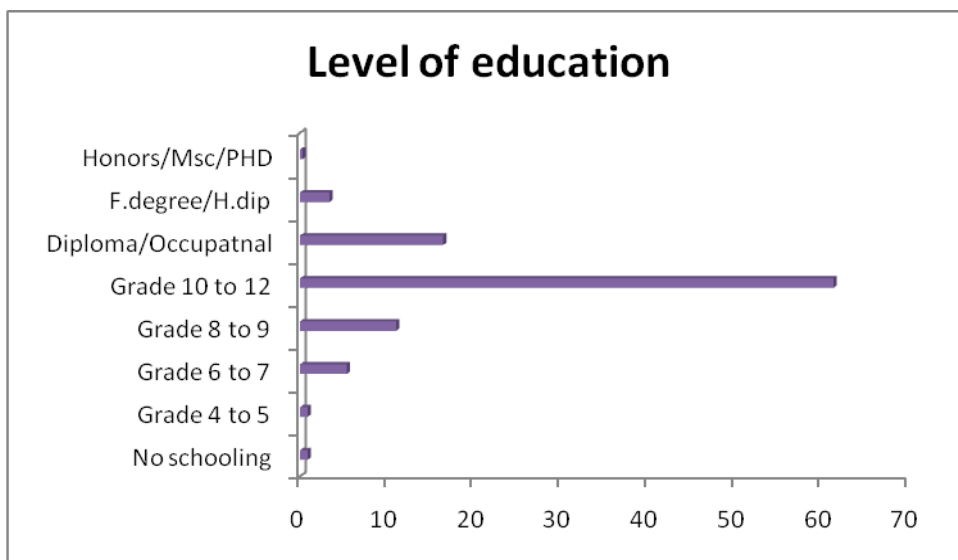


Figure 7. Marital Status



**Figure 8. Level of Education**

#### ***4.2.1 Perceived Socio-economic status of respondents***

Unemployment as reported by respondents was 53% (unemployed looking for work, unemployed not looking for work, student/pupil/learner, and housewife). With regard to the existing financial situation of the respondents, the following is shown in Table 5.1. Most respondents (64.7%) reported having enough for basics, while a significant group (25.3%) reported a lack of sufficient money for basics. An appraisal of the living standard of participants (see Table 5.2) revealed that 96.9% reported having electricity; 88.3% have a cell-phone; 87.5% have television; 85.8 have a fridge; and 84.6% have a radio. It was also reported that 29.3% were receiving child support grants and 23.4% on pension grants as illustrated in Table 5.3. The majority (45.9%) had between 1 to 2 dependent children; and 24.2% had 3 or more dependent children of their own while 36.5% had 1 to 2 other dependent children.

Table 5.1

## Perceived Financial Situation

	N	%
Insufficient money for basics	88	25.3
Money for food & clothes only	127	36.5
Money for basics	98	28.2
Money to save & buy expensive items	35	10.1

Table 5.2

## Living Standards of Respondents\*

	%							
	TV	Fridge	Cell phone	Telephone	Private Car	Electricity	Vegetable Garden	Radio
Yes	87.5	85.8	88.3	19.1	38.5	96.9	12.5	84.6
No	12.5	14.2	11.7	80.1	61	3.1	87.2	15.4

\*An indication of living standard

Table 5.3

## Number of Households Receiving Social Grants (N = 347)

	N	%
Pension	82	23.4
Disability	27	7.7
Child support	103	29.3
Foster care	95.7	3.1

### 4.3 Media exposure

Everyday contact with messages from cell phones and television were reportedly 79.8% and 75.8% respectively; whereas daily contact with radio messages was 52.7%. Frequencies' regarding media exposure is shown in Table 6.

Table 6

## Media Exposure Frequency

	%			
	Never	< Once/wk	Few days/wk	Everyday
Television (N = 350)	10.8	3.7	9.7	75.8
Radio (N = 350)	14	10.9	22.3	52.7
Newspapers (N = 349)	14	35.6	27.4	17.1
Cell phone messages (N = 344)	10.5	2.3	5.4	79.8

#### 4.4 Awareness and Sources of information about HIV vaccines

In Table 7, awareness and sources of information about HIV vaccine are presented. Less than half (42.7%) (N=150) indicated an awareness of HIV vaccines. Of this group, the majority (74.4%) reported that they heard about it from the radio; 67.8% heard about HIV vaccines on the Television, and 55.6% from a Clinic/Hospital while 54.2% also mentioned Newspapers/Magazine.

Table 7

Awareness and Sources of Information about HIV Vaccines (N =341)

	N	%
Aware of HIV vaccines	150	44.0
Unaware of HIV vaccines	191	56.0
Sources of information*		
Radio	107	74.3
Television	97	67.8
Clinic/Hospitals	79	55.6
Newspapers/Magazine	77	54.2
Community members	48	34.3
Community meetings	31	22.1
Community leaders	25	17.1
Aurum leaders	10	7.1

\*Do not add up to 100% because respondent could have more than one response.

#### 4.4.1 Demographic variables and awareness regarding HIV vaccines

The chi-square tests for independence (with Yates Continuity Correction for sex & race: and Pearson chi-square for age & education) conducted to assess if there were significant demographic differences in respondents' awareness regarding HIV vaccines. Separate chi-square analyses were conducted on race and gender (to examine differences in HIV vaccine awareness) because of small and unequal cell sizes. Table 8 showed that race ( $\chi^2 = 17.10$ ;  $p = 0.000$ ) was statistically significantly associated with an awareness about HIV vaccines, and Black/Africans (60.9%) were more likely to report a lack of awareness about HIV vaccine than Whites. Conversely, gender ( $\chi^2 = 0.843$ ;  $p = 0.359$ ); age ( $\chi^2 = 3.66$ ;  $p = 0.160$ ); and education ( $\chi^2 = 15.98$ ;  $p = 0.25$ ) were not significantly associated with HIV vaccine awareness. Nonetheless, respondents who had a grade 9 or lower level of education reported less awareness of HIV vaccines.

Table 8

Chi-square Analysis of Demographic Variables and HIV Vaccine Awareness (N =341)

	$\chi^2$	Df	P-value
Gender	0.843	1	0.359
Race	17.10	1	0.000*
Age	3.66	2	0.160
Education	15.98	7	0.25

\*\*Correlation is significant at the 0.01 level (2-tailed).

#### 4.5 HIV/AIDS knowledge

In this section, responses pertaining to HIV knowledge (on transmission, prevention, treatment, as well as HIV/AIDS myths) are presented and the frequencies for these measures are shown in Tables 10.1 through to 10.4.

##### 4.5.1 Knowledge on HIV/AIDS modes of transmission

Correct responses on HIV/AIDS knowledge on transmission items vary between 31% and 92.6%. About 71% of the respondents were aware that a baby can be infected with HIV/AIDS via breastfeeding from an infected mother. While 92.6% agreed that one can get HIV through unprotected sex, and 80% reported that sexually transmitted infections (STI) makes it easy to get HIV/AIDS. Approximately 72% of the respondents knew that the chance of contracting HIV is increased with multiple partners compared with serial monogamy. With regards to transmission of HIV infection from an infected person, 92.5% of respondents agreed that HIV cannot be transmitted through touch, 85.9% agreed that transmission cannot occur through sharing cutlery and 84.2% reported that HIV cannot be transmitted on account of sharing toilet facilities. However, as much as 45.8% reported that the chance of HIV infection is small when having sex with a recently infected person, and about 31% thought HIV could be transmitted via mosquitoes. The frequency for each statement pertaining to HIV/AIDS modes of transmission are depicted in Table 9.1.

Table 9.1

## Frequency Regarding HIV/AIDS Modes of Transmission

<b>Statements*</b>	<b>SA%</b>	<b>A%</b>	<b>U%</b>	<b>D%</b>	<b>SD%</b>
A baby can be infected via breastfeeding from infected mother	33.6	37.0	8.8	13.4	7.1
One can get HIV from unprotected sex	66.3	26.3	0.6	3.4	3.4
An STI makes it easy to get HIV/AIDS	43.0	37.0	8.6	8.0	3.4
Chance of HIV infection is small when you have sex with a recently infected person	21.2	24.6	5.4	16.9	31.8
Chance of HIV is increased with multiple partners compared with a partner/time	44.7	27.2	2.6	12.6	12.6
One can get HIV from mosquito bites	8.0	11.7	12.0	31.5	36.7
One can get HIV by sharing cutlery	5.7	5.7	4.3	34.1	50.1
One can get HIV by sharing toilets with someone with HIV/AIDS	3.7	6.0	4.3	35.2	50.7
One can get HIV by touching others who are infected	3.2	3.2	1.1	33.5	59.0

\*SA = strongly Agree, A = Agree, U = Unsure, D = Disagree, SD = Strongly disagree

#### **4.5.2 Knowledge of HIV prevention**

With regards to HIV/AIDS knowledge on prevention, only 27.7% of the respondents knew that a medically circumcised male is less likely to be infected with HIV, while the majority (81%) agreed that once both sexual partners are infected with HIV, they need to continue using condoms. Table 9.2 depicts the frequency distribution for knowledge on HIV prevention measures.



Table 9.2

Frequency of Knowledge about HIV/AIDS Prevention

<b>Statements*</b>	<b>SA%</b>	<b>A%</b>	<b>U%</b>	<b>D%</b>	<b>SD%</b>
Medically circumcised male is less likely to be infected with HIV	9.4	18.3	21.1	25.1	26.0
Once both sexual partners are infected with HIV they do not need to use condom	6.9	7.8	4.3	31.0	50.0

\*SA = strongly Agree, A = Agree, U = Unsure, D = Disagree, SD = Strongly disagree

#### ***4.5.3 Knowledge of AIDS treatment***

As reported, 74.6% of respondents knew that AIDS can be treated by Anti-retroviral therapy (ART), while 54.5% knew that ART should not be avoided because of negative side-effects. 81.6% agreed that people on ART should not discontinue their treatment on account of feeling better after taking it for a while and 68.8% disagreed with the statement that people who have AIDS do not need to go on ART if they eat well. In spite of this, a considerable number (28.4%) were unsure as to whether ART should be avoided because of negative side-effects. The frequency on each statement is shown below in Table 9.3.

Table 9.3

Frequencies for HIV/AIDS Knowledge Pertaining to ART

<b>Statements*</b>	<b>SA%</b>	<b>A%</b>	<b>U%</b>	<b>D%</b>	<b>SD%</b>
AIDS is treated by Anti-retroviral therapy	36.3	38.3	12.9	8.3	4.3
ART should be avoided because of negative side-effects	5.4	11.7	28.4	30.4	24.1
Once people start feeling better on ART they do not need to continue treatment	3.2	6.6	8.6	33.3	48.3
People with AIDS do not need to go on ART if they eat well	4.6	9.7	16.9	37.7	31.1

\*SA = strongly Agree, A = Agree, U = Unsure, D = Disagree, SD = Strongly disagree

#### 4.5.4 HIV/AIDS myths

Different myths with respect to HIV/AIDS were explored. The vast majority (79%) of respondents disagreed that traditional healers are able to cure AIDS and another 86% disagreed that having sex with a virgin will cure a person of HIV/AIDS. Nevertheless, 41.3% thought that one can get HIV/AIDS by having sex with widows who have not done a cleansing-ritual, while 15.5% were unsure of this statement. See Table 9.4 for frequencies on HIV/AIDS myths.

Table 9.4

Frequency regarding HIV/AIDS Myths

Statements*	SA%	A%	U%	D%	SD%
Traditional healers cure AIDS	3.2	6.6	10.9	23.2	56.2
Having sex with a virgin will cure a person of HIV/AIDS	2.6	4.0	7.4	20.9	65.1
One can get HIV/AIDS by having sex with a widow who has done cleansing ritual	22.1	19.2	15.5	18.3	24.9

\*SA = strongly Agree, A = Agree, U = Unsure, D = Disagree, SD = Strongly disagree

#### 4.5.5 Demographic variables and HIV/AIDS knowledge measure

The results of independent samples t-test conducted to examine race and gender differences in the mean scores of the HIV/AIDS knowledge measures, as well as one-way-groups ANOVA between age groups and these measures indicated statistically significant differences between:

- Race and knowledge of HIV prevention: Africans/Blacks (M = 3.14, SD = 0.61) and Whites, M = 2.69, SD = 0.47;  $t = (348) = 5.08, p = 0.000$ . Africans had better knowledge regarding HIV prevention.
- Race and HIV/AIDS myths: Africans/Blacks (M = 4.97, SD = .91) and Whites, M = 5.60, SD = 0.57;  $t = -6.59, p = 0.000$ . Whites held fewer myths.
- Age and HIV/AIDS myths:  $F(2, 348) = 3.33, P = 0.04$ . Post hoc comparison showed that the mean score for respondent's aged 25 - 35 years (M = 5.16, SD = 0.89) was significantly different from those aged 36 - 49 years (M = 4.89, SD = 0.94). There

were no significant differences in mean score for respondents between the 18 - 24 age brackets and the other groups. The younger participants (18 - 24 years) had less myths.

- Age and knowledge of HIV prevention:  $F(2, 347) = 3.76, p = 0.02$ . Post hoc comparison revealed a statistically significant difference in HIV prevention scores for those aged 25-35 years ( $M = 3.02, SD = 0.62$ ) compared with mean scores of respondents in the 36 - 49 age group ( $M = 3.20, SD = 0.66$ ). Scores for those in the 18 - 24 year group did not differ significantly from the 25 - 35 age groups.

There were no significant differences between: race and either HIV/AIDS modes of transmission or HIV treatment; gender and all the different HIV/AIDS knowledge measures, as well as no significant difference between age groups with respect to HIV/AIDS modes of transmission and HIV treatment.

However, using Pearson product-moment correlation coefficient, level of education was positively correlated with HIV/AIDS knowledge measures with the exception of knowledge regarding HIV prevention. The correlations were as follow:

- Level of education and knowledge on HIV/AIDS modes of transmission ( $r = 0.16, n = 351, p < 0.005$ ; two-tailed)
- Level of education and knowledge of HIV treatment ( $r = 0.24, n = 350, p < 0.0005$ ; two-tailed)
- Level of education and HIV/AIDS myths ( $r = .28, n = 351, p < 0.0005$ ; two-tailed).

Higher levels of education were associated with high level of knowledge regarding HIV/AIDS modes of transmission, AIDS treatment and fewer AIDS myths.

#### ***4.5.6 The extent of Media exposure and HIV/AIDS knowledge***

Bivariate intercorrelations between media exposure (radio, television and newspaper) and HIV/AIDS knowledge measure (transmission, prevention, treatment and myths) were examined. See Table 10. Media exposure variables were significantly correlated with respondent's HIV/AIDS related knowledge. Positive correlations were obtained between:

- Knowledge of HIV/AIDS modes of transmission and watching television ( $r = 0.22, p < 0.0005$ )

- Knowledge of HIV/AIDS prevention and reading newspapers ( $r = 0.12$ ,  $p < 0.05$ )
- Knowledge of HIV/AIDS treatment and listening to the radio ( $r = 0.11$ ,  $p < 0.05$ )
- HIV/AIDS myths and listening to the radio ( $r = 0.18$ ,  $p < 0.05$ ); watching television ( $0.24$ ,  $p < .0005$ ); and reading newspapers ( $r = 0.20$ ,  $p < 0.0005$ ). Those with higher exposure to the media were less likely to believe in myths regarding transmission.

Respondents who watched television, read newspapers and, or listened to radio were more likely to have adequate HIV/AIDS related knowledge.

Table 10

Intercorrelations between Variables on Media and HIV/AIDS Knowledge Measures

Variables	1	2	3	4	5	6	7
1. Listening to radio	-	-	-	-	-	.111*	.117*
2. Watching television	-	-	-	.223*	-	-	.224**
3. Reading newspapers	-	-	-	-	.123*	-	.199**
4. HIV/AIDS modes of transmission	-	.223**	-	-	-	-	-
5. Knowledge of HIV/AIDS prevention	-	-	.123*	-	-	-	-
6. Knowledge of AIDS treatment	.111*	-	-	-	-	-	-
7. HIV/AIDS myths	.117*	.224**	.199**	-	-	-	-

\*Correlation is significant at the 0.05 level (2-tailed).

\*\*Correlation is significant at the 0.01 level (2-tailed).

#### 4.6 Perceived HIV risk

Approximately 67% of the respondents agreed that life is risky and getting AIDS is just one of those things. Also, the same percentage (67%) of respondents felt that most people in their community were at risk of getting HIV/AIDS infection. However, a considerable number (60.6%) of the respondent's opposed the statement saying it is better not to think of AIDS and enjoy life while 65.8% disagreed on not worrying about AIDS until when one starts to get ill. A majority (78.7%) knew that AIDS is not just another disease, and as such requires

one to be mindful of not contracting it. As reported, 82.6% of the respondents had not given up on trying to protect themselves from HIV/AIDS, although 64.4% felt their partner cannot infect them with AIDS. A sizeable number (77.2%) among the respondent's do not think that their behaviours over the years has put them at risk for HIV/AIDS, while 76.4% do not see themselves getting HIV/AIDS infection in a matter of time.

Contrary to popular belief regarding grant-aided welfare packages, 89.7% of the respondent's care more about not getting AIDS rather than getting a grant that will presumably make their life easier. While 61.5% of the respondents felt they could not get HIV/AIDS by any chance, a substantial group of respondents (31.6%) agreed that it is just a matter of time before they get HIV/AIDS. Table 11 presents the descriptive statistics for HIV risk perception items used in the fatalism regarding HIV/AIDS infection scale.

Table 11

## Descriptive Statistics for Perceived HIV Risk

Statements*	N	Min	Max	Mean	Std. Dev
Life is risky and getting AIDS is just one of those things	331	1	4	2.92	1.003
It is better not to think about AIDS and enjoy life	331	1	4	2.04	0.929
I will only start to worry about AIDS when I start to get ill	332	1	4	2.09	0.984
I do not care if I get AIDS because it is just another disease	332	1	4	1.74	0.879
I feel that my partner might infect me with AIDS	321	1	4	2.06	0.958
I have given up trying to protect myself from HIV	330	1	4	1.67	0.831
It is just a matter of time before I get HIV/AIDS	329	1	4	1.67	0.861
I think that there is a chance that I will get HIV/AIDS	326	1	4	2.14	0.970
My behavior over the past year has put me at risk for HIV/AIDS	331	1	4	1.82	0.832
Most people in my community are at risk of getting HIV/AIDS one day	327	1	4	2.92	0.940
I do not care if I get AIDS because I will get a grant and it will make my life easier	330	1	4	1.45	0.675

#### 4.6.1 Demographic variables and perceived HIV risk

Separate Independent-samples t-tests (because of small and unequal cell sizes) conducted to assess the difference in mean scores on the perceived risk measures for race and gender groups indicated a significant difference between Black and White respondents' mean scores on perceptions of perceived HIV risk. Based on respondents' scores, Black ( $M = 23.85$ ,  $SD = 5.05$ ) had a higher level of fatalism regarding risk of contracting HIV infection than Whites ( $M = 16.25$ ,  $SD = 4.41$ ); ( $t = 10.14$ ,  $p = 0.000 < 0.05$ ). See Table 12. However, there was no

significant difference in the mean scores of perceived HIV risk for Males ( $M = 22.81$ ,  $SD = 5.25$ ) and Females ( $M = 25.91$ ,  $SD = 5.96$ );  $t = 0.43$ ,  $p = 0.67 < 0.05$  (2-tailed). No significant differences were found between the age groups with regard to the mean scores of HIV risk perceptions. However, Pearson product-moment correlation coefficient revealed a strong negative correlation between perceived HIV risk and level of education,  $r = -.385$ ,  $n = 331$ ,  $p < .0001$ , with high levels of education associated with lower levels of perceived HIV risk (measured as fatalism regarding HIV infection). The result is illustrated in Table 13.

Table 12

T-test Results for Race and Gender Differences in HIV Risk Perception Mean Scores

		N	M	SD	df	t	p*
Race					329	10.14	0.000
	Black	279	23.85	5.05			
	White	52	16.25	4.41			
Gender					329	0.43	0.67
	Male	139	22.81	5.25			
	Female	195	25.91	5.96			

\*Correlation is significant at the 0.05 level (2-tailed).

Table 13

Pearson Product-Moment Correlation Coefficient between

Level of Education and HIV risk Perception

	N	r	P*
Level of education	331	-.385**	0.000

\*\*Correlation is significant at the 0.01 level (2-tailed)

#### 4.6.2 Extent of media exposure and perceived HIV risk

Bivariate intercorrelations between media exposure (radio, television and newspaper) and perceived HIV risk revealed negative correlations between watching television and perceived HIV risk ( $r = -.27$ ,  $p < 0.0001$ ) and between reading newspapers and perceived HIV risk ( $r = -.28$ ,  $p < 0.0001$ ). Respondents who watched television and read newspapers often had lower levels of perceived HIV risk. No significant correlations were found between listening to radio and perceived HIV risk. See Table 14 for results.

Table 14

Intercorrelations between Variables on Media Exposure and Perceived HIV Risk

Variables	1	2	3	4
1. Listening to radio	-	-	-	-
2. Watching television	-	-	-	-.27**
3. Reading newspapers	-	-	-	-.28**
4. Perceived HIV risk	-	-.27**	-.29**	-

#### 4.7 Perceptions regarding HIV vaccines

The view on a future vaccine being able to provide total protection to people from getting HIV was supported by 48.3% of the respondents while 41% uphold the conviction that an HIV vaccine will protect people from being easily infected by HIV/AIDS. In addition, about 68% agreed that it is safe to participate in medical research to develop an HIV-vaccine, while the majority (81.3%) believed that HIV-vaccine development should be a Government priority. However, a substantial group of people (30.9%) reported being unsure as to whether a future vaccine could provide total protection against HIV and another 29.5% were uncertain of an HIV-vaccine being able to protect people from being easily infected by HIV/AIDS. The views regarding HIV vaccines are reflected in Table 15.

Table 15

Frequency regarding HIV Vaccine Perceptions (N)\*

Statements**	SA%	A%	U%	D%	SD%
A future HIV vaccine could provide total protection from getting HIV infection (N=350)	16.9	31.4	30.9	12.3	8.6
An HIV-vaccine will protect people from being easily infected by HIV/AIDS (N=349)	13.5	27.5	29.5	16	13.5
It is safe to participate in medical research to develop an HIV-vaccine (n=346)	34.1	33.8	18.2	6.9	6.9
HIV-vaccine development should be a government priority (N=348)	49.4	31.9	10.1	4.9	3.7

\*Measured as: SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly disagree, U = Uncertain

\*\*Changes in sample size are due to missing values on the variables concerned.



#### ***4.7.1 Correlations between demographic variables, media exposure and HIV vaccine perceptions***

No significant differences were found between race; gender; age groups and HIV vaccine perception scores ( $p > 0.05$ ). Level of education did not significantly correlate with HIV vaccine perception  $p > 0.01$  and  $0.05$ ; (2-tailed). Furthermore, HIV vaccine perceptions did not significantly correlate with media exposure (listening to radio, watching television, and reading newspapers).

#### ***4.7.2 Intercorrelations between measures of HIV knowledge, perceived HIV risk and HIV vaccine perceptions***

The relationship between HIV knowledge measure (transmission, prevention, treatment and AIDS myths), perceived HIV risk (measured as fatalism regarding HIV infection), and perceptions about HIV vaccines were investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. Significant correlations were found between HIV/AIDS knowledge measure (transmission, treatment and myths) and risk perceptions as well as between these measures and HIV vaccine perceptions. Positive correlations were obtained between HIV knowledge regarding modes of transmission and HIV vaccine perceptions;  $r = 0.12$ ,  $p < 0.05$  (2-tailed) and between knowledge of AIDS treatment and HIV vaccine perceptions;  $r = 0.18$ ,  $p < 0.0005$  (2-tailed). High knowledge with respect to HIV/AIDS modes of transmission and treatment were associated with positive vaccine perceptions (high scores reflect positive vaccine perceptions). While negative correlations were obtained between knowledge on modes of transmission of HIV/AIDS and perceived HIV risk;  $r = -.17$ ,  $p < 0.005$  (2-tailed); between knowledge of AIDS treatment and perceived HIV risk;  $r = -.18$ ,  $p < 0.0005$ ; and between HIV/AIDS myths and perceived HIV risk;  $r = -.37$ ,  $p < 0.0005$ , no significant correlations were obtained between perceived HIV risk and HIV vaccine perceptions; and between HIV/AIDS myths and HIV vaccine perceptions. Additionally, neither perceived HIV risk nor HIV vaccine perceptions had statistically significant correlations with knowledge regarding HIV prevention. Hence, respondents who had high knowledge about HIV/AIDS (with respect to modes of transmission, treatment and HIV/AIDS myths) were likely to have low levels of perceived HIV risk (measured as low levels of fatalism regarding HIV infection). The results are shown in Table 16.

Table 16

Intercorrelations between Measures of HIV/AIDS Knowledge, Perceived Risk and HIV Vaccine Perception

Measure	1	2	3	4	5	6
1. HIV/AIDS modes of transmission	-	-	-	-	-.17**	.12*
2. knowledge of HIV prevention	-	-	-	-	-	-
3. knowledge of AIDS treatment	-	-	-	-	-.18**	.18**
4. HIV/AIDS myths -	-	-	-	-	-.37**	-
5. Perceived HIV risk	-.17**	-	-.18**	-.37**	-	-
6. HIV vaccine perceptions	.121*	-	.18**	-	-	-

\*Correlation is significant at the 0.05 level (2-tailed). \*\*Correlation is significant at the 0.01 level (2-tailed).

#### 4.7.3 Predictors of HIV vaccine perceptions

To determine the predictors of HIV vaccine perceptions, standard and hierarchical multiple regression analyses were performed. An exploratory standard multiple regression analysis was conducted followed by a hierarchical multiple regression to assess the relative contribution of each component of the HIV/AIDS knowledge measure and HIV risk perception to predict positive vaccine perceptions, after controlling for the influence of race, gender, and sex. Of the independent variables used in the standard multiple regression model (demographics, HIV knowledge measures and perceived HIV risk), only HIV/AIDS knowledge measures (transmission, prevention and AIDS treatment) were statistically significant ( $t = 3.66$ ,  $p < 0.000$ ). The standard multiple regression model reaches statistical significance (Sig = 0.002; i.e.  $p < 0.005$ ), and it explained 6% of the variance in HIV vaccine perceptions. The square of Part correlation coefficient for HIV/AIDS knowledge measure (statistically significant independent variable) yielded 0.041. This shows that HIV/AIDS knowledge measure makes the strongest unique contribution to explaining the dependent variable. It explained 4% of the variance in Total HIV vaccine perceptions scores. The results are indicated in Table 17.

Table 17

Standard Multiple Regression Analysis re Predictors of HIV Vaccine Perceptions

Variables	$\beta$	t	Sig	95% CI*	
				LL	UL
Race	0.002	0.032	0.974	-1.27	1.31
Age	0.083	1.45	0.147	-0.139	0.923
Sex	0.022	.389	0.697	-0.638	0.953
HIV/AIDS knowledge	0.209	3.66	0.000	0.150	0.497
HIV risk perception	0.105	1.59	0.112	-0.016	0.147

\*CI= confidence interval; LL= lower limit; UL= upper limit.

Hierarchical multiple regression (sequential regression) models were fitted to determine the best predictors of HIV vaccine perceptions. After controlling for the possible influence of demographic variables (race, age and sex), the total variance explained by the model as a whole was 5.8%,  $F(7, 305) = 2.68$ ,  $p < 0.05$ . Only HIV knowledge on treatment was statistically significant (the strongest predictor of reporting a positive view for HIV vaccines) with a beta value  $\beta = 0.16$ ,  $p < 0.01$ .

#### 4.8 Conclusion

In this chapter, findings of the statistical analyses were presented under the various subsections as proposed. The results are discussed in Chapter five.

## **CHAPTER FIVE**

### **DISCUSSION**

#### **5.1 Introduction**

The findings of this study will be discussed in this chapter in relation to the literature. The aim of this study was to investigate perceptions of HIV vaccines and the relationships between HIV knowledge, perceived risk and perceptions about HIV vaccines among participants of different ethnic groups aged between 18 and 49 in the Rustenburg community of Bojanala district with a view to assess the feasibility of the future HIV vaccine trial site in the area. However, great effort was made not to raise any expectation about HIV vaccines. It is hoped that information from the study will inform further community investigations regarding HIV vaccine perceptions and trial participation, should the site be found to be feasible for an HIV vaccine trial. In addition, findings will contribute to the emerging empirical evidence regarding perceptions of HIV vaccines and how it may shape decisions to participate in trials. It should be noted that there is a paucity of studies and published data in South Africa on perceptions regarding HIV vaccines among different population groups at a community level. Community views especially among Whites people were included as the majority of studies related to HIV were being done among African communities.

#### **5.2 HIV vaccine knowledge**

The result of this study reveals that less than half (42.7%) of the study participants indicated any awareness of HIV vaccines. However, in response to subsequent statements on perceptions regarding an HIV vaccine and vaccine trial participation, the participants responded and thus seemed to have had some views regarding HIV vaccines. This aspect was clarified with the fieldworkers recruited from the community and who were responsible for data collection. The translated version (Setswana) of this item asked the participants whether they had any knowledge of HIV vaccines and because they were not knowledgeable responded accordingly. Nevertheless, they seemed to have heard about HIV vaccines and thus were able to respond on the other related items. Despite the fact that great care was taken in the translation of the questionnaire as professional translators assisted in the process, it highlights the importance of this process in questionnaire development and the need for relevant and appropriate translation of research instruments used in multi-cultural contexts. Challenges nevertheless remain around the translation of instruments from English to African languages.

Nevertheless, the results from this study are entirely consistent with earlier research done globally especially within South Africa (Allen, et al., 2005; Lindegger, Quayle & Ndlovu, 2007; Roberts et al., 2005; Sayles, MacPhail, Newman & Cunningham, 2009). A lack of knowledge regarding HIV vaccines varies widely around the world. In a study done among adults in the general United States population, Allen et al. (2005) found both awareness and knowledge of HIV vaccine and HIV vaccine research to be rather low. A surprising number (43%) of the study participants reportedly heard or read about HIV vaccine and on-going vaccine related research. Similarly, (Lindegger et al., 2007; Sayles et al. 2009) found that the majority of young and middle aged adults in South Africa had never heard of an HIV vaccine or efforts to develop an HIV vaccine in both international and national communities.

In this study no association was found between gender, age, level of education and knowledge regarding an HIV vaccine. However some research evidence exists as to the relationship between a lack of knowledge/awareness regarding HIV vaccines and gender - women (particularly among those who were neither parents nor child care-givers); age (the young); and low levels of education (Allen et al., 2005; Roberts et al., 2005; Sayles et al., 2009). The low level of knowledge regarding HIV vaccines amongst Blacks (Africans) found in this study supports findings in similar studies done by Allen et al. (2005) and Sayles et al. (2009). These data show clearly that the populace at large (particularly those worst affected by HIV/AIDS) are either ignorant or ill - informed about HIV vaccines in general and vaccine development efforts. This emphasizes the importance of urgent HIV vaccine and vaccine research related education using appropriate messages in the correct medium to raise awareness and increase knowledge regarding HIV vaccines and related vaccine development efforts. Pre-requisite knowledge in these issues would undoubtedly serve as an essential catalyst to build community preparedness, acceptance of HIV vaccines and engagement in HIV vaccine trials.

It is interesting to note that all people who reported awareness of HIV vaccines indicated that the radio (74.4%) followed by television (67.8%) were their primary sources of information about HIV vaccines. The significance of the mass media in the dissemination of HIV related information has been well documented (Scheepers et al., 2004; Goldstein et al., 2005). These authors reported great gains in HIV preventive behaviour such as abstinence and/or condom

use as well as a significant decrease in reports of recent sexual activity following exposure to Soul City programmes. All other existing national-level HIV/AIDS communication programmes that utilize media have broadly similar achievements (Kincaid et al. 2008; Shisana et al., 2009).

### **5.3 HIV/AIDS related knowledge**

With a few notable exceptions, in the examination of the study participants' HIV/AIDS related knowledge, it is clear that most had an acceptable level of knowledge (54.5% to 92.6%) across different aspects of HIV/AIDS. This finding is not different in any way from data reported by previous studies and it corroborates a growing consensus of opinion on increased HIV/AIDS knowledge across the globe especially among the worst affected countries and groups (Asekun-Olarinmoye et al., 2009; Eaton & Flisher, 2000; Hartung, Nash, Ngubane & Frellund, 2002; Lesch & Kruger, 2004; Macintyre et al., 2004; Rutenberg, Kaufman, Macintyre, Brown & Karim, 2003; Shisana et al., 2005; Shisana & Simbayi, 2003; Vaz, Ferreira, Kulkarni & Motghare, 2006). Despite a relatively high level of knowledge across the board, views based on misconception and prejudice abound. Frequently held misconceptions about HIV/AIDS as reported in this study included the notion that the chances of transmitting HIV infection is small/lower when one has sex with a recently infected person, that mosquito bites could transmit HIV infection and medical circumcision of males cannot prevent HIV infection. Unfounded opinions such as revealed by this study may constrain prevention efforts and thus require attention. Medical circumcision has been adopted by the Department of Health as a strategy to prevent HIV prevention and it is clear that efforts to improve knowledge regarding its benefits will assist in the uptake of male circumcision.

Considerable uncertainty about ART, whether it should be avoided because of negative side effects was reported by some respondents. In addition, myths about the possibility of contracting HIV/AIDS through sex with widows who have not done a cleansing-ritual were held by a large portion of the study sample while a small minority was unsure. There is limited literature on the role of cultural and traditional practices in HIV transmission in Africa, particularly in sub-Saharan Africa. Nonetheless, nobody can gainsay that such practices promote HIV transmission even though studies are yet to be conducted to establish convincing evidence of such linkage. Some of these practices include but are not limited to,

widow inheritance, sexual cleansing (after a husband's death), virgin myth (in view of a cure for AIDS), traditional surgeries (male circumcision, female genital mutilation and body scarification), and blood pacts/initiation into brotherhood and manhood. These harmful cultural practices require exposure to blood and body fluids which carries a significant HIV infection risk.

Depending on what side of the coin one stands, these harmful traditional and cultural practices mean different things to different people. From the public health practitioner's point of view, these practices impact on the health, well being, human rights and dignity of people who engage in it. However, to the custodians of such beliefs and practices, HIV infection is seen as punishment for the transgression of cultural norms and practices (Omonzejele, 2008). The practice of these traditional norms and cultural beliefs is assumed to keep them in harmony with their ancestors (Omonzejele, 2008), the transgression of which brings diseases such as HIV/AIDS and others. Their ancestors are assumed to transcend humanity, yet interact with humanity. It is critical that such myths that have become harmful be demystified through intensive continuous sustained education and empowerment of vulnerable communities. In addition, public health campaigns should involve stakeholders in order to address these beliefs.

Findings from this study suggest that Black participants were more likely to hold myths regarding HIV/AIDS, and that such myths were prominent among study participants who had a low-level education and among those aged 25 - 35years. However, participants with a higher level of education, and the older age-group (36 - 49) were more knowledgeable about HIV transmission, prevention, and treatment. This is interesting as one would expect older people to be more traditional. Moreover, it is a curious paradox that there is more knowledge about HIV transmission, prevention and treatment among the age group (36 - 49) with an increased HIV prevalence rate (Shisana et al, 2009). The level of knowledge among those aged 36 - 49 could possibly be due to their experience owing to the high incidence of HIV infection as well as death rates from HIV-related illnesses which have risen considerably in recent years in the study district (DoH, 2009). In addition, the more educated participants held little or no myths regarding HIV/AIDS. Contrary to reported empirical data by Peltzer and Promtussananon, (2005) and Shisana and Simbayi, (2003), the Black population was found to be more informed about HIV prevention in this study compared with the Whites surveyed. It is possible that this group (Whites) in this area do not perceive themselves to be

at risk of contracting HIV and therefore do not process information about HIV and AIDS carefully. No association was found between gender and HIV/AIDS-related knowledge. With the exception of improved knowledge in Blacks and in the older age-group, these findings support previous research findings on issues of HIV/AIDS-related knowledge and level of education (Negi et al., 2006) and gender (Shisana & Simbayi, 2003).

In many parts of the world, the extraordinary improvement in HIV/AIDS-related knowledge has not translated into significant behaviour change (Dladla et al., 2001; Macintyre et al., 2004; Swora, 2003). The overall impact on national, regional and global HIV and AIDS prevalence and incidence rate is relatively low as evident in the latest AIDS epidemic update (UNAIDS, 2009). In the absence of any vaccine, measures to combat HIV/AIDS will continue to rely heavily on prevention. Conversely, the prevention of HIV transmission is dependent on knowledge and effective learning that is translated into action to reduce risk and vulnerability to infection (Ellison et al., 2003; UNAIDS, 2002). However, the actions required to bring the needed reduced risk and vulnerability to infection is embedded in rational decision making and this (rational) is the dominant paradigm in public health.

Furthermore, the Health Belief Model (HBM) postulates that people would make rational decisions to live a healthy long life when given the information they need about what is good for them and what is bad for them and to provide services that they can use to act on the information alongside some motivation. However with HIV/AIDS, the reverse is true, as the association between knowledge and rational decision is rather ambiguous (Dladla et al., 2001; Macintyre et al., 2004; Swora, 2003). The HIV pandemic continues to spread apace in many parts of the world, as if the human race is being held captive by the HI virus because knowledge (regarding HIV transmission, prevention and treatment) is not translated into the desired protective behaviours.

One study after another has highlighted that people would engage in behaviours that may predispose them to HIV/AIDS despite having the necessary knowledge and skills to prevent HIV infection (Bhattacharya et al., 2000; Macintyre et al., 2004). Based on findings from studies among Commercial Sex Workers (CSW) and Intravenous Drug Users (IDU) in Asia, Pisani et al. (2003) concludes that many a time, people contract HIV infection, despite good knowledge and skills regarding HIV/AIDS prevention because they engage in risky behaviours for perfectly rational reasons (The Guardian, 2008). This finding makes a strong



case for the ambiguity in the paradigm of ‘rational’ decision making in health. Quite frankly, what is rational for Public health and Public health practitioners may not necessarily be rational for the worst affected groups and/or for the populace at large. Against this background of ineffective knowledge-rational decision approaches, one can conveniently conclude that health related behaviours (in this case HIV/AIDS preventive behaviours) are determined not only by conscious rational choice by skilled and knowledgeable individuals, but also by the extent to which community and societal contexts enable and support the performance of such behaviours (Ellison et al., 2003; Meyer-Weitz, 2005; Sumartojo, 2000). This principle recognizes the impact of institutional structures on health.

Underpinning the concerns expressed by researchers on HIV/AIDS related knowledge vs. behaviour change, it may be necessary to look into how existing public health policies, programmes/interventions and service delivery at institutional, national, regional, and global level in both public and private sectors either hinders or boosts HIV preventive behaviours and the uptake of HIV preventive measures directly or indirectly. This knowledge should come preferably from the proverbial horse’s mouth – ‘hard-to-reach’ groups in marginalized communities, worst affected groups, disadvantaged communities, and even from activists in the field of HIV and AIDS prevention and treatment. Community contributions are likely to inform stakeholders about issues in HIV prevention that are relevant to programme development, service delivery and policy responses. Programmes developed and implemented through this process would thus be informed by a comprehensive understanding of what is happening at the knowledge, social, structural and contextual levels for a specific audience (Ellison et al., 2003).

#### **5.4 Perceived HIV risk**

Findings of this study revealed a mixed perception of risk of acquiring HIV/AIDS among the study participants. A majority had a fair enough sense of perceived risk in acquiring HIV/AIDS as evident in their responses to statements pertaining to perceived HIV risk. It is encouraging to know that a sizeable number of respondents do not perceive HIV and AIDS as ‘just another’ disease, hence, the need to be mindful and not throw caution to the winds in the bid to enjoy life. In addition, the prospect of a grant-aided livelihood (should they contract HIV and AIDS infection) would not tempt respondents with an appropriate sense of perceived HIV risk to care less about getting the disease. As such, a large number of

respondents have not relented in their efforts to prevent HIV infection and the consequent feeling that they could not get HIV/AIDS by any chance or in a matter of time. Nonetheless, some degree of fatalism about the inevitability of HIV/AIDS pervades a considerable number of responses. A significant (65% – 70%) number of the population sample considered life to be risky and see HIV/AIDS as one more problem about which they could do nothing. Besides, some of the respondents felt there is no point in worrying about AIDS until one starts to get ill while a substantial group (32%) alleged that it is just a matter of time before they get HIV/AIDS.

Consistent with previous research (Asekun-Olarinmoye et al., 2009; Brown & Van Hook, 2006; Derlega et al., 2006; Kelly, 2002; Pettifor et al., 2004; Sadob et al., 2006; Shama et al., 2002), a large majority do not think their behaviours over the years could put them at risk of HIV/AIDS, nor feel their partner can infect them with the disease. Nevertheless, the bulk (96%) of the population sample felt that most people in their community were at risk of getting HIV/AIDS. Justifiably, the Rustenburg community where this study has been carried out is a fast growing community where HIV/AIDS has been spreading rather rapidly. Moreover, Bojanala district in North West Province (where the community is located) accounts for the second highest infection rate in the “major urban category division WHO (2008). On the whole, the response and response rate regarding perceived HIV risk (measured as fatalism regarding risk of contracting HIV/AIDS) reflects a low level of fatalism regarding risk of contracting HIV infection, though with an element of contradiction, denial and underestimation of HIV risk. Importantly, Webb, (1997) and Meyer-Weitz, (2005) argue that fatalism is one of the ‘real reasons’ behind the unrelenting pandemic and the presence of such a point of view can inhibit preventive behaviours and uptake of preventive measures (Forster, 2001; Meyer-Weitz, 2005).

Contrary to findings of a growing number of studies reporting on perceived risk (Anderson & Beutel, 2007; Barden-O’Fallon et al., 2004; Belcher et al., 2005; Maes & Louis, 2003; Macintyre et al., 2004; Pettifor et al., 2004), no significant difference was found in perceived HIV risk across genders (measured as fatalism regarding HIV infection). This finding is similar to those found by (Meyer-Weitz et al., 2009b; Meyer-Weitz, 2005) using the Human Science Research Council’s (HSRC) EPOP survey to understand fatalism in HIV/AIDS protection. However, in this study, race was associated with fatalism regarding risk of contracting HIV infection, with Blacks more likely to hold these views. This study result is

consistent with earlier research findings (Anderson et al., 2007; Macintyre et al., 2004; Meyer-Weitz et al., 2009b; Meyer-Weitz, 2005). In addition, this present study shows that respondents with a higher level of education were more likely to have a lower level of fatalism regarding risk of contracting HIV infection. These results suggest a relationship between race (Black), low education levels and perceived HIV risk, and it highlights the importance of recognizing the role of race and level of education as it informs and influences perceived HIV risk. Assessment of perceived HIV risk has further been found to be associated with knowing someone with or who has died of HIV/AIDS (Anderson et al., 2007; Macintyre et al., 2004), personal experience with AIDS and sexual debut (Anderson et al., 2007), connectedness to parents and/or community (Macintyre et al., 2004), condom use (Belcher et al., 2005; Macintyre et al., 2004), and age-group (Barden-O'Fallon et al., 2004; Macintyre et al., 2004; Maes & Louis, 2003; Pettifor et al., 2004).

Mindful of the influence of various modifying and intrapersonal factors on perceptions regarding risk, threat and benefit, the HBM proposes that people would most likely take up recommended health related behaviours if there is an understanding of the true nature and impact of the disease/ill health condition on their health (individually and collectively), and if they see themselves to be at risk of such disease as well as belief that the recommended health behaviour change would bring about a reduction or possible eradication of the threat posed by the disease (Glanz, Rimer & Lewis, 2002; National Cancer Institute [NCI], 2003; Hochbaum, 1958; Nutbeam & Harris, 2002; Rosenstock, Stretcher & Becker, 1994). In spite of the widely acknowledged increase in the understanding of the nature and impact of HIV/AIDS and available preventive measures the world over, perceived HIV risk, one of the bedrocks of any health behaviour education, change, and promotion seem incongruous (Glanz, Rimer, & Lewis, 2002; National Cancer Institute [NCI], 2003). More importantly, this issue is almost universal. A close association between race, low level of education and perceived HIV risk as revealed by this study cannot be underestimated if much success is expected from any HIV/AIDS intervention especially with measures aimed at preventing and curtailing HIV infection.

## **5.5 Perceptions regarding HIV vaccines**

With the exception of those who had some air of uncertainty about HIV vaccines, this study revealed a noteworthy positive view-point regarding HIV vaccines. This is evident by the

percentage (41 to 48.3%) of the respondents who expressed support of a future vaccine, able to protect people from getting or being easily infected by HIV. Although the majority (68%) argued in favour of safety regarding participation in medical-research to develop an HIV-vaccine, yet the concept of vaccine trials, especially HIV vaccine trials appear blurred and not well understood by a substantial number (one-third) of the respondents. Nonetheless, nearly (81.3%) of all respondents believed that HIV-vaccine development should be a Government responsibility and priority. In addition, the data showed that HIV/AIDS knowledge on transmission; prevention and treatment were associated with perceptions regarding HIV vaccines. Nevertheless, HIV knowledge on treatment was the only statistically significant variable in predicting perceptions regarding HIV vaccines. In contrast to findings of previous research efforts (Frew et al., 2008; Lindegger et al., 2007; Roberts et al., 2005; Sayles et al., 2009; Zimet, Blythe & Fortenberry, 2000), no correlations or significant difference were found in perceptions regarding HIV vaccines across race groups, genders, age-groups and level of education.

It has been strongly argued that health literacy (especially treatment literacy in HIV/AIDS management) is the key to treatment/medication adherence (Nielsen-Bohlman, Panzer & Kindig, 2004; Schenker, 2006; Skhosana, Struthers, Grey & McIntyre, 2006). Provision of ART and good education about ART are equally important. Kalichman et al., (2008) found that people with a higher level of health literacy about ART adhere better to their medication. This finding convincingly supports previous arguments with regards to health literacy. As such, reinforcing health literacy on HIV treatment and the possibilities of the future HIV vaccine may hold the clue to supportive perceptions for HIV vaccines, trial participation and the likely future uptake of a vaccine.

Despite widespread gaps and confusion in knowledge regarding HIV vaccines, (Allen et al., 2005; Lindegger, Quayle & Ndlovu, 2007; Roberts et al., 2005; Sayles et al., 2009), existing mistrust and conspiracy theories with regards to medical research (Roberts et al., 2005; Newman et al., 2006a & 2006b; Rudy et al., 2005), and negative media publicity about vaccines and HIV vaccine, among other issues, support for future HIV vaccine and vaccine trial participation was rather remarkable. This could on the one hand be due to the terrifying scale of the impact of the HIV epidemic and relative ineffective biomedical, behavioural, community and individual preventive efforts (Ellison et al., 2003; Meyer-Weitz, 2005).

Findings in a qualitative study in the area by Meyer-Weitz et al, (2008a & 2008b) found that people view a HIV vaccine as the only viable alternative as behaviour change was too difficult. This seems to buttress the arguments for future HIV vaccines. On the other hand, the inaccessibility of current ARV's by the majority of those affected by HIV as reported by UNAIDS, (2009) could be a motivating factor for the support for future HIV vaccine. Meanwhile, either the individual/communities previous experience with existing preventive vaccines and immunization schedule in the Expanded Program on Immunization (EPI) against preventable diseases (in which case, they do not have to pay) or the exorbitant costs which limit the widespread use of other preventive vaccines which do not form part of the EPI, may offer explanation for the unanimous belief in HIV- vaccine development as a Government responsibility and priority. Moreover, the choice of response as reported by this study could have been informed by the stance of the current health system which does not appear to be overly concerned about most of the population who cannot afford private care. Hence, the widespread consensus that government has a key role to play in the success of HIV-prevention programmes (Ellison et al., 2003; Sayles et al., 2009).

#### **5.6 Relationship between HIV knowledge, perceived risk and perceptions regarding HIV vaccines**

In this study, correlations were found between HIV knowledge and perceived HIV risk as well as between HIV knowledge and perceptions regarding HIV vaccines. However, no relationship was found between perceived risk and perceptions regarding HIV vaccines. The data states explicitly that with the exception of knowledge regarding HIV prevention, people who had good knowledge regarding HIV transmission, treatment, and held little or no myths about HIV were more likely to have low levels of perceived HIV risk. Additionally, HIV knowledge regarding modes of transmission, treatment and myths were positively correlated with perceptions regarding an HIV vaccine. In other words, respondents who had a good enough knowledge on transmission, treatment and who do not believe in HIV myths seem to be favourably disposed towards HIV vaccines hence the positive view in support of a future vaccine being able to protect people from getting, or being easily infected by, HIV.

The views revealed by this study are opposed to findings from earlier research in which awareness and knowledge regarding HIV showed no relationship with peoples' perceived HIV risk (Cok, Gray & Ersever, 2001; Klepp, Mnyika, Ole-Kingori, Leshabari & Kissila,

2004; Ojo, 2004) and the consequent key challenges for development practitioners and Public health practitioners working in the field of HIV/AIDS prevention. There is a growing recognition that knowledge regarding HIV transmission, prevention and treatment (although not always enough) informs perceived HIV risk, behavior change and in this case positive view-point towards HIV vaccines. Though respondents might not be able to achieve or sustain behaviour change, nonetheless, a paucity of research has investigated the relationships between HIV/AIDS knowledge, perceived risk and vaccine perceptions.

Furthermore, more recent research has focussed on understanding the relationship between awareness/knowledge of HIV vaccine and possible predictors, determinants, and factors that influence vaccine perception and acceptability. There is no doubt at all that these are essential parts of the process of large phase vaccine trials and efforts to understand future vaccine acceptance and possible uptake (Ellison et al., 2003). The prevailing low and possibly incorrect estimation of perceived HIV risk of the populace at large may not augur well for the future of HIV vaccine uptake for the simple reason that awareness or knowledge of HIV vaccine without a well placed perceived risk of acquiring HIV infection would most likely affect possible uptake of HIV vaccines. It can be hypothesised that those who perceive themselves to be at risk might be more positively inclined towards HIV vaccines than others. Clearly, little is known about the possible interaction between perceived HIV risk and HIV vaccine perceptions. Deductions from this study with regard to the relationship between HIV knowledge, perceived risk and perceptions regarding HIV vaccines (especially between perceived HIV risk and perceptions regarding HIV vaccines) are worthy of consideration as it highlights several key areas where research is urgently needed.

### **5.7 Role of the media in HIV/AIDS related knowledge, perceived risk and views regarding HIV vaccines**

This study revealed statistically significant associations between exposures to the mass media and HIV/AIDS related knowledge and perceived risk. Respondents who either watched television, read newspapers and, or listened to the radio were more knowledgeable about HIV/AIDS with regard to its transmission, prevention, treatment and held fewer myths than those with less exposure. Similarly, respondents who reported watching television everyday and reading newspapers at least once per week reported lower levels of perceived HIV risk. No significant association was found between exposure to any of the mass media (listening to

radio, watching television, and reading newspapers) and HIV vaccine perceptions. The findings on the role of mass media on knowledge and perceived HIV risk is not surprising considering the frequency of media exposure (52.7 to 79.8%) as reported by the study participants. More so, in a country where an alleged 99% of the population have access to the radio, 75% have access to television, and 70% read newspapers (Harrison, 2001).

A simple summary of this data demonstrates the enormous impact that mass media has had on the study population. Meanwhile the perceived role of the mass media in HIV/AIDS related issues have been mixed. Study after study has reported improvement in knowledge regarding HIV/AIDS related issues, especially knowledge and changes in HIV/AIDS related behaviour (Bertrand et al., 2006; Goldstein et al., 2005; Peltzer & Seoka, 2004; Pettifor et al 2004; Pettifor et al 2005a & 2005b; WHO, 2006). Nonetheless, Shelton et al., (2004) and Meyer-Weitz, (2005) argues that incessant negative media coverage of the magnitude of the epidemic among other things, would most likely render susceptible people helpless and hopeless. Given the very different foci of research, it is perhaps unsurprising that different studies come up with such different explanations and conclusion. Two independent national surveys conducted in the United States and India identified television, radio, and newspaper as the primary source of HIV/AIDS information (Harrison, 2001). There are strong arguments for and against the influence of mass media in HIV/AIDS related issues, and it would be disingenuous to claim that mass media programs are without shortcomings. Nonetheless, the actual and potential for positive HIV/AIDS prevention and behaviour change can be identified and strengthened. For instance, using the mass media as cues for action with regards to HIV vaccine can help to create and raise public awareness of HIV vaccine development, and the value of a future vaccine in HIV prevention.

It has been argued that perceived risk for a disease or disorder influences the likelihood of taking recommended preventive health measures (Becker & Rosenthal, 1984; Turner et al., 2004). The combined effects of the constructs in the health belief model (as applied to this study) more often than not yield the desired action if accompanied by rational decision. The HBM posits that the mass media is likely to be one of the most critical modifying factors of perceived risk and behavioural compliance (Diclemente & Peterson, 1994; Kaiser Family Foundation & SABC, 2007; Graham, 2002). It is assumed that the knowledge of a disease, the risk it poses, the benefits of recommended action and exposure to factors that start people

on the way to changing behaviour (i.e. cues) would result in observance of the recommended preventive health actions (compliance). However, attempting to effect changes in health/behaviour is rarely as simple as it may appear.

The media has given information about HIV and AIDS transmission and prevention and through this process it is expected that people will understand their own risk. However, despite the presence of good information, people do not understand their own risk because of other psychological processes which may impact on realistic HIV risk assessment, such as denial of HIV risk. It might be worthwhile to evaluate how the mass media has influenced perception of HIV risk positively or otherwise, as a paucity of studies have investigated the role of mass media on perceived HIV risk. Given the paucity of studies in this regard, it is somewhat difficult to write about the ways in which the mass media has shaped perceived HIV risk. It is also possible that some groups (Whites and Indians) might not consider themselves to be at risk of HIV and AIDS as very little HIV media coverage pertains to them.

In light of the vast majority (89%) of study participants who possess cell-phones, the frequency of daily communication (80%) using the cell-phone as reported by this study, and the alleged huge number (about 37 million) of cell phones in use by South Africans, this study upholds the view put forward by a few other researchers in the field of the innovative use of cell-phones for HIV and AIDS related behavioural change communication (Cassidy, 2008; Kaplan, 2006; de Tolly & Alexander, 2009; Lester, Gelmon & Plummer, 2006; Ybarra & Bull, 2007). Literature on the use of the cell-phone (mobile telephones) as a health-care intervention for HIV or any acute/chronic disorder in either developed or developing countries are either in infancy or almost none existent. Yet the inherent potential of mobile technology can be harnessed in HIV/AIDS and HIV vaccine/vaccine trial education and communication. However, this would be almost impossible for Public health practitioners in the field of HIV/AIDS prevention without the aid of appropriate and relevant policy driven governance. Clearly, HIV/AIDS is a multi-dimensional and multi-factorial phenomenon that requires very different approaches and tools if the pandemic is to be reduced to a minimum. The political will, commitment, expressed support, and cooperation of national and international government can compel Global System for Mobile communications (GSM) providers to work hand-in-hand with these HIV/AIDS practitioners and stakeholders to



support HIV-prevention initiatives as well as disseminate HIV/AIDS and HIV-vaccine information to the masses.

The HBM- the theoretical framework that underpins this study, underscores the importance and interplay of its constructs in the understanding of issues that either promote or inhibit HIV/AIDS prevention efforts.

## CHAPTER SIX

### CONCLUSION AND RECOMMENDATIONS

#### 6.1 Conclusions

To date, the HIV/AIDS pandemic remains a global disaster. Given the global scale of the pandemic and the limited success of prevention programmes in controlling its spread, an urgent need for the development of a safe, effective and affordable HIV preventive vaccine for curbing the pandemic becomes crucial, particularly in the developing world.

Based on findings from this study, it is reasonable to infer that the study participants had a relatively moderate level of awareness of HIV vaccine though without much knowledge about its science. However, in more than half of the study participants, people with low levels of education, and Blacks in general, had little knowledge about HIV vaccines. Being Black and having a low level of education might pose a serious threat to positive perceptions about the future HIV vaccine and thus trial participation. As such, it is important that public health practitioners, particularly those in the field of HIV prevention, develop and increase awareness and knowledge of HIV vaccines among Blacks, and the less educated, particularly in many of the worst-affected and at-risk communities and countries. Moreover, effort should also be made to distinguish and clarify awareness about HIV vaccine from knowledge, as awareness does not imply being knowledgeable.

The study data revealed a remarkable level of knowledge among participants with regard to HIV transmission, prevention, treatment and low levels of myths. However, a few uncertainties about HIV treatment as well as considerable misconceptions and myths that could jeopardize HIV management efforts thrive among some individuals from the Rustenburg community. Though race (being Black) was not alluded to as a reason for these views, low level of education and age-group (25 – 35 years) played a prominent role in influencing respondents' HIV/AIDS knowledge. Therefore, aside from dispelling existing unfounded views, the need to develop clear, specific and appropriate age and level of education selective HIV/AIDS-related knowledge (particularly for this risk group), requires urgent attention if the much-needed success is to be achieved with HIV prevention, vaccine trial participation and possible future uptake. In addition, this study suggests the incorporation of HIV vaccine literacy into the primary and secondary school curriculum as

well as widespread HIV/AIDS community outreach throughout the country. Possible justification for this proposition is grounded on the reality that most of the population of the communities that have been disproportionately affected by HIV/AIDS have primary-level-education or less as absolute maximum qualification. The people who have not had the benefit of good HIV/AIDS education as result of dropping out of school would benefit greatly from such an outreach.

A revealing and startling insight into the community's perceived HIV risk, measured as fatalism regarding risk of contracting HIV infection was provided by this study. Fatalistic attitudes and views towards protecting the self from HIV/AIDS infection was lower than reported in a number of studies. Despite well-documented evidence on the rapid spread of HIV infection in the study location and reports that the community account for the second highest infection in the 'major urban category' division (a demographic HIV-risk area), a large number of respondents have not relented in their efforts to prevent HIV infection. This existing view could be of great benefit to HIV vaccine prevention efforts should the site be found to be feasible for an HIV vaccine trial. Nonetheless, as seen in HIV vaccine and HIV/AIDS- related knowledge, being Black and having a low-level of education were linked to fatalistic views about HIV risk. Perhaps these are the most profound demographic challenges facing HIV knowledge and perceived risk and require special effort from public health practitioners.

Meanwhile, it is becoming increasingly clear that perceived risk is the prominent attribute propelling the HIV/AIDS pandemic globally and particularly in South Africa. These findings highlight the major problems facing HIV management efforts as well as the importance of recognizing the role of these characteristics in HIV and AIDS issues. In addition to these, there is a need to overcome the powerful and overarching economic, social, political, structural and sometimes cultural values that sustain these formidable obstacles to HIV prevention and eradication.

The study reflects prevailing positive views held by respondents in the Rustenburg community that a future HIV vaccine would protect against HIV infection and that HIV vaccine trial participation is safe. This could possibly be due to the ineffective individual-level approaches to HIV prevention, an interpretation which might explain respondents'

inherent desire and support for medical rather than behavioural intervention to manage HIV/AIDS. The implication of this view is that the study participant and the study location (Rustenburg Community of Bojanala District) could form important target groups for trial participation motivation and recruitment. The view on HIV vaccine as a government responsibility and priority reflects respondents' perceived stance on the current health system with regard to ARV and to its apparent lack of real concern for most of the population who cannot afford private care. This has an implication in both HIV vaccine advocacy and policy at national, regional and global levels. Additionally, knowledge on AIDS treatment, the only statistically significant variable that was positively associated with perceptions regarding HIV vaccines deserves special attention. This emphasizes the appropriate placement of HIV-related knowledge in vaccine knowledge development and dissemination. The findings from this study suggest that, with the exception of perceived risk and perceptions regarding HIV vaccines, HIV/AIDS-related knowledge is essential to understand perceived HIV risk and the importance of HIV vaccine development.

The data generated from this study reported and emphasized the vital role that the mass media play in HIV/AIDS issues. Media exposure not only improved HIV/AIDS related knowledge, but also impacted on perceived HIV risk among the study participants. Although evidence abounds on the constructive influence of mass media intervention on HIV and AIDS knowledge and behavioural practices, conclusive evidence on the influence of existing mass media programmes/intervention on the afore-mentioned variables (perceived HIV risk and perceptions regarding HIV vaccines) are insufficient. This may be due to the relatively little attention given to HIV vaccine education in the mass media. However perceived risk for HIV needs special attention as various psychological processes may impact on realistic HIV risk assessment i.e. denial, stigma.

The possibilities for harnessing cell phones for disseminating information about HIV and AIDS including information about ART and HIV vaccines seems untapped. This is an important feature of "The Digital Revolution", which is characterized by widespread use of computers, information technology and cell (or mobile) phones. This has great significance in South Africa, where an estimated 37 million cell phones are in use among an overall population of about 47 million people. This connotes that a mighty lot of talking is getting

done, and the majority of the people just live on their phones. This has implications for both HIV/AIDS education and communication in South Africa.

## **6.2 Limitations of the study**

There are no doubts about the usefulness of this study but it has its limitations. This study aims to reflect the views of the local community with regard to perceptions of HIV vaccines and the relationships between HIV knowledge, perceived risk and perceptions about HIV vaccines in view of assessing the feasibility of the future HIV vaccine trial site in the area. As indicated, the primary focus is on HIV prevention and on understanding the different issues/factors which may either promote or inhibit HIV prevention and prevention efforts. The cross sectional nature of the survey does not give us an indication of how these factors change overtime. Furthermore, prevention is often voiced as better than cure. This study does not in any way suggest that HIV/AIDS treatment, care and support of the infected are unimportant. Beyond reasonable doubt, HIV treatment has helped to alleviate, and will continue to mitigate, the impact of the pandemic. However, this study emphasized the importance of strengthening HIV prevention - the ultimate goal required to achieve set objectives contained in both the Millennium development goal and the UNAIDS (2009) Outcome Framework 2009 – 2011.

The sampling method employed in the study that generated the data in this study requires better techniques for improving response rate among White and Male community members. White people and males were under-represented, and this can influence the outcome and interpretation of the study findings.

HBM, the theoretical framework underpinning this study does not take contextual influence such as the social, cultural, biological and personality factors, among other issues, into consideration. Contextual factors are not only important in the transmission and impact of HIV, and the implementation of interventions; they are also important determinants of health-related behaviours. The deficit of these factors in this study will invariably affect the interpretation and use of these study findings. Furthermore, HIV/AIDS studies based on HBM have been inconsistent in their assessment of its constituent concepts making comparison of findings somewhat difficult.

Although the aim of this study was to assess the relationship of the afore-mentioned variables among representative local community members, allusions were made to findings and studies done in developing and developed countries as well as across all groups (adolescent, CSW, IDU, MSM, Students, etcetera). This is due to the paucity of studies on the subject of interest at the community level.

The Rustenburg community of Bojanala District, located in North West Province, is one of the many communities in South Africa that is plagued by rapidly increasing HIV infection. It is therefore important to conduct a similar study on a similar sample population outside the North West Province and South Africa, particularly in hyper endemic settings if findings are to be generalized for the Province.

In conclusion, this study provided an indication of perceptions of HIV vaccines and the relationships between HIV knowledge, perceived risk and perceptions about a HIV vaccine in the Rustenburg community. It also provided useful information for future vaccine trial planning in the local community. In addition, it has led to a better understanding of the role of these factors (knowledge, perceived risk, socio-demographics and other modifying issues) that may inform vaccine perceptions and possibly trial participation, while highlighting several key areas where research is urgently needed. It is hoped that information from the study will inform further community investigations regarding HIV vaccine perceptions and trial participation, should the site be found to be feasible for an HIV vaccine trial. In addition, findings will contribute to the emerging empirical evidence on the importance of perceptions of HIV vaccine in shaping the decision to participate in trials as there has been a paucity of studies and published data from South Africa on perceptions of HIV vaccine among different population groups at a community level.

### **6.3 Recommendations**

A number of significant findings from this study have implications for strategies in HIV prevention, prevention efforts, advocacy and policy. In the light of the above findings, the following recommendations are made:

Further studies utilizing qualitative research methods/approach should be undertaken to understand issues that inform and sustain existing myths and misconception in Rustenburg and in many of the communities in which HIV/AIDS predominates. The understanding of issues in this regard would prove useful in the design of effective interventions aimed at

addressing those mistaken beliefs. (Ghani & Boily 2003; Ellison et al., 2003), and (Gregson 2003) – quantitative social scientists who have made significant advances in data collection and analysis have argued that quantitative questionnaire surveys are only able to identify subtle differences in behavioural, socio-cultural and structural factors responsible for differences in HIV prevalence in ‘ostensibly similar’ populations. Hence, this study makes a case for this type of approach. Equally important is the need to gain proper understanding of the relationship between traditional/cultural practices and HIV transmission. Hypothetically, and with evidence from limited literature, it may be suggested that a relationship exists between these practices and HIV transmission. However, the underlying dimensions for such relationships are not addressed by most studies.

This study advances the development of clear, specific, appropriate age and level of education selective HIV/AIDS-related education of the populace particularly the worst affected groups with distinctive emphasis on HIV knowledge on treatment. Campaigns to promote and incorporate the afore-said along with HIV vaccine and research literacy into existing HIV/AIDS school curriculum should be a prominent characteristic of most, if not all, HIV prevention strategies, particularly in vaccine trial initiatives. Information, in a language appropriate for target audiences, about the great benefits that a future HIV vaccine could offer against HIV infection and the potential risks involved in vaccine trials are equally important. This should be an essential feature of any interventions in marginalised and disproportionately affected communities. Education through mass media is cost effective in reaching large numbers of people with relevant health promoting information.

As indicated in this study, widespread consensus that Government has a key role to play in the success of HIV vaccine development and most probably future vaccine supply should be upheld. Moreover, concerted effort should be made to canvas for political governance’s provision of the will, and/or the means, for effective HIV prevention. The provision should be such that it includes investment in community-level capacity to support evidence-informed HIV/AIDS and HIV vaccine/vaccine trial education. More often than not, local community contexts within which people negotiate their identities play a vital role in either enabling or constraining HIV/AIDS prevention efforts.

Further research efforts are required among comparable groups/communities to evaluate and validate the findings revealed by this study on HIV knowledge, perceived risk, perceptions

about HIV vaccines and the relationship between these variables. For instance, if the existing level of fatalism regarding the risk of contracting HIV infection is considered, the high HIV prevalence in the community is understandable and effort is needed to assist community members to have a better understanding of their perceived HIV risk.

Mindful of the profound impact made by mass media exposure on HIV/AIDS-related knowledge, perceived HIV risk and perceptions regarding HIV vaccine among study participants, this study advocates the scaling up of existing mass media intervention/programmes. In addition, further research examining the role of mass media exposure on perceived HIV-risk and perceptions regarding HIV vaccine are required rather than just assessing its influence on HIV/AIDS-related knowledge, skills and behaviour. This has great significance for HIV prevention efforts in populations that have identified the mass media (television and radio) as their primary sources of HIV/AIDS and HIV vaccine information.

Perceptions on HIV vaccine and vaccine development reflect an unwavering support, belief and desire for HIV vaccine. Though experts caution that there is still a long way to go before a safe and globally effective HIV vaccine will be made available, breakthrough in HIV vaccine development is inevitable. The results of the Thai phase III HIV vaccine clinical trial demonstrate that a safe and effective AIDS vaccine is an achievable goal. Against this background, unprecedented collaborative effort among stakeholders is required to make the future HIV vaccine globally available. That is, the principle of global availability of the future HIV vaccine should be enshrined in International Declarations to support universal access, equity, participation and multi-sectoral action, all within a framework of gender equality and human rights.

To put it in another way, prospective HIV vaccines should be included in the existing WHO Expanded Program on Immunization (EPI), such that stigma that may attend or discourage uptake of a stand-alone HIV vaccination is eliminated. Like small-pox, Trivalent Oral polio (TOPV), Measles, Bacillus Calmette-Guerin (BCG), Hepatitis, Haemophilus influenzae B, Diphtheria, Pertussis and Tetanus (DPT) vaccines, a preventable HIV vaccine could help save millions of lives. No doubt, demand for the future HIV vaccine would be greatest in communities, countries and regions that are either already burdened by the sufferings and deprivation the pandemic brings, that lack the capacities required to mount an effective



prevention and care response, or at least are not able to pay for them. However, these are groups who would in future be instrumental to ending the scourge of HIV/AIDS through their participation in vaccine trials. Obviously, when governments at national, regional and global level spend more to develop a safe and effective HIV vaccine, there would indeed be a fall in HIV infection. Additionally, the eventual HIV/AIDS treatment burden will decrease.

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01 SEPTEMBER 2008

PROF. A MEYER-WEITZ (11471)  
PSYCHOLOGY

Dear Prof. Meyer-Weitz

**ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0257/08**

I wish to confirm that ethical clearance has been approved retrospectively for the following project:

*"HIV/AIDS and related behaviors baseline survey – Bojanala District"*

**PLEASE NOTE:** Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

.....  
**MS. PHUMELELE XIMBA**

cc. Dr. J Frohlich  
cc. Mr. R Hamilton  
cc. Dr. M Latka  
cc. Prof. G Churchyard  
cc. Dr. K Fielding



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13 October 2009

Mrs T O Adebawale  
Faculty of Humanities, Development and Social Sciences  
c/o Mr A Adebawale  
School of Biological and Conservation Sciences  
WESTVILLE CAMPUS

Dear Mrs Adebawale

**PROTOCOL: A community based study of the relationship between HIV knowledge, perceived risk and perceptions about HIV vaccines**  
**ETHICAL APPROVAL NUMBER: HSS/0695/2009**

In response to your application dated 05 October 2009, Student Number: **209531907** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL**.

**PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.**

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

**Professor Steve Collings (Chair)**  
**HUMANITIES & SOCIAL SCIENCES ETHICS COMMITTEE**

SC/sn

cc: Prof. A Meyer-Weitz  
cc: Ms S van der Westhuizen

## QUESTIONNAIRE

<b>KABP BASELINE SURVEY - BOJANALA DISTRICT</b>
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***FOR THIS QUESTIONNAIRE I WILL ASSIST YOU BY READING OUT THE QUESTIONS TO YOU SO THAT YOU MAY MARK THE ANSWERS YOURSELF AND THEN SEAL THE QUESTIONNAIRE IN THE ENVELOPE. THIS WILL ENSURE ANONYMITY AND CONFIDENTIALITY OF YOUR ANSWERS.***

**1. Sex of respondent** (*Mark self*)

Male	1
Female	2

**2. How old are you?** (In years)

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**3. How would you describe yourself?** (*Read out options*)

African	1	Coloured	2	Asian/Indian	3	White	4	Other...	5
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**4. What is your home language?** (*Mark appropriate response*)

Tswana	1	Pedi	7
Sotho	2	Tsonga	8
Zulu	3	Venda	9
Xhosa	4	English	10
Siswati	5	Afrikaans	11
Ndebele	6	Other .....	12

**5. What is the highest level of education that you have obtained** (*Mark appropriate response*)

No schooling	1
Up to Std 1 (From Grade R to Grade 3 Junior Primary School)	2
Std 2, 3 (Grade 4-5 Junior Primary School)	3
Std. 4, 5 (Grade 6-7 Senior Primary School)	4
Std 6, 7 (Grade 8 and 9 Junior Secondary)	5
Std 8-10 (Grade 10-12 Senior Secondary)	6
Diploma(s)/ Occupational certificates	7
First Degree/ Higher diplomas	8
Honours/Master's degree/Doctorate	9

## QUESTIONNAIRE

**6. For how long have you been living in this area?** *(Read out options)*

Less than one year	1
One to two years	2
Longer than two years	3

**7. How would you describe your employment situation?** *(Read out options – make sure that you get the answer that best describe their employment situation)*

Unemployed looking for work	1
Unemployed not looking for work	2
Unable to work - Receive social grant	3
Student/pupil/learner	4
Self-employed – part time less than 40 hours per week	5
Self-employed – full time 40 hours or more per week	6
Employed, less than 40 hours per week	7
Employed, full time (40 hours or more)	8
Other, specify	9

**8.1 I am going to read a number of statements to you. Which one best describes your household situation?** *(Mark only one)*

a	Not enough money for basic things like food, clothes	1
b	Have money for food and clothes but short on many other things	2
c	We have the basics but not enough money for expensive items	3
d	Have money to save or buy expensive things	4
e	Other (specify) .....	5

**8.2 I am going to read you a list. Please tell me if your household has the following things that are in a working condition?** *(Ask each question)*

	Household amenities	Yes	No
a	Does your household have a working TV?	1	2
b	Does your household have a working fridge?	1	2
c	Does your household have a working cell phone?	1	2
d	Does your household have a working telephone?	1	2
e	Does your household have working electricity?	1	2
f	Does your household have a working private car?	1	2
g	Does your household have a vegetable garden?	1	2
h	Does your household have a working radio?	1	2

**9. Now I am going to ask you about the people in this household who get a social grant.** *(Read each statement; code number)*

## QUESTIONNAIRE

Number of people getting a social grant	
a	How many people get a pension?
b	How many people get a disability grant?
c	How many children get a child support grant?
d	How many children get a foster care grant?

**10. How many of your own children are dependent on you? (Mark one response)**

No children	0
One child	1
Two children	2
More than two children	3

**11. How many other children (not your own) are dependent on you? (Mark one)**

No other children	0
One child	1
Two children	2
More than two children	3

**12. Now I'm going to read a list, please tell me which one best describes your relationship status? (Read each statement select one)**

a	Married (civil magistrate /traditional /religious)	1
b	Not married but living together	2
c	Single but have a steady partner	3
d	Single but have more than one partner	4
e	Single with no partners	5
f	Other (specify):	

**13. Does your partner live with you?**

Yes	1
No	2
Don't have partner	3

## QUESTIONNAIRE

**13.1 If No (2):** Now I am going to read you a list, please tell me which statement best describes how often do you see your partner? *(Read options and mark one)*

Less than once a month	1
About once a month	2
About two to three times a month	3
About four times a month	4
More than four times a month	5

**14.** Now I am going to read you a list, please tell me how often you do the following? *(Read out each option)*

		Never	Less than once a week	A few days a week	Every day
a	How often do you listen to the radio?	1	2	3	4
b	How often do you watch TV?	1	2	3	4
c	How often do you read the newspaper?	1	2	3	4
d	How often do you check your cell phone messages	1	2	3	4

**15.** Have you ever heard about HIV-vaccines?

<b>Yes</b>	1	
<b>No</b>	2	Go to Question 20

**16.1 IF YES:** Where did you hear about HIV-vaccines? *(Read out all options and mark each one)*

		Yes	No
a	Radio	1	2
b	Newspaper or magazine	1	2
c	Television	1	2
d	Through a community meeting that I attended	1	2
e	Through community leaders	1	2
f	At the clinic/hospital	1	2
g	From community members	1	2
h	Aurum Institute for Health Research	1	2
i	Others, specify:		

## QUESTIONNAIRE

**17. I am going to read out some knowledge statements about HIV/AIDS. Please tell me to what extent you agree or disagree with the following statements? Please answer with one of these 4 options: strongly agree, agree, disagree, strongly disagree.**

*(Read each statement. Do not skip a statement! Mark only the Don't know option when the participant tells you that he/she doesn't know)*

	Statements	Strongly agree	Agree	Disagree	Strongly Disagree	Don't know
a.	A baby can become HIV infected through breastfeeding if the mother is infected	1	2	3	4	5
b.	Your chance of getting AIDS is very small when you have sex with someone who has recently been infected with HIV	1	2	3	4	5
c.	One can get HIV/AIDS from touching others who are infected.	1	2	3	4	5
d.	One can get HIV/AIDS from unprotected sex (not using condoms when having sex)	1	2	3	4	5
e.	If you have a STI it is easy to get HIV/AIDS.	1	2	3	4	5
f.	One can get HIV/AIDS by using the same toilet as someone with HIV/AIDS.	1	2	3	4	5
g.	One can get HIV/AIDS from mosquito bites	1	2	3	4	5
h.	One can get HIV/AIDS by sharing cups, knives or forks with someone with HIV/AIDS	1	2	3	4	5
i.	If a man had his penis circumcised by a doctor, he is less likely to get HIV infection in future.	1	2	3	4	5
j.	An HIV blood test, three months after infection, will show if someone is infected with HIV	1	2	3	4	5
k.	People with HIV/AIDS are easily infected with other diseases like TB	1	2	3	4	5
l.	Having sex with a virgin will cure a person of HIV/AIDS	1	2	3	4	5
m.	HIV breaks down the body's resistance to fight diseases	1	2	3	4	5
n.	Traditional healers cure AIDS	1	2	3	4	5
o.	AIDS is treated by Anti-retroviral therapy	1	2	3	4	5
p.	A future HIV Vaccine could help to protect people from getting HIV	1	2	3	4	5
q.	ART should be avoided because of negative side-effects	1	2	3	4	5
r.	People with HIV/AIDS do not need to go on ART if they eat well	1	2	3	4	5
s.	Once people start feeling better on ART they do not need to continue with treatment	1	2	3	4	5

## QUESTIONNAIRE

t.	Once both sexual partners are infected with HIV/AIDS they do not need to use condoms	1	2	3	4	5
u.	An HIV-vaccine will protect people from being easily infected by HIV/AIDS	1	2	3	4	5
v.	It is safe to participate in medical research to develop a HIV-vaccine	1	2	3	4	5
w.	HIV-vaccine development should be a government priority	1	2	3	4	5
x.	If you have different sexual partners during the same time period your chance of getting HIV/AIDS is bigger than when you keep to one partner and then move on to the next partner later.	1	2	3	4	5
Y	One can get HIV/AIDS by having sex with a widow who has not done a cleansing ritual	1	2	3	4	5

**18. I would like to know how you feel about HIV/AIDS. Please indicate to what extent you agree or disagree with the following statements by using the 4 options: strongly agree, agree, disagree, strongly disagree.**

	Statements	Strongly agree	Agree	Disagree	Strongly disagree
a	Life is risky and getting AIDS is just one of those things	1	2	3	4
b	It is better not to think about AIDS and enjoy your life	1	2	3	4
c	I will only worry about HIV/AIDS when I start to get ill	1	2	3	4
d	I do not care if I get HIV/AIDS because it is just another disease	1	2	3	4
e	I feel that my partner might infect me with HIV/AIDS	1	2	3	4
f	I have given up trying to protect myself from HIV	1	2	3	4
g	It is just a matter of time before I get HIV/AIDS	1	2	3	4
h	I think there is a chance that I will get HIV/AIDS	1	2	3	4
i	My behaviour over the past year has put me at risk for HIV/AIDS	1	2	3	4
j	Most people in my community are at risk of getting HIV/AIDS one day	1	2	3	4
k	I do not care if I get AIDS because I will then get a grant and it will make my life easier	1	2	3	4

**THANK YOU VERY MUCH FOR YOUR PARTICIPATION THUS FAR!**