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HIV/AIDS-RELATED STIGMA IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY: THE CASE OF ESKOM

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in partial fulfilment of the requirements for the degree

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Date: November 2014

Declaration

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Abstract

The South African construction industry has not responded effectively to address the high HIV-prevalence rate within its workforce. The Western Cape construction industry is the least responsive. No formal studies have examined how the construction industry`s unresponsiveness to the pandemic has impacted Eskom's capital construction projects. Central to the fight against the spread of the disease is voluntary testing and counselling (VCT). AIDS-related stigma and discrimination are impediments to VCT.

The *aim* of this study is to explore how stigmatisation and discrimination of HIV/AIDS positive persons negatively impacts site-based HIV/AIDS intervention programmes implemented at Eskom construction sites. The three main *objectives* are: to determine the current attitude and views Koeberg employees have towards HIV/AIDS; to determine if the stigma of HIV/AIDS prevents Koeberg employees from accessing HIV intervention programmes offered at Koeberg?; and to determine the percentage of Koeberg employees utilising the HIV intervention programme at Koeberg.

A self-administered questionnaire gathered data from 296 site-based employees, mostly contract construction workers, at Koeberg Nuclear Power Station, located in Cape Town. The data were analysed using Pearson`s product-moment correlation, the test for differences in means, the chi-square test for independence, and multiple regression analysis. These statistical analyses were conducted to determine relationships among 'demographic' variables (age, gender, ethnicity, employment type, marital status and education level) and 'cognitive' and 'behavioural' factors ('lifestyle risk', 'condom non-compliance', 'substance use', 'HIV/AIDS knowledge', and 'attitudinal fear of testing') – to predict HIV/AIDS-related stigma. The results indicate that: (1) age predicts lifestyle risk, condom non-compliance and alcohol consumption – younger workers i.e., under 30 years, consume more alcohol, partake to a greater extent in riskier sexual affairs, but practice safer sex than older workers; (2) gender predicts lifestyle risk and alcohol use, and directly influences attitudinal fear of being tested for HIV – younger men, particularly contract construction workers, tend to be more fearful of being tested for HIV, lead riskier sexual lifestyles, and consume greater amounts of alcohol; (3) ethnicity predicts condom non-compliance and alcohol consumption – 'White', 'Indian' and 'Coloured' men are less likely to use condoms and consume more alcohol than 'Black' African men; and (4) HIV/AIDS

knowledge and attitudinal fear of testing predicts stigmatised views toward HIV/AIDS – those with lower levels of education and possessing poor knowledge about HIV/AIDS, coupled with high attitudinal fear of testing, hold highly stigmatised views towards HIV/AIDS persons. 'Coloured' employees living with HIV have higher levels of felt-stigma and enacted stigma than 'Black' African employees living with HIV.

The Koeberg site-based HIV/AIDS intervention programme should increase its focus on communicating the benefits of being tested for HIV/AIDS, and encourage younger men, particularly contract construction workers, to undergo testing. Effort should also be focussed on reassuring employees about their confidentiality and dispel misinformation and myths associated with the disease. Finally, Koeberg senior management should pledge their support, influence and guide construction firms employed at Koeberg to utilise the Eskom HIV/AIDS intervention programme.

Dedication

I dedicate this study to my wonderful wife, Jill, for her patience and support. Also to my parents, Jean and Edward, for their sacrifices and affording me the opportunity to pursue my education.

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I would like to thank Professor Paul Bowen for his guidance, insight and always requiring excellence during this research study.

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AIDS	Acquired Immunodeficiency Syndrome
ARV	Antiretroviral
CHIETA	Chemical Industries Education and Training Authority
CIDB	Construction Industry Development Board
DPW	Department of Public Works
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HSRC	Human Sciences Research Council
ICRW	International Centre for Research on Women
Koeberg	Koeberg Nuclear Power Station
MSM	Men who have sex with Men
MSW	Men who have sex with Women
NAM	National AIDS Manual
NPC	National Planning Commission
OHSAct	Occupational Health and Safety Act
SANAC	South African National AIDS Council
SME	Small and Medium-sized Enterprises
Stats SA	Statistics South Africa
STIs	Sexually Transmitted Infections
TB	Tuberculosis
UNAIDS	Joint United Nations programme on HIV/AIDS
UNESCO	United Nations Educational, Scientific and Cultural Organization
VCT	Voluntary, Counselling and Testing
Wesgro	The Western Cape Destination Marketing, Investment and Trade Promotion Agency-South Africa
WHO	World Health Organization

Chapter 1: Introduction

1.1 HIV/AIDS Background

The Human Immunodeficiency Virus (hereinafter referred to as HIV) is mainly transmitted by unprotected sexual activity or the transmission of bodily fluids (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2006:16-17). The HIV infection depletes the body`s immune system, leaving the body vulnerable against life-threatening illnesses (UNESCO, 2006:13). HIV can be treated, but cannot be cured (UNESCO, 2006:22-24). Eventually HIV progresses to Acquired Immunodeficiency Syndrome (hereinafter referred to as AIDS); this is when the immune system is unable to defend against opportunistic infections and without medical intervention, the AIDS sufferer invariably dies (UNESCO, 2006:13-24).

1.2 History of HIV/AIDS in South Africa

For more than 25 years the world has been battling the HIV/AIDS pandemic, however the public`s fear and ignorance of the disease ensures the prevalence rate continues to increase (Quah, 1998). The Joint United Nations Programme on HIV/AIDS (hereinafter referred to as UNAIDS) estimates that 35.3 million adults and children live with HIV throughout the world, with the developing world bearing the brunt of the HIV/AIDS pandemic, particularly Sub-Saharan Africa (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2012 a).

In 1982, South Africa`s first HIV infection cases were reported amongst the homosexual community (Ashforth, 2001; Weinel, 2005). According to UNAIDS statistics, in 1990, South Africa`s HIV prevalence rate ranked 45th highest in the world at 0.2 % of the population (UNAIDS, 2012a). Since the early 1990s, the Department of Health continues to monitor the prevalence rate at antenatal clinics and over a decade has witnessed a dramatic increase to 24% prevalence amongst pregnant women reporting to antenatal clinics (Department of Health, 2001). In 2012, UNAIDS stated that the prevalence rate was estimated at 17.2% i.e., 6.1 million people living with HIV, placing South Africa 4th highest in the world (UNAIDS, 2012a). Deaths due to AIDS-related illnesses recorded in 1990 was 563 people compared to 235 100 in 2012, peaking in 2010, at 373 900 deaths (UNAIDS, 2012a; UNAIDS, 2012 b).
A 2013 mid-year report by Statistics South Africa (hereinafter referred to as Stats SA) estimated the overall HIV prevalence rate to be approximately 10% (Statistics South Africa

[Stats SA], 2013b:2). The estimated population of South Africa is 52.98 million (Stats SA, 2013b:2). The report estimates that in 2013, the total number of people living with HIV is approximately 5.26 million (Stats SA, 2013 b: 2).

Figure 1.1 depicts the number of people living with HIV in South Africa since 2002 (Stats SA, 2013b: 4)

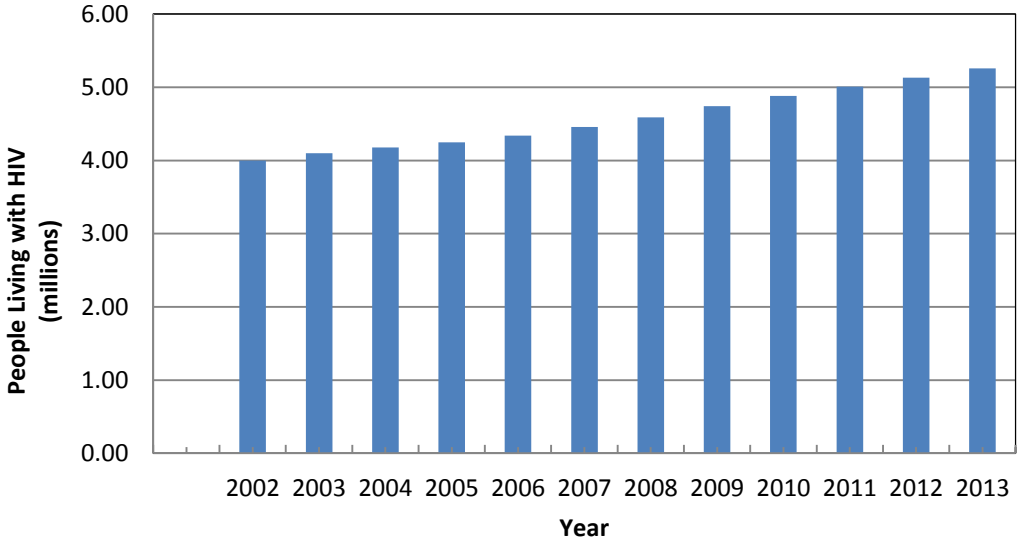

Figure 1.1: HIV population in South Africa (Adapted from Stats SA, Table 3:4)

An earlier survey in 2010 ranked KwaZulu-Natal with the highest HIV prevalence rate at 39.5%, followed by Mpumalanga (35.1%), Free State (30.6%) and Gauteng (30.4%) (Health and Development Africa (Pty) Ltd, 2012: 34).

The HIV prevalence rate amongst adults aged between 15–49 years was estimated at 15.9% (Stats SA, 2013 b). The report further projects that the life expectancy of men up to 57.7 years and up to 61.4 years for women (Stats SA, 2013b). While the HIV prevalence rate has increased over the observed years, the number of AIDS-related deaths steadily decreased to 178 373, in 2013, as can be seen in Figure 1.2 (Stats SA, 2013b). This rate of decrease in AIDS-related deaths can be attributed to the roll-out of public antiretroviral (hereinafter referred to as ARV) drug programmes since 2002 (Stats SA, 2013 b).

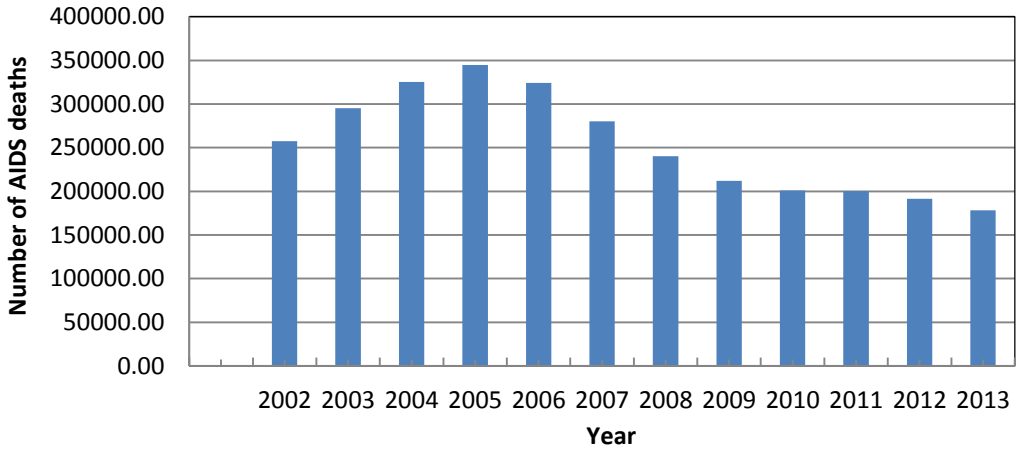

Figure 1.2: AIDS deaths in South Africa
(Adapted from Stats SA 2013b-Table 8: Births and deaths for the period 2002–2013:7)

Despite ARV treatment, the percentage of AIDS deaths remains at 31.9 % of all recorded deaths in South Africa for 2013 (Stats SA, 2013b). The prevalence rate from 1990 to 2013 shows that the HIV/AIDS approach adopted by government was ineffective. This statistic may potentially be an indicator of how stigma associated to HIV/AIDS prevents people to determine their HIV status and access intervention programmes for ARV drugs.

1.2.1 Historical and current HIV/AIDS approach of the South African Government

South Africa faced a political transformation from the laws of apartheid to a democratically elected-government in 1994. It is argued that, due to the complex and volatile political situation, the focus of the new government was to prevent the threat of civil war, which was more pressing (at that time) than an inconspicuous spread of HIV, which was left basically unchallenged (Grundlingh, 2001; Van der Vliet, 2004). Ashforth (2001) argues that due to the mistrust that existed, the newly elected-government did not acknowledge the seriousness of the HIV epidemic or the efforts of the apartheid government to prevent and reduce the transmission of HIV (Ashforth, 2001).

In 1999, in an attempt to protect the population against the infection of HIV, South African lawmakers proposed legislation which would restrict the travelling of people living with HIV and mandated compulsory HIV testing and disclosure of their status (Malcolm *et al.*,1998; Ashforth, 2001; UNAIDS, 2012b). Non-governmental activists resisted the proposed laws and

argued its detrimental effects on the HIV/AIDS prevention efforts and violation of citizens` constitutional rights. The laws were never enacted (Ashforth, 2001).
The government has been criticised for the lack of leadership and offering no strategy to deal with the rising infection rate nor introducing mechanisms to reduce the stigma associated with HIV/AIDS. Instead, it has been suggested that government wanted to transfer responsibility to the private sector (Ashforth, 2001; Meintjies *et al*., 2007).

Further misgivings of the government`s HIV/AIDS approach was the mixed message sent to the public by President Thabo Mbeki. He refused to acknowledge the link that HIV causes AIDS, further stigmatising HIV/AIDS (Campbell *et al.*, 2005:809; Sheckels, 2009). Instead of facing the problem and disseminating the legitimate science about HIV/AIDS, efforts were directed to deflect attention to addressing HIV symptoms with herbal remedies (Meintjies *et al.*, 2007). The denial and silence on the topic contributed to widening the vacuum of knowledge and fuelled the publics` negative attitude and perception towards HIV/AIDS (Campbell *et al.*, 2005).

In 2005, President Nelson Mandela`s public announcement stating that his son had succumbed to AIDS broke the denial and silence of the disease (Malan, 2013). Mandela regrettably admitted that he had done little for the battle against the HIV/AIDS pandemic during his presidency and understood that government leadership had the ability to influence and dispel the myths and misinformation of HIV/AIDS (Malan, 2013). In 2006, President Jacob Zuma admitted to having sexual intercourse with an HIV-positive woman, without a condom, and believed that having a shower would decrease his chances of being infected (Evans & Wolmarans, 2006; Robins, 2008:419). Efforts to undo and minimise the effects by government`s initial silence, denial and questioning the scientific basis of HIV and AIDS, were further undermined. The leadership of the South African government also suffers under the weight of HIV/AIDS stigma and the belief that to acknowledge the existence of HIV/AIDS would tarnish their and their family`s reputation. This is evident when ministers of parliament, who showed clear signs of opportunistic AIDS-related illnesses are said to have died from a long suffering illness (Duffy, 2005; Meintjies *et al.*, 2007).
This perception and beliefs by government are respected and the ignorance of the disease is adopted and practiced by the community at large.

The government has since established the South African National AIDS Council (hereinafter referred to as SANAC). The council developed its latest five year plan, '*National Strategic Plan on HIV, STIs and TB, 2012-2016'*, documenting how the challenges of HIV, sexually transmitted infection (STI) and tuberculosis (TB) are planned to be addressed (South African National AIDS Council [SANAC], 2011:12). The plan strives to continually drive and expand interventions that have proved effective against the pandemic, such as increasing awareness of prevention and availability of ARVs (SANAC, 2011:8- 12).

1.2.2 HIV/AIDS pandemic within South Africa`s construction industry

The Department of Public Works (hereinafter referred to as DPW) states that the construction industry has the third highest HIV/AIDS prevalence rate after the mining and transportation industries (Department of Public Works [DPW], 2004:3). It is estimated that the construction industry employs 5.7% (approximately 409 000 workers) of South Africa`s total labour force of 7.2 million workers (Haupt, 2001:19; Haupt & Smallwood, 2004:311).

If one considers that approximately 15% of South Africans are infected with HIV/AIDS, it can be assumed that approximately 61395 construction workers are infected with the virus (Haupt & Smallwood, 2004:311; Ellis, 2006:682). In a later study, George (2006:181) indicated that the infection rate might be higher. He estimated the infection rate at 23.9% in 2005 and projected that in 2015, the infection rate will be 22.1% (George, 2006:181). These figures indicate that in 2005, the construction industry had a death rate of 1.7 per 100 workers and in 2015 the projected death rate will be 2.1 per 100 workers (George, 2006:181).

The construction industry`s labour force mainly consists of unskilled, black African migrant workers (DPW, 2004; Haupt & Smallwood, 2004). It was shown that the unskilled black African workers have significantly less knowledge of HIV/AIDS and sexually transmitted infections (STIs) than their white and coloured counterparts (Haupt & Smallwood, 2004:317). Usually construction sites are located in remote areas where there are minimal health care facilities (DPW, 2004:3; Haupt & Smallwood, 2004; Bowen *et al.*, 2010). Most employees would have migrated to work at these construction sites (DPW, 2004). During their stay at the construction site, the workers often partake in casual sexual affairs (DPW, 2004; Bowen *et al.*, 2010). These casual sexual affairs coupled with the lack of HIV/AIDS transmission knowledge and lack of health care facilities increases the incidence of HIV/AIDS and sexually transmitted

infections (STIs) amongst the migrant workers population (DPW, 2004; Haupt & Smallwood, 2004; Bowen *et al.*, 2010). The migrant workers eventually return home and subsequently infect their partners (DPW, 2004).

1.2.3 Capital infrastructure projects proposed by the National Development Plan

The South African government formulated the National Development Plan (NDP), which plans to create more employment and eliminate poverty (Department of the Presidency: National Planning Commission [NPC], 2011). The government states that better infrastructure will be a conduit for improved economic activity (NPC, 2011). It intends to utilise the infrastructure expansion programme, *inter alia*, as a vehicle to establish an acceptable standard of living for all South Africans (NPC, 2011). The programme will focus on capital expansion national infrastructure, such as transportation, water and electricity, and expects the infrastructure expansion spending to be equivalent to 30% of South Africa`s gross domestic product (hereinafter referred to as GDP) by 2030 (NPC, 2011). The expansion will be championed by the public sector i.e., state-owned companies such as Eskom or Transnet (NPC, 2011). The target population is the 15-64 year old age bracket, which makes up 64% of the population (NPC, 2011:21). It is the government`s aim to employ 1 million unskilled people from this age group by 2015 and employ 2 million people by 2020 (NPC, 2011:20).

1.2.4 Effects of HIV/AIDS on the construction industry and its response

Assuming that the construction industry employs the anticipated 1 million unskilled workers and considering that the projected HIV infection rate will be 22.1% in 2015 and the death rate 2.1 per 100 workers, it means that by 2015 the construction industry will have approximately 221 000 HIV infected workers and that 21 000 workers are predicted to die from AIDS-related illnesses (George, 2006:181; NPC, 2011:20-21). Regardless of the skill-level, the HIV/AIDS disease affects the entire spectrum of the organisation from senior management to the shop floor level (Barac & Otter, 2001).

The larger construction firms operate and offer holistic HIV/AIDS awareness, prevention and treatment programmes to their workers, with 40% providing ARV therapy (Bowen *et al.*, 2013:1; Ellis, 2006:690). The implementation of HIV/AIDS intervention programmes by small construction firms (i.e. firms employing less than 100 workers) and medium construction firms

(i.e. firms employing between 100-500 workers) are less widespread (Ellis, 2006:689). It is reported that 10% of small firms and less than 40% of medium firms provide HIV/AIDS care, support and treatment programmes (Ellis, 2006:690). Furthermore only 3% of small firms provide anti-retroviral therapy and 17% of medium firms provide this service (Ellis, 2006:690). The small and medium firms do not foresee being affected by HIV/AIDS and therefore do not require proactive HIV/AIDS programmes (Ellis, 2006:691-692). Small and medium firms believe that the unskilled labour force can easily be replaced (Ellis, 2006).

The government is viewed as being responsible for dealing with the pandemic and that labour unions should provide peer educators to create and maintain awareness of the disease (Ellis, 2006). It is further believed that the stigma associated with the disease prevents workers to access or request HIV/AIDS programmes at the workplace, as they fear being ostracised and discriminated against for being HIV-positive (Ellis, 2006).

The Western Cape construction industry is the least responsive in the sector in terms of offering HIV/AIDS intervention programmes to its employees (Bureau for Economic Research, 2005). Collectively the industry`s leadership in the province does not view the pandemic as a significant threat on its operations (Bureau for Economic Research, 2005; Shisana *et al*., 2009, Bowen *et al*., 2013). It has been suggested that the cost of an HIV/AIDS programme did not justify the proposed benefits (Bowen *et al*., 2010).

Bowen *et al.* (2013) confirm the Western Cape construction industry does not believe nor understand the long-term risks and impacts of the HIV/AIDS pandemic. The Western Cape construction industry`s belief that the HIV/AIDS pandemic is not a significant threat, is contradicted by a Millennium Development Goals study (2009). The study tracked the HIV prevalence rate amongst the 15-49 years group since 1998 within the Western Cape. Figure 1.3 shows that, in 2008, the prevalence rate has increased to an estimated 16.1 % (Millennium Development Goals [MDG], 2009:8). In 2014, an HSRC study showed that the HIV prevalence for the 15-49 year old age group in the Western Cape was notably lower, at 7.8% (Shisana *et al.*, 2014:45). The same study found that the HIV prevalence within the Western Cape had increased from 1.9% in 2005 to 5 % in 2012 (Shisana *et al.*, 2014:37). Furthermore, the Western Cape ranked the highest of people who believed that they were at low risk and would definitely not be infected with HIV (Shisana *et al.*, 2014:87).

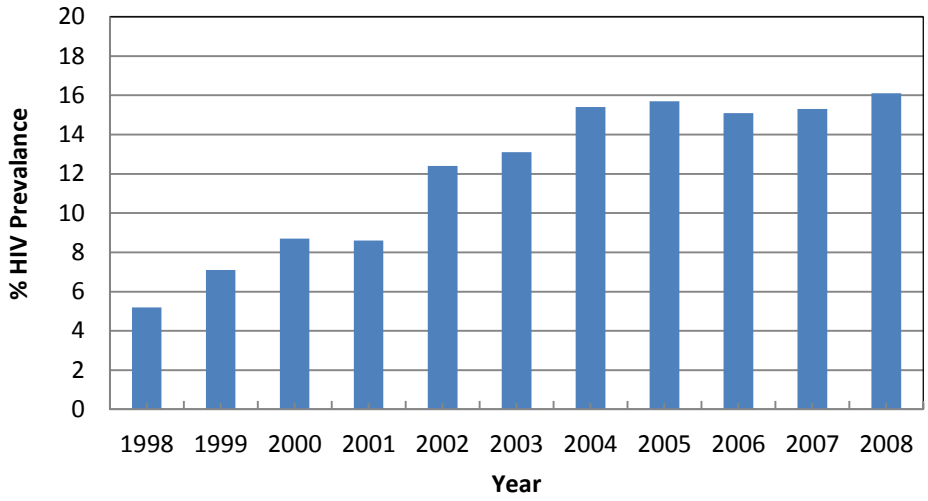

Figure 1.3: HIV prevalence in Western Cape 1998 – 2008
(Adapted: Millennium Development Goals [MDG], Table 6.2:8)

Even though these studies do not indicate similar figures, they studies do however show that the HIV prevalence of the 15-49 year old age-group is on an upward trend within the Western Cape. The aforementioned age group is the main source of labour for the construction industry. The increase in the prevalence rate within the Western Cape constitutes a risk towards the Western Cape`s construction industry.

1.2.5 Perception and attitudes of HIV/AIDS within the construction industry

The construction industry is male-dominated and men are traditionally the breadwinners in the household, especially in previously disadvantaged communities (Evian *et al.*, 2004; Dlamini *et al.*, 2007; Stats SA, 2013a). Typically, these men would be older and would have economical-power, forcing their female partners (assuming a heterosexual relationship) to be submissive and to partake in unsafe sexual practises (Dlamini *et al.*, 2007; International Organization for Migration [IOM], 2010). It has been shown that the second highest rate of deaths caused by AIDS and related diseases is in men between the ages of 25-44 years old, which makes up the majority age-group of the construction labour force (Haupt *et al*., 2005:108). These deaths may be linked to a lack of awareness as well as a negative perception of the HIV/AIDS disease (Haupt *et al.*, 2005).

It has been shown that older people, particularly middle-aged men over 40 years old, have prejudicial views of HIV (Green, 1995:558). The construction industry`s leadership would

typically consist of men aged 40 years and older (Evian *et al.*, 2004). Senior management believe that HIV mainly impacts the unskilled labour force, however in cases it has been reported that skilled employees have a higher HIV prevalence rate (DPW, 2004; Bowen *et al*., 2013). It demonstrates that the leadership does not have an understanding of HIV/AIDS (Bowen *et al.*, 2013). The belief that the HIV/AIDS pandemic is not a threat results in a lack of support by its leadership and reluctance to implement HIV/AIDS intervention programmes (Bowen *et al.*, 2013). Meintjies *et al.* (2007) highlight the non-supportive and directionless political climate that has influenced the unfocused and diluted approach adopted by the construction industry dealing with the HIV/AIDS pandemic.

The prejudiced views and lack of support from the industry`s leadership may not cultivate an environment of trust. This makes a worker reluctant to seek HIV/AIDS assistance at these construction sites (Green, 1995; Haupt & Smallwood, 2004). Bhagwanjee *et al.* (2008) considers the workplace as the best environment to tackle the HIV/AIDS pandemic.

1.2.6 Project management and HIV/AIDS risks of project human resources

According to the guide to the Project Management Body of Knowledge (PMBOK® Guide), during the project`s planning phase, a project manager is required to identify the appropriate competencies to execute and fulfil the project`s objectives (Project Management Institute (PMI), 2013). The project manager will then need to secure the human resources identified; however, the required skilled resources may not be readily available (PMI, 2013). The project manager should consider the availability or the competition for the required skills as a risk to the project`s execution and formulate plans to manage the risk accordingly (PMI, 2013). The construction industry has demonstrated a limited response to the implementation of HIV/AIDS intervention programmes. It implies that project managers on construction projects do not consider HIV/AIDS affecting its human resources as a high priority risk towards their projects (Ellis, 2006). As a result, the potential impacts of HIV/AIDS are not factored into the staffing plan – issues such as an increased absenteeism rate, reduced productivity, increased retraining costs and the reduced availability of relevant skills, which hinders their capability to delivery construction projects (DPW, 2004). The failure by project managers and construction firms to consider and address the HIV/AIDS disease, during the staffing plan development, will contribute to higher operating costs and negatively impacts on the construction projects (Haupt *et al*., 2005; Ellis, 2006).

The construction industry can assist the government to address the spread and treatment of HIV/AIDS, which in turn will result in less government expenditure on the health sector and these savings can be funnelled into more infrastructure projects (DPW, 2004; Haupt *et al.*, 2005). Construction industry leaders should understand the impacts of HIV/AIDS on their businesses and the industry overall. They should review their perception of the disease as well as their approach to managing the disease. The construction industry should consider the notion that the lack of awareness fuels the stigma and discrimination of HIV/AIDS, which prevents its labour force from seeking help, eroding its labour capacity thus impacting the firm's financial profitability (Haupt *et al.*, 2005; Ellis, 2006).

1.2.7 HIV/AIDS risks to Eskom`s new build capital programme

Eskom is a state owned company that has contributed to the infrastructure development of South Africa (Eskom, 2013a). An Eskom study indicates that its direct and indirect business contributes approximately 7.4% of South Africa`s GDP (Eskom, 2014 g).

Since 2005, the power utility has started with its new build capital programme to fulfil the increasing electricity demand (Eskom, 2013a). The capital programme is envisaged to double Eskom`s power generation capacity to 80 000 MW and the budget is estimated to increase to R1 trillion by 2026 (Eskom, 2013a).

According to Eskom, the Medupi power station project activities increased the GDP of Lephalale (located in Limpopo Province) by approximately 95% per year and directly employs 17 000 people at the project`s construction peak (Eskom, 2013c). Furthermore, it is estimated that more than 40% of the Kusile power station project`s workforce (located in the Nkangala District of the Mpumalanga Province) are from the local community (Eskom, 2013d). The Kusile power station project consists of 40 principle contractors with approximately 300 subcontractors (Eskom, 2013d). These construction projects are dominated by male employees (Eskom, 2013d).

Together with the positive economic and employment contributions from these capital projects, there are also negative socio-economic impacts (Eskom, 2013e). Eskom construction projects rely heavily on migrant workers and for the duration of the projects, workers may partake in casual sexual affairs, which would contribute to the spread of HIV/AIDS and sexually

transmitted infections (DPW, 2004; Haupt & Smallwood, 2004; Bowen *et al.*, 2010) It is evident that Eskom`s projects have a major influence and will have a lasting legacy – the aim is to have a more positive than negative legacy – on the local communities (Eskom, 2013f).

Eskom`s previous capacity expansion programme was 20 years ago (Eskom, 2013a). The power utility did not have to deal with the challenges of the HIV/AIDS pandemic it faces today, to successfully deliver these capital projects (Eskom, 2013b; Eskom, 2013f).
The lack of knowledge of HIV/AIDS and accessing intervention programmes by Eskom employees and contractors contributes to the loss of productivity and project delays.

1.3 Research Question

To what extent does stigma impact negatively on Eskom's HIV/AIDS intervention programmes?

1.4 Problem Statement

The problem statement to be addressed in this study is:

The HIV/AIDS intervention programmes implemented at Eskom construction sites are not fully utilised because of a fear of being stigmatised and discriminated against for being HIV-positive.

1.5 Research Hypothesis

The research hypothesis to be examined is as follows:

The fear of being ostracised, stigmatised and discriminated against for being HIV-positive adversely impacts on the success of site-based HIV/AIDS interventions programmes implemented at Eskom capital projects.

1.6 Aim and Objectives

The *aim* of this research study is to determine the nature and extent of AIDS-related stigma and discrimination and their relationship with the success or otherwise of site-based HIV/AIDS intervention implemented by Eskom.

The *objectives* of the research study are to:

a) *Determine the current attitude and perceptions of employees towards HIV/AIDS at the Eskom capital construction projects;*

b) *Determine if the stigma of HIV/AIDS prevents employees from accessing HIV intervention programmes at Eskom construction sites?*

c) *Determine the percentage of employees utilising the HIV intervention programme at Eskom construction sites;*

d) *Determine how Eskom and contractors implement and manage a site-based HIV intervention programme and how the programme deals with the stigma and discrimination associated of HIV/AIDS at the Eskom construction site?*

e) *Determine criteria for the successful management and minimisation of the stigma associated with HIV/AIDS and fear of discrimination?*

1.7 Research Methodology

The research objectives will be achieved by adopting the following research method:

a) A literature review of subject matter pertinent to this study;

b) An examination of policy documents and other material relating to HIV/AIDS interventions programmes implemented by Eskom, its principle contractors, and its sub-contractors;

c) The administration of a stigma questionnaire complied by the Human Science Research Council (HSRC) at Eskom`s current capital project construction site(s). The purpose of the questionnaire is to determine what the nature and extent of HIV/AIDS-related stigma of HIV/AIDS and what the consequence of the stigma and discrimination experienced by employees at the Eskom capital construction projects is?

d) An analysis and interpretation of data received from the stigma questionnaire; and

e) Drawing conclusions and offering recommendations.

1.8 Limitations and Scope of Research

This research is limited to the following:

a) The case study will only focus on Eskom`s current construction projects, namely, construction projects at the Koeberg Nuclear Power Station; Medupi Power Station project; Ingula Power Station project and Kusile Power Station project;

b) Eskom`s corporate medical department may not agree to conduct the stigma questionnaire at the mentioned construction sites;

c) Key individuals and stakeholders may decline to participate in the interviews, thereby impacting the outcome of the research;

d) Funding may not be authorised by Eskom to travel and conduct the interviews at the Medupi, Kusile or Ingula Power Station projects, thereby resulting in the Koeberg Nuclear Power Station construction projects being the only case study for this research; and

e) The questionnaire is available in English, Afrikaans and isiXhosa. The workforce may prefer other South African official languages. This limitation may hinder the effectiveness of the study.

If these limitations are realised, the study will be conducted at the Koeberg Nuclear Power Station, Cape Town, South Africa. The local on-site medical department`s HIV/AIDS peer educators will be requested to conduct the stigma questionnaire interviews. The targeted participants will be the Koeberg`s maintenance, support services, construction sub-contractors and management staff members.

1.9 Structure of the Research Report

The research report is structured in five chapters:

Chapter 1 introduces the research topic, states the research problem, the research question and the research hypothesis. It also defines the research objectives, aim, provides a description of the research methodology and outlines the limitations and scope of the research.

Chapter 2 comprises a critical review of relevant literature relating to the stigma associated with HIV/AIDS within the South African context, particularly focussing on how it influences Eskom and the construction industry`s approach to dealing with the pandemic. This chapter reviews the extant literature in this field.

Chapter 3 documents the choice of research method and choice of data collection instrument. It describes the structure of the questionnaire and the questions contained therein. The questionnaire aims to determine the attitudes, perception and stigma associated with HIV/AIDS at the Eskom construction sites. In addition, the chapter describes how interviews were conducted at Eskom`s capital project(s).

Chapter 4 presents and interprets the results from the questionnaire survey.

Chapter 5 documents the conclusions arising from the research and offers recommendations regarding enhancements to the HIV/AIDS programmes implemented by Eskom and its construction contractors.

These five chapters are followed by a comprehensive list of **References** and an **Appendix** containing the survey instrument.

Chapter 2: Literature review

2.1 Introduction

HIV/AIDS is not only a medical problem, but also has a social dimension and consequences that will have dire implications for South Africa, if it is not dealt with, particularly when intervention programmes are not being accessed (Duffy, 2005; ILO, 2008, Bowen *et al*. 2013). According to Parker & Aggleton (2003), the stigma of HIV/AIDS is widespread and tends to hinder people accessing HIV/AIDS intervention programmes.

The chapter consists of 5 sections and this section introduces the chapter. It explores the literature on the stigma of HIV/AIDS to understand the reason(s) why stigma prevents people from accessing intervention programmes and what the subsequent consequences are for individuals, construction firms and how this impacts South Africa`s prosperity.

Section 2 provides the definition of HIV/AIDS stigma and explains the process of stigma and how discrimination is a result thereof.

Section 3 documents the origins and factors that influences and perpetuates the stigma of HIV/AIDS. It shows how cultural norms, beliefs, attitudes and languages influences stigma. It includes a study that determined how some people living with HIV were negatively affected by felt and enacted stigma, whereas others were resilient enough to resist the discrimination.

In Section 4, it demonstrates how those unable to resist the stigma and discrimination towards HIV/AIDS, are reluctant to access intervention programmes. It highlights the implications for individuals, the construction industry and the South African economy. This section outlines the upstream consequences of a reluctant individual. It considers the vulnerability of the construction industry due to the HIV/AIDS pandemic and how Eskom`s operating plants and mega-construction projects are susceptible. An illustration is constructed to visually outline the relationship and impacts of the cycle of HIV/AIDS stigma.

Finally, Section 5 summarises the concept of HIV/AIDS stigma and the consequences thereof.

2.2 The concept of stigma and discrimination relating to HIV/AIDS

The Oxford dictionary defines the word stigma to mean a "*disgraced or discredited characteristic*" (Allen, 1990:1197). Goffman (1963) contextualised the term by defining the concept of stigma as a trait or attribute that is socially unacceptable or undesired. The term distinguishes and categorises socially accepted attributes from undesirable social attributes (National AIDS Manual [NAM], 2013). In other words, society projects beliefs and attitudes to discredit a person or group (Spark, 2007; MacQuarrie *et al.,* 2009). Society enacts these beliefs, perceptions and attitudes against this unacceptable trait or attribute through various forms of discrimination (Goffman, 1963). Kleinman (1988:159) likened HIV/AIDS stigmatisation to the *'sign of David'*, forced by the Nazis to label and identify Jewish people.

2.2.1 Forms and consequences of Stigma

Many people fear HIV/AIDS and have a prejudicial perception and negative attitude towards the disease (NAM, 2013). Members of society are publically sympathetic to the plight of HIV-positive people but, in private, the majority of society fear coming into contact with a person living with HIV and believe the HIV infection is a consequence of their behaviour (Green, 1995; Campbell *et al.*, 2005).

The perceived view of HIV/AIDS is that typically people living with HIV are homosexuals, sex-workers or drug-addicts (Quah, 1998; Campbell *et al.*, 2005; Weinel, 2005; MacQuarrie, *et al*., 2009). This is known as double stigmatisation (Green, 1995; Spark, 2007). Contrary to the view above, Campbell *et al.* (2005) shows that the highest transmission of HIV is amongst the "*normal"* heterosexual population, particularly amongst the youth.

The belief exists that people living with HIV pose a risk of passing on an undesired affliction and, in an attempt to minimise the potential threat, tactics such as ostracising or devaluing their social standing are used (Malcolm *et al.*, 1998; The Openly Positive Trust, 2007; Spark, 2007; Bowen *et al*. 2013). The tactic of stigmatisation renders a negative social behaviour of discrimination (Quah, 1998; Campbell *et al.*, 2005; Link & Phelan, 2001; Spark, 2007; Bowen *et al*. 2013).

The prejudicial belief and attitude manifests in forms of behaviour and discrimination i.e., enacted stigma, such as using unsympathetic language, gossiping about and social rejection (Green, 1995; Insideout Research, 2003; Campbell *et al.*, 2005). Social rejection manifests in not wanting to share a meal, sleeping in the same room or not even speaking to a person living with HIV (Shisana & Simbayi, 2002; Kalichman & Simbayi, 2004; Campbell *et al.*, 2005; Kalichman *et al.*, 2009). In some cases, families hide relatives living with HIV or dying from AIDS from the community to prevent embarrassment, disgrace and discrimination from the community (Green, 1995; Insideout Research, 2003; Campbell *et al.*, 2005).
The stigma experienced causes feelings that are internalised, termed felt-stigma (Insideout Research, 2003; Kalichman *et al.*, 2009:87). The felt-stigma causes feelings of being ashamed of their situation and results in oppressive fears with severe social impacts, such as depression and isolation from society (Green, 1995; Insideout Research, 2003; Kalichman *et al.*, 2009).

Simbayi *et al.* (2007) found that the majority of people living with HIV/AIDS in South Africa were embarrassed and not comfortable to disclose their HIV status. People living with HIV believe that they will be discriminated against because others are not tolerant and empathetic to their situation (Green, 1995; Duffy, 2005; Kalichman *et al.*, 2009).

People are sociable and need to share life experiences, celebrate their joys with loved ones and seek support during difficult times (Link & Phelan, 2001; Campbell *et al.*, 2005; Kalichman *et al.*, 2009). A negative secret such as not disclosing ones HIV-positive status tends to psychologically consume a person and the shameful feelings tend to be internalised and pressures a person to protect themselves from discrimination (Malcolm *et al.*, 1998; Kalichman *et al.*, 2009). People become hesitant to know their HIV status and tend to live in denial to prevent this enacted stigma, let alone willing to access HIV/AIDS intervention programmes to gain knowledge on the disease (Malcolm *et al.*, 1998; Campbell *et al.*, 2005; International Labour Office [ILO], 2008).

The consequence of a person internalising the stigma associated with HIV/AIDS can lead to mental, emotional distress and health implications (Kalichman *et al.*, 2009). It results in a deterioration of health leading to causes in financial loses, due to an increased absenteeism (Link & Phelan, 2001; ILO, 2008; Bowen *et al.*, 2010).

Stigma experienced by the men and women are found to be different (Hutchinson & Mahlalela, 2006; MacQuarrie *et al*., 2009). In South Africa, women are most vulnerable to enacted stigma, especially in communities where women are marginalised (Hutchinson & Mahlalela, 2006; Wingood *et al.*, 2007; MacQuarrie *et al*., 2009; Dunn, *et al*., 2009). Women are constantly confronted with verbal and physical abuse, as well as sexual violence, with the potential of being unknowingly infected with HIV (Goudge *et al.*, 2009). Men have been found to internalise the felt-stigma by resorting to coping mechanisms, such as alcohol and drugs (MacQuarrie *et al.*, 2006; Simbayi *et al.*, 2007; MacQuarrie *et al*., 2009).

Stigma is a viscous cycle of ignorance, denial and fear which has tragic consequences on individuals, families, communities and the country alike (Ashforth, 2001; ILO, 2008; Goudge *et al.* 2009; Bowen *et al.*, 2010). Ironically, stigma and discrimination are widespread and a common occurrence, even in areas where the prevalence rates are high (Spark, 2007). It means that people who are likely to be infected themselves, discriminates against people living or suspected of living with HIV (Spark, 2007). It demonstrates how powerful HIV/AIDS-related stigma is – when people are not willing to take action to know their HIV-status or access ARV treatment – in order to protect themselves from being discriminated against. This fear of discrimination increases as the symptoms and visible inflictions of HIV appears, making the disease more difficult to conceal (McGrath *et al.* 1993; Meintjies *et al.* 2007; MacQuarrie *et al*., 2009).

Stigma is a complex social phenomenon and manifests differently in a diverse country such as South Africa, consisting of a variety of cultures, ethnicities and languages (Malcolm *et al.*, 1998; Stats SA, 2013b).

Stigmatisation can be equated to a form of risk management for personal preservation (Gilmore & Somerville 1994; Link & Phelan, 2001; Maughan-Brown, 2006). People tend to identify and project their fears on discredited individuals or groups, in an attempt to quarantine a threat (Campbell *et al.*, 2005). By judging and blaming an individual or group, society believes it transfers responsibility and blame (McGrath, 1992; Link & Phelan, 2001; Maughan-Brown, 2006). This response of ignoring or isolating a threat is believed to be justified to minimise the risk of exposure to the threat (McGrath, 1992; Gilmore & Somerville 1994; Link & Phelan, 2001; Maughan-Brown, 2006).

2.2.2 Stigma as a social process to discriminate

The process of stigmatising i.e., labelling and stereotyping "*them from us*", provides a sense of security and comfort for an individual against a potential threat (Campbell *et al.*, 2005:808).

The traditional definition by Goffman, as explained above, has been modified from an attribute or trait that discredits a person to a person having a social label that is undesired and is therefore not worthy of being in the socially acceptable group (Goffman, 1963; Jones *et al.*,1984; Stafford & Scott, 1986:81; Crocker *et al*.,1998:505; Campbell *et al.*, 2005:808).

A contemporary framework was developed to show the stages of the concept of stigma (Sayce, 1998). It is argued that stigma interacts with and is influenced by additional factors, besides traits or attributes (Sayce, 1998: 367). The holistic framework defines the process of stigma as:

i. **Labelling**: It is human nature to distinguish and categorise a different attribute or characteristics (Sayce, 1998:367-368);

ii. **Stereotyping**: The distinguished attribute or trait is evaluated against the community`s socially-accepted norms and beliefs. These attributes are deemed undesirable; these undesirable labels form a negative stereotype. It is then believed that certain attributes or characteristics automatically are associated with an undesired group – this is consistent with Goffman`s view on attribute/traits;

iii. **Separating**: These beliefs and stereotyping of certain groups evoke a reaction and in the case of HIV, it is rejection (Sayce, 1998: 368,369). The primal instinct for survival is to stay away from an undesirable source of harm physically or socially – strength comes from belonging to a group, hence the community tend to separate from the undesired labelled group, a scenario of "*them*" and "*us*" begins to exist (Devine *et al*., 1999; Link & Phelan, 2001:370). The stigmatised person is then equated to HIV (Link & Phelan, 2001:370).

iv. **Status loss:** The stigmatised individual or group is marginalised, losing social statue (Sayce, 1998: 370).

v. **Discrimination**: The marginalised individual or group is regarded not worthy of being treated as an equal, which results in discrimination against an individual or a group. In some cases, the undesired group is considered to be so different from the socially-

> accepted norms that it is believed that the persons within the group are considered less than human. This is believed to be a justification to treat stigmatised people inhumanely (Sayce, 1998:370).

Social scientists are criticised when defining the concept of stigma. It is said that they are not a part of the labelled group and therefore do not understand or consider the perception of the stigmatised group (Schneider, 1988; Kleinman *et al.*, 1995). These experts, who presumably have never experienced the felt and enacted stigma, go on to formulate policies to prevent and treat people living with HIV and AIDS (Link & Phelan, 2001). Another criticism is that stigma is studied on an individual level; people are unique and respond to the HIV/AIDS-related stigma and discrimination differently (Sayce, 1998). Unrealistic conclusions are used to determine what the root cause of the stigma is and as a result ineffective solutions are formulated (Sayce, 1998).

This holistic framework of stigma shows that stigma is not an attribute or trait in isolation, but rather a series of complexly interrelated stages (Link & Phelan, 2001:366). When combining this understanding of influential factors with the knowledge of the stages of stigma, policy makers are able to develop holistic solutions which would make people comfortable and secure to access HIV/AIDS programmes (Link & Phelan, 2001:382). The following section explores the various factors that can influence stigma.

2.3 Factors influencing HIV/AIDS stigma

This section examines how factors, such as limited knowledge, cultural norms and the belief that HIV equates to death, contribute to the misconceptions and fears of the pandemic (Sontag, 1989; Gilmore & Somerville, 1994; Malcolm *et al.*, 1998; Kalichman & Simbayi, 2004; Campbell *et al.*, 2005; ILO, 2008). Equally important, witchcraft is shown to be a factor that influence people`s perception of HIV. These factors influence unbecoming language, metaphors and contribute towards the stigma used to describe and act against the pandemic (Sontag, 1989; Gilmore & Somerville, 1994; Malcolm *et al*., 1998; The Openly Positive Trust, 2007). It is further shown how some people living with HIV are not able to resist the adverse effects of stigma, whereas others are resilient enough to be able to resist all forms of discrimination (Sontag, 1989; Gilmore & Somerville, 1994; Malcolm *et al*., 1998; MacQuarrie *et al.*, 2006).

2.3.1 Beliefs, attitudes, cultural norms influencing stigma

The main objective of a human being is self-preservation, i.e. their physical and emotional well-being, as well as their social standing within a group or community (Campbell *et al.*, 2005). When a threat may harm a person`s physical and emotional well-being, action is taken to prevent any potential harm (Campbell *et al.*, 2005). HIV/AIDS has been linked to death, with little hope of a cure (Malcolm *et al.*, 1998). HIV is viewed as a harmful disease and therefore a threat to a person`s health and wellbeing (Campbell *et al.*, 2005). A person`s culture and ethnical background influences their perception of HIV/AIDS and what action is required to prevent being infected (Quah, 1998:6-9; Kalichman & Simbayi, 2004).

2.3.1.1 *Cultural beliefs and norms*

A study established that people in a Cape Town township believed that God or the ancestors have an influence over disease and illnesses (Kalichman & Simbayi, 2004). The illness or disease is a punishment for a sinful or inappropriate act (Kalichman & Simbayi, 2004). It is believed that being infected with HIV is due to their immoral behaviour and they should have known better to prevent the inflection (Quah, 1998; Goudge *et al.* 2009). This is therefore a justifiable reason to stigmatise against people living with HIV, as they are assumed to have sinned against God or angered ancestors (Goffman, 1963; Kalichman & Simbayi, 2004). Cultural norms, beliefs and religion introduce a dimension equating sex to sin (Ashforth, 2001:6; Campbell *et al.*, 2005). Churches and schools which are traditionally sources of power and knowledge, particularly in poorer communities, have been shown to correlate sex and pornography to sin (Campbell *et al.*, 2005:810). The church leader preaches that sinful and shameful behaviour (refer Figure 2.1) is punished by one contracting HIV (Campbell *et al.*, 2005; Goudge *et al.* 2009).

These traditional belief systems complicate and embarrass parents, rendering it difficult for them to openly discuss sex, let alone HIV preventative methods, such as condom use (Ashforth, 2001, Campbell *et al.*, 2005). In addition, young men are raised believing that having many sexual partners would boost their masculinity (Ashforth, 2001; DPW, 2004; Haupt & Smallwood, 2004; Bowen *et al.*, 2010; James *et al*., 2012). HIV/AIDS intervention programmes are not designed to circumvent the embarrassment of openly discussing sex and HIV/AIDS (MacQuarrie *et al.*, 2009). The vacuum of HIV/AIDS knowledge may be filled by misleading information, causing communities to revert to trusted cultural beliefs and norms (Malcolm *et al.*, 1998).

Figure 2.1: Sex before marriage is a sin
(Source: Wild, 2014)

A person may then seek concocted home-brewed remedies, which could prove to be fatal (Mane & Maitra, 1992; Lwihula *et al.* 1993; Strebal, 1996; Malcolm *et al.*, 1998; International Communication Association, 2005; Meintjies *et al*., 2007; ILO, 2008).

2.3.1.2 *Knowledge and misinformation of HIV/AIDS*

Stigma is a result of silence and silence is a product of denial and secrecy (Duffy, 2005). Denial and secrecy originates from a vacuum of knowledge, which is corrupted by misinformation and society`s prejudices and beliefs (Prohaska *et al.*, 1990; Duffy, 2005.) HIV/AIDS is not an openly discussed topic and is often shied away from, particularly in poorer communities (Campbell *et al.*, 2005).

Poverty compounds the potential to be infected with HIV (Goldin, 1994; Ashforth, 2001; Campbell *et al.*, 2005; ILO, 2008; Goudge *et al.,* 2009). The lack of access to basic services such as education, health services and housing and being unemployed contributes to a community not being knowledgeable about HIV/AIDS (Malcolm *et al.*, 1998; Campbell *et al.*, 2005; Kalichman & Simbayi, 2004). In some cases, poverty forces people to choose certain lifestyles, such as exchanging sex for money and if not armed with HIV/AIDS knowledge, the ability to protect against HIV infection is reduced (Goldin, 1994; Ashforth, 2001; Campbell *et al.*, 2005).

A direct correlation exists between the lack of a formal education and stigmatised views i.e., poorer communities which have less knowledge of HIV/AIDS, have a higher prejudiced view

of HIV/AIDS (Maughan-Brown, 2006). This is not necessarily always the case, as it was found that well-informed and educated professionals also have stigmatised views towards HIV/AIDS (Maughan-Brown, 2006). Usually these professionals have subordinates and these views may lead to subtle discrimination, such as victimisation at work (Maughan-Brown, 2006).

It is not guaranteed that education and knowledge will necessarily mean that people will act differently towards HIV/AIDS (International Communication Association, 2005; Maughan-Brown, 2006). By openly discussing and addressing people`s fear of HIV infection and misinformation or lack of knowledge about HIV transmission, this will tend to lead to a reduction of stigma towards HIV/AIDS infected people (Maughan-Brown, 2006).
Education and awareness programmes increase the chances of reducing the levels of stigma. In spite of this, these programmes are not the ultimate solution to reduce stigma towards HIV/AIDS (Maughan-Brown, 2006).

2.3.1.3 *Language associated with HIV/AIDS*

"Keep your thoughts positive because your thoughts become your words. Keep your words positive because your words become your behaviour. Keep your behaviour positive because your behaviour becomes your habits. Keep your habits positive because your habits become your values. Keep your values positive because your values become your destiny." (Mahatma Gandhi, BrainyQuote.com, 2013.)

The above quote eloquently shows how words have the power to evoke emotions within people; it can be either positive or negative, which results in behaviour believed to be appropriate. The language and words used is an indicator of the person`s mind-set and belief system (The Openly Positive Trust, 2007). The language expressed to describe HIV/AIDS is influenced by a person's perceptions, opinions, attitude, beliefs and feelings (International Communication Association, 2005). Inappropriate use of words and language when discussing or describing HIV creates a negative connotation which influences a non-tolerant and stigmatised attitude (International Communication Association, 2005). The languages and metaphors used to describe HIV/AIDS, transmission of HIV and sexual behaviours varies between communities and regions (Farmer, 1990; Ingstad, 1990; Lie & Biswalo, 1996; Campbell *et al.*, 2005; The Openly Positive Trust, 2007). The words used within a society have the power to influence the thinking towards HIV/AIDS (Wetherall *et al.*, 2001; The Openly Positive Trust, 2007).

Typically African cultures will use story-telling, metaphors and proverbs to describe HIV/AIDS in a negative light (International Communication Association, 2005). Analogues are usually used to describe HIV as a parasitic consumer of the human body and are augmented with food metaphors – such as not eating a sweet with a wrapper or a banana with its peel – are used to rationalise not opting for safe sex practises (Wolf, 2002; International Communication Association, 2005:8).

The Openly Positive Trust (2007) established a positive language guideline to facilitate change to the use of positive words and language associated with HIV/AIDS. The change in vocabulary is to encourage people to have a more tolerant attitude and become more sensitive towards people living with HIV (The Openly Positive Trust, 2007). The guideline shows concepts that attempt to transform the stigmatising language used to more empathic language (The Openly Positive Trust, 2007). A few examples are discussed below to illustrate how the changes in language can shape the attitude towards HIV and AIDS.

The initial idea is to prevent categorising people on account of their HIV status, recognising that HIV is an aspect of them and not who they are (The Openly Positive Trust, 2007:223). The preferred phrase is a "*person living with HIV or person who has HIV*" instead of a "*HIV positive person or HIV-infected person*" (The Openly Positive Trust, 2007:223). To empower a marginalised group, instead of describing the group as "*AIDS victims*" rather use "*people facing the challenges of living with HIV and AIDS*" to give hope and believe that the disease can be challenged (The Openly Positive Trust, 2007:224).
In the early years the terms "*full- blown AIDS* "and "*AIDS disaster*" were used to sensationalise the topic, resulting in fear and indifferences of the disease (The Openly Positive Trust, 2007: 225). By simply stating that HIV is manageable with ARV treatment and progression to AIDS is no longer inevitable with treatment, this will help contextualise HIV/AIDS and guide fear and ignorance away from the idea of "*full- blown AIDS"* and "*AIDS disaster"* (The Openly Positive Trust, 2007:225). The guideline states that information on HIV and AIDS should be specific, precise and factual, and that the terminology used can prevent generalisation and vagueness causing ignorance and fear (The Openly Positive Trust, 2007: 226). An example of this is to describe the virus as the "*AIDS virus*" or getting an "*AIDS test*" when, in fact, there is no such thing (Malcolm *et al*, 1998:226). Unfortunately, former president Thabo Mbeki publically questioned the link between HIV causing AIDS, fuelling ignorance and fear towards HIV/AIDS (Campbell *et al*, 2005:809; Sheckels, 2009).

Language has the power to change people's mind-sets and attitudes. If the recommended language practice is used, the message has the potential to remove the negative images conjured in peoples` minds and would encourage them to know their status (Malcolm *et al*, 1998:364; The Openly Positive Trust, 2007).

2.3.1.4 *Witchcraft influence on stigma*

Scientific literature states that HIV transmission is through unprotected sexual contact or through the exchange of bodily fluids (UNESCO, 2006:16-17). However, within an African context, it is believed by some that HIV is caused by witchcraft and curses (Ashforth, 2001). In a study by Kalichman and Simbayi (2004:572) it was shown that 11% of people interviewed believed HIV/AIDS is caused by spirits or within the supernatural realm, with 21% of people unsure of the cause. The vacuum of HIV/AIDS knowledge allows inaccurate information to influence people`s perception of the disease (Kalichman & Simbayi, 2004).

The belief exists that a begrudged person would pay a witchdoctor – known as a "*sangoma"* – to cast a curse on an enemy, to either harm or kill (Ashforth, 2001:1-10). The curse would then guide a supernatural force and subsequently manifest into an illness or misfortune for the enemy, in this case an HIV infection (Ashforth, 2001:1-10). Usually, a jealous neighbour is suspected of the curse (Ashforth, 2001:11). This causes tension and diminishes the trust amongst the people in the communities (Ashforth, 2001:11). The cursed person would then seek and pay for a traditional remedy from a witchdoctor (Ashforth, 2001:11). It has been reported that when a remedy fails, a man would try to get rid of his "*bewitched*" semen by having sex with another woman – preferably a virgin – in the belief the curse will not affect the other woman, as the curse was intended to harm his wife alone (Berglund,1976; Ashforth, 2001:12-24).

Kalichman and Simbayi (2004) showed that people believing that HIV/AIDS is caused by spirits and supernatural forces had minimal formal education, were unemployed and unmarried. It is evident that this belief results in unsafe sexual practises, such as not using condoms, even-though respondents displayed good awareness of HIV/AIDS (Kalichman & Simbayi, 2004:575). People with superstitious views and lower levels of HIV/AIDS awareness have a higher likelihood of justifying their stigmatised behaviour (Kalichman & Simbayi, 2004). Traditional healers have been suggested to be included in the fight against the lack of HIV/AIDS knowledge, prevention, stigma and treatments (Ashforth, 2001). Kalichman and

Simbayi (2004) suggest that HIV/AIDS intervention programme should consider and address these traditional beliefs that supernatural forces causes HIV infections.

2.3.1.5 *Resilience of people living with HIV*

The feelings and responses of people when diagnosed with HIV vary from anger, blame, violence, withdrawal, grief, and depression, to avoidance of family, friends and community (Goudge *et al.,* 2009). A study revealed that this was not always the case; some people living with HIV did not believe they deserve to be treated badly and did not allow being treated badly due to their HIV infection; this is known as passive resistance (Goudge *et al.,* 2009:100). Others confronted and demanded discriminating people to reveal their HIV status; this is known as active resistance. In other cases, some choose to use a combination of being discreet (known as strategic avoidance) and active resistance depending on the situation (Goudge *et al.,* 2009). The activism route is where the person is open and willing to share their experience living with HIV (Goudge *et al.,* 2009).

Goudge *et al.* (2009) determined why some people living with HIV succumb to stigma and why others could resist it. It is found that support and encouragement from health workers or family members allow people living with HIV to move away from self-destruction, self-defeatist inward pity to an outward opportunism finding meaning and value in their experiences. It empowers a belief that they play a role to help others to also resist stigma and discrimination (Goudge *et al.,* 2009).

The newly found opportunism ensures that their newly invigorated spirit needs to adhere to the ARV treatment to remain healthy and strong to help others, currently facing the hardship of stigma and discrimination (Charmaz, 1991; Frank, 1995; Becker, 1997; Kralik *et al.*, 2004). This change in perception and approach further demystifies the stigma associated with HIV, as their healthy, productive roles or identities would contradict the general sickly and hapless perception society has of a person living with HIV (Douaihy & Singh, 2001; Goudge *et al.*, 2009).

It is shown that social support is critical for a paradigm shift in a person`s construct of thinking. It provides people living with HIV the practical and emotional shields to fend off both the felt and enacted stigma caused by society (Goudge *et al.*, 2009). Without these shields people living with HIV will not have an outlet to talk and share their burden, but will continue to

wallow in self-pity and depression, never transforming to a new valued role of opportunism (Goudge *et al.*, 2009).

While this discussion shows how people are able to be resilient and resist the effects of stigma, the majority of people living with HIV are still reluctant to access intervention programmes and remain on ARV treatment (McGrath *et al.* 1993; Meintjies *et al.*, 2007; Bowen *et al.*, 2013).

2.4 Impacts of HIV/AIDS stigma

The links between how stigma pressures people to decide against accessing HIV/AIDS intervention programmes and how these decisions are detrimental to themselves and their families are reviewed in this section. It highlights how these micro-impacts on an individual level expands upstream affecting an organisation`s longevity, such as the construction industry and ultimately impacting South Africa`s prosperity (ILO, 2008).

2.4.1 HIV/AIDS stigma impact on individuals

Initially, HIV/AIDS programmes did not consider stigma and discrimination, as its main focus was on dealing with the immediate medical condition (Spark, 2007). It misunderstood and neglected to factor in the social aspect comprising of the complexities of the human construct of beliefs, attitudes towards gender, sexuality and cultural differences. These shortcomings were exacerbated by institutional, legal and economical frameworks (Spark, 2007).

The fear of being ostracised prevents people from testing for HIV, or indeed STIs (Chesney & Smith, 1999). Similarly, workers living with HIV are reluctant to disclose their HIV status, nor access or be associated with HIV/AIDS treatment programmes (Kilewo *et al.*, 2001; Meintjies *et al.,* 2007; Bowen *et al.*, 2013). The consequence is that reluctant workers decrease their chances of knowing their HIV status, thereby eliminating their choice for treatment and support (International Centre for Research on Women [ICRW], 2007). HIV/AIDS-related stigma has an immediate impact on people living with HIV and AIDS, dealing with tremendous physical, emotional and financial hardships (Duffy, 2005; Goudge *et al.*, 2009). It adversely impacts their health and quality of life (Goudge *et al.*, 2009). Communities and families shun their relatives living with HIV and AIDS, offering no support and assistance (Campbell *et al.*, 2005; Goudge *et al.*, 2009). Chances of accessing medical treatment without their families or

communities assistance are drastically reduced (Campbell *et al.*, 2005; Goudge *et al.*, 2009). Their limited income diminishes even further, especially in poorer households (Ashforth, 2001; Maughan-Brown, 2006; ILO, 2008; Goudge *et al.*, 2009). Eventually, if left untreated, the individual becomes gravely ill and unable to work, ultimately resulting in death (ILO, 2008).

The sooner a person knows their HIV status, the sooner he/she is armed with life-saving knowledge, and the greater the likelihood that the person will make a choice to remain healthy (Duffy, 2005; ILO, 2008). People will therefore remain on ARVs and also engage in safer sexual practices thereby decreasing the risk of infecting their partners and re-infecting themselves.

The youth are more willing to challenge the traditional views of HIV/AIDS and school-based peer education programmes have shown to produce more tolerant views (Duffy, 2005; The Openly Positive Trust, 2007; Spark, 2007). However, due to parents developing AIDS and dying, children are forced to leave school to work and support their households (Duffy, 2005; Campbell *et al.*, 2005). The rate of orphans is increasing due to people not accessing HIV/AIDS intervention programmes (Duffy, 2005). Children, who are forced to leave their formal schooling, tend to grow up with the same preconceived beliefs of their parents and would have a higher risk of contracting HIV (Duffy, 2005). The vicious cycle of ignorance, denial and fear continue to have tragic consequence for individuals, families and communities (Ashforth, 2001).

The HIV/AIDS pandemic has impacted the South African workplace`s productivity and skilled human capital (Bowen *et al.*, 2013). This collective impact on human resources has direct and indirect financial implications for industries, particularly in the construction industry for reasons described above (Bowen *et al.*, 2013).

2.4.2 Financial implications of the HIV/AIDS pandemic for the construction industry

In 2005 it was reported that South African businesses loses a month-worth of productivity per worker per year due to HIV-related absenteeism. It was equated to a loss over R 2 billion per year (Moodley, 2005).

Table 2.1 illustrates the differing views held by various industries concerning the potential impact of the pandemic on company profitability. While over 60% of respondents from the mining industry acknowledged HIV/AIDS to have a significant impact on its profitability (Naidoo, 2007:7), over 25 % of the construction industry respondents acknowledged that this to would have an impact; albeit the industry is the third worst affected industry in South Africa (DPW, 2004; Bureau for Economic Research (BER), 2005; Naidoo, 2007:7).

Table 2.1: Industries acknowledgement of HIV/AIDS impact on company profits

(Source Naidoo, 2007:7)

Mining	>60%
Financial Services	>45%
Manufacturing	>40%
Wholesale	>25%
Motoring	>30%
Retail	>25%
Building and Construction	>25%

The consequence of this view adopted by many firms in the construction industry has certainly had an impact on both their direct and indirect costs. HIV increases direct cost in health care, pension, life, disability medical aid contributions and wages due to the reducing workforce (Ahwireng-Obeng & Akussah, 2003; Ellis *et al*., 2003). The increase in indirect costs attributed to HIV/AIDS-related morbidity and mortality are as a result of loss of experienced skilled human capital, recruitment and training costs, lower labour productivity, production interruptions, increased staff turn-over, ill-health retirements, absenteeism due to illness or leave to attend/arrange a family member`s funeral, increase funding for funeral expenses and declining morale (Ellis *et al*., 2003). Figure 2.2 illustrates the typical consequences of the HIV/AIDS pandemic on a company`s financial situation and its labour force.

The decline in the labour pool is the beginning of a vicious cycle, resulting in fewer workers being available, demanding higher wages, thereby increasing the companies' production expenditure (Bollinger & Stover, 1999; DPW, 2004; Haupt *et al*., 2005). Research indicates that the increase in labour costs due to HIV/AIDS for the South African construction industry ranged from 4.5 % to 7.9% (Ambert, 2002). Companies tend to sell their products at higher

prices – losing their competitiveness – to account for the increased expenditure (Ambert, 2002).

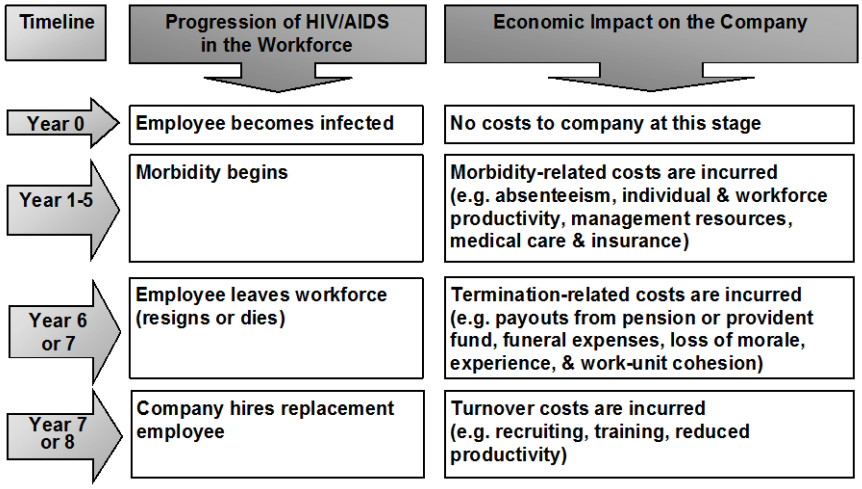

Figure 2.2 Company costs due to HIV/AIDS pandemic
(Source: BER, 2004)

Construction firms are at a distinct disadvantage; their infrastructure products are fixed and rely upon and utilise casual unskilled labour (Meintjies *et al*., 2007; ILO, 2008). The fixed product cannot be moved to a more competitive market and sold (Meintjies *et al*., 2007).

The construction industry builds the fundamental infrastructure of a country, for its economy to operate and function, such as roads, ports, power stations, buildings, (ILO, 2008). The increase in costs experienced by the construction industry retards infrastructure development within South Africa, which it needs, impacting the overall economy (Meintjies *et al*., 2007). The construction industry has not proactively dealt with the pandemic and focuses on workers occupational safety rather than their health (DPW, 2004; ILO, 2008).

According to Ribeiro (2009), the construction industry is not alone in this non-proactive approach, a sample of metal and engineering firms in Gauteng share the opinion that HIV infections are mainly associated with lower-skilled worker. These firms believe that because their staff compliment comprises intermediate and highly skilled workers, the HIV/AIDS pandemic does not pose a risk to their operations.

Hawarden (2006) found that the majority of 20 small and medium-sized enterprises (SME) in the manufacturing industry, in Central Gauteng, stated stigma towards HIV/AIDS was the main reason for not implementing an HIV/AIDS intervention programme. Those companies with HIV/AIDS policies deemed stigma as a major hindrance to these programmes` effectiveness (Hawarden, 2006). HIV-positive workers were reported to be fearful of their colleagues' reaction and only accessed HIV/AIDS programmes at work in the latter stages of the infection i.e., when their health situation was dire (Hawarden, 2006). Interestingly, the seven companies with HIV/AIDS policies did not implement these programmes because of financial and operational impacts, instead implemented these programmes due to a moral obligation and corporate social responsibility (Hawarden, 2006).

Conversely, in 2003, the Chemical Industries Education and Training Authority [CHIETA] initiated a study to understand the threat HIV/AIDS posed towards its sector and improve its approach (Redpeg, 2005). The study determined that nearly 60% of participants believed that knowing their HIV status was essential (Redpeg, 2005). However, over 70% feared to be stigmatised and discriminated against if their HIV-positive status was known (Redpeg, 2005). Nearly 80 % of managers confirmed this fear, when witnessing HIV-positive workers experiencing workplace stigma and discrimination (Redped, 2005). As a result, the CHIETA developed a holistic approach - beyond an awareness programme to an intervention programme - which highlighted the risk HIV/AIDS posed to its operations and introduced practical methods to manage these [HIV/AIDS pandemic] impacts (Redpeg, 2005). Unfortunately, this kind of approach has not been adopted by the construction industry (DPW, 2004; ILO, 2008; Bowen *et al.*, 2013). The construction industry has not considered the compounding effects of the HIV/AIDS pandemic i.e., the impact on its financial viability (DPW, 2004; ILO, 2008; Bowen *et al.*, 2013).

When the cumulative economically-active labour force begins to diminish and disposal income is diverted to health care and funeral expenditure, the economy`s growth begins to be compromised (Barnett & Whiteside, 2002). As the impact of HIV/AIDS becomes more severe, the government will start to also divert and increase funding to health and welfare to deal with the increasing rate of AIDS-related deaths and orphans. It will result in a decline in demand for the construction industries` product, as the funding for housing and infrastructure will begin to diminish (Whiteside & Sunter, 2000). Consequently, this negatively influences the growth of the economy (ILO, 2008:9). As economic activity starts to decline, investors classify South

Africa as a higher risk investment destination, thus requiring a higher rate of return (Barnett & Whiteside, 2002).

2.4.3 Eskom`s vulnerability due to HIV/AIDS impacts on the construction industry

In Chapter 1 the interface between, and reliance on, the construction industry by Eskom for its new build infrastructure programme was described (see Eskom, 2013a).

Similarly, operating plants, such as Koeberg Nuclear Power Station (hereinafter referred to as Koeberg), relies on disciplines practised within the construction industry. Koeberg uses an array of disciplines to ensure and maintain the plant`s safe operation, such as civil works on the containment building, erection of new buildings, maintaining and installing mechanical components, such as turbines and nuclear reactor vessels. The project and maintenance activities executed at Koeberg are defined as construction work and these activities are required to comply with the Construction Regulations (OHSAct 85 of 1993, Department of Labour, 2003).

The construction industry typically structures their projects with a core skilled project team guiding and instructing a large pool of workers ranging from unskilled to skilled workers (Construction Industry Development Board [CIDB], 2004). Project management structures are common practice at Eskom, with an Eskom project manager co-ordinating both in-house resources and out-sourced skills from a construction firm, to deliver a project. An example of such a project is the construction and installation of a tank for the nuclear island at Koeberg. The project has been awarded to a large construction firm, under the management of an Eskom appointed construction project manager (Lesedi Nuclear Services, 2013).

Construction firms have steadily opted to increase their reliance on out-sourced labour, mainly to improve their financial bottom line and also to divert responsibility for a sick workforce and eliminate the direct cost of HIV/AIDS intervention programmes (Haupt *et al*., 2005). The consequence of this out-sourcing practice has resulted in a declining pool of professional, skilled and semi-skilled resources available within Eskom (DPW, 2004). Eskom`s reliance on the construction industry for its infrastructure development activities has inherently introduced

the HIV/AIDS vulnerability faced by the construction industry into its own operations (DPW, 2004).

Koeberg planned maintenance outages rely on labour resources and specialists from across the country and the world, for periods prior to, during and after outages. Due to the limited skills available in South Africa, Koeberg shares these (mainly male) skilled resources with other Eskom sites. They constantly travel to various parts of the country to execute projects for other outages at Eskom sites. Leisure time may be spent interacting with the local community and potentially engaging in unsafe sexual encounters with multiple sexual partners or sex-workers, increasing their risk of being infected with HIV (Fourie & Schonteich, 2002). After the project has been completed, they would return home to their partners (Fourie & Schonteich, 2002).

It is not inconceivable that, given Eskom's reliance on outsourced construction resources, the impact the HIV/AIDS pandemic has had on the construction industry may have been a contributor to the delays and increase in project costs experienced with the construction of the Medupi power station (Eskom, 2013h).

2.4.4 HIV/AIDS impact on the South African economy and Eskom

According to a recent report by Goldman Sachs, the most important challenges faced by South Africa are HIV, unemployment, and poverty (Coleman, 2013:30). The report stated that the number of people living with HIV has grown from an estimated 1 million South Africans in 1994, to an estimated 4.6 million in 2013. Despite improved ARV programmes have stemmed the tide against the infection rate, it is estimated that 15.9 % of the 15-49 age group are infected, who are recognised as the drivers of economic activity (Coleman, 2013:30). In isolation, the challenges faced by the construction industry due to the pandemic, poses a risk to Eskom`s ability to generate and supply electricity, which threatens South Africa's prosperity.

The HIV/AIDS pandemic has adversely affected progress made by many developing counties such as South Africa (ILO, 2008). It has even been argued that the pandemic has the potential to weaken the economy to such an extent so as to even destabilise South Africa`s democracy (Ashforth, 2001; ILO, 2008). HIV/AIDS has impacted significantly on the economically active population, who directly contribute towards the country`s GDP (UNAIDS & WHO, 1998; ILO,

2008). An ILO (2006) study revealed that some developing countries could lose up to 18% of their GDP due to HIV/AIDS.

2.4.5 Illustration of HIV/AIDS stigma origins and impacts

The illustration depicted in Figure 2.2 consolidates and summarises the literature review into a visual aid, which provides an overview of the cycle of HIV/AIDS stigma and its impacts. The right side of the figure shows the origins, i.e. attitude, beliefs and cultural norms. It continues to illustrate the process of HIV/AIDS stigma, as discussed in section 2.2.2. The consequence of the process of HIV/AIDS stigma results in enacted and felt- stigma.

The two forms of discrimination are linked to the left side of the figure and demonstrate the impacts on the individual. The figure further shows the compounded and upstream impacts of the individual on the organisational and country.

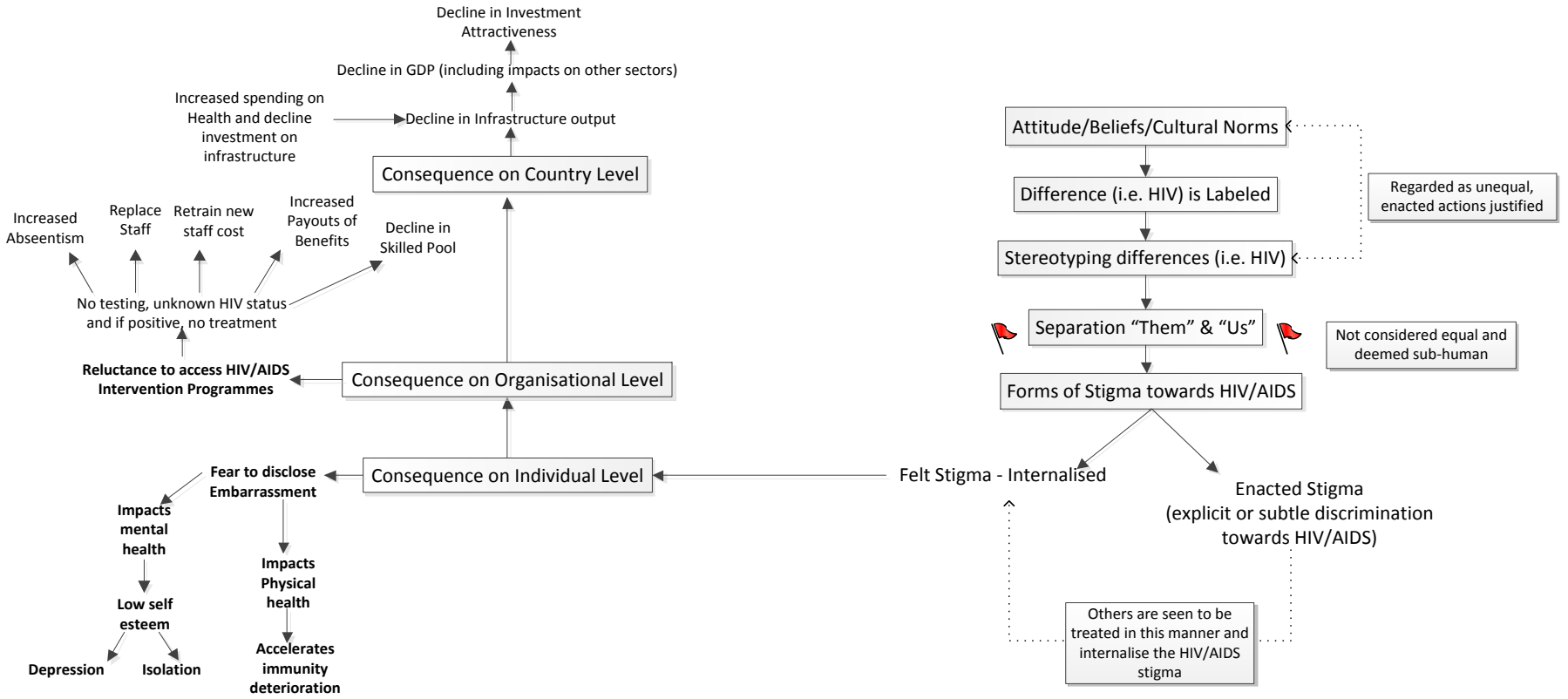

Figure 2.3: Origins and Consequence of HIV/AIDS Stigma
(Sourced from Sayce,1998; Campbell *et al.*, 2005; Dufy,2005; Meintjies *et al.*, 2007; Goudge *et al.*, 2009; Coleman, 2013)

2.5 Summary

This chapter reviews the concept of stigma, its relationship with discrimination, its impact on HIV/AIDS prevention and treatment programmes offered by some construction firms, and the potential negative consequences for a company`s profitability and the economy. It shows how the definition of stigma progressed from the traditional attribute or trait view to a new contemporary framework consisting of stages making up the social process of stigma.

The chapter further explains and establishes the factors influencing the stigma of HIV/AIDS. It explains how stigmatisation of HIV creates an environment where individuals are reluctant to access intervention programmes, limiting the treatment of HIV and AIDS. The adverse effects of stigma in turn impact on individuals and influence an organisation`s productivity and financial viability. The construction industry as a whole, has not acknowledged the significant threat that the HIV/AIDS pandemic has on its operations. Eskom`s operations and new build programme is reliant on the construction industry. The construction industry's limited response to the pandemic has introduced a vulnerability to Eskom, as well as the prosperity of South Africa.

In the next chapter the research methodology will be justified and described.

Chapter 3: Research Methodology

3.1 Introduction

This chapter describes the research methodology used to address the research question highlighted in Chapter 1:

> *To what extent does stigma impact negatively on Eskom's HIV/AIDS intervention programmes?*

The chapter starts by presenting a review of the extant survey-based literature published since 2004, focusing on HIV/AIDS in Cape Town. The objective of the review is to understand the research method employed by others in this field and its limitations. The chapter summarises the limitations of the reviewed survey-based research designs and examines the implications these issues pose to the Koeberg study.

The research method proposed for the Koeberg study is discussed and justified. In addition, the survey-based instrument planned for the Koeberg study is discussed and the various cognitive and behavioural scales are elaborated on. The chapter discusses the processes and the authorisations required to conduct the study at Koeberg. The survey administration, setting and data collection are described and the reasons for selecting the survey venues are discussed. Finally, a synopsis of the chapter is given.

3.2 Survey-based design

3.2.1 Critical review of extant survey-based research design

The critical review is based upon an extant survey-based research design of journals published over the period 2004 - 2014. This literature focuses on the determinants impeding accessing HIV/AIDS testing and treatment programmes.

Kalichman and Simbayi (2004) used a self-administered questionnaire to examine the relationship between traditional beliefs that spirits and supernatural forces cause HIV/AIDS, AIDS-related knowledge, and AIDS-related stigma. The survey was conducted in a 'Black' Cape Town township and collected data from men (n=218) and women (n=269). The survey

measured demographic characteristics, history of HIV testing, risky sexual behaviour, HIV transmission and prevention knowledge, and traditional beliefs causing HIV/AIDS. The survey was administered in English and Xhosa. The study captured a wide spectrum of participants within the township. In spite of this, the study is limited to a poor African urban township. The outcome of the study does not reflect the attitudes of a rural setting or the general population of South Africa. Field-workers approached participants in a public setting. This may have compromised the confidentiality of the questionnaire and participants may not have been entirely truthful. Coupled with high levels of poverty within the township and self-reporting measures, those who harboured extreme stigmatised views may have been enticed to hastily participant merely for the incentive (ZAR 15) and had no intention to answer the questionnaire truthfully. A further limitation was the design of the study being cross-sectional and did not allow for predictive or causal interpretations of the findings.

Kalichman *et al.* (2005) stated that no standard reliable and valid multi-item AIDS stigma scale existed for the African context. In response, their study developed a nine-item AIDS-Related Stigma Scale. The scale was developed by reviewing previous HIV/AIDS stigma studies within Southern African; reviewing previous measurements of AIDS stigma and gathering insights from HIV/AIDS service providers within South Africa. The AIDS-Related Stigma Scale sought to measure the feelings of respondents toward people living with HIV. Other survey measures included: demographic characteristics; AIDS knowledge; AIDS concern; attitude toward disclosure of HIV status; and HIV testing history. The study collected data from five independent samples, namely, two in an indigenous 'Black African' township; one in a 'Coloured' (mix race) township; a random household survey from a mainly 'Coloured' population; and the final sample was from a clinic treating sexual transmitted infections (STIs), mainly from a 'Black African' sample. The scale was administered in three languages, namely, English (n=1154, 50%), Xhosa (n=814, 35%), and Afrikaans (n=338, 15%). The nine-item scale was shown to be reliable and valid (α = 0.75). The survey`s validity was limited with a small number of potential correlations for convergent and divergent validity analyses (Kalichman *et al.,* 2005). Further limitations of the nine-item scale were shown to have a few items that did not fully correlate with the total score, thereby reducing the internal consistency of the scale. The authors recommended refining the sentence construction to produce a more detailed version, expanding the sub-scaling responses to address the dichotomous responses thereby improving the representation, sensitivity and overall reliability of the survey. The survey had limited representation of the 'White' and 'Indian' population and was restricted to a

specific geographical location and socio-economic sample i.e., mainly persons of Xhosa heritage. It is cautioned to extrapolate the results of The AIDS-Related Stigma Scale to the general population of South Africa.

Simbayi *et al.* (2007) examined the prevalence of discrimination and internalised stigma of men and women living with HIV/AIDS in Cape Town. The survey showed that a greater degree of internalised stigma corresponded to a higher level of reported depression. The survey measures were demographic and health characteristics, internalised AIDS stigma, HIV/AIDS discrimination experiences, cognitive and affective depression, and substance use. The convenient and purposive sampling targeted men (*n*=420) and women (*n*=643) from local social support and health-care providers offering services to people living with HIV/AIDS. The results were represented by 68% 'Black African' (*n*=714), 15% 'Coloured' (*n*=156), 12% 'Indian' (*n*=127), and 5% 'White' (*n*=47) population groups. The survey was conducted in the most commonly spoken languages in Cape Town, namely, English, Afrikaans and Xhosa. A team of 11 trained, racially and ethnically diverse field-workers administered the venue-based survey. The survey was self-administered and an incentive was given only after the survey was completed. The survey was ethnically representative, further enhancing the insight to the various racial groups within Cape Town. The survey was however restricted to Cape Town and the discrimination experienced by HIV-positive people may be less relative to poorer resourced regions in South Africa (Simbayi *et al.,* 2007). In short, it is not advisable to extrapolate the results from this study to the general population of South Africa. The convenient and purposive sampling method singled out venues used by people living with HIV. This sampling method introduced a bias and focused the research on internalised stigma and depression experienced by HIV-positive people only, without evaluating or comparing depression experienced by people who do not live with HIV/AIDS. A further limitation to the study was the measuring instrument; it did not measure depression directly. Instead the instrument interpreted the level of depression experienced by the negative emotion reported in the survey. In addition, the study relied on self-reporting to measure respondents HIV status, which may have resulted in under-reporting and compromising the study`s findings. In spite of its shortcomings, the study gives an in-depth insight to the internalised stigma, discrimination and depression experienced by people living with HIV/AIDS.

Cloete *et al.* (2008) stated that HIV/AIDS studies are mainly based on heterosexual orientation, with less focus on the sexual lifestyle of homosexual men. An anonymous venue-based survey

was conducted to measure the internalised stigma amongst men in Cape Town. The sample was split between men who have sex with women (hereinafter referred to as MSW) and men who have sex with men (hereinafter referred to as MSM). The convenient and purposive sampling method targeted social service and healthcare facilities offering services to people living with HIV/AIDS. The survey resulted in MSW (n=330) and MSM (n=92) participating and determined that all men, regardless of sexual orientation, experienced significant levels of internalised stigma. In addition, it was found that MSM experienced generally higher internalised stigma than that of MSW. Local fieldworkers, who were openly living with HIV, administered the seven-page survey. The survey was available in commonly spoken languages in Cape Town, namely, English, Afrikaans and Xhosa. The survey measured the demographic and health characteristics, history of risky sexual behaviour, internalised AIDS stigma, HIV/AIDS discrimination experiences, cognitive and affective depression, social support, and substance use. A limitation of the purposive sampling method used introduced a selection bias to target locations used by MSM. The research method had no mechanism to prevent people who did not live with HIV to participate in the survey. The authors argue that, due to the stigmatised nature of the topic and the reward given after the survey was completed; only HIV – positive people participated. Furthermore participants knew the fieldworkers, potentially compromising their confidentiality. This may have resulted in responses not being entirely truthful and under-reporting.

Kalichman *et al.* (2009) explored the stigma of HIV/AIDS. The study found that the enacted stigma experienced by people living with HIV is eventually internalised and has adverse effects on an individual`s emotional well-being. The survey-based design used a scale derived from an AIDS-Related Stigma Scale previously used (Kalichman *et al.*, 2005). The six-item scale (IA-RSS) reflected destructive self-beliefs and negative perceptions of people living with HIV/AIDS. The survey was administered and collected samples in three countries, namely, Cape Town (South Africa) (n=1068), Swaziland (n=1090), and Atlanta (USA) (n=239). Collectively, the data showed that people, who did not disclose their HIV-positive status was due to fear and suffered greater internalised stigma. Furthermore, it was determined that a positive relationship existed between internalised stigma and depression and inversely linked to social support. The sample population in Cape Town is racially diverse and the commonly spoken, languages are English, Afrikaans and Xhosa. The challenges stemming from translation were resolved by discussion and repeating the back-translation process with more native speakers (Kalichman *et al*., 2009). A shortcoming of the study was that it had a limited

representation of people living with HIV/AIDS in the three countries, albeit more regions in Swaziland were sampled. The survey was re-tested in established urbanised cities, namely, Cape Town (South Africa) and Atlanta (USA), and did not consider rural areas within these countries. A similar limitation of a previous study by Simbayi *et al.* (2007) was that the research took place in cities that offer more support to people living with HIV/AIDS and experience less discrimination compared to rural areas or poorer cities. A further limitation of the study was that a weak relationship was shown between internalised stigma and only two psychological constructs (depression and social support) and one health index (HIV symptoms). The authors recommended further studies to expand and confirm the psychometric properties of the IA-RSS and to understand the origins of destructive self-beliefs and negative perceptions of people living with HIV/AIDS.

Pitpitan *et al.* (2012) studied the relationship between alcohol use within informal drinking establishments and the level of HIV testing status, risky sexual behaviour, and the endorsement of stigmatised views. The measures employed were adapted from previous studies, namely, the demographics characteristics, HIV testing status, items from the AIDS-Related Stigma Scale by Kalichman *et al.* (2005), alcohol use, drug use and HIV risky sexual behaviour. The survey was administered in the three common languages spoken in Cape Town, namely, English, Afrikaans and Xhosa. An incentive was given only after each survey was completed. The informal drinking establishments, commonly known as '*shebeens*', were situated in a racially integrated 'Black African' and 'Coloured' (mixed race) township of Cape Town`s outskirts. Of the 2572 completed surveys, 21.4% of the responses were duplicates and 60 responses had missing data, these responses were removed from the dataset. The racially diverse field-workers approached a sample of participants consisting of men (n=1407) and women (n=1162) at 10 different '*shebeens'*. Participants were approached when they entered the venue and before ordering a second drink. The anonymous survey was conducted over a 19-month period (October 2009 to April 2011). The study attempts to have an integrated perspective of two distinctly different ethnically diverse groups and gather information to correlate alcohol use, stigma, and HIV testing. A limitation of the survey was that it did not link stigma directly to HIV testing. Furthermore, the survey cannot correlate the use of alcohol to HIV testing. The study could also not establish different drinking patterns between patrons who have stigmatised views of HIV/AIDS compared to those who have not indicated any stigmatised views. A

second limitation was that the venue-based survey did not provided sufficient privacy of participants, resulting in under-reporting of stigmatised views. A final limitation was that the survey was limited to a specific socio-economic group from a specific township, which does not represent the general population of Cape Town.

A study by Scott-Sheldon *et al.* (2013) aimed to explore the relationship between HIV testing, HIV transmission knowledge and sexual behaviour amongst men. The survey was administered in several 'Black African', Xhosa speaking townships in Cape Town. The chain referral method was used to recruit between eight to 10 patrons from various '*shebeens'* from these townships and invited them to an alcohol and HIV risk reduction programme at the local community centre. The initial patrons then recruited additional participants to complete the self-administrated surveys at the community centre. The study measured the demographic characteristics, HIV testing history, HIV knowledge, risky sexual behaviour (unprotected vagina and anal sex), and alcohol use. The participants gave written consent and were incentivised (ZAR 100) after the survey was completed. The study was conducted over a 27-month period (September 2008 to November 2010). A total of 820 men participated in the survey, were over 18 years old and lived in the adjacent townships. The study showed that over 60 % (n=516) of the men reported to have been tested for HIV and 82% (n=412) of these reported to be HIV-negative. A shortcoming of this study was the limited representation of the larger community, especially of other race and socio-economic groups within Cape Town. The second limitation was that the survey was administered in a public venue surrounded by community members and relied on self-reporting; not HIV-testing. Participants may not have being entirely truthful in their responses or unaware of their HIV-positive status, resulting in under-reporting of HIV-positive data. The last limitation was that the study did not directly correlate HIV testing with HIV knowledge. The findings were interpreted by causal inferences. The authors suggest that longitudinal data instead of cross-sectional data is gathered, if the study is to be repeated.

Bowen *et al.* (2014b) examined the factors which influenced the HIV testing behaviour of construction workers in Cape Town. The study proposed an integrated conceptual model predicting the testing behaviour of construction workers. The model used measures such as demographic factors, lifestyle risk and condom use, alcohol consumption, drug use, knowledge about HIV/AIDS, prejudice towards HIV-positive persons, and attitudinal fear of being tested. The model was mathematically tested using data from a field-administered questionnaire

survey. The questionnaire items and measures were similar to previous studies by Kalichman and Simbayi (2003, 2004), Kalichman *et al.* (2005) and Simbayi *et al*. (2007). The survey was conducted in the most common languages spoken in the Western Cape, namely, English, Afrikaans and Xhosa. The convenient and purposive sampling method was used to select the construction sites and workers. The survey was able to collect data from 512 site-based construction workers from various construction sites (n=18) within the Western Cape. One of the study`s findings showed that employment type, alcohol consumption, drug use, and HIV/AIDS knowledge served as predictors of HIV testing behaviour. A limitation of the study was that it utilised a self-reporting method. This method of data collection increases the chances of under-reporting and compromising the validity of the data, which constantly needs to be validated relative to established indicators. Another limitation of the study was its inability to gain an insight to the reasons in how and why these factors influence these construction workers testing behaviour. Regardless of these limitations, the study was able to show measures associated with the HIV testing behaviour of construction workers.

3.3 Summary of limitations of a survey-based design

The reviewed survey-based research designs explore a sensitive topic within South Africa, where a large percentage of South Africans have never been tested and do not know their HIV status (Health and Development Africa (Pty) Ltd Africa, 2012). The results from the studies reviewed above offer insight into attitudinal fear of HIV/AIDS testing and highlights influential factors such as low education, unemployment, lack of information of HIV transmission, alcohol and substance use and AIDS-related stigma (Kalichman & Simbayi, 2003; Peltzer *et al*., 2009).

The limitations encountered, which influenced the effectiveness of these studies, were the limited privacy participants encountered; incentives offered; and the lack of population representation.

Limited privacy

The people who were approached in the street and public venues in the various townships were not guaranteed anonymity. The participants were surrounded by fellow members of the community and may have been familiar with the field workers. It is possible that certain individuals may have been afraid to be identified and were reluctant to answer the survey in an

honest manner, even though their identity was not required. As a consequence, the responses may have been answered in such a manner to appease the communities` bias and hence skewed the results of the survey.

Incentives offered

Kalichman and Simbayi (2004) indicated that due to the level of poverty, the incentive possibly caused participants to rush through the survey and as a result, not answer truthfully or completely.

Lack of representation

Furthermore, the surveys mainly targeted the 'Black African' population, who are the largest population group in South Africa. This is not the case for the Western Cape, neither for the city of Cape Town, the majority is the 'Coloured' population (The Western Cape Destination Marketing, Investment and Trade Promotion Agency-South Africa hereinafter referred to as Wesgro, 2012; Stats SA, 2014). The majority of the studies reviewed used the convenient and purposive sampling method. This sampling method does not give people an equal chance to be selected and introduces a selection bias (Cloete *et al.,* 2008). The studies are not representative of the diverse population of South Africa. The surveys were mainly conducted in poor, urbanised communities and in a well-resourced city. The findings do not represent racial groups in affluent areas and with higher levels of education. For example, Pitpitan *et al*. (2012) concludes that stigma-endorsers would typically be Coloured and less educated. Furthermore it gives no insight from rural and poorer provinces in South Africa, where possibly these barriers may be even worse than that experienced in Cape Town. The final limitation is the racially polarised results, with 'White' and 'Indian' racial groups having limited representation.

In spite of their limitations, the extant survey-based research designs were able to extract valuable insight into the factors that hinder people from accessing HIV/AIDS facilities to be tested and treated for HIV. This quantitative approach would fulfil the aims of this study by understanding the relationship between stigma and it hindering people from access to HIV/AIDS programmes (Punch, 2005).

3.4 Justification of a survey-based research design

The limitations highlighted in the previous section potentially had an influence on the results of the reviewed extant survey-based research studies. These limitations would need to be considered when developing and establishing a survey-based research design for the Koeberg study.

The survey-based research design is an appropriate method to collect a variety of responses to the same question from a large sample of people (Kane & O`Reilly-de Brun, 2001). The research design caters for a variety of different backgrounds, opinions and beliefs, using standardised scales and indices. The research design uses an instrument called a questionnaire. It is a standardised, structured set of questions to determine information from participants, such as personal particulars, typical behaviour, opinions, beliefs, convictions and attitude (Huysamen, 2001). The measures (metrics) employed in the reviewed extant survey-based research studies are congruent with the objectives of this study. Furthermore, the high level of internal consistency showed that the scales derived from the metrics were stable, reliable and valid, albeit the study was conducted amongst culturally different communities.

The questionnaire could either be self-administered or a face-to-face interview. Kalichman *et al.* (2007) found that many people living with HIV/AIDS in South Africa are not comfortable to disclose their HIV status. A face-to-face interview would cause people to be fearful to share private and potentially damaging information (Renzetti & Lee, 1993; Kane & O`Reilly-de Brun, 2001). These findings were considered and it was decided to utilise a self-administered questionnaire.

Huysamen (2001) states that the Human Sciences Research Council (hereinafter referred to as HSRC) is the most appropriate source for standardised social tests. Punch (2005) further justifies using an existing instrument from a reputable source, such as the HSRC, because the instrument has been used before and is easier to compare analysed results to an existing body of knowledge. Bowen *et al.* (2014b) corroborates that the benchmark for HIV research in South Africa is the survey-based research design and that the HSRC and Medical Research Council use this approach extensively.

Consequently, this study adopts HSRC survey metrics for examining demographic characteristics, HIV-testing history, risky sexual behaviour and condom use, HIV/AIDS

knowledge and traditional beliefs causing HIV/AIDS, attitudinal fear of being tested, prejudice towards HIV-positive persons, alcohol and substance use, and internalised AIDS stigma (Kalichman & Simbayi, 2003, 2004; Kalichman *et al*., 2005; Simbayi *et al*., 2007).

To further justify the use of the HSRC questionnaire, the literature review in Chapter 2 has been mapped (see Table 3.1) to the questions relating to stigma and its influencing factors in the questionnaire developed by the HSRC (see Kalichman *et al.* 2009). Scales previously employed in HIV/AIDS stigma studies are also adopted, namely, Cognitive factors – 'lifestyle risk', 'condom use', 'alcohol and drug use', and Behavioural factors – 'HIV/AIDS knowledge scale', 'attitudinal fear of testing', 'stigma towards HIV-positive persons', 'internalised stigma', and 'discrimination experiences' (see Kalichman & Simbayi, 2003, 2004; Kalichman *et al*., 2005; Simbayi *et al*., 2007; Bowen *et al.,* 2014a,b). The metric focuses on the research question, research problem, and research objectives outlined in Chapter 1. The HSRC questionnaire (refer to Appendix A - English version) and adopted scales will be discussed in further detail in Section 3.6 below.

Table 3.1 Mapping of the literature review to the HSRC questionnaire for factors influencing HIV/AIDS stigma

Items	Question references	Relevant literature
Demographic characteristics		
Age	A1	Haupt *et al*., 2005; Coleman, 2013; Stats SA, 2013a
Ethnicity	A2	Malcolm *et al*., 1998; Statistics SA, 2013b
Gender	A3	Evian *et al*., 2004; Dlamini *et al*., 2007; Statistics SA, 2013b
Nature of employment	A4	DPW, 2004; Haupt & Smallwood, 2004; Bowen *et al*., 2010
Education	A7	Malcolm *et al*., 1998; Kalichman & Simbayi, 2004; Maughan-Brown, 2006
HIV risk behaviour history: Lifestyle (risky lifestyles increase the risk of HIV infection)		
Multiple sex partners and risky lifestyle behaviour	C1	Fourie & Schonteich, 2002; DPW, 2004; Haupt & Smallwood, 2004; Bowen *et al.*, 2010
Transactional sex as risky lifestyle behaviour	C2,C3	Goldin, 1994; Green, 1995; Ashforth, 2001; Kalichman & Simbayi, 2004
Drug injection as risky lifestyle behaviour	C4,C5	Green, 1995; Quah, 1998; Kalichman & Simbayi, 2004
HIV risk behaviour history: Condom use (condom use as a safe sex practice)		
Use of condoms in practicing safe sex	C6, C7, C8	Ashforth, 2001; Kalichman & Simbayi, 2004; Campbell *et al.*, 2005; Evans & Wolmarans, 2006; Robins, 2008; Pitpitan *et al.,* 2012
HIV/AIDS knowledge (risk minimisation factor)		
Family/friends/ acquaintances living with HIV	D1	Link & Phelan, 2001; Kalichman *et al*., 2005; Simbayi *et al.*, 2007; Goudge *et al.,* 2009
Knowledge about HIV/AIDS contagion, transmission, superstition influence to transmission and disease process; in terms of lifestyle behaviour	D2 – D16	DPW, 2004; Haupt & Smallwood, 2004; Kalichman & Simbayi, 2004; Maughan-Brown, 2006; Bowen *et al.*, 2010
Attitudinal fear of testing (fearful of the consequences of a positive test result)		
Fear of testing for HIV in terms of negative consequences in respect of family, friends, stigmatization and discrimination	E1 – E 6	Malcolm *et al.*, 1998; Chesney & Smith, 1999; Parker & Aggleton, 2003; Campbell *et al.*, 2005; Ellis, 2006; Goudge *et al.*, 2009
Stigma towards HIV-positive persons (Prejudice and discrimination i.e., feelings and acts of intolerance)		
Feelings towards HIV+ persons in terms of prejudice and discriminatory attitudes	E7 – E19	Prohaska *et al*., 1990; Campbell *et al.*, 2005; Duffy, 2005; Maughan-Brown, 2006
Alcohol consumption (alcohol consumption as a risk-inducing behaviour)		
Alcohol consumption and its relationship with risky lifestyles, testing and drug use	F1 a	MacQuarrie *et al.*, 2006; Simbayi *et al.*, 2007; MacQuarrie *et al*., 2009; Pitpitan *et al.*, 2012
(Illegal) Substance use (drugs as a risky lifestyle and risk-inducing behaviour)		
Use of illegal substances and it relationship with risky lifestyles and sex	F1 b – F 1 e	MacQuarrie *et al.*, 2006; Simbayi *et al.*, 2007; MacQuarrie *et al*., 2009
Internalised stigma of HIV+ persons (felt stigma i.e., internal feelings of worthlessness and rejection)		
Felt-stigma experienced by HIV+ persons	G1 – G7	Malcolm *et al.*, 1998; Insideout Research, 2003; Kalichman & Simbayi, 2004; Goudge *et al.,* 2009; Kalichman *et al.*, 2009
Discrimination experiences by HIV+ persons (enacted stigma i.e., losing job or housing)		
Enacted stigma experienced by HIV+ persons	G8 – G16	Malcolm *et al.*, 1998; Insideout Research, 2003; Kalichman & Simbayi, 2004; Goudge *et al.,* 2009; Kalichman *et al.*, 2009

3.5 Survey administration

3.5.1 Eskom research authorisation

The aim of the study was to conduct the survey at various Eskom construction projects, as stated in Chapter 1, namely, construction projects at the existing Koeberg Nuclear Power Station; the construction of the Medupi Power Station project; the construction of the Ingula Power Station project and the construction of the Kusile Power Station project. The requests to conduct the survey at these construction sites in the north of the country were declined, mainly due to financial constraints. It was decided to focus only on construction projects at Koeberg Nuclear Power Station. The research proposal was presented to Koeberg`s Wellness manager who agreed to collaborate with the study.

The research proposal was then presented to Koeberg`s Stakeholder and Communication manager, who vetted the content and confirmed that the study would not result in any negative publicity towards Eskom, nor Koeberg Nuclear Power Station. Final approval was received from Koeberg`s Power Station Manager (hereinafter referred to as PSM) and his senior management team (refer to Appendix B). The senior management team were assured that participants`anonoymity would be the priority of the survey.

3.5.2 UCT research authorisation

The ethics application to the Faculty of Engineering and the Built Environment at the University of Cape Town (UCT) stated that the study`s objective would utilise an HSRC-approved questionnaire previously employed in more generalised population studies. The application was further supported as a previous UCT study had received ethical clearance (Bowen *et al*., 2014b) and had the endorsement of the Koeberg senior management team.

The Faculty of Engineering and the Built Environment Ethics Committee granted ethical clearance to proceed (refer to Appendix C).

3.5.3 Survey setting and data collection

The aim of this survey was to collect accurate and meaningful data, without jeopardising participants' confidentiality. The limitation highlighted in Chapter 3 from the review of the extant survey-based design was the privacy of participants while completing the questionnaire. Three mechanisms were devised to address the privacy of participants and increase the chances that the questionnaire would be completed as honestly as possible:

(1) The survey required no form of personal identification, or any kind of information that could be retrieved from any records or any other means. Furthermore the survey was completely voluntary;

(2) Initially it was planned to use the Koeberg medical department to administer the questionnaire. However, due to the daily interaction and familiarity employees have with the medical personnel, it was decided to use external professional nurses to administer the survey. This eliminated any perception or risk of participants' confidentiality being compromised;

(3) Typically the HIV/AIDS voluntary, counselling and testing awareness sessions (hereinafter referred to as VCT) would be held in the same medical centre where routine Occupational Health and Safety Act (OHSAct 85 of 1993) medical examinations are conducted, meaning the same waiting room would be shared. As a result chances were high that staff waiting for an HIV test could easily be identified. It was decided to conduct the HIV/AIDS stigma survey away from the employees` immediate work-site and at a private and neutral location.

The Koeberg Wellness Manager agreed to utilise fully-trained contract HIV/AIDS voluntary, counselling and testing nurses (hereinafter referred to as VCT nurses). These were external nurses and were not familiar with any of the staff on the Koeberg site. This significantly reduced the risk of compromising Koeberg staffs` confidentiality. The nurses could be employed utilising the existing Eskom corporate service agreement, therefore not requiring a lengthy procurement process. Additionally, these nurses already had access to the Koeberg site and did not require attending the mandatory two-week Fitness for Duty (FFD) process, such as criminal checks, medical examinations and training evaluation.

According to Kalichman and Simbayi (2003), small gifts were previously used by the HSRC as incentives to encourage participation. It was decided to give an Eskom-branded utility bag to

the participant after the questionnaire was completed. It was hoped that these tokens of appreciation would increase participation in the convenient and purposive sampling method.
The Wellness Manager supported the study at Koeberg and assisted with the presentation to the PSM, who agreed to the survey`s approach and allocated a budget. The budget was able to secure four VCT nurses for a period of four days (7- 10 July 2014) and included monies for500 Eskom-branded utility bags - a small token of appreciation for their time (approx. costs – R 17 per bag).
The contract required three of the four nurses to be proficient in English and Afrikaans, with one nurse proficient in English, Afrikaans and Xhosa.

The Koeberg facilities co-ordinator agreed to allocate four survey locations (three temporary offices, commonly known as ski-cabins, and one unoccupied office) for the study at targeted areas across the power station. The facilities co-ordinator also provided additional furniture to accommodate the required layout. The layout required two chairs facing one another, where the nurses could inform the participants about the survey, with a separate desk and chair situated in the opposite corner of the office. The intent of the office layout was to increase the participant`s sense of privacy, increasing the level of honest responses.

Two ski-cabins were purposely allocated close to the contractor`s yard. The contractor`s yard housed all the civil, mechanical, electrical, rigging and welding contractors at Koeberg. The Nuclear Project and Construction Management, and Maintenance Services departments were located adjacent to these ski-cabins. The signage on the ski-cabins identified the English and Xhosa-speaking nurse, whereas the other cabin identified the English and Afrikaans-speaking nurse. The unused office was situated in the main administration building, which accommodated the engineering department, administrative staff and senior management team. The third ski-cabin was located outside a building, which housed Eskom technicians, specialists, supervisors and administrative staff. The intent of the spatial locations was to collect a broad spectrum of data representing both contractors and the Eskom employees.

The VCT nurses were briefed on the survey`s objectives and requested to assist participants to answer questions. The VCT nurses were given clear instructions not to educate participants on HIV/AIDS prior to the questionnaire`s completion, this would influence the views of participants and distort the study`s results. Additional instructions were:

- the survey was anonymous and no participant`s name would be mentioned or recorded;

- if any identification was found on a questionnaire, the questionnaire had to be destroyed;
- if participants were uncomfortable, they would be allowed to skip any question or stop at any time, and the questionnaire would be accepted without hesitation;
- the final instruction was to verify if responses to question B2 i.e., stating their HIV-status, correlated with Section G – designed for HIV-positive participants only.

Participants were encouraged to complete the questionnaire in full and to be as honest as possible.

Prior to the survey, a couple of communiqués (refer to Appendix D and E) were sent via Kroeber's daily newsletter, informing potential participants of the study`s objective and how it would be conducted.

3.6 Survey instrument design

The structure of the HSRC-based questionnaire used in this study and the formation of the scales are described in detail below.

3.6.1 Questionnaire sections and scales determination

Section A: About You

The section captures the *Demographic characteristics* (see Table 3.1) of the sample, namely, age, ethnicity, gender, employment status at Koeberg, marital status, number of children, and level of education. The questions are coupled with multiple-choice responses. Education level was measured by *'No schooling'*, '*Primary'*, '*Secondary'*, '*Tertiary'*, and '*Post-graduate'*. Employment status was categorised as '*Permanent'*, '*Temporary'*, and '*Casual'*. The ethnicity information was classified as '*Black'*, '*Coloured'*, '*Indian'*, '*White*, and '*Other'*.
Similar to Bowen *et al.* (2014b) the metric for the *Education* scale is further defined, as '*Primary or less*=1', 'Secondary=2', and '*Tertiary or higher*=3'. Typically Kalichman *et al*., (2003, 2004) and Bowen *et al.* (2014b) would define the ethnicity metric as '*Black African'* and '*non- African'*. Due to the majority of participants classified as '*Coloured'* in the Koeberg

survey, it has been decided to define the *Ethnicity* scale, as '*Black*=1', '*Coloured*=2', and '*Others*=3'.

Section B: HIV Status and Health

This section aims to determine the HIV-testing history of participants (see Kalichman *et al*., 2005). The selection of multi-choice responses is presented, namely, '*Never'*, '*1-5 times'*, '*6-10 times'*, and '*More than 10 times'*. Participants are asked to disclose their HIV-status and select from the multiple-choice options: '*Yes* (*Tested)*', '*No (Tested)*', '*Don*`t *know (Tested)'*, and '*Not Tested'*.

Section C: Sex and Lifestyle

This section is mapped to HIV risk behaviour history consisting of *Lifestyle (risky lifestyles increase the risk of HIV infection) and Condom use (condom use as a safe sex practice)* in Table 3.1. Participants are asked to indicate the number of sexual partners engaged with in the previous three months, whether or not they have paid or received money in exchange for sex, injected drugs or had sex with a partner who injected drugs. This information is used to assess the exposure a certain lifestyle has to an HIV infection (see Kalichman *et al*., 2003).
Collectively responses to the items are summed to form a *Lifestyle* scale. The responses ranges from 0 to 5, the higher score indicates riskier sexual behaviour.

Furthermore, participants are asked about their condom use, namely, '*Have you ever used a condom*?', '*Did you use a condom the last time you had sex'*, and '*Do you like to use a condom during s*ex?'. The dichotomous responses are '*Yes'* or '*No'*. Firstly, the dichotomous responses (Yes=1/No=0) were reversed-coded, to form a *Condom use (non-compliance)* scale. The score ranged between 0-3, a higher score indicating a higher level of risk, namely, greater condom non-compliance

Exploratory Factor Analysis (EFA) – a data reduction technique is used to 'distribute' the data into a smaller collection of inter-correlated variables (Field, 2005). The extraction method, Principle Component Analysis (PCA), produces a Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value which indicates a level of appropriateness (recommended KMO = 0.6 or greater) (Field, 2005).

The *Lifestyle* scale (see Table 3.2) did not meet the EFA criteria of appropriateness, with variables presenting low correlations (r <0.30, and KMO=0.465 p<0.001). Furthermore, the *Lifestyle* scale produced a Cronbach`s alpha coefficient (α= 0.268) below the recommended 0.5 criteria, proving to be unreliable. Even though the scale proved to have a poor internal consistency, Pitpitan *et al*. (2012) *inter alia*, reported that risky sexual behavioural had an influence on stigma endorsement and HIV testing. It was decided to retain the scale.

In contrast, the variables loaded appropriately (KMO=0.644 p<0.001) on the *Condom use* (see Table 3.2) scale. All variable loaded appropriately on one component, explaining 62% of the variance. The *Condom use* scale was coupled with an acceptable reliability (α= 0.689).

Section D: Knowledge about HIV/AIDS

This section is mapped to HIV/AIDS Knowledge (risk minimisation factor) in Table 3.1.
Firstly, participants are asked the number of people they know who are HIV-positive. The multiple choice responses are *'None'*, *'1-2'*, *'3-10'*, and *'More than 10'*.

The following questions assess the HIV/AIDS-related knowledge of participants. The set of questions use items previously employed by Kalichman and Simbayi (2003, 2004). The response options are given as *'Yes'*, *'No'*, or *'Do not know'*. Examples of items include *'Is AIDS spread by kissing*?', '*Can a women give AIDS to men*?', '*Can a person get rid of AIDS by having sex with a virgin?*' and *'Is HIV the virus that causes AIDS?*'. These responses are consolidated to form the *HIV/AIDS knowledge* scale (see Table 3.2). Initially, the responses were coded as, '*Yes =1'*, '*No=2'* and '*Do not know =3'*. In order to measure the level of HIV/AIDS knowledge a participant possesses, the responses were recoded to reflect the number of correct answers, i.e. '*Yes=0'*, '*No=2'* indicates the correct response to the 6-item scale. The scale ranges from 0 to 12, with a high score indicating a participant being knowledgeable of HIV/AIDS. Bowen *et al*. (2014b) considers, unlike Kalichman and Simbayi (2003), that responses to *'Do not know'*=1, should be acknowledge as partially correct.

The variables of the *HIV/AIDS knowledge* scale loaded appropriately (r <0.30, and KMO=0.769 p<0.001) exceeding the recommended value of 0.6. Principal Component Analysis showed six components with eigenvalues exceeding 1, explaining 40 % of the variance. The internal consistency of the *HIV/AIDS knowledge* scale is acceptable at α = 0.677 (see Table 3.2).

Section E: View about HIV/AIDS

This section is mapped to *Attitudinal fear of testing (fearful of the consequences of a positive test result)* and *Stigma towards HIV-positive persons (prejudice and discrimination)* in Table 3.1. The section establishes attitudinal fears of HIV testing and stigmatised views toward people living with HIV. Examples of the *Attitudinal fear of testing* include questions such as *'People in my life would leave me if I had HIV'* and *'I would rather not know if I have HIV'*. And examples for *Stigma towards HIV-positive people* include: *'People who have HIV/AIDS are dirty'*, and *'People who have HIV/AIDS should be isolated'*. The three items form the *Fear of testing* scale (see Table 3.2). Dichotomous responses are used (Agree=1 or Disagree =0). The scale ranges from 0 to 3, with a higher score indicating a greater fear to test for HIV.

Principle Component Analysis showed that the 'fear' variables loaded (KMO=0.447 p<0.05) strongly to one factor. However the Cronbach`s alpha coefficient (α= 0.376) indicates a low reliability value. Bowen *et al.* (2014b) states that similar results are observed in previous studies. These studies did not report the reliability of the scale and it was recommended that this scale requires refinement in future studies.

Bowen *et al.* (2014a) formed a consolidated *Stigma towards HIV-positive persons* scale from prejudice-related and discrimination-related questions by Kalichman and Simbayi (2003). This study develops a similar 10-item question scale, with five prejudice-related and five discrimination-related questions. The *Stigma towards HIV-positive persons* scale uses the same coding as described above. The scale ranges from 0 to 10, the higher score showing a higher level of intolerance towards people living with HIV. The variables were appropriately (see Table 3.2) loaded to one factor (KMO =0.642 p<0.001) and one-factor explains 22% of the variance. The *Stigma towards HIV-positive person* scale was marginally reliable (α= 0.538).

Section F: Coping with Life

Participants are asked to indicate the number of times alcohol or drugs, such as crystal methadone (Tik), cannabis (dagga) or mandrax, were used in the past three months (see Simbayi *et al*., 2007). The response options for alcohol and illicit drugs are *'No'*, *'Once only'*, and *'More than once'*. The *Substance use* scale consists of four-items, namely, alcohol, dagga, tik and cocaine.

Using EFA, the variables are shown (see Table 3.2) to have loaded strongly to a factor (KMO =0.601 $p<0.001$) and one factor explaining 51% of the variance. The scale is shown to have a poor internal consistency ($\alpha= 0.188$), with alcohol. The reliability of the scale improves ($\alpha= 0.689$) when the alcohol variable is removed. Pitpitan *et al.* (2012) showed a direct relationship between alcohol use, stigma endorsement and risky sexual behaviour. For this reason, the alcohol variable is removed from the *Substance use* scale and analysed separately.
The *Substance use* scale ranges from 0 to 6; a higher score reflecting a high consumption of substances.

Section G: HIV-positive stigma experienced

This section is aimed only at people living with HIV/AIDS. It is mapped to Internalised stigma of HIV-positive persons (felt-stigma, i.e. internal feelings of worthlessness and rejection) and Discrimination experiences by HIV-positive (enacted stigma, i.e. discrimination due to their HIV-positive status) in Table 3.1.

The *Internalised stigma of HIV- positive person's* scale is assessed with items adopted from the AIDS-Related Stigma Scale (Kalichman *et al.,* 2005). These items are assessed with dichotomous responses in the form of '*Agree'* or '*Disagree'*. Examples include *'Being HIV+ makes me feel dirty'*, *'I am ashamed that I am HIV +'*, and *'It is my own fault that I am HIV+'*.

The items to assess Discrimination experiences by HIV – positive persons scale include 'I have talked about AIDS with a family member', 'HIV has caused me to lose a job or housing', 'I have experienced discrimination because of HIV', and 'There are people I have not told I am HIV+ for fear of negative consequences'. These items have dichotomous responses of 'Yes' or 'No'.

The variables loaded strongly for both the *Internalised stigma* scale (KMO =0.699 $p<0.001$), explaining 54% of the variance, and the *Discrimination experienced* scale (KMO =0.626 $p<0.001$) with one factor explaining 44% of the variance (see Table 3.2). The *Internalised stigma* ($\alpha= 0.839$) and *Discrimination experienced* ($\alpha= 0.700$) scales produced a high internal consistency. Furthermore both these scales range from 0 to 7, with each scale with high scores indicating corresponding feelings of internalised stigma and discrimination experienced.

Table 3.2 Scale items, factor loadings and Cronbach's alpha reliability coefficients for HIV/AIDS stigma predictors

Factors	Items	Metric	Factor loading	Cronbach's alpha (α)
Demographic characteristics				
	PI1. Age (*n*=296)	Age in years	-	-
	PI2. Gender (*n*=296)	Male=1; Female=2	-	-
	PI3. Ethnicity (*n*=289)	'Black'=1; 'Coloured'=2; 'Others'=3	-	-
	PI4. Employment (*n*=293)	Permanent=1; Temporary=2; Casual=3	-	-
	PI5. Marital status (*n*=294)	Married=1; Not Married=2; Long term relationship=3	-	-
	PI5. Education (*n*=296)	Primary or less=1; Secondary=2; Tertiary or higher=3	-	-
Cognitive Factors				
Lifestyle		Yes=1; No=0	One factor extracted	0.268*
	LS1. Had two or more sex partners in the last 3 months?		0.634	
	LS2.Ever received money, housing, gifts or food for sex?		0.690	
	LS3.Ever given money, housing, gifts or food for sex?		0.723	
	LS4.Have you ever injected drugs into yourself?		0.920	
	LS5.Have you ever had a sex partner who is an injection drug-user?		0.629	
Condom use		Yes=1; No=0	One factor extracted	0.689 (increases to 0.695 if C1 removed)

	C1. Have you ever used a condom? (No)		0.644	
	C2. Did you use a condom the last time had sex? (No)		0.665	
	C3. Do you like to use a condom during sex? (No)		0.681	
Substance use		No=0; Once only=1;More than once=2	One factor extracted	0.188 (increases to 0.695 if SU1 removed) *
	SU1. Alcohol		0.029	
	SU2. Dagga (Cannabis)		0.526	
	SU3. Tik (Crystal Methadone)		0.679	
	SU4. Cocaine		0.803	
Behavioural Factors				
HIV/AIDS Knowledge		No=2; Don`t Know=1;Yes=0	One factor extracted	0.677 (increases to 0.686 if K1 removed) **
	K1. Is AIDS caused by spirits or supernatural forces? (No)		0.463	
	K2 Can the use of vitamins and healthy foods cure AIDS? (No)		0.810	
	K3.Can a person get rid of AIDS by having sex with a virgin? (No)		0.591	
	K4.Can traditional African medicines cure AIDS? (No)		0.751	
	K5.Are the medications (ARVs) for treating HIV/AIDS dangerous? (No)		0.516	
	K6. Is there a cure for AIDS? (No)		0.591	
Fear of testing		Agree=1; Disagree=0	One factor extracted	0.124*
	F1. People in my life would leave me if I had HIV		0.781	
	F2. I would rather not know if I have HIV		0.727	
	F3. People who test HIV+ should hide it from others		0.712	
Stigma towards HIV+ persons		Agree=1; Disagree=0’	One factor extracted	0.538
	P1.People who have HIV/AIDS are dirty		0.575	
	P2. People who have HIV/AIDS are cursed		0.416	
	P3.People who have HIV/AIDS cannot be trusted		0.606	
	P4. People who have HIV/AIDS should be ashamed		0.654	

	P5. Most people become HIV+ by being weak or foolish		0.511	
	D1. People with HIV/AIDS must expect some restriction on their freedom		0.460	
	D2. A person with HIV/AIDS must have done something wrong and deserves to be punished		0.522	
	D3. People who have HIV/AIDS should be isolated		0.697	
	D4. I do not want to be friends with someone who has HIV/AIDS		0.452	
	D5. People who have HIV/AIDS should not be allowed to work		0.658	
Internalised Stigma		Agree=1; Disagree=0’	One factor extracted	0.839
	IS1. It is difficult to tell people about my HIV infection		0.713	
	IS2. Being HIV+ makes me feel dirty		0.656	
	IS3. I feel guilty that I am HIV+		0.729	
	IS4. I am ashamed that I am HIV+		0.711	
	IS5. I sometimes feel worthless because I am HIV+		0.734	
	IS6. It is my own fault that I am HIV+		0.887	
	IS7. I hide my HIV+ status from other people		0.518	
Discrimination experiences		Yes=1; No=0		0.700
	DE1. I have talked about AIDS with a family member		0.739	
	DE2. I have talked with a friend about AIDS		0.705	
	DE3. I have been treated differently since I disclosed my HIV+ status to friends and family		0.750	
	DE4. Family and friends stopped visiting after learning that I am HIV+		0.764	
	DE5. HIV has caused me to lose a job or housing		0.834	
	DE6. I have experienced discrimination because of HIV		0.884	
	DE7. There are people I have not told I am HIV+ for fear of negative consequences		0.677	

Note: Used Principal Components Analysis for factor extraction *Discussed in the text. ** Rotation Method: Oblimin with Kaiser Normalization

3.7 Method of Data Analysis

A total of 296 questionnaires were completed. The survey data were captured and coded in a Microsoft Excel spreadsheet. The 296 cases were reviewed and verified by two reviewers. A third reviewer collected a random sample of 30 cases and found no errors. The captured data were imported to the Statistical Package for the Social Sciences software application (IBM SPSS version 22.0 for Mac) and the data set was subjected to missing value analysis to detect anomalies. The completed questionnaires were scrutinised, by the VCT nurses, resulting in a quality dataset of 296 cases without anomalies. The data is based on 296 cases.

The adopted scales have Cronbach`s alpha coefficients ranging from 0.538 to 0.839, indicating marginal to very good levels of internal consistency respectively (DeVellis, 2003; Kline, 2005). In contrast, the '*Lifestyle'* and '*fear of testing'* scales produce poor levels of internal consistency (see Section 3.6 above). The data analysis is continued by describing the demographic characteristics, HIV-testing history, lifestyle and condom use, HIV/AIDS knowledge, stigma towards HIV-positive persons, and substance use by using descriptive statistics.

The bivariate relationships among stigma, age, cognitive and behavioural factors are explored by using Pearson`s correlation. Thereafter the relationships between the remaining demographic characteristics (gender, ethnicity and employment) cognitive and behavioural factors are explored with the use of a test for difference in means. Further descriptive analysis is used – contingency table chi-square tests – to examine the internalised stigma and discrimination experienced (enacted stigma) between 'Black' and 'Coloured' participants living with HIV. The level of statistical significance of 5% (p=0.05) will be used. Finally, linear regression is conducted to establish general predictors of testing behaviour. It is expected from the extant literature review that the contributing variables impacting the testing behaviour are: lifestyle; substance use; HIV/AIDS knowledge; attitudinal fear of testing and HIV/AIDS stigma.

3.8 Limitations to research method

This study experienced limitations during the data collection phase, despite the consideration and justification of the shortcomings of the aforementioned survey-based studies. In spite of

the survey ski-cabin and office spatially located to obtain a representative sample, the adopted sampling method – convenient and purposive – introduced a selection bias of participants. More focus and resources were allocated closest to the work sites of labourers, who were mainly contract workers, 'Black African' or 'Coloured', and had lower levels of education.

The study relied on a self-administered questionnaire, and, even with the constant assurance of anonymity by the professionally registered nurses, it cannot be guaranteed that participants were completely honest. The encouraging outcome of the survey was that all questionnaires were completed; however this could either be attributed to the presence of the VCT nurses or the inducement of the gifts. Furthermore, it was feared that the gifts resulted in participants repeating the survey; though it was argued that the value of the gift was not worth the time spent repeating the survey. Furthermore, a large number of participants at the contractors` yard used their lunchtime to complete the survey, and this may have resulted in hastily completed questionnaires –inaccurate responses – in order to receive the gift.

Lastly, it was reported that the majority of Xhosa speaking participants requested an English version of the questionnaire to compare and understand the questions. This may have led to misinterpretation. In some instances, participants asked the VCT nurse to read the questions and fill in the questionnaire on their behalf, extending the time spent beyond the average 12 minutes per questionnaire.

3.9 Summary

The chapter discusses and justifies the survey-based research design used for the Koeberg study. An extant review of survey-based research designs is used to understand its research methods and limitations. The limitations of the survey-based research designs are summarised and considered.

The adoption of the survey-based research design at Koeberg is discussed and justified. The selection of the survey-based research design is further motivated by mapping the factors influencing HIV/AIDS stigma to the literature reviewed in Chapter 2 (see Table 3.1). The process authorising the survey to take place at Koeberg, followed by the survey administration and data collection is described. Thereafter, the HSRC questionnaire is explained, coupled with a discussion of the reliability of the cognitive and behavioural scales formed (see Table 3.2).

The chapter describes the method of data analysis planned to be used to interpret the data to address this study`s research question. The chapter is concluded by the limitations encountered during the data collection phase.

The following chapter will document an analysis and interpretation of the data from the questionnaire survey.

Chapter 4: Results and Interpretation

4.1 Introduction

In the previous chapter, the research method was outlined, based on a review of the extant survey-based literature of published HIV/AIDS studies over the past ten years. The chapter continued to explain the survey instrument and the formation of the scales intended to address the research question highlighted in Chapter 1. It discussed the authorisations required to conduct the study at Koeberg and described the survey administration, setting and data collection process of the self-administered questionnaire and highlighted the reason for the selected venues.

This chapter presents and discusses the findings based on the analysis of data obtained from 296 workers employed at the Koeberg Nuclear Power Station in Cape Town.

The *aim* of this research study is to determine the nature and extent of AIDS-related stigma and discrimination and their relationship with the success or otherwise of site-based HIV/AIDS interventions implemented by Eskom.

The analysis is undertaken to achieve three main *objectives* of the research study, namely:

a) Determine the current attitude and views Koeberg employees have towards HIV/AIDS;

b) Determine if the stigma of HIV/AIDS prevents Koeberg employees from accessing HIV intervention programmes offered at Koeberg?

c) Determine the percentage of Koeberg employees utilising the HIV intervention programme at Koeberg.

Finally, the findings are summarised to conclude Chapter 4.

4.1.1 Results

4.1.1.1 Descriptive Statistics

Demographic Characteristics:

The age of participants (*N*=296) ranged from 18 to 64 years old, with the mean and median ages being 35 and 33 years, respectively. The majority of respondents classified themselves as 'Coloured' (*n*=234; 79%), 14% (*n* = 41) responding as 'Black' African, followed by Whites (*n*=9; 3%), Indian (*n*=4; 1.4%) and Others (*n*=1; 0.3%). Seven participants (*n*=7; 2.3%) opted not disclose their ethnicity. This is consistent with the 'Coloured' population representing the single largest group in the Western Cape and Cape Town (Wesgro, 2012; Stats SA, 2014).

Predictably, the survey was dominated by males (*n*= 213; 72%) and nearly 60% of respondents (*n*=175) were contract workers, with almost 40% (*n* = 116) permanently employed by Eskom. This study mainly comprised of male contract construction workers from small and medium construction firms employed by Koeberg.

Most of the respondents (*n*=200; 68%) reported to have a high school education, with 30% (*n* = 88) having a tertiary education or higher. Only 3% (*n* = 8) reported to have a primary or no education. The majority (*n*=134; 46%) of participants were married, compared to 35% (*n*=102) who were not married and nearly 20% (*n* = 58) were in long-term relationships.

HIV-testing behaviour:

Over 60% (*n* = 187) of participants had tested at least once for HIV. The data further showed that 14.5% (*n* = 43) and 9.5% (*n* = 28) got tested for HIV '*6 to 10 times'* and *'more than 10 times'*, respectively. Forty-one participants (*n* = 41; 14%) disclosed their HIV-positive status. Nearly 13% (*n*= 38) had never been tested for HIV. Of the 38 employees, more contract workers never got tested for HIV (*n* = 31; 18%) than permanent employees (*n* = 7; 6%). Men are shown to be most reluctant to be tested, regardless of employment type i.e., 21.4% male contractor employees (*n* = 30) and 9% male permanent employees (*n* = 6), whereas one female contract employee (3%) and one female permanent employee (2%) never got tested for HIV.

A chi-square test of independence shows that the testing behaviour at Koeberg has a significant association with gender [χ^2 (3, n = 296) = 18.953, p < 0.001]; employment type [χ^2 (6, n = 293) = 19.706, p = 0.003]; marital status [χ^2 (6, n = 294) = 19.832, p = 0.003]; having children [χ^2 (3, n = 296) = 12.805, p = 0.005]; and knowledge of HIV/AIDS [χ^2 (8, n = 290) = 474.309, p < 0.001], but not with age, ethnicity or educational level.

HIV/AIDS knowledge:

One hundred and fifty two participants (55%) indicated that they do not know any people living with HIV, whereas more than 30 % (n = 95) know at least one person living with HIV. Over 80% (n= 238) of respondents knew that HIV/AIDS is not spread by kissing, however over 12% (n = 37) did not know if this was the case and 7% (n=21) believed that kissing spreads HIV/AIDS. The majority understood that the transmission of HIV was not gender specific; respondents knew that both men (n=280; 95%) and women (n=277; 94%) could infect the opposite sex with HIV.

This study found that 15.2% (n = 45) were unsure whether spirits or supernatural forces cause HIV/AIDS, and nearly 3% (n = 8) believe that this was the case. The majority (n=253; 86%) of the respondents knew that having a shower or washing did not prevent an HIV infection. However, over 4% (n=12) believed that washing protects one from getting AIDS, coupled with nearly 10% (n=28) being unsure. HIV-related ignorance and misunderstanding fuels and strengthens myths, the study showed that nearly 5% (n=14) of participants were unsure of virgin-cleansing, whereas one person (0.3%) believed that this was true. Over 90% (n=280) knew that sex with a virgin did not cure HIV.

The majority (n=262, 89%) of respondents knew that HIV causes AIDS. However, almost 7% (n=19) disagreed with this assertion, and 5% (n=15) of respondents were unsure. Nearly 10% (n = 29) of the respondents believe that a cure for AIDS exists, whilst nearly 15% (n=43) are not sure if an AIDS cure exists. The majority (n=223; 76%) is aware that a vaccine has not been developed for HIV/AIDS.

Stigma towards HIV-positive persons:

Almost all of the participants did not report stigmatised views towards people living with HIV. The majority disagreed (*n*=286, 97%) that *'People living with HIV are dirty'*, *'cursed'* (*n*=289; 96%) or *'cannot be trusted'* (*n*=269; 91%). Nearly 90% (*n*=257) agreed that *'People living with HIV are like everyone else'* and almost all (*n*=279; 94%) stated that there was nothing to be ashamed of. Furthermore, 80% (*n*=237) believed that there was nothing to feel guilty about. In contrast, more than 30% of the participants agreed (*n*=91) that people were infected due to them being either weak or foolish.

Over 70% of respondents believed that it was safe to work with people living with HIV/AIDS. Equally, over 90% did not believe in punitive action against people living with HIV, such as being restricted from working, punished or being isolated. Conversely, 32% (*n*= 92) agreed that people living with HIV/AIDS should expect some restriction to their liberties.

4.1.1.2 Bivariate relationship among stigma towards HIV-positive persons, age, cognitive and behavioural factors

The Pearson`s product-moment correlation measures the strength and direction of a linear relationship between two variables (Pallant, 2013). The value of the Pearson correlation coefficient, denoted as *r*, ranges from -1 for a perfect inverse relationship to + 1 for a perfect positive linear relationship (Pallant, 2013). A zero value indicates no linear relationship between two variables (see Pallant, 2013). The magnitude of the Pearson correlation coefficient determines the strength of the correlation. Cohen (1988) provides general guidelines (see Table 4.1) for assigning strength of association to particular values.

Table 4.1 Pearson's coefficient strength of correlation guideline

Coefficient Value	Strength of Association
0.1 < | r | < 0.29	small correlation
0.3 < | r | < 0.49	moderate correlation
| r | > 0.5	large/strong correlation

A Pearson`s product-moment correlation was used to assess the relationship between respondent age and the cognitive factors (lifestyle risk, condom non-compliance, alcohol and substance use) and behavioural factors (HIV/AIDS knowledge, attitudinal fear of testing and stigma towards people living with HIV) – all continuous variables.

A significant relationship exists between age and three of the cognitive factors (see Table 4.2). Older workers participated in less risky sexual lifestyles (r=-0.184, *n*=296, p<0.01) and as a result opted not to use condoms during sexual encounters (r= -0.430; *n*=296, p<0.01). Older participants also consumed less alcohol (r=-0.291, *n*= 287, p<0.01) than their younger colleagues. Alcohol was significantly related to a risky sexual lifestyle (r=0.271, *n*= 287, p<0.01). This implies that younger participants of the sample adopt a risky sexual lifestyle and are more prone to HIV infection. However, lifestyle risk and alcohol consumption had an inverse relationship with condom non-compliance; in other words those who participated in risky lifestyles (and consuming alcohol) are aware of the need to engage in safe sexual practices.

Overall stigma was significantly related to attitudinal fear of testing and HIV/AIDS knowledge. Consequently, the fear of testing has a positive correlation, whereas HIV/AIDS knowledge has a negative correlation with stigma towards HIV-positive people. The results suggested that the sample of participants possessing less knowledge about HIV/AIDS are more fearful of being tested for HIV and tend to hold greater levels of stigma towards people living with HIV.

Table 4.2 Pearson`s correlation between Stigma towards HIV + persons, Age, and Cognitive and Behavioural factors

Variable	Overall Stigma	Age	Lifestyle Risk	Condom non compliance	Alcohol	Substance use	HIV/AIDS knowledge	Fear of testing
Overall Stigma	1.000							
Age	-0.060	1.000						
Lifestyle risk	-0.005	-0.200**	1.000					
Condom non-compliance	-0.047	0.435**	-0.178**	1.000				
Alcohol	-0.103	-0.291**	0.271**	-0.212**	1.000			
Substance use	-0.056	-0.048	0.021	-0.062	0.099	1.000		
HIV/AIDS Knowledge	-0.225**	0.007	0.023	-0.022	0.061	0.086	1.000	
Fear of testing	0.305**	0.062	0.093	-0.027	-0.076	-0.009	-0.109	1.000

Note: ** p<0.01

4.1.1.3 Testing for Differences in means between categorical demographic, cognitive and behavioural factors

Firstly, the independent-samples t-test was used to determine if a difference existed between the means of the male and female variable and whether the differences were statistically significant (Pallant, 2013). The t-test only determines differences between groups; it does not indicate the magnitude of the differences between the gender groups. The eta-squared value is calculated as an effect size statistics and is used to demonstrate the 'size' of the effect (Pallant, 2013). Cohen (1988) gives a guideline to interpret the eta-squared values, see below:

Table 4.3 Eta-squared effect size guideline

Eta value	Effect size
0.01	small effect
0.06	moderate effect
0.14	large effect

Secondly, one-way analysis of variance (ANOVA) is used to compare the mean scores of two or more independent groups, such as the ethnicity groups. It is an extension of the independent-samples t-test, which compares mean scores between two groups only (see Pallant, 2013). The effect size for ANOVA is calculated by dividing the sum of the squares between the groups by the total sum of the squares (see Pallant, 2013). The outcome follows the same guidelines prescribed by Cohen (1988) (see Table 4.3).

Overall stigma was shown to have no statistically significant difference amongst the demographic categories (see Table 4.4). Gender was significantly related to lifestyle, [F (1,294) = 71.814, $p < 0.001$], condom non-compliance [F (1, 294) = 3.392, $p < 0.05$], alcohol consumption [F (1, 294) = 0.755, $p < 0.001$], and fear of testing [F (1, 286) = 0.001, $p<0.05$]; but not to substance use and HIV/AIDS knowledge. Men are more prone to adopt a riskier sexual lifestyle relative to women. However, when it came to condom compliance, men engaged in safer sexual practices than women. Furthermore, men consumed significantly higher amounts of alcohol than women and were more fearful of being tested for HIV.

Ethnicity was significantly related to condom non-compliance [F (2, 28.553) =14.761, $p< 0.001$]; but was not to the rest of the cognitive and behavioural factors. 'Black' African participants were significantly more likely to use condoms during sex, whereas 'Others' i.e.,

'White' and 'Indian' participants were the most reluctant to use condoms. According to Cohen`s *d* (1988), the effect size of condom non-compliance is moderate.

Employment type was significantly related to lifestyle risk [F= (2,290) = 3.190, p< 0.05], but not to the rest of the cognitive and behavioural factors. Contract workers at Koeberg adopted a riskier sexual lifestyle compared to the permanent Koeberg employees. This finding has a small effect size (see Table 4.3).

Education was significantly related to alcohol consumption [F= (2,293) = 3.781, p< 0.05], condom non-compliance [F= (2,293) = 4.391, p< 0.05] and HIV/AIDS knowledge [F= (2,288) = 5.517, p< 0.005]; but not to overall stigma, lifestyle risk, substance use, and fear of testing.

According to Cohen`s (1988) guideline, these effect sizes are all moderate. Those with primary or no education are more likely not to use a condom during sex. Graduates with tertiary education or higher consume significantly more alcohol than their less-educated colleagues. Furthermore, these graduates are significantly more knowledgeable about HIV/AIDS and adhere to safe sexual practices, i.e. using a condom when having sex.

Table 4.4 Testing for Difference in means between categorical demographic, cognitive and behavioural factors

Variable	Categories	Overall Stigma	Lifestyle risk	Condom non compliance	Alcohol	Substance use	HIV/AIDS Knowledge	Fear of testing
Gender	Male	1.1250	0.2488	1.3286	1.36	0.0622	10.543	0.4135
	Female	0.8462	0.0361	1.6386	0.82	0.0366	10.815	0.2500
	Significance	0.095	0.000***	0.026*	0.000***	0.640	0.261	0.033*
	Eta	0.0098	0.0440	0.0166	0.0008	0.0139	0.0044	0.0132
Ethnicity	'Black' African	1.0750	0.2439	0.7317	1.22	0.000	10.4500	0.2564
	'Coloured'	1.0396	0.1923	1.5043	1.19	0.0699	10.6623	0.3886
	'Others'	0.8333	0.0769	1.9231	1.62	0.0000	10.7692	0.2500
	Significance	0.837	0.519	0.000***	0.186	0.557	0.774	0.270
	Eta	0.0013	0.0046	0.0721	0.0091	0.0042	0.0018	0.0065
Employment	Permanent	0.8829	0.1121	1.5517	1.21	0.0431	10.9826	0.3596
	Temporary	1.1235	0.2457	1.3257	1.19	0.0647	10.4012	0.3432
	Casual	1.0000	0.0000	0.500	2.00	0.0000	9.5000	0.5000
	Significance	0.283	0.043*	0.105	0.471	0.898	0.102	0.920
	Eta	0.009	0.0215	0.0154	0.0052	0.0007	0.0263	0.0006
Education	Primary or less	1.1429	0.000	2.500	0.75	0.0000	9.4286	0.5000
	Secondary	1.0410	0.2100	1.4100	1.14	0.561	10.4439	0.3744
	Tertiary or higher	1.0595	0.1591	1.3295	1.41	0.0575	11.1023	0.3412
	Significance	0.974	0.338	0.013*	0.045*	0.932	0.014*	0.776
	Eta	0.0002	0.074	0.0291	0.0252	0.0005	0.0369	0.0018

Notes: *p < 0.05; ***p < 0.001.

4.1.1.4 Chi-square test for independence

The majority of participants, who disclosed their HIV-positive status, classified themselves as 'Coloured' (*n*= 29; 72.5%). Simbayi *et al*. (2007) showed that AIDS-related stigma increased internalised (felt) stigma and discrimination against (enacted stigma) people living with HIV. 'Black' African and 'Coloured' participants who experienced felt-stigma and enacted stigma are compared using chi-square (χ^2) tests. The chi-square test for independence explores whether two categorical variables are associated, in other words, the test determines whether the two variables are statistically independent (Field, 2005; Pallant, 2013).

Generally, the entire sample of participants did not endorse stigmatised views towards people living with HIV. However, most of the people living with HIV had experienced felt and enacted stigma since testing HIV-positive. More specifically, a t-test showed that 'Coloured' participants experienced higher incidents of felt and enacted stigma (see Table 4.5). Twenty (*n*=20; 69%) 'Coloured' participants found it significantly more difficult [$\chi 2$ (1, n = 41) = 4.440, $p < 0.05$] to talk about their HIV-positive status compared to their 'Black' African counterparts. Similarly, most 'Coloured' participants felt dirty (*n*=13; 45%), and guilty (*n*=17; 59%) for being infected with HIV, whereas significantly [$p < 0.05$] fewer 'Black' African participants felt dirty (*n*=1; 8.3%) or guilty (*n*=3; 25%) for being HIV-positive.

A significant difference existed [$\chi 2$ (1, n = 40) = 4.477, $p < 0.05$] between 'Black' African and 'Coloured' participants when talking to family about AIDS. Most of the 'Black' African participants (*n*=10; 91%) were comfortable to discuss HIV/AIDS with their family members relative to 55% (*n*=16) of 'Coloured' participants. Despite not being significantly different in terms of ethnicity, it is noteworthy that 39% of 'Coloured' participants (*n*= 11) reported being treated differently since disclosing their HIV status; 19% (*n*=5) losing a job or accommodation due to their HIV-positive status; 48% (*n*=13) having experienced discrimination because of their HIV-positive status; and 56% (*n*=15) being afraid of the repercussions when disclosing their HIV-positive status.

The sample of people living with HIV at Koeberg showed that a statistically significant relationship exists between enacted stigma and felt-stigma, with a medium and positive correlation [$r = 0.457$, $n = 37$, $p < 0.01$]. Simply stated, the more an HIV-positive person experiences discrimination, the more these negative feelings are internalised.

Table 4.5 Internalised stigma and discrimination experienced by 'Black' African and Coloured participants living with HIV/AIDS

	'Black'		'Coloured'		
	N	**%**	***N***	**%**	χ^2
Internalised Stigma					
It is difficult to tell people about my HIV infection	4	33.3%	20	69%	4.440*
Being HIV+ makes me feel dirty	1	8.3%	13	45%	5.03*
I feel guilty that I am HIV+	3	25%	17	59%	3.84*
I am ashamed that I am HIV+	2	17%	15	54%	4.68
I sometimes feel worthless because I am HIV+	3	25%	17	59%	3.84
It is my own fault that I am HIV+	8	67%	14	48%	1.15
I hide my HIV+ status from other people	6	50%	12	41%	0.256
Discrimination experiences					
I have talked about AIDS with a family member (*Yes*)	10	91%	16	55%	4.47*
I have been treated differently since I disclosed my HIV+ status to friends and family (*Yes*)	5	42%	11	39%	0.020
Family and friends stopped visiting after learning that I am HIV+ (*Yes*)	3	25%	8	30%	0.088
HIV has caused me to lose a job or housing (*Yes*)	1	8%	5	19%	0.622
I have experienced discrimination because of HIV (*Yes*)	2	17%	13	48%	3.48
There are people I have not told I am HIV+ for fear of negative consequences (*Yes*)	5	42%	15	56%	0.641
	Mean	SD	Mean	SD	*t*
Internalised Stigma	2.3	1.9	3.8	2.6	1.88
Discrimination experiences	2.2	1.6	2.5	1.9	0.47

Notes: *p < 0.05

4.1.1.5 Multiple Regression

A standard multiple regression is able to predict a dependent variable based on multiple independent variables. It determines the overall fit of a model and explains the relative contribution of each independent variable to the total variance (Tabachnick & Fidell, 2013). The dependent variable is referred to as the outcome or criterion variable, whereas the independent variable is referred to as the predictor or regressor variable (Field, 2005; Pallant, 2013). The standard multiple regression is an extension to the simple linear regression, the only difference between the two techniques is the number of predictors used (Field, 2005).

General predictors of stigma towards HIV-positive people:

A multiple regression was performed to predict the determinants of overall stigma from the demographic variables, the lifestyle risk, condom non-compliance, alcohol consumption, substance use, HIV/AIDS knowledge, and the attitudinal fear of testing for HIV. The assumptions of linearity, independence of errors, homoscedasticity, unusual points and normality of residuals were met.

The overall model was significant [F= (11,263) = 3.387, p< 0.001], explaining 12.4% of the variance in overall stigma. In this case, HIV/AIDS knowledge [b= -0.144, t= -2.391, p< 0.05], and attitudinal fear of testing [b= 0.225, t= 3.806, p< 0.001] were found to be significant independent determinants of overall HIV/AIDS stigma (see Table 4.6). It showed, that the greater a person's knowledge of HIV/AIDS, the lower their level of stigma towards HIV-positive persons. Similarly, higher levels of attitudinal fear of testing were associated with greater levels of stigma.

Age, gender, ethnicity, education and employment were not significant in this model. Nor were lifestyle risk, condom non-compliance, alcohol consumption and substance use.

Demographic predictors of lifestyle risk:

Age [b = 0.225, t= -2.418, p< 0.001] and gender [b= 0.225, t= -2.969, p< 0.001] are significant demographic factors predicting lifestyle risk. The model was significant [F= (5,279) = 4.5357, p< 0.01], explaining 7.2% of the variance in lifestyle risk (see Table 4.6). Young people were

more likely to adopt a riskier sexual lifestyle than their older counterparts. In particular, men were less risk adverse than women when it came to their sexual lifestyle.

Demographic predictors of condom non-compliance:

The model was significant [F= (5,279) = 14.782, p< 0.001], explaining 21% of the variance in condom non-compliance. The significant demographic factors predicted condom non-compliance are age [b = 0.387, t= 6.859, p< 0.001] and ethnicity [b = 0.136, t= 2.497, p< 0.05] (see Table 4.6). Ethnicity predicted condom non-compliance during sex; in this case 'Black' Africans were more likely to use condoms. Furthermore, the older a person was, the less likely they were willing to use a condom.

Demographic predictors of alcohol use:

This model was significant [F= (5,279) = 9.890, p< 0.001], explaining 15% of the variance in alcohol use. Age [b = -0.233, t= -3.9886, p< 0.001], gender [b = -0.250, t=- 4.383, p< 0.001], and ethnicity [b = 0.121, t= 2.132, p<0.05] were found to be significant independent determinants for this model (see Table 4.6). The model showed that a young 'Coloured' man was more likely to consume significant amounts of alcohol relative to women, older people and other races.

Demographic predictors of substance use:

This model was not significant [F= (5,273) = 0.426, p= 0.830], explaining 0.08% of the variance in alcohol use (see Table 4.6). No uniquely significant determinants were found for this model.

Demographic predictors of HIV/AIDS knowledge:

The demographic factors were regressed onto HIV/AIDS knowledge. The model was found to be significant [F= (5,274) = 3.525, p< 0.01], explaining 6% of the variance in HIV/AIDS knowledge. In the model, level of education [b = 0.169, t= 2.729, p<0.01] was the only significant independent determinant (see Table 4.6). The level of education was related to the level of HIV/AIDS knowledge; the higher a person's level of education the higher their level of HIV/AIDS knowledge.

Demographic predictors of attitudinal fear of testing:

This model was not significant [F= (5,270) = 1.842, p=105], explaining 3% of the variance in attitudinal fear of testing. In this model, gender [b = -0.175, t= -2.826, p< 0.01] was the only significant independent determinant of fear of testing (see Table 4.6). Gender played a significant role in testing for HIV; it showed that men are more fearful of being tested for HIV than women are.

Cognitive and behavioural predictors of stigma towards HIV-positive people:

In this model, cognitive (lifestyle risk, condom non-compliance, alcohol use, and substance use) and behavioural (HIV/AIDS knowledge and attitudinal fear of testing) factors were regressed onto overall stigma (see Table 4.6). The model was significant, [F= (6,268) = 4.533, p< 0.001], explaining 9% of the variance in overall stigma. HIV/AIDS knowledge [b = -0.144, t= -2.393, p< 0.01] and attitudinal fear of testing [b = 0.222, t= 3.757, p< 0.001] were significant independent determinants of overall stigma. The behavioural factors, i.e. HIV/AIDS knowledge and attitudinal fear of testing, played a significant role in predicating the level of stigma a person had towards HIV-positive people.

Table 4.6 Regression models of demographic factors, cognitive and behavioural, and HIV/AIDS Stigma

Model	Dependent variable	Independent variables	*B*	S.E.	*b*	*t*	*p-value*	*R*	R^2	*F*
General predictors of stigma	Overall stigma	(Constant)	1.342	0.736		1.823	0.069	0.352	0.124	3.387***
		Age	-0.034	0.072	-0.032	-0.470	0.639			
		Gender	-0.195	0.158	-0.077	-1.234	0.218			
		Ethnicity	0.023	0.093	0.015	0.245	0.807			
		Employment	0.258	0.146	0.113	1.763	0.079			
		Education	0.241	0.143	0.105	1.684	0.093			
		Lifestyle	-0.150	0.156	-0.060	-0.964	0.336			
		Condom non-compliance	-0.038	0.070	-0.036	-0.547	0.585			
		Alcohol	-0.100	0.081	-0.081	-1.236	0.218			
		Substance use	-0.107	0.157	-0.039	-0.677	0.499			
		HIVAIDS knowledge	-0089	0.037	-0.144	-2.391	0.018*			
		Fear of testing	0.406	0.107	0.225	3.806	0.000***			
Demographic predictors of lifestyle risk	Lifestyle risk	(Constant)	0.607	0.240		2.532	0.012*	0.269	0.72	4.357**
		Age	-0.063	0.026	-0.148	-2.418	0.016*			
		Gender	-0.179	0.060	-0.177	-2.969	0.003**			
		Ethnicity	-0.013	0.036	-0.021	-0.363	0.717			
		Employment	0.047	0.057	0.0521	0.819	0.413			
		Education	-0.023	0.055	-0.025	-0.409	0.683			
Demographic predictors of condom non-compliance	Condom non-compliance	(Constant)	-0.054	0.526		-0.102	0.919	0.458	0.209	14.782***

		Age	0.389	0.057	0.387	6.859	0.000***			
		Gender	0.160	0.132	0.067	1.210	0.227			
		Ethnicity	0.199	0.080	0.136	2.497	0.013*			
		Employment	-0.029	0.126	-0.013	-0.230	0.819			
		Education	-0.109	0.121	-0.050	-0.898	0.370			
Demographic predictors of Alcohol use	Alcohol use	(Constant)	1.844	0.464		3.977	0.000***	0.388	0.151	9.890***
		Age	-0.199	0.050	-0.233	-3.988	0.000***			
		Gender	-0.511	0.117	-0.250	-4.383	0.000***			
		Ethnicity	0.150	0.070	0.121	2.132	0.034*			
		Employment	-0.083	0.111	-0.045	-0.750	0.454			
		Education	0.197	0.107	0.107	1.841	0.067			
Demographic predictors of substance use	Substance use	(Constant)	0.034	0.064		0.527	0.598	0.088	0.008	0.426
		Age	-0.009	0.007	-0.085	-1.338	0.182			
		Gender	0.002	0.016	0.006	0.097	0.923			
		Ethnicity	0.003	0.010	0.020	0.315	0.753			
		Employment	0.005	0.015	0.019	0.293	0.770			
		Education	-0.003	0.015	-0.014	-0.226	0.821			
Demographic predictors of HIV/AIDS knowledge	HIV/AIDS Knowledge	(Constant)	9.838	0.912		10.786	0.000***	0.246	0.060	3.525**
		Age	-0.059	0.098	-0.037	-0.595	0.552			
		Gender	0.287	0.230	0.075	1.246	0.214			
		Ethnicity	-0.014	0.138	-0.006	-0.099	0.921			
		Employment	-0.374	0.218	-0.110	-1.713	0.088			

		Education	0.575	0.211	0.169	2.729	0.007**			
Demographic predictors of fear of testing	Fear of testing	(Constant)	0.727	0.316		2.299	0.022*	0.182	0.033	1.842
		Age	0.035	0.034	0.066	1.042	0.299			
		Gender	-0.223	0.079	-0.175	-2.826	0.005**			
		Ethnicity	-0.008	0.047	-0.011	-0.174	0.862			
		Employment	-0.069	0.075	-0.060	-0.919	0.359			
		Education	-0.037	0.072	-0.033	-0.517	0.606			
Cognitive and behavioural predictors of overall stigma	Overall stigma	(Constant)	1.959	0.419		4.678	0.000***	0.304	0.092	4.533***
		Lifestyle	-0.111	0.151	-0.045	-0.737	0.462			
		Condom non-compliance	-0.093	0.063	-0.089	-1.480	0.140			
		Alcohol	-0.044	0.075	-0.037	-0.590	-0.193			
		Substance use	-0107	0.155	-0.040	-0.688	0.492			
		HIV/AIDS knowledge	-0.086	0.036	-0.141	-2.393	0.017*			
		Fear of testing	0.392	0.104	0.222	3.757	0.000***			

Note: *p<0.05; **p<0.01; ***p<0.001

4.2 Discussion

4.2.1 Demographic factors

In this study, age predicted lifestyle risk, condom non-compliance and alcohol consumption. Similarly, gender was also able to predict lifestyle risk and alcohol use, whereas ethnicity predicted only condom non-compliance and alcohol use.

The Koeberg data showed that younger men lead risky sexual lifestyles and consume more alcohol than older participants and women. Nearly a quarter of participants younger than 30 years (n = 25) had two or more sexual partners in the previous three months, with two (n = 2; 1.8%) participants exchanging money or gifts for sex. Nearly half of the participants (n = 73; 49%) who consume alcohol were younger than 30 years. This was consistent with findings within the South African construction industry, where younger men consume large amounts of alcohol relative to their older colleagues and partake in casual sexual affairs (DPW, 2004; Haupt & Smallwood, 2004; Bowen *et al.*, 2010; James *et al.*, 2012). Younger men, in this study, seem to be aware that a risky lifestyle increases their chances of an HIV infection and were more prone to practice safe sex than older workers and women.

The Koeberg study established parallels with the findings in the South African construction industry; where the level of education and ethnicity showed that 'Black' African participants consumed less alcohol than their 'Coloured', 'White' and 'Indian' colleagues and those with higher levels of education consume more alcohol. Bowen *et al.* (2014b) argued that this could be attributed to 'Black' African participants generally having less education and as a result had less disposable income for alcohol. The same study by Bowen *et al.* (2014b:17) showed that low-level construction workers typically used drugs. The Koeberg study had no predictors to suggest substance use. The reason is simple; the site is managed in accordance to the National Key Point Act (Act 102 of 1980), where employees are regularly tested for illegal substances and alcohol.

Education correlated with condom non-compliance, where those who obtained lower levels of education were less likely to use condoms. Older 'Black' African participants were more likely to use condoms during sex. This was at odds with traditional findings, where 'Black' African men did not support having sex with a '*wrappe*r' or '*eat a banana with its peel'* (Wolf, 2002;

Kalichman & Simbayi, 2004). Interestingly, women were less likely to use condoms. Nearly 70% of women (*n*= 57) revealed not to have used a condom during their last sexual encounter. It could be argued that men are the economically-dominate partners within the relationship and negatively influenced safe sex practices (Dlamini *et al.*, 2007). This is not the case, however, as the majority of women who did not use a condom the last tome they had sex was because they are married (*n*=37; 45%), followed by those in long-term relationships (*n*= 9; 11%). The majority of women who were not married (*n*=17; 61%) did use a condom the last time they had sex. This being said, the majority of women (*n*=50; 62%) do not like using a condom during sex. It is noteworthy to mention that the VCT nurses who conducted the survey revealed that (1) most women only referred to male-condoms and (2) were unfamiliar with the female condom and did not know how to use it. Furthermore, the level of education predicts the level of HIV/AIDS knowledge. Typically, those with a higher level of education had higher HIV/AIDS knowledge scores (Haupt & Smallwood, 2004).

Following on with the gender demographic factor, it directly influenced the attitudinal fear of testing for HIV. Consequently, in this study men (*n*=36; 17%) were found to be more fearful of being tested for HIV than women (*n*=2; 2.4%). This finding was aligned with previous studies showing that men were less likely to be tested for HIV, than women, namely, Peltzer *et al.* (2009) (25% males: 30% females); Venkatesh *et al.* (2011) (29% males: 65% females); and Shisana *et al.* (2014) (59% males: 72% females). The Koeberg study showed women having higher levels of HIV/AIDS knowledge, thereby holding less stigmatised views of HIV/AIDS. Men with lower levels of HIV/AIDS knowledge and higher stigmatised views, did not access testing facilities to the same extent as their counterparts (Scott-Sheldon *et al.*, 2013).

4.2.2 Cognitive and Behavioural factors

People with stigmatised views, were reluctant to seek testing and treatment for HIV (Moss *et al.,* 1999; Simbayi *et al*., 1999; Pipitan *et al.*, 2012). This study has established the same relationship between stigma towards HIV-positive people and the attitudinal fear of testing. Furthermore, the study aligns with previous studies where HIV/AIDS knowledge reduces stigmatised views towards people living with HIV (Moss *et al.,* 1999; Simbayi *et al*., 1999; Pipitan *et al.*, 2012; Scott-Sheldon *et al.*, 2013).

The sample at Koeberg scored high on the HIV/AIDS knowledge scale, with an average score in excess of 10 out of 12. Malcolm *et al* (1998) stated that the current anti-stigma approach was to provide knowledge to remove ignorance about HIV/AIDS. Generally, Koeberg participants

did not have prejudicial views towards HIV-positive people. This confirmed the conventional relationship between stigma and HIV/AIDS knowledge, namely, higher HIV/AIDS knowledge equated to less prejudicial views towards HIV-positive people (see Prohaska *et al.*, 1990; Malcom *et al*., 1998; Kalichman & Simbayi, 2004; Campbell *et al*., 2005; Duffy, 2005; Haupt *et al*., 2005).

Green (1995) cautioned that society publically supported people living with HIV, however in private the majority of society believed being HIV-positive was a result of their (bad) behaviour. This finding was validated where more than 30% of Koeberg participants agreed with the statement '*Most people become HIV+ for being weak or foolish'* and '*People living with HIV/AIDS should expect some restriction to their freedom*'.

A reasonable expectation was that those who expressed these views had a low HIV/AIDS knowledge score; this however was not the case. It could be argued that these participants were confident that their anonymity would be guaranteed and express their true views and the rest of the participants were concerned to reveal their true feelings in a work survey. Education is a powerful tool in the fight against HIV/AIDS; however the scientific and medical knowledge about HIV transmission does not necessarily eliminate traditional and cultural beliefs (Quah, 1998; Ashforth, 2001; Kalichman & Simbayi, 2004; Campbell, 2005).

In this study, 15% (*n*=45) of participants were not sure if spirits or supernatural forces cause AIDS. A study by Kalichman and Simbayi (2004) found a similar result, where 21% (*n*=105) of participants were unsure if spirits or supernatural forces caused HIV/AIDS. Typically 'Black' African participants were more likely to be influenced by traditional beliefs than are other racial groups (Kalichman & Simbayi, 2004). In fact, it was not 'Black' African participants but mostly 'Coloured' (*n*=40; 17%) participants who were unsure if spirits or supernatural forces caused AIDS. South Africa is a diverse country, with many languages, religions, traditional and cultural beliefs (Malcolm *et al*., 1998; Ashforth, 2001). People with lower levels of HIV/AIDS knowledge are prone to believe misleading information about the pandemic, causing them to revert back to trusted traditional and cultural beliefs to override scientific explanations of the disease (Malcolm *et al*., 1998; Kalichman & Simbayi, 2004; Haupt *et al*., 2005). People with these traditional views and cultural beliefs are more likely to justify stigmatised behaviour because they believe that being infected with HIV is a consequence of sinful or inappropriate behaviour; angering the ancestors or a punishment from God (Goffman, 1963; Sontag, 1989; Gilmore and Somerville, 1994; Green, 1995; Malcolm *et al*., 1998; Kalichman & Simbayi, 2004; Campbell *et al*., 2005).

HIV/AIDS stigma is a powerful deterrent preventing people from accessing private testing facilities, let alone being tested within the work environment (ILO, 2008). The Eskom HIV/AIDS policy (2010i) stipulates that HIV counselling and testing should occur in a safe and private room, with solid and soundproof walls. Ideally, the room should have a separate entrance and exit from the normal medical centre. The Koeberg medical centre complies with all these mentioned criteria, except a separate entrance and exit doorway. The majority of the participants were contract workers employed by small and medium construction firms. These firms are mainly required to comply with the safety protocols stipulated in the Occupational Health and Safety Act (Act 85 of 1993) and are heavily reliant on Koeberg to provide HIV/AIDS educational awareness, testing and treatment programmes (Whiley, personal communication, 2014 September 26).

Even though the Eskom HIV/AIDS policy (2010i) follows international best practices and ensures HIV-positive permanent and non-permanent (contract) employees will be protected against discrimination, victimisation or harassment; only 7.5% (n=253) of Koeberg employees – of all employment types – used the Eskom HIV/AIDS testing facility during August 2013 to August 2014 (Whiley, personal communication, 2014 September 15). The VCT nurses reported that on numerous occasions participants had to be reassured that the survey only required them to fill in the questionnaire and not have an HIV test, further indicating employee reluctance to be tested at Koeberg. Clearly, employees are not comfortable being tested using the Koeberg HIV/AIDS testing facility (see Malcolm *et al*., 1998; Chesney & Smith, 1999; Link & Phelan, 2001; Duffy, 2005; Bowen *et al*., 2010).

Of those who tested HIV-positive, more than a third experienced discrimination as a result of their infection. One in three HIV-positive respondents were treated differently by family and friends since disclosing their status and more than 15% had lost a job or accommodation due to their HIV-positive status. These findings are aligned with the extant literature (see Simbayi *et al.* 2007).

HIV-positive respondents experienced a high degree of internalised stigma; over a half believed it was their fault for being HIV-positive and three in five respondents found it difficult to talk to others about their HIV-positive status. ‘Black’ African and ‘Coloured’ participants experienced discrimination, with the latter group experiencing it to a greater extent. These findings were consistent with studies by Simbayi *et al.* (2007). Furthermore, internalised

stigma was a direct result in HIV-positive participants reporting feelings of anxiety (34%), depression (40%), and sadness (29%). This study corroborates findings by Deacon *et al*. (2009), linking anxiety and depression to a reduced quality of life for people living with HIV. This study did not reveal if these enacted experiences occurred at work.

Even though a low number of employees (*n*=253; 7.5%) use the Koeberg HIV/AIDS testing and treatment facility, collectively more than 80% (*n*=264) of participants know their HIV status. This statistic can be argued to be a result of participants being tested elsewhere. A counter-argument is that those who participated in the survey previously got tested at Koeberg and are not negatively influenced by HIV/AIDS stigma (see Goudge *et al.*, 2009). This is confirmed by the Koeberg`s Wellness Manager stating that she recognises the same people getting tested for HIV during Koeberg`s bi-annual HIV testing week (Whiley, personal communication, 2014 September 15). It is noteworthy that almost all of these staff members test negative for HIV and are comfortable using the facility (Whiley, personal communication, 2014 September 15). This shows that stigma of HIV/AIDS and fear of discrimination hinders Koeberg employees from accessing HIV/AIDS intervention programmes (see Malcolm *et al*., 1998; Chesney & Smith, 1999; Link & Phelan, 2001; Duffy, 2005; Bowen *et al*., 2010).

Educational awareness programmes may reduce ignorance of HIV transmission; it does not stem the fear and stigma associated with HIV/AIDS (Bowen *et al*., 2014a). More is required from educational programmes. It should not only disseminate medical information about HIV, but also need to address social aspects to curtail the negative associations with HIV/AIDS. In addition, the programmes should impart skills to those who are infected to lessen the felt and enacted stigma (Goudge *et al.*, 2009).

4.2.3 Limitations to the study

The limitations of this study need to be considered when interpreting these findings.

Firstly, the participants were based at the Koeberg Nuclear Power Station. The findings of this study, in particular felt and enacted stigma, may not be representative of other Eskom sites located throughout South Africa.

Secondly, this study relied upon a self-reporting method with predetermined responses, to measure the extent of the stigmatised views employees have towards HIV-positive people. These predetermined responses may have shown relationships among variables, but it did not give insight to the reasons why employees have stigmatised views. In this regard, the questionnaire was restrictive in that it did not provide an option for open-ended responses. Participants, particularly HIV-positive employees, wanted to tell their stories and these insights could have been obtained with either open-ended questions or through face-to-face interviews (Bowen *et al.,* 2014a).

Thirdly, employees may have under-reported their alcohol and substance use, in fear of being traced and punitive action taken against them by Koeberg security i.e., black-listed from ever working at the power station.

Fourthly, a further limitation of self-reporting is the possible under-reporting of employees' true stigmatised feelings toward people living with HIV (Green, 1995). This under-reporting is a result of '*social desirability bias'* (Bowling, 2005:285). Social desirability is when participants are susceptible to being influenced by social norms (Bowling, 2005). In other words, people want to present themselves in the best possible light. It results in over reporting of desired behaviours and under-reporting of undesirable behaviours (Bowling, 2005:285).
Even with all the steps taken to ensure participants` anonymity to eliminate or minimise this shortcoiming, certain participants required constant reassurance that their confidentiality would be protected.

Lastly, the study implied that only male condom were used for safe sex practices and did not explore the use of female condoms as a HIV transmission preventative measure. The condom non-compliance scale developed from the questionnaire did not distinguish between the two

forms of condom i.e., male and female; restricting further insights that could have been gained as to the proactive steps women could use to protect themselves from contracting the disease.

The aim of this quantitative research method was to measure the stigma construct towards HIV/AIDS, and to determine its relationships with determinants, such as HIV/AIDS knowledge and attitudinal fear of testing (Bryman, 1988). The validity, reliability and objectivity of the scores obtained from the instrument needs to be considered (Bryman, 1988; Creswell, 2009).

The concept of validity in quantitative research determines if the intended social construct i.e., stigma towards HIV/AIDS, was measured and if meaningful and useful inferences are obtained from the questionnaire (Bryman, 1988; Creswell, 2009). Validity is further distinguished between external validity and internal validity. The threat to external validity is the inability to generalise the findings from the sample to other people, other settings or future situations (Creswell, 2009). This study clearly stated its limitations and restricted generalisations about construction workers and employees at Eskom sites throughout the country. The threat to internal validity is the inability to establish the correct relationship i.e., cause and effect, from the sample of participants (Bryman, 1998; Creswell, 2009). According to Creswell (2009:163) the types of threats to internal validity for this study are the selection of participants with certain attributes '*predisposing'* them to certain outcomes and *'compensatory/resentful demoralisation'*, where a certain sample of participants receive treatment and others do not. This studies dealt with the selection threat through the use of 'random' sampling of participants at Koeberg i.e., convenient and purposive sampling. The latter threat was remedied by instructing the VCT nurses not to educate participants prior to the survey, preventing any distortions in the results when comparing them to previous studies.

The research instrument adopts a self-reporting survey measurement method. Therefore, the findings may have the potential risk of common method variance and the validity of data may be questioned. However, it should be noted that the question response scales have been adopted from the extensive HIV/AIDS intervention management literature, and the studies of Kalichman and Simbayi (2003, 2004), Kalichman *et al.* (2005) and Simbayi *et al. (*2007) in particular. The sample size militates against validity concerns, as do the significance values for the correlations between overall stigma and the demographic, lifestyle, condom-

noncompliance, alcohol, substance abuse, HIV/AIDS knowledge and fear of testing variables (see Bowen *et al.,* 2014b).

Reliability considers the internal consistency of the instrument`s scale and indices, in other words, the coherence of the scale (Bryman, 1998). It also determines measurement consistency over time i.e., using the instrument more than once (Bryman, 1998; Creswell, 2009). Factor analysis was used to determine the coherence of the scales, thereafter the internal consistencies of the scales were found to be at an adequate level, except the '*Lifestyle'* and '*Fear of Testing*' scales. The measure of consistency over time was not a concern; this questionnaire and scales were used in previous studies (see Kalichman & Simbayi, 2003, 2004; Kalichman *et al.,* 2005; Simbayi *et al.,* 2007; Bowen *et al.,* 2014a, b) with similar findings.

Creswell (2009:233) defines objectivity or bias as "*the effect of nonresponses on survey estimates*", it merely means if employees other than the sample of participants responded to the survey, this would have significantly altered the study`s overall results. This sample is biased towards the contract construction workers and 'Coloured' participants at Koeberg - by virtue of having allocating more resources i.e., two VCT nurses and ski-cabins, to their working area. In an attempt to attain a representative sample, another ski-cabin and office were located in close proximity to the administrative workers, technicians, engineers and other race groups.

4.3 Summary

The chapter discussed the various techniques of data analysis used to determine relationships among the demographic, cognitive and behavioural factors, namely, Pearson`s product-moment, testing for differences in means, t-test for independence and multiple regression.

The analysis showed that demographic factors, such as age, gender, ethnicity and level of education, influenced lifestyle risk, condom non-compliance, HIV/AIDS knowledge and attitudinal fear of testing. Younger men are likely to lead risky lives, which increases their chances of being infected with HIV. HIV/AIDS knowledge and attitudinal fear of testing predicated the stigmatised views toward people living with HIV. In spite of the high level of HIV/AIDS knowledge, employees are still reluctant to be tested using the Koeberg HIV/AIDS intervention programmes. 'Coloured' participants were more prone to experience discrimination for being HIV-positive and internalise these negative experiences. Generally,

most Koeberg employees do not have stigmatised views against people living with HIV, but a sizeable minority have reported destructive attitudes and views towards people living with HIV/AIDS. Education is a powerful tool in the arsenal against the fight against HIV/AIDS. Education without considering and addressing myths and misinformation influenced by traditional and cultural beliefs, allows HIV/AIDS stigma to persist.

In the following chapter, the findings from this study are discussed in relation to the research question posed in Chapter 1. It will determine if the research aims and objectives were achieved, and, based on this study`s research findings, conclusion are drawn and recommendations are made for the Eskom HIV/AIDS intervention programme and future research.

Chapter 5: Conclusions and Recommendations

5.1 Introduction

This study has investigated the relationship between HIV/AIDS-related stigma, discrimination and Eskom`s HIV/AIDS intervention programme, to determine whether HIV/AIDS-related stigma and discrimination prevent employees from accessing Eskom's HIV/AIDS intervention programmes.

The problem statement proposed in Chapter 1 was stated as:

The HIV/AIDS intervention programmes implemented at Eskom construction sites are not fully utilised because of a fear of being stigmatised and discriminated against for being HIV-positive.

A research question was formulated to guide the investigation in order to address the problem statement, namely:

To what extent does stigma impact negatively on Eskom's HIV/AIDS intervention programmes?

The supplementary questions were:

a) *Determine the percentage of employees utilising the HIV intervention programme at Eskom construction sites*;

b) *Determine how Eskom and contractors implement and manage a site-based HIV/AIDS intervention programme and how the programme deals with the stigma and discrimination associated of HIV/AIDS at the Eskom construction site*?

c) *Determine criteria for the successful management and minimisation of the stigma associated with HIV/AIDS and fear of discrimination*?

The following hypothesis was posited:

The fear of being ostracised, stigmatised and discriminated against for being HIV-positive adversely impacts on the success of site-based HIV/AIDS interventions programmes implemented at Eskom capital projects.

The research was based on an extant review of the published literature pertinent to stigma, globally, and within South Africa; coupled with a quantitative survey-based research method. The self-administered questionnaire was completed by 296 site-based employees at Koeberg Nuclear Power Station, located in Cape Town, to determine the relationship between the HIV/AIDS-related stigma, discrimination and the up-take of the Koeberg HIV/AIDS intervention programme.

This chapter discusses the findings from this study in relation to the research question posed in Chapter 1. The problem statement is restated and the research hypothesis is tested. The attainment of the aim and objectives of the study are discussed. Thereafter, conclusions are presented and recommendations are proposed for Eskom`s HIV/AIDS intervention programmes.

5.2 Validation of Problem Statement

The problem statement to be addressed in this study is:

The HIV/AIDS intervention programmes implemented at Eskom construction sites are not fully utilised because of a fear of being stigmatised and discriminated against for being HIV-positive.

The problem statement is addressed by the findings from the data analysis and interpretation thereof, contextualised within the extant literature. The findings show that Eskom employees and contract construction workers are reluctant to access the Eskom HIV/AIDS intervention programmes at Koeberg Nuclear Power Station. The study identifies HIV/AIDS-related stigma and discrimination as being the main barrier for employees to access the intervention programmes. The findings explain that the determinants of HIV/AIDS-related stigma and discrimination are poor HIV/AIDS knowledge and attitudinal fear of testing for HIV.

5.3 Findings of the Research Questions

The research report addresses the following research questions:

To what extent does stigma impact negatively on Eskom's HIV/AIDS intervention programmes?

Firstly, Chapter 1 describes the background of the HIV/AIDS pandemic in South Africa. It further shows the negative effects that HIV/AIDS has on the South African construction industry. The construction industry is an integral part of the South Africa`s infrastructure programme and the growth of the economy. Despite these adverse effects, the construction industry has largely been unresponsive to the pandemic, with construction firms not responding effectively to address and manage the risk posed by the pandemic. The Western Cape construction industry is shown to be the least responsive. The construction industry`s reluctance to respond to the pandemic is linked to the prejudiced views and perceptions held by its leadership.

Secondly, Chapter 2 reviews literature on the concept of stigma and discrimination, and discusses its origins and impacts. The chapter shows how HIV/AIDS-related stigma and discrimination hinder construction workers from accessing HIV/AIDS intervention programmes. The financial implications of HIV/AIDS-related stigma and the HIV/AIDS pandemic on the construction industry are discussed, based on factors such as loss of human capital, recruitment and training costs, absenteeism, operating costs, productivity, declining morale and competitiveness – *inter alia*. Chapter 2 demonstrates the reliance Eskom has on the South African construction industry, for its capital expansion and maintenance programmes; vital for South Africa`s prosperity. Eskom`s reliance on the construction industry, impacted by the HIV/AIDS pandemic, introduces a vulnerability to Eskom`s new-build programme and electricity generating and delivery operations.

Thirdly, Chapter 4 details the findings emanating from a survey-research based design conducted in the form of a self-administered questionnaire. The study reveals that the construction firms employed by Koeberg are heavily reliant on Eskom`s HIV/AIDS intervention programmes. The findings show that stigma of HIV/AIDS and fear of discrimination prevents less than 10% of Eskom employees and contract construction workers from accessing the HIV/AIDS intervention programme based at Koeberg. Stigma is shown to have a significant relationship with fear of testing and (poor) HIV/AIDS knowledge. Specifically, men with lower levels of HIV/AIDS knowledge have higher stigmatised views and are more fearful of being tested for HIV than women.

The research question is addressed, namely, that stigma has an adverse impact on Eskom`s HIV/AIDS intervention programmes, where the majority of employees are reluctant to utilise the programme.

5.4 Validation of the Research Hypothesis

The research hypothesis to be examined is as follows:

The fear of being ostracised, stigmatised and discriminated against for being HIV-positive adversely impacts on the success of site-based HIV/AIDS intervention programmes implemented at Eskom capital projects.

HIV-positive permanent and contract employees experienced internalised stigma (felt-stigma) and discrimination (enacted stigma). They reported feelings of internalised stigma, such as feeling dirty, guilty, worthless and ashamed of being HIV-positive. The findings also show that they believe that being HIV-positive is their fault and hide their HIV-positive status from others.

Some of these employees report being treated differently since disclosing their HIV-positive status to family and friends. Subsequently, some family and friends have opted not to visit them since learning about their HIV-positive status. Certain HIV-positive employees report having lost a job or accommodation since disclosing their HIV-positive status.
The majority of respondent HIV-positive employees are reluctant to tell people about their HIV-positive status due to the fear of negative consequences. It can be deduced that these employees are not willing to use the Eskom HIV/AIDS intervention programme for treating or managing this chronic disease. They are afraid of being identified and, as a result, being ostracised, stigmatised and discriminated against for being HIV-positive; further internalising these negative reactions.

These findings validate the research hypothesis i.e., HIV-positive permanent and contract employees are fearful of being ostracised, stigmatised and discriminated against for disclosing their HIV-positive status, adversely impacting the success of site-based HIV/AIDS intervention programmes at Eskom construction projects.

5.5 Achievement of the Research Aim

The aim of this research study is to determine the nature and extent of AIDS-related stigma and discrimination and their relationship with the success or otherwise of site-based HIV/AIDS intervention implemented by Eskom.

The findings of this study show that AIDS-related stigma and discrimination negatively hinders contract construction workers from accessing the Koeberg HIV/AIDS intervention programmes.

The study revealed that HIV/AIDS knowledge and attitudinal fear of testing are determinants of HIV/AIDS stigma. This study mainly comprised of male contract construction workers. The construction firms employed by Koeberg are heavily reliant on the Eskom HIV/AIDS intervention programmes for their HIV/AIDS knowledge training and testing. These contract construction workers are found to have less knowledge about HIV/AIDS than permanent Eskom employees and in some cases believe that spirits or supernatural forces cause HIV/AIDS. The findings show that people with lower levels of education tend to revert back to trusted traditional and cultural beliefs, justifying their stigmatised views towards HIV-positive people.

The study also shows that these stigmatised views held by contract construction workers cause them to be more fearful of being tested for HIV than their permanent counterparts. This is confirmed by the data analysis revealing that more contract construction workers have never been tested for HIV than permanent Eskom employees. Most of the HIV-positive contract construction workers are not willing to disclose their HIV-positive status in fear of being discriminated against.

Based on these findings, it can be deduced that the Eskom HIV/AIDS intervention programmes offered at Koeberg are not successful due to its low-up take as a result of stigmatised views held by employees, particularly contract construction workers.

5.6 Achievement of the Research Objectives

The *objectives* of the research study are to:

a) *Determine the current attitude and perceptions of employees towards HIV/AIDS at the Eskom capital construction projects;*

Chapter 4 shows that the Eskom HIV/AIDS policy provides for a non-discriminatory working environment where negative attitudes and perceptions towards HIV-positive employees are not tolerated. This policy stipulates and supports a working environment where HIV-positive employees, regardless of their employment type, are not victimised, harassed or discriminated against due to their HIV-positive status. The findings in this Koeberg study show that the Eskom HIV/AIDS policy has facilitated the acquisition by employees of knowledge relating to HIV/AIDS. In general, the Koeberg employees did not report negative attitudes and perceptions towards HIV-positive people. However, a sizable minority (32%) of Koeberg employees reported stigmatised views towards HIV-positive people, namely, that being HIV-positive is their own fault and certain liberties should be taken away from them. This may be attributable to most respondent employees not knowing any HIV-positive people and thus not being confronted with HIV/AIDS in their personal-life environment or circumstances. This objective has been achieved.

b) *Determine if the stigma of HIV/AIDS prevents employees from accessing HIV intervention programmes at Eskom construction sites?*

The analysis of data in Chapter 4 concludes that despite the majority of Koeberg employees reporting low levels of stigmatised views, the low take-up of the intervention programmes and the reported internalised stigma and discrimination experienced by HIV-positive employees, indicates that employees are fearful of being tested and that HIV-positive employees are reluctant to be treated at Eskom intervention programmes.
Stigma of HIV/AIDS and fear of discrimination prevents employees to access the Eskom HIV/AIDS intervention programmes. This objective has been achieved.

c) *Determine the percentage of employees utilising the HIV intervention programme at Eskom construction sites;*

The findings from Chapter 4 shows that, of the 3373 Koeberg permanent and non-permanent (contract) employees, 7.5% (n=253) employees used the Eskom HIV/AIDS intervention programmes to be tested during the period of August 2013 to August 2014.
This objective is partially achieved. Due to confidentiality and ethical reasons, the number of staff accessing ARV treatment cannot be disclosed.

d) *Determine how Eskom and contractors implement and manage a site-based HIV intervention programme and how the programme deals with the stigma and discrimination associated of HIV/AIDS at the Eskom construction site?*

Eskom commits to managing HIV/AIDS holistically in a comprehensive, supportive and non-discriminatory manner for both permanent and non-permanent employees, in this case contract construction workers. Eskom does not require out-sourced construction firms to have an HIV/AIDS intervention programme and the study showed that these construction firms are fully reliant on Eskom.
The Eskom HIV/AIDS policy recognises that HIV/AIDS is a preventable disease and requires health custodians, namely, medical staff, peer educators, HIV-positive employees and first aiders, to change attitudes, behaviour, provide information and education. The policy recognises that cultural norms and beliefs adversely influence the spread of HIV in an HIV/AIDS knowledge vacuum and hinders prevention efforts. Its programme supports mobilising community-based prevention, care and treatment responses. Peer educators are another critical component in the Eskom HIV/AIDS approach to educate employees and to prevent further HIV infections. The policy states that the peer educator programme needs the support of management, supervisors and employees to succeed. Peer educators should comprise from a voluntary or nomination basis from across the organisation, including management.

Education about HIV/AIDS is viewed as a key part of the holistic HIV/AIDS programme to combat stigma and discrimination and to protect the rights of HIV-positive employees. The Employee Assistance Programme (EAP) is an Eskom programme, in conjunction with periodic OSHA required medicals, providing services such as HIV/AIDS counselling and advice about chronic diseases, smoking and substance abuse, and financial and lifestyle wellness management programmes.

The policy prescribes conducting assessments to determine levels of knowledge and attitudes of employees prior to implementing prevention initiatives. In terms of these initiatives, the programme will have practical measures to support behaviour change and risk management of STIs, TB and HIV/AIDS illnesses and provides free male and female condoms.
The policy acknowledges that female employees are more vulnerable to HIV infection and the programme is designed to address the empowerment of female employees to successfully prevent and treat HIV/AIDS of these female employees.

The organisation offers voluntary testing to permanent and non-permanent (contract) Eskom employees by specialised service providers. These service providers provide pre- and post-counselling, explaining the nature and purpose of HIV testing, advantages and disadvantages of HIV testing, and assist employees to deal with a HIV-positive result. The service providers are required to adhere to strict confidentiality and disclosure criteria. In a further method to address stigma and discrimination, Eskom do not allow HIV/AIDS testing as a screening mechanism in its recruitment process nor require potential employees to disclose their HIV status.
The organisation requires service providers to educate HIV-negative employees on how to remain negative. Eskom commits, within in its available means, to resource HIV-positive employees (permanent or non-permanent) to receive treatment and care. Permanent HIV-positive employees are required to receive treatment from their respective Eskom medical aid`s chronic management programmes, whereas non-permanent (contract) HIV-positive employees are required to consult their own medical aid programmes or a public sector health care facility.

The policy acknowledges that stigma and discrimination of HIV/AIDS impacts the willingness of employees to be tested or treated. It stipulates testing to occur in a safe environment, a private room with solid walls, soundproof and separate rooms for both counsellor and nurse. Ideally the room should have separate entrance and exit points from the normal OHSA medical centre.

The policy envisages that no permanent and non-permanent (contract) employees are discriminated against for either their real or perceived HIV-positive status and strives to protect HIV-positive employees against discrimination, victimisation or harassment.
Disciplinary and grievance procedures are instituted against those found guilty of participating in any discriminatory acts against HIV-positive employees. This process is also coupled with educating the aggressor about HIV/AIDS.

Eskom's Health and Wellness department is responsible for implementing the programme and ensuring that all permanent employees adhere to the HIV/AIDS response strategy prescribed. This objective has been addressed.

e) *Determine criteria for the successful management and minimisation of the stigma associated with HIV/AIDS and fear of discrimination?*

HIV/AIDS stigma and discrimination reduction programmes needs to be a multi-layered action plan, as discussed below.

The most important success ingredient to reduce the stigma associated with HIV/AIDS and fear of discrimination is to account for the diversity within a community or organisation; South Africa is a diverse country and people share different life experiences and has diverse perspectives of HIV/AIDS. An intervention programmes should address the social aspects of HIV/AIDS such as traditional and cultural belief of the disease and not merely supply 'clinical' information of how HIV is transmitted. In order to implement and address the social aspect of HIV/AIDS, people living with HIV/AIDS need to be empowered. A mechanism to empower people living with HIV is to involve them in the development and implementation of the anti-stigma programme. This strategy has two benefits, it reduces the internalised stigma HIV-positive people experience and the community sees people living with HIV as being productive and healthy, thereby reducing the overall stigma within the community. As a result more people will access HIV/AIDS intervention programmes and adherence to an ARV treatment regime. This approach can be used to involve people living with HIV from the local communities surrounding Koeberg such as Atlantis, Mamre and Darling. The majority of the contract construction workers originate from these communities.

Secondly, engaging with and educating employees to challenge their own stigmatised views towards HIV/AIDS by using role-playing exercises. These role-playing exercises place employees in the 'shoes' of a person living with HIV and simulate discrimination scenarios. Employees are requested to relate these scenarios their personal circumstances and imagine it's happening to themselves, a family member or friend when placed in 'those shoes'. This exercise creates an environment of reflection on discriminatory views held towards people living with HIV/AIDS and challenges these views by relating it to their personal situation. Employees will become sensitised and empathic to the plight of people living with HIV/AIDS. The Koeberg HIV/AIDS intervention programme can be expanded beyond its perimeter and

assist the local surrounding clinics with role-playing exercise and HIV/AIDS knowledge training. This will help eliminate any misinformation and negative view employees and the local community have towards HIV/AIDS.

Thirdly, establish a non-stigmatising policy at an institutional level such as the Eskom HIV/AIDS policy. The non-stigmatising policy should be aligned with programmes at national level and compliment international best practices. It is imperative to ensure the leadership of an institution, publically pledge their support towards an HIV/AIDS intervention programme and be seen supporting the programme i.e., being tested using the institution`s testing facility or for a leader to shake or hug a person openly living with HIV/AIDS. In addition, for a programme to be successful, stigmatised views or actions should not be tolerated and be dealt with accordingly. An example is initiate disciplinary actions, coupled with HIV/AIDS education, against those who discriminate against people living with HIV/AIDS at the institute.

Fourthly, telling successful stories of and avoid intolerant language to describe people living with HIV/AIDS by using various communication channels. It humanises the HIV/AIDS pandemic and initiates discussions and debates within an organisation or surrounding community, exploring and challenging peoples` understanding and assumptions they have of HIV/AIDS. It raises the awareness of influential people within a group or organisation, such as supervisors and managers at Koeberg or elders within the local surrounding community who are the drivers of perceptions and negative attitudes towards HIV/AIDS.

Lastly, the cost and cost effectiveness of HIV/AIDS intervention programmes – offering HIV testing, treatment, care, and support – to reduce stigma associated with HIV/AIDS and fear of discrimination. The success of an intervention programme is dependent on the belief that it is costly and has limited financial benefits. The Western Cape construction industry holds this belief, where the HIV/AIDS pandemic does not pose a detrimental threat to its operations and the costs of such a programme are not justified. This traditional view and approach has been discredited, it is argued that the loss of productivity due to employees` ill health, direct and indirect cost of the pandemic outweigh the costs to implement and sustain an HIV/AIDS intervention programme.

It is imperative for the safe operation of Koeberg for the next 20 years, Koeberg`s leadership, in addition to CIBD and DPW, must assist the out-sourced small and medium construction firms (employed at Koeberg) to understand the benefits to implement an HIV/AIDS intervention programme for its workers. By understanding how the benefits outweigh the cost

of such a programme, will ensure that construction firms and the industry remain profitable and sustainable to provide its services Koeberg into the future. This is objective has been achieved.

5.7 Conclusions

This study set out to establish the nature and extent to which HIV/AIDS stigma negatively impacts site-based HIV/AIDS intervention programmes implemented by Eskom. A survey-based research design was adopted, previously employed by the HSRC, for the Koeberg study. This quantitative research method was conducted using a structured instrument, namely, a self-administered questionnaire in which each of the research objectives were collectively addressed by the various questions. A sample of 296 employees participated in the Koeberg study. Participants mainly comprised contract construction workers from small to medium-sized construction firms employed by Eskom. The collected data was coded and analysed using SPSS version 22.0 for Mac. The suite of statistical analysis techniques were used to establish the relationships among demographic, cognitive and behavioural factors, and shows how these factors influences employees` reluctance to access the site-based HIV/AIDS intervention programme at Koeberg.

The overall conclusions of this research study are:

1. HIV/AIDS knowledge and attitudinal fear of being tested for HIV are significant determinants of overall stigma towards HIV/AIDS. Despite Koeberg employees generally exhibiting high levels of HIV/AIDS knowledge, many supported punitive and discriminatory actions against HIV-positive people. Men are shown to be more fearful of being tested for HIV and less likely to access the Koeberg HIV/AIDS intervention programmes than are women. Men are less knowledgeable about HIV/AIDS than women and as a result men reported higher levels of stigmatised views towards people living with HIV/AIDS. Men, particularly younger men aged below 30, engage in riskier sexual lifestyles than older men and women. These men, more specifically ‘Coloured’ men, also consume more alcohol than do the other races, older men, and women. Alcohol consumption is shown to contribute to a riskier lifestyle. Younger men are aware of the need to use condoms to protect themselves and their partners during sex.

2. Condom non-compliance is significantly related to gender, ethnicity and education. Female employees had higher scores for condom non-compliance than men and did not

like using condoms during sex. Contrary to previous studies, 'Black' African employees are shown to be more likely to use condoms during sex, whereas 'White' and 'Indian' employees were shown to be more reluctant to use condoms, followed by 'Coloured' employees.

3. Level of education is a significant determinant of HIV/AIDS knowledge and indirectly influences the stigmatised views employees hold towards HIV/AIDS. The survey showed that some participants were unsure whether or not HIV/AIDS is caused by forces from the supernatural realm. Employees with lower levels of education held higher stigmatised views towards people living with HIV/AIDS and are less likely to access the Koeberg HIV/AIDS intervention programme to be tested for HIV. In addition, employees with lower levels of schooling were less likely to engage in safe sex practices.

4. Most of the HIV-positive employees experienced discrimination because of their HIV-positive status. In some cases, HIV-positive employees reported having lost a job or accommodation since disclosing their HIV-positive status. The study showed significant differences for internalised stigma and discrimination between 'Coloured' and 'Black' African employees since disclosing their HIV-positive status. 'Coloured' participants have a higher mean score for internalise stigma and discrimination than their 'Black' African counterparts.

The following recommendations are based on findings presented in 4 and 5, particularly sections 4.1.1.4, 4.1.1.5, 4.2 and 5.6.

5.8 Recommendations

This study points to Eskom`s reliance on the South African construction industry. The construction industry has been shown to be one of the least responsive against the fight against HIV/AIDS. This study found that HIV/AIDS stigma and fear of discrimination, coupled with the lack of response by the construction industry, introduces a vulnerability to Eskom`s electricity generating and delivery operations and new build programme. This particular study i.e., exploring the affects the HIV/AIDS responsiveness of the South African construction industry has on Eskom`s mandate, has never been explored. It is recommended that this study be duplicated and expanded to other Eskom power stations and construction sites.

The recommendations proposed are intended to influence construction firms working at Koeberg to adopt a more proactive and engaging stance towards combatting HIV/AIDS and reducing the stigma associated with HIV/AIDS and the fear of discrimination.

Firstly, as a selection criterion during the tendering process for project work at Koeberg, construction firms should ensure their OHSA safety file expand to include its HIV/AIDS policy and plan. According to Bowen *et al.* (2014c:4) existing HIV/AIDS guidelines are available for the construction industry to adopt, namely, *Specification for HIV/AIDS Awareness* (Construction Industry Development Board (CIDB), 2003), the *HIV/AIDS Awareness Programme* (DPW, 2004), and the *Code of Practice on HIV/AIDS and the World of Work: Guidelines for the Construction Sector* (ILO, 2008). After the tender has been awarded to a construction firm, their newly adopted HIV/AIDS programme can be monitored using the Koeberg`s existing SHEQ (Safety, Health, Environment and Quality) programme – *inter alia*, monitoring statistics on HIV/AIDS awareness training, informing employees of HIV transmission prevention measures, explaining the benefits of being tested for HIV and treatment regimes, as well as talks by people openly living with HIV.
This requirement will ensure that construction firms are consciously making an effort to address or at the very least acknowledge the existence of HIV/AIDS in the workplace and its impact on their operations. As a consequence, management from these construction firms are likely to be more inclined to support and encourage contract construction workers to use the existing Koeberg HIV/AIDS intervention programmes.

Secondly, to reduce the overall stigma associated with HIV/AIDS and the fear of discrimination at Koeberg; the Wellness manager recommended the following:

1. Koeberg Senior Management should recognise that collectively employees' health impacts the plant`s productivity. Senior management should support the HIV/AIDS intervention programmes and participate in the marketing of the programme. For example, senior management staff could be photographed while being tested using the HIV/AIDS intervention programme;

2. Reinstitute the HIV/AIDS tool kit`s original purpose, namely, to involve departmental managers, as originally intended, to administer the tool kit to support staff who disclosed their HIV-positive status and educate staff to remain HIV-negative. Currently, secretaries have been delegated this function and since then almost no staff have come forward to disclose their status;

3. Peer educators should be supported by their respective departmental managers. Peer educators are voluntary offering their time; however managers are reluctant to release them from their roles and allow them time for HIV/AIDS peer educators training. As a result, there are only 22 Koeberg employees volunteering their time as peer educators to service 3373 Koeberg employees. This is well below the international best practice of one peer educator per 50 employees (Eskom, 2010i). In order to increase the number of volunteers for the peer educators programme and gain the support from the departmental managers, it is recommended to include the function of the peer educator as an incentive in the yearly performance appraisal programme.

4. Institute generic lifestyle training, in addition to the HIV/AIDS role-playing exercises discussed above, to all staff during monthly SHEQ sessions, regardless of HIV status, such as how to deal with stress, how to cope with a chronic disease, and financial and retirement planning.. This training will assist HIV-positive employees to become more skilled and better able to deal with their internalised feelings, enabling them to better cope and manage the disease. HIV-negative employees will be exposed to the perspective and the challenges people living with HIV have to contend with. This will help in sensitising persons holding stigmatised views towards HIV/AIDS, reducing their likelihood of discriminating.

Administer the quarterly HIV testing programme away from the OHSA medical centre. This study`s spatially located office/ski-cabins survey model was used in the recent HIV

testing week offered at Koeberg. As a result 158 employees accessed the testing facility during the VCT week in September 2014; compared to 91 employees wanting to be tested in June 2014.

5.9 Reflections on the research study

For the purpose of future research, confidentiality plays a pivotal role in the data collection process. Participants` fear of confidentiality was partially allayed by the spatially located office/ski-cabins. It is believed, when using the survey model i.e., VCT nurses and spatial locations, participants were not necessarily concerned about their confidentiality when filling in the questionnaire, but rather concern that the survey also required an HIV test. As a result many potential participants avoid the survey.
To eliminate this confusion, the purpose of the survey should be communicated at least a month before, clearly stating that no HIV-testing is required for the survey.

The VCT nurses in the contractors' yard indicated that lunch time was the busiest, suggesting that the contract construction workers were willing to partake in the survey but did not want to be reprimanded for leaving their worksites during working times. The Koeberg contract manager has given his permission to the construction firms to allow for this time, but this information may not have been passed on to the workers, supervisors or the construction firms leadership may not have supported or understood the purpose of this study.

The questionnaire should use colloquial language, particularly for the *isiXhosa* questionnaire. For example, for the question relating to *'genital ulcer'* use the term *'genital sore'*. The VCT nurses suggested additional questions, particularly in the demographic section. The VCT nurses suggested, by way of an example, that whether a person was divorced or not may be important information to capture – as their experience indicated that divorcees tend to be more promiscuous and often opt not to practice safe sex.

Furthermore the VCT nurses suggested that the questionnaire also allow for open ended questions. According to the VCT nurses, certain participants wanted to *'tell their (HIV/AIDS) story*'.

The lessons learned from the study will enhance the efficacy of future studies.

References

Ahwireng-Obeng, F. & Akussah, G. 2003. The impact of HIV/AIDS on African economies. (Research Paper No. 67). Africa Institute of South Africa.

Allen, R. E. 1990. The concise Oxford dictionary of current English. 8th Ed. New York, USA: Oxford University Press.

Ambert, C. 2002. Economic impact of HIV/AIDS on the construction sector: Supply side implications for housing policy. *South African Journal of Economics.* 70(7):1235-1261.

Ashforth, A. 2001. AIDS, Witchcraft and the Problem of Power in Post-Apartheid South Africa. Paper No. 10. (Unpublished).

Barac, K. & Otter, J. 2001. The financial accountability of HIV/AIDS. *Meditari Accountancy Research*. 9:1-32.

Barnett, T. & Whiteside, A. 2002. *AIDS in the Twenty First Century: Disease and Globalisation*. New York, USA: Palgrave Macmillan.

Becker, G. 1997. *Disrupted lives: How people create meaning in a chaotic world*. San Francisco and Los Angeles: University of California Press.

Bureau for Economic Research (BER). 2005. *The Impact of HIV/AIDS on Selected Business Sectors in South Africa.* Stellenbosch, South Africa.

Berglund, A. 1976. *Zulu Thought-Patterns and Symbolism*. Bloomington and Indianapolis: Indiana University Press.

Bhagwanjee, A., Petersen, I., Akintola, O. & George, G. 2008. Bridging the gap between VCT and HIV/AIDS treatment uptake: perspectives from a mining-sector workplace in South Africa. *African Journal of AIDS Research.* 7(3):271-279.

Bollinger, L. & Stover, J. 1999. The Economic Impact of AIDS in South Africa. *The Policy Project*. Available: www.policyproject.com/byTopic.cfm/HIV [2005 July 26].

Bowen, P., Cattell, K., Edwards, P. J. & Marks, J. 2010. Perceptions of HIV/AIDS policies and treatment programmes by Western Cape construction firms. *Construction Management and Economics*. 28(9):997-1006.

Bowen, P., Edwards, P., Simbayi, L. & Cattell, K. 2013. HIV/AIDS interventions by construction firms in the Western Cape, South Africa: a thematic analysis of qualitative survey data. *International Journal of Construction Management*. 13(4):11-33.

Bowen, P., Govender, R., Edwards, P.J., Cattell, K. & Street, A. 2014a. Factors determining construction workers' prejudice towards and discrimination against HIV+ persons. *Journal of Construction Engineering and Management.*

Bowen, P., Govender, R., Edwards, P. J., & Cattell, K. 2014b. An integrated model of HIV/AIDS testing behaviour in the construction industry. *Construction Management and Economics*. DOI:10.1080/01446193.2014.958509

Bowen, P., Allen, Y., Edwards, P., Cattell, K., & Simbayi, L. 2014c. Guidelines for effective workplace HIV/AIDS intervention management by construction firms. *Construction Management and Economics*. 32(4):362-381. DOI:10.1080/01446193.2014.883080

Bowling, A. 2005. Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health.* 27(3):281–291.

BrainyQuote.com, Xplore Inc. 2013. *Mahatma Gandhi Quotes*. Available: http://www.brainyquote.com/quotes/authors/m/mahatma_gandhi.html [2013 November 28].

Bryman, A. 1988. Contemporary Social Research:18. General Editor Martin Bulmer. *Quantity and Quality in Social Research*. Routledge. London and New York.

Campbell, C., Foulis, C. A., Maimane, S. & Sibiya, Z. 2005. “I have an Evil Child at My house": Stigma and HIV/AIDS management in a South African Community. *American Journal of Public Health*. 95(5):808-815.

Charmaz, K. 1991. *Good days, bad days: The self in chronic illness and time*. New Brunswick. New Jersey: Rutgers University Press.

Chesney, M. & Smith, A. 1999. Critical delays in testing and care: The potential role of stigma. *American Behavioral Scientist*. 42: 1162-1174.

Cloete, A., Simbayi, L.C., Kalichman, S.C., Strebel, A. & Henda, N. 2008. Stigma and discrimination experiences of HIV-positive men who have sex with men in Cape Town, South Africa. *AIDS Care*. 20(9):1105-1110.

Coleman. 2103. *Two Decades of Freedom. What South Africa Is Doing With IT, And What Now Needs To Be Done*. Goldman Sachs International, South African Office an Investment Banking Division, Sub-Saharan Africa. 1-70. Available: http://www.goldmansachs.com/our-thinking/focus-on/growth-markets/colin-coleman/20-yrs-of-freedom.pdf. [2013 November 11].

Cohen, J. W. 1988. *Statistical power analysis for the behavioural sciences*. 2nd Ed. Hilldale, NL: Lawrence Erlbaum Associates.

Construction Industry Development Board (CIDB). 2003. *Specification for HIV/AIDS Awareness*. Construction Industry Development Board, Pretoria, June.

Construction Industry Development Board (CIDB). 2004. *SA Construction Industry: Status Report 2004, synthesis review on the South African construction industry and its development*, CIDB Discussion Document. Available: http://www.cidb.org.za/documents/kc/cidb_publications/ind_reps_other/ind_reps_status_report_2004.pdf. [2014 February 05].

Creswell, J.W. 2009. Research Design. Qualitative, Quantitative, and Mixed Methods Approaches. 3rd Ed. Sage Publications. London.

Crocker, J., Major, B. & Steele, C. 1998. Social stigma. In The Handbook of Social Psychology, ed. D T Gilbert, S T Fiske,. Boston. M A: McGraw-Hill.

Deacon, H., Uys, L. & Mohlahlane, R. 2009. HIV and stigma in South Africa. In *HIV/AIDS in South Africa 25 Years On: Psychological Perspectives* (Eds. P. Rohleder, L. Swartz, S.C. Kalichman, and L.C. Simbayi), Springer, New York, Chapter 8:105-120.

Department of Health, Directorate of Health Systems Research and Epidemiology. 2001. Summary Report: National HIV Sero-prevalence Survey of Women Attending Ante-Natal Clinics in South Africa.

Department of Public Works (DPW). 2004. *HIV/AIDS Awareness Programme: Training Manual*. Pretoria: Department of Public Works. Available: http://www.publicworks.gov.za/PDFs/consultants_docs/HIVAIDS_TRAINING_MANUAL.PDF [2013, July 12].

Department of the Presidency: National Planning Commission (NPC). 2011. *Our future – make it work. National Development Plan 2030: Executive Summary*. Pretoria: Department of the Presidency. Available: http://www.npconline.co.za/MediaLib/Downloads/Downloads/Executive%20Summary-NDP%202030%20-%20Our%20future%20-%20make%20it%20work.pdf. [2013 July 15].

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Devine, P. G., Plant, E. A. & Harrison, K. 1999. The problem of us versus them and Aids stigma. *American Behaviour Science*. 42:1212–1228.

Dlamini, P. S., Wantland, D., Makoae, L. N., Chirwa, M., Kohi, T. W, Greeff, M. 2007. Verbal and physical abuse and neglect as manifestations of HIV/AIDS stigma in five African countries. *Public Health Nursing*. 24(5):389-399.

Douaihy, A. & Singh, N. 2001. Factors affecting quality of life in patients with HIV infection. *AIDS Reader*. 11(9):450-4, 460-1, 475.

Duffy, L. 2005. Suffering, Shame, and Silence: The Stigma of HIV/AIDS. *Journal of the association of nurses in AIDS care*. 16:13-20.

Dunn, L. B., Green Hammond, K. A., & Roberts, L. W. 2009. Delaying Care, Avoiding Stigma: Residents' Attitudes Toward Obtaining Personal Health Care. *Academic Medicine*. 84(2): 242-250.

Ellis, L. L., Smit, B.W. & Laubscher, P. 2003. The macroeconomic impact of HIV/AIDS in South Africa. *Journal for Studies in Economics and Econometrics*. 27(2): 1–28.

Ellis, L. L. 2006. The economic impact of HIV/AIDS on small, medium and large enterprises. *South African Journal of Economics*. 74(4):682-701.

Eskom Holdings SOC Limited. 2013a. New Build Programme: Build Programme in South Africa (Background). *Eskom*. 2013. Available: http://www.eskom.co.za/c/21/new-build/ [2013 August 07].

Eskom Holdings SOC Limited. 2013b. About ECSF (Eskom & Construction Services Forum. *Eskom*. 2013. Available: http://www.eskom.co.za/c/article/294/about-ecsf-eskom-construction-services-forum/ [2013 August 07].

Eskom Holdings SOC Limited. 2013c. Medupi Power Station Project. *Eskom*. 2013. Available: http://www.eskom.co.za/c/article/1854/home/ [2013 August 07].

Eskom Holdings SOC Limited. 2013d. Kusile Power Station Project. *Eskom*. 2013. Available: http://www.eskom.co.za/c/article/58/kusile-power-station/ [2013 August 07].

Eskom Holdings SOC Limited. 2013e. Medupi Legacy Programme. *Eskom*. 2013. Available: http://www.eskom.co.za/c/article/1849/medupi-legacy-programme/ [2013 August 07].

Eskom Holdings SOC Limited. 2013f. Legacy Programme - Socio-economic development. *Eskom*. 2013. Available: http://www.eskom.co.za/c/article/1853/legacy-programme-socio-economic-development/ [2013 August 07].

Eskom Holdings SOC Limited. 2011g. Eskom Factor Report 2011- Economic growth engine. *Eskom.* 2014. Available: http://www.eskomfactor.co.za/eskom-factor-growth.php [2014 January 31].

Eskom Holdings SOC Limited. 2013h. MEDIA STATEMENT Monday, 08 July 2013: Eskom update on its new build programme. *Eskom.* 2013. Available: http://www.eskom.co.za/OurCompany/MediaRoom/Documents/NewBuildupdate.pdf [2014 January 24].

Eskom Holdings SOC Limited. 2010i. 32-1122: HIV AIDS in the workplace policy. *Eskom.* 2013. Johannesburg.

Evans, J. & Wolmarans, R. 2006. *Timeline of the Jacob Zuma rape trial*. Available: http://mg.co.za/article/2006-03-21-timeline-of-the-jacob-zuma-rape-trial_ [2013 December 19].

Evian, C., Fox, M., MacLeod, W., Slotow, S. J. & Rosen, S. 2004. Prevalence of HIV in workforces in Southern Africa, 2000-2001. *South African Medical Journal.* 94(2):125-130.

Farmer, P. 1990. Sending sickness, sorcery, politics and changing concepts of AIDS in rural Haiti. *Medical Anthropological Quarterly*. 4 (l):6-27.

Field, A. P. 2005. Discovering statistics using SPSS . 2nd Ed. Sage. London.

Fourie, P. & Schonteich, M. 2002. Die, the beloved countries: human security and HIV/AIDS in Africa. *Politeia*. 21(2):6–30.

Frank, A. 1995. *The wounded storyteller: Body, illness, and ethics*. Chicago. Chicago University Press.

George, G., 2006. Workplace ART programmes: Why do companies invest in them and are they working? *African Journal of AIDS Research.* 5(2):179-188.

Gilmore, N. & Somerville, M.A. 1994. Stigmatization, scapegoating and discrimination in sexually transmitted diseases, overcoming 'them' and 'us'. *Social Science and Medicine*. 39: 1339-1358.

Goffman, E. 1963. *Stigma: Notes on the Management of Spoiled Identity*. Englewood Cliffs, NJ: Prentice Hall.

Goldin, C. S. 1994. Stigmatization and AIDS, critical issues in public health. *Social Science and Medicine*. 39:1359-1366.

Goudge, J., Ngoma, B., Manderson, L. & Schneider, H. 2009. Stigma, identity and resistance among people living with HIV in South Africa. *Journal of Social Aspects of HIV/AIDS.* 6(3). 94-104.

Green, G. 1995. Attitudes towards people with HIV: are they as stigmatizing as people with HIV perceive them to be? *Social Science and Medicine*. 4(4):557-568.

Grundlingh, L. 2001. Government responses to HIV/AIDS in South Africa as reported in the media, 1983–1994. *South African Historical Journal.* 45:124–153.

Haupt, T. C. 2001. The performance approach to construction worker safety and health. Ph.D. Dissertation. University of Florida.

Haupt, T. C & Smallwood, J. 2004. HIV and AIDS in SA construction: attitudes and perceptions of workers. *Journal of Construction Research*. 5(2):311-327.

Haupt, T. C., Munshi, M. & Smallwood, J. 2005. HIV and AIDS in South Africa construction: is age nothing but a number? *Construction Management and Economics*. 23(1):107-120.

Health and Development Africa (Pty) Ltd. 2012. *Global AIDS Response Progress Report 2012*. Department of Health and the Research, Monitoring and Evaluation Technical Task Team of the South African National AIDS Council. Available: http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_ZA_Narrative_Report.pdf. [2014 January 22].

Hawarden, V. 2006. The response of SME manufacters to the HIV/AIDS crisis. MBA Thesis. University of Pretoria.

Hutchinson, P. L. & Mahlalela, X. 2006. Utilization of voluntary counselling and testing services in the Eastern Cape, South Africa. *AIDS Care*. 18:446-455.

Huysamen, G. K. 2001. *Methodology for the social and behavioural sciences*. Oxford: Oxford University Press

Ingstad, B. 1990. The cultural construction of AIDS and its consequences for prevention in Botswana. *Medical Anthropobgy Quarterly*. 4:28-40.

Insideout Research. 2003. Siyam`kela: A report of the fieldwork leading to the development of HIV/AIDS stigma indicators and guidelines. A research report. *Insideout Research*. 2013. Available: http://www.policyproject.com/pubs/countryreports/SA_Siyam_fieldwork.pdf [2013 September 02].

International Centre for Research on Women (ICRW). 2007. *Towards a Stronger Response to HIV and AIDS: Challenging Stigma.* Internal paper for Department for International Development (DFID), Washington DC.

International Communication Association. 2005. Talking about HIV/ AIDS: Language and discourse on HIV/AIDS in Africa. Conference Papers.

International Labour Office (ILO). 2008. *HIV/AIDS and the construction guidelines.* Sectoral Activities Branch, ILO Programme on HIV/AIDS and the World of Work. Geneva. 1-20.

International Organization for Migration (IOM). 2010. Regional Assessment on HIV-Prevention Needs of Migrants and Mobile Populations in Southern Africa. *Construction Sector Report.* USAID.

James, P. M., Braam Rust, A. A. & Kingma, L. 2012. The well-being of workers in the South African construction industry: a model for employment assistance. *African Journal of Business Management*, 6(4):1553–8.

Jones, E., Farina, A., Hastorf, A., Markus, H., Miller, D. T. & Scott R. 1984. *Social Stigma: The Psychology of Marked Relationships*. New York: Freeman.

Joint United Nations Programme on HIV/AIDS (UNAIDS) & World Health Organization (WHO). 1998. Epidemiological Fact Sheet on HIV/AIDS and Sexually Transmitted Diseases: South Africa. Geneva. *UNAIDS/WHO*.

Joint United Nations Programme on HIV/AIDS. 2012a. AIDS info. *UNAIDS*. Available: http://www.unaids.org/en/dataanalysis/datatools/aidsinfo/. [2013 December18].

Joint United Nations Programme on HIV/AIDS. 2012b. South Africa. *UNAIDS* Available: http://www.unaids.org/en/regionscountries/countries/southafrica/ [2013 December 11].

Kalichman, S. & Simbayi, L. 2003. HIV testing attitudes, AIDS stigma, and voluntary HIV counselling and testing in a black township in Cape Town, South Africa. *Sexually transmitted infections*. 79 (6):442-447.

Kalichman, S. C. & Simbayi, L. 2004. Traditional beliefs about the cause of AIDS and AIDS-related stigma in South Africa. *AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV*.16 (5):572-580. DOI:10.1080/09540120410001716360

Kalichman, S. C., Simbayi, L. C., Jooste, S., Toefy, Y., Cain, D., Cherry, C., *et al*. 2005. Development of a Brief Scale to Measure AIDS-Related Stigma in South Africa. *AIDS and Behavior*. 9(2):135-143.

Kalichman, S. C, Simbayi, L. C, Cloete, A. Mthembu, P. P, Mkhonta, R. N. & Ginindza, T. 2009. Measuring AIDS stigmas in people living with HIV/AIDS: the Internalized AIDS-Related Stigma Scale. *AIDS Care*. 21 (1):87-93.

Kane, E. & O`Reilly-de Brun, M. 2001. *Doing Your Own Research*. Marion Boyars Publishers Ltd. London.

Kilewo, C., Massawe, A., Lyamuya, E., Semali, I., Kalokola, F., Urassa, E., Giattas, M., Temu, F., Karlsson, K., Mhalu, F. & Biberfield, G. 2001. HIV counselling and testing of pregnant women in sub-Saharan Africa: experiences from a study on prevention of mother-to-child HIV-1 transmission in Dar es Salaam, Tanzania. *Journal of AIDS*. 28 (5): 458-462.

Kleinman, A. 1988. *The illness narratives: Suffering, healing, and the human condition*. New York: Basic Books.

Kleinman, A., Wang, W. Z., Li, S. C., Cheng, X. M., Dai, X. Y., Li, K. T. & Kleinman, J. 1995. The social course of epilepsy: chronic illness as social experience in interior China. *Social Science and Medicine*. 40:1319–30.

Kline, R. B. 2005. Principles and practice of structural equation modeling. 2nd ed. New York: Guildford.

Kralik, D., Koch, T., Price, K., & Howard, N. 2004. Chronic illness self-management: taking action to create order. *Journal of Clinical Nursing*. 13(2):259-267.

Lesedi Nuclear Services. 2013. *Local Consortium formed by Group Five and Lesedi Nuclear Services Secures Strategic Nuclear Construction Contract*. Available: http://www.lesedins.co.za/ptr-tanks/# [2014 January 16].

Lie, G. T. & Biswalo, P. M. 1996. HIV-positive patient's choice of a significant other to be informed about the HIV-test result, findings from an HIV/AIDS counselling programme in the regional hospitals of Arusha and Kilimanjaro, Tanzania. *A I D S Care*. 8:285-296.

Link, B. G. & Phelan, J. C. 2001. Conceptualizing Stigma. *Annual Reviews - Sociology*.27:363-385.

Lwihula, G., Dahlgren, L., Killcwo, J. & Sandsuom, A. 1993. AIDS epidemic in Kagera Region, Tanzania-the experience of local people. *AIDS Care*. 5:347-357.

MacQuarrie, K., Nyblade. L., Philip. F., Kwesigabo, G. & Mbwambo, J. 2006. Gender Differences and the Experience of Stigma (Abstract No. THPE0618). *AIDS 2006, XVI International AIDS Conference.* Toronto, Canada.

MacQuarrie, K., Eckhaus, T. & Nyblade, L. 2009. HIV-related Stigma and Discrimination: A Summary of Recent Literature. August 2009. Report prepared by and submitted by the International Center for Research on Women (ICRW) to UNAIDS. Funding by *UNAIDS*.

Malan, M. 2013. *Mandela and the belated rise of an Aids activist*. Available: http://mg.co.za/article/2013-12-13-the-belated-rise-of-an-aids-activist [2013 December 13].

Malcolm, A., Aggleton, P., Bronfman, M., Galvao, J., Mane, P. & Verrall, J. 1998. HIV-related stigmatisation and discrimination: Its forms and contexts. *Critical Public Health*. 8(4):347-370.

Mane, P. & Maitra, S. A. 1992. *A I D S Prevention*, The Socio-Cultural Context in India. Bombay. Tata Institute of Social Sciences.

Maughan-Brown, B. G. 2006. Attitudes towards people with HIV/AIDS: Stigma and its determinants amongst young adults in Cape Town, South Africa. *South African Review of Sociology*. 37(2):165-188.

McGrath, J. W. 1992. The biological impact of social responses to the AIDS epidemic. *Medical Anthropology*. 15: 63-79.

McGrath, J. W., Ankrah, E. M., Schumman, D. A., Nkumbi, S. & Lubega, M. 1993. AIDS and the urban family, its impact in Kampala, Uganda. *A I D S Care*. 5:55-70.

Meintjies, I., Bowen, P. & Root, D. 2007. HIV/AIDS in the South African construction industry: understanding the HIV/AIDS discourse for a sector specific response. *Construction Management and Economics*. 25:255-266.

Millennium Development Goals (MDG). 2009. Goal 6, Combat HIV/AIDS, malaria and other diseases. *Methodology Workshop*. 19-20 November 2009. Cape Town. Available: http://www.statssa.gov.za/nss/Goal_Reports/GOAL%206-COMBAT%20HIV%20AIDS%20MALARIA%20AND%20OTHER%20DISEASES.pdf [2014 January 22].

Moodley, N. 2005. Absenteeism costs R12bn a year, with up to R2.2bn due to Aids. *Business Report*. 8 February. Available: www.busrep.co.za [2005 July 14].

Moss, W., Bentley, M., Maman, S., Ayuko, D., Egessah, O., Sweat, M., Nyarang`O, P., Zenilman, J., Chemtai, A. & Halsey, N. 1999. Foundations for effective strategies to control sexually transmitted infections: voices from rural Kenya. *AIDS Care*. 11:95-113.

Naidoo, P. 2007. The study of Knowledge, Attitude and Practices (KAP) with regards to HIV/AIDS within Organisation X. MBA. Short Dissertation. University of Johannesburg.

National AIDS Manual. 2012. NAM Aidsmap, HIV, stigma & discrimination. *NAM*. 2013. Available: http://www.aidsmap.com/ [2013 September 02].

National Key Point Act, No. 102 of 1980. 1980. Available: http://saflii.org/za/legis/consol_reg/nkpa102o1980rangnr1731667/ [2014, October 31].

Occupational Health and Safety Act, No. 85 of 1993. Construction Regulations. 2003. *Government Notice*. Department of Labour, 2003. Available: http://www.labour.gov.za/DOL/legislation/regulations/occupational-health-and-safety/regulation-ohs-construction-regulations-2003 [2013 August 17].

Parker, R. & Aggleton, P. 2003. HIV and AIDS-related stigma and discrimination: A conceptual framework and implications for action. *Social Science and Medicine*. 57:1324.

Pallant, J. 2013. *SPSS Survival Manual. A step by step guide to data analysis using IBM SPSS*. 5th Ed. McGraw Hill. Berkshire.

Peltzer, K., Matseke, G., Mzolo, T. & Majaja, M. 2009. Determinants of knowledge of HIV status in South Africa: results from a population-based HIV survey. *BMC Public Health*, Vol. 9 (1):174.

Pitpitan, E.V., Kalichman, S.C., Eaton, L. A., Cain, D., Sikkema, K. J., Skinner, D., Watt, M. H. & Pieterse, D. 2012. AIDS-Related Stigma, HIV Testing, and Transmission Risk Among Patrons of Informal Drinking Places in Cape Town, South Africa. *The Society of Behavioral Medicine*. 43:362–371. DOI 10.1007/s12160-012-9346-9

Prohaska, T. R., Albrecht, G., Levy, J. A., Sugrue, N. & Kim, J. H. 1990. Determinants of Self-Perceived Risk for AIDS. *Journal of Health and Social Behavior.* 31:384-394.

Project Management Institute (PMI). 2013. A guide to the Project Management body of knowledge (PMBOK® Guide). 5th Edition. Pennsylvania, USA: *Project Management Institute (Inc).*

Punch, K. F. 2005. Introduction to Social Research: Quantitative and Qualitative Approaches. Sage Publications Ltd, London.

Quah, S.R. 1998. Ethnicity, HIV/AIDS prevention and public health education. *International Journal of Sociology and Social Policy*. 18(7/8):1-25.

Redpeg. 2005. *The CHIETA National HIV/AIDS Workplace Programme*. CHIETA.

Renzetti, C. M. & Lee, R. M. 1993. *Researching sensitive topics*. Sage Publications.

Ribeiro, M.F. 2009. An evaluation of skills development in a sample of metal and engineering firms in Gauteng. MSocSc Thesis. University of Cape Town.

Robins, S. 2008. Sexual Politics and the Zuma Rape Trial. *Journal of Southern African Studies*. 34(2):411-427. DOI: 10.1080/03057070802038066.

Sayce, L. 1998. Stigma, discrimination and social exclusion: what's in a word. *Journal of Mental Health*. 7:331–343.

Schneider, J. W. 1988. Disability as moral experience: epilepsy and self in routine relationships. *Journal of Social Issues*. 44:63–78.

Scott-Sheldon, L. A., Carey, M. P., Carey, K. B., Cain, D., Simbayi, L. C., Mehlomakhulu, V. & Kalichman, S. C. 2013. HIV testing is associated with increased knowledge and reductions in sexual risk behaviours among men in Cape Town, South Africa. *African Journal of AIDS Research.*12(4):195-201. DOI: 10.2989/16085906.2013.863219

Sheckels, T. F. 2009. The Rhetorical Success of Thabo Mbeki's 1996 "I Am an African" Address. *Communication Quarterly*. 57(3):319-333.

Shisana, O. & Simbayi, L. 2002. Nelson Mandela/HSRC Study of HIV/AIDS: South African *National HIV Prevalence, Behavioural Risks and Mass Media, Household Survey 2002*. Human Sciences Research Council.

Shisana, O., Rehle, T., Simbayi, L. C., Zuma, K., Jooste, S., Pillay van Wyk, V., Mbelle, N., Van Zyl, J., Parker, W., Zungu, N. P., Pezi, S. & the SABSSM III Implementation Team. 2009. *South African national HIV prevalence, incidence, behaviour and communication survey 2008: A turning tide among teenagers?* Cape Town: HSRC Press.

Shisana, O., Rehle, T., Simbayi, L., Zuma, K., Jooste, S., Zungu, N., Labadarios, D., Onoya, D. & *et al*. 2014. *South African National HIV Prevalence, Incidence and Behaviour Survey, 2012*. Cape Town, South Africa: HSRC Press.1-195.

Simbayi, L., Strebel, A., Andipatin, M., Msomi, N., Potgieter, C., Ratele, K., Shefer, T. & Wilson, T. 1999. *Sexually transmitted diseases in the public sector in South Africa: perceptions, sexual behaviour, health care-seeking behaviour and quality of care.* National Department of Health's Directorate of Health Systems Research and Epidemiology in conjunction with the Directorate of HIV/AIDS and STDs through the Medical Research Council.

Simbayi, L. C., Kalichman, S., Strebel. A., Cloete. A., Henda, N. & Mqeketo, A. 2007. Internalized stigma, discrimination, and depression among men and women living with HIV/AIDS in Cape Town, South Africa. *Social Science and Medicine*. 64(9): 1823-1831.

Sontag, S. 1989. *A I D S and its Metaphors*. New York, Farrer, Straus & Giroux.

Spark. 2007. How can we tackle stigma and discrimination through effective communication?: Back ground material. Panos London / Healthlink Worldwide discussion

Stafford, M. C. & Scott, R. R. 1986. Stigma deviance and social control: some conceptual issues. In The Dilemma of Difference, ed. S C Ainlay, G Becker, L M Coleman. New York: Plenum.

Statistics SA. 2013a. *Construction industry, 2011-Report No. 50-02-01 (2011).* Stats SA Library Cataloguing-in-Publication (CIP) Data. Statistics South Africa. Pretoria: Available: www.statssa.gov.za/publications/Report-50-02-01/Report-50-02-012011.pdf [2013 July 31].

Statistics SA. 2013b. *Mid-year population estimates. Statistical release P0302.* Available: http://beta2.statssa.gov.za/publications/P0302/P03022013.pdf [2014 January 14].

Statistics SA. 2014. *Census 2011 Provincial Profile: Western Cape*. Statistics South Africa. Pretoria. Available: http://www.statssa.gov.za/publications/Report-03-01-70/Report-03-01-702011.pdf [2015 April 09].

Strebal, A. 1996. Prevention implications of AIDS discourses among South African women. *AIDS Education Previews*. 8(4):352-374.

Tabachnick, B. G & Fidell, L. S. 2013. *Using multivariate statistics*. 6th Ed. Boston: Pearson Education.

The Openly Positive Trust. 2007. Clouds move: Positive language guidelines.

The Western Cape Destination Marketing, Investment and Trade Promotion Agency-South Africa. 2012. *Western Cape Destination Fact Sheet, Wesgro*, Available:

http://www.westerncape.gov.za/assets/departments/premier/2012.06_western_cape_overview1_0.pdf [2014 August 12].

The South African National AIDS Council. 2011. *National Strategic Plan on HIV, STIs and TB 2012-2016.* Available: http://www.sahivsoc.org/upload/documents/National_Strategic_Plan_2012.pdf [2013 June 13].

United Nations Educational, Scientific and Cultural Organization. Education Sector: Division for the Coordination of UN Priorities in Education: Section on HIV and AIDS. 2006. *UNESCO Guidelines on Language and Content in HIV- and AIDS - Related Materials*. France: United Nations Educational, Scientific and Cultural Organization.

Van der Vliet, V. 2004. South Africa divided against AIDS: a crisis in leadership, in Kauffman, K.D. and Lindauer, D.L. (eds) Aids and South Africa: The Social Expression of a Pandemic. New York, USA: Palgrave Macmillan.

Venkatesh, K., Madiba, P., De Bruyn, G., Lurie, M., Coates, T. & Gray, G. 2011. Who gets tested for HIV in a South African urban township? Implications for test and treat and gender-based prevention interventions. *Journal of Acquired Immune Deficiency Syndromes.* 56 (2):151-165.

Weinel, M. 2005. AIDS policy in South Africa: between denial and action. *Working Paper: Research Project—Global Health Governance*. German Overseas Institute.Hamburg. Available www.duei.de/ghg [2005 September 29].

Wetherall, M., Taylor, S., & Yates, J, S. 2001. The prejudiced views, results in punitive actions taken against the marginalised group, in this case people living with HIV. Discourse as data. London: Sage.

Wild. S. 2014. Gates Foundation, SA link to combat HIV, TB, malaria. *Mail & Guardian. 21 January.* Available: http://mg.co.za/article/2014-01-21-00-gates-foundation-sa-link-to-combat-hiv-tb-malaria [2014 January 22].

Whiteside, A. & Sunter, C. 2000. AIDS: *The Challenge for South Africa*. Cape Town, South Africa: Human & Rousseau Tafelberg.

Wingood, G. M., Diclemente, R. J., Mikhail , I., McCree, D. H., Davies, S. L, Hardin, J.W, Peterson, S. H, Hook, E. W., & Saag, M. 2007. HIV Discrimination and the Health of Women Living with HIV. *Women & Health*. 46(2-3): 99-112.

Wolf, A. 2002. War, Movement and Food: the use of metaphors in discourses about AIDS. Paper presented at Conference on Language, literature and Discourse of HIV/AIDS. Gaborone, Botswana Africa. Available: http://bwenglish.tripod.com/conf/abstract.htm#Kierkegaardian-Pointer-on--Communication-for-the-Prevention-of-HIV-AIDS [2003 September 9].

Appendix A

PLACE NEXT ID LABEL IN SEQUENCE HERE

HIV/AIDS Stigma Questionnaire

THIS SURVEY IS COMPLETELY CONFIDENTIAL. PLEASE DO NOT PUT YOUR NAME ANYWHERE ON IT.

The information in this questionnaire is not given to anyone. The data will only
be used to gain more knowledge about issues concerning HIV/AIDS.

Please answer all questions as honestly as you can.

Try not to skip any questions.

You may stop doing the survey at anytime without penalty.

Please give the completed survey back to the Assistant.

Date:	**TIME - Start: Finish:**
Interviewer's Name:	**Interviewer's Signature:**

SECTION A: ABOUT YOU

Please fill in or circle ONE appropriate answer for each question below.						
A1.	What is your AGE in years and Date of Birth (DOB)?	**=_____ _**	**Years**	**DOB (dd/mm/yyyy) :**	…../…./….	
A2.	Which ethnic group best describes you?	**Black**	**Coloured**	**Indian**	**White**	**Other**
A3.	Are you male/female ?	**Male**	**Female**			
A4.	What is the nature of your employment ?	**Permanent**	**Temporary (Contract)**	**Casual**		
A5.	What is your marital status?	**Married**	**Not Married**	**In a long-term relationship**		
A6.	Do you have any children?	**YES**	**NO**			
A7.	What is the highest level of schooling / education you have completed?	**No schooling**	**Primary**	**Secondary**	**Tertiary**	**Post-graduate**

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SECTION B: HIV STATUS & HEALTH

Please fill in or circle ONE appropriate answer for each question below.						
B1.	How many times have you been **tested** for HIV?		**NEVER**	**1-5 times**	**6-10 times**	**More than 10 times**
B2.	Are you HIV+?		**YES (Tested)**	**NO (Tested)**	**Don't know (Tested)**	**Not Tested**
B3.	If you are HIV+, when did you first test HIV positive? (Please write in the date)		**_____ Month**	**_____ Year**		
B4.	If you are HIV+, are you currently taking antiretroviral (ARV) medications?		**YES**	**NO**		
B5.	7. If you are HIV+, how many times have you stayed **overnight** in a hospital due to an HIV or AIDS related illness?	**Never**	**Once**	**Twice**	**3 times**	**4 or more times**
B6.	Which answer best describes your current health?	**Excellent**	**Very Good**	**Good**	**Poor**	**Very Poor**
B7.	Have you ever been diagnosed with an STD such as syphilis, gonorrhoea, or herpes?			**YES**	**NO**	
B8.	Have you ever had a genital ulcer?			**YES**	**NO**	

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B9.	**Over the past <u>three</u> months, have you experienced any of the following medical conditions? (CIRCLE the appropriate YES / NO answer)**			
	(a) Persistent shortness of breath	YES	NO	
	(b) A persistent cough	YES	NO	
	(c) Oral lesions / sores	YES	NO	
	(d) Recurring fever	YES	NO	
	(e) Persistent or severe diarrhoea	YES	NO	
	(f) Difficult or painful swallowing	YES	NO	
	(g) Nausea, stomach cramps, vomiting	YES	NO	
	(h) Persistent or severe headaches	YES	NO	
	(i) Seizures and lack of co-ordination	YES	NO	
	(j) Mental symptoms, such as confusion and forgetfulness	YES	NO	
	(k) Loss of vision	YES	NO	
	(l) Excessive or sudden loss of weight	YES	NO	
	(m) Extreme fatigue	YES	NO	
	(n) Coma	YES	NO	

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SECTION C: SEX & LIFESTYLE

For the following questions, CIRCLE the appropriate YES / NO answer (Remember that your answers are confidential).			
C1.	Have you had two or more sex partners in the last 3 months?	YES	NO
C2.	Have you ever received money, housing, gifts or food for sex?	YES	NO
C3	Have you ever given money, housing, gifts or food for sex?	YES	NO
C4.	Have you ever injected drugs into yourself?	YES	N0
C5.	Have you ever had a sex partner who is an injection drug-user?	YES	NO
C6.	Have you ever used a condom?	YES	NO
C7.	Did you use a condom the last time you had sex?	YES	NO
C8.	Do you like to use a condom during sex?	YES	NO

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SECTION D: KNOWLEDGE ABOUT HIV/AIDS

Please circle ONE appropriate answer for each question:					
D1.	Do you know any people who are HIV+?	**None**	**1-2**	**3-10**	**More than 10**
D2.	Is AIDS spread by kissing?		YES	NO	Do not know
D3.	Can a person get AIDS by sharing kitchens and bathrooms with someone who has AIDS?		YES	NO	Do not know
D4.	Can you get AIDS by touching someone with AIDS?		YES	NO	Do not know
D5.	Can men give AIDS to women?		YES	NO	Do not know
D6.	Can women give AIDS to men?		YES	NO	Do not know
D7.	Is AIDS caused by spirits or supernatural forces?		YES	NO	Do not know
D8.	Must a person have many different sex partners to get AIDS?		YES	NO	Do not know
D9.	Does washing after sex help protect someone from getting AIDS?		YES	NO	Do not know
D10.	Can a pregnant woman give AIDS to her baby?		YES	NO	Do not know
D11.	Can the use of vitamins and healthy foods cure AIDS?		YES	NO	Do not know
D12.	Can a person get rid of AIDS by having sex with a virgin?		YES	NO	Do not know
D13.	Can traditional African medicines cure AIDS?		YES	NO	Do not know
D14.	Are the medications (ARVs) for treating HIV/AIDS dangerous?		YES	NO	Do not know
D15.	Is HIV the virus that causes AIDS?		YES	NO	Do not know
D16.	Is there a cure for AIDS?		YES	NO	Do not know

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SECTION E: VIEWS ABOUT HIV/AIDS

Please circle either AGREE or DISAGREE to indicate your answers to the following statements:			
E1.	Getting tested for HIV helps people feel better.	Agree	Disagree
E2.	Getting tested for HIV helps people from getting HIV.	Agree	Disagree
E3.	People in my life would leave me if I had HIV.	Agree	Disagree
E4.	People who test HIV+ should hide it from others.	Agree	Disagree
E5.	I would rather not know if I have HIV.	Agree	Disagree
E6.	I am concerned that I could get HIV.	Agree	Disagree
E7.	People who have HIV/AIDS are dirty.	Agree	Disagree
E8.	People who have HIV/AIDS are cursed.	Agree	Disagree
E9.	People who have HIV/AIDS cannot be trusted.	Agree	Disagree
E10.	People who have HIV/AIDS are like everybody else.	Agree	Disagree
E11.	People who have HIV/AIDS should be ashamed.	Agree	Disagree
E12.	People who have HIV/AIDS have nothing to feel guilty about.	Agree	Disagree
E13.	Most people become HIV+ by being weak or foolish.	Agree	Disagree
E14.	It is safe for people with HIV/AIDS to work with other people (including children).	Agree	Disagree
E15.	People with HIV/AIDS must expect some restriction on their freedom.	Agree	Disagree
E16.	A person with HIV/AIDS must have done something wrong and deserves to be punished.	Agree	Disagree
E17.	People who have HIV/AIDS should be isolated.	Agree	Disagree
E18.	I do not want to be friends with someone who has HIV/AIDS.	Agree	Disagree
E19.	People who have HIV/AIDS should not be allowed to work.	Agree	Disagree

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SECTION F: COPING WITH LIFE

The following question asks about alcohol and drug use in the past 3 months. Please CIRCLE your answers. Remember that your name is not on this questionnaire and this questionnaire cannot be linked to you in any way.

F1.	**Have you used any of the following in the past 3 months?**			
		No	**Once only**	**More than once**
	a) Alcohol	0	1	2
	b) Dagga (Cannabis)	0	1	2
	c) Tik (Crystal Methadone)	0	1	2
	d) Cocaine	0	1	2
	e) Mandrax	0	1	2
	f) Any drug injected with a needle (shot up); such as Heroin	0	1	2
	g) Any other drug	0	1	2

For each of the following statements, please circle the answer that applies most closely to you.

		Completely true	**Mostly True**	**Mostly False**	**Completely False**
F2.	If I were sick and needed someone to take me to a doctor, I would have trouble finding someone.	1	2	3	4
F3.	I feel there is no one with whom I can share my most private concerns and fears.	1	2	3	4
F4.	I feel a strong emotional bond with at least one other person.	1	2	3	4

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For each of the following statements, circle the number of days which best describes how often you felt this way during the past week (including today).

		Days in the past week			
F5.	I was bothered by things that usually do not bother me.	0	1-2	3-4	5-7
F6.	I felt that I was just as good as other people.	0	1-2	3-4	5-7
F7.	I felt depressed.	0	1-2	3-4	5-7
F8.	I thought my life had been a failure.	0	1-2	3-4	5-7
F9.	I felt fearful.	0	1-2	3-4	5-7
F10.	I felt happy.	0	1-2	3-4	5-7
F11.	I talked less than usual.	0	1-2	3-4	5-7
F12.	I felt lonely.	0	1-2	3-4	5-7
F13.	I had crying spells.	0	1-2	3-4	5-7
F14.	I felt sad.	0	1-2	3-4	5-7
F15.	I felt that people disliked me.	0	1-2	3-4	5-7

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The following questions are about people in your life. For each statement, please CIRCLE how true or false it is for you.					
		Completely True	**Mostly True**	**Mostly False**	**Completely False**
F16.	There are several people that I trust to help me solve problems.	1	2	3	4
F17.	There is no one that I feel comfortable talking to about intimate personal problems.	1	2	3	4
F18.	There really is no one who can give me an objective view on how I am handling my problems.	1	2	3	4
F19.	If I needed a place to stay for a week because of an emergency I could easily find someone who would put me up.	1	2	3	4
F20.	I feel that there is no one I can share my most private worries and fears with.	1	2	3	4
F21.	If I were sick, I could easily find someone to help me with my daily chores.	1	2	3	4
F22.	I feel a strong emotional bond with at least one other person.	1	2	3	4
F23.	There is someone I can turn to for advice about handling problems with my family.	1	2	3	4
F24.	When I need help to deal with a personal problem, I know someone I can turn to.	1	2	3	4
F25.	If I needed an emergency loan of R100, there is someone I could get it from.	1	2	3	4
F26.	I have close personal relationships that provide me with a sense of emotional security and well-being.	1	2	3	4
F27.	I lack a feeling of intimacy with another person.	1	2	3	4

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SECTION G: ANSWER THE FOLLOWING QUESTIONS ONLY IF YOU HAVE TESTED HIV+ (POSITIVE)

IF YOU ARE HIV+ Please circle either AGREE or DISAGREE / YES OR NO to indicate your answers to the following statements:			
G1.	It is difficult to tell people about my HIV infection.	Agree	Disagree
G2.	Being HIV+ makes me feel dirty.	Agree	Disagree
G3.	I feel guilty that I am HIV+.	Agree	Disagree
G4.	I am ashamed that I am HIV+.	Agree	Disagree
G5.	I sometimes feel worthless because I am HIV+.	Agree	Disagree
G6.	It is my own fault that I am HIV+.	Agree	Disagree
G7.	I hide my HIV+ status from other people.	Yes	No
G8.	I have talked about AIDS with a family member.	Yes	No
G9.	I have talked with a friend about AIDS.	Yes	No
G10.	I have been treated differently since I disclosed my HIV+ status to friends and family	Yes	No
G11.	Friends and family stopped visiting after learning that I am HIV+.	Yes	No
G12.	HIV has caused me to lose a job or housing.	Yes	No
G13.	I have experienced discrimination because of HIV.	Yes	No
G14.	I believe my family has experienced discrimination since my HIV+ status became known.	Yes	No
G15.	I believe my friends have experienced discrimination since my HIV+ status became known.	Yes	No
G16.	There are people I have not told I am HIV+ for fear of negative consequences	Yes	No

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ANSWER THE FOLLOWING QUESTIONS ONLY IF YOU HAVE TESTED HIV+ (POSITIVE)

Read each statement and CIRCLE the number to show how much you believe the statement describes you. There are no right or wrong answers.					
		Completely True	**Mostly True**	**Mostly False**	**Completely False**
G17.	If I did not know a person's HIV status I'm certain that I could decide about telling them my HIV+ status before having sex.	1	2	3	4
G18.	I'm certain that I could discuss being HIV positive with a new sex partner.	1	2	3	4
G19.	I feel confident that I could tell someone I am dating that I am HIV positive.	1	2	3	4
G20.	I'm certain that I could decide about disclosing my HIV+ status to a new sex partner even if I had been drinking.	1	2	3	4
G21.	I would rather not have sex than deal with decisions to disclose my HIV+ status.	1	2	3	4

END

Thank you for taking part in this research. We appreciate your help in our work.

Please check that you answered every question and filled out every page.

Please make sure that you have NOT put your name anywhere on the survey.

PLEASE HAND THE COMPLETED SURVEY TO THE ASSISTANT

Appendix B

University of Cape Town **Koeberg Operating Unit**

ENDORSEMENT TO CONDUCT SURVEY AT KOEBERG POWER STATION FOR:

HIV/AIDS-related stigma in the South African construction industry: the case of Eskom

The objective of the survey is to determine ***how the stigma of HIV/AIDS impacts the Eskom HIV/AIDS prevention, care & treatment programmes?***

The HSRC (*Human Science Research Council*) survey has previously been approved by the UCT ethics committee. Currently the UCT ethics committee requires Koeberg senior management to allow the survey to be conducted at the Koeberg Nuclear Power Station.

The Koeberg Wellness and Health Department representatives, namely Karla Whiley and Dr Langakazi Msengana (*Dr Snowy*), have lend their support to this survey and is prepared to utilise ICAS to conduct the survey. Similarly, Roderick Beckman, the Outage senior manager, has also endorsed the survey.

Furthermore the survey wants to determine,

- What gives rise to the stigma associated with HIV/AIDS?
- If staff know their HIV status at the Eskom construction sites?
- How knowledgeable staff is about HIV/AIDS on the Eskom construction sites?
- What are the perception and attitudes towards HIV/AIDS of management and employees at the Eskom construction sites?
- Are employees fearful of being tested for HIV at the Eskom construction sites?
- Does the perception and attitude of leadership influence employee`s perception and attitude towards HIV/AIDS?

The survey is entirely voluntary and requires the participants' consent.
They can withdraw at any time without any negative consequence or any punitive action, if the participants were to decline.

The survey is aimed to determine what actions are needed to reduce the stigma of HIV/AIDS at construction sites, to ensure workers get treatment to remain productive and continue to contribute at work.
The survey will take place at a neutral location, away from the immediate work-site.

The survey is anonymous and the information will remain private and will be strictly confidential.

Endorsement from Koeberg Nuclear Power Station Manager

I endorse this survey to be conducted in the manner described above at Koeberg Nuclear Power Station

PSM: Riedewaan Bakardien

Appendix C

EBE Faculty: Assessment of Ethics in Research Projects

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. For more info regarding the procedure of completing the form please log onto http://www.ebe.uct.ac.za/research/ethics/.
When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth year student, the Head should forward this form for approval by the Faculty EIR committee: submit to Ms Zulpha Geyer (Zulpha.Geyer@uct.ac.za; Chem Eng Building, Ph 021 650 4791).
Students must include a copy of the completed form with the thesis when it is submitted for examination.

Name of Principal Researcher/Student: **Cameron Fredericks** Department: **Construction Economics and Management**

If a Student: Degree: **MSc in Project Management (by Coursework plus Research Report)** Supervisor: **Prof. Paul Bowen**

If a Research Contract indicate source of funding/sponsorship:

Research Project Title: **HIV/AIDS-related stigma in the South African construction industry: the case of Eskom**

Overview of ethics issues in your research project:

Question 1: Is there a possibility that your research could cause harm to a third party (i.e. a person not involved in your project)?		NO
Question 2: Is your research making use of human subjects as sources of data? If your answer is YES, please complete Addendum 2.	YES	
Question 3: Does your research involve the participation of or provision of services to communities? If your answer is YES, please complete Addendum 3.		NO
Question 4: If your research is sponsored, is there any potential for conflicts of interest? If your answer is YES, please complete Addendum 4.		NO

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate.

I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

	Full name and signature	Date
Principal Researcher:	Prof. Paul Bowen	10th February 2014
Student:	Cameron Fredericks	10th February 2014 (originally 28th January 2014)

This application is approved by:

Supervisor (if applicable):	Prof. Paul Bowen	10th February 2014
HOD (or delegated nominee): Final authority for all assessments with NO to all questions and for all undergraduate research.	Prof. Keith Cattell	12th February 2014
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	A/Prof. Francois Viruly	12 February 2014

Appendix D

Eskom

Wednesday – 2 July 2014

Status of the units

Unit 1: 99.19% - 970MW **Sent out:** 930MW

Unit 2: 99.15% - 967MW **Sent out:** 927MW

Total sent out: 1857MW **Seawater temperature:** 14.9°C

Duty work controller	Duty ALARA SRPA
Avron Solomons - tel. 2553/pg 1601	Anthea Lewis - tel. 4400

Alara Station dose:

- *Actual dose for previous week: 2509µSv*
- *Total estimation for previous week: 3168µSv*

Station Priority: Nuclear Safety

Interdict against strike action

Eskom has obtained an Interdict in terms of a **Court Order,** dated Tuesday, 1 July 2014, against any strike action by its employees. Please note that any employee who contravenes the Court Order will be committing an offence. Employees who have embarked on industrial action will be disciplined. We urge employees to respect the Court Order.

Mongezi Ntsokolo, Group Executive Human Resources (Acting)

Quality theme: July 2014

Quality may mean different things to different people. However, in general, this is defined as the degree to which something meets or exceeds the expectations of your customer or superior. Thus, something is declared to be of high quality when it is done right the first time, with no rework or wastage. In order to achieve Quality, good attitude and values need to be practised. To access the Quality theme for the month of July please click here

Station Priority: Nuclear Safety, **Industrial Safety,** Outage Performance **and** Plant Reliability

Who's where?

- **Noxolo Kunene** is now working at the Maintenance Contracts Group and can be contacted at tel. 021 522 2191.
- **Penny Engelbrecht (EMS)** number has changed to tel. 4371.

Canteen and catering services

A **new supplier** is rendering the catering service as from 1 July 2014. On 2 and 3 July 2014 a meal of the day will be served to enable the new supplier to settle in properly. As from Monday, 7 July 2014, the full service will be back to normal. Please contact Rita Steyn at tel. 5463 should you have any queries.

University of Cape Town and Koeberg HIV/AIDS Stigma Survey

South Africa has one of the highest HIV infection rates in the world. Relating these figures to the Western Cape, the province was shown to have an infection rate of 18.5 % amongst the 15-49 years age group. It means that almost 1 out of 5 people are infected with HIV and may be reluctant to know their HIV status.

What would be the reason for people to be fearful of knowing their HIV status and starting ARV treatment? It is called stigma.

People are fearful and embarrassed to be linked to anything related to HIV/AIDS, because of the perceived shame and disgrace associated to HIV/AIDS.

This collective negative perception of HIV/AIDS results in various forms of discrimination, such as families being embarrassed and hiding loved-ones from their communities, using unsympathetic language and gossiping.

UCT and Koeberg are collaborating to understand the knowledge and views Koeberg staff have of HIV/AIDS by means of a survey using a self-administered questionnaire developed by the Human Science Research Council.

How will the survey be conducted?

- Only questions will be asked and no HIV or other testing will be done.
- ICAS nurses (non-Koeberg nurses) will conduct the survey in private ski-cabins and offices.
- Questionnaire ranges between 15 minutes to 35 minutes.
- One questionnaire is conducted at a time (available in English, Afrikaans and Xhosa).
- The questionnaire is confidential and anonymous - if any names are found on the questionnaire, it will to be destroyed.
- The survey will commence on 7 July and will end on 10 July 2014 between 09:00 to 15:00.
- A small gift will be provided after completion of the questionnaire.

Location of private ski-cabins and office

- Two at the contractor's yard – opposite the SOC building
  Survey will be conducted in Xhosa, English and Afrikaans
- One behind CAS building – OCC Ski-cabin
  Survey will be conducted in English and Afrikaans
- One at MAB (Room 21)
  Survey will be conducted in English and Afrikaans.

For more information contact Shameema Maged at tel. 4987.

Cameron Fredericks

Published by Internal Communication, Stakeholder Management, Koeberg Operating Unit.

Appendix E

Eskom

Monday - 7 July 2014

Status of the units

Unit 1: 99.42% - 973MW **Sent out:** 933MW

Unit 2: 99.39% - 967MW **Sent out:** 927MW

Total sent out: 1860MW **Seawater temperature:** 14.7°C

Duty work controller	Duty ALARA SRPA
Akash Malasingh - tel. 4500/pg	Anthea Lewis - tel. 4400

Hippy happy birthday

- ***TTG*** would like to wish **Piet Bonthuys** a very happy birthday for today, 7 July 2014.
- ***RP*** would like to wish **Hein de Nicker** a belated happy birthday for yesterday, 6 July 2014.

Who's where?

- **Bradley Oaker (Licensing Manager)** will be away from the office until 16 July 2014. ***Riaan Jooste*** will be standing in for him with full delegation of authority and can be contacted at tel. 5006.
- **Jaco Oliver (Nuclear Sites)** has been seconded to the Visitors Centre until June 2014. He can be contacted at tel. 4089.

Catch that training

Employees who have received appointments for **Sharepoint training** are reminded to attend this compulsory training. Should you have any queries contact Shageerah Firfirey FirfirS@eskom.co.za.

Reminder

Contractor Safety Awareness sessions will be taking place at 09:00 on Wednesday, 9 July 2014, as per the below schedule:

Session one	Session two
Venue: Visitors Centre Auditorium	*Venue:* Nuclear Auditorium
Target Audience: Eskom employees; SHE professionals/functionaries, Contracts manager/end user/ project leader, Buyers/Group Commercial functionaries	*Target Audience:* Contractors; SHE professionals, Site manager, Contractor Supervisor
Seats available: 100	*Seats available:* 30

** For more information, please see Newsflash of 4 July 2014.*

Heads up

Safety evaluators please note: it is the responsibility of reviewers and approvers of screenings, evaluations and justifications to ensure that all signatories are properly authorised.

University of Cape Town and Koeberg HIV/AIDS Stigma Survey

The Stigma of HIV/AIDS **prevents** people from knowing their HIV status and this decision reduces their life expectancy. **Stigma** is a process used as a **survival** technique which gives a sense of **security** and **comfort** against any potential HIV infection.

The Stigma process is explained below:

1) **Labelling** people who have different characteristics;
2) **Stereotyping** is judging people as undesirable;
3) **Separating**, rejection of people living with HIV, i.e. "*them*" and "*us*";
4) **Status loss**, a stigmatised individual is marginalised, losing social standing in the community;
5) **Discrimination**, a marginalised individual is considered or treated as to be less than human. This is a justification to treat stigmatised people less than human.

People living with HIV start feeling **worthless** and **depressed**; and do not feel it is worth looking after their health. With almost 1 in 5 people living with HIV in the Western Cape, it means that **loved-ones** are being stigmatised against.

UCT and Koeberg are collaborating to understand the knowledge and views Koeberg staff has of HIV/AIDS by means of a survey using a self-administered questionnaire.

How will the survey be conducted?

- **ONLY** questions asked and **NO HIV or other** testing.
- ICAS nurses (**non-Koeberg** nurses) will conduct the survey in **private** ski-cabins and offices.
- Questionnaire ranges between **15 minutes** to **35 minutes**.
- **One** questionnaire is conducted at a time. Available in English, Afrikaans and Xhosa.
- The questionnaire is **confidential** and **anonymous**, if any **names** are found on the questionnaire, it will to be **destroyed**.
- The survey will run from **7** to **10 July 2014**. Between **09:00 to 15:00**.
- A small **gift** will be provided **after** completing the questionnaire.

Location of private ski-cabins and office

- Two at the contractor's yard – opposite the SOC building - *survey will be conducted in Xhosa, English and Afrikaans.*
- One behind CAS building – OCC Ski-cabin - *survey will be conducted in English and Afrikaans.*
- One at MAB (Room 21) - *survey will be conducted in English and Afrikaans.*

For more information contact Shameema Maged at tel. 4987.

Cameron Fredericks

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