The Knowledge and Attitudes of Registered Nurses in Public Hospitals Related to the Prevention of HIV and AIDS Transmission

by

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ABSTRACT

Human Immunodeficiency Virus (HIV) and Acquired Immuno-Deficiency Syndrome (AIDS) have brought about a global epidemic far more extensive than was predicted even a decade ago (van Rensburg, 2002:1). South Africa has one of the highest HIV prevalence rates in the world (South African Department of Health, 2000:5), it still increase yearly. Before a vaccine and/or effective treatment become available, effective education and information campaigns are necessary for preventing the spreading of HIV and AIDS (WHO (the World Health Organization), 1988:21). According to WHO and ICN (International Council of Nurses) (1988:12), Nurses can play a pivotal role in the education of patients, their families and friends with regard to the prevention of HIV and AIDS transmission, so as to control the spread of this disease.

In South Africa, more than 60% of the healthcare human resources comprise professional nursing practitioners (Muller, 2002:95). Therefore, the education and training of nurses is one of the effective methods to preventing further spread of HIV and AIDS infection in South Africa. Accordingly, nurses need to reduce both personal and occupational risk of becoming infected with HIV themselves, as well as provide education to patients and their families. Before effective and efficient in-service education guidelines on the prevention of HIV and AIDS transmission can be developed, any knowledge deficit and negative attitudes of registered nurses regarding the prevention of HIV and AIDS transmission should be identified. Thus, it is important to survey the knowledge and attitudes of nurses in healthcare institutions related to the prevention of HIV and AIDS transmission.

The main goal of the study was to explore and describe the knowledge and attitudes of registered nurses in public hospitals related to the prevention of HIV and AIDS transmission. The secondary objective was to develop in-service education guidelines for registered nurses in public hospitals to optimise both
personal and occupational prevention measures relating to HIV and AIDS transmission.

The research was conducted using a quantitative, explorative, descriptive and contextual design. The purposive sampling method was used to select the participants and a self-administered questionnaire was used to collect data. This data was analysed by inferential statistics and descriptive statistics and areas of deficits concerning knowledge and negative attitudes were identified. In this study there were deficits concerning the knowledge and negative attitudes regarding the prevention of HIV and AIDS transmission to a greater or lesser degree in all the subgroups of the questionnaire. In general, the registered nurses with the attendance of HIV and AIDS training program, experience in caring for HIV and AIDS patients made the level of certain knowledge related to the prevention of HIV and AIDS transmission different; Working experience as a registered nurses and the attendance of HIV and AIDS training programmes did not make attitudes towards the prevention of HIV and AIDS transmission significantly different. The registered nurses with experience of caring for HIV and AIDS patients had more positive attitudes than those without the experience. This information was used to compile in-service education guidelines for registered nurses concerning the prevention of HIV and AIDS transmission.

The in-service education guidelines will be given to clinical facilitators at public hospitals. It is envisaged that this will guide them as to what to include in their in-service education programmes concerning the prevention of HIV and AIDS transmission for registered nurses.
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CHAPTER ONE
OVERVIEW OF THE STUDY

1.1. INTRODUCTION AND PROBLEM STATEMENT

Human Immunodeficiency Virus (HIV) and Acquired Immuno-Deficiency Syndrome (AIDS) have brought about a global epidemic far more extensive than was predicted even a decade ago. Still growing rapidly, the epidemic is reversing development gains, obliterating millions of lives and undermining social and economic security. It has become a major cause of disease in South Africa (van Rensburg, 2002:1).

According to estimated figures from the Joint United Nations Programme on HIV and AIDS (UNAIDS) and World Health Organisation (WHO), 39.4 million people, including 3.2 million children, were living with HIV worldwide at the end of 2004. Of these people, 25.4 million were living in Sub-Saharan Africa and 8.2 million in Asia in 2004 (Barnett & Whiteside, 2006: 9-15). Since the first AIDS patient was reported two decades ago, AIDS has killed more than 21.8 million people worldwide. Sub-Sahara is one of the areas with the highest prevalence in the world. In 2004, 3.1 million people in the region became newly infected, while 2.3 million died of AIDS. A total of 25.4 million people with HIV and AIDS have been living in Sub-Saharan Africa at the end of 2004 (Barnett & Whiteside, 2006: 10).

South Africa is regarded as having one of the highest HIV prevalence rates in the world, with an estimated 6 million South Africans living with HIV and AIDS reported at the end of 2005 and there are almost 1 million orphans under the age of 15 whose mothers will have died of AIDS. It is estimated that more than a million South Africans will die of AIDS by 2008 and the average life expectancy is expected to fall to 40 years between 1998 and 2008 (South African Department of Health, 2000:5). AIDS has become the leading cause of death in South Africa.
(Bradshaw, Nannan, Groenewald, Joubert, Laubscher, Nojilana, Norman, Pieterse and Schneider, 2005: 496-503). Approximately 40% of all deaths in the 15-49 year age group in South Africa are AIDS-related and it is predicted that, if no effective measures are taken, the total number of AIDS-related deaths in South Africa will rise to between five and seven million by 2010. About 780 000 people are expected to die of AIDS each year – the highest number in any country in the world. If more drastic measures are not taken to stem the HIV/AIDS tide in South Africa there will be a three-fold increase in deaths among children aged between one and five by the end of this decade. AIDS-related deaths will account for twice as many deaths as all other causes combined and population growth will be halted (van Rensburg, 2004: 279-280).

HIV and AIDS are having a profound effect on almost every aspect of society, particularly economic activity, family life and national security in South Africa. van Rensburg (2004: 6) states that the economic consequences of HIV and AIDS will lead to a substantial decline in productivity, available skills and expertise. It is estimated that more than a quarter of the economically active South African population will be infected. In education, AIDS-related illness and deaths are reducing the supply of skilled and experienced teachers and thus lowering the quality of education. Because of illness and loss of the ability to work and pay treatment fees, family incomes are being reduced. School-related expenses for children cannot be afforded and some of them have to drop out of school to join the workforce in order to supplement family income.

The epidemic of HIV and AIDS in South Africa also places an increased burden on the health services of a society. The increase in AIDS-related illness and deaths of healthcare workers and health science students worsens the situation, especially in the public healthcare sectors. The largest impact of HIV and AIDS on the public sectors in South Africa is on the public hospitals. Research commissioned by the
South African Department of Health (Abt Associates/Kaiser Family Foundation, 2001) indicates that in the year 2000 an estimated 628,000 admissions to public hospitals were for AIDS-related illness, which amounts to 24% of all public hospital admissions. Public hospitals are unable to cope with the present patients' needs caused by HIV and AIDS, let alone the future burden (van Rensburg, 2004: 298).

If the impact of the HIV infection is to be reduced, a wide-ranging strategy is required, involving caring for those suffering from AIDS as well as reducing the stigma associated with HIV and AIDS. Because of impressive technical and scientific advances, treatment of HIV and AIDS has improved greatly and the lifespan of patients suffering from HIV and AIDS has increased. Nevertheless, until a vaccine or an effective treatment becomes available, combating the HIV pandemic is impossible. WHO (1988: 21) stated that to combat the disruptive social features associated with AIDS, effective education and information campaigns are necessary. Since transmission of HIV and AIDS is caused mostly by behavioural factors, WHO (1988: 12) emphasises that education leading to widespread change in behaviour of the public is the key to preventing further spread of HIV infection and calls for the further education and training of healthcare workers, including nurses. In this aspect of care, nurses are in a position both to provide care that respects the dignity of the individual and to set an example of appropriate non-judgmental attitudes for other healthcare workers and members of the community. In guidelines for nursing management of people infected with HIV, WHO and the International Council of Nurses (ICN) suggest that each country must develop specific overall objectives in the education of nurses and through them, the education of individuals, families and communities so as to prevent the transmission of HIV and AIDS in healthcare settings (WHO & ICN, 1988: 1). WHO and ICN further recommend that education programmes should take into account nurses’ characteristics, their knowledge and attitudes so as to obtain maximum education effectiveness (WHO & ICN, 1988: 12). Hence the knowledge and
attitudes of nurses related to the prevention of HIV and AIDS transmission should be surveyed before education guidelines are developed.

Certain policies have been developed in response to the epidemic of HIV and AIDS in South Africa. The South African National Sexually-Transmitted Disease (STD)/HIV and AIDS Review (2000) has recommended developing a national policy that prevents HIV and AIDS transmission, including management of STD, and prevention and reduction of mother-to-children transmission. Strategies implemented by government include increased acceptance and the adoption of positive attitudes and perceptions regarding the use of condoms and encouraging their use as a form of contraception among the youth to prevent the spread of HIV and AIDS and STD (South African Department of Health, 2000: 14-15). The correct use of a condom during sexual intercourse is one of the effective ways to combat the spread of HIV and AIDS (van Dyk, 1992: 24). According to a survey by the Department of Health, there are certain factors that influence the use of condoms by young people, and these include the unsympathetic attitude of nurses towards sexual activity amongst the youth (South African Department of Health, 2000 in Van Rensburg, 2004: 285). Education is an effective way of changing nurses’ attitudes towards sexual activity amongst the youth, so that they can promote the use of condoms among the youth to prevent HIV and AIDS transmission.

Nurses have an important role to play in the prevention of HIV and AIDS transmission in the healthcare setting. In developed countries, the prevention of HIV and AIDS transmission in healthcare facilities has had great success. In order to achieve similar success regarding HIV prevention in resource-limited countries (including South Africa), the Global HIV Prevention Working Group (GHPWG) (2002:5) suggests that adherence to Universal Precautions and the use of safer technology can reduce the risk of exposure to HIV in healthcare settings significantly. Universal Precautions, developed by the Centre for Disease Control (CDC, 2001) in the United States of America (USA), refer to a set of precautions
designed to prevent transmission of HIV and AIDS and other blood-borne pathogens in healthcare settings. According to Universal Precautions, blood and body fluids of all patients are considered potential sources of infection for HIV and other blood-borne pathogens (CDC, 2001). According to CDC, Universal Precautions include the following main aspects (van Dyk, 1992: 29-46):

- Basic hygiene and precautions: Washing hands and covering of skin lesions.
- Protective clothing: Using gloves, masks, aprons or eye shields.
- Preventing injury by sharp objects.
- Guidelines involving disinfection procedures.

However, in Sub-Saharan Africa (where South Africa is situated), only 18% of healthcare settings adhere to Universal Precautions (GHPWG, 2002: 10). The knowledge of Universal Precautions by nurses is a prerequisite for reducing the risk of exposure to HIV and AIDS in healthcare settings. Research conducted by Chamane and Kortenbout (1997: 43) in Durban revealed that, although the general knowledge of professional nurses concerning HIV and AIDS is fairly high, they lack knowledge relating to Universal Precautions which are vitally important aspects with regard to the prevention of HIV and AIDS transmission in the working environment. Therefore it is necessary to develop effective and efficient guidelines on the prevention of HIV and AIDS transmission for clinical practice in South Africa. Surveying the knowledge and attitude of nurses on the prevention of HIV and AIDS transmission in healthcare institutions will assist in the developing of such guidelines.

Without adequate knowledge, nurses cannot educate patients and their families properly. Mellish (1985: 125-126) states that one of the independent functions of a nurse is education of patients and their relatives or friends where necessary, so that self-care is maintenance where possible, therapy continued as long as is necessary and community resources are known to the person being treated. The
implication is that patient education can influence the community deeply and comprehensively. Because HIV testing is voluntary in South Africa, it is impossible for nurses to know each patient’s HIV status. Accordingly, nurses need to treat all patients as being potentially HIV-positive and teach them and their families or friends about the prevention of HIV and AIDS transmission. This should prove to be very helpful in preventing and controlling the prevalence of HIV and AIDS. In order to provide patient education on the prevention of HIV and AIDS transmission, adequate knowledge and a positive attitude are necessary. Inadequate knowledge of healthcare professionals about the prevention of HIV and AIDS transmission can engender a negative attitude towards HIV and AIDS patients; and this will ultimately influence the quality of the health education they give. Therefore it is necessary to provide continuous education and training to nurses, especially with regard to HIV and AIDS prevention and care, as this is a complex, dynamic and rapidly expanding field of knowledge (Canadian Association of Nurses in AIDS care, 2000).

Some studies show that nurses who have considerable knowledge but not complete understanding regarding HIV and AIDS prevention are more likely to have negative attitudes towards HIV and AIDS patients (Chen, Han & Holzemer, 2004: 421), therefore the relationship between the knowledge of and the attitudes on the prevention of HIV and AIDS transmission also interests the researcher. Regular in-service training of healthcare workers is a basic management strategy with regard to STD, especially HIV and AIDS (South African Department of Health, 2000: 15). It has been noted that, although informal and formal in-service training programmes on HIV and AIDS prevention are available for nurses, nurses are failing to integrate this information into their clinical practice (Van Rensburg, 2004: 340). A study on HIV and AIDS prevalence among South African healthcare workers by Shisana, Hall, Maluleke, Chauveau and Schwabe (2004: 849) has shown that HIV prevalence among health workers aged 18 years and older is 15.7%; the prevalence rate among healthcare workers in public hospitals is 15.9%.
This figure is very high compared to HIV prevalence among South Africans of reproductive age (15-49 years), which is 15.6% (Shisana et al., 2004: 849). Lack of knowledge or negative attitudes may lead to healthcare workers failing to adhere to the Universal Precautions, resulting in their occupational exposure to HIV and AIDS. While occupational exposure to HIV is highly likely in a healthcare setting, several other studies in Africa have shown that the overwhelming majority of HIV infections among healthcare workers (including nurses) are due to sexual exposure (Karim & Karim, 2005: 348). These research results imply that healthcare workers may either lack adequate knowledge or fail to comply with both personal and professional prevention measures relating to HIV and AIDS transmission. Consequently, according to the knowledge-attitude-risk practices paradigm, healthcare workers’ knowledge and attitudes towards the prevention of HIV and AIDS transmission should be reviewed.

The Eastern Cape Province is no exception to the increase in HIV and AIDS-related deaths in South Africa each year. According to van Rensburg (2004: 286) national and provincial HIV prevalence rates among antenatal clinic attendees in the Eastern Cape has increased from 8.1 in 1996 to 23.6% in 2002. van Rensburg (2004: 283) also declares that:

- the rate of condom usage among 15-49 year old women in the Eastern Cape is the lowest of all the provinces in the country, except for the Northern Cape where the figure is 6.1%; and
- about 15.1% of men over 15 years of the age in the Eastern Cape have STDs, which is the fourth highest rate in the country.

The AIDS Training and Information Counselling Centre (ATICC) (2002) declares the following with regard to the situation relating to HIV infection and AIDS in the Western region of the Eastern Cape, including the Nelson Mandela Metropole (NMM):

- In 1989, 30 persons were HIV positive and five persons died from AIDS-related illnesses;
In 2001, 7 537 persons were HIV positive and 1 200 people died from AIDS-related illnesses. Therefore it is imperative that public education on the prevention of HIV and AIDS transmission be improved. Professional nurses have a major role to play in the prevention of the spread of HIV and AIDS. Their actions should, however, be based on adequate knowledge and appropriate attitudes.

In South Africa more than 60% of the healthcare human resources comprise professional nursing practitioners (Muller, 2002: 95). This statistic implies that nurses form the majority group of the healthcare human resources. Consequently, they should play an important role in the prevention of HIV and AIDS transmission. There are an estimated 100,000 nurses working in public hospitals (Tshego, November 1999). In the NMM about 730 registered nurses are working in the three major public hospitals responsible for the healthcare of the public in the city. These nurses should first protect themselves from HIV and AIDS infection, which implies that they should reduce both the personal and occupational risks relating to HIV and AIDS transmission. As mentioned previously, in the western region of the Eastern Cape, including NMM, the prevalence of HIV and AIDS is increasing yearly. Teaching patients in the public hospitals, as well as their families and friends, about the prevention of HIV and AIDS transmission will help to control the spread of the disease in NMM. In order to do this, nurses need to have adequate knowledge and a positive attitude regarding the prevention of HIV and AIDS transmission. Accordingly, surveying nurses' knowledge and attitudes related to the prevention of HIV and AIDS transmission is necessary in order to develop in-service education guidelines.

This background serves as a motivation to conduct a study on the knowledge and attitudes of registered nurses relating to the prevention of HIV and AIDS transmission. For the purpose of this study the following research question is formulated:
“What are the knowledge and the attitudes of registered nurses in public hospitals in NMM with regard to the prevention of HIV and AIDS transmission? How can this information be used to develop in-service education guidelines for registered nurses to optimise preventative measures relating to HIV and AIDS transmission?”

1.2. RESEARCH OBJECTIVES

This research study has a primary and a secondary objective.

- The **primary objective** is to explore and describe the knowledge and attitudes of registered nurses in public hospitals in the Nelson Mandela Metropole relating to the prevention of HIV and AIDS transmission.

- The **secondary objective** is to develop in-service education guidelines for registered nurses in public hospitals to optimise both personal and occupational prevention measures relating to HIV and AIDS transmission.

1.3. CONCEPT CLARIFICATION

Creswell (1994: 106) states that a detailed, elaborate definition of key variables and concepts will provide specific guidance for use of the terms to readers. The following concepts will be explained for the purpose of this study:

- **Registered nurse**: A registered nurse is a person who is registered as a nurse in terms of section 16 of the Nursing Act, No 50 of 1978 (South African Nursing Association Terminology List, 1994: 30).

- **Knowledge**: ‘Knowledge’ is understanding of, or information about, a subject which has been obtained by experience or study, and which is either in a person’s mind or possessed by people generally (Cambridge University, 2003: 693). For the purpose of this study, ‘knowledge’ refers to the nurses’ understanding of the prevention of HIV and AIDS transmission.

- **Attitude**: ‘Attitude’ is a feeling or opinion about something or someone, or a way of behaving that is caused by this (Cambridge University, 2003: 70). This
study focuses on the registered nurses’ feelings or opinion about the prevention of HIV and AIDS transmission.

- **Human Immunodeficiency Virus (HIV) and Acquired Immuno-Deficiency Syndrome (AIDS):** According to the World Health Organisation (1988: 1-3), the Human Immuno-deficiency Virus (HIV) is a virus that causes Acquired Immuno-deficiency Syndrome (AIDS) and is transmitted through either sexual contact or exposure to infected blood or blood components or parentally from mother to neonate.

- **Prevention:** ‘Prevention’ refers to primary prevention and implies stopping a disease or mental disorder from manifesting in susceptible individuals or populations through promotion of health, including mental health and specific protection, as in immunization, as distinguished from prevention of complications or after-effects of an existing disease; and it may refer to disease prevention at the earliest possible point (Freshwater & Maslin-Prothero, 2005: 479).

- **Transmission:** ‘Transmission’ means the transfer of a disease from one person to another (Freshwater & Maslin-Prothero, 2005: 621). In this study ‘transmission’ specifically refers to the transfer of HIV causing AIDS.

- **Public hospital:** A ‘public hospital’ is a hospital funded by general tax revenue (van Rensburg, 2004: 298). For the purpose of this research, the term ‘public hospital’ refers to the three public hospitals located in the urban area of NMM.

- **In-service education:** ‘In-service education’ refers to the training of personnel that is directly related to their work (Muller, 2002: 344). For the purpose of this research study it will refer to the prevention of HIV and AIDS transmission education that will focus on the possible knowledge deficit and negative attitudes identified in the study.

- **Guideline:** is the systematically developed statement to assist healthcare workers to make decisions about appropriate practice for specific circumstances and can be regarded as a practical educational resource for
healthcare professionals (Todd, Biskupiak & Weingarten, 1998: 1-5). In the study, in-service education guidelines on the prevention of HIV and AIDS transmission will be developed according to the knowledge deficit and negative attitudes identified in the study.

1.4. RESEARCH DESIGN

According to Mouton (2001:55), a research design is a plan or blueprint of how one intends conducting the research study. In order to get information on the knowledge and attitudes of registered nurses in relation to prevention of HIV and AIDS transmission, the research design will be quantitative, explorative, descriptive and contextual in nature.

1.4.1. Quantitative Research

Quantitative research uses statistical tests to express the relationship between variables (Gorard, 2003: IX) and also uses questionnaires to collect data. The means of data collection to be employed in this study is quantitative, because it involves the analysis of closed-ended questions and uses statistical tests to analyze the collected data. A questionnaire will be used in the study in order to explore and describe the knowledge and attitudes of registered nurses in public hospitals related to the prevention of HIV and AIDS transmission.

1.4.2. Exploratory Research

The study is exploratory in the sense that it appears to be the first study of its kind in the Nelson Mandela Metropole area that investigates the knowledge and attitudes of registered nurses in the NMM public hospitals related to the prevention of HIV and AIDS transmission. Explorative studies are not intended for generalization to large populations but to increase knowledge in the particular field of study (Burns & Grove, 2001: 374).
1. 4.3. Descriptive Research

Descriptive research presents a picture of the specific details of a situation, social setting or relationship and focuses on “how” and “why” questions. In quantitative studies descriptive design refers to the characteristics of a population (de Vos, Strydom, Fouche & Delport, 2002:109-110). According to Babbie and Mouton (2001: 81), descriptive studies emphasize the in-depth description of a specific individual, social event, group, company or social artefact, which can be accomplished by employing descriptive statistics. The research will aim to describe the knowledge and attitudes of registered nurses in public hospitals related to the prevention of HIV and AIDS transmission.

1. 4.4. Contextual Research

Holloway and Wheeler (2002: 11) explain that as the context of participants’ lives or work affects their behaviours, researchers must be sensitive to the context of the research and immerse themselves in the setting and situation. In a broad sense the context includes the economic, political and cultural framework. This study will be conducted amongst registered nurses in public hospitals in the Nelson Mandela Metropole, which is an urban area, focusing on the knowledge and attitudes of registered nurses relating to the prevention of HIV and AIDS transmission.

1. 5. RESEARCH METHOD

The research method refers to the methods, techniques and procedures that are employed in the process of implementing the research design or research plan (Babbie and Mouton, 2001: 104).

1. 5.1. Research Population

The population in a research study is the entire group of persons or objects that the researchers wish to study (Gorard, 2003: 57). In this research study, the population consists of registered nurses working in public hospitals in the Nelson Mandela
1.5.2. Target Population, Sampling Method and Sample Size

In this research study the target population consists of registered nurses working in public hospitals in the Nelson Mandela Metropole (NMM) who can converse and read in English and will have at least one year’s working experience at the time when the study is conducted.

Purposive samples sampling method will be used, applying certain inclusion criteria and choosing the sample (Holloway & Wheeler, 1998: 74). Registered nurses from the public hospitals in NMM must meet the following criteria:

- Have at least one year’s working experience.
- Can converse and read in English.
- Full-time employed registered nurse.

The list of wards and the list of names of registered nurses in each ward will be obtained from the director of each public hospital on a pre-arranged date. The suitable time to deliver the questionnaire to the registered nurses also will be determined. At the agreed upon time the researcher will visit each ward involving the study. A short interview will be done with the registered nurses who are working in the wards at the time to choose the target population. Each ward will choose 2 or 3 registered nurses as samples by using the purposive samples method. A total of 80 registered nurses will be included in the study. In Hospital A, 30 questionnaires will be delivered to 11 wards; in Hospital B, 20 questionnaires will be delivered to 10 wards and in Hospital C, 30 questionnaires will be delivered to 10 wards.

1.5.3. Data Collection Instrument

A self-administration questionnaire for assessing knowledge and attitudes related to the prevention of HIV and AIDS transmission will be developed by the researcher. The questionnaire consists of three parts:

Section A: This section is concerned with the demographic data, including
biographical information such as: gender; race; professional qualifications; years working as a registered nurse; experience related to caring for HIV and AIDS patients; participation in any HIV and AIDS training programmes; and the resources of knowledge related to the prevention of HIV and AIDS transmission.

**Section B:** This section is concerned with the assessment of knowledge related to the prevention of HIV and AIDS transmission. The questionnaire will be developed by the researcher on the basis of a literature review. The section, which includes 40 questions, will be explained in detail in Chapter three.

**Section C:** This section will focus on the assessment of attitudes regarding the prevention of HIV and AIDS transmission. There are 34 questions included in the questionnaire, which follows a fixed response with response choices of “strongly agree”, “agree”, “disagree” and “strongly disagree”. It will be explained comprehensively in Chapter three.

1. 5.4. Data collection method

After obtaining permission from these registered nurses, the researcher will hand deliver the questionnaires to the participants in the wards, who will then be allowed time to complete them. The participants will be asked to put the completed questionnaires in a sealed box placed in the nursing station for this purpose. In order to get a higher response rate, the following methods will be used in the study: Motivating the respondents by foot-in-the-door; incentives and follow up (Malhotra, 1999: 369-370). They will be explained further in Chapter Three.

The researcher will follow up participants twice, on the day of handing out the questionnaires and three days after the questionnaires are delivered. Three more days will be given to the respondents to complete the questionnaire after following up. One week later the researcher will collect the sealed box from the nursing station.

1. 5.5. Pilot Study

A pilot study is a small-scale version of the major study and assesses the feasibility
of the study (Polit & Hungler, 1993:40). A pilot study can also identify any deficits in
the questionnaire. The researcher will conduct a pilot study with six registered
nurses drawn from the three public hospitals in order to determine whether the
questionnaire succeeds in answering the research question. Any ambiguous words
in the questionnaire will be adjusted before the main study is conducted. The pilot
study is developed similarly to the proposed study, using similar subjects, the same
sitting and the same data collection and analysis techniques (Burns & Groves,
2003: 42). If no problems are experienced with the questionnaires, the results of
the pilot study will form part of the main study.

1.6. METHOD OF DATA ANALYSIS

The data obtained from the questionnaire regarding the knowledge of, and attitudes
pertaining to, the prevention of HIV and AIDS transmission will be analyzed by
means of statistical analyses, including descriptive and inferential statistics.

Descriptive statistics which is a method of presenting quantitative description in a
manageable form, can help the researcher to describe and summarise the
distribution of a single variable or association between variables (Babbie & Mouton,
2001: 457-486). In this research study, descriptive statistics will help the researcher
to describe the registered nurses’ responses to the questionnaires and summarise
their knowledge and attitudes with regard to the prevention of HIV and AIDS
transmission.

Inferential statistics are used to estimate the single variable characteristics of the
population or tests of statistical significance and estimate the relationships between
variables in the population (Babbie & Mouton, 2001: 486). In this research study the
researcher will use inferential statistics to estimate the level of knowledge or the
characteristic attitudes of the registered nurses in the public hospitals in NMM.
Inferential statistics can also help the researcher estimate the relationships
between the knowledge of registered nurses and their attitudes.

A statistical package for social science – STATISTICA will be involved in this procedure. STATISTICA is a set of related computer programmes for storing, analyzing and reporting on statistical results. The data analysis will be done with the assistance of an experienced statistician and the findings displayed in graphical format and tables.

1. 7. QUALITY OF RESEARCH METHODS

In order to ensure that fellow-scientists accept the quality of the research study and the findings, meticulous attention should be given to the reliability and validity of the study, which will be comprehensively discussed in Chapter three.

1. 7.1. Reliability
Reliability is concerned with how consistently an instrument measures the phenomenon of interest, or the accuracy of the data in the sense that it reflects the true measures of the phenomenon under investigation (Polit & Hungler, 1993: 244-45). Test-retest can establish the reliability of an instrument (de Vos et al., 2002:169). The questionnaire developed by the researcher will be test-retested by distributing the questionnaire to six registered nurses in the identified hospital, at different times to establish its reliability. This will be the pilot study.

1. 7.2. Validity
Validity refers to whether the instrument actually measures the concept in question and whether the concept is measured accurately. One of the most common and useful classification schemes of validity is content and face validity. (de Vos et al., 2002:166).

The detail of reliability and validity will be explored in Chapter three.
1.8. ETHICAL AND LEGAL CONSIDERATIONS

de Vos et al. (2002: 64-68) who compiled opinions of certain authorities on ethical issues, mentioned the following aspects regarding ethical issues in research:

- Privacy, anonymity and confidentiality.
- No harm to respondents.
- Informed consent.
- Autonomy.
- Voluntaries.

During the procedure of the study these principles mentioned above will be adhered to.

According to McIntyre (2005: 77) **Privacy** is control over the extent, timely and circumstances of sharing oneself with others. **Confidentiality** means that the identity of research participants is kept in confidence (although the identity is known to the researcher); **anonymity** means that no one including the researcher knows the identity of research participants; **voluntaries** refers to the subjects having a right to be free of coercion, duress or undue influence; and **informed consent** is a person's voluntary agreement, based upon adequate knowledge and understanding of relevant information, to participate in the research. **Autonomy** is the right of an individual to consider alternatives, make choices and act without undue influence or interference from others. **No harm to respondents**: respondents can be harmed in a physical and/or emotional manner; emotional harm to respondents is often more difficult to predict and to determine than physical discomfort; and the respondents' family life, relationships, employment situation or negative behaviour of the past may be a source of emotional harm to them (de Vos et al., 2002: 64).

In order to maintain these principles, the following methods will be used:
A letter explaining the research will be sent to the potential participants (see Annexure 2)

Consent forms will be required to be signed (see Annexure 1)

Permission to conduct the research will also be obtained from:

- advanced Degree and Ethics Committee of Nelson Mandela Metropolitan University;
- relevant Regional and local Health Authorities;
- nursing Managers of the units involved in the study; and
- participating registered nurses.

No form of identification appears on the questionnaire and a number will be allocated to each questionnaire.

Details of ethical and legal considerations will be described in Chapter Three.

1. 9. DISSEMINATION OF RESULTS

The researcher will prepare an article for publishing in a suitable peer-review nursing journal. In-service education guidelines will be developed and offered to registered nurses working in public hospitals to update their knowledge in this regard. A copy of the research study will be given to the relevant health authorities.

1. 10. CHAPTER DIVISION

Preliminary outline of the chapters of the research study:

Chapter One: Overview of Study
Chapter Two: Literature Review
Chapter Three: Research Design and Method
Chapter Four: Data Analysis and Discussion
Chapter Five: In-service Education Guidelines, Conclusions, Limitations and Recommendations
1.11. SUMMARY

South Africa is regarded as having one of the highest HIV prevalence rates in the world. Until a vaccine or an effective treatment become available, combating the pandemic of HIV/AIDS is impossible, but one effective method to prevent further spread of HIV infection is the education and training of nurses and, through them, the education of patients, their families and friends regarding the prevention of HIV and AIDS transmission. This implies that registered nurses are in a pivotal position regarding the prevention of HIV and AIDS transmission. Accordingly, they need to reduce both personal and occupational risks of becoming infected with HIV themselves, as well as provide education to patients and their families. Hence, the development of education guidelines for training of nurses is necessary. Before in-service education guidelines on the prevention of HIV and AIDS transmission can be developed, any knowledge deficit and negative attitudes of registered nurses regarding the prevention of HIV and AIDS transmission should be identified. The aim of this study is to explore and describe the knowledge and attitudes of registered nurses related to prevention of HIV and AIDS transmission and, based on these findings, to develop in-service education guidelines on the prevention of HIV and AIDS transmission.
2.1. INTRODUCTION

Nurses are in the unique position of being in contact not only with patients, but also with their families and friends, as well as with the community at large. Therefore they have a specific role in the prevention and control of HIV and AIDS (WHO and ICN, 1988: 1). van Dyk (1992: 5) has stated that the role of nurses is to create a safe working environment for themselves and their colleagues; educate patients and the general public; counsel where counselling is needed; combat fear, ignorance and prejudice and replace it with understanding and preparedness and offer care and compassion to those living with HIV infection and dying of AIDS.

In order to fulfil this calling the nurses should have a good working knowledge of the prevention of HIV and AIDS transmission and an appropriate attitude towards the prevention of HIV and AIDS transmission. This chapter is divided into ten sections, which cover exploring the knowledge of HIV and AIDS including the historical background of HIV and AIDS, the factors that influence its prevalence and the attitudes towards HIV and AIDS. This particularly refers to the knowledge of registered nurses relevant to the prevention of HIV and AIDS transmission and their attitudes towards the prevention of HIV and AIDS transmission. The ways of preventing HIV and AIDS transmission in individuals and in the health setting are also explored.

2.2. HIV AND AIDS IN PERSPECTIVE

HIV and AIDS is not a disease with has a long history. According to the World Health Organisation (1988: 1-3), the Human Immuno-deficiency Virus (HIV) is a virus that causes Acquired Immuno-Deficiency Syndrome (AIDS) and is transmitted
through sexual contact and exposure to infected blood or blood components and parentally from mother to neonate. Because its prevalence has a close relationship with human behaviour, the definition of HIV and AIDS should include these facts.

2.2.1. HIV and AIDS

The Human Immuno-deficiency Virus (HIV) which is a retro-virus directly attacks and destroys the immune system which protects the body against viral, bacterial and parasitic infections and leads to the acquired immuno-deficiency syndrome (AIDS). HIV can be transmitted by unsafe sexual activity and blood or body fluid contact. There are two types of HIV viruses, HIV1 and HIV2. HIV1 is more easily transmitted than HIV2. HIV1 is responsible for AIDS in America; HIV2 is responsible for AIDS in Africa. There are many theories about the origin of AIDS, the most popular theory being that people initially contracted AIDS from green monkeys infected with a virus similar to HIV2, namely SIV (simian immunodeficiency virus). It is theoretically possible for a retrovirus to cross the species barrier, but in the case of HIV several scientists have rejected the idea of HIV transferability between animals and man. The question of when and how HIV entered human population has had ever been a source of great debate. Some evidence has been used to substantiate the zoonotic (transmission of a disease from one species to another) origin of AIDS (Barnett & Whiteside, 2006; Damani, 2003; Evian, 2000 and van Dyk, 1992).

2.2.2. Historical background to HIV and AIDS

AIDS is a relatively new and unique disease. It was first recognised in America in the summer of 1981 among gay patients. Therefore the doctors called the disease “gay disease”. Healthcare workers in Africa had been aware for a long time that a new disease was increasing the death toll among their patients (Barnett & Whiteside, 2006: 30), causing severe weight loss and diarrhoea and called “slims disease”. This was also due to immune deficiency and present in heterosexually-oriented people. More and more people began developing this
illness and other conditions associated with immune deficiency. In 1983, the doctors and scientists discovered that the gay disease was caused by a virus which at that stage was known as LAV (Lymphadenopathy-associated virus) HTLV-III (Human T-cell Lymphotropic virus Type III). In May 1986 the virus was renamed HIV and is now called HIV1. At the same time the scientists and doctors noted that the epidemic spread rapidly throughout Southern and Eastern Africa, but has moved quite slowly into the Western part of the continent. For reasons not yet fully known, they found that the epidemic in Western African involved a different virus, HIV2, which was not transmitted as easily as HIV1 and was the virus responsible for AIDS in the rest of Africa (Barnett & Whiteside, 2006: 30-32).

In the developing world nearly all those who are HIV infected die from AIDS-related illnesses, usually as a direct result of the fact that HIV destroys the ability of the body to fight infection. From a medical point of view, HIV destroys the human immune system and finally causes death. In the following paragraph the activity of HIV in the human body and the human body’s responses to HIV will be discussed.

2. 2.3. The medical perspective on HIV and AIDS
In order to learn the activity of HIV in the human body and what the responses of the human body to HIV are, it is important to know the life cycle of HIV.

2. 2.3.1. The life cycle of HIV
The HIV is a retrovirus (van Dyk, 1992: 9), which reverses the normal flow of genetic information. In cells where the genes are expressed, the genetic material is DNA. The DNA is first transcribed into a messenger RNA (mRNA), which serves as the template for the production of proteins. The genes of the retrovirus are encoded in RNA; and before they can be expressed, the RNA must convert into DNA. Only then are the viral genes transcribed and translated into proteins in the sequence (Barnett & Whiteside, 2006: 32). The retroviruses do not have their own DNA as a template for the production of proteins; therefore they have to use the gene
materials-DNA of a target cell as their template. It means HIV cannot multiply itself without host cells and has to use target cells for replication.

In the human body, CD4 which are important cells controlling and supporting the immune system, become target cells of the HIV. After entering the body, HIV attaches to the CD4 receptors, mainly on the dendritic cells and T lymphocytes, as well as other cells, such as monocytes, macrophages and others, as long as they possess a CD4 receptor on their surface. Once attachment and entry into the CD4 cells have occurred, the HIV finally destroys the cells (Evian, 2000: 6).

Figure 2. 1. Shows the life cycle of HIV and site of action of anti-retroviral drugs.

2.2.3.2. The effect of HIV on the human body
Once HIV invade the human body, they survive and replicate in the human body, and lead to the human body’s eventual death. Because the immune system of the human body has a strong repairing ability, it takes a long time (usually 5-12 years) (Evian, 2000: 25) to develop AIDS. A person who becomes infected with HIV will usually go through various clinical stages that occur over a long period of time. There are four stages of HIV infection theoretically.

2.2.3.2.1. The acute phase
The acute phase of HIV infection which may begin as early as a week after infection, it usually precedes sero-conversion, which generally develops 6 to 12 weeks (sometimes longer) after infection. Sero-conversion means conversion from HIV negative to HIV positive (van Dyk, 1992: 9). This period is called the window period. HIV antibodies are usually detected after about 6 weeks. Some individuals may need 12 weeks, and very few may need 6-12 months before their HIV test becomes positive (Evian, 2000: 41). The symptoms of the acute phase are the following caused by a short (1-2 weeks) sero-conversion illness (Evian, 2000: 28):
Fever, tiredness, rash, sore throat, muscle and joint pains and some swelling of the lymph glands.

Even though the test is negative early after infection, the person is able to pass on the virus to others during this window period. The more people there are in the early stage of infection, the greater the chance of effective transmission between people (Barnett & Whiteside, 2006: 32).

2.2.3.2.2. The asymptomatic carrier stage

The second stage of HIV infection is the asymptomatic carrier stage at which a person infected with HIV develops antibodies, becomes a carrier of the virus for life, but displays no symptoms (van Dyk, 1992: 10). The HIV-infected person usually experiences a period of good health in which the virus remains clinically "silent" or latent. The phase may last between 3 and 7 years, even up to 10 years; but the virus is active in the body, usually causing progressive damage to the immune system (Evian, 2000: 29). The person is able to spread the virus during this phase, and the HIV test is positive.

2.2.3.2.3. The symptomatic phase: HIV-related disease

After about 5-8 years following HIV infection, the viral load tends to increase progressively and the immune system continues to deteriorate and become immune deficient. The most common signs and symptoms of this stage of HIV-related disease are as follows (Evian, 2000: 31):

- Oral or vaginal Candida infection (thrush), usually persistent and recurrent
- Hairy leukoplakia on the tongue
- Recurrent herpes simplex infection, “cold sores” or genital herpes infection
- Herpes zoster (shingles)
- Acne-like bacterial skin infections
- Persistent and unexplained fevers and night sweats
- Skin rashes
• Generalised lymphadenopathy or shrinking of previously enlarged lymph nodes
• Persistent diarrhoea
• Weight loss (more than 10% of usual body weight)
• Reactivation of tuberculosis may also be associated with this stage of infection, especially in people from low socio-economic communities, where tuberculosis is common.

2.2.3.2.4. The severe symptomatic phase: AIDS, severe HIV-related disease

The symptomatic phase usually progresses over the next year or 18 months into the fully developed AIDS phase of the disease. Signs and symptoms of AIDS may differ from one patient to another and depending on which infection, cancer or organ is affected. Evian gave some instance (2000: 32) in the following:

• Herpes, seborrhoea dermatitis, skin sepsis may present with a variety of skin rashes and skin conditions
• Respiratory infection usually presents with persistent cough, chest pain and fever.
• Candidiasis presents with oral and or genital thrush.
• Infection of the bowel is present with ongoing diarrhoea
• Cancers, such as Kaposi’s sarcoma, appear as reddish, purple soots on the skin and mucous membranes that increase in size and number. Lymphoma may present with enlarged lymph nodes, liver or spleen.
• People with AIDS usually experience severe tiredness, fatigue and weakness
• Occasionally there may be some memory and concentration loss, and some people may eventually develop severe mental deterioration and confusion
Figure 2.1: The figure of the life cycle of HIV and site of action of anti-retroviral drugs. Resource: Evan, 2000:6.

Manifestations of AIDS may include any of the conditions mentioned above in the symptomatic phase and include (Evian, 2000: 32):

- Skin rashes
- Persistent, worsening cough and pneumonia
- Nausea, vomiting and diarrhoea (lasting more than 2 weeks)
- Peripheral neuropathy (pains, “Pins and needles” or numbness)
• Persistent headache, convulsions and signs of meningitis
• Poor concentration, memory loss and confusion
• Wasting of the body’s tissues and marked weight loss
• Difficulty and pain in swallowing (usually due to candidiasis of the throat and oesophagus)
• Retinitis and blindness (usually due to cytomegalovirus).

Patients with AIDS have high HIV viral loads, or signs of HIV disease or low CD4 cell count, therefore risk of transmission is increased in this stage.

In order to guide clinical treatment, the World Health Organisation set up the international Adults HIV and AIDS staging system (National Department of Health South Africa, 2004: 80).

2.2.3.2.5. International Adults HIV and AIDS staging system (National Department of Health South Africa, 2004: 80). There are four stages according the system:

● **Stage I**
  ✓ Asymptomatic
  ✓ Persistent generalised lymphadenopathy (PGL)
  ✓ Acute retroviral infection (sero-conversion illness) and / or performance scale 1: asymptomatic, normal activity.

● **Stage II**
  ✓ Unintentional weight loss <10% of body weight
  ✓ Minor mucocutaneous (e.g. seborrhoea, prurigo, fungal nail infection, oral ulcers, angular cheilitis)
  ✓ Herpes zoster within the last five years
  ✓ Recurrent upper respiratory tract infection (e.g. bacterial sinusitis) (URTT) and / or performance scale 2: symptomatic, normal activity.

● **Stage III**
  ✓ Unintentional weight loss > 10% of body weight
  ✓ Chronic diarrhoea > one month
  ✓ Prolonged fever > one month
✓ Oral candidiasis
✓ Oral hairy leukoplakia
✓ Pulmonary TB within the last year (PTB)
✓ Severe bacterial infections (pneumonia, pyomyositis)
✓ Vulvovaginal candidiasis> one month/poor response to therapy and/or performance scale 3: bedridden< 50% of the day during the last month.

● **Stage IV**
✓ HIV wasting (8+9 or 10)
✓ Pneumocystis carina pneumonia (PCP)
✓ CNC toxoplasmosis (TOXO)
✓ Cryptosporidiosis plus diarrhoea> one month
✓ Isosporiasis plus diarrhoea
✓ Cryptococcosis (non pulmonary)
✓ Cytomegalovirus infection other than liver, spleen or lymph node (CMV)
✓ Herpes simplex infection; visceral or > one month mucocutaneous (HSV)
✓ Progressive multi-focal leucoencephalopathy (PML)
✓ Disseminated mycosis (i.e. histoplasmosis, coccidiomycosis)
✓ Candida oesophageal/ tracheal/ pulmonary
✓ Atypical mycobacteriosis disseminated (MOTT)
✓ Non-typhoidal salmonella septicaemia
✓ Extra-pulmonary tuberculosis (ETB)
✓ Lymphoma
✓ Kaposi’s sarcoma (KS)
✓ HIV encephalopathy (ADC)
✓ Invasive cervical carcinoma and / or performance scale 4: bedridden > 50% of the day during the last month.

A person with AIDS will usually be dead within 1-3 years, so the prevention of AIDS should focus on the prevention of HIV infection which is transmitted in different
ways. Understanding of transmission modes of HIV and AIDS is the first step in the prevention of the disease. These are discussed in detail below.

2. 3. TRANSMISSION MODES OF HIV AND AIDS
HIV is generally spread in mainly three ways (Barnett & Whiteside, 2006: 41), namely via unsafe sex, exposure to blood and body fluids and infected mother to child.

2. 3.1. HIV and AIDS is transmitted through unsafe sex
In order to gain entry into the body, the HIV needs to bind to CD4 receptors, such as macrophages, dendritic cells and T4 lymphocytes. The receptor cells are plentiful in the lining of the genital tract and the ano-rectal area. Therefore anal and vaginal intercourse and oral sex are high risks for transmitting the HIV virus. Non-penetrative sex, such as sex between the thighs and masturbation, is considered safe.

2. 3.2. Blood and body fluid transmission
HIV and AIDS can be transmitted by blood and certain body fluids.

2.3.2.1. HIV and blood transmission
According to Evian (2000:15) HIV-infected blood becomes a high risk when passed into the body in the following ways:

- Through a blood transfusion
- Via blood-contaminated needles, syringes, razor blades and other sharp instruments
- Through intravenous drug use (sharing of needles and syringes)
- It is also possible, but very rare, for HIV to enter the body through an open skin wound or sore
• Nurses and healthcare professionals can become infected with HIV and AIDS through accidental exposure to HIV and AIDS-infected blood and body fluids.

According to van Dyk (1992: 18): accidental exposure includes:

✓ needle stick injuries with HIV infected blood;
✓ injuries from contaminated sharp instruments;
✓ infected blood or body fluids that come into contact with the mucous membrane of the eyes or oral cavity and
✓ non-intact skin such as open cuts or scratches which come into contact with contaminated blood or other body fluids.

There is only 0.3% chance of becoming infected with HIV and AIDS by accidental exposure to HIV and AIDS (Evian, 2000: 306).

2.3.2.2. HIV and body fluids transmission

Saliva, urine and sweat include too low a concentration of HIV to transmit successfully (Evian, 2000: 13), but the following body fluids can transmit HIV, according to van Dyk (1992: 28):

• Any body fluids containing visible blood
• Semen
• Vaginal secretions (including menstrual discharge)
• Body tissue fluid
• Amniotic (pregnancy) fluid
• Cerebrospinal (brain and backbone) fluid
• Peritoneal (abdomen) fluid
• Pericardial (heart) fluid
• Pleural (chest) fluid
• Synovial (joint) fluid

2. 3.3. Mother-to-child HIV transmission (MTCT)
HIV can be transmitted from mother to child during pregnancy, childbirth and via breast-feeding.

2. 3.3.1. Pregnancy and childbirth
There is approximately a 1 in 3 chance that an HIV-positive mother’s infant will be born with an HIV infection.
A woman is more likely to transmit the virus to her foetus during pregnancy if she was infected just before or during the pregnancy, a high HIV viral load, high symptomatic HIV disease and a low CD4 count (Evian, 2000: 16).
Evian recommended (2000:16) the following ways that can be used to reduce the risk of MTCT during labour:

- The use of anti-retroviral therapy during labour
- Disinfection of the birth canal (vaginal cleansing)
- Avoiding unnecessary rupture of membranes and episiotomy
- Minimising trauma to the foetus
- The mode of delivery (Caesarian section).

2. 3.3.2. Breast-feeding
There is a high HIV-transmission risk to the foetus from breast-feeding. Because there is also a potential risk to the foetus from gastro-enteritis, malnutrition and other infective conditions from unsafe formula feeding, healthcare workers will need to inform and advise mothers carefully (Evian, 2000: 17). Balancing these risks is a new challenge to healthcare workers.

2. 3.4. Myths about the transmission of HIV and AIDS
Because of the limited knowledge about HIV and AIDS there are many myths about the spread of HIV. Evian (2000: 18) states that the following practical experiences have shown that HIV and AIDS is not transmitted through:

- Airborne routs, such as coughing, sneezing, laughing, talking and kissing.
- Simple skin contact, such as handshaking, hugging and touching.
• Food, water, or on plates, cup, spoons, toilets, baths, pools and showers.
• Towels, bed linen or clothes.
• Insects, such as mosquitoes.

The following facts require attention, according to Evian (2000: 18):

• The HIV virus is not stable and does not survive for long periods outside the human body.
• The virus cannot penetrate normal intact skin and does not readily enter through a healthy mouth or eye.
• A person with a healthy genital tract is less likely to acquire HIV than a person with genital disease.
• The virus is not present in high enough quantities in the saliva and urine to cause infection

2.3.5. Sexually-transmitted diseases and the transmission of HIV and AIDS

There is very close relationship and association between common sexually-transmitted diseases (STDs) and the transmission of HIV and AIDS. According to Evian (2000: 251-252):

• STDs enhance the transmission (and spread) of HIV because STDs cause genital inflammation. Inflammation causes many immune cells with CD4 receptors in and around the genital tract.
• STDs cause damage to the surface and natural barriers in the genital tract. HIV easily gets into the body.
• People who get STDs are also at risk of getting HIV.
• People who have HIV also increase the spread of STDs because of immune-deficiency.
• In the presence of STDs, always look for signs of HIV infection.

2. 4. DIAGNOSISING OF HIV AND AIDS

Because of the symptoms-free early stage of HIV infection, in many patients the only evidence of HIV infection is a positive HIV test. The HIV antibody test is often
the only way to know if a person is definitely infected with the HIV virus. If patients show signs and symptoms of AIDS or immune deficiency, it makes the chance of HIV infection more probable. The normal HIV antibody test is not recommended. Evian (2000:39) recommended HIV testing be done normally in the following situations.

- Clinical signs suggestive of HIV infection.
- Other clinical indications, such as testing during antenatal care or if there are associated diseases such as tuberculosis (TB) or sexually transmitted diseases (STDs).
- Other purposes, e.g. life insurance policies, as part of the blood-donating screening process, post-needlestick injuries etc.

2. 4.1. HIV diagnostic tests

Varies methods are used to diagnose an HIV infection including an HIV antibody test and HIV antigen (p24) and HIV PCR tests.

2. 4.1.1. HIV antibody test

The HIV antibody test is usually done on blood (serum) including ELISA (enzyme-linked immunosorbent assay) and a western blot method of testing. These tests are usually done in the laboratory. With the HIV antibody test it is possible to detect antibodies in other body fluids such as saliva and urine. But the HIV antibody test does not detect the actual HIV virus. Approximately 6 weeks after infection, antibody tests usually become positive. After HIV infection and before the test becomes positive, this period is called window period (Evian, 2000:40).


This usually lasts 6 weeks or may last 12 weeks or 6-12 months depending on different patients. During the window period, although the HIV antibody test is still negative, the person is HIV infected and the virus can be passed on to others. The p24 antigen and the HIV PCR tests are usually positive

- The ELISA antibody test (Evian, 2000:42).
The HIV ELISA antibody test which is the most popular and commonly used test, is sufficient to make a diagnosis of HIV-infection. The characteristics of the HIV ELISA antibody test are the following:

- It is widely available and reasonably cheap.
- It does not need a laboratory and can be done in the consulting rooms or clinic and is available as a rapid test.
- Rapid tests are generally reasonably reliable. However any positive rapid HIV antibody test should be confirmed by a formal laboratory test.
- The ELISA tests are excellent screening tests.
- ELISA tests are very sensitive and most tests have 99% sensitivity with very few false negative results.
- However, there is a very low probability of the test being falsely positive. In order to ensure the accuracy of the results of the antibody test, a patient should have at least 2 positive antibody tests. Usually another ELISA test is done on the same specimen, preferably with a different testing method/design.

2. 4.1.2. Interpreting an HIV antibody test

- An HIV-positive test result indicates the following according to Evian (2000:43):
  - There is definite HIV infection if there are other obvious signs of immune deficiency.
  - There is a likely HIV infection and a confirmatory test should be done.
  - The person is able to spread the HIV during sex, through his/her blood, or during pregnancy, childbirth and breast feeding.
  - It is very rarely a false positive result.

- The HIV positive test result does not mean the following according to Evian (2000:44):
  - The person has developed the AIDS stage of the HIV disease.
✓ The person will definitely develop AIDS. However, most HIV positive people will develop AIDS within 7-10 years from the time of the infection not from the time of the test.
✓ The stage of the disease has been revealed.
✓ The time when the person acquired the HIV infection can be determined.

- An HIV negative test result indicates the following according to Evian (2000: 44):
  ✓ The patient does not have HIV infection, unless the test is done in the window period.
  ✓ It may be falsely negative if the test is done within the first 6-12 weeks after HIV infection. If the test is done within the first 6-12 weeks after possible HIV exposure, then the test should be repeated after a total period of 12 weeks after the possible HIV exposure. A person with a negative result must not think that she/ he is immune to HIV infection.

- Re-test a person who has an HIV negative test result if he/she has been involved in any risky sexual activity or risk factors in the 6-12 weeks before having the test. Risky sexual activity and risk factors may include (Evian, 2000:45):
  ✓ having sex without a condom with a new partner;
  ✓ having sex with more than one partner without using a condom every time;
  ✓ having sex with a sex worker (prostitute) without using a condom;
  ✓ any sexually transmitted disease in the past 3 months and
  ✓ any sharing of needle and syringes or blood transfusions in the past 3 months.

2. 4.1.3. HIV antigen and PCR tests
They are commonly known as the P24 HIV antigen and the HIV RAN PCR test. Antigen/PCR tests usually become positive within 7-14 days after HIV infection. The p24 antigen test is more likely to be positive around the sero-conversion period and in the more advanced stages of the disease, but they are expensive and usually not necessary for HIV diagnosis. There is also a higher false positive rate in
the very early stage of HIV infection.

Only in the following situation are they done:

✓ When it is necessary to know the HIV status very early such as in the window period.
✓ When the antibody tests are indeterminate.
✓ Special circumstances, such as in a newborn baby, post rape etc..

2. 4.1.4. Rapid HIV tests

Rapid HIV testing refers to HIV antibody testing which can usually be performed more quickly (5-30 minutes) than the standard laboratory-based test (Evian, 2000:46). The accuracy and reliability of rapid tests is dependent on the test being performed properly and the result read accurately. Many of the tests require a comparison or matching of the colour of the final outcome of the reagents or of agglutination of the reagents. The roles of rapid HIV testing are in the following condition according to Evian (2000:46-48):

- Rapid diagnosis of HIV infection.
- Diagnosing HIV infection in areas without local, adequate, diagnostic laboratories of facilities, such as a rural hospital or in isolated communities being served only by a clinic or a few clinical healthcare personnel.
- Clinical screening such as antenatal testing; patients with STDs or TB; patients with clinical signs that may suggest HIV infection.
- Biohazardous injuries (needlestick injuries) or post-sexual abuse, such as the recommended management of occupationally acquired HIV exposure.
- Epidemiological surveillance and other screening.
- HIV testing where follow-up is unlikely or difficult such as in isolated rural areas.

In the absence of a blood test, clinical signs indicating a higher likelihood of HIV infection include:

- TB infection
• Signs of immune deficiency such as oral thrush (candidiasis) and / or hairy leukoplakia on the tongue, recent herpes zoster or molluscum contagiosum infection, Kaposi’s sarcoma.

• History of recurrent infectious condition such as diarrhoeal diseases, pneumonia, meningitis, skin sepsis

• Unexplained weight loss

• Seborrhoeic dermatitis

• Persistent glandular lymphadenopathy

All the signs mentioned in section 2.2.3.2.3 and 2.2.3.2.4 will help to diagnosis HIV infection.

Persons with HIV infection varies in responding and reacting to HIV. In some the virus may cause immune damage and illnesses earlier than in others. When the HIV-related immune deficiency is so severe that various life-threatening, opportunistic infections and / or cancers occur, a person with HIV-infection has developed AIDS. Once a patient is diagnosed with HIV infection and AIDS, the next important step in treatment is the care of the patient. In the following paragraph, the treatment of HIV and AIDS will be discussed.

2. 5. THE TREATMENT OF HIV AND AIDS

At the present, there are no effective drugs that can cure the HIV and AIDS, but scientists have found a few drugs that can inhibit the HIV reproduction, thereby extending the life of the HIV infected person. Treatment is becoming more effective than before and the progression of the disease can be successfully halted (Greenstein, 2004: 320). The treatment is called antiretroviral treatment (ART). In order to ensure optimal therapy and good clinical outcomes, the South African National Department of Health have developed national guidelines for the use of ART.
2. 5.1. Goals of antiretroviral treatment (National Department of Health South Africa, 2004: 3)

**The primary goal of ART is to decrease HIV-related morbidity and mortality.**
- The patient should experience fewer HIV-related illnesses.
- The patient’s CD4 count should rise and remain above the baseline count.
- The patient’s viral load should become undetectable (< 400 copies/ mm3), and remain undetectable on ART.

**The secondary goal is to decrease the incidence of HIV through:**
- An increase in voluntary testing and counselling with more people knowing their status and practising safe sex.
- Reducing transmission in discordant couples (discordant couples means one partner is positive and one negative).
- Reducing the risks of HIV-transmission from mother to child.

2.5.2. Criteria for ART initiation in adults and adolescents (National Department of Health South Africa, 2004: 3).

The criteria for ART include medical criteria and psycho-social consideration

**Medical criteria**, Table 2.1 shows the medical criteria for ART initiation in adults and adolescents.

**Table 2.1: Criteria for ART initiation in adults and adolescents**

<table>
<thead>
<tr>
<th>Adults and adolescents-including pregnant women</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ CD4&lt; 200 cells/mm3 irrespective of stage</td>
</tr>
<tr>
<td><strong>OR</strong></td>
</tr>
<tr>
<td>■ WHO Stage IV AIDS-defining illness, irrespective of CD4 count</td>
</tr>
<tr>
<td><strong>AND</strong></td>
</tr>
<tr>
<td>■ Patient expresses willingness and readiness to take ART adherently</td>
</tr>
</tbody>
</table>

**Psycho-social considerations include the following** (National Department of Health South Africa, 2004: 3):
- Demonstrated reliability, i.e. patients have attended three or more scheduled visits to an HIV clinic.
- No active alcohol or other substance abuse.
- No untreated active depression.
- Disclosure: it is strongly recommended that patients have disclosed their HIV status to at least one friend or family member OR have joined a support group.
- Insight: patients need to have accepted their HIV-positive status. They need to have insight into the consequences of HIV infection and the role of ART before commencing therapy.
- Patients should be able to attend the antiretroviral centre on a regular basis or have access to services that are able to maintain the treatment chain. Transport may be needed to be arranged for patients in rural areas or for those far away from the treatment site.

2.5.3. ART regimens in adults

Two ART regimens are recommended for use in the South Africa public sector. Patients who fail both regimens will be referred for individual evaluation by ART specialists. New developments in ART will determine options for salvage therapy.

**First-line therapy for adults** (National Department of Health South Africa, 2004: 6). Table 2.2 shows the recommended regimens in adults.

Table 2.2: Recommended regimens in adults

<table>
<thead>
<tr>
<th>regimen</th>
<th>Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>d 4T(stavudine)/ 3TC(Lamivudine)/ EFV(efavirenz)</td>
</tr>
<tr>
<td>1b</td>
<td>d 4T/ 3TC/ NVP(Nevirapine)</td>
</tr>
<tr>
<td>2</td>
<td>AZT(Zidovudine)/ddl(Didanosine)/lopinavir/ ritonavir</td>
</tr>
</tbody>
</table>

Figure 2.2 displays the first-line therapy for adults in the following:
All men, as well as women on injectable contraception + condom

↓ Begin regimen 1a

D 4T 40mg every 12 hours (or 30mg bd if < 60 kg) **plus**
3TC 150mg every 12 hours **plus**
EFV 600mg at night (or 400mg if < 40 kg)

Women who are unable to guarantee reliable contraception while on therapy

↓ Begin regimen 1b

D 4T 40mg every 12 hours (or 30mg bd if < 60 kg) **plus**
3TC 150mg every 12 hours **plus**
NVP 200mg daily for 2 weeks, followed by 200mg every 12 hours

Figure 2.2: First-line therapy for adults (1a and 1b)

**Second-line therapy (regimen 2)** (National Department of Health South Africa, 2004: 14)

Patients who continue to fail virologically despite demonstrated adherence may be changed to Figure 2.3. Before changing to Figure 2.3, the patient should go through the treatment readiness and education process again. This would need to be carefully monitored as some patients might hide their non-adherence.

AZT 300mg every 12 hours **with**
ddi 400mg once a day (250mg daily if < 60kg), taken alone, dissolved in water on an empty stomach **and**
Lopinavir/ritonavir (LPV/r) 400/100mg every 12 hours

Figure 2.3: Second-line therapy for adults (regimen 2)

**Note:** Patients need to keep LPV/r safe, cool and dry (<25); ddi must be taken alone, on an empty stomach at least an hour before or at least 2 hours after a meal.
Less than 50% is absorbed if taken immediately after a meal. Tablets should be dissolved in at least 30 ml of water. No other liquids may be used to dissolve the tablets.


- If the patient has no history of WHO stage IV illness, and has a CD4 count of more than 200 cells/mm³, ART is not yet needed. The need for ART should be reassessed on completion of TB treatment.
- If patients had a history of WHO stage IV illness and/or a CD4 count of less than 200 cells/mm³, they should complete 2 months of TB therapy before commencing ART.
- If the patient has a CD4 count of less than 50 cells/mm³, or other serious HIV-related illness, make sure that the patient is tolerating TB treatment before initiating ART. The patient should complete at least 2 weeks of TB treatment before initiating ART. Patients in this group should be started on first-line therapy consisting of stavudine, lamivudine and efavirenz. Nevirapine should generally be avoided because drug levels might decrease.

**2. 5.4. Prophylaxis after occupational exposure to HIV** (National Department of Health South Africa, 2004: 18)

Healthcare workers have a low but measurable risk of HIV infection after accidental exposure to infected blood or body fluid. Compliance with infection control recommendations in handling sharp objects is the mainstay in the prevention of occupational HIV infection; but additional prevention strategies now include post-exposure prophylaxis with ART. Treatment has to commence as soon as possible within 1 to 2 hours after exposure. Table 2.3 and Table 2.4 are recommendations for post-exposure prophylaxis (PEP). After occupational exposure, this includes blood, CSF, semen, vaginal secretions and synovial/pleural/pericardial/peritoneal/amniotic fluid from HIV sero-positive patients.
Table 2.3: Recommendations for PEP after occupational exposure

<table>
<thead>
<tr>
<th>Exposure</th>
<th>HIV status of source patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td>Intact skin</td>
<td>No PEP</td>
</tr>
<tr>
<td>Mucosal splash/no-intact skin</td>
<td>Consider 2-drug regimen</td>
</tr>
<tr>
<td>Percutaneous (sharps)</td>
<td>Recommend 2-drug regimen</td>
</tr>
<tr>
<td>Percutaneous (needle in vessel or deep injury)</td>
<td>Recommend 2-drug regimen</td>
</tr>
</tbody>
</table>

Table 2.4: Recommended PEP drug regimen

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Frequency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZT</td>
<td>300mg</td>
<td>12-hourly</td>
<td>28 days</td>
</tr>
<tr>
<td>3TC</td>
<td>150mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPV/r in cases of high exposure</td>
<td>400mg/100mg</td>
<td>12-hourly</td>
<td>28 days</td>
</tr>
</tbody>
</table>

2. 6. PREVENTION OF HIV AND AIDS TRANSMISSION

Before a vaccine for HIV is developed and in the absence of any cure for HIV and AIDS, the prevention of HIV and AIDS transmission is the only way to combat the prevalence of HIV infection. There are many factors that influence the prevention of HIV and AIDS transmission. They are explored in the following paragraph.

2. 6.1. Factors influencing the prevention of HIV and AIDS transmission

As mentioned in the previous section, HIV is transmitted through certain behaviour patterns. According to van Dyk (1992: 3) HIV and AIDS should not be seen as an
exclusive medical problem for which medical science has to find an answer. The prevention of HIV and AIDS should include behavioural issues that can be controlled through changing high-risk behaviour. WHO (1988:12) stated that effective education and information campaigns are the key to preventing further spread of HIV infection. However, the prevention of HIV transmission is not restricted to providing information as some research had identified a number of additional factors other than knowledge about HIV and AIDS in reducing risks. These factors are commonly grouped into what is known as the KAP model or knowledge, attitude and risk-practice mode (Lindegger and Wood, 1995 in Lahav, 2001: 30). The elements of this model will be explored in the following:

The KAP model

**Knowledge:** knowledge of the prevention of HIV and AIDS transmission and behavioural intervention are the first elements of the KAP model. While this element is not in itself sufficient to reduce HIV transmission, it is an essential starting point in any HIV prevention programme (Kalichman, Nachimson, Cherry and Williams 1998 in Lahav, 2001: 30). Therefore, having knowledge of the prevention of HIV and AIDS transmission is the starting point for registered nurses to prevent HIV transmission. This treatise is to explore the knowledge of registered nurses related to the prevention of HIV and AIDS transmission.

**Attitudes:** the second element of the model which refers to attitudes about HIV and AIDS. This includes perceptions of personal vulnerability to HIV, perceived responsibility for infection, attributes concerning the causes of HIV and AIDS, beliefs about HIV and AIDS and its cure and stereotypes about infected persons (Lindegger and wood, 1995 in Lahav, 2001:30). Certain studies (Steins and Weiner, 1999 in Lahav, 2001: 31) showed that although the perceived responsibility for infection encouraged reducing risky practices, it also reduced the willingness to help infected individuals. The concern with this latter point is that reduced empathy is related to reduced-risk practice; and is therefore considered to be a stumbling block in preventing HIV transmission. Therefore the effects of responsibility need to
be taken into account in the prevention of HIV and AIDS transmission programmes.

In this study, the registered nurses’ attributes of responsibility have to be surveyed.

Another psychological concept known as the self-positive bias means “it won’t happen to me” (Raghubir and Menon, 1998 in Lahav, 2001: 32). It is a perception of personal invulnerability to HIV. The perception blocks intentions in reducing risky behaviour. Some researchers (Raghubir and Menon, 1998 in Lahav, 2001: 32) have suggested that by increasing the accessibility to the causes of HIV infection, perceptions of one’s own risk increased, which can reduces the self-positivity bias. Because experience of caring for HIV and AIDS patients increases the registered nurses’ accessibility to the causes of infection, their attitudes and intentions in reducing risk behaviour should be improved. Registered nurses’ attitudes in the prevention of HIV transmission, particularly concerning their own vulnerability to infection and responsibility for infection, will help them translate received the knowledge of the prevention of HIV transmission into safe behaviours. This will reduce their both personal and occupational risk practice and protect them from HIV infection and through standard clinical techniques protect their patients as well.

**Risk practice:** Some factors influence reducing risk practice, such as self-efficacy. Self-efficacy is regarded as an individual’s ability to see himself as competent, able and willing to carry out particular tasks. This perception is directly linked to actual task performance (Schlebusch and Cassidy, 1995 in Lahav, 2001: 33). The consideration of self-efficacy in preventing HIV transmission is of importance. Nevertheless, it necessitates working with the individual. In countries like South Africa, resources are limited for individual work; but this dilemma may be solved through preventive education, which will be explored in the next section of this chapter.

The process of preventing HIV transmission has highlighted the importance of including areas of the KAP model. Knowledge of the prevention of HIV transmission is an essential starting point to prevent it. Attitudes concerning the
perception of those HIV-infected; personal vulnerability to HIV; perceived responsibility for infection and risk practice will guide registered nurses to reduce their risk practice, such as unsafe sexual behaviour and misbehaviour in health settings.

2.6.2. Preventive education
Since HIV and AIDS epidemics spread, different education efforts to educated people in the prevention of HIV and AIDS transmission have been made all over the world. South Africa which has one of the highest prevalence rate in the world, has organised education campaigns which have focused on increasing public knowledge and self-protective behaviour regarding HIV and AIDS with a varied impact.

In order to achieve effective results in education, psychological factors mentioned in the last section should be considered, because these factors have an impact on an individual’s personal response to an education campaign. Research has shown that many individuals perceive that they are less likely to contract HIV than other people in the population (Raghubir & Menon, 1998 in Gilbert, 2002: 61). Regular in-service training of healthcare workers is a basic management strategy with regard to STDs, especially HIV and AIDS (South African Department of Health, 2000: 15).

It has been noted that, although informal and formal in-service training programmes on HIV and AIDS prevention are available for nurses, nurses are failing to integrate this information into their clinical practice (van Rensburg, 2004: 340). Some survey results show that, although nurses have undergone study programmes and taken workshops to update their skills on AIDS, there was no change in their behaviour (McNabb in Tabak; Ben-Or & Zur, 1997: 741).
An essential and integral part of HIV and AIDS prevention campaigns is the encouragement of responsible condom usage but even this in itself has been shown to present a number of problems. Although 62.8% of registered nurses in one study in China (Chen et al., 2004: 417-421), agreed that condoms were effective in preventing HIV and AIDS transmission, only 7.9% of them used condoms during their first experience of sexual intercourse, and 58.6% of them thought it was less comfortable to use condoms. Furthermore, one study showed that one of the reasons for resistance to condom use for young people was the unsympathetic attitude of healthcare staff (van Rensburg, 2004:285-286).

Research conducted in the Western Cape found nurses to be recommending and promoting the injection as a form of contraception, rather than the use of condoms (Tillotson & Maharaj 2001 in van Rensburg, 2004: 286). Siegel and Gibson (1988: 66-70) summarised the prevailing negative attitude to condom usage as follows: condoms compromise the pleasure of intercourse; they are seen more as a contraceptive device than as a form of prophylaxis against sexually transmitted diseases; their usage is believed to be unnatural; it is difficult to anticipate or prepare in advance for sexual activity; the belief that a partner would be offended by the introduction of a condom; the belief that cures for AIDS are available thus making condom usage unnecessary; the stigmatisation of condom users as promiscuous or in some way morally questionable; and the embarrassment or discomfort felt in condom purchase. The knowledge and attitudes of registered nurses towards the use of condom will influence their personal behaviours and the efficiency of a patient’s education. Culture is another factor influencing the condom use in real life. One study conducted by Ackermann and de Klerk (2003, 40-43) in South Africa has shown that an ideal culture of trust resulted in non-condom use and a real culture of infidelity exists. This places individuals at risk of contracting HIV, as condom use is guided by an ideal rather than a real culture.
Nurses and other healthcare professionals are recognized as possible risk groups for contracting HIV owing to the risk of accidental sharp injury and exposure to HIV infected blood and other body fluids (Evian, 2000:307). It is therefore of the utmost importance for them to know how HIV infections can be prevented. The most basic means of preventing HIV and AIDS infections are to ensure that body fluids such as blood, seminal or cervical fluids, do not enter the bloodstream of a non-infected person. It must also be emphasised that sexual transmission of HIV still remains by far the most important mode of infection. Nurses and other healthcare professionals should strive to reduce both their personal and their professional risks and prevention education campaigns can achieve this goal.

In the following paragraph the prevention of HIV infection within sexual relationships will be discussed briefly and then the preventive measures in the healthcare setting: hospital will be discussed in detail.

2. 6.3. The prevention of HIV infection in sexual relationships
Nurses must take note of safer sex practice, not only for personal reasons, but also to counsel patients, especially teenagers. Safe sex practices include the following (van Dyk, 1992: 24):

- Limit the number of sex partners. Having sex with many partners, or having sex with someone who possibly has several other sex partners, is dangerous.
- In cultures where a man has more than one wife, both he and his wives should be uninfected and remain faithful to their relationship.
- The correct use of condoms is one of the most effective ways in combating the spread of HIV.
- Use spermicidal creams with condoms.
- Use only lubricants with a water base with condoms.
- Avoid all high-risk sex practices such as vaginal, anal and oral sex without a condom. Avoid casual sex, sex with a prostitute, sex with a partner who
shares needles and syringes with other drug users and sex with a person whose sexual history is unknown.

- Never allow semen, vaginal fluids, blood or menstrual blood to enter the vagina, anus, mouth or broken skin. Wash hands with soap and water if in contact with those fluids.
- Adopt alternative sexual practices.

2.6.4. The prevention of HIV infection in the healthcare setting
Although the risk of contracting HIV from infected patients is extremely low, there are some risks that nurses should consider and reduce these risks, thereby preventing professional HIV infection.

2.6.4.1. The nurse’s risk of contracting HIV in the healthcare setting
The Centre of Disease Control (CDC) in USA (2001) have indicated that in clinical practice the following factors are high-risk factors for healthcare workers:

- skin piercing with a needle or with other sharp instruments which have been contaminated with blood or other body fluids from an HIV infected person;
- non-intact skin such as broken skin, open cuts or wounds exposure to blood or other body fluids from an HIV infected person;
- splashes from infected blood or body fluids onto the mucous membranes (mouth, eye and nose).

The risk of transmission of HIV in the working setting is dependent on healthcare personal practices and the prevalence of infection among patients. South Africa is regarded as having one of the highest HIV prevalence rates in the world with an estimated 6 million South Africans having lived with HIV and AIDS at the end of 2005 (Department of Health in South Africa, 2000:5). This situation puts nurses in South African in a high-risk category of transmission of HIV, especially in public hospitals.
According to Damani (2003: 206) the risk of HIV and AIDS transmission will be increased in the following situations:

- A large quantity of blood
- Types of body fluid involved such as blood, serum, plasma and all biological fluids visibly contaminated with blood, pleural, amniotic, pericardial, peritoneal, synovial and cerebrospinal fluids and uterine/vaginal secretion or semen
- A needle in the blood vessels
- Deep injuries
- Hollow-bore needle injuries
- Blood or body fluid coming from patients with terminal illnesses.

2. 6.4.2. The prevention of HIV transmission in hospital

van Dyk (1992: 26) states that in clinical practice, nurses should see every patient as a possible carrier of HIV because, according to the South African law, HIV testing is voluntary in South Africa. Screening every patient is impossible; and it is meaningless for the patient in the window period of HIV infection to have an HIV antibody test. Therefore Universal Precautions to prevent HIV transmission should be used with every patient. Believing that precaution is only applicable to the “known carrier” of HIV gives a false sense of security and is a very dangerous attitude. In protecting oneself against unknown carriers of HIV and other unrecognised infections like HIV, it is important to comply at all times with the following golden rules:

All body fluids should at all times be assumed to be infected with HIV. Universal blood and body fluid precautions should therefore always be practised with all patients.

2. 6.4.2.1. Universal Precautions

CDC (2001) in the USA developed a strategy of universal blood and body fluid precautions to address concerns regarding the transmission of HIV in the healthcare setting. The universal precautions emphasise that all patients should be
assumed to be infectious for HIV and other blood-borne pathogens. In the hospital
Universal Precaution should be followed when workers are exposed to blood, to
certain other body fluids as specified by the CDC or to any body fluid visibly
contaminated with blood. Universal Precautions are based on the risk of exposure
to blood and not on a positive diagnosis of HIV infection (van Dyk, 1992: 27).

2. 6.4.2.2. Blood and body fluids requiring Universal Precautions

The following body fluids can be infectious when contaminated and are therefore
applicable in the Universal Precautions (van Dyk, 1992: 28):

- Blood (including menstrual blood)
- Any body fluids containing visible blood
- Semen
- Vaginal secretions (including menstrual discharge)
- Body tissue
- Amniotic (pregnancy) fluid
- Cerebrospinal (brain and backbone) fluid
- Peritoneal (abdomen) fluid
- Pericardial (heart) fluid
- Pleural (chest) fluid
- Synovial (joint) fluid

However, there are some body fluids due to the low concentration of the virus for
which Universal Precautions are not required when handling these fluids, unless
visible blood is present. These body fluids not requiring Universal Precautions
include:

- Faeces
- Nasal secretions
- Saliva
- Sputum (lung/ mucus)
- Sweat (HIV is not present in sweat)
- Tears
• Urine
• Vomitus (van Dyk, 1992: 28).

2. 6.4.2.3. Guidelines for the prevention of HIV infection in hospital
According to Universal Precautions, guidelines of the prevention of HIV infection in hospital include: basic hygiene and precautions, protective clothing, precautions concerning needlestick and sharp injury and invasive procedures, precautions concerning laboratory specimens and disinfection of HIV.

2. 6.4.2.3.1. Basic hygiene and precautions
Basic hygiene and precaution include routine hand-washing and covering of skin lesions.

- **Routine Hand washing** is the most basic measure to prevent the spread of infection (Van Dyk, 1992: 29). Routine hand-washing will render the hands socially clean and remove transient micro-organisms provided that an effective technique is used.

The procedure of routine hand-washing is as follows (Damani 2003:228):

A. Wet hands and forearms
B. Apply sufficient plain, non-microbial (bar or liquid) soap to the hands to obtain a good lather on the surface of the hands for at least 10 seconds
C. Rub vigorously to form lather on the surface of the hands for at least 10 seconds
D. Rinse hands thoroughly under running water for a further 10 seconds
E. Dry thoroughly using good quality paper towels

Damani (2003: 228-230) recommended hands should be washed:

✧ Before and after a work shift
✧ Before and after each nursing contact
✧ After contact with blood, body fluids, secretions and excretions
✧ After handling soiled or contaminated equipment or linen
✧ Before eating, drinking or handling food (including serving meals) or drinks or administering drugs.
✧ After using the toilet
During outbreaks of infection when contact with blood and body fluid has occurred or in situations where microbial contamination is likely to occur.

- In high-risk areas, e.g. patients in isolation, intensive care and special care baby units.
- Before performing an invasive procedure.
- Before and after touching wounds, urethral or IV catheters.
- Before wearing and after removing gloves.

Although hand-washing is considered to be the most important single intervention for preventing nosocomial infections, studies have repeatedly shown poor compliance with hand-washing by hospital personnel. The problem has been highlighted especially among doctors who frequently fail to wash their hands between patients. Failure to comply is a complex problem that includes elements of lack of motivation and lack of knowledge about the importance of hand-washing. It may also be due to real or perceived obstacles, such as understaffing, inconveniently located hand washing facilities and unacceptable hand washing products or dermatitis caused by previous hand washing.

Several strategies have been suggested to improve compliance. Long-term success will require development of programmes and sustained efforts at promoting compliance with hand washing. Effective interventions will probably be multidimensional, and will require the application of behavioural science theory combined with engineering and/or product innovation (Damani, 2003: 234).

- **Covering of skin lesions**

HIV can enter the bloodstream through broken skin. For all clinical procedures, existing wounds, skin lesions and all breaks in exposed skin should be covered with waterproof dressing (Damani, 2003: 191). It is therefore important to ensure that one’s hands are always in good condition. van Dyk (1992: 30-31) has mentioned some measures that can reduce HIV infection through non-intact skin.
Use hand lotion to prevent skin cracking. Do not, however, apply lotion right after washing one’s hands or right before giving direct care since the lotion might interfere with the action of antimicrobial soap thus rendering it ineffective.

Cover skin lesions on one’s hands with waterproof dressings until healed.

Treat oozing lesions, weeping dermatitis, or other breaks in the skin, properly and cover at all times.

Nurses with serious oozing skin lesions should refrain from direct patient care, and contact with patient care equipment, until the condition has improved.

2. 6.4.2.3.2. Protective clothing

Protective clothing should be worn whenever there is a possibility of contact with blood or body fluids. The follow paragraph will indicate a discussion of universal infection control practices regarding the wearing of gloves, eyeshields, masks, and aprons.

- **Gloves**

Wearing gloves is not recommended for casual contact with a patient. It is not necessary to wear gloves when touching intact skin, such as when giving a backrub, taking blood pressure or giving medication. Gloves should always be worn when touching blood and body fluids (to which Universal Precautions apply), mucous membranes, body tissue, or any compromised skin areas of all patients. Damani (2003: 191) recommended the following situations should wear gloves:

- Drawing blood.
- Starting intravenous therapy.
- Changing wound dressings.
- Changing drainage bags.
- Performing surgical procedures.
- Performing finger or heel pricks on babies and children.
- In emergency situations where tasks involve exposure to blood.
- Childbirth.
 Whenever blood contamination is a possibility, e.g. while working with restless patients.

 For cleaning spills of blood and body fluids.

 When a nurse has open, weeping lesions or chronic dermatitis on her hands.

 **NOTE:** Wash hands immediately after removing gloves, change gloves between patients and do not handle personal items when wearing gloves.

 **Protective eyewear**

 Protective eyewear (glasses, goggles or face-shields) is to help guard the mucous membranes of the eyes, nose, and mouth of the healthcare workers from exposure to blood or body fluids that may be splashed, sprayed or splattered into the face during the clinical procedures (Damani, 2003: 239).

 Protective eyewear must be worn during procedures such as bronchoscopy and during certain surgical, dental and obstetrical procedures that are likely to generate droplets of blood or high-risk body fluids (Damani, 2003: 239).

 Masks and eyewear should be worn together (Van Dyk, 1992: 33).

 **Face masks**

 Wearing of masks during routine ward procedures such as wound dressing or invasive medical procedures is for prevention of infection (Damani, 2003: 239), but use of a mask is not a substitute for good infection control practice (Damani, 2003: 239).

 Dental healthcare workers should wear masks or facial barriers (Damani, 2003: 239). Damani (2003: 239) recommends that masks should:

 ✷ be fitted according to the manufacturer’s instructions;

 ✷ be used only once and changed when moist or grossly contaminated;

 ✷ not be touched by hand while being worn;

 ✷ be removed by untying and handled only by the ties and never by the face-covering part which may be heavily contaminated with the microorganisms; and

 ✷ not be worn loosely around the neck, but be removed and discarded as soon as practicable after use.
• **Aprons** (Damani, 2003: 239-240).
  ✩ Single-use disposable plastic aprons are recommended for general use and should be worn when there is a risk that clothing or uniforms may become exposed to blood, body fluids, secretions and excretions.
  ✩ Plastic aprons should be worn as single-use items for one procedure or episode of patient care only.
  ✩ Aprons should be removed immediately after use by tearing the neck strap and the waist tie and discarded into clinical waste bags before leave the room.
  ✩ Hands should be washed immediately after removing and bagging the soiled plastic apron.

• **Gowns** (Damani, 2003: 240).
  ✩ Clean, non-sterile gowns should be worn during procedures, which are likely to expose healthcare workers to spraying or splashing of blood, body fluids, secretions, or excretions.
  ✩ Gowns should be impermeable and water repellent and make of plastic.
  ✩ Grossly soiled gowns should be promptly removed and placed in a designated leak-proof laundry bag.
  ✩ Hands should be washed immediately after removing and bagging of the soiled gown.

2.6.4.2.3.3. Precautions concerning injuries related to sharp objects

According to van Dyk (1992: 35-36), the following are guidelines for protection against sharp injuries:

✩ Do not resheath, bend or break needles or other sharp objects.
✩ Do not remove needles from disposable syringes, discard the needle and syringe together.
✩ Do not manipulate a needle or other sharp instruments by hand.
✩ Do not carry syringes with exposed needles (use receive or some other protection).
✩ Do not remove scalpel blades by hand; use artery forceps.
Do not leave used sharp objects lying around.
Do not dispose of needles or syringes in the trash bin.
Discard used needles and other sharp instruments in puncture-proof containers immediately after use.
Puncture-proof containers should be located as near as practical to where they are to be used. Make sure that the opening of the container is large enough not to obstruct disposal. Place the container below eye level for good visibility. Cover and discard the container before the fill line is exceeded.

2.6.4.2.3.4. Precautions concerning laboratory specimens
The following are precautions concerning laboratory specimens (van Dyk, 1992: 35-36):

- Nurses should always wear gloves when drawing blood and when handling any specimen of body fluid, regardless of the source (blood, urine, sputum or faeces).
- Cover all open wounds on hands and arms with a waterproof dressing
- Place all blood or body fluid specimens in firm, leak-proof, unbreakable, plastic containers with secure lids to prevent leakage during transport
- Avoid contaminating the outside of the container
- Clean any contamination on the outside of the container with an antimicrobial solution before dispatching the specimen. Make sure that the forms accompanying a specimen are clean.
- Do not dispatch specimens in syringes with exposed needles
- Hands must always be washed after accidental exposure to specimens
- Cover working surfaces with a non-penetrative material that is easy to clean, such as plastic film
- Disinfect any spillage of blood or body fluid with an appropriate disinfectant before cleaning it. Wear gloves when cleaning up blood or body fluids
Dispose of specimens carefully by pouring them down a drain connected to a sewer. If impossible, decontaminate blood and body fluids with an appropriate disinfectant before disposal. Wear gloves during disposal.

2.6.4.2.4. Disinfection of HIV

- The HIV virus is not stable and does not survive for long periods outside the human body (Evian, 2000:18).
- Since HIV is destroyed much more quickly than other organisms, routine sterilisation methods are appropriate for HIV (van Dyk, 1992: 42).
- Remove organic material from equipment by thorough washing before disinfecting or sterilisation. Wear gloves and plastic aprons for this procedure (van Dyk, 1992:42).
- HIV is easily destroyed by boiling small objects for 10 minutes and larger objects for 30 minutes (van Dyk, 1992:42).
- Moist heat (autoclaving) readily kills the virus at 121°C for 15 minutes; 126°C for 10 minutes; or 134°C for 3.5 minutes (van Dyk, 1992:42).
- Dry heat at 121°C for 16 hours; 140°C for 3 hours; 160°C for 2 hours or 170°C for 1 hour is sufficient to kill HIV (van Dyk, 1992:42).

2.6.4.2.5. Safe blood supplies

The blood safety policy of the South African national blood service is based on the following key principle (Karim and Karim, 2005: 207):

- A co-ordinated programme to procure sufficient blood from low-risk voluntary, non-remunerated blood donors
- A programme that aims to be nationally self-sufficient for low-risk blood products
- Issuing blood according to a hierarchy of risk
- Recognising the right to privacy of the individual donor
• Protecting the health of blood donors, recipients of blood products and staff members
• Educating blood donors, particular learners, on the importance of donating blood, the spread and pathogenesis of HIV and AIDS and the effects of a safe healthy lifestyle on the quality and safety of the blood supply.

In South Africa all blood donations are routinely screened for the presence of HIV antibodies and the P24 antigen by sensitive and specific third-generation enzyme-linked immuno-assays (EIA), but blood donations in South Africa are currently not screened for viral nucleic acid (Nucleic Acid Testing; NAT) (Karim and Karim, 2005: 206). The reality makes the so-called window period of infectivity become the major HIV risk to the safety of blood.

2.7. EPIDEMIOLOGY

The subsequent section will consider the global, national and local (Eastern Cape) epidemiology of HIV; the factors influencing HIV and AIDS in South Africa and will focus particular attention on the impact of HIV and AIDS to health, education and economics. This will be done in order to provide a perspective of the extent of the HIV and AIDS problem in the prevention of HIV transmission.

2.7.1. A global summary

HIV and AIDS has changed the lives of individuals; ruined their health; caused their death; widened the gap between rich and poor; and undermined social and economic security (Barnett & Whiteside, 2006: 5-9). According to estimated figures from the Joint United Nations Programme on HIV and AIDS (UNAIDS) and World Health Organisation (WHO), 39.4 million people, including 3.2 million children, were living with HIV worldwide at the end of 2004. Of these people 25.4 million were living in Sub-Saharan Africa and 8.2 million in Asia in 2004 (Barnett & Whiteside, 2006: 9-15). Since the first AIDS patient was reported two decades ago,
AIDS has killed more than 21.8 million people worldwide. In 2004, 3.1 million people in the region became newly infected, while 2.3 million died of AIDS. A total of 25.4 million people lived in Sub-Saharan Africa at the end of 2004 (Barnett & Whiteside, 2006: 10).

Table 2.5 shows a global and regional summary of the HIV and AIDS pandemic (end of 2002). From the table women constitute 58% of those infected with HIV in Sub-Saharan Africa, contrary to the situation in most other regions where women are in the minority among those infected. In Sub-Saharan Africa, some two million more women than men are infected with HIV— a situation caused by amongst others, prevailing gender inequalities and harmful cultural beliefs about masculinity and male sexual behaviour (UNAIDS 2001D in van Rensburg, 2004: 277).

In some countries the epidemic is shifting towards more vulnerable categories of people: young women, ethnic minorities and the poor in particular appear to face disproportionate risks of infection. These are also the categories most likely to be missed by prevention campaigns and to be deprived of access to treatment. About One-third of those living with HIV and AIDS at the end of 2001 were between 15 and 24 years of age – most of them unaware that they were carrying the virus (UNAIDS 2002a in Van Rensburg, 2004: 277). Of the approximately 14 000 new infections per day in 2002, some 50% occurred in the age group 15-24 years.

Table 2.5 Global and regional summary of the HIV and AIDS pandemic (end of 2002)

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</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>8.8</td>
<td>29.4 million</td>
<td>58</td>
<td>3.5 million</td>
<td>2.4 million</td>
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<td>Caribbean</td>
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<td>50</td>
<td>60 000</td>
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<td>Region</td>
<td>Prevalence</td>
<td>Total</td>
<td>Incidence</td>
<td>New Cases</td>
<td>Deaths</td>
</tr>
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<td>-------------------------------</td>
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<tr>
<td>North America</td>
<td>0.6</td>
<td>980 000</td>
<td>20</td>
<td>45 000</td>
<td>15 000</td>
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<tr>
<td>South &amp; Southeast Asia</td>
<td>0.6</td>
<td>6 million</td>
<td>36</td>
<td>700 000</td>
<td>440 000</td>
</tr>
<tr>
<td>Latin America</td>
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<td>1.5 million</td>
<td>30</td>
<td>150 000</td>
<td>60 000</td>
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<tr>
<td>Eastern Europe &amp; Central Asia</td>
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<td>27</td>
<td>250 000</td>
<td>25 000</td>
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<tr>
<td>Western Europe</td>
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<td>Middle East &amp; North Africa</td>
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<td>7</td>
<td>500</td>
<td>&lt; 100</td>
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<tr>
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<td>1.2 million</td>
<td>24</td>
<td>270 000</td>
<td>45 000</td>
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<tr>
<td>Total (world)</td>
<td>1.2</td>
<td>42 million</td>
<td>50</td>
<td>5 million</td>
<td>3.1 million</td>
</tr>
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</table>

Sources: van Rensburg, 2004: 276

2.7.2. HIV and AIDS in South Africa

The section below will focus on the HIV and AIDS epidemic in South Africa, including the epidemiology, the factors influencing the epidemic and the social, economic and political effects of HIV and AIDS.

2.7.2.1. The epidemiology of HIV and AIDS in South Africa

The HIV and AIDS epidemic is now in its third decade, yet it shows no sign of relenting, South Africa is regarded as having one of the highest HIV prevalence rates in the world, with an estimated 6 million South Africans living with HIV and AIDS by the end of 2005 and almost 1 million orphans under the age of 15 whose
mothers will have died of AIDS. It is estimated that more than a million South African people will die of AIDS by 2008 and their average life expectancy is expected to fall to 40 years between 1998 and 2008 (South African Department of Health, 2000:5).

AIDS has become the leading cause of death in South Africa (Bradshaw, Nannan, Groenewald, Joubert, Laubscher, Nojilana, Norman, Pieterse and Schneider, 2005: 496-503). Approximately 40% of all deaths in the 15-49-year age group in South Africa are AIDS-related and it is predicted that, if no effective measures are taken, the total number of AIDS-related deaths in South Africa will rise to between five and seven million by 2010 (Van Rensburg, 2004: 279-280). The figures of provincial and national HIV-prevalence rates among antenatal clinic attendees are presented in Table 2.6 below.

From Table 2.6 it is evident that the levels of HIV prevalence in South Africa reflect large geographical variations between the provinces, with KwaZulu-Natal consistently reflecting the highest prevalence rate. From prevalence rates elsewhere on the continent it would appear that the epidemic in Africa has a natural ceiling of around 30% for the adult prevalence rate (Whiteside & Sunter 2000 in van Rensburg, 2004:281). Some of the latest figures, especially those for Mpumalanga and the Free State, tend to confirm this, although KwaZulu-Natal and to a certain extent also Gauteng, have already broken through this ceiling. Other provinces below this ceiling are catching up, and in some cases (Limpopo and the Eastern Cape) the prevailing socio-economic dynamics and demographic profiles indeed point at optimum breeding grounds for a future escalation towards the ‘natural ceiling’. Hence, awareness campaigns and prevention programmes are of crucial importance in order to stop the increase from continuing in those provinces that are below the rates in those provinces that are either close to or already beyond the ‘natural ceiling’.
HIV has the potential to spread much faster in South Africa than in other African countries because of the efficiency of transport routes and the migration of labourers (Barnett & Whiteside, 2006: 159-166). The South African epidemic thus

Table 2.6: Provincial and National HIV prevalence rates among antenatal clinic attendees (1996-2002)

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<td>Kwazulu-Natal</td>
<td>19.9</td>
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<td>27.3</td>
<td>29.7</td>
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<td>Gauteng</td>
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<td>17.1</td>
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<td>23.9</td>
<td>29.4</td>
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<td>31.6</td>
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<td>Free State</td>
<td>17.5</td>
<td>20.0</td>
<td>22.8</td>
<td>27.9</td>
<td>27.9</td>
<td>30.1</td>
<td>28.8</td>
</tr>
<tr>
<td>North West</td>
<td>25.1</td>
<td>18.1</td>
<td>21.3</td>
<td>23.0</td>
<td>22.9</td>
<td>25.2</td>
<td>26.2</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>8.1</td>
<td>12.6</td>
<td>15.9</td>
<td>18.0</td>
<td>20.2</td>
<td>21.7</td>
<td>23.6</td>
</tr>
<tr>
<td>Limpopo</td>
<td>8.0</td>
<td>8.2</td>
<td>11.5</td>
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<td>14.5</td>
<td>15.6</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>6.5</td>
<td>8.6</td>
<td>9.9</td>
<td>10.1</td>
<td>11.2</td>
<td>15.9</td>
<td>15.1</td>
</tr>
<tr>
<td>Western Cape</td>
<td>3.1</td>
<td>6.3</td>
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<td>7.1</td>
<td>8.7</td>
<td>8.6</td>
<td>12.4</td>
</tr>
<tr>
<td>National average</td>
<td><strong>14.2</strong></td>
<td><strong>17.0</strong></td>
<td><strong>22.8</strong></td>
<td><strong>22.4</strong></td>
<td><strong>24.5</strong></td>
<td><strong>24.8</strong></td>
<td><strong>26.5</strong></td>
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Sources: Compiled from department of Health (2001; 2002; 2003a) in van Rensburg, 2004:282

in many ways mirrors the epidemic in other Sub-Saharan African countries, despite the potential that it has for benefiting from the delayed onset of the epidemic and for developing interventions to reduce the impact of HIV and AIDS on the country. In order to conceptualise HIV and AIDS in South Africa and the difficulties involved in managing an epidemic of this magnitude, it is necessary to examine the factors in South Africa’s unique political and social history which have impacted on the HIV and AIDS epidemic in this country.
2. 7.2.2. Factors influencing HIV and AIDS in South Africa

With HIV and AIDS being identified in South Africa in the 1980s and reaching epidemic proportions in the 1990s, the virus made contact with the country at a particularly vulnerable time in its history, when substantial political and social changes were under way. Prior to 1994, an effort of the apartheid government to prevent the spread of HIV was largely ineffectual in many regions of South Africa, as the encouragement of condom usage was often perceived as a governmental strategy to decrease the rate of black population growth (Barnett & Blaikie 1992 in Gilbert, 2002: 40-41). The apartheid system of government also brought with it many factors which facilitated the rapid spread of HIV through the population. The culture of violence, poor education, lack of literacy and the disruption of community life all contributed towards the growing problem, which made the preventive intervention of HIV and AIDS strategies difficult (Barnett & Blaikie 1992 in Gilbert, 2002:40-41). Poverty aggravates the lack of access to education and other health services as well as economic resources. A significant proportion of the poor reside in rural areas, putting them at a disadvantage regarding healthcare and healthcare expenditure (van Rensburg et al., 2004: 290-291).

The spread of HIV in South Africa is also fostered by the region’s dependence on migrant labour (Barnett & Whiteside, 2006:163-164). Migrant labourers are separated from their families, have easy access to sex workers or a “town wife” and they soon pick up a second family and an ordinary sexually-transmitted disease as well as HIV and then when they go home and pass the HIV virus on to their families.

Women in South Africa frequently lack the power in sexual relationships to determine whether and how sexual intercourse will take place, and sexual violence, abuse and exploitation of women are commonplace (van Rensburg, 2004: 289). Violence – or the fear of violence – reduces the woman’s ability to negotiate condom use. One study found that 57% of women in the Eastern Cape believed that they could not refuse sex with their partner (UCSF 2001 in Van Rensburg,
Education campaigns which have focused on increasing public knowledge and self-protective behaviour regarding HIV and AIDS have had a varied impact. Although South African women have reasonable knowledge about HIV and AIDS (Department of Health 2002a in van Rensburg, 2004: 283), this knowledge does not always translate into safe sexual behaviour that will reduce the risk of HIV infection.

2. 7.2.3. The effects of HIV and AIDS on South Africa

HIV and AIDS have profound effects on almost every aspect of society, economic activity and family life and even upon national security in South Africa. Some of the hardest hits are the health, education and business/industry sectors (van Rensburg, 2004: 298).

Education is a fundamental building block in a country’s development. AIDS affects the education sector in the following ways (UNAIDS 2000; Bollinger & Stover 1999; de Souza 2002 in van Rensburg et al., 2004:299): AIDS-related illnesses and deaths are reducing the supply of skilled and experienced teachers, and thus lowering the quality of education; AIDS reduces family budgets, thus reducing the money available for school-related expenses and increase the pressure on children to drop out of school to join the workforce in order to supplement family income. Children may also leave school in order to look after sick family members.

The HIV and AIDS epidemic poses one of the greatest challenges to business development in South Africa. van Rensburg (2004: 6) states that the economic consequences of HIV and AIDS will lead to substantial declines in productivity, skills and expertise. It is estimated that more than a quarter of the HIV-infected persons are economically active South Africans. Due to healthcare and other HIV and AIDS-related expenses may reduce investments and drive up the cost of capital. Public sector, corporate and personal savings are decreased, and reduce
The economic growth of the country.

The epidemic of HIV and AIDS in South African also places an increased burden on the health services of a society, especially on the public health sector this is explored in the next section in detail.

2. 7.2.4. The impact of HIV and AIDS on the public hospitals

The adverse effects of AIDS on the health sector are due to the increase in the number of people seeking services; and healthcare for AIDS patients is more expensive than for most other conditions. There is evidence that over the last ten years total hospital admissions have been rising and an increasing proportion are due to people with HIV-related diseases at the expense of HIV-negative patients (Karim & Karim, 2005:340-344). The majority of the population (80%) make use of the publicly-funded hospitals and primary case clinic system. Therefore public sectors are likely to be seriously affected by the epidemic (Gilbert et al.,2002; Steinberg et al.,2000 in van Rensburg et al., 2004: 299). However, largely owing to a redirection of spending towards primary healthcare at clinics, public hospitals are unable to cope with the present demands, the situation aggravated by the fact that an estimated 5% of dentists and 23% of student nurses are HIV positive (Kenyon et al., 2002 in van Rensburg et al., 2004: 299).

The largest impact of HIV and AIDS on the public sectors in South Africa is on the public hospitals. Research commissioned by the South African Department of Health (Abt Associates/Kaiser Family Foundation, 2001) indicates that in the year 2000 an estimated 628 000 admissions to public hospitals were for AIDS-related illnesses, which amounts to 24% of all public hospital admissions. Public hospitals are unable to cope with the present patients’ demands caused by HIV and AIDS, let alone the future burden (van Rensburg, 2004: 298).
The main impact on adult health services appears to be increased hospital admissions, leading to ward overcrowding and the possible exclusion of HIV-negative patients. The increasing incidence of TB that accompanies HIV in Southern Africa has also had an effect on hospital and other healthcare services. Increased mortality is seen in both patients infected with HIV and those who are not (Karim & Karim, 2005: 336).

The prevalence of HIV and HIV-related diseases is increasing among paediatric patients using public sector health services. Whilst the spectrum of disease is not substantially different between the HIV-positive and HIV-negative cases, certain diseases such as pneumonia, diarrhoea, fungal infections and malnutrition are more common among the HIV-positive and tend to have a higher mortality rate. HIV-positive children do respond to standard treatment protocols but clinicians need to be ready to change therapy should the response be poor. The increasing burden on healthcare facilities may have a negative impact on the care of the HIV-negative children and alternative care strategies. The impact of HIV among children could be substantially reduced if there were an effective, national mother-to-child transmission (MTCT) prevention programme and universal access to antiretroviral treatment (Karim & Karim, 2005: 341-342).

The escalating burden on the public healthcare system described above will require increased resources to care for individuals with AIDS (Karim & Karim, 2005: 343).

2. 7.3. HIV and AIDS in the Eastern Cape Province of South Africa

The Eastern Cape Province is no exception to the increase in HIV and AIDS-related deaths each year. According to national and provincial HIV prevalence rates among antenatal clinic attendees from 1996 to 2002 (Table2.6),
the prevalence of HIV in the Eastern Cape has increased from 8.1 to 23.6% (van Rensburg, 2004: 286). van Rensburg (2004: 283) also declares:

- The rate of condom usage among 15-49 year old women in the Eastern Cape is the lowest of all the provinces in the country, except for the Northern Cape where the figure is 6.1%; and

- About 15.1% of men over 15 years in the Eastern Cape have STDs, which is the fourth highest rate in the country.

The AIDS Training and Information Counselling Centre (ATICC) (2002) declare the following with regard to the situation relating to HIV infection and AIDS in the western region of the Eastern Cape, including the Nelson Mandela Metropole (NMM):

- In 1989, 30 persons were HIV-positive and five persons died from AIDS-related illnesses; and
- In 2001, 7537 persons were HIV-positive and 1200 people died from AIDS-related illnesses.

Table 2.7 gives an indication of HIV and AIDS infections annually in the western region of the Eastern Cape, including Nelson Mandela Metropole, where the present study was conducted.

News from newspapers described the situation of the prevalence of HIV and AIDS in Eastern Cape: A Port Elizabeth hospital was sending AIDS babies home to make way for children with illnesses that could be cured. Every day at the hospital at least two babies were diagnosed with AIDS. They were admitted only once and then restricted to outpatient care. The AIDS fatality rate of one seven years ago has increased over the past two years to up to two deaths a week (Beresford, 2000). Therefore it is imperative that public education on the prevention of HIV and AIDS transmission be improved. Professional nurses have a major role to play in the prevention of the spread of HIV and AIDS. Their actions should, however, be based on appropriate knowledge and correct attitudes.
Table 2.7: Western Region-Eastern Province HIV/AIDS statistics from 1989 to 2002

<table>
<thead>
<tr>
<th>YEAR</th>
<th>HIV positive</th>
<th>AIDS deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>1990</td>
<td>70</td>
<td>9</td>
</tr>
<tr>
<td>1991</td>
<td>190</td>
<td>19</td>
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<tr>
<td>1992</td>
<td>430</td>
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<td>1993</td>
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<td>74</td>
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<tr>
<td>1994</td>
<td>1534</td>
<td>140</td>
</tr>
<tr>
<td>1995</td>
<td>2621</td>
<td>197</td>
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<tr>
<td>1996</td>
<td>3703</td>
<td>230</td>
</tr>
<tr>
<td>1997</td>
<td>5234</td>
<td>414</td>
</tr>
<tr>
<td>1998</td>
<td>5800</td>
<td>511</td>
</tr>
<tr>
<td>1999</td>
<td>6444</td>
<td>562</td>
</tr>
<tr>
<td>2000</td>
<td>6837</td>
<td>1021</td>
</tr>
<tr>
<td>2001</td>
<td>7537</td>
<td>1200</td>
</tr>
<tr>
<td>2002 (end of June)</td>
<td>3688</td>
<td>450</td>
</tr>
</tbody>
</table>

(ATICC, Port Elizabeth 2002)

2. 8. HIV AND AIDS AND HEALTHCARE WORKERS

The nurses and other healthcare professionals are recognised as possible risk groups for contracting HIV. In addition to the risk of infection through the same routes as the general community, healthcare workers are at added risk through their exposure to HIV-contaminated blood and body fluids in the workplace. Risk of HIV infection is higher in Africa than elsewhere in the world resulting from the higher prevalence of these diseases in the general population and healthcare workers frequently lack the training and equipment to adequately protect
themselves. A study conducted at Chris Hani Baragwaneth hospital near Johannesburg found that 69% of interns reported one or more percutaneous exposures to blood during the intern year and 56% had suffered a penetrating injury during pre-clinical training, of which 18% recollected needlestick injuries involving HIV-positive patients (Karstaedt & Pantanowitz, 2001: 57-61). At Tygerberg Children's Hospital near Cape Town it was recently stated that 91% of young doctors had suffered needlestick injuries and 55% had been exposed to HIV (Karim & Karim, 2005: 347). CDC (2001) has reported that 66% of the total needlestick injuries of healthcare worker were nurses.

A study on HIV and AIDS prevalence among South African healthcare workers by Shisana, Hall, Maluleke, Chauveau and Schwabe (2004: 849) has shown that HIV prevalence among health workers aged 18 years and older is 15.7%; and the prevalence rate of healthcare workers in public hospitals is 15.9%. This figure is high compared to HIV prevalence among South Africans of reproductive age (15-49 years), which is 15.6% (Shisana et al., 2004: 849). The authors of the study which was conducted in four provinces declared that the estimates of HIV prevalence among health workers should be considered valid for public sector healthcare workers. However, in spite of these occupational hazards, evidence suggests that the distribution of HIV and the exposure to risk factors among healthcare workers are little different from the general community. Some studies showed that the overwhelming majority of HIV infections among health workers were due to sexual exposure (Karim & Karim, 2005: 348).

While the physical risks of acquiring HIV from workplace exposures may be small, the HIV/AIDS epidemic has had other more subtle impacts on healthcare workers. The perceived threat posed by exposure to HIV-infected blood, body fluids and patients is a source of mental stress. Breault and Polifroni (In Wang, 1997:36-49) studied 16 nurses who cared for HIV and AIDS patients and found the nurses experienced fear, anger, sympathy, fatigue and helplessness. Anxiety and
stress are the main reasons why some nurses refuse to treat HIV and AIDS patients (Tabak, Ben-Or & Zur, 1997: 741 and Askarian, Hashemi, Jaafari & Assadian, 2006: 48-53). One further study found needlestick injuries appeared to be the main source of fear. (Ncama & Uys, 2003: 11-18). Fear of HIV and AIDS is the main source of negative attitudes towards the HIV and AIDS patients, and acquiring knowledge does not change negative attitudes to positive ones (Wang, 1997: 39). A study conducted by Mbanya, Zebaze, Kengne, Minkoulou, Awah & Beure (2001: 241-250) in Cameroon found that the overall knowledge did not necessarily influence the attitudes and practices of the nursing staff. However, in the same study also showed that information, education and communication and compliance with international working norms, remain essential tools in the control of HIV/AIDS spread in hospital settings. In the next section the knowledge and attitudes of healthcare workers related to HIV and AIDS will be explored.

2.9. KNOWLEDGE AND ATTITUDES OF HEALTHCARE WORKERS RELATED TO HIV AND AIDS

One survey (Fido & Al Kazemi, 2002: 682-684) of HIV and AIDS knowledge and the attitudes of Kuwaiti family physicians has shown that knowledge was lacking in areas dealing with HIV-related neuropsychiatry complications and other issues concerning HIV and AIDS. The majority of physicians expressed negative attitudes toward homosexuality and about AIDS patients in general. Eighty-three percent of Kuwaiti family physicians would opt out of treating AIDS patients; and more than half of the physicians would avoid coming into social contact with HIV-seropositive persons. For example, 80% of the respondents felt uncomfortable coming into social contact with HIV-positive persons; 61% would feel different about patients with HIV infection than patients with any other disease; 84% would quarantine HIV patients to stop the spread of infection; 70% believed homosexuality to be a psychiatric illness; 83% would choose to opt out of treating HIV patients in family practice; and 90% disapproved of condom use for protection from HIV sexual
transmission. Regarding knowledge of the prevention of HIV and AIDS transmission, 53% of physicians had incorrect answers on ‘the only bodily fluids known to transmit HIV are blood and semen’. 35% of physicians were unaware that HIV virus outside the body was easily destroyed. There is a need early in the medical internship training years to promote an AIDS education, which addresses many underlying socio-cultural factors.

Islam et al. (1998:271-278) used a pre-tested and self-administered questionnaire to assess staff of an international organisation in Bangladesh as regards knowledge on, and attitudes toward HIV and AIDS. Main sources of information were radio and television (93%), newspapers and magazines (84.8%). Most of the respondents believed that unprotected sexual intercourse and delivery of babies by infected mothers could transmit HIV. Similarly, the respondents had the knowledge that HIV infection could be prevented by using condoms during sexual intercourse, having sex with only an HIV-negative faithful partner, avoiding transfusion of blood not screened for HIV (88.9%) and taking injections with sterile needles.

However, only 33% had the knowledge that infected person could look healthy, and 56.4% were unaware of transmission through breast-milk. Most members of the staff, particularly at lower levels, had misconceptions about it. The findings of the study suggest that the members of the Centre’s staff have a satisfactory level of essential knowledge on HIV and AIDS, although half of them have poor attitudes toward persons with HIV and AIDS. Therefore, preventive strategies for the staff should be directed toward behaviour change communication.

A study conducted by Mbanya, Zebaze, Kengne, Minkoulou, Awah & Beure (2001: 241-250) among healthcare workers in Cameroon has shown respondents that scored highly in the knowledge section compared to 50.5% in the attitude and practice section. There were several outstanding misconceptions about HIV and AIDS and malpractices. Knowledge, but not attitude, was significantly influenced by
the grade of the staff. Approximately 15% of 62% patients with AIDS indicated that they were attended to with signs of disgust and/or hatred. The major health service factors thought to influence KAP: the lack of adequate information; the lack of commitment to alter attitudes and practices; the lack of in-service promotions; and the ongoing fear of becoming infected with the virus through caring for patients with AIDS. Therefore, it is imperative that ongoing education programmes are provided for nurses to enable them to meet the needs of the increasing HIV prevalence in our country. Information, education and communication remain essential tools in the control of HIV/AIDS spreading in healthcare settings.

The knowledge of Universal Precautions of nurses is a prerequisite to reducing the risk of exposure to HIV and AIDS in healthcare settings. However, in Sub-Saharan Africa (where South Africa is situated), only 18% of healthcare settings adhere to Universal Precautions (GHPWG, 2002: 10). Research conducted by Chamane and Kortenbout (1997: 43) in Durban, South Africa has revealed that, although the general knowledge of professional nurses’ concerning HIV and AIDS is fairly high, they lack knowledge relating to Universal Precautions, for example, the prevention of the spread of infection and the use of protective clothing. These are vitally important aspects with regard to the prevention of HIV and AIDS transmission in the working environment. Therefore it is necessary to develop effective and efficient in-service education guidelines on the prevention of HIV and AIDS transmission in clinical practice in South Africa.

Ferguson et al. (2004:726-731) further explored the reasons for not using precautions. These included: belief that stopping to use standard precautions would have put the patient at risk; precautions would have interfered with patient care; precautions were not warranted in a specific situation; and high job demands had caused respondents to be in a hurry. Less often, equipment was not available, respondent forgot, respondents thought that the patient did not pose a risk, or the available equipment was not effective. In terms of overall exposure rates, 34% of
those described an incident of experiencing a sharp injury during the previous 3 months; and 42% had experienced a mucocutaneous exposure. In terms of overall non-adherence, 44% wore gloves less than 100% of the time, while 61% washed their hands less than 100% of the time.

Ncama and Uys (2003: 11-18) explored the fear of contracting HIV and AIDS among trauma nurses in the province of KwaZulu-Natal, South Africa. The findings of the study revealed the trauma nurses perceived themselves and their families to be at risk of acquiring HIV and AIDS from their working environment despite the available precautionary measures. Needlestick injuries appeared to be the main source of fear. The study also showed that the fear of contracting HIV has increased the application and efficiency of universal precautions but treatment is sometimes delayed as result of the fear of contracting HIV. The process of gloving up, putting on visors and aprons also causes a few seconds’ delay.

A survey conducted in Iran on the knowledge about HIV infection and attitude of nursing staff toward patients with AIDS (Askarian et al., 2006: 48-53) found that although half of the Iranian nursing staff had previously cared for patients with AIDS and 54.3% had participated in education programmes on AIDS, half of the Iranian nursing staff strongly agreed that they would not want to have to care for patients with AIDS. The authors of the study suggested that education campaigns should be carefully structured and chose the most suitable education strategy and specifically tailored to a particular setting.

Healthcare personnel are the key professionals in advising patients about the prevention and treatment of HIV and AIDS. It may be assumed that because of their experience with the high prevalence of infection, the health workers in Sub-Saharan countries will be more knowledgeable (Mbanya et al., 2001: 241-250); it is logically to be assumed that healthcare workers in South Africa should be more
knowledgeable because South Africa has the highest prevalence of HIV and AIDS in Sub-Saharan Africa.

The researches above related to the prevention of the HIV and AIDS transmission and referred to different healthcare workers. Although not all of them have specifically referred to the registered nurses, the knowledge and attitudes of healthcare workers in many ways mirrors the knowledge and attitudes of registered nurses relating to the prevention of HIV and AIDS transmission. The findings of these researches showed the registered nurses’ knowledge of the prevention of HIV and AIDS transmission was inadequate; and their attitudes toward the prevention of HIV and AIDS transmission were inappropriate. According to these findings, the registered nurses’ knowledge and attitudes on the prevention of HIV and AIDS transmission in public hospital in NMM should be surveyed. The deficits should be identified and in-service education guidelines should be developed. As some studies showed in-service education did not change the registered nurses’ attitudes and knowledge (Askarian et al., 2006: 48-53). The in-service education of the registered nurses should be carefully structured and the most suitable education strategy should be specifically tailored to a particular setting. Therefore these principles of education should be considered, especially for registered nurses.

2. 9.1. Adult learning

Whatever criteria are used to measure adulthood, all learners coming to nurse education are adults (Burnard & Chapman, 1990: 44). Knowles has suggested (Knowles, 1980 in Burnard & Chapman, 1990: 43) that negotiated and experiential learning is the best way of education for adults. The characteristics of adult learners are as the follows:

- Adults both desire and enact a tendency toward self-directedness as they mature, although they may be dependent in certain situations.
• Adults’ experiences are a rich resource for learning. Adults learn more effectively through experiential techniques of education such as discussion or problem-solving.

• Adults are aware of specific learning needs generated by real-life tasks or problems. Adult education programmes, therefore, should be organised around life-application categories and sequenced according to learners’ readiness to learn.

• Adults are competency-based learners in that they wish to apply newly acquired skills or knowledge to their immediate circumstances. Adults are, therefore, performance centred in their orientation to learning.

Therefore, in order for education systems to be successful in in-service education programmes, these characteristics should be considered. Educators further identified seven components of adult education practice which are highly relevant to the development of nursing skills and nursing knowledge. They are as follows according to Burnard & Chapman, (1990: 44):

• Facilitators must establish a physical and psychological climate conducive to learning.

• Facilitators must involve learners in mutual planning of methods and curriculum directions.

• Facilitators must involve themselves in diagnosing their own learning needs.

• Facilitators must encourage learners to formulate their own learning objectives.

• Facilitators must encourage learners to identify resources and to devise strategies for using such resources to accomplish their objectives.

• Facilitators must help learners to carry out their learning plans.

• Facilitators must involve learners in evaluating their learning.

2.10. THE CHALLENGES AND ROLES OF NURSES IN PREVENTION OF HIV AND AIDS TRANSMISSION
The HIV and AIDS pandemic necessitate increased preventive health education inputs from healthcare workers, especially from nurses. Although the HIV and AIDS message is conveyed by different Medias, one study in Swaziland received this information from healthcare workers, mostly nurses (Buseh, Glass, McElmurry, Mkhabela & Sukati, 2002: 525-538). Nurses are knowledgeable about HIV and AIDS and nurses can communicate in the local languages of the communities concerned. Moreover, nurses are also familiar with the cultural traditions and taboos of specific communities and can convey health education messages in culturally congruent terms. Providing effective health education to adolescents, pregnant women, and adult men and women in any community is the only way to help stem the tide of the HIV and AIDS pandemic in Africa including South Africa (Ehlers, 2006: 661). Nurses could play a pivotal role in implementing and maintaining such effective health education in schools, at youth centres, at colleges and universities, at clinics and in hospitals.

Advances in the pharmaceutical management of HIV infection have greatly improved patient outcomes; but the advent of antiretroviral treatment (ART) poses many challenges to nurses in African countries, including South Africa. Nurses needed to obtain the necessary knowledge prior to prescribing and administering these drugs and they might be the only healthcare professionals at clinics, making it their sole responsibility to decide who should and who should not get ART (Ehlers, 2006: 661).

Nurses might find it is difficult to protect themselves from getting tuberculosis from their patient, as the incidence of TB continues to rise in South Africa. Nurses face fear caused by needlestick injuries and being cut with scalpels or being injured while suturing wounds, because they might become HIV positive through contact with patients’ body fluids.
In South Africa, there are not only large numbers of HIV and AIDS patients, but also a large number of patients with HIV status might be unknown to the healthcare providers, and sometimes even to the patients themselves. One study done in the United States by Young et al. (Young, 1996 in Ehlers, 2006:657-662) showed that despite the availability of protective clothing, USA nurses increased their use of protection if they knew their patients were HIV-positive. However, if they thought that their patients were HIV-positive or if they thought that their patients were HIV negative or if they did not know their patients’ HIV status, they did not always use adequate protection. In the South Africa with shortages of resources, staff and supplies, nurses might face increased challenges in the prevention of HIV and AIDS transmission. The knowledge and attitudes of registered nurses in South Africa, relevant to the prevention of the HIV and AIDS transmission are therefore extreme important in facing the challenge.

One research that assessed the USA physicians’ and nurses’ behaviour relating to HIV prevention in practice (Wolf, Linsk, Mitchell & Schechtman, 2004: 63-73) revealed that while many physicians and nurses were actively engaging in HIV prevention, screening and also treatment and management of the disease, many health professional are missing valuable opportunities to provide information or to identify at-risk patients in their own practices. These findings stress the compelling need for continued efforts to increase physicians’ and nurses’ awareness of the epidemic and their role in prevention education, risk assessment, and case finding.

In the light of this reality, physicians and nursing professionals need to be made aware of the importance of their public health role in the prevention and detection of the epidemic, and to be targeted for opportunities to improve their knowledge and practical skills relevant to working with HIV and AIDS. As mentioned above, epidemiological trends in HIV infection in South Africa are increasing each year. This suggests that existing efforts in the prevention of HIV and AIDS transmission
are inadequate. Nurses in South Africa have an even more significant role to play in the prevention of HIV and AIDS transmission.

In South Africa more than 60% of the healthcare human resources comprise professional nursing practitioners (Muller, 2002:95). This statistic implies that nurses form the majority group of the healthcare human resources. There are an estimated 730 nurses working in three main public hospitals in the NMM who are responsible for the health of the public in the city. These nurses should first protect themselves from HIV and AIDS infection, which implies that they should reduce both the personal and occupational risks relating to HIV and AIDS transmission.

2.11. CONCLUSION

HIV and AIDS have created new challenges and new problems for healthcare workers as they are expected to teach people about the epidemic and its prevention (Evian, 2000: 303). Therefore this study of the knowledge and attitudes of registered nurses relating to the prevention of HIV and AIDS is necessary. The study will use the quantitative method.

The next chapter will explain the method of the study including research design, choice of samples, data-collection instruments and their reliability and validity. Data analysis and concerns on ethical and legal issues of this study will also described in next the chapter.
CHAPTER THREE
RESEARCH DESIGN AND METHOD

3. 1.  INTRODUCTION

The objectives of the study were to explore and describe the knowledge and attitudes of registered nurses in public hospitals in NMM relating to the prevention of HIV and AIDS transmission and to develop in-service education guidelines for registered nurses to optimise both personal and occupational prevention measures to combat HIV and AIDS transmission. In this chapter, the research design and method used in the study will be described in detail.

3. 2.  RESEARCH DESIGN

In order to achieve the objectives of the study, the research design was quantitative, explorative, descriptive and contextual in nature.

3. 2.1.  Quantitative Research

Quantitative research uses statistical tests to express the relationship between variables (Gorard, 2003: IX) and often uses questionnaires to collect data. The method of data collection to be employed in this study was quantitative, because the study involved a questionnaire to collect the data on the knowledge of, and attitudes towards, the prevention of HIV and AIDS transmission.

Quantitative research is conducted to describe new situations, events or concepts in the world, and examine the relationship between concepts or ideas (Burn &
This study described the level of knowledge of and attitudes of registered nurses pertaining to the prevention of HIV and AIDS transmission. On the basis of the level of knowledge and attitudes of registered nurses, their relationship with the experience of caring for HIV and AIDS patients, attendance of training programmes for HIV and AIDS and working experience as a registered nurse were explored in the study.

3.2.2. Exploratory Research
Exploratory studies which are most typically done to satisfy the researcher’s curiosity and desire for improved understanding and occur when a researcher examines a new interest or when the subject of study itself is relatively new (Babbie, 2001: 91-92). According to Malhotra (1999: 85), the objective of exploratory research is to explore or search through a problem or situation to provide insights and understanding. Exploratory research could be used for any of the following purposes:

- to formulate a problem or define a problem more precisely;
- to isolate key variables and relationships for further examination; and
- to gain insights for developing an approach to the problem.

The knowledge and attitudes of registered nurses in the public hospitals relating to the prevention of HIV and AIDS transmission were explored by the researcher and carried out in the NMM area for first time. In the study the researcher answered the question: What are the knowledge and attitudes of registered nurses pertaining to the prevention of HIV and AIDS transmission? Variables such as race, marriage, working experience, experience of nursing patients with HIV and AIDS and training programmes on HIV were isolated. The relationship between the level of knowledge and attitudes of registered nurses was also explored.

3.2.3. Descriptive Research
The major objective of descriptive research is to describe something. Descriptive research is conducted for the following reasons (Malhotra, 1999: 87):
• To describe the characteristics of relevant groups.
• To estimate the percentage of units in a specified population exhibiting a certain behaviour.

In this study the researcher described the level of the knowledge and attitudes of the registered nurses in the public hospitals pertaining to the prevention of HIV and AIDS by a numerical description such as percentage.

Descriptive studies are often conducted when little knowledge is available (Burns & Groves, 2003: 27). There was little knowledge and the knowledge on the attitudes of registered nurses in the public hospitals pertaining to the prevention of HIV and AIDS transmission in NMM when the study was conducted. Through descriptive studies, researchers determine the frequency with which something occurs (Burns & Groves, 2003: 27). The researcher aimed to describe the level of the knowledge of and the attitudes of registered nurses towards the prevention of HIV and AIDS transmission.

3.2.4. Contextual Research
Holloway and Wheeler (2002: 11) explain that the context of respondents’ lives or work affects their behaviours; therefore researchers must be sensitive to the context of the research and immerse themselves in the setting and situation. In a broad sense the context includes the economic, political and cultural framework. This study was conducted amongst registered nurses in public hospitals in the Nelson Mandela Metropole which is an urban area. The patients to whom they provide health service are those from the lower income strata who have no medical aid thus have to use public hospital health resources. Because poverty and poor social-economic conditions promote the spread of HIV (Evian, 2000: 21-22), the HIV prevalence among the patients in the public hospitals is very high. The registered nurses in the public hospital have a very important role to educate their patients to prevent the spread of HIV and adequate knowledge of, and appropriate
attitudes towards the prevention of HIV and AIDS transmission are prerequisites for them to render patient education. This study was focused on exploring and describing these registered nurses’ knowledge of, and attitudes towards, the prevention of HIV and AIDS transmission.

3. 3. RESEARCH METHOD

This section will provide a discussion of the steps, procedures and strategies for gathering and analysing the data that was used during the research process.

3. 3.1. Research population

The population in a research study is the entire group of persons or objects that the researchers wish to study (Gorard, 2003: 57). In this research study the population consisted of registered nurses working in public hospitals in the Nelson Mandela Metropole (NMM) at the time when the study was conducted.

3. 3.2. Target Population, Sampling Method and Sample Size

The target population is the collection of elements or objects that possess the information sought by the researcher and about which inferences are to be made (Malhotra, 1999: 330). In this study, the sample consisted of full-time registered nurses working in public hospitals in the Nelson Mandela Metropole (NMM), as it was difficult to arrange for the part-time registered nurses to participate in the research. They were able to read and converse in English as the questionnaire was written in English. They also had at least one year’s working experience at the time when the study was conducted, as experience could have an effect on the registered nurses’ knowledge of and attitudes towards the prevention of HIV and AIDS transmission.

The purposive sampling method was used in the study, a method used where certain inclusion criteria are applied and the sample is chosen accordingly
(Holloway & Wheeler, 1998: 74). Registered nurses from the public hospitals in NMM met the following criteria:

- They were full-time employed registered nurses.
- They had at least one year’s working experience in the public hospitals.
- They could read and converse in English

Table 3.1 represents the sample size selected in each hospital. A total of 80 registered nurses was included in the study. In total 30 questionnaires were delivered to Hospital A; there were 10 wards involved in the study in Hospital B, a total of 20 questionnaires was delivered in Hospital B and in Hospital C, 30 questionnaires were handed out to 10 wards, 3 for each ward.

Table 3.1 The sample size of the study

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Hospital A</th>
<th>Hospital B</th>
<th>Hospital C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward</td>
<td>11</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Questionnaire handed out</td>
<td>30</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

3.3. Data Collection Instrument

The self-administered questionnaire (Annexure 3) for measuring knowledge and attitudes relating to the prevention of HIV and AIDS transmission was drawn up after reviewing the relevant literature and an intensive discussion with HIV and AIDS experts at Nelson Mandela Metropole University (NMMU). An examination of similar measures previously utilised in AIDS research was made. This investigation comprised one questionnaire divided into three sections. Section A determined the biographical data; section B covered the aspect of knowledge about the prevention of HIV and AIDS transmission and section C assessed attitudes towards the prevention of HIV and AIDS transmission. The questionnaire was written in English because was a practical difficulty of issuing each subject with a questionnaire in his or her home language, as there were at least three languages in use at the three public hospitals. The questionnaire which was completed anonymously, took approximately 15 to 20 minutes to complete.
3. 3.3.1. Section A Biographical data

The questions which comprise Section A of the questionnaire were concerned with the demographic data, including biographical information such as: gender; race; professional qualifications; working periods as a registered nurse; experience related to caring for HIV and AIDS patients; and participation in any HIV and AIDS training programmes.

This section also concluded with questions regarding previous sources of knowledge related to the prevention of HIV and AIDS transmission and an option of choosing where they would most like to gain knowledge in the future. Race and gender were included in the section as some research showed cultural influence in the attitudes towards the use of condoms; and participation in HIV and AIDS programmes was in the section as according to the result of a survey, although nurses have undergone study programmes and taken workshops to update their skills on AIDS, there was no change in their behaviour (Tabak, Ben-Or and Zur, 1997: 741 and Askarian et al., 2006: 48-53).

The study showed that the experience of caring for HIV and AIDS patients might influence the attitudes towards and the knowledge of the prevention of HIV and AIDS transmission (Askarian et al., 2006: 48-53).

The research study also investigated the relationship between working experience as a registered nurses and attitudes towards and knowledge of the prevention of HIV and AIDS transmission. Whether professional qualifications influence the level of the knowledge of the prevention of HIV and AIDS transmission or not, as some studies showed that the higher level of qualification, the high level of knowledge of HIV and AIDS (Askarian et al., 2006: 48-53; Mbanya et al., 2001:241-250). High levels of qualification also demonstrate high levels of concern about HIV and AIDS transmission (Plant & Foster, 1993: 80-87).
3. 3.2. Knowledge section

The knowledge section, Section B, was concerned with the assessment of knowledge relating to the prevention of HIV and AIDS transmission.

The researcher developed the questionnaire on the basis of an extensive literature review. All questions in the questionnaire were adapted from the statements of literature that study medical personnel’s knowledge of HIV and AIDS (Chen, Han & Holzemer, 2004:417-421; Lovelife Survey, 2000 in Van Rensburge, 2004: 285; Islam et al., 2002: 271-278; Fido & Al Kazemi, 2002: 683; Plant & Foster, 1993: 83).

The section consisted of 40 questions addressing the transmission of HIV and AIDS; the prevention of HIV and AIDS transmission including the correct use of condoms; the use of protective clothing; disinfection of HIV; the risks of getting HIV infection; prevention of needlestick injuries and the prevention of infection from post-exposure by HIV-antiretroviral treatment. Questions 1 to 15, 17, and 18 assessed the knowledge of HIV transmission and some myths of HIV transmission including the transmission in the health working setting. Questions 16, 26, 27 were on the knowledge of disinfection of HIV; questions 19 to 21 were related to knowledge of the correct use of condoms which is the main way to prevent HIV from sexual transmission; questions 22, 23, 24, and 25 were on the knowledge of the Universal Precautions that are guidelines to prevent HIV transmission within the healthcare environment; statement 28 was about safe blood transfusion; questions 29, 30 and 32 referred to knowledge on needlestick injuries; questions 31, 33, 34, 35 and 36 were relevant to the knowledge of the risks of getting HIV infection; statement 37 was about the knowledge of sexually transmitted disease and HIV; and statement 38, 39 and 40 mentioned the knowledge of the treatment of HIV-infection namely antiretroviral treatment.

Each question included in the questionnaire followed a fixed response set with response choices of “yes” ”no” or ”do not know”. The percentage of correct answers
to each question was counted. A higher percentage of correct answers reflected a greater knowledge concerning the prevention of HIV and AIDS transmission.

3.3.3. Attitude section
This section focused on the assessment of attitudes regarding the prevention of HIV and AIDS transmission.

The section of the questionnaire was developed on the basis of an extensive literature review. In other words, the attitude section was compiled from an extensive collection of statements about the prevention of HIV and AIDS transmission. This was generated, instructed and tested by healthcare workers (including registered nurses) in different countries. All questions in the developed questionnaire were adapted from the statements of literature that studied medical personnel’s attitude towards HIV and AIDS (Chen, Han & Holzemer, 2004: 417-421; Lovelife Survey, 2000 in van Rensburge, 2004: 285; Islam et al., 2002: 271-278; Fido & Al Kazemi, 2002: 683; Plant & Foster, 1993: 83).

This section used a four-point scale ranging from “strongly agree” with a statement to “strongly disagree” with the statement. There were 34 questions included in the questionnaire, which followed a fixed response set with response choices of “strongly agree”, “agree”, “disagree” and “strongly disagree”. The questionnaire was aimed at evaluating the attitudes of registered nurses regarding the prevention of HIV and AIDS transmission. Statements 1, 2, 3, 4, 5 and 6 in the questionnaire were adapted to assess the attitude towards the use of condoms to prevent HIV and AIDS transmission.

Siegel and Gibson (1988) summarised the prevailing negative attitude to condom usage as follows: condoms compromise the pleasure of intercourse; they are seen more as a contraceptive device than as a form of prophylaxis against
sexually-transmitted diseases; their usage is believed to be unnatural; the stigmatization of condom users as promiscuous or in some way morally questionable; and the embarrassment or discomfort felt in condom purchase. Statements 1, 2, 3, 4, 5 and 6 in the questionnaire were developed in combining with these statements, which were derived from the study of Chen et al in China on attitudes of registered nurses towards condom usage (Chen, Han & Holzemer, 2004:417-421),

Statement 7 was evaluating attitudes of registered nurses towards safe sexual behaviour; statement 8 was assessing attitude of registered nurses towards the prevention of HIV transmission by blood transfusion; and statement 9 was about attitude of registered nurse towards the prevention of HIV transmission by using sterile needles. Questions 10, 11, 12, 13, 14, 15, 16, 26 and 27 were adapted by changing the format of questions or merging same-meaning sentences from three studies on attitudes of healthcare workers towards HIV-infected patients, co-workers and high-risk patients. One study was conducted by Islam et al (2002: 271-278) among healthcare workers including registered nurses in Bangladesh; one study was conducted by Fido and Al Kazemi among Kuwaiti family physicians (Fido & Al Kazemi, 2002: 682-4); and another study by Plant and Foster researched AIDS-related experience, knowledge, attitudes and beliefs among nurses in one hospital in Scotland (Plant & Foster, 1993: 80-88).

As for the compliance of registered nurses in applying Universal Precautions in the healthcare working setting, one study (Ferguson et al., 2004: 726-731) showed that reasons given by healthcare workers, including registered nurses, why they did not adherent to Universal Precautions were the following: belief that stopping to use Universal Precautions would have put the patient at risk; using Precautions would have interfered with patient care; Precaution were not warranted in a specific situation; did not anticipate the potential for exposure; high job demands that had caused respondents to be in a hurry; less often, equipment was not available; a few
respondent forgot and thought the patient did not pose a risk. This study also showed less than half of respondents wore gloves less than 100% of the time, while 61% washed their hands less than 100% of the time.

By changing these statements of the study, the researcher adapted questions 17 to 24 in the questionnaire in the research study to testing compliance of registered nurses in complying Universal Precautions—the method of prevention of HIV and AIDS transmission in clinical practice. Statements 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 37 were derived from a study conducted by Plant and Foster (1993: 80-88) in one hospital in Scotland. These statements were about perceived responsibility of registered nurses or their personal vulnerability to HIV transmission, their perception of in-service training on the prevention of HIV transmission and feelings on patient education.

### 3.3.4. Method of data collection

After obtaining permission from the Advanced Degree and Ethics Committee of Nelson Mandela Metropolitan University (NMMU) and relevant regional Health Authorities; permission was requested and obtained from the director of each public hospital. The researcher visited the manager of each hospital on a date pre-arranged to get the list of wards and a list of the names of the registered nurses in each ward and determine a suitable time to deliver the questionnaires to them. At the time agreed upon, the researcher visited each ward involved in the study. A short interview was held with the registered nurses who were working in the wards at the time to choose samples that met the criteria. After obtaining permission from these registered nurses, questionnaires were handed out to the respondents in the wards, who were then allowed time to complete them. The respondents were asked to put the completed questionnaires in a sealed box placed in the nursing station for this purpose. Voluntary participation was emphasised during the procedure.
In order to ensure a high response rate, the following methods was used in the study:

**Motivating the respondents** means that potential respondents can be motivated to participate in a survey by increasing their interest and involvement. **Foot-in-the-door** is one of the useful strategies (Malhotra, 1999: 369). It means that small request is followed by a larger request, a critical request that solicits participation in the survey (Malhotra, 1999: 370). Each respondent was given a short interview before the questionnaire was handed out.

**Incentives:** Respondent rates can be increased by offering monetary as well as non-monetary incentives to potential respondents (Malhotra, 1999: 370). In the study, small gifts were given to the respondents.

**Follow up:** Follow-up, or contacting the non-respondents periodically after initial contact, is particularly effective in decreasing refusals in mail survey. It can be done by letter, e-mail, and personal contacts (Malhotra, 1999: 370). The researcher followed up participants twice, on the day of handing out the questionnaire and three days after the questionnaire had been delivered. After one week the researcher collected the sealed box from the nursing station. In the study, the response rates were as the follows:

- A total of 80 questionnaires were handed out in three hospitals to the registered nurses, 66 respondents including 6 respondents in a pilot study. The response rate in the study was 75% (66/88).
- 30 questionnaires were handed out in Hospital A. There were 23 responses, plus two responses from the pilot study, and the response rate was 78.13% (25/32).
- 20 questionnaires were handed out in Hospital B with 16 responses, plus two responses from the pilot study; the response rate was 81.82% (18/22).
- 30 questionnaires were handed out in Hospital C with 21 responses, plus two responses from the pilot study; the response rate was 71.88% (23/32).

### 3.3.5. Method of Data Analysis
In quantitative research, data analysis refers to the stage in the research process where the researcher through the application of various statistical and mathematical techniques, focuses separately on specific variables in the data set (Mouton, 1996: 161). The domain of statistics has traditionally been divided according to two main functions, namely descriptive statistics and inferential statistics.

In this study, the data obtained from the questionnaire regarding the knowledge of, and attitudes towards the prevention of HIV and AIDS transmission was analysed by means of statistical analyses, including descriptive and inferential statistics.

Descriptive statistics are concerned with organising and summarising the data at hand, to render it comprehensible (Mouton, 1996: 163). Descriptive statistics included the percentage of the answer for each question and the standard deviations for total knowledge scores. The same procedure was employed to compute the items of the attitude scales of the prevention of HIV and AIDS transmission in order to discover the frequency of individual responses to the knowledge section and the attitude section. Frequency counts and percentages were calculated.

Inferential statistics are used to estimate the single variable characteristics of the population or tests of statistical significance and estimate the relationships between variables in the population (Babbie & Mouton, 2001: 486). In this research study the researcher used inferential statistics to estimate the relationship between the level of knowledge and the characteristics of attitudes of the registered nurses in the public hospitals in NMM. Inferential statistics were also used to estimate the relationships between the registered nurses' knowledge of, their attitudes towards HIV and AIDS transmission and nursing experience of caring for HIV and AIDS patients.
A statistical package for Social Science – STATISTICA was involved in this procedure. STATISTICA is a set of related computer programmes for storing, analyzing and reporting on statistical results. The data analysis was done with the assistance of an experienced statistician and the findings were displayed in graphical form and tables.

3.4. PILOT STUDY

A pilot study which is a small-scale version of the major study, assesses the feasibility of the study (Polit & Hungler, 1993:40). It is developed similarly to the proposed study, using similar subjects, the same sitting and the same data collection and analysis techniques (Burns & Groves, 2003: 42). A pilot study can also identify any deficits in the questionnaire. The questionnaire was pilot-tested on a sample group of registered nurses in three public hospitals to check for ambiguities and any difficulties that might have arisen regarding language or administration. The questionnaires were handed out to the six registered nurses chosen from the three public hospitals by using the purposive sampling method. As the results of the pilot study did not show significant ambiguities and difficulties of administration, the questionnaire was used unchanged. The pilot study formed part of the main study.

3.5. QUALITY OF RESEARCH METHODS

The reliability and validity of the instrument used in the study are crucial to maintaining the quality of the research methods.

3.5.1. Reliability

The reliability of an instrument can be established by test-retest (De Vos et al, 2002:169). According to Malhotra (2006: 304-305), in test-retest reliability, respondents are administered identical sets of scale items at two different times under as nearly equivalent conditions as possible. The time interval between the two measurements is determined by computing a correlation coefficient. In this
study the test-retest was done to determine the reliability of the questionnaire developed by the researcher.

Test-retest was done in the process of the pilot study. The questionnaire used in the study was distributed to six registered nurses in the three public hospitals, at different times, to establish its reliability. The six registered nurses were selected from the three public hospitals, two for each hospital by purposive sample methods. Each questionnaire was allocated one number from 1 to 6. Each participant was requested to remember the number on the questionnaire when they answered the questionnaire the first time. Because the numbers are simple therefore they are easy to be remembered. After the data collection, the questionnaire was hand delivered to the six registered nurses without an allocated number again two weeks later. Respondents were requested to write the number on the questionnaire that they had completed the first time. After data analysis, Kendall Tau correlations obtained for the attitude test-retest were r=1% (P< .01000) which meant all six responses were strongly correlated. Strong relationship implies good reliability. The higher the correlation coefficient is, the greater the reliability (Malhotra, 2006: 582). Therefore, the attitudes section of the questionnaire had a high reliability.

The following methods were done to secure the reliability of the questionnaire used in the study:
The questionnaire was developed by the researcher on the basis of extensive literature review. All statements in the questionnaire were adapted from the literature.
This information was discussed with the supervisors of the study who are knowledgeable in the field of nursing research and have extensive nursing education and research methodology experience. The researcher also visited experts on HIV and AIDS in the AIDS Centre at the NMMU and health sectors in NMM. Thereafter the instrument was designed.
3.5.2. Validity

Validity refers to whether the instrument actually measures the concept in question, and whether the concept is measured accurately. One of the most common and useful classification schemes of validity is content and face validity (de Vos et al., 2002:166).

3. 5.2.1. Content validity

The content validity is concerned with the representativeness or sampling adequacy of the content of an instrument (De Vos et al, 2002: 167), as the questionnaire was developed on the basis of extensive literature reviews, all statements in the questionnaires were adapted from the statements in different studies on medical personnel’s knowledge and attitudes. Content validation is also a judgment process (de Vos et al., 2002: 167). The instrument was evaluated by the study supervisors who have had extensive experience in supervising students doing masters and doctoral studies and who are experts in research methodology. The experts of HIV and AIDS in the AIDS Centre in NMMU and health sectors also evaluated the questionnaire.

3. 5.2.2 Face Validity

Face validity is a desirable characteristic of a measuring instrument (De Vos et al, 2002:167). In this study it was found that the instrument was designed using an acceptable format for the presentation of the questions. The following methods were done to assess face validity in the study:

- Research supervisors with extensive clinical, research and supervising experience, experts of HIV and AIDS in the AIDS Centre in NMM and health sectors, as well as an experienced statistician, evaluated and approved the data-gathering instrument.
- A pilot study was done to ensure that clear and understandable wording was used.
- A thorough literature search was conducted to ensure that the data in the
questionnaire corresponded with what had been found in the available literature regarding registered nurses’ knowledge and attitudes pertaining to the prevention of HIV and AIDS transmission.

3.6. ETHICAL AND LEGAL CONSIDERATIONS

During the study procedure, the following ethical and legal principles were adhered to by the researcher:

- Privacy, anonymity and confidentiality
- No harm to respondents
- Informed consent
- Autonomy
- Voluntaries

3.6.1. Privacy, Anonymity and Confidentiality

**Privacy** refers to the protection of information normally not intended for others to observe or analyze (de Vos et al., 2002:67). **Confidentiality** refers to the researcher’s assurance to participants that information provided would not be made public or available to anyone other than those involved in the research process without the participants’ consent. Confidentiality is maintained by restricting access to raw data to those on the research team who need to use it (Burkhardt & Nathaniel, 2002:239). In this study, the participants were assured that information gathered from them was kept confidential by signing a consent form. Only the researcher, supervisors and the statistician have access to the information. The information regarding the ethical committee was given to the potential participants via a letter. If conflicts occurred they could complain to the ethical committee. **Anonymity** means that no one including the researcher knows the identity of the research participants (McIntyre, 2005: 77). **Anonymity** was guaranteed by allocating a number to each questionnaire and ensuring that no identifying information was recorded on it. When the participants filled in the questionnaire, the researcher explained to the participants that no form of identification was shown on the questionnaire. Participation in the research was on
a strictly voluntary basis and after the data had been collected, captured and analysed, the questionnaires were destroyed.

3. 6.2. Harming of respondents
Respondents can be harmed in a physical and/or emotional manner; but an emotional harm to respondents is often more difficult to predict and to determine than physical discomfort since respondents’ family life, relationships, employment situation or negative behaviour of the past may be a source of emotional harm to them (de Vos et al., 2002: 64). In this study the instrument of data collection was a questionnaire, which could not harm respondents physically. However, the questionnaire did seek to elicit information concerning sexual behaviour, which is a very private subject. If the researcher were to tackle her task improperly, it could result in a violation of the privacy of the respondents and harm them emotionally. In order to avoid harming respondents, the anonymity rule was strictly enforced; questionnaires were numerically coded and no identifying information appeared on them. The participants were reminded not to write anything on the questionnaire which might have identified them.

3. 6.3. Autonomy
**Autonomy** is the right of an individual to consider alternatives, make choices, and act without undue influence or interference from others (McIntyre, 2005: 77).
In the study, a letter of guidelines on participation gave the information on the study and guided the potential participants in making their own decision on whether to participate in the research or not. A short interview was held with respondents to provide information on the research before the questionnaire was handed out to ensure the principles of **Autonomy**.

3.6.4. Voluntaries
**Voluntaries** refer to the subjects having the right to be free of coercion, duress, or undue influence (McIntyre, 2005: 77). Before the questionnaire was handed out to
the respondents, a short interview was held with registered nurses to get permission. Respondents who wished to withdraw from the study at any time were free to do so without fear of reprisal.

3. 6.5. Informed consent

Informed consent in a research study refers to voluntary participation based on full disclosure of all information relating to the research, as well as ways of protecting privacy, anonymity and confidentiality (Burkhardt & Nathaniel, 2002:240). In this research study, the participants were asked to sign a consent form which included information of the study on the basis of voluntary participation (see Annexure 1). If any participants wished to withdraw from the study at any time, they would free to do so without fear of reprisal.

3. 7. SUMMARY

A questionnaire was used as an instrument to determine the level of knowledge and attitudes of registered nurses relating to the prevention of HIV and AIDS transmission in the study. A literature study was integrated into the questionnaire. The reliability and validity were also tested through an extensive literature review, test-retest, pilot study, as well as evaluation of the relevant experts including research supervisors from NMMU who have experience in nursing education and research methodology, HIV and AIDS experts in the HIV and AIDS Centre in NMMU and an experienced statistician.

The results of the study will be presented in the next chapter.
CHAPTER FOUR
DATA COLLECTION AND ANALYSIS

4.1. INTRODUCTION

Chapter Three gave a general description of how the data was collected from participants who were selected utilizing a purposive sampling method via a hand delivered questionnaire. The chapter also described how the data was analysed. The current chapter will concentrate on the analysis results of the research study, and the findings will be displayed in graphical as well as tabular format.

4.2. DATA COLLECTION

In the study, 80 questionnaires were handed out to 80 registered nurses in the three public hospitals, and 6 questionnaires that were handed out in the pilot study. No changes were made to the questionnaire after the completion of the pilot study. In total there were 86 questionnaires handed out, but there were 66 respondents. The response rate was 75% (66/88).

The questionnaire (see Annexure 3) was divided into the following three sections; and analysis of each section will be done separately. Section A of the questionnaire was concerned with the demographic data, including biographical information. This section consists of 10 questions which are listed below, covering:
• gender;
• race;
• marital status;
• working experience as a registered nurse;
• participation in any HIV and AIDS training programmes;
• experience related to caring for HIV and AIDS patients;
• professional qualifications and any additional qualifications;
• people with whom the registered nurses have discussed the prevention of HIV and AIDS transmission;
• previous sources of knowledge relating to the prevention of HIV and AIDS transmission;
• Options of gaining more knowledge in the future.

Section B was concerned with the assessment of knowledge related to the prevention of HIV and AIDS transmission. This section consisted of the following 40 questions.

• Questions 1 to 15, 17, and 18 were about the knowledge of HIV transmission; and some myths of HIV transmission.
• Questions 16, 26 and 27 were relevant to the knowledge of disinfection of HIV.
• Questions 19 to 21 were related to the knowledge of correct use of the condom.
• Questions 22, 23, 24, and 25 were the knowledge of the Universal Precautions that are guidelines to prevent HIV transmission within the healthcare environment.
• Question 28 was about safe blood transfusion.
• Questions 29, 30 and 32 referred to knowledge of injuries from sharp objects.
• Questions 31, 33, 34, 35 and 36 were relevant to the knowledge of the risk of getting HIV infection.
• Question 37 was about the knowledge of sexually transmitted diseases together with HIV.
• Questions 38, 39 and 40 referred to the knowledge of the treatment of HIV-infection namely antiretroviral treatment.
Section C focused on the assessment of attitudes regarding the prevention of HIV and AIDS transmission. This section used a four-point scale ranging from “strongly agree” with a statement, to “strongly disagree” with the statement. There were 34 questions.

- Statements 1, 2, 3, 4, 5 and 6 assessed the attitudes of registered nurses towards the use of condoms.
- Statement 7 assessed the attitudes of registered nurses towards safe sexual behaviour.
- Statement 8 assessed the attitude of registered nurses towards the prevention of HIV transmission by blood transfusion.
- Statement 9 evaluated the attitude of registered nurse towards the prevention of HIV transmission by using sterile needles.
- Statements 10, 11, 12, 13, 14, 15, 16, 26 and 27 evaluated attitudes of registered nurses towards HIV-infected patients, co-workers and high-risk patients.
- Statements 17, 18, 19, 20, 21, 22, 23 and 24 assessed attitudes of registered nurses toward Universal Precautions.
- Statement 25 evaluated attitudes towards injuries related to sharp objects.
- Statements 28, 29, 30, 31, 32, 33, and 34 evaluated perceived responsibility of registered nurses about HIV transmission and personal vulnerability to HIV transmission, their perception of having knowledge on the prevention of HIV transmission and feelings on patient education.

4.3. DATA ANALYSIS OF THE QUESTIONNAIRE

In the following paragraphs, each section of the questionnaire will be analysed and documented.

4.3.1. Section A the demographic data

4.3.1.1. Gender
A total of 7.6% (5) males and 92.4% (61) females were included in the sample of 66 respondents. Figure 4.1 indicates the gender distribution of the registered nurses who responded in the research. The reason why there were more female respondents than male is that most registered nurses are female. The male to female ratio of registered nurses is 1:12. The statistics of the South African Nursing Council (SANC) for 2006 revealed that in Eastern Cape there was a male to female ratio of registered nurses of 1:17 (SANC, 2006). Although the male/ female ratio of the respondents does not exactly correlate with the SANC statistics, the results of the research represent the gender distribution.

FIGURE 4.1 GENDER DISTRIBUTION (N=66)

4.3.1.2. Race of respondents

Figure 4.2 shows the percentage of the races of the registered nurses. 46.97% (31) respondents were Black, 45.45% (30) were Coloured and 7.58% (5) were White.
FIGURE 4.2 RACE OF RESPONDENTS (N=66)

4.3.1.3. Marital status

Altogether 60.6% (40) of the respondents were married, 37.88% (25) were single. 1.52% (1) respondents was living with a partner, and there were no widows. See figure 4.3.

FIGURE 4.3 MARITAL STATUS OF RESPONDENTS (N=66)

4.3.1.4. Working experience as a registered nurse

Figure 4.4 indicates the working experience of the respondents as registered nurses. The average years of working as a registered nurse were 12 years; the minimum was one year and the maximum was 27 years. There were 25
respondents with 1-5 years’ experience; 25 respondents with 5-10 years’ experience and 16 respondents had more than 11 years’ working experience. In order to analyse the data, the registered nurses were categorised according to the period of working experience. The registered nurses with 1-5 years were junior; those with 5-10 years were middle level and those with more than 10 years were senior.

FIGURE 4.4 WORKING EXPERIENCE AS A REGISTERED NURSE (N=66).

4.3.1.5. Participation in HIV and AIDS training programmes

From Figure 4.5, the average duration of the training programmes was 12.6 days and the maximum duration was 360 days. About 60.61% (41) of respondents had participated in the different HIV and AIDS training programmes, 37.88% (25) had not had a chance to participate in any HIV and AIDS training programme. One respondent did not answer the question. The result is expected, because HIV and AIDS prevalence rate is very high in South Africa. Responding to the HIV and AIDS prevalence situation in South Africa, the South African Government is providing healthcare workers with regular in-service training (South African Department of Health, 2000: 15).
4.3.1.6. Experience related to caring for HIV and AIDS patients

Figure 4.6 shows the percentage of registered nurses who had experience of caring for HIV and AIDS patients. A total of 80.3% (53) of the respondents claimed they had experience in caring for patients with HIV and AIDS, while 19.7% of the respondents had no experience in caring for these patients. The result is expected, because HIV and AIDS prevalence rates are very high in South Africa (Van Rensburg, 2002: 1).

The minimum duration in caring for HIV and AIDS patients was 2 days and the maximum was not measurable because most respondents answered that their experience was the same as their working experience as a registered nurse. It meant that registered nurses regarded all patients as being potentially HIV infected. This may be relevant to voluntary HIV status testing in South Africa (van Rensburg, 2002: 62) which have the effect of there being large numbers patients whose HIV status that is unknown to the healthcare providers.
FIGURE 4.6 EXPERIENCE OF CARING FOR HIV AND AIDS PATIENTS (N=66)

4.3.1.7. Professional qualifications of respondents

Figure 4.7 indicates the professional qualifications of registered nurses. Among the 66 respondents, 57.6% (38) had a diploma in nursing; there were 18.2% (12) respondents with a degree in nursing; 16.7% (11) respondents had a basic diploma; and 3% (2) had an Honours degree and 1.5% (1) had Masters Degree. Because the number of basic, Honour and Magister qualifications were limited, statistical inferences were not possible for the professional qualification.

Additional qualification

Altogether 21 of 66 respondents had an additional qualification. Among them, 3 (14%) had an HIV and AIDS nursing certificate, and 2 (9.5%) had a HIV and AIDS counselling certificate.
4.3.1.8. People with whom registered nurses have discussed the prevention of HIV and AIDS transmission

FIGURE 4.7 refers to the number of people with whom respondents have previously discussed the prevention of HIV and AIDS transmission. The options offered were the following: colleague, spouse, friends of the same gender, friends of different genders, other family members and patients; and the respondents were allowed to choose as many or as few of these options as applied to themselves. The six most frequently chosen options or combination of options are represented in Figure 4.8. The most frequently chosen option was that of colleagues and patients while the option of spouse was the least popular choice. Among 66 respondents, 55 of them with colleagues, 47 of them with patient, and 42 of them with other family members have discussed the prevention of HIV and AIDS transmission; only 30 respondents have previously discussed the prevention of HIV and AIDS transmission. It might because the fact that most commonly spread of HIV and AIDS via sexual intercourse (Evian, 2000: 20); so it might be relevant to the morality issue of HIV and AIDS transmission.
4.3.1.9. Previous sources of knowledge relating to the prevention of HIV and AIDS transmission

The options of the section were the following: magazines, newspapers, television, spouse, friends, colleagues, in-service training and self-study. The five most frequently chosen options or combination of options are presented (see FIGURE 4.9), according to rank, in-service training, self-study, magazines, television and colleagues. The most frequently chosen option here was in-service training. That meant the knowledge of most respondents (registered nurses) related to the prevention of HIV and AIDS transmission gained from in-service training. It further proved that in-service training played an important role in the prevention of HIV and AIDS transmission. The option of spouse was the least used source of knowledge relating to the prevention of HIV and AIDS transmission which corresponded to the spouse being the least likely person with whom registered nurses had discussed the prevention of HIV and AIDS transmission. The least amount of knowledge of registered nurses relating to the prevention of HIV and AIDS transmission had gained from friends and newspapers.
4.3.1.10. Preferred options for receiving the knowledge on the prevention of HIV and AIDS transmission in the future

Figure 4.10 refers to where registered nurses would like to obtain knowledge of the prevention of HIV and AIDS transmission in the future. In a total of 66 respondents, 90.9% showed a strong preference for in-service training. The choice of magazine also appeared popular as 28 respondents chose magazines in varying combinations. The least popular choice of receiving information on the prevention of HIV and AIDS transmission in the future was a spouse which may relate to the moral questions of the transmission of HIV and AIDS because the main mode of the HIV and AIDS transmission is unsafe sexual behaviour (Evian, 2000: 20). One study conducted by Ackermann and de Klerk (2003, 40-43) in South Africa showed that a real culture of infidelity existed in South Africa.
4.3.3. **Section B – The knowledge of the prevention of HIV and AIDS transmission section.**

This section evaluated the level of the knowledge relating to the prevention of HIV and AIDS transmission. Table 4.1 to table 4.23 indicated responses to each individual statement from the total samples from the three hospitals. The tables offer a breakdown of the questionnaire. These are:

- knowledge of HIV transmission and myths of HIV transmission;
- knowledge of disinfection of HIV;
- knowledge of correct use of condoms which is the main way to prevent HIV and AIDS sexual transmission;
- knowledge of the Universal Precautions that are guidelines to prevent HIV and AIDS transmission within the healthcare environment;
- knowledge of safe blood transfusion;
- knowledge relevant to sharp injuries;
- knowledge of the risks of getting HIV infection;
• knowledge of sexually transmitted diseases and HIV; and
• knowledge of the treatment of HIV-infection namely antiretroviral treatment.

The results are presented in terms of the frequency of individual responses to the knowledge section. Frequency counts and percentages were calculated.

4.3.3.1. Knowledge of HIV transmission and some myths of HIV transmission

Table 4.1 shows the frequency of individual responses to knowledge of the ways of HIV and AIDS transmission and some myths of HIV transmission. The registered nurses appeared to have a high level of knowledge of the ways of HIV transmission and some myths of HIV transmission. Except for the statement 13 and 15 (see table 4.1), more than 58 respondents (87%) chose the correct answer. Statement 13 tested the knowledge of HIV and AIDS transmission in a health setting. However 15% of registered nurse did not know or were not sure how HIV and AIDS could be transmitted through broken skin, open cuts or wound exposure to infected materials. Statement 15 was to test the knowledge on HIV and body fluids. Semen and blood are not the only body fluids to transmit HIV and AIDS as there are others body fluids such as vaginal secretions (including menstrual discharge) (see Chapter Two in section 2.3.2.2 HIV and body fluids transmission). Only 43.97% of the registered nurses chose the correct answer, and the rest did not know about or were not sure the knowledge of other body fluids that could transmit HIV and AIDS.

Table 4.1 The frequency of individual responses to knowledge of the ways of HIV transmission and some myths of HIV transmission

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. From unprotect sexual intercourse with an HIV/AIDS infected person.</td>
<td>Yes</td>
<td>66</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>2. From sharing cups and plates</td>
<td>No</td>
<td>66</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>
with HIV/ AIDS-infected person.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. From being bitten by mosquitoes or bedbugs.</td>
<td>No</td>
<td>62</td>
<td>93.94</td>
<td>1</td>
</tr>
<tr>
<td>4. An HIV-infected mother can pass on HIV/ AIDS to her baby through breast milk.</td>
<td>Yea</td>
<td>59</td>
<td>89.39</td>
<td>6</td>
</tr>
<tr>
<td>5. Through unprotected oral sex with an HIV/AIDS infected person.</td>
<td>Yes</td>
<td>58</td>
<td>87.88</td>
<td>3</td>
</tr>
<tr>
<td>6. Through hugging or being close to an HIV/AIDS-infected person.</td>
<td>No</td>
<td>65</td>
<td>98.48</td>
<td>1</td>
</tr>
<tr>
<td>7. By swimming in the same pool as an HIV/AIDS-infected person</td>
<td>No</td>
<td>65</td>
<td>98.48</td>
<td>1</td>
</tr>
<tr>
<td>8. By kissing an HIV/AIDS-infected person</td>
<td>No</td>
<td>63</td>
<td>95.45</td>
<td>0</td>
</tr>
<tr>
<td>9. From HIV/AIDS-infected blood transfusions</td>
<td>Yes</td>
<td>66</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>10. Through needle-stick injuries in the clinical setting</td>
<td>Yes</td>
<td>63</td>
<td>95.45</td>
<td>2</td>
</tr>
<tr>
<td>11. From handling belongings of an HIV-positive person</td>
<td>No</td>
<td>63</td>
<td>95.45</td>
<td>3</td>
</tr>
<tr>
<td>12. By sharing needles during drug use</td>
<td>Yes</td>
<td>65</td>
<td>98.48</td>
<td>1</td>
</tr>
<tr>
<td>13. Through broken skin, open cuts or wound exposure to infected materials</td>
<td>Yes</td>
<td>51</td>
<td>77.27</td>
<td>13</td>
</tr>
<tr>
<td>14. Through splashes from infected blood or body fluids onto the mucous membranes</td>
<td>Yes</td>
<td>65</td>
<td>98.48</td>
<td>1</td>
</tr>
<tr>
<td>15. Blood and semen are the only No</td>
<td>29</td>
<td>43.94</td>
<td>35</td>
<td>53.03</td>
</tr>
</tbody>
</table>
body fluids to transmit HIV

17. An HIV-infected person always shows symptoms

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>59</th>
<th>89.39</th>
<th>7</th>
<th>10.61</th>
<th>0</th>
</tr>
</thead>
</table>

18. An HIV-infected person can look healthy.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>61</th>
<th>92.42</th>
<th>3</th>
<th>4.55</th>
<th>2</th>
<th>3.03</th>
</tr>
</thead>
</table>

N=Count; %=percentage

From Table 4.2, it was clear that 40 respondents had been trained on the HIV and AIDS programmes, among them 40% had the correct answer, and 55% had the incorrect answer. While among the no-training respondents, 52% had the correct answer, and 48% had the incorrect answer. Therefore, it seems as if having attended training programmes on HIV and AIDS was not influence the knowledge of the ways of HIV transmission and myths of HIV transmission.

Table 4.2 relationship between attendance of HIV and AIDS training programmes and knowledge of the ways of HIV transmission and some myths of HIV transmission

<table>
<thead>
<tr>
<th>Statement 15</th>
<th>Having training</th>
<th>No-training</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct</td>
<td>16</td>
<td>13</td>
<td>29</td>
</tr>
<tr>
<td>Column %</td>
<td>40%</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>22</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Column %</td>
<td>55%</td>
<td>48%</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Column %</td>
<td>5%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>40</td>
<td>25</td>
<td>65</td>
</tr>
</tbody>
</table>

Note: refer to 4.3.1.5. Participation in HIV and AIDS training programmes.

Table 4.3 indicated the relationships between registered nurses’ experience in caring for HIV and AIDS patients and the knowledge of the ways of HIV transmission and myths of HIV transmission. Of the 53 registered nurses claiming...
they had experience in caring for HIV and AIDS patients, 43.40% had the correct answer, while 52.83% had the incorrect answer. About 46.15% of those with no-experience of caring for HIV and AIDS patients had the correct answer, and 53.85% had the incorrect answer. There was no significant difference between them; therefore, registered nurses’ experience of caring for HIV and AIDS patients does not make a difference in the level of the knowledge of HIV transmission and myths of HIV transmission.

Table 4.3 Relationship between experience of caring for HIV and AIDS patients and knowledge of the ways of HIV transmission and some myths of HIV transmission

<table>
<thead>
<tr>
<th>Statement</th>
<th>Having Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct</td>
<td>23</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>Column %</td>
<td>43.4%</td>
<td>46.2%</td>
<td></td>
</tr>
<tr>
<td>Incorrect</td>
<td>28</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Column %</td>
<td>52.8%</td>
<td>53.9%</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Column %</td>
<td>3.8%</td>
<td>0. %</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>

4.3.3.2. Knowledge on the disinfection of HIV

Table 4.4 shows the frequency of individual responses to the knowledge on the disinfection of HIV. From the table, it appears that most of the registered nurses know that the HIV virus is a blood-borne pathogen like Hepatitis B, therefore procedures for avoiding hepatitis B infection are also appropriate for avoiding HIV infection. However most of the registered nurses did not have adequate knowledge on the disinfection of HIV (See Chapter Two on section 2. 6.4.2.4. Disinfection of HIV).

Table 4.4 The frequency of individual responses to the knowledge on disinfection of HIV
16. Even outside the body, HIV is very hard to kill.       Correct Incorrect  
<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>43</td>
<td>65.15</td>
<td>10</td>
<td>15.15</td>
<td>13</td>
</tr>
</tbody>
</table>

26. Procedures for avoiding hepatitis B infection are also appropriate for avoiding HIV-infection.      Correct Incorrect  
<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60</td>
<td>90.91</td>
<td>2</td>
<td>3.03</td>
<td>4</td>
</tr>
</tbody>
</table>

27. Spills of HIV-infected material can be inactivated by simple disinfectants such as household bleach.  Correct Incorrect  
<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>45</td>
<td>68.18</td>
<td>14</td>
<td>21.21</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 4.5 indicates the frequency of responses to statements 16 and 27 which tested the knowledge on HIV disinfection referring to working experience as a registered nurse. From Table 4.5, it was shown that 50% of junior registered nurses had the correct answer while 76% of senior registered nurses had the correct answer. The longer the period of working experience as a registered nurse was, the higher the frequency of correct answers. Therefore, it can be assumed that working experience as a registered nurse influences the level of the knowledge of HIV disinfection.

Table 4.5 relationship between working experience as a registered nurses and the knowledge of disinfection of HIV

<table>
<thead>
<tr>
<th>Statement 16</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt; 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count Incorrect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count Correct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column %</td>
<td>25.00%</td>
<td>16.00%</td>
<td>8.00%</td>
</tr>
</tbody>
</table>

| Count Incorrect | 4 | 4 | 2 |
| Count Correct   | 8 | 16| 19 |
Table 4.6 indicates the frequency of individual responses to the knowledge of HIV disinfection referring to the HIV and AIDS training programme. From Table 4.6, it can be seen that a higher percentage (70%) of registered nurses participating in the training programme for HIV and AIDS had a correct answer than those who did not participate in training programmes, and so the HIV and AIDS training programmes did influence the level of the knowledge of HIV disinfection. The registered nurses who participated in a HIV and AIDS training programme had a higher frequency of correct answers than those who did not participate in a training programme.

**Table 4.6 relationship between attendance of HIV and AIDS training programme and the knowledge on disinfection of HIV**

<table>
<thead>
<tr>
<th>Statement 16</th>
<th>Training</th>
<th>No Training</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>Incorrect</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Column %</td>
<td></td>
<td>12.50%</td>
<td>20.00%</td>
</tr>
<tr>
<td>Count</td>
<td>Correct</td>
<td>28</td>
<td>15</td>
</tr>
</tbody>
</table>
From Table 4.7, it is clear that 71.7% of respondents who had experience of caring for patients with HIV and AIDS had a correct answer, while only 38.46% of respondents without the experience had a correct answer. Experience of caring for HIV and AIDS patients does influence the level of the knowledge of HIV disinfection.

Table 4.7 Relationships between experience of caring for HIV and AIDS patients and the knowledge of disinfection of HIV

<table>
<thead>
<tr>
<th>Statement 16</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>Incorrect</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Column %</td>
<td>13.21%</td>
<td>23.08%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Correct</td>
<td>38</td>
<td>5</td>
</tr>
<tr>
<td>Column %</td>
<td>71.70%</td>
<td>38.46%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Do not know</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Column %</td>
<td>15.09%</td>
<td>38.46%</td>
<td></td>
</tr>
</tbody>
</table>
4.3.3.3. Knowledge of the correct use of condoms

Table 4.8 shows all registered nurses had a basic knowledge on the use of a condom which could reduce the risk of getting HIV and AIDS; but most of the registered nurses did not know how to use condoms correctly. Only 43.94% of the respondents answered Question 20 correctly, while 57.58% respondents did not know lubricants with an oil base could change the structure of a condom and make the HIV virus penetrate through a condom. Correct use of a condom is the main way to prevent HIV sexual transmission (See Chapter Two on section 2.6.3 The prevention of HIV infection in sexual relationships). In general the registered nurses did not have adequate knowledge of the correct use of condoms.

Table 4.8 The frequency of individual responses to the knowledge of correct use of condoms

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Use of condoms during sexual intercourse can lower the risk of getting HIV and AIDS</td>
<td>Yes</td>
<td>66</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Totals</th>
<th>All Groups</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>Correct</td>
<td>38</td>
<td>7</td>
<td>45</td>
</tr>
<tr>
<td>Column %</td>
<td>71.70%</td>
<td>53.85%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Incorrect</td>
<td>9</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Column %</td>
<td>16.98%</td>
<td>38.46%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Do not know</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Column %</td>
<td>11.32%</td>
<td>7.69%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>
20. Spermicidal creams with a condom can improve the effectiveness of prevention of HIV and AIDS transmission | Yes | 29 | 43.94 | 21 | 31.82 | 16 | 24.24 |
21. Use of a condoms with an oil a base lubricant can decrease the effectiveness of prevention of HIV and AIDS transmission | yes | 13 | 19.7 | 38 | 57.58 | 15 | 22.73 |

Table 4.9 indicated the frequency of registered nurses’ response to the knowledge of correct use of a condom referring to working experience as a registered nurse. The table shows that working experience as a registered nurse did not influence the level of the knowledge of the correct use of a condom.

Table 4.9 Relationships between working experience as a registered nurse and the knowledge of correct use of a condom

<table>
<thead>
<tr>
<th>Statement</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt; 10 years</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>Correct</td>
<td>7</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Column %</td>
<td>43.75%</td>
<td>48.00%</td>
<td>40.00%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Incorrect</td>
<td>4</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Column %</td>
<td>25.00%</td>
<td>28.00%</td>
<td>40.00%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Do not know</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Column %</td>
<td>31.25%</td>
<td>24.00%</td>
<td>20.00%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>16</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt; 10 years</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>Incorrect</td>
<td>8</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Column %</td>
<td>50.00%</td>
<td>64.00%</td>
<td>56.00%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Do not know</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Column %</td>
<td>25.00%</td>
<td>20.00%</td>
<td>24.00%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>Correct</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 4.10 shows the percentage of the registered nurses' response to the knowledge of correct use of a condom referring to HIV and AIDS training programmes. The frequency of registered nurses' response to the knowledge of the correct use of a condom did not show significant difference between the two groups.

### Table 4.10 Relationships between attendance of HIV and AIDS training programmes and the knowledge of correct use of a condom

<table>
<thead>
<tr>
<th>Statement 20</th>
<th>Training</th>
<th>No Training</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Correct)</td>
<td>17</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>Column%</td>
<td>42.50%</td>
<td>44.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>12</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Column%</td>
<td>30.00%</td>
<td>36.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Column%</td>
<td>27.50%</td>
<td>20.00%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>40</td>
<td>25</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement 21</th>
<th>Training</th>
<th>No Training</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Incorrect)</td>
<td>24</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Column%</td>
<td>60.00%</td>
<td>52.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>8</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Column%</td>
<td>20.00%</td>
<td>28.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>8</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Column%</td>
<td>20.00%</td>
<td>20.00%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>40</td>
<td>25</td>
<td>65</td>
</tr>
</tbody>
</table>

**Note:** refer to 4.3.1.5. Participation in HIV and AIDS training programmes
Table 4.11 shows there was no significant difference in the knowledge between registered nurses who had experience in caring for HIV and AIDS patients and the registered nurses without it.

Table 4.11 Relationships between experience of caring for HIV and AIDS patients and the knowledge of the correct use of a condom

<table>
<thead>
<tr>
<th>Statement 20</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Correct)</td>
<td>25</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>Column%</td>
<td>47.17%</td>
<td>30.77%</td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>16</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Column%</td>
<td>30.19%</td>
<td>38.46%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>12</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Column%</td>
<td>22.64%</td>
<td>30.77%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement 21</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Incorrect)</td>
<td>33</td>
<td>5</td>
<td>38</td>
</tr>
<tr>
<td>Column%</td>
<td>62.26%</td>
<td>38.46%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Column%</td>
<td>18.87%</td>
<td>38.46%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>10</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Column%</td>
<td>18.87%</td>
<td>23.08%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>

4.3.3.4. Knowledge of the Universal Precautions

Table 4.12 shows that most of the registered nurses know that when they contact blood they should wear gloves, but most of the registered nurses overestimated the role played by certain body fluids such as sweat and saliva as an important source of HIV transmission. Most of them thought that even contact with the patient’s sweat and saliva created a need to wear gloves. This was why in questions 23 and
24 most of the respondents chose the incorrect answer. 53% of the registered nurses did not know or were not sure that they should wear gloves when in contact with non-intact skin of a patient who was HIV-negative.

The registered nurses in USA increased their use of protection if they knew their patients were HIV-positive. However, if they thought that their patients were HIV positive or if they thought that their patients were HIV-negative or if they did not know their patients’ HIV status, they did not always use adequate protection (Young, 1996 in Ehlers, 2006:657-662). Therefore registered nurses had incomplete the knowledge of Universal Precautions (See Chapter Two on section 2.6.4.2.1-Universal Precautions). The result of one research conducted by Chamane and Kortenbout (1997: 43) in Durban, South Africa, showed that, although the general knowledge of professional nurses’ concerning HIV and AIDS was fairly high, they lacked knowledge relating to Universal Precautions.

Table 4.12 The frequency of individual responses to the knowledge of the Universal Precautions

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should wear gloves in the following situations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. When delivering specimens of blood to laboratory.</td>
<td>Yes</td>
<td>48</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>23. when in contact with patient's sweat</td>
<td>No</td>
<td>20</td>
<td>45</td>
<td>1</td>
</tr>
<tr>
<td>24. when in contact with patient's saliva</td>
<td>No</td>
<td>24</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>25. when in contact with non-intact skin of patient who is HIV negative.</td>
<td>Yes</td>
<td>35</td>
<td>26</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 4.13 indicates that most junior registered nurses (1-5 years’ working experience), indicated that when coming in contact with patients’ sweat and saliva, it was not necessary to wear gloves; and they had the highest percentage of correct answers in the three groups, indicating that Junior registered nurses might have up-to-date knowledge of Universal Precautions.

Table 4.13 Relationships between working experience as a registered nurse and the knowledge of Universal Precautions

<table>
<thead>
<tr>
<th>Statement 23</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>More than 10 years</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Incorrect)</td>
<td>15</td>
<td>17</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>Column%</td>
<td>60.00%</td>
<td>68.00%</td>
<td>81.25%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>9</td>
<td>8</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Column%</td>
<td>36.00%</td>
<td>32.00%</td>
<td>18.75%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Column%</td>
<td>4.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>25</td>
<td>25</td>
<td>16</td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement 24</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>More than 10 years</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Incorrect)</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Column%</td>
<td>60.00%</td>
<td>60.00%</td>
<td>62.50%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Column%</td>
<td>8.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>Column%</td>
<td>32.00%</td>
<td>40.00%</td>
<td>37.50%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>25</td>
<td>25</td>
<td>16</td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement 25</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>More than 10 years</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Incorrect)</td>
<td>11</td>
<td>13</td>
<td>11</td>
<td>35</td>
</tr>
<tr>
<td>Column%</td>
<td>44.00%</td>
<td>52.00%</td>
<td>68.75%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>11</td>
<td>11</td>
<td>4</td>
<td>26</td>
</tr>
</tbody>
</table>
From Table 4.14, it is clear that higher percentages of registered nurses participating in training programmes had incorrect answers on saliva and sweat, and lower percentages of them chose the correct answer to statement 25. Therefore, having attended HIV and AIDS training programmes did not make a difference in the level of knowledge of Universal Precautions. Since it might relate to the context of training programmes, or effect of training, extended training on the Universal Precautions should be given in the future.

**Table 4.14 Relationships between attendance of HIV and AIDS training programmes and the knowledge of Universal Precautions**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Training</th>
<th>No Training</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>26</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>Column %</td>
<td>65.00%</td>
<td>72.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>13</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Column %</td>
<td>32.50%</td>
<td>28.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Column %</td>
<td>2.50%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>40</td>
<td>25</td>
<td>65</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>24</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td>Column%</td>
<td>60.00%</td>
<td>60.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Column%</td>
<td>0.00%</td>
<td>8.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>16</td>
<td>8</td>
<td>24</td>
</tr>
</tbody>
</table>
Table 4.15 indicated that registered nurses having experience of caring for HIV and AIDS patients had high frequency of the incorrect answers to statement 23 and statement 24. They overestimated the role played by other body fluids such as saliva and sweat during HIV transmission; and they had a high percentage of incorrect answers on the knowledge of the prevention of HIV and AIDS transmission when contacting the non-intact skin of a patient who was HIV-negative.
4.3.3.5. Knowledge of safe blood transfusion
Table 4.16 shows the frequency of individual responses to the knowledge of safe blood transfusion. 93.94% of registered nurses had correct answers, which indicates they have adequate knowledge of safe blood transfusion.

Table 4.16 The frequency of individual responses to the knowledge of safe blood transfusion

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement 24</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Incorrect)</td>
<td>31</td>
<td>9</td>
<td>40</td>
</tr>
<tr>
<td>Column%</td>
<td>58.49%</td>
<td>69.23%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Column%</td>
<td>3.77%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>20</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Column %</td>
<td>37.74%</td>
<td>30.77%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement 25</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Correct)</td>
<td>27</td>
<td>8</td>
<td>35</td>
</tr>
<tr>
<td>Column %</td>
<td>50.94%</td>
<td>61.54%</td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>22</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>Column %</td>
<td>41.51%</td>
<td>30.77%</td>
<td></td>
</tr>
<tr>
<td>Count (Do not know)</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Column%</td>
<td>7.55%</td>
<td>7.69%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>
All blood intended for transfusion in South Africa is tested for HIV antibodies

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct N %</th>
<th>Incorrect N %</th>
<th>Do not know N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>29. After a sharp injury, flushing the site with running water can reduce the risk of getting HIV-infection</td>
<td>Yes</td>
<td>55 83.33</td>
<td>9 13.64</td>
<td>2 3.03</td>
</tr>
<tr>
<td>30. After a sharp injury, stopping the bleeding at the site where there is bleeding can reduce risks of getting HIV</td>
<td>No</td>
<td>58 87.89</td>
<td>6 9.09</td>
<td>2 3.03</td>
</tr>
<tr>
<td>32. Bending a needle by hand is more risky for getting needle stick injuries</td>
<td>Yes</td>
<td>57 86.36</td>
<td>5 7.58</td>
<td>4 6.06</td>
</tr>
</tbody>
</table>

4.3.3.6. Knowledge on injuries related to sharp objects

Table 4.17 indicates the frequency of individual responses to the knowledge of sharp injuries. 83.33% of respondents knew how to deal with the situation after a sharp injury, 87.89% of registered nurses knew that stopping the bleeding at the site would increase the risk of getting HIV after getting a sharp injury; and 86.36% of respondents knew that bending a needle by hand was more risky for getting needle stick injuries. Therefore it could be assumed that registered nurses have adequate knowledge of the prevention of injury from sharp objects so as to prevent HIV transmission.
4.3.3.7. Knowledge of sexually transmitted disease and HIV

Table 4.18 shows only 59% of respondents know the chancres could increase risk of getting an HIV-infection, while 28.79% did not know the answer. The registered nurses had inadequate knowledge of sexually transmitted diseases and HIV (see Chapter Two on the section of 2.3.5. sexually transmitted diseases and the transmission of HIV and AIDS).

Table 4.18 The frequency of individual responses to the knowledge of sexually transmitted disease and HIV

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>37. Chancres can increase person to get HIV-infection.</td>
<td>Yes</td>
<td>39</td>
<td>59.09</td>
</tr>
</tbody>
</table>

Table 4.19 shows the relationship between working experience as a registered nurse and the knowledge of sexually transmitted disease and HIV. Junior registered nurses gave a high percentage of correct answers (10 among 16, 62.5% had correct answer); but had a low percentage of “do not know”; while the mid-level and senior registered nurses had a low percentage of correct answers and a high percentage of “do not know” answers. Therefore, working experience as a registered nurse influences the knowledge of sexually transmitted diseases and HIV. Junior registered nurses were the most knowledgeable group among the three groups with regard to knowledge of sexually transmitted diseases and HIV.

Table 4.19 relationship between working experience as a registered nurse and knowledge of sexually transmitted diseases and HIV

<table>
<thead>
<tr>
<th>Statement 37</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt; 10 years</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Do not know)</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>Column %</td>
<td>18.75%</td>
<td>32.00%</td>
<td>32.00%</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.20 indicates the relationship between HIV and AIDS training programmes and the knowledge of sexually transmitted disease with HIV. The registered nurses participating in the training programmes had a higher percentage of correct answers than those who did not participate in training programmes.

Table 4.20 relationship between attendance of HIV and AIDS training programmes and knowledge of sexually transmitted diseases and HIV

<table>
<thead>
<tr>
<th>Statement 37</th>
<th>Training</th>
<th>No Training</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Do not know)</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Column %</td>
<td>25%</td>
<td>32%</td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Column%</td>
<td>10%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>26</td>
<td>13</td>
<td>39</td>
</tr>
<tr>
<td>Column %</td>
<td>65%</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>40</td>
<td>25</td>
<td>65</td>
</tr>
</tbody>
</table>

Table 4.21 indicates the relationship between the experience of caring for HIV and AIDS patients and statement 37 which indicated that 64.15% of respondents having the experience had correct answers, while 38.46% of the registered nurses having no experience in caring for HIV and AIDS patients had the correct answer. The registered nurses who had experience in caring for HIV and AIDS patients had a higher level of knowledge of sexually transmitted diseases and HIV than those who had no experience in caring for HIV and AIDS patients.
Table 4.21 Relationship between experience of caring for HIV and AIDS patients and knowledge of sexually transmitted diseases and HIV

<table>
<thead>
<tr>
<th>Statement 37</th>
<th>Experience</th>
<th>No Experience</th>
<th>Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (Do not know)</td>
<td>15</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Column %</td>
<td>28.30%</td>
<td>30.77%</td>
<td></td>
</tr>
<tr>
<td>Count (Incorrect)</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Column%</td>
<td>7.55%</td>
<td>30.77%</td>
<td></td>
</tr>
<tr>
<td>Count (Correct)</td>
<td>34</td>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td>Column %</td>
<td>64.15%</td>
<td>38.46%</td>
<td></td>
</tr>
<tr>
<td>Count (All Groups)</td>
<td>53</td>
<td>13</td>
<td>66</td>
</tr>
</tbody>
</table>

4.3.3.8. Knowledge of the risks of getting HIV infection

From Table 4.22 it is clear that most of the registered nurses do not have adequate knowledge of the risk factors for getting HIV infection. Except for statement 35, which 95.45% of registered nurses had correct answers, statements 31, 33, 34, and 36 have low percentages of the correct answers.

Table 4.22 The frequency of individual responses to the knowledge of the risks of getting HIV infection

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>31. A large quantity of blood</td>
<td>No</td>
<td>9</td>
<td>13.64</td>
<td>52</td>
</tr>
</tbody>
</table>
from the source person is the same risk as a little quantity of blood from the source person

<table>
<thead>
<tr>
<th>33. Infected blood or body fluid that comes from patients with terminal illness increase the risk of getting HIV and AIDS</th>
<th>Yes</th>
<th>33</th>
<th>50</th>
<th>27</th>
<th>40.92</th>
<th>6</th>
<th>9.09</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Smoking can increase the risk of getting HIV infection</td>
<td>Yes</td>
<td>12</td>
<td>18.18</td>
<td>48</td>
<td>72.73</td>
<td>6</td>
<td>9.09</td>
</tr>
<tr>
<td>35. Alcohol can kill the HIV virus in the body.</td>
<td>No</td>
<td>63</td>
<td>95.45</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4.55</td>
</tr>
<tr>
<td>36. Hepatitis B can increase the risk of getting HIV-infection</td>
<td>Yes</td>
<td>38</td>
<td>57.58</td>
<td>20</td>
<td>30.3</td>
<td>8</td>
<td>12.12</td>
</tr>
</tbody>
</table>

4.3.3.9. Knowledge of the treatment of HIV Infection with antiretroviral treatment

This section tested the knowledge of antiretroviral treatment. Table 4.24 shows that most of the respondents had the basic knowledge of antiretroviral treatment; but had incomplete knowledge about the antiretroviral treatment of HIV patients with TB. 57% of registered nurse had the incorrect answer, and 9.09% did not know the answer.

Table 4.23 The frequency of individual responses to Knowledge of the treatment of HIV-Infection: antiretroviral treatment

<table>
<thead>
<tr>
<th>Statement</th>
<th>Correct answer</th>
<th>Correct N</th>
<th>Correct %</th>
<th>Incorrect N</th>
<th>Incorrect %</th>
<th>Do not know N</th>
<th>Do not know %</th>
</tr>
</thead>
<tbody>
<tr>
<td>38. There are some drugs which can prevent HIV infection after exposure to</td>
<td>Yes</td>
<td>47</td>
<td>71.21</td>
<td>17</td>
<td>25.76</td>
<td>2</td>
<td>3.03</td>
</tr>
</tbody>
</table>
HIV and AIDS infection

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Percentage</th>
<th>Difference</th>
<th>Standard Error</th>
<th>z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>39. Antiretroviral treatment is more effective and efficient at the early stages of HIV infection than in the later stage of HIV infection.</td>
<td>Yes</td>
<td>80.3</td>
<td>10</td>
<td>15.15</td>
<td>3</td>
<td>4.55</td>
</tr>
<tr>
<td>40. Antiretroviral treatment cannot be used to treat HIV positive patients with active TB</td>
<td>Yes</td>
<td>33.33</td>
<td>38</td>
<td>57.58</td>
<td>6</td>
<td>9.09</td>
</tr>
</tbody>
</table>

**4.3.4. Section C The attitudes of registered nurses pertaining to the prevention of HIV and AIDS transmission.**

This section used a four-point scale ranging from “strongly agree” with the statement, to “strongly disagree” with the statement to evaluate attitudes of registered nurses relating to the prevention of HIV and AIDS transmission. Table 4.24 to Table 4.42 indicate responses to each individual statement by the total samples from three hospitals. The tables offer a breakdown of the questionnaire.

There are:

- attitudes towards the use of condoms;
- attitudes towards safe sexual behaviour;
- attitudes towards the prevention of HIV transmission by safe blood transfusion;
- attitudes towards the prevention of HIV transmission by using sterile needles;
- attitudes towards HIV infected-patients, co-workers and high-risk patients;
- attitudes toward Universal Precautions; and
- perceived responsibility about and personal vulnerability to HIV transmission, and perception of having the knowledge on the prevention of HIV transmission and patient education.

**4.3.4.1. Attitudes towards the correct use of condoms**
Table 4.24 shows the frequency of individual responses to the attitudes on the use of a condom. Most respondents (SA: 60.62%, A: 33.33%) agreed that the correct use of a condom could prevent HIV and AIDS infection, and thought that it was comfortable to use condoms (SA: 27.27%, A: 42.42%), while most of the registered nurses did not think a condom was too expensive to use, and did not think it was embarrassing to buy condoms. In general the attitudes of registered nurses towards the use of condoms were positive. However, most of the registered nurses (D: 53.03%, SD: 18.18%) did not think a condom could be a safe method of contraception. Most of them are married respondents (see Table 4.26). 7.58% of respondents strongly agreed and 25.76% agreed that the use of condoms could reduce sexual pleasure. More Coloureds and more males had this opinion. 60% of male respondents thought the use of condoms could reduce sexual pleasure (See Table 4.27).

Table 4.24 The frequency of individual responses to the attitudes towards the use of condoms

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th></th>
<th>A</th>
<th></th>
<th>D</th>
<th></th>
<th>SD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>1. Correct use of a condom can prevent HIV and AIDS.</td>
<td>40</td>
<td>60.61</td>
<td>22</td>
<td>33.33</td>
<td>2</td>
<td>3.03</td>
<td>2</td>
<td>3.03</td>
</tr>
<tr>
<td>2. It is comfortable to use condoms</td>
<td>18</td>
<td>27.27</td>
<td>28</td>
<td>42.42</td>
<td>18</td>
<td>27.27</td>
<td>1</td>
<td>1.15</td>
</tr>
<tr>
<td>3. It is safe to rely on condoms for contraception</td>
<td>6</td>
<td>9.09</td>
<td>11</td>
<td>16.67</td>
<td>35</td>
<td>53.03</td>
<td>12</td>
<td>18.18</td>
</tr>
<tr>
<td>4. The use of condoms can reduce sexual pleasure</td>
<td>5</td>
<td>7.58</td>
<td>17</td>
<td>25.76</td>
<td>28</td>
<td>42.42</td>
<td>12</td>
<td>18.18</td>
</tr>
<tr>
<td>5. The condom is too expensive to afford its use</td>
<td>3</td>
<td>4.55</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>18.18</td>
<td>50</td>
<td>75.76</td>
</tr>
<tr>
<td>6. It is embarrassing to buy</td>
<td>6</td>
<td>9.09</td>
<td>8</td>
<td>12.12</td>
<td>20</td>
<td>30.30</td>
<td>30</td>
<td>45.45</td>
</tr>
</tbody>
</table>
condoms

SA=strongly agree; A= Agree; D= Disagree; SD=Strongly agree

Note: some respondents did not answer all the questions.

From Table 4.25 it is shown that 28.79% of respondents disagreed or strongly disagreed that use of condoms was comfortable. More Coloured and married registered nurses thought condoms were not comfortable than their peer groups (See Table 4.25).

Table 4.25 The relationship between gender, race and marital status and attitudes towards the use of condoms (refers to statement 2)

<table>
<thead>
<tr>
<th>Statement 2</th>
<th>Scale</th>
<th>Male</th>
<th>Female</th>
<th>Black</th>
<th>Coloured</th>
<th>White</th>
<th>Married</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>17</td>
<td>4</td>
<td>13</td>
<td>1</td>
<td>4</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>20.00%</td>
<td>27.87%</td>
<td>12.90%</td>
<td>43.33%</td>
<td>20.00%</td>
<td>16.00%</td>
<td>35.00%</td>
</tr>
<tr>
<td>Count</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>0.00%</td>
<td>1.64%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>20.00%</td>
<td>4.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>5</td>
<td>61</td>
<td>31</td>
<td>30</td>
<td>5</td>
<td>25</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 4.26 The relationship between gender, race and marital status and attitudes towards the use of condoms (refers to statement 3)

<table>
<thead>
<tr>
<th>Statement 3</th>
<th>Scale</th>
<th>Male</th>
<th>Female</th>
<th>Black</th>
<th>Coloured</th>
<th>White</th>
<th>Married</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0</td>
<td>35</td>
<td>17</td>
<td>16</td>
<td>2</td>
<td>10</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>0.00%</td>
<td>57.38%</td>
<td>54.84%</td>
<td>53.33%</td>
<td>40.00%</td>
<td>40.00%</td>
<td>62.50%</td>
</tr>
<tr>
<td>Count</td>
<td></td>
<td>1</td>
<td>11</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>20.00%</td>
<td>18.03%</td>
<td>9.68%</td>
<td>26.67%</td>
<td>20.00%</td>
<td>12.00%</td>
<td>22.50%</td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>5</td>
<td>61</td>
<td>31</td>
<td>30</td>
<td>5</td>
<td>25</td>
<td>40</td>
</tr>
</tbody>
</table>
Table 4.27 The relationship between gender, race and marital status and attitudes towards the use of condoms (refers to statement 4)

<table>
<thead>
<tr>
<th>Statement 4</th>
<th>scale</th>
<th>Male</th>
<th>Female</th>
<th>Black</th>
<th>Coloured</th>
<th>White</th>
<th>single</th>
<th>Married</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>SA</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Column %</td>
<td>20%</td>
<td>6.6%</td>
<td>6.6%</td>
<td>10%</td>
<td>0.00%</td>
<td>8%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>A</td>
<td>2</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Column %</td>
<td>40%</td>
<td>24.6%</td>
<td>16.1%</td>
<td>33.3%</td>
<td>40%</td>
<td>4%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>All Graps</td>
<td>5</td>
<td>61</td>
<td>31</td>
<td>30</td>
<td>5</td>
<td>25</td>
<td>40</td>
</tr>
</tbody>
</table>

4.3.4.2. Attitudes towards safe sexual behaviour

Table 4.28 indicates the frequency of individual responses to attitudes towards safe sexual behaviour. Most of the registered nurses strongly agreed or agreed (SA: 37.88%, A: 30.33%) that having one HIV-negative faithful partner was the only way to avoid getting HIV infection via sexual behaviour. About 31.82% respondents disagreed or strongly disagreed with the statement.

Table 4.28 The frequency of individual responses to the Attitudes towards safe sexual behaviour

<table>
<thead>
<tr>
<th>Statement 4</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>7. Having sex with an HIV-negative faithful partner is the only way to avoid getting HIV infection via sexual transmission</td>
<td>25 37.88</td>
<td>20 30.3</td>
<td>10 15.2</td>
<td>11 16.7</td>
</tr>
</tbody>
</table>

From Table 4.29, it is clear that more single respondents (40% of the single) than the married disagreed with the statement, and more Black registered nurses
disagreed with the statement than did the other races. A higher percentage of males than females disagreed with the statement (see Table 4.29). This reflected harmful cultural beliefs about masculinity and male sexual behaviour in South Africa (UNAIDS 2001D in van Rensburge, 2004:277).

Table 4.29 The relationship between gender, race and marital status and attitudes towards safe sexual behaviour

<table>
<thead>
<tr>
<th>Statement 7</th>
<th>Scale</th>
<th>Male</th>
<th>Female</th>
<th>Black</th>
<th>Coloured</th>
<th>Single</th>
<th>Married</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count D</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Column%</td>
<td>0.00%</td>
<td>16.4%</td>
<td>16.1%</td>
<td>16.7%</td>
<td>20%</td>
<td>12.5%</td>
<td></td>
</tr>
<tr>
<td>Count SD</td>
<td>2</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Column%</td>
<td>40%</td>
<td>14.8%</td>
<td>22.6%</td>
<td>13.3%</td>
<td>20%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Count All Groups</td>
<td>5</td>
<td>61</td>
<td>31</td>
<td>30</td>
<td>25</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

4.3.4.3. Attitudes towards the prevention of HIV transmission by safe blood transfusion.

Table 4.30 shows the frequency of individual responses to the attitudes towards the prevention of HIV transmission by safe blood transfusion. 53.03% respondents strongly agreed and 36.36% respondents agreed that avoiding giving blood transfusions that were not screened for HIV was an effective way to prevent transmission of HIV and AIDS.

Table 4.30 The frequency of individual responses to the attitudes towards the prevention of HIV transmission by safe blood transfusion

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>8. An effective way to prevent transmission of HIV and AIDS is by avoiding giving blood transfusions</td>
<td>35</td>
<td>53.03</td>
<td>24</td>
<td>36.36</td>
</tr>
</tbody>
</table>
that are not screened for HIV.

4.3.4.4. Attitudes towards the prevention of HIV transmission by using sterile needles

From Table 4.31, almost all the registered nurses think sterile needle have an important role in preventing HIV and AIDS transmission.

Table 4.31 The frequency of individual responses to attitudes towards the prevention of HIV transmission by using sterile needles

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th></th>
<th>A</th>
<th></th>
<th>D</th>
<th></th>
<th>SD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>9. Only give an injection with a</td>
<td>57</td>
<td>86.36</td>
<td>7</td>
<td>10.61</td>
<td>1</td>
<td>1.52</td>
<td>1</td>
<td>1.52</td>
</tr>
<tr>
<td>sterile needle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3.4.5. Attitudes towards HIV infected patients, co-workers, and high-risk patients

Table 4.32 indicates the frequency of individual responses to the attitudes towards HIV infected patients, co-workers and high-risk patients. 24.24% of registered nurses disagreed, 71.21% of registered nurses strongly disagreed that an HIV-infected nurse should not be allowed to continue to work as a nurse. 36.36% of respondents disagreed, 46.97% of respondents strongly disagreed that nurses should have the right to refuse to work with clients/patients with HIV and AIDS. Most of the registered nurses disagreed or strongly disagreed that a nurse should have the right to refuse to work with high risk patients, such as homosexual men, bisexual men, intravenous drug users, haemophiliacs and prostitutes. 37.88% of respondents disagreed, 53.03% strongly disagreed that separating HIV and AIDS patients from other patients was an effective way to prevent HIV and AIDS. Therefore, in general, the attitudes of registered nurses towards infected patients,
co-workers and high-risk patients are positive. However, there were 31.82% of registered nurses who strongly agreed, 27.27% registered nurses agreed that screening each patient was an effective way to prevent HIV and AIDS transmission.

Table 4.32 The frequency of individual responses to the attitudes towards HIV-infected patients, co-workers, and high-risk patients

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>10. An HIV-infected nurse should not be allowed to continue to work as a nurse.</td>
<td>3</td>
<td>4.6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11. A nurse should have the right to refuse to work with clients/patients with HIV and AIDS.</td>
<td>5</td>
<td>7.6</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>12. Homosexual men</td>
<td>1</td>
<td>1.5</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>13. Bisexual men</td>
<td>1</td>
<td>1.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14. Intravenous drug users</td>
<td>2</td>
<td>3.0</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>15. Haemophiliacs</td>
<td>1</td>
<td>1.5</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>16. Prostitutes</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>26. Screening each patient is an effective way to prevent HIV and AIDS transmission.</td>
<td>21</td>
<td>31.8</td>
<td>18</td>
<td>27.3</td>
</tr>
<tr>
<td>27. Separating HIV and AIDS patients from other patients is an effective way to prevent HIV and AIDS</td>
<td>2</td>
<td>3.0</td>
<td>4</td>
<td>6.1</td>
</tr>
</tbody>
</table>
Table 4.33 shows the relationship between training programmes, experience of caring for HIV and AIDS patients and working experience as a registered nurse and the attitudes toward screening each patient as an effective way to prevent HIV transmission. From Table 4.33, 72% of respondents without participating in training programmes strongly agreed or agreed with screening each patient. Only 21 of 40 (52.5%) registered nurses participating in training programmes strongly agreed or agreed with screening each patient. Registered nurses who had attended HIV and AIDS training programmes had more positive attitudes than those who did not take part in HIV and AIDS training programmes. 56.6%, 30 of 53 respondents who had experience of caring for HIV and AIDS patients strongly agreed or agreed, while 69.23%, 9 of 13 respondents without experience of caring for HIV and AIDS patients strongly agreed or agreed that screening each patient was an effective way to prevent HIV transmission. There was significant difference between the two groups. Registered nurses who had experience in caring for HIV and AIDS patients had more positive attitudes towards the infected patients that those without the experience. Registered nurses who had worked as a registered nurse more than 10 years had more positive attitudes than did junior registered nurses.

Table 4.33 The frequency of individual responses to statement 26 refers to participating in training programmes, experience in caring for HIV and AIDS patients and working experience as a registered nurse

<table>
<thead>
<tr>
<th>Statement 26</th>
<th>Scale</th>
<th>Having training</th>
<th>No training</th>
<th>Experience</th>
<th>No experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt;10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>SA</td>
<td>10</td>
<td>11</td>
<td>17</td>
<td>4</td>
<td>6</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>25%</td>
<td>44%</td>
<td>32.1%</td>
<td>30.8%</td>
<td>37.5%</td>
<td>52%</td>
<td>8%</td>
</tr>
<tr>
<td>Count</td>
<td>A</td>
<td>11</td>
<td>7</td>
<td>13</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>27.5%</td>
<td>28%</td>
<td>24.5%</td>
<td>38.5%</td>
<td>37.5%</td>
<td>20%</td>
<td>28%</td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>40</td>
<td>25</td>
<td>53</td>
<td>13</td>
<td>16</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>
4.3.4.6. Attitudes towards Universal Precautions

Table 4.34 indicates the frequency of individual responses to the attitudes towards Universal Precautions. 54.55% of registered nurses strongly agreed, 31.82% of them agreed that even in emergency situations they always wore gloves whenever they were in contact with blood or body fluids. Most of the respondents strongly disagreed (43.94%), or disagreed (36.36%) that when they knew a patient’s HIV negative status, it was not necessary to use protective clothing. The result corresponds with the knowledge section in which 53% of registered nurses were not sure and did not know if it was necessary to wear gloves when in contact with the non-intact skin of a patient who was HIV negative.

There were 51.52% of respondents who disagreed and 36.36% strongly disagreed that they were not confident when wearing gloves to perform vein punctures; 25.76% of registered nurses disagreed and 42.42% of registered nurses strongly disagreed they felt uncomfortable to perform vein punctures when wearing gloves. Most (90.91%) of the respondents disagreed or strongly disagreed that they did not wear an apron because they could not always anticipate when they would be splashed by blood or body fluids.

Most registered nurses did not think they were too busy to wash their hands after handling one patient. Although 25.76% of the registered nurses strongly agreed, 40.91% agreed that washing hands could reduce the risk of HIV and AIDS transmission; 33.33% of registered nurses disagreed or strongly disagreed that washing hands could reduce the risk of HIV and AIDS transmission. It may be one of the reasons for non-compliance of washing hands. 21.21% of registered nurses strongly agreed and 24.24% of them agreed that stopping to put on protective clothing would put the patient at risk. This may influence the registered nurses to comply with the Universal Precautions. Failure to comply with washing hands is a
complex problem that includes elements of lack of motivation and lack of knowledge about the importance of hand washing (Damani, 2003: 234).

Table 4.34 The frequency of individual responses to attitudes towards Universal Precautions

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>17. Whenever I am in contact with blood or body fluid, I always wear gloves, even in emergency situations.</td>
<td>36</td>
<td>54.6</td>
<td>21</td>
<td>31.8</td>
</tr>
<tr>
<td>18. When I know a patient’s HIV negative status, it is not necessary to use protective clothing.</td>
<td>3</td>
<td>4.55</td>
<td>10</td>
<td>15.15</td>
</tr>
<tr>
<td>19. I believe that stopping to put on protective clothing would put patients at risk.</td>
<td>14</td>
<td>21.21</td>
<td>16</td>
<td>24.24</td>
</tr>
<tr>
<td>20. I am so busy that I do not always have time to wash my hands after handling one patient.</td>
<td>1</td>
<td>1.52</td>
<td>8</td>
<td>12.12</td>
</tr>
<tr>
<td>21. I am not confident performing vein punctures when I am wearing gloves.</td>
<td>1</td>
<td>1.5</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>22. I feel uncomfortable to perform vein punctures when I am wearing gloves</td>
<td>7</td>
<td>10.61</td>
<td>12</td>
<td>18.18</td>
</tr>
<tr>
<td>23. I do not wear an apron</td>
<td>2</td>
<td>3.03</td>
<td>4</td>
<td>6.06</td>
</tr>
</tbody>
</table>
because I cannot always anticipate when I will be splashed by blood or body fluid.

24. Washing your hands can reduce the risk of HIV and AIDS transmission.

<table>
<thead>
<tr>
<th>Statement 19</th>
<th>scale</th>
<th>Having training</th>
<th>No training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt; 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17</td>
<td>25.76</td>
<td>27</td>
<td>40.91</td>
<td>11</td>
<td>16.67</td>
<td>11</td>
<td>16.67</td>
</tr>
</tbody>
</table>

Table 4.35 indicates that a higher percentage (10 of 13) 77% of the registered nurses without experience in caring for the patients with HIV and AIDS strongly agreed or agreed that stopping to put on protective clothing would put the patient at risk. The experience of caring for HIV and AIDS patients does influence the attitude toward the use of protective clothing, while attendance of training programmes and working experience as a registered nurse did not make a significant difference on the attitudes of registered nurses related to the use of protective clothing. Studies showed that in-service education did not change the registered nurses’ attitudes and knowledge (Askarian, Hashemi, Jaafari & Assadian, 2006: 48-53). The in-service education of registered nurses should be carefully structured and the most suitable education strategy should be specifically tailored to a particular setting. The attitudes were not significantly influenced by the grade of the staff (Mbanya, Zebaze, Kengne, Minkoulou, Awah & Beure, 2001: 241-250).

Table 4.35 The frequency of individual responses to statement 19 refers to participating in training programmes, experience of caring for HIV and AIDS and working experience as a registered nurse
From Table 4.36, it is clear that a higher percentage, 43.75% of junior registered nurses strongly agreed or agreed that they felt uncomfortable performing vein punctures when they were wearing gloves. The less working experience they had as a registered nurse, the more negative attitude they had towards wearing gloves.

**Table 4.36 The frequency of individual responses to statement 22 refers to having attended training programmes, experience of caring for HIV and AIDS patients and working experience as a registered nurse.**

<table>
<thead>
<tr>
<th>Statement 22</th>
<th>Scale</th>
<th>Having training</th>
<th>No training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt;10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>SA</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Column%</td>
<td>10%</td>
<td>12%</td>
<td>9.4%</td>
<td>15.4%</td>
<td>18.8%</td>
<td>8%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>A</td>
<td>9</td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Column%</td>
<td>22.5%</td>
<td>12%</td>
<td>18.9%</td>
<td>15.4%</td>
<td>25%</td>
<td>20%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>40</td>
<td>25</td>
<td>53</td>
<td>13</td>
<td>16</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

From Table 4.37, the highest percentage of junior registered nurses (7 of 16, 43.75%) disagreed or strongly disagreed that washing hands could reduce the risk of getting on HIV infection, therefore highest percentage of the junior registered nurses had negative attitudes towards washing hand which would impede them in complying with the Universal Precautions in the three groups. Having attended training programmes for HIV and AIDS did not make a difference in attitude towards washing hands versus the no-training group. The attitudes of registered
nurses having experience of caring for HIV and AIDS patients were not different from those without experience of caring for HIV and AIDS patients.

Table 4. 37 The frequency of individual responses to statement 24 refers to the attendance of HIV and AIDS training programmes, experience of caring for HIV and AIDS patients and working experience as a registered nurse

<table>
<thead>
<tr>
<th>Statement 24</th>
<th>Scale</th>
<th>Having training</th>
<th>No training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt;10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count D</td>
<td>7</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Column% 17.5%</td>
<td>12%</td>
<td>17.0%</td>
<td>15.4%</td>
<td>31.3%</td>
<td>16%</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count SD</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Column% 15%</td>
<td>20%</td>
<td>17.0%</td>
<td>15.4%</td>
<td>12.5%</td>
<td>16%</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count All Groups</td>
<td>40</td>
<td>25</td>
<td>53</td>
<td>13</td>
<td>16</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

4.3.4.7. Attitudes towards injuries related to sharp objects

Table 4.38 indicates the frequency of individual responses to the attitudes towards sharp injuries. 67% of registered nurses disagreed or strongly disagreed with statement 24. They thought that the chance of transmission of HIV and AIDS by needlestick was great. The registered nurses worried about needle stick injury. One study showed that needlestick injuries appeared to be the main source of fear for contracting HIV and AIDS. Fear of getting HIV can therefore improve the application of the precautions against HIV and AIDS transmission (Ncama and Uys, 2003: 11-18).

Table 4.38 The frequency of individual responses to the attitudes towards sharp injuries

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
</table>

142
25. The chance of transmission of HIV and AIDS by needle stick is so low, it is not necessary to worry about it.

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.52</td>
<td>3</td>
<td>4.55</td>
<td>11</td>
<td>16.67</td>
<td>51</td>
<td>77.27</td>
</tr>
</tbody>
</table>

4.3.4.8. Perceived responsibility about and personal vulnerability to HIV transmission, perception of having the knowledge on the prevention of HIV transmission and feelings on patient education.

Table 4.39 shows the frequency of individual responses to the perceived responsibility about and personal vulnerability to HIV transmission, perception of having knowledge of the prevention of HIV transmission and feelings on patient education. 53.03% of respondents disagreed and 36.36% strongly disagreed that they lacked knowledge about the prevention of HIV and AIDS transmission. That meant that most of the registered nurses thought they had adequate knowledge of the prevention of HIV and AIDS transmission. This corresponds with the findings of the section of knowledge which showed that the level of the knowledge of registered nurses was high pertaining to the prevention of HIV and AIDS transmission.

About 34.85% of respondents disagreed and 25.76% of respondents strongly disagreed that they were concerned that they were at risk of passing on infection to their family. 48.48% of registered nurses disagreed and 43.94% strongly disagreed that they felt they might pass on HIV infection to other patients or clients. The perceived responsibility for infection encourages reducing risk practices (Steins and Weiner, 1999 in Lahav, 2001: 31); but having a low perceived responsibility for HIV transmission will lead these registered nurses not to comply with the personal and occupational preventive measures of HIV and AIDS transmission so as to protect themselves and their patients.
A total of 31.82% of registered nurses disagreed and 28.79% strongly disagreed that they were afraid they could get HIV and AIDS from their sexual partner(s). Fear of getting HIV can improve application of the prevention of HIV and AIDS transmission. The registered nurses who were not afraid of getting HIV and AIDS from sexual partners would probably not adhere to the personal measures for the prevention of HIV and AIDS transmission. However, 27.27% strongly agreed and 30.3% agreed that they were afraid of getting HIV and AIDS from patients; this fear of contracting HIV and AIDS can increase the application and efficiency of Universal Precautions (Ncama and Uys, 2003: 11-18). Most of the registered nurses (80.31%) did not feel uneasy about discussing sexual matters with individuals. More than 83% (SA: 43.94%; A: 39.39%) felt confident about providing health education about HIV infection and AIDS to individuals.

Table 4.39 The frequency of individual responses to the perceived responsibility about and personal vulnerability to HIV transmission, perception of having the knowledge on the prevention of HIV transmission and feelings on patient education.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>28. I lack knowledge about the prevention of HIV and AIDS transmission.</td>
<td>1</td>
<td>1.52</td>
<td>6</td>
<td>9.09</td>
</tr>
<tr>
<td>29. I am concerned that I am at risk of passing on infection to my family.</td>
<td>9</td>
<td>13.64</td>
<td>15</td>
<td>22.73</td>
</tr>
<tr>
<td>30. I feel I might pass on HIV infection to other patients or clients.</td>
<td>1</td>
<td>1.52</td>
<td>4</td>
<td>6.06</td>
</tr>
<tr>
<td>31. I am afraid I could get HIV and AIDS from my sexual partner(s).</td>
<td>11</td>
<td>16.67</td>
<td>14</td>
<td>21.21</td>
</tr>
<tr>
<td>32. I am afraid I could get HIV and</td>
<td>18</td>
<td>27.27</td>
<td>20</td>
<td>30.3</td>
</tr>
</tbody>
</table>
AIDS from patients.

33. I am uneasy about discussing sexual matters with individuals.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Scale</th>
<th>Having training</th>
<th>No Training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 year</th>
<th>6-10 year</th>
<th>&gt;10 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count SA</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Column%</td>
<td>7.5%</td>
<td>24%</td>
<td>13.2%</td>
<td>15.4%</td>
<td>31.3%</td>
<td>12%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Count A</td>
<td>10</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Column%</td>
<td>25%</td>
<td>20%</td>
<td>24.5%</td>
<td>15.4%</td>
<td>18.8%</td>
<td>32%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Count D</td>
<td>16</td>
<td>6</td>
<td>19</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Column%</td>
<td>40%</td>
<td>24%</td>
<td>35.8%</td>
<td>30.8%</td>
<td>43.8%</td>
<td>20%</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>Count SD</td>
<td>11</td>
<td>6</td>
<td>14</td>
<td>3</td>
<td>0</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

34. I feel confident now about providing health education about HIV infection and AIDS to individuals.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Scale</th>
<th>Having training</th>
<th>No Training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 year</th>
<th>6-10 year</th>
<th>&gt;10 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count SA</td>
<td>4</td>
<td>6.06</td>
<td>9</td>
<td>13.64</td>
<td>34</td>
<td>51.52</td>
<td>19</td>
<td>28.79</td>
</tr>
<tr>
<td>Count A</td>
<td>29</td>
<td>43.94</td>
<td>26</td>
<td>39.39</td>
<td>8</td>
<td>12.12</td>
<td>3</td>
<td>4.55</td>
</tr>
</tbody>
</table>

From Table 4.40, it is clear that the registered nurses who had experience of caring for HIV and AIDS were more concerned that they were at risk of passing on infection to their family than those who did not have experience of caring for HIV and AIDS patient. More mid-level and senior (>10 years) registered nurses were not concerned that they were at risk of passing on infection to their family than junior registered nurse.

Table 4.40 Relationship between the attendance of HIV and AIDS training programmes, experience of caring for HIV and AIDS patients and working experience as a registered nurse and attitudes towards perceived responsibility to HIV transmission.
From Table 4.41, it is clear that the more working experience as a registered nurse the respondents had, the less fear of getting HIV and AIDS from their sexual partner(s) they had. A highest percentage of the junior registered nurses (50%) were afraid that they could get HIV and AIDS from a sexual partner(s) and the lowest percentage of the senior registered nurses (28%) were afraid that they could get HIV and AIDS from their partner(s) in the three groups.

Table 4.41 Relationship between participating in training programmes, experience of caring for HIV and AIDS patients and working experience as a registered nurse and attitudes towards personal vulnerability to HIV transmission

<table>
<thead>
<tr>
<th>Statement 31</th>
<th>Scale</th>
<th>Training</th>
<th>No Training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt;10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>SA</td>
<td>7</td>
<td>4</td>
<td>10</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Column%</td>
<td>17.5%</td>
<td>16%</td>
<td>18.9%</td>
<td>7.7%</td>
<td>25%</td>
<td>12%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>A</td>
<td>7</td>
<td>7</td>
<td>11</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Column%</td>
<td>17.5%</td>
<td>28%</td>
<td>20.8%</td>
<td>23.1%</td>
<td>25%</td>
<td>28%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>D</td>
<td>14</td>
<td>6</td>
<td>19</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Column%</td>
<td>35%</td>
<td>24%</td>
<td>35.8%</td>
<td>15.4%</td>
<td>31.3%</td>
<td>24%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>SD</td>
<td>11</td>
<td>8</td>
<td>12</td>
<td>7</td>
<td>3</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Column%</td>
<td>27.5%</td>
<td>32%</td>
<td>22.6%</td>
<td>42.9%</td>
<td>18.8%</td>
<td>36%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>40</td>
<td>25</td>
<td>53</td>
<td>13</td>
<td>16</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

From Table 4.42, it can be shown that the registered nurses having experience of caring for HIV and AIDS patients were more afraid of getting HIV and AIDS from patients than those without the experience. Most of the junior registered nurses
were afraid of getting HIV and AIDS from patients, while most of the senior nurses were less afraid of getting HIV and AIDS from patients.

Table 4.42 Relationship between participating in training programmes for HIV and AIDS, experience of caring for HIV and AIDS patients and working experience as a registered nurse and attitudes towards vulnerability to HIV transmission

<table>
<thead>
<tr>
<th>Statement 32</th>
<th>Scale</th>
<th>Training</th>
<th>No Training</th>
<th>Experience</th>
<th>No Experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>&gt;10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>SA</td>
<td>8</td>
<td>10</td>
<td>13</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>20%</td>
<td>40%</td>
<td>24.5%</td>
<td>38.5%</td>
<td>37.5%</td>
<td>32%</td>
<td>16%</td>
</tr>
<tr>
<td>Count</td>
<td>A</td>
<td>14</td>
<td>5</td>
<td>20</td>
<td>0</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>35%</td>
<td>20%</td>
<td>37.7%</td>
<td>0.00%</td>
<td>37.5%</td>
<td>32%</td>
<td>24%</td>
</tr>
<tr>
<td>Count</td>
<td>D</td>
<td>12</td>
<td>6</td>
<td>13</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>30%</td>
<td>24%</td>
<td>24.5%</td>
<td>38.5%</td>
<td>25%</td>
<td>16%</td>
<td>40%</td>
</tr>
<tr>
<td>Count</td>
<td>SD</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Column%</td>
<td></td>
<td>15%</td>
<td>16%</td>
<td>13.2%</td>
<td>23.1%</td>
<td>0.00%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Count</td>
<td>All Groups</td>
<td>40</td>
<td>25</td>
<td>53</td>
<td>13</td>
<td>16</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

4.4. CONCLUSION

In conclusion, the level of the knowledge of registered nurses pertaining to the prevention of HIV and AIDS transmission is high, but they have inadequate knowledge about the correct use of the condom, disinfection of HIV and risk factors for getting HIV and AIDS. The knowledge of Universal Precautions also needs to be improved. In general, the attendance of HIV and AIDS training programmes, experience of caring HIV and AIDS patients and working experience as a registered nurse made a difference to the level of the knowledge of registered
nurses pertaining to the prevention of HIV and AIDS transmission. With regard to
the attitudes of registered nurses relating to the prevention of HIV and AIDS
transmission, the registered nurses had positive attitudes towards the use of the
condom to prevent HIV and AIDS transmission, and positive attitudes towards the
HIV-infected co-workers, patients and high-risk patients, although most of them
thought that screening each patient was an effective way to prevent HIV and AIDS
transmission. Most of the registered nurses thought they had adequate knowledge
of the prevention of HIV and AIDS transmission and felt confident about delivering
patient education. However, the attendance of training programmes for HIV and
AIDS did not make a significant difference to the attitudes of registered nurse
relating to the prevention of HIV and AIDS transmission. Experience of caring for
HIV and AIDS patients and working experience as a registered nurse made a
significant difference to the attitudes of registered nurse relating to the prevention
of HIV and transmission.

CHAPTER FIVE
CONCLUSIONS, IN-SERVICE EDUCATION GUIDELINES, LIMITATIONS
AND RECOMMENDATIONS
5.1. INTRODUCTION

In this chapter the results of the data analysis will be summarised in order to draw conclusions so that in-service education guidelines for the prevention of HIV and AIDS transmission for registered nurses can be developed. Limitations and recommendations of the study will also be discussed.

This research study had a primary and a secondary objective.

- The **primary objective** was to explore and describe the knowledge and attitudes of registered nurses in public hospitals in the Nelson Mandela Metropole related to the prevention of HIV and AIDS transmission. This objective was met by conducting a literature review that was presented in Chapter two and by analysis of the data presented in Chapter four. The information gathered was used to describe the knowledge and attitudes of registered nurses relating to the prevention of HIV and AIDS transmission. A self-administered questionnaire (refer to Annexure 3) was given to the respondents in the sample to complete in order to identify deficits in areas of knowledge and attitudes of registered nurses.

- Secondly, the researcher used the deficit areas in knowledge and attitudes identified through the analysis of the data in Chapter four to develop in-service education guidelines in public hospitals in order to design in-service education programmes to optimize registered nurses personal and occupational prevention measures relating to HIV and AIDS transmission.

5.2. CONCLUSION

Linked to the findings discussed in Chapter 4, the following major conclusions can be made.

5.2.1. Demographical data

5.2.1.1. Gender
A total of 7.6% (5) male and 92.4% (61) female registered nurses were included in the sample of 66 respondents.

5.2.1. 2. Race
Altogether 46.97% (31) of respondents were Black; 45.45% (30) were Coloured and the rest, 7.58% (5), were White. There were no Indian and Asian respondents in the study.

5.2.1. 3. Marital status
Of the 66 respondents in the study, 60.6% (40) of respondents were married, 37.88% (25) were single. 1.52% (1) respondent was living with a partner and there were no widows.

5.2.1.4. Working experience as a registered nurse
The average working experience as a registered nurse was 12 years, the minimum was one year and the maximum was 27 years for the 66 respondents. There were 25 respondents with 1-5 years experience; 25 respondents with 5-10 years experience and 16 respondents had more than 11 years’ working experience.

5.2.1. 5. Participation in HIV and AIDS training programs
A total of 60.61% (41) of respondents had participated in the different HIV and AIDS training programmes. The average duration of the training programmes was 12.6 days and the maximum duration 360 days. Responding to the high HIV and AIDS prevalence situation in South Africa, the South African government was aiming to provide regular in-service training of healthcare workers (South African Department of Health, 2000: 15). This is the main reason that most of the respondents had participated in HIV and AIDS training programmes.

5.2.1. 6. Experience related to caring for HIV and AIDS patients
Altogether 80.3% (53) of the respondents claimed they had had experience in caring for patients with HIV and AIDS. The result was expected, because HIV and
AIDS prevalent are higher in South Africa than anywhere in the world (van Rensburg, 2002: 1). The minimum time of experience in caring for HIV and AIDS was 2 days, but as most respondents answered that the period of this experience was the same as their working experience as a registered nurse. Therefore the maximum time of experience was not measurable.

5.2.1. 7. Professional qualifications
Among 66 respondents, 57.6% (38) had a diploma in nursing; there were 18.2% (12) respondents with a degree in nursing; 16.7% (11) respondents had a basic diploma; those with Honours and Magister were 3% (2) and 1.5% (1) respectively.

Additional qualifications
Altogether 21 of 66 respondents had an additional qualification. Among them, 3 of 21 (14%) had an HIV and AIDS nursing certificate, and 2 of 21 (9.5%) had an HIV and AIDS counselling certificate.

5.2.1.8. People with whom the registered nurse have discussed the prevention of HIV and AIDS transmission
The colleagues and patients were persons with whom the registered nurses most frequently discussed the prevention of HIV and AIDS transmission. The option of discussion with the spouse was the least popular choice.

5.2.1.9. Previous sources of knowledge and information related to the prevention of HIV and AIDS transmission
The most frequently chosen option here was in-service training. That meant the knowledge of most of the registered nurses relating to the prevention of HIV and AIDS transmission was gained from in-service training. It further indicated that in-service training played an important role in the prevention of HIV and AIDS transmission. The option of spouse was the least popular source of knowledge relating to the prevention of HIV and AIDS transmission; and registered nurses’
knowledge relating to the prevention of HIV and AIDS transmission was least likely to be gained from friends and newspapers.

5.2.1.10. Preferred options from whom they would like to gain knowledge information in the future

A total of 66 respondents, 90.9% showed a strong preference for in-service training. The choice of magazines also appeared popular, and 28 respondents chose magazines in varying combinations. The least popular choice of receiving information on the prevention of HIV and AIDS transmission in the future was the spouse.

5.2.2. Knowledge related to the prevention of HIV and AIDS transmission

The section of the questionnaire on the knowledge related to the prevention of HIV and AIDS transmission was broadly divided into 9 sub-groups to assess the respondents' knowledge on each. The knowledge of the registered nurses in this study will be concluded according to these 9 sub-groups.

5.2.2.1. Ways to transmit HIV and myths on HIV transmission

- The registered nurses appear to have the highest level of knowledge on the ways and some of the myths of HIV transmission. However, 15% of registered nurse did not know or were not sure about HIV and AIDS transmission through broken skin, open cuts or wound exposure to infected materials.
- More than 56% of the registered nurses had limited knowledge of body fluids that could transmit HIV and AIDS.
- The registered nurses' experience in caring for HIV and AIDS patients and the attendance of HIV and AIDS training programme did not influence the level of knowledge of ways and myths of HIV and AIDS transmission.

5.2.2.2. Disinfection to prevent HIV transmission

- Most of the registered nurses knew that procedures for avoiding hepatitis B
infection were also appropriate for avoiding HIV infection. However, most of the registered nurses did not have adequate knowledge of disinfection of HIV.

- The longer the working experience registered nurses had, the higher the level of the knowledge of HIV disinfection.
- The registered nurses who had participated in HIV and AIDS training programmes had a higher frequency of correct answers than those who had not attended training programmes.
- The registered nurses with experience of caring for the patients with HIV and AIDS had a high level of knowledge of disinfection of HIV.

5.2.2.3. Correct usage of condoms

The correct use of a condom is the main way to protect one from HIV transmission via sexual behaviour.

- All registered nurses had basic knowledge on the use of condoms that could reduce the risk of getting HIV and AIDS; but most of the registered nurse did not know how to use a condom correctly.
- Working experience as a registered nurse and having experience of caring for HIV and AIDS patients did not influence the level of the knowledge on the correct use of condoms.
- The attendance of training programmes on HIV and AIDS did not make a difference to the level of the knowledge of the correct use of condoms.

5.2.2.4. Universal Precautions

- Most of the registered nurses had basic knowledge on protective clothing, such as gloves and aprons, but their knowledge of the Universal Precautions was incomplete.
- Most of the registered nurses were ignorant body fluids which did not require Universal Precautions such as sweat and saliva (van Dyk, 1992: 28).
• Altogether 53% of the registered nurses did not know or were not sure whether they must wear gloves or not when confronted with non-intact skin of a patient who was HIV negative.

• Most of the junior registered nurses with 1-5 years experience thought it was not necessary to wear gloves when in contact with patients’ sweat and saliva.

• A high percentage of the registered nurses participating in the training programmes had the incorrect answer. Therefore, participating in HIV and AIDS training programmes did not increase the level of the knowledge of Universal Precautions. It might relate to the context of the training programmes, or the effect of training therefore extended training on the Universal Precautions should be given in the future.

• Registered nurses with experience of caring for HIV and AIDS patients were overestimated the role of saliva and sweat played in HIV and AIDS transmission; and they had also inadequate knowledge on the prevention of HIV and AIDS transmission when contacting non-intact skin of a patient who was HIV negative.

5.2.2.5. Safe blood transfusion
A total of 93.94% of the registered nurses had adequate knowledge on the prevention of HIV and AIDS transmission via safe blood transfusion.

5.2.2.6. Injuries related to sharp objects
The registered nurses had adequate knowledge on the prevention of sharp injury so as to prevent HIV and AIDS transmission.

5.2.2.7. Sexually-transmitted diseases and HIV
• The registered nurses had inadequate knowledge of sexually-transmitted diseases and HIV.
• Junior registered nurses had the highest level of knowledge of sexually-transmitted diseases and HIV among the registered nurses.
• The registered nurses who had attended training programmes had a higher level of knowledge of the sexually transmitted diseases and HIV than those who had not.
• The registered nurses with experience of caring for HIV and AIDS patients had a different level of knowledge of sexually transmitted diseases and HIV from those without experience.

5.2.2.8. Risks of getting HIV infection
Most of the registered nurses did not have adequate knowledge on the risk factors of getting an HIV infection.

5.2.2.9. HIV-Infection antiretroviral treatment
Most of the respondents had the basic knowledge of antiretroviral treatment; but they did not have complete knowledge about the antiretroviral treatment with TB patients.

5.2.3. Attitudes towards the prevention of HIV and AIDS transmission
The attitudes of registered nurses relating to the prevention of HIV and AIDS transmission were broadly divided into 8 sub-groups to assess the respondents’ attitudes on each. The attitudes of the registered nurses in this study will be concluded according to these 8 sub-groups.

5.2.3.1. Use of condoms
• In general, the attitudes of registered nurses towards the use of condoms were positive.
• Most respondents (SA: 60.62%, A: 33.33%) agreed that correct use of a condom could prevent HIV and AIDS transmission and thought that it was comfortable to use condoms (SA: 27.27%, A: 42.42%).
• Most of the registered nurses did not think condoms were too expensive to afford but were too embarrassed to buy them.
• However most registered nurses (D: 53.03%, SD: 18.18%) did not think condoms could be a safe method of contraception (most of them were married respondents).
• More Coloured and more males respondents agreed that the use of condoms reduced sexual pleasure.
• More than 28% of the registered nurses, among them, more Coloured and more married registered nurses, disagreed that the use of a condom was comfortable.

5.2.3.2. Safe sexual behaviour
Most of registered nurses strongly agreed or agreed (SA: 37.88%, A: 30.33%) that having one HIV-negative faithful partner was the only way to avoid getting HIV infection via sexual behaviour.
• However, about 31.82% of the respondents disagreed or strongly disagreed with the statement.
• More single respondents (40% of them) than those married disagreed with the statement.
• More Black registered nurses disagreed with the statement than did the other races.
• A higher percentage of males than females disagreed with the statement.
These attitudes reflected harmful cultural beliefs about masculinity and male sexual behaviour in South Africa (UNAIDS 2001D in van Rensburg, 2004:277).

5.2.3.3. The prevention of HIV and AIDS transmission by safe blood transfusion.
The attitudes of registered nurses towards the prevention of HIV transmission by safe blood transfusion were positive.

5.2.3.4. The prevention of HIV transmission by using sterile needles
Almost all the registered nurses thought sterile needles had an important role to
play in preventing HIV and AIDS transmission.

5.2.3.5. HIV infected patients, co-workers, and high-risk patients

- In general, the attitudes of registered nurses towards infected patients, co-workers and high-risk patients were positive.
- However, nearly 60% of registered nurses agreed that screening each patient was an effective way to prevent HIV and AIDS transmission.
- Registered nurses who had participated in HIV and AIDS training programmes had more positive attitudes than those who had not.
- Registered nurses with experience in caring for HIV and AIDS patients had more positive attitudes towards the patients than those without the experience.
- Those who had worked as registered nurses for more than 10 years were more positive in their attitude than groups who had worked as registered nurses for fewer than 10 years.

5.2.3.6. Universal Precautions

- The attitudes of the registered nurses were generally positive towards the application of protective clothing including gloves and aprons, as well as hand washing.
- However nearly 20% agreed that when they knew a patient’s HIV negative status, it was not necessary to use protective clothing. The results correspond with the knowledge section, where 53% of registered nurses were not sure and did not know if it was necessary to wear gloves or not when in contact with non-intact skin of a patient who was HIV negative.
- Although most of the registered nurses thought that washing hands could reduce the risk of HIV and AIDS transmission, 33.33% of the registered nurses did not think that washing hands could reduce the risk of HIV and AIDS transmission. Most of them were junior registered nurses with 1-5 years working experience. The attitude may be one of the reasons for non-compliance with washing hands.
• More than 45% of the registered nurses agreed that stopping to put on protective clothing would put the patient at risk. Most of them were registered nurses who did not have experience of caring for HIV and AIDS patients. This may influence them to comply with the Universal Precautions.
• While attendance of HIV and AIDS training programmes and working experience as a registered nurse did not make a significant difference to the attitudes of registered nurses towards application of protective clothing.
• A high percentage (7 of 16, 43.75%) of junior registered nurses thought that it was uncomfortable to perform vein punctures when they were wearing gloves.

5.2.3.7. Injuries related to sharp objects
Most of the registered nurses worried about needlestick injuries. One study showed that needlestick injuries appeared to be the main source of fear of contracting HIV and AIDS. Fear of getting HIV can therefore improve the application of preventive measures against HIV and AIDS transmission (Ncama and Uys, 2003: 11-18).

5.2.3.8. Perceived responsibility or personal vulnerability to HIV transmission, perception of having the knowledge on the prevention of HIV transmission and patient education.
• Most of the registered nurses thought they had adequate knowledge of the prevention of HIV and AIDS transmission. This corresponds with the results of the knowledge section.
• Most of the registered nurses had low perceived responsibility to HIV transmission. More than 60% of the registered nurses did not think they were at risk of passing on the HIV infection to their family and patients. The high perceived responsibility for infection could encourages reducing risky practices (Steins and Weiner, 1999 in Lahav, 2001: 31) while the low perceived responsibility to HIV transmission will reduce tendency of these registered nurses to comply with the personal and occupational preventive measures of HIV and AIDS transmission so as to protect themselves and their patients.
• Most registered nurses had low personal vulnerability to HIV transmission. More than 60% of registered nurses were not afraid they could get HIV and AIDS from their sexual partner(s), therefore they would probably not adhere to the personal measures of the prevention of HIV and AIDS transmission, which meant they believed HIV would not happen to them for personal reasons. This perception might block them from reducing personal risky behaviour to reduce their compliance with the prevention of HIV and AIDS transmission. However, nearly 60% of the registered nurses were afraid of getting HIV and AIDS from patients. The fear of contracting HIV from patients can increase the application and efficiency of Universal Precautions (Ncama and Uys, 2003: 11-18).

• Most of the registered nurses did not feel uneasy about discussing sexual matters with individuals. More than 83% felt confident about providing health education about HIV infection and AIDS to individuals.

• The registered nurses with experience of caring for HIV and AIDS patients were more concerned that they were at risk of passing on infection to their family than those without experience of caring for HIV and AIDS patients and more afraid of getting HIV and AIDS from patients than those without the experience of caring for HIV and AIDS patients.

• A low percentage of the senior registered nurses with more than 10 years’ working experience were concerned that they were at risk of passing on infection to their family.

• The more years of working experience the registered nurse had, the less fear of getting HIV and AIDS from their sexual partner(s) they had.

• Most of the junior registered nurses were afraid of getting HIV and AIDS from patients, while the senior nurse were less afraid of getting HIV and AIDS from patients than the junior nurses.

A deficit regarding knowledge and negative attitudes was identified when the study finished. In general, the registered nurses with attendance of the HIV and AIDS training programmes and with experience in caring for HIV and AIDS patients made
the level of certain knowledge relating to the prevention of HIV and AIDS transmission different. Working experience as a registered nurse and the attendance of the HIV and AIDS training programmes however, did not make attitudes towards the prevention of HIV and AIDS transmission significantly different. The registered nurses with experience of caring for HIV and AIDS patients had more positive attitudes than those without the experience. By use of this information an in-service education guideline for the registered nurses will be designed.

5.3. COMPILING GUIDELINES

A guideline is a systematically developed statement to assist healthcare workers to make decisions about the appropriate practice for specific circumstances and can be regarded as a practical educational resource for healthcare professionals (Todd, Biskupiak & Weingarten, 1998: 1-5). Guidelines can help clinical facilitators reduce inappropriate variations in education practice; provide a focus for continuing nursing education and promote the efficient use of healthcare education resources (Todd et al., 1998: 5). In-service education refers to the education of personnel that is directly related to their work (Muller, 2002: 344). There are various principles used to structure guidelines to enable the clinical facilitators to design their own education programmes by providing practical resources i.e. In-service education guidelines. According to Todd et al. (1998:6-11), some principles should be followed when drawing up guidelines. These include the following:

- Guidelines should address a specific healthcare need.
- The aims and objectives of guidelines must be clearly stated and achievable.
- Guidelines should be based on scientific evidence and should state clearly the strength and source of that evidence.
- Guidelines should be flexible and adaptable to local conditions.
- Resource implication should be considered in the development and use of guidelines.
Education as a specified implementing strategy.

The effect of guidelines should be evaluated to determine if the aims and objectives have been achieved.

5.4. IN-SERVICE EDUCATION GUIDELINES

Mellish (1985: 125-126) states that one of the independent functions of a nurse is education. In order to fight the spreading of HIV and AIDS in South Africa, registered nurses have to acquire adequate knowledge and appropriate attitudes to provide patients and sub-categories of nursing personnel with effective education. For the purpose of this study, in-service education guidelines related to the prevention of HIV and AIDS transmission for the registered nurses were designed. Each facilitator using these guidelines needs to design his or her own in-service programmes according to seven components of adult education practice (Burnard & Chapman, 1990: 44) which are highly relevant to the development of nursing skills and nursing knowledge (see Chapter 2). The following principles were addressed in the planning of the in-service education guidelines.

5.4.1. Identification and assessment of education needs of registered nurses

The questionnaire on knowledge and attitudes of the registered nurses related to the prevention of HIV and AIDS transmission was used in this study to identify the deficits of knowledge and attitudes of the registered nurses.

5.4.2. Encouraging the principles of adult learning

A physical and psychological climate conducive to learning should be created in the in-service training education environment (Burnard & Chapman, 1990: 44). The following adult education principles are prerequisites within in-service education: eagerness to learn, knowledge of experience, readiness to learn and competency to learn. Negotiated and experiential learning is the best way of education for adults (Knowles, 1980 in Burnard & Chapman, 1990: 43). When the clinical facilitators use
the in-service education guidelines they should ensure that these principles are adhered to when presenting the in-service education programme.

5. 4. 3. Evaluating the impact of the in-service education guideline
An evaluation tools should be used as a guideline in the evaluation of in-service education (Swansburg, 1996: 533). The questionnaire on the knowledge and attitudes of registered nurses related to the prevention of HIV and AIDS transmission could be used as an assessment tool to determine if the learning process was successful.

Incorporating these principles mentioned, the following broad outline for in-service education guidelines for the prevention of HIV and AIDS transmission was designed.

5. 4. 4. The content of in-service education guidelines for registered nurses regarding the prevention of HIV and AIDS transmission
The study explored the registered nurses’ the level of knowledge of, and attitudes towards, the prevention of HIV and AIDS transmission; and the content of in-service education guidelines includes two sections: knowledge and attitudes sections.

A. Knowledge on the prevention of HIV and AIDS transmission
As the following deficits of registered nurses’ knowledge on the prevention of HIV and AIDS transmission were identified by the study, the content of in-service education guidelines should concentrate on them. Relevant knowledge of the prevention of HIV and AIDS transmission has been explored in detail in Chapter Two, can be used as guidelines to optimise registered nurses personal and occupational prevention measures relating to HIV and AIDS transmission.

- Correct usage of a condom
  - Limiting the number of sex partners.
✓ Using spermicidal creams with condoms.
✓ Using only lubricants with a water base with condoms.
✓ Avoiding all high risk sex practices such as vagina, anal and oral sex without a condom,

• Knowledge of sexually-transmitted diseases and HIV (see Chapter Two on section 2.3.5 )
  ✓ STDs enhance the transmission (and spread) of HIV
  ✓ People who get STDs are at risk of getting HIV
  ✓ People who have HIV increase the spread of STDs

• Occupational transmission mode of HIV and AIDS, according to Van Dyk (1992: 18):
  ✓ Needlesticks with HIV-infected blood;
  ✓ Injuries with contaminated sharp instruments;
  ✓ Infected blood or body fluids that come into contact with the mucous membrane of the eyes or oral cavity;
  ✓ Non- intact skin such as open cuts or scratches which come into contact with contaminated blood or other body fluids

• Body fluids that are applicable in the Universal Precautions:
  ✓ Blood (including menstrual blood)
  ✓ Any body fluids containing visible blood
  ✓ Semen
  ✓ Vaginal secretions (including menstrual discharge)
  ✓ Body tissue
  ✓ Amniotic (pregnancy) fluid
  ✓ Cerebrospinal (brain and backbone) fluid
  ✓ Peritoneal (abdomen) fluid
  ✓ Pericardial (heart) fluid
  ✓ Pleural (chest) fluid
 ✓ Synovial (joint) fluid

- Body fluids not requiring universal precautions
  ✓ Faeces
  ✓ Nasal secretions
  ✓ Saliva
  ✓ Sputum (lung/ mucus)
  ✓ Sweat
  ✓ Tears
  ✓ Urine
  ✓ Vomitus

- Disinfection of HIV, for instance
  ✓ The HIV virus is not stable and does not survive for long periods outside the human body (Evian, 2000:18).
  ✓ Since HIV is destroyed much more quickly than other organisms, routine sterilisation methods are appropriate for HIV (Van Dyk, 1992: 42).

- Universal Precautions application of protective clothing (see Chapter Two on section 2.6.4.2.3.2)
  ✓ Gloves
  ✓ Protective eyewear
  ✓ Face masks
  ✓ Aprons
  ✓ Gowns

- Risk factors of getting HIV infection
  ✓ A large quantity of blood
  ✓ The types of body fluid involved such as blood, serum, plasma and all biological fluids visibly contaminated with blood, pleural, amniotic,
pericardial, peritoneal, synovial and cerebrospinal fluids and uterine/vaginal secretion or semen.

✓ A needle in the blood vessels
✓ Deep injuries
✓ Hollow-bore needle injuries
✓ Blood or body fluid comes from a patent with terminal illness

- Antiretroviral treatment and TB patients (see Chapter Two on section 2.5)

B. attitudes towards the prevention of HIV and AIDS transmission

According to the findings of the study, the following negative attitudes should be focused on when clinical facilitators develop their in-service education programmes to try to change negative attitudes.

**Attitude 1:** Condoms cannot be a safe method of contraception

As many registered nurses thought that a condom could not be a safe method of contraception, it would influence their promoting the use of a condom among patients during patient education.

**Attitude 2:** Use of condoms can reduce sexual pleasure

As many registered nurses believed that the use of a condom could reduce sexual pleasure. This attitude would stop registered nurse from using a condom to prevent their contracting HIV infection via sexual behaviour. The attitude would prevent their encouraging the use of condoms when giving patient education.

**Attitude 3:** Use of condoms is uncomfortable.

Some registered nurses thought that the use of a condom was uncomfortable, which would this will impede the use of condoms among these registered nurses and would put the registered nurses at risk of getting HIV infection. Therefore the way using condoms comfortably should be explored.
Attitude 4: many registered nurses did not believe that having sex with an HIV-negative faithful partner was the only way to avoid getting HIV infection via sexual transmission. The attitude might continue to influence these registered nurses indulge in risk sexual behaviour, such as having more than one sexual partner which would put them at risk of getting HIV infection.

Attitude 5: Screening each patient was an effective way to prevent HIV and AIDS transmission.
Voluntary HIV-status testing is one of the national policies on the management of HIV and AIDS in South Africa. Screening each patient will violate this policy and the patient’s right and besides, screening each patient will increase the cost of treatment. Therefore practical reason, it is impossible to screen each patient.

Attitude 6: Contact with non-intact skin of a patient who is HIV negative does not require gloves.
As the results of researches showed that the registered nurses in USA did not comply with the Universal Precautions when they knew the patient was HIV negative status. This attitude put the registered nurses in South Africa at high risk of getting HIV infection because of the very high HIV prevalence rate in South Africa. HIV testing is negative while a patient is in the window period, which the virus still is transmitted.

Attitude 7: Washing hands cannot reduce the risk of HIV and AIDS transmission.
Some registered nurses, especially junior registered nurses, believed that washing hands could not reduce the risk of HIV and AIDS transmission, which might be one of reasons for non-compliance of washing hands. Washing hands is basically way to prevent HIV and AIDS transmission in clinical practice; and failure to comply with washing hands is a complex problem that includes elements of lack of motivation and lack of knowledge about the importance of hand washing (Damani, 2003: 234). Education programmes should focus on changing this attitude.
**Attitude 8:** Not at risk of passing on infection to family and patients.

Many registered nurses thought that they were not at risk of passing on infection to family and patients; and the perception of their own risk of getting HIV infection was low. Perceptions of one’s own risky increasing can reduce risky behaviour, and act as a filtering system for absorbing and translating received knowledge (Raghubir and Menon, 1998 in Lahav, 2001: 32). This attitude could lead these registered nurses not to comply with Universal Precautions and put them at risk of getting HIV and AIDS. Increasing accessibility to the causes of HIV infection can however increase the perception of one’s own risk of getting HIV infection.

**Attitude 9:** Not afraid of getting HIV and AIDS from their sexual partner(s).

The study has showed that the fear of contracting HIV has increased the application and efficiency of precautions of HIV and AIDS transmission (Ncama & Uys, 2003: 11-18). As some registered nurses said that they were not afraid of getting HIV and AIDS from their sexual partner(s), this attitude would lead them not to comply with safe sexual behaviour, so that they would continue to put themselves at risk of getting HIV infection.

5.5. RECOMMENDATIONS

The following recommendations are made in relation to this study.

5.5.1. Recommendations for the nursing practice

- As the experience in caring for HIV and AIDS patients influences the level of the knowledge of, and attitudes towards, the prevention of HIV and AIDS transmission, encouraging the registered nurses to participate in nursing patients with HIV and AIDS will improve the level of their knowledge of, and their attitudes towards, the prevention of HIV and AIDS.
- In-service education guidelines designed in the study could be used as a standard for in-service education and evaluation.
5.4.2. Recommendations for further research

- The validity of the data-collection instrument-questionnaire should be considered.
- As only registered nurses from the public sector were used, the study should be repeated using registered nurses from the private sector.
- This study should be repeated at every level of healthcare workers.
- More samples should be included in the test-retest to test the reliability of the questionnaire than were used in the study.

5.4.3. Recommendations for nursing education

- As the findings of the research show that training programmes of HIV and AIDS only affected certain knowledge of the prevention of HIV and AIDS transmission and did not affect the attitudes of the registered nurses relating to the prevention of HIV and AIDS transmission, the structure and context of in-service education should be chosen carefully.
- Because experiential learning comes from work experience (Burnard & Chapman, 1990: 80), experiential learning should be considered in the education of nurses by clinical facilitators, and as the findings of the study showed experience of caring for HIV and AIDS patients made a difference to the level of certain knowledge and attitudes of the registered nurses.

5.6. LIMITATIONS OF THE STUDY

- The data-collection instrument-questionnaire was designed by the researcher. The validity of the questionnaire was not confirmed by any statistical method. The reliability of the knowledge section of the questionnaire cannot be measured by any statistical method. Some statements of the questionnaire also need to be adjusted.
- The study was contextual as only a limited number of respondents from three public healthcare hospitals which are in an urban area were involved. The
findings of the study are therefore valid for the context in which the study was done and cannot be generalised.

- Only registered nurses from public healthcare hospitals were used in this study.
- The respondents in this study were largely from two main cultural groups.

5.7. SUMMARY

The researcher succeeded in achieving the objectives of the study, which were:

- to explore and describe the knowledge and attitudes of registered nurses working in public hospital on the prevention of HIV and AIDS transmission; and
- to develop in-service education guidelines for registered nurses regarding the prevention of HIV and AIDS transmission.

The research was conducted using a quantitative, explorative, descriptive and contextual design and a self-administered questionnaire was used to capture data. The data were analysed and areas of deficits concerning knowledge and attitudes were identified. In this study there were deficits concerning the knowledge and attitudes regarding the prevention of HIV and AIDS transmission to a greater or lesser degree in all the sub-groups of the questionnaire. This information was used to compile in-service education guidelines for registered nurses concerning the prevention of HIV and AIDS transmission.

The in-service education guidelines will be given to clinical facilitators at public hospitals. It is envisaged that this will guide them as to what to include in their in-service education programme concerning the prevention of HIV and AIDS transmission for registered nurses.
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**South African Medical Journal**, July 2005, 95(7): 496-503


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Annexure 1
Information Consent Form
(Registered Nurses)
Dear participant,

You are invited to participate in a research, the research approved by Research Committee Reference Number: 203040953 and Research Ethical Committee in Nelson Mandela Metropole University Ref: N 01/03/07 [H06HN-010/ Approval]

**Title of the Research Project:** The Knowledge and Attitudes of Registered Nurses in Public Hospitals Related to the Prevention of HIV and AIDS Transmission

**Principal Investigator:** Yabin Mo

**Address:** Department of Nursing Science, NMMU, PO Box 77000, Port Elizabeth

**Contact Telephone NO:** 0828432080 or 0844497665

Participate in the research, you are required to sign the consent form below.

Information Consent Form (Registered Nurses)

<table>
<thead>
<tr>
<th>Declaration By Participant:</th>
<th>Initial</th>
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<tr>
<td>1. The undersigned______________ (name)</td>
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<td>I.D. No_____________________ a registered nurse at</td>
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<td>____________________________ (Name of Hospital).</td>
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<td>A. I Hereby Confirm As Follows:</td>
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<tr>
<td>1. I was invited to participate in the abovementioned research project which is being undertaken by Yabin Mo of the Department of Nursing Science in the Faculty of Health Sciences of Nelson Mandela Metropolitan University.</td>
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| 2. The following aspects have been explained to me: | Initial |
| 2.1 Aim: The investigator is researching the knowledge and attitudes of registered nurses working in public hospitals related to the prevention of HIV/AIDS transmission in the Nelson Mandela Metropole. | |
The information will be used to
Explore and describe the knowledge and attitudes of registered nurses and develop in-service education guidelines for registered nurses working in the public hospitals on the prevention of HIV/AIDS transmission.

**Procedures**: I understand that I will answer all questions on the questionnaire; the researcher expects me to answer the questions as honestly as possible.

**2.2 Risks**: There will be no risks for myself with regard to participating in the study.

**Possible Benefits**: As a result of my participation in this study the principle investigator aims to
- Develop guidelines for registered nurses to improve their knowledge about the prevention of HIV/AIDS transmission.
- Improve working surroundings to ensure application of universal precautions.

**Confidentiality**: My identity will not be revealed in any discussion, description, or scientific publications by the investigators.

**Access to Findings**: I will have no personal access to the findings, but the researcher hopes that this study will contribute to:
- Enhancing the role of registered nurses in preventing transmission of HIV/AIDS in public hospitals in the Nelson Mandela Metropole.

**Voluntary participation/ refusal/ discontinuation**: My participation is voluntary. My decision whether or not to participate will in no way affect my work.

3. The above information was explained to me by Yabin Mo in English and I was given the time to answer the questions in the questionnaire.
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<td>4. No pressure was exerted on me to consent to participate and I understand that I may withdraw at any stage without penalization.</td>
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<td>5. Participation in this research won’t result in any additional cost to me.</td>
<td>Initial</td>
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<tr>
<td>A. I Hereby Consent Voluntarily to Participate in the Above Mentioned Project.</td>
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<td>Signed / Confirmed at_____________ on ___________20 (Place) (Date)</td>
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<tr>
<td>Signature of participant signature of witness</td>
<td></td>
</tr>
</tbody>
</table>
Annexure 2
Guidelines for participating in the research
Dear participants,

The following information is given to guide you make a decision whether or not to participate in the research:

1. Title of the Research Project: Knowledge and Attitudes of Registered Nurses in Public Hospitals Related to the Prevention of HIV and AIDS Transmission
   The research approved by Research Committee Research Reference Number: 203040953 and Ethics Committee of NMMU Ref: N 01/03/07 [H06HN-010/ Approval]

2. Principal Investigator: Yabin Mo
   Address: Department of Nursing Science, NMMU, PO Box 77000, Port Elizabeth
   Contact Telephone NO: 0828432080 or 0844497665

3. Aim: The investigator is researching the knowledge and attitudes of registered nurses working in public hospitals related to the prevention of HIV/AIDS transmission in the Nelson Mandela Metropole. The information will be used to explore and describe the knowledge and attitudes of registered nurses and develop in-service education guidelines for registered nurses working in the public hospitals on the prevention of HIV/AIDS transmission.

4. Procedures: The researcher will hand deliver the questionnaires to the participants in the ward, who will then be allowed time to complete them. Do not write your name or indicate any other form of identification anywhere on the questionnaire. A reference number will be allocated to the questionnaire in order to preserve your anonymity. The contents of the questionnaire will remain confidential. Answer questions in the questionnaire as honestly as possible. The participants will put the completed questionnaires in a sealed box placed in the nursing station. The researcher will remain in the ward until the process has been completed, after which she will collect the sealed box from the nursing station.

5. Risks: There will be no risks to the participant with regard to participating in the study.

6. Possible Benefits: As a result of your participation in this study the principal investigator aims to develop guidelines for registered nurses to improve their knowledge about the prevention of HIV/AIDS transmission and improve working surroundings to ensure application of universal precautions.

7. Confidentiality: your identity will not be revealed in any discussion, description, or scientific publications by the investigators. After data analysis, all questionnaires will be torn up. If conflicts occur, may call the Director: Research Management at (041) 504-4536 or write to: The Chairperson of the Research, Technology and Innovation Committee, PO Box 77000, Nelson Mandela Metropolitan University, Port Elizabeth, 6031
8. Access to Findings: The participant will have no personal access to the findings, but the researcher hopes that this study will contribute to enhancing the role of registered nurses in preventing the transmission of HIV/AIDS and change attitudes of registered nurses towards HIV and AIDS in public hospitals in the Nelson Mandela Metropole.

9. Voluntary participation/ refusal/ discontinuation: Participation is voluntary, whether or not to participate will in no way affect work; you may withdraw at any stage without penalization and the research will not result in any additional cost to the participant.

Yours sincerely
Yabin Mo
Annexure 3

Questionnaire on the Knowledge and Attitudes of Registered Nurses in Public Hospitals Related to the Prevention of HIV and AIDS Transmission
Questionnaire on the Knowledge and Attitudes of Registered Nurses in Public Hospitals Related to the Prevention of HIV and AIDS Transmission

Please complete the following questionnaire on the Knowledge and Attitudes of Registered Nurses Related to the Prevention of HIV and AIDS Transmission.

Instructions for answering the questions will be explained below:
Where indicated, please mark an “X” on the number in the box to indicate your response, for example:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Do not Know</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>2</td>
<td>3</td>
<td></td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

SA = strongly agree     A = agree
D = disagree     SD = strongly disagree

NB Do not write your name or indicate any other form of identification anywhere on this questionnaire. A reference number will be allocated to the questionnaire in order to preserve your anonymity. The contents of the questionnaire will remain confidential.

Please answer questions in the questionnaire as honestly as possible.

Thank you for your time and co-operation!

Yabin Mo
M. Cur student
Department of Nursing science
Nelson Mandela Metropolitan University
NMMU, PO Box 77000, Port Elizabeth
Contact NO: 0828432080 or 0844497665

Reference Number: ___________
Section A: Biographical Detail

Please mark the number by using an "X" to indicate your response, please respond to the questions as honestly as possible.

1. Gender

<table>
<thead>
<tr>
<th>Male</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2</td>
</tr>
</tbody>
</table>

2. Race

<table>
<thead>
<tr>
<th>Black</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coloured</td>
<td>2</td>
</tr>
<tr>
<td>Indian</td>
<td>3</td>
</tr>
<tr>
<td>Asian</td>
<td>4</td>
</tr>
<tr>
<td>White</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Marriage

<table>
<thead>
<tr>
<th>Single</th>
<th>1</th>
<th>Married</th>
<th>2</th>
<th>Widow</th>
<th>3</th>
<th>Living with partner</th>
<th>4</th>
</tr>
</thead>
</table>

4. Number of years practising as a registered nurse.

5. Have you participated in any training programme on HIV and AIDS?

<table>
<thead>
<tr>
<th>Yes</th>
<th>1</th>
<th>No</th>
<th>2</th>
</tr>
</thead>
</table>

If yes, state the duration of this training programme (days)

6. Do you have any experience in caring for patients with HIV and AIDS?

<table>
<thead>
<tr>
<th>Yes</th>
<th>1</th>
<th>No</th>
<th>2</th>
</tr>
</thead>
</table>
If yes, state the length of experience _______ _______ (days)

7. Your professional qualifications

<table>
<thead>
<tr>
<th>Basic diploma</th>
<th>Diploma</th>
<th>Basic degree</th>
<th>Degree</th>
<th>Honour</th>
<th>Magister</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

8. Additional qualifications: ______________________________

9. With whom have you discussed HIV and AIDS?

<table>
<thead>
<tr>
<th>Colleagues</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse</td>
<td>2</td>
</tr>
<tr>
<td>Friends of same gender</td>
<td>3</td>
</tr>
<tr>
<td>Friends of different genders</td>
<td>4</td>
</tr>
<tr>
<td>Other family members</td>
<td>5</td>
</tr>
<tr>
<td>Patients</td>
<td>6</td>
</tr>
</tbody>
</table>

10. From whom or how have you received most of your knowledge on HIV and AIDS in the past?

<table>
<thead>
<tr>
<th>Magazines</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspapers</td>
<td>2</td>
</tr>
<tr>
<td>Television</td>
<td>3</td>
</tr>
<tr>
<td>Spouse</td>
<td>4</td>
</tr>
<tr>
<td>Friends</td>
<td>5</td>
</tr>
<tr>
<td>Colleagues</td>
<td>6</td>
</tr>
<tr>
<td>In-service training</td>
<td>7</td>
</tr>
<tr>
<td>Self-study</td>
<td>8</td>
</tr>
</tbody>
</table>
11. How would you like to receive information on HIV and AIDS in the future?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Magazines</td>
<td>1</td>
</tr>
<tr>
<td>Newspapers</td>
<td>2</td>
</tr>
<tr>
<td>Television</td>
<td>3</td>
</tr>
<tr>
<td>Spouse</td>
<td>4</td>
</tr>
<tr>
<td>Friends</td>
<td>5</td>
</tr>
<tr>
<td>Colleagues</td>
<td>6</td>
</tr>
<tr>
<td>In-service training</td>
<td>7</td>
</tr>
<tr>
<td>News</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
</tr>
</tbody>
</table>
### Section B: Knowledge about the Prevention of HIV/ AIDS Transmission

Instruction: please indicate your response by making a cross on the number which represents your response.

<table>
<thead>
<tr>
<th>Items</th>
<th>Yes</th>
<th>No</th>
<th>Do not Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS can be transmitted in the following ways: (Question 1-14)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Unprotected sexual intercourse with an HIV/AIDS infected person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. From sharing cups and plates with an HIV/ AIDS infected person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. From being bitten by mosquitoes or bedbugs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. An HIV infected mother can pass on HIV/ AIDS to her baby through breast milk</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Through unprotected oral sex with an HIV/AIDS infected person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Through hugging or being close to an HIV/AIDS infected person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. By swimming in the same pool as an HIV/AIDS infected person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. By socially kissing an HIV/AIDS infected person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. From HIV/AIDS infected blood transfusions</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Through needle-stick injuries in the clinical settings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. From handling belongs of an HIV- positive person</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. By sharing needles when using drug</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. Through non-intact skin exposure to infected materials</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Through splashes from infected blood or body fluids onto the mucous membranes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. Blood and semen are the only bodily fluids to transmit HIV</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. Outside the body, HIV is very hard to kill</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. An HIV-infected person always shows symptoms of infection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. An HIV-infected person can look healthy</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
19. Use of condoms during sexual intercourse can lower the risk of getting HIV and AIDS

20. Spermicidal creams with a condom can improve the effectiveness of prevention of HIV and AIDS transmission

21. Use of a condoms with an oil a base lubricant can decrease the effectiveness of prevention of HIV and AIDS transmission

**In which of the following situation, should you wear gloves? (Question 22-25)**

22. When delivering blood specimens to the laboratory

23. Contact with a patient’s sweat and saliva

24. Contact with a patient’s saliva

25. Contact with non-intact skin of a patient who is HIV negative

26. Procedures for avoiding hepatitis B infection are also appropriate for avoiding HIV infection

27. Spills of HIV infected material can be inactivated by simple disinfectants such as household bleach

28. All blood intended for transfusion in South Africa is tested for HIV antibodies

29. After a needle stick, flushing the site with running water can reduce the risk of getting HIV infection

30. After a needle stick, stopping the bleeding at the site where there is bleeding can reduce the risks of getting HIV

31. A larger quantity of blood from the source person is the same risk as a little quantity of blood from the source person

32. Bending a needle by hand is more risky for obtaining a needle stick injury

33. Infected blood or body fluid coming from patients with a terminal illness creates more risk of getting HIV and AIDS than those from
<table>
<thead>
<tr>
<th>the common patients</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Smoking can increase the risk of getting HIV infection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>35. Alcohol can kill the HIV virus in the body</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>36. Hepatitis B can increase risk for a person to get HIV infection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>37. Chancres can increase risk for a person to get HIV infection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>38. There are some drugs which can prevent getting HIV infection after exposure to blood or body fluids of HIV and AIDS infection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>39. Antiretroviral treatment is more effective and efficient at early stage of HIV infection than later stage of HIV infection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>40. Antiretroviral treatment cannot be used to treat HIV positive patients with active TB</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Section C: Attitudes Regarding the Prevention of HIV and AIDS Transmission

Instruction: The items listed below refer to people’s feelings or opinions about the topic of the prevention of HIV and AIDS transmission. There are no right or wrong answers, only your own individual opinions. To indicate your reactions to these statements, use the scale indicated below and mark the number represents your response by using an “x”.

SA = strongly agree       A = agree
D = disagree             SD = strongly disagree

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Correct use of a condom can prevent HIV and AIDS.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. It is comfortable to use condoms.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. It is safe to rely on condoms for contraception.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. The use of condoms can reduce sexual pleasure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. The condom is too expensive to afford its use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. It is embarrassing to buy condoms.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Having sex with an HIV-negative faithful partner is the only way to avoid getting HIV infection via sexual transmission</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. An effective way to prevent transmission of HIV and AIDS is by avoiding giving blood transfusions that are not screened for HIV.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Only take an injection with a sterile needle.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. An HIV-infected nurse should not be allowed to continue to work as a nurse.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. A nurse should have the right to refuse to work with clients/patients with HIV and AIDS.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

The nurse should have the right to refuse to work with the following clients/patients (Question 12-16)

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Homosexual men</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>13. Bisexual men</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Intravenous drug users</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Hemophiliacs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Prostitutes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. Whenever I am in contact with blood or body fluid, I always wear gloves, even in emergency situations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. When I know a patient’s HIV negative status, it is not necessary to use protective clothing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. I believe that stopping to put on protective clothing would put the patient at risk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. I am so busy, I do not always have time to wash my hands after handling one patient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21. I am not confident to perform vein punctures when I am wearing gloves</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. I feel uncomfortable to perform vein punctures when I am wearing gloves</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. I do not wear an apron because I cannot always anticipate when I will be splashed by blood or body fluid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. Washing your hands can reduce the risk of HIV and AIDS transmission</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. The chance of transmission of HIV and AIDS by needle stick is so low, it is not necessary to worry about it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. Screening each patient is an effective way to prevent HIV and AIDS transmission</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. Separating HIV and AIDS patients from other patient is an effective way to prevent HIV and AIDS</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. I lack knowledge about the prevention of HIV and AIDS transmission</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
29. I am concerned that I am at risk of passing on infection to my family.  
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

30. I feel I might pass on HIV infection to other patients or clients.  
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

31. I am afraid I could get HIV and AIDS from my sexual partner(s).  
<p>| | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

32. I am afraid I could get HIV and AIDS from patients.  
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>4</td>
</tr>
</tbody>
</table>

33. I am uneasy about discussing sexual matters with individuals.  
<p>| | | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
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<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

34. I feel confident now about providing health education about HIV infection and AIDS to individuals.  
<p>| | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Thank you for your participating in this research study.
Annexure 4
Advanced Degree Committee Approval and Health Authority Approval
Ref: 203040953

Contact person: Ms G Ehbel

Date: 28 March 2006

Address:

Ms Y Mo
99 Admiralty Way
Summerstrand
PORT ELIZABETH
6001

Dear Ms Mo

FINAL RESEARCH PROPOSAL: MCur

Congratulations on a well prepared final research proposal. Please be advised that your final research proposal was approved by Faculty Management subject to the following suggestions/recommendations being made to the satisfaction of your Supervisor:

(i) that the title be amended as suggested below:
    KNOWLEDGE AND ATTITUDES OF REGISTERED NURSES IN PUBLIC HOSPITALS RELATED TO PREVENTION OF HIV AND AIDS TRANSMISSION;
(ii) that in the questionnaires, a few of the questions, terminology and numbering needed to be revisited;
(iii) that in the Reference List, reference to Van Rensburg 1 and Van Rensburg 2 needed to be clarified;
(iv) that the section under the Dissemination of Results needed to be revisited and clarified;

Yours sincerely

[Signature]

OFFICE OF THE DEAN
FACULTY OF HEALTH SCIENCES

S/Gty/H/H/researchletters/final research proposal/June
23 August 2006

To whom it may concern

PERMISSION TO CONDUCT RESEARCH: PE HOSPITAL COMPLEX

This serves to confirm that Ms. Yabin Mo has been granted permission to conduct a research towards her Masters’ Degree.

We therefore request our staff in all our three Institutions to give her the appropriate assistance and co-operation.

Yours faithfully

[Signature]

DR. L. M. JAM
CHIEF EXECUTIVE OFFICER
PE HOSPITAL COMPLEX

DATE: 23/08/2006