

**Evaluating the effectiveness of ARV training program for
registered nurses in
Thabo Mofutsanyana District (Free State Province)**

By

Masabata Maria Mokuena

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Supervisor: Prof P.M. Mulaudzi

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DECLARATION

I, Masabata Maria Mokuena, student number 12332712, hereby declare that the dissertation titled-

Evaluating the effectiveness of the ARV training program for registered nurses in Thabo Mofutsanyana District (Free State Province)

is my own original work. All the sources used and quoted in the text are acknowledged by means of complete references in the reference list. Furthermore, this dissertation was not submitted before for any degree at any university.

M.M. MOKUENA

Signature

27. 11. 2011

Date

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"You Raise Me Up" by Josh Groban

When I am down and, oh my soul, so weary;
When troubles come and my heart burdened be;
Then, I am still and wait here in the silence,
Until you come and sit awhile with me.

You raise me up, so I can stand on mountains;
You raise me up, to walk on stormy seas;
I am strong, when I am on your shoulders;
You raise me up... To more than I can be.

Masabata Maria Mokuena

ABSTRACT

AIDS statistics indicated that approximately 5, 7 million people in South Africa were infected with the HIV virus in 2010. The purpose of this study was to evaluate the effectiveness of antiretroviral (ARV) training for registered nurses in the Thabo Mofutsanyana District in the Free State. Quantitative data was collected by means of a reactionnaire and questionnaire completed by respondents who underwent ARV therapy training. By obtaining general feedback and determining the knowledge and attitudes of respondents about HIV/AIDS and ARV treatment, the researcher wished to determine the effectiveness of training. A systematic literature review was conducted on ARV therapy and comprehensive management and care of HIV/AIDS patients. Data collected was analysed and interpreted. General feedback was positive, and results indicated knowledge acquisition and possible knowledge deficiencies among respondents who displayed positive attitudes about caring for HIV/AIDS patients. The study concluded that the course was beneficial to registered nurses.

Key terms:

ARV; HIV/AIDS; training; evaluate; effectiveness

OPSOMMING

Vigsstatistiek het aangedui dat ongeveer 5,7 miljoen mense in Suid-Afrika in 2010 met die MIV-virus geïnfekteer was. Die oogmerk van hierdie studie was die evaluasie van die doeltreffendheid van onderrig in antiretrovirale middels (ARM) vir geregistreerde verpleegkundiges in die distrik Thabo Mofutsanyana in die Vrystaat. Kwantitatiewe data is versamel by wyse van 'n terugvoervorm en 'n vraelys wat deur respondente ingevul is wat ARM-onderrig ondergaan het. Die navorser wou die doeltreffendheid van onderrig bepaal deur algemene terugvoer te verkry en die kennis en gesindhede van respondente oor MIV/vigs te bepaal. 'n Sistematiese literatuurstudie is uitgevoer oor ARM-terapie en die omvattende hantering en sorg van MIV/vigs-pasiënte. Die ingesamelde data is ontleed en vertolk. Die algemene terugvoer was positief, en die resultate het kennisverkryging en moontlike kennistekorte aangedui by respondente wat 'n positiewe houding oor die versorging van MIV/vigs-pasiënte getoon het. Volgens die studie het die kursus die geregistreerde verpleegkundiges tot voordeel gestrek.

Sleuteltermes:

ARM; MIV/vigs; onderrig; evalueer; doeltreffendheid

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LIST OF ABBREVIATIONS

3TC	Lamivudine
AIDS	Acquired immunodeficiency syndrome
ARV	Antiretroviral/antiretroviral therapy
AZT	Zidovudine (also known as azidothymidine)
DOH	Department of Health
HIV	Human immunodeficiency virus
ICN	International Council of Nurses
IIME	Institute for International Medical Education
NQF	National Qualifications Framework
PALSA Plus	Practical Approach to Lung Health, HIV/AIDS and STI in South Africa
PEP	Post-Exposure Prophylaxis
PEPFAR	[US] President's Emergency Plan for Aids Relief
PHC	Primary Health Care
PMTCT	Prevention of Mother-to-Child Transmission
SANC	South African Nursing Council
SAQA	South African Qualifications Authority
SPSS 10	Statistical Programme for Social Scientists
STI	Sexually Transmitted Infection
TB	Tuberculosis
UK	United Kingdom
USA	United States of America
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) have caused a pandemic that affects all people worldwide in all spheres of life. HIV/AIDS is the most serious and devastating disease that the world is facing today; it is a global disease that knows no colour, language or age barrier and one that has become a serious concern to society due to its rapid spread (Munro, 2007:18). Statistics at the inception of this study, at the end of 2006, indicated that 40,3 million people worldwide were known to be living with HIV, with an estimated 27,9 million living with HIV in sub-Saharan Africa.

Although a few countries, including Kenya, Zimbabwe and Uganda, recently showed declines in the epidemic, South Africa showed no such decline. AIDS statistics in South Africa indicated that approximately 5,7 million people in South Africa were infected with HIV in 2010 (Van Rensburg et al 2008:1). The Free State, one of nine provinces in South Africa, with an estimated population of 2 792 000, has an AIDS prevalence rate of 18,5% among people in the age group 15 to 49 years, with the national figure for this age group being 16,9% (Van Rensburg et al 2008:1).

HIV/AIDS not only affects individuals but also influences communities, health care services, the economy, family life, and education, making its impact felt on microlevel and macrolevel worldwide. In South Africa, the impact of HIV/AIDS led to a dramatic decline in the population, increased expenditure with respect to health care services, loss of productivity, families shouldering a burden of care and responsibility, and many AIDS orphans with poor school performance and psychological and social problems (Munro, 2007:19).

The South African Department of Health's (DOH's) Strategic Plan for South Africa (2005) is aimed at providing a framework for multiple responses to HIV/AIDS at all

levels of society. The multiple-response framework includes a comprehensive package of care for HIV/AIDS patients, and the provisioning of antiretroviral (ARV) treatment for HIV/AIDS in the public sector. As nurses represent the first line of contact with patients in primary health-care settings, the strategic plan also includes the training of nurses in ARV therapy (DOH 2004:1).

The training programme on ARV therapy was first presented in the province of the Free State in April 2004. The two-week course included some experiential learning at clinics where HIV/AIDS patients were screened. Training in the first week consisted of theory on HIV/AIDS comprehensive management and care, while experiential learning occurred during the second week. Registered nurses were allocated to so-called ARV clinics where they met with HIV/AIDS patients and did clinical work. After successfully completing the ARV therapy training, registered nurses were issued with certificates accredited by SAQA, the South African Qualifications Authority (Department Of Health, 2004:1). Since its roll-out the ARV therapy training programme has never been evaluated to determine its effectiveness. This study aims to evaluate the ARV therapy training programme in order to determine its effectiveness in enhancing the knowledge and skills of nurses concerning treatment for HIV/AIDS. The results of the study might assist the Free State Department of Health with gaining information on how to improve future training programmes.

1.2 BACKGROUND TO AND RATIONALE OF THE STUDY

1.2.1 Background

South Africa currently experiences a shortage of health care practitioners to render health care in the public sector, and many health care practitioners are also unwilling to work in rural areas. Currently, the health care approach in the public sector is to deliver health care through the primary health care (PHC) system. The PHC philosophy required a change from a hospital and disease-based model to a clinic-based health care model, with professional nurses playing a leading role in assessing and managing clients, including HIV/AIDS clients (Van Rensburg, 2004:413). To ensure the success of the PHC approach, and to curb the rising mortality and morbidity rates caused by the apparent failure of PHC settings to manage patients on ARV drugs effectively, nurses in the Free State were given training in ARV therapy.

1.2.2 Rationale for training nurses in ARV therapy

The World Health Organization (WHO) set indicators for the provisioning of ARV drugs in order to contribute to prolonging the survival of individuals with HIV/AIDS and restoring their quality of life. A need was identified to train registered nurses in South Africa in the comprehensive management and care of HIV/AIDS patients. Comprehensive management and care include testing and counselling patients, and, based on laboratory results, referring them to hospitals or ARV treatment sites for further treatment, monitoring the side effects of ARV regimens, assessing patients for opportunistic infections, and educating patients on ARV regimen compliance.

The general training of registered nurses in South Africa includes modules on communicable diseases, including HIV/AIDS. The emphasis is on preventative measures, and less attention is given to ARV treatment and the comprehensive management and care of HIV/AIDS patients. In addition, legislation such as the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965), the Pharmacy Act, 1974 (Act 53 of 1974), and regulations and rules relating to dispensing, also included in the Ethical rules of Conduct for Practitioners registered under the Health Professions Act, 1974, regulate the prescribing and dispensing of medication by registered nurses in South Africa. Registered nurses in South Africa are not allowed to prescribe ARV drugs but must monitor their adverse effects. At each ARV site, pharmacists trained in ARV therapy dispense medication as prescribed by doctors at hospital level. Legislation regulating treatment and the national treatment guidelines issued by the South African (DOH, 2004:507) control the prescribing of treatment according to funded drugs like *stavudine*, *lamivudine (3TC)*, *efavirenz*, and *nevirapine*. These drugs are known to have fewer side effects.

The ARV therapy training programme was expected to positively influence the role of registered nurses by increasing their knowledge and skills, thereby enhancing their ability to care for HIV/AIDS patients at PHC level. Registered nurses have to monitor HIV/AIDS patients for opportunistic infections and treat them using the Practical Approach to Lung Health and HIV/AIDS and STIs in South Africa, better known as the PALSA Plus treatment guideline. This approach or guideline equips nurses to diagnose and manage respiratory diseases including HIV/AIDS, sexually transmitted infections

(STIs), and tuberculosis (TB), and guides them to promptly refer high-risk patients for further treatment to medical doctors. PALSA Plus is a standardised treatment protocol for treating HIV/AIDS and associated opportunistic infections.

1.2.3 Structure of the ARV training course

The Free State DOH designed an ARV therapy training programme to train registered nurses in the comprehensive care and management of HIV/AIDS patients. Training is comprised of the following topics:

1. Overview of HIV/AIDS
2. Assessment of patients who should be offered ARV treatment
3. Assessment of patients who qualify for ARV treatment
4. Drug interaction and drug procurement
5. Laboratory investigations
6. Nutrition and HIV/AIDS
7. Infant feeding in the context of HIV/AIDS
8. Walking patients (adults and children) through HIV/AIDS management
9. Data management
10. HIV/AIDS ethics
11. ARV drug regimens and their side effects
12. Paediatric ARV drug treatment
13. Pharmacovigilance
14. Prevention of mother-to-child transmission (PMTCT)
15. ARV programme roll-out
16. Opportunistic infections, TB, and HIV infection.

The two-week training programme included both theory and experiential learning. Registered nurses who underwent training also wrote a post-training test to determine whether or not learning occurred and knowledge and skills were acquired that would assist them in performing their duties effectively. Two hundred and ninety five (295) registered nurses in the Thabo Mofutsanyana District were trained in ARV therapy, and are now working at ARV clinics.

The researcher was interested in evaluating the effectiveness of the ARV training programme for registered nurses in the Thabo Mofutsanyana District in the province of

the Free State where the researcher was working. During a literature study about the evaluation of ARV training programme for nurses, a validated model was found that could be used for evaluating such a training programme, namely the Kirkpatrick Model for the evaluation of training programmes (Kirkpatrick:1998). Donald Kirkpatrick developed this model in 1998. It determines the effectiveness of training programmes by measuring changes in reaction, learning, knowledge, attitudes, skills, and behaviour, and by assessing outcomes. The Kirkpatrick Model was used in the past for evaluating training programme done for institutions such as IBM, Motorola, St Luke Hospital, Intel, CIGNA Corporation, First Union National Bank, Hughes Aircraft, Hobart Corporation, the Kemper National Insurance Companies, and the University of Wisconsin. These institutions applied one or more of the four levels of the Kirkpatrick Model to evaluate the effectiveness of training programme received. The researcher decided on using the first two levels of the model for evaluating the effectiveness of the ARV therapy training programme completed by registered nurses in the province of the Free State:

- Level 1: Evaluating reaction: This implied investigating how registered nurses felt about the training received.
- Level 2: Evaluating learning: This implied investigating to what extent registered nurses changed their attitudes, acquired knowledge, and increased skills as a result of attending the ARV therapy training programme.

1.3 RESEARCH QUESTIONS

In order to answer the following research questions satisfactorily, the researcher had to familiarise herself with the intended outcomes of the ARV therapy training programme:

- How did registered nurses react to the ARV therapy training programme?
- To what extent did registered nurses change their attitudes and improve their knowledge and skills as a result of attending the ARV therapy training programme?

1.4 AIM OF THE STUDY

The aim of the study is to evaluate the effectiveness of the ARV therapy training for registered nurses in the Thabo Mofutsanyana District in the province of the Free State. In order to realise this aim, the study objectives outlined in the next section was pursued.

1.5 OBJECTIVES OF THE STUDY

The objectives of the study are to:-

- determine and describe the reaction that registered nurses displayed to the ARV therapy training;
- determine and describe the knowledge, skills, and attitudes that registered nurses displayed after completion of the ARV therapy training course; and
- make recommendations to the Free State DOH on how to improve future training programmes in this regard.

1.6. Hypothesis

The hypothesis of this study was:

- The more the registered nurses are trained in ARV training programme the more knowledgeable, skillful they will become and their attitudes towards training will improve.

1.7 SIGNIFICANCE OF THE STUDY

The evaluation of the ARV therapy training programme has been neglected for a long time, and the researcher believes that the study about the effectiveness of the training programme for registered nurses in the Thabo Mofutsanyana District in the Free State was having the following advantages:

- Implementation of the recommendations of the study might result in the improvement of the training programme, thereby ensuring and enhancing the quality of service delivery in the district.
- Study findings could lead to the improved performance of registered nurses in managing HIV/AIDS patients.
- The study could also create awareness among health workers of how ARV therapy should be managed.

1.8 DEFINING KEY CONCEPTS

- **Evaluation**

Evaluation tracks the appropriateness and effectiveness of the design and implementation of social programmes through the systematic application of social research procedures and techniques. Evaluation helps to identify what was or wasn't working and provides feedback to all role-players (Garrison 2003:16, Patton 2002:369).

- **HIV and AIDS**

The letters HIV stand for human immunodeficiency virus (Strydom, 2002:19; Whiteside & Sunter, 2000:2). The virus can be transmitted through unprotected penetrative sex, blood transfusions, the use of unsterilized injection equipment or cutting instruments, and from an infected woman to her unborn baby or nursing infant. The virus gradually damages the immune system, which was then unable to protect the body satisfactorily, resulting in the development of AIDS, associated with an increased susceptibility to various cancers and opportunistic infections.

The acronym AIDS stands for acquired immunodeficiency syndrome. Strydom (2002:18) as well as Whiteside and Sunter (2000:1) explained the acronym as follows:

- "A" stands for acquired. This means that the virus was not spread through casual or inadvertent contact like flu or chickenpox. In order to become infected, a person has to do something or have something done to them which expose them to the virus.
- "I" and "D" stand for immunodeficiency. The virus attacks a person's immune system and makes it less capable of fighting infections. Thus, the immune system becomes deficient.
- "S" is for syndrome. AIDS is not just one disease but presents itself as a number of diseases that develop as the immune system fails. Hence, it is regarded as a syndrome.

AIDS may therefore be defined as a syndrome of opportunistic diseases, infections and certain cancers, caused by the human immunodeficiency virus, which eventually leads to death.

- **ARV**

ARV stands for antiretroviral. ARV therapy (also abbreviated as ART in health literature) is highly active to achieve HIV suppression and reduce the level of ribonucleic acid (HIV RNA) to the lowest possible level, for as long as possible. It helps to promote recovery of immune status, improve immune function and capacity, and prevent disease progression (Evian , 2003:79).

- **Effectiveness**

The extent to which actions achieve predetermined objectives; cost is not involved in this measurement (Winfrey, 1999).

- **Training**

Training is aimed at acquiring a skill (Kurtus, 1999). The ARV therapy training module was referred to by the Department of Health as a training programme. The content of the module encompasses more than only gaining specific skills. Knowledge, attitude and problem-solving skills are addressed in order to ensure ARV therapy management of a high quality.

1.9 RESEARCH DESIGN

For the purposes of this study, retrospective, descriptive survey methods based on the Kirkpatrick Model was used. The study was retrospective, as the participants have already completed their training. The summative evaluation of training implies asking the participants to reflect on their reactions during the training period, as well as the extent of the knowledge and skills they acquired during training. Relevant research approaches was used for the collection, analysis, and interpretation of data.

Du plooy (1995:38) defines 'research design' as "the plan of procedures for data collection and analysis that are undertaken to evaluate particular theoretical perspectives". Neuman (1994:28) was in agreement when stating that a research design is the blue print for the collection, measurement, and analysis of data. For the sake of clarity, the research methods considered for this study was described according

to the study objectives. The goal, setting, population and sampling, data collection instrument, validity and reliability requirements, and data analysis relevant to each study objective are described below.

Study objective 1:

To determine and describe the reaction of registered nurses to ARV therapy training

- **Goal**

The goal is to measure the reaction of the participants to the training programme. The process involves asking participants to relay their overall reaction to the programme. It also includes measurements of participants' reaction to or attitude toward certain aspects of the programme, such as the instructor, topics, presentation style, schedule, and use of audiovisual material.

- **Setting**

The study was conducted at ARV sites (clinics and hospitals) in the Thabo Mofutsanyana District in the province of the Free State where patients are screened for HIV/AIDS and prepared for ARV therapy. Ten clinics and three hospitals (all ARV therapy sites) constituted the research setting. Thabo Mofutsanyana, one of five health districts in the Free State, has been chosen because of its proximity to the researcher.

- **Population and sampling**

The population in this study was comprised of a number of registered nurses in the Thabo Mofutsanyana District who completed the two-week ARV therapy training programme in the period 2004 to 2009. According to McMillan and Schumacher (1997:164), "population refers to a group of elements or cases that conform to specific

criteria, and are intended to be generalized once the results of the research have been obtained.”

Convenience sampling, a non-probability sampling method, was used for the selection of participants (Burns & Grove, 2005:350). Convenience sampling implies selecting registered nurses who were at work at selected clinics/hospitals on a particular day.

- **Data collection instrument**

Questionnaires adopted from the Kirkpatrick Model will be used for the collection of data. Registered nurses who underwent the ARV therapy training programme were asked to complete a reactionnaire (a general feedback form) to determine their overall reaction to the training programme. The reactionnaire was completed after completion of training programme. Questionnaires were been distributed personally by the researcher to registered nurses in the Thabo Mofutsanyana District, and administered and collected by contact persons at the various clinics and hospitals. A follow-up visit was arranged to collect questionnaires that were not returned. Questions from the Kirkpatrick Model was modified in accordance with the study objectives.

- **Validity and reliability requirements**

Reliability refers to the consistency with which the same results can be obtained, using the same measuring instrument (Burns, 2000:127; Trochim, 2002; Uys & Basson, 2000:75). A pilot study was improving the reliability of the research (Neuman, 1994:130). The questionnaires were first been tested in a pilot study before they were used for the real study.

Validity refers to the degree to which an instrument measures what it is supposed to be measuring (Polit & Hungler, 2001:418). The research instruments for this research, i.e. the questionnaires, including the reactionnaire, which was adopted from Kirkpatrick’s model, had been tested for face and content validity by experts in the field of research. A pilot study was conducted before the questionnaires are administered to ensure their clarity. Questionnaire items, i.e. questions and statements, was reflecting the scope of the ARV therapy training programme. Face validity was ensured by asking questions based on the content of the ARV therapy training.

- **Data analysis**

According to Merriam (1998:178), data analysis is “the process of making sense out of data, involving consolidating, reducing and interpreting participants’ feedback and evaluators’ observations.” Patton (2002:375) describes data analysis as follows: “working with data, organizing it, and breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others.” This research had adopted a quantitative approach to data analysis. The assistance of the Department of Biostatistics at the North-West University was been sought with respect to the analysis of data. Descriptive statistics, including frequencies and percentages for categorical data, was used.

Study objective 2:

To determine and describe the knowledge, skills, and attitudes that registered nurses displayed after completion of the ARV therapy training

- **Goal**

The second goal of this research study (or level 2 of the investigation) was to determine whether learning took place. This goal was achieved by assessing learning outcomes, i.e. assessing actual learning against the intended learning outcomes of the training course.

- **Setting**

ARV sites (clinics and hospitals) in the Thabo Mofutsanyane District in the province of the Free State has constituted the setting at this level of the investigation.

- **Population and sampling**

Registered nurses who underwent ARV training and are working at ARV clinics and hospitals was selected for participation in this study. Convenience sampling was used for the selection of the participants.

- **Data collection instrument**

A questionnaire, consisting of statements that must be rated as true or false, was used to gather data about knowledge gained during the ARV therapy course. Data about skills acquired and attitudes toward HIV/AIDS patients was gathered by requesting participants to indicate whether they agree or disagree, or strongly agree or strongly disagree, with a given statement, which responses was then quantified. Data was collected by the researcher herself. The content of the questionnaire, i.e. the questionnaire items or statements, was based on the contents of the ARV therapy training module.

- **Data analysis**

The data obtained was analysed using descriptive statistics. The assistance of the Department of Biostatistics at the North-West University was enlisted to calculate frequencies and percentages for categorical data. By interpreting participant's feedback, the researcher had strived to make sense out of data (Merriam, 1998:178). By working with the data, organising it, and breaking it into manageable units (Patton, 2002:145), patterns can be observed and inferences made.

- **Reliability and validity**

Reliability refers to the consistency with which the same results can be obtained, using the same measuring instrument (Burns, 2000:127; Trochim, 2002; Uys & Basson, 2000:75). A pilot study was improving the reliability of the research (Neuman, 1994:130). The questionnaires were first tested in a pilot study before they were used for the real study.

Validity implies that the measurement technique actually assesses what it is supposed to measure (Burns, 2000:127; Marneweck & Rouhani, 2000:292; Trochim, 2002). According to McMillan and Schumacher (1997:178), validity is a judgment of the appropriateness of a measure for specific inferences, decisions, consequences or uses that result from the interpretation and meaning of the scores derived from the instrument. In this study the researcher had used structured questionnaires as a valid research instrument to collect relevant data, and Kirkpatrick's model to evaluate the effectiveness of ARV training programme for registered nurses at their workplace after

they had undergone training programme. Since the Kirkpatrick Model has been used worldwide, the researcher has regarded it as a credible and reliable research instrument. The frequencies and percentages for categorical data were calculated.

The content covered in the questionnaire was reflecting the content of the ARV therapy module, ensuring adherence to content validity. The questionnaires have been tested in a pilot study, which were improving the reliability of the study (Neuman, 1994:130).

1.10 ETHICAL CONSIDERATIONS

In conducting the study the researcher was being guided by ethical principles defined by Brink (2006:45-48) and the International Council of Nurses (2000) . Ethics is a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal and social obligations concerning study participants (Polit & Beck, 2004:717).

The principle of self-determination was upheld, as prospective participants was having the right to decide voluntarily whether or not to participate in the study, without risking any penalty (Brink, 2003:39; Polit & Beck, 2004:147).

The principle of respect for human dignity was upheld as well. This principle encompasses people's right to make informed decisions about participation in a study, and informed participation involves full disclosure of what is expected of a participant (Polit & Beck, 2004:147; Uys & Basson, 2000:99).

All participants gave informed consent prior to partaking in the study. Informed consent means that participants had adequate information and had the power of free choice, enabling them to consent to or decline participation voluntarily (Brink, 2003:42; Burns & Grove, 2005:193; Polit & Beck, 2004:151). All data obtained from the reactionnaire and a questionnaire completed by study participants was been depersonalized to enhance confidentiality. Permission to conduct the study was obtained from the relevant authorities.

The study proposal was submitted to the Ethics Committee of the Faculty of Health Sciences at the North-West University. The Ethics Committee, being satisfied that no ethical principles were being disregarded, has given their approval for continuing with the study. The Free State DOH, representing clinics and hospitals within the Thabo Mofutsanyana District, has granted the researcher permission to conduct the study.

1.11 STRUCTURE OF THE DISSERTATION

Chapter 1 describes the research problem and the purpose and significance of the study, defines key terms, and briefly describes the research design and methods.

Chapter 2 contains the literature review.

Chapter 3 explains the research design and research methods used.

Chapter 4 discusses and illustrates the findings of the study.

Chapter 5 presents the conclusions, recommendations and the limitations for further research.

1.12 SUMMARY

In order to combat the HIV/AIDS epidemic, the South African DOH instituted ARV therapy training for registered nurses responsible for the care and management of HIV/AIDS patients at PHC level. The success of the ARV training course in the Thabo Mofutsanyane District has not been determined since its roll-out in 2004. The researcher therefore decided to conduct this research study in order to determine the effectiveness of the training course in the above district. Chapter 1 introduced the reader to the research problem, the objectives of the study, and the research design. Chapter 2 contains a literature study that covers the theoretical foundation of HIV/AIDS and relevant research about ARV treatment, the comprehensive management and care of HIV/AIDS patients, training in ARV therapy, adult learning principles, and learning assessment.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter contains an overview of literature that is relevant to the evaluation of the effectiveness of an ARV therapy training programme for registered nurses in the Thabo Mofutsanyana District in the province of the Free State. The first aim was to identify what was known about the ARV therapy training course. Reviewing literature is one of the important steps in research because it is through a review of literature that the researcher comes up with research ideas and orientates him/herself with respect to the research topic. A literature review also helps a researcher to familiarise him/herself with practical and theoretical issues relating to the topic (Polit, Beck & Hungler, 2001:88). In this study the overall aim of the literature review was to obtain information that would assist the researcher in evaluating the effectiveness of the ARV training programme offered in Thabo Mofutsanyana District in the Free State. A literature study could also assist the researcher with determining training achievements and challenges, and in making recommendations relevant to similar training programmes.

The researcher's starting point was to search for similar problems studied by others and to identify similar and different views so as to establish more appropriate instruments for data collection and analysis for the topic under discussion (Polit *et al.*, 2001:88).

Nurses are valuable assets in every society and the quality of services rendered by them directly relates to their knowledge and skills. The South African DOH invests in the continuous development of nurses, believing that a better motivated nursing staff would perform to the best of their ability. This is especially true if such professional development leads to the fulfilment of high-order needs such as self-actualisation and self-expression. The ARV therapy training is aimed at developing nurses to contribute to a reduction in the high incidence of HIV/AIDS in South Africa.

A comprehensive Internet search was conducted, exploring the web-based nursing information databases CINAHL, MEDLINE PREMIER, and ERIC. Search engines like Google, EBSCO, Science Direct, and SA Publications were also used. The following keywords were used: Evaluation, effectiveness, ARV training, HIV and AIDS, registered nurses. Data in hard-copy format was obtained with the assistance of librarians from the library of the institution where the researcher was registered, and the community library where the researcher was staying, also by using interlibrary services of the Free State University (FSU) QwaQwa Campus. Most of the literature obtained was written in English, while some abstracts were available in both English and Afrikaans (Burns & Grove, 2005:102). Abstracts from the DENOSA journal *Curationis* were read to identify relevant articles. About 75 applicable research reports within the nursing, medical and business fields were identified. Only those relevant to this study were used for this literature review.

ARV therapy training was instituted to promote the management of HIV/AIDS patients in the province of the Free State and South Africa as a whole, and in response to WHO statistics concerning the morbidity and mortality rate of HIV/AIDS.

2.2 THEORETICAL FOUNDATION OF HIV/AIDS

If hospitals and clinics are to fulfil their missions, then nursing staff must be given the opportunity to grow and develop personally and professionally. They should also be given the opportunity to provide specialised care, such as the management of patients with contagious diseases like HIV/AIDS.

Nursing staff need support and specialised training in order to cope with the ever-increasing scourge of HIV/AIDS within the South African society. The challenge is to develop programmes that will help registered nurses to manage patients with HIV/AIDS effectively, while reducing the stigma of the disease. The Free State DOH also faces these challenges.

There are many definitions of HIV/AIDS.

- Evian (2003:3) defines HIV/AIDS as “the disease of the human immune system caused by the human immunodeficiency virus, this condition progressively

reduces the effectiveness of the immune system and leaves individual susceptible to opportunistic infections.”

- Gifford, Long, Laurent and Gonzalez (2000:5) define HIV/AIDS as a “disease of the immune system caused by a virus HIV, it infect people and they develop damage to their immune system gradually.”
- Franklyn (2010:9) confirms that AIDS is caused by the “Human Immunodeficiency Virus (HIV) that causes the Acquired Immune Deficiency Syndrome.”

The mandate of the Free State DOH was to educate registered nurses concerning the management and care of HIV/AIDS patients and the use of ARVs for treatment. Hospitals and clinics in the province need well-educated nurses specialising in the management of HIV/AIDS to help the provincial department to fulfil their mandate.

As the management of HIV/AIDS becomes more and more complex, more nurses are needed for managing the ARV therapy programme professionally. Competent nurses are those who understand the concept of HIV/AIDS well and relate it to appropriate treatment.

- The San Francisco AIDS Foundation (2010:1) defines HIV/AIDS as “the disease or illness caused by infection with the human immunodeficiency virus, if untreated the disease progresses slowly from asymptomatic infection to worsening immunocompromise to AIDS.”
- De Jong (2003:3) argues that HIV/AIDS is the “leading cause of death in sub-Saharan Africa and the fourth biggest killer in the world, and that it has infected majority of people, young, sexually active adults and ageing parents.”
- Munro (2007:19) describes HIV/AIDS as a chronic disease that needs continuous treatment in order to alleviate symptoms. She also calls it an infectious disease that is transmitted through direct contact of the mucous membrane or the bloodstream with HIV infected body fluids, such as HIV infected blood, semen, vaginal fluid, preseminal fluid and breast milk.

From the definitions above it is clear that an intervention training programme was needed to educate nurses in alleviating the chronic symptoms of the disease and the stigma attached to it. In order to develop the correct intervention strategy, the Free State DOH in conjunction with the national DOH implemented the ARV therapy training programme to educate registered nurses in ARV therapy management.

2.3 TRAINING PROGRAMME FOR REGISTERED NURSES AS AN INTERVENTION STRATEGY FOR HIV/AIDS MANAGEMENT

In order to manage HIV/AIDS in South Africa effectively, the national DOH in South Africa collaborated with European countries, the WHO, the World Bank's Multi-Country HIV/AIDS Program, and the United States of America (USA) President's Emergency Plan for Aids Relief (PEPFAR) by declaring their commitment in Geneva in response to HIV/AIDS by setting a target of treating 3 million people living with HIV/AIDS in developing countries (WHO, 2003:322). In order to respond to this global epidemic, the WHO urged low resource countries to speed up as an emergency the scaling up of ARV treatment.

To combat the epidemic, a disease curriculum for the training of health professionals was developed through the efforts of the following organisations: HIV/AIDS Bureau, Health Resources and Services Administration, USA Department of Health and Human Services, USA Aids Education and Training Center, ICN, WHO, and the United Nations Program on Aids. The WHO also developed and published guidelines for the use of ARV treatment in adults and children, with reference to resource limited settings (WHO, 2002:9).

According to the WHO (2002:9), this curriculum was developed to train nurses in low resource countries to train other health care providers in ARV therapy in order to enhance the quality of life of HIV infected people and slow disease progression. The WHO (2002:9) further stated that as the curriculum would primarily be used for the training of trainers, it should be able to build upon basic HIV/AIDS knowledge. The goal of the curriculum was to increase knowledge about ARV treatment and enhance nursing skills by providing ARV training to health care personnel.

The WHO (2002:9) anticipated that when the HIV/AIDS Bureau and the Health Resources and Services Administration receive a request for assistance in preparing a curriculum on HIV/AIDS and ARV therapy in partnership with the requesting country, the curriculum would be adapted to reflect the culture and training needs of that specific country. The existing curriculum reflects a more Western cultural perspective, but it is used as a guide for developing a curriculum that suits a specific country's cultural viewpoints on ARV therapy.

According to the South African Government Communication and Information System (GCIS, 2007:1), the South African government took advantage of new developments to enhance the country's comprehensive health plan and to respond to the HIV/AIDS epidemic by implementing a programme in November 2003 to provide ARV treatment in the public health sector. Van Rensburg et al (2008;2) confirmed that the South African government was obliged to strengthen its HIV/AIDS intervention programme, as PEPFAR provided the South African government with funds to enhance ARV programmes in the public health sector, supporting the provisioning of effective HIV/AIDS treatment.

The ARV therapy curriculum was developed as a collaborative effort between the Johns Hopkins University AIDS Service and South African nursing staff and leadership. Each province in South Africa trained trainers who would then train registered nurses in their respective provinces.

Scotti and Leslie (2004:6) argued that government employed various curricula in order to address the needs of nursing staff, and by using the Training the Trainer Model they hoped the curriculum would be used throughout the country to increase knowledge about care for HIV infected patients and to influence in a positive way the attitudes of those caring for HIV infected patients.

Scotti and Leslie (2004:6) further said that training would assist registered nurses in developing skills that are needed for the clinical management and counseling of HIV positive patients. Hence, an ARV training programme for registered nurses was implemented in 2004. Every health district in the Free State nominated registered nurses to attend the first ARV therapy training course in the province's capital, Bloemfontein.

2.4 IMPLEMENTATION OF ARV THERAPY TRAINING FOR REGISTERED NURSES IN THE FREE STATE

In order to smoothly implement ARV therapy training for registered nurses in the Free State, a Training the Trainer mini-course covering the basic building blocks for creating a training course was first implemented. For successful training, trainers must plan ahead and develop their notes and training methods well before training begins. This was also the view of Miramontes (2002: 15) who argued that trainers had to understand the importance of getting registered nurses involved and active during training, and of motivating them to start training on a positive note

Miles, Clutterbuck, Seitio, Sebego and Riley (2007:557) stated that the ARV trainers should be registered nurses with accredited ARV training, who received clinical mentorship from an experienced HIV practitioner until they themselves became competent. Miles, *et al.* (2007:557) further stated that there was a need to define which registered nurses should take on extended roles in ARV therapy delivery, as well as clear criteria as to what the minimum educational and experiential prerequisites should be.

Wood, Kruger, Martin, Charalambous, Grant, Day, Pemba, Chaisson, Churchyard and Brink, (2007:1) asserted that a clinical programme should be designed to guide registered nurses in implementing ARV therapy. The ARV therapy training programme thus consists of ARV clinical guidelines that are standardised. These clinical guidelines make recommendations about the appropriate time of starting treatment, treatment regimens, and the monitoring of patients. The guidelines also include indications for starting treatment using the WHO clinical stages and the CD4 cell count. The CD4 cell count is an indicator of the progress of an HIV infection and helps measure the effectiveness of ARV drugs.

ARV therapy is not included in normal nursing training, as nurses in South Africa do not prescribe medications. However, nurses administer medication and monitor their side effects. ARV regimens 1 and 2 were chosen by the South African government for use in the public health care sector. Regimen 1 consists of two nucleoside reverse transcriptase inhibitors (*zidovudine*, also known as *azidothymidine* or AZT, and *lamivudine* or 3TC) and one non-nucleoside reverse transcriptase inhibitor (*efavirenz*). Regimen 2 is comprised of *abacavir*, *didanosine* and *lopinavir-ritonavir*. These treatment

regimens were chosen by the South African government because of their efficacy, tolerability, and ease of administration.

Brink *et al.* (2007:22) stated that while HIV/AIDS patients in the United Kingdom (UK) were experiencing decreased mortality and morbidity as a result of highly active ARV therapy, the growing number of HIV/AIDS patients was making great demands on those providing care. The reason for the UK to focus on care provided by the nurse practitioner was twofold: to respond to the needs of the clinic population through the utilisation of existing staff structures; and to provide a new and improved career for experienced nurses. Brink, *et al.* (2007:24) further stated that training and support were considered essential for the development of nurse practitioners.

Idigbe, Odutolu, Okonkwo, Folayan, Uwakwe, Audu, Jolayemi and Osagbemi (2006:490) confirmed that the success of an ARV therapy programme depends on knowledgeable and skilled registered nurses. To ensure an effective and comprehensive HIV/AIDS management programme, well-trained and motivated registered nurses should be involved. The training of registered nurses will always be a very important component in the workplace, as it promotes quality of care and increases skill and knowledge. Capable nurses perform their work with pride as they have knowledge and skill, and this in turn promotes service delivery.

Nurses in South Africa are the backbone of the health care system. They form the greater part of the health department and constitute the first line of contact with clients. If they are empowered with knowledge and skill, the health status of the community at large will improve. Not only registered nurses but also the community will be empowered, as nurses will educate people. This will contribute to the prevention and limitation of the spread of disease and the promotion of healthy living. By encouraging those who are ill to seek treatment as soon as possible, mortality and morbidity rates will be reduced.

However, most nurses in the country are not sufficiently educated during their pre-service years. They still lack the necessary knowledge, skills, and attitudes needed for providing quality care and for confronting the HIV/AIDS epidemic. According to Van Rensburg, Steyn, Schneider, and Loffstadt (2008:5), the Free State DOH responded to these challenges by developing their own training curriculum covering the ARV therapy programme.

Thus, to enhance the training of registered nurses, the Free State DOH ran a regular two-week ARV training course for registered nurses. Van Rensburg *et al.* (2008:5) further explained that the Free State DOH implemented on-site training in the integrated management of respiratory illness, tuberculosis (TB), HIV/AIDS, including ARV therapy, and sexually transmitted infections (STIs) in adults, using the PALSA Plus guideline. The ARV module instituted by the DOH was presented to registered nurses at clinics and hospitals. Since in-service training targets adult learners, the principles of adult learning have to be taken into account. Different training methods are used for addressing the training needs of adults.

2.5 PRINCIPLES OF ADULT LEARNING

Adult learners are a diverse group, as they differ in age and accumulated experiences, and concerning their position in society. Facilitating the learning experience for adults necessitates an understanding of adulthood in conjunction with the learning process (Darkenwald & Merriam, 1982:86; Fenwick & Tennant, 2004:55). Principles of learning relevant to adult education can be derived from the theories of behaviourists, humanists, and cognitive theorists. The following principles of adult learning have to be taken into account:

- An adult's readiness to learn depends on the amount of previous learning. The more knowledgeable a person is, the better he or she is able to absorb new information and engage in complex modes of thinking (Darkenwald & Merriam, 1982:110). Previous learning includes life experiences and knowledge that may include work-related activities, family responsibility, and previous education (Lieb, 1991). Learning is successful when some basic knowledge is acquired before new knowledge is assimilated. It is desirable that employees' basic prior knowledge is known before planning and developing learning material that builds on pre-existing knowledge (Booyens, 1993:370; Nesbit, Leach & Foley, 2004:92).
- Employee training is most valuable if employees are motivated to learn, if they express an interest in a subject, and if they are told beforehand what benefits they could expect from participating in the learning opportunity (Booyens, 1993:371). Intrinsic motivation produces more comprehensive performance

outcomes. When needs are satisfied by the learning itself, what is learnt becomes an integral part of the learner. Extrinsic motivation may produce learning but the learning is not as effective as when it is intrinsically motivated (Darkenwald & Merriam, 1982:110; Mellish, Brink & Patton, 1998:68).

- Positive reinforcement of learning is more effective than negative reinforcement. As many adults are insecure and fearful because of negative past learning experiences, feelings of success in adult learning are essential for continued learning (Darkenwald & Merriam, 1982:110). When adults display application of newly learnt knowledge, skills, or attitudes and positive feedback is given, the new behaviour will be reinforced (Booyens, 1993:371).
- Adults learn best by actively taking part in their instruction. Collaborative modes of teaching and learning will enhance the self-concepts of those involved and result in more meaningful and effective learning (Darkenwald & Merriam, 1982:110; Brundage & Mackeracher, as cited in Dewar, 1999; Nesbit *et al.*, 2004:86). Projects, exercises, problem-solving sessions, group discussions, and formal discussions are methods that can be recommended for adult learning. Better learning will take place if a learner actively performs a particular task according to set guidelines, rather than watching the instructor demonstrate the correct way of performing the task (Booyens, 1993:371). Learners should therefore be encouraged to share with the educator in planning their learning experience (Mellish *et al.*, 1998:67; Quinn, 2000:105).
- To maximise learning, information must be presented in an organised fashion. The starting point for organising material for adults is to relate it to the adult's past experiences and knowledge. In this way adults are helped to identify their present level of competence and the level of competence to be achieved. This links to adults being goal orientated. Adults appreciate an educational programme that is organised, with clearly defined elements (Darkenwald & Merriam, 1982:110; Lieb, 1991; Mellish *et al.*, 1998:67; Quinn, 2000:105).

- Meaningful material and tasks are more easily learned and remembered longer than non-meaningful material (Darkenwald & Merriam, 1982:110; Lieb, 1991; Mellish, *et al.*, 1998:67). Adult learners are usually not interested in knowledge which they feel will be of little practical value to them. They want to acquire useful knowledge to integrate into their practical everyday work (Gilles, cited in Booyens, 1993:371; Nesbit *et al.*, 2004:88). Ideally this newly acquired knowledge should immediately be applied in the workplace (Darkenwald & Merriam, 1982:86; Mellish *et al.*, 1998:68).
- Adults are more sensitive to their physical surroundings and environmental factors that affect learning (Booyens, 1993:372; Mellish *et al.*, 1998:67). Stimuli such as noise, seating, and temperature can interfere with the learning process (Darkenwald & Merriam, 1982:110; Quinn, 2000:1055).
- Learning with regard to skill development is enhanced by repetition (Darkenwald & Merriam, 1982:110). When the task to be learned or mastered by the employee is not likely to be practised immediately in the work situation, and when performance of a task must be maintained during periods of stress, repetitive learning should be practised (Booyens, 1993:373).
- Learning should ideally be paced at the individual's rate, taking individual differences into account (Booyens, 1993:372).

The ARV therapy training course not only had to adhere to adult learning principles, but also needed to be accredited to fit into the legal nursing education framework, in order to be accepted by adult learners.

2.6 LEGAL FRAMEWORK APPLICABLE TO COURSE

2.6.1 South African Nursing Council

The nursing profession is regulated by standards, protocols, and a regulatory framework that are aimed at ensuring accountability and quality in practice. The South African Nursing Council (SANC) is the statutory body that regulates the duties and responsibilities of nurse practitioners. The SANC recommends revision of nursing

curriculum and amendments to the scope of nursing practice in accordance with WHO guidelines, thereby extending the role of nurses, especially with respect to the comprehensive care and management of HIV/AIDS.

2.6.2 Scope of practice

Applications and integrated care pathways need to be developed that clearly state which patients may be managed by nurses and which should be seen by a doctor. According to Miles *et al.* (2007:557), the limitations of nursing practice should be clearly defined and referral pathways between a nurse and a doctor streamlined. For example, nurses could see asymptomatic patients and doctors could see those with stable or increasing CD4 cell counts. Patients with suppressed viral load could be followed up by nurses, and those presenting with adverse effects or treatment failure by doctors. These practice guidelines could be determined nationally, in accordance with local staff capacity, capabilities and infrastructure. Miles *et al.* (2007:558) further expected that the increased integration of ARV therapy services into the primary level of health care would have many implications for policy, particularly with respect to PHC nurses prescribing and initiating ARV therapy.

2.6.3 South African Qualifications Authority Act, 1995

The aim of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995), was to provide for the development and implementation of the National Qualifications Framework (NQF), the establishment of the South African Qualifications Authority (SAQA), and for matters connected therewith (Assessing Workplace Learning, LGWSETA, 2002: 7).

SAQA identified a list of critical outcomes considered essential to develop skills for all South African learning areas. These outcomes were defined as the ideal product of education and training.

In health education, 'outcome' refers to a new skill, knowledge or stimulus that will improve the quality of patient care. Setting outcomes can be very useful for developing a framework of various results expected from various educational activities. Outcomes may be related to the educational process, to the product of education (learning outcome), or the professional role of the learner (performance outcome) (LGWSETA, 2002:4). SAQA includes in the description of what an outcome is the acquisition of

values and attitudes integrated into the learner's performance (LGWSETA, 2002:4). Essential embedded knowledge is therefore included in all courses registered with this body. Embedded knowledge refers to the body of theory essential for understanding and applying the standard to be studied (LGWSETA, 2002:32).

Outcomes inform all relevant parties of what should be achieved by the end of a module and assist in measuring progress and understanding in relation to what is required for each module (LGWSETA, 2002:5). Categories of competence are assessed using the appropriate methods of assessment (LGWSETA, 2002:28). The National Standards Body recommends outcomes, and SAQA registers them.

2.6.4 National Qualification Framework

The NQF provides the means for registering all types of learning achievements within one of eight levels. The aim is that the NQF will embody all registered unit standards, credits, and qualifications in such a manner that the interrelationships will enhance and facilitate career pathing, portability, articulation, and flexibility between economic sectors (Assessing Workplace Learning, LGWSETA, 2002: 7). The ARV course is at Level 5.

2.6.5 Qualifications

In terms of the South African Qualifications Authority Act, 1995, a qualification is a formal recognition of the achievement of a range of credits embodied in a coherent number of unit standards supported by evidence of achievement of outcomes and range of credits and other requirements as may be determined at a specific level of the NQF. There is a need to define which nurses could take on extended roles in delivering ARV therapy, as well as clear criteria as to what the minimal educational and experiential prerequisites should be. For example, to prescribe ARV drugs, nurses should be registered nurses with accredited ARV training, who received clinical mentorship from an experienced HIV practitioner until they were deemed competent. Registered nurses are responsible for the provision of care to HIV/AIDS clients. After having undergone training, nurses have to be assessed to determine whether or not they were competent and gained the necessary knowledge and skills.

2.7 ASSESSMENT

Assessment is a process of passing judgment on individual competence in a given situation. This is a structured process, whereby different types of evidence are collected, using a variety of assessment methods. An individual's performance is judged according to national standards. This strategy enables the assessor to measure knowledge, skills and attitudes. The measurement of data gained from assessment helps one to evaluate actions (Kellagan & Greany, 2001:19; LGWSETA, 2002:7; South Africa, Ministerial Committee for work on NQF, 1996:16). Fallows and Steven (2000:39) added that assessment involves observation, analysis, and judgment of each student's performance on the basis of explicit criteria with feedback to the student. In the South African context, it specifically refers to the process of gathering and weighing evidence in order to determine whether learning occurred (Van Rooyen & Prinsloo, 2003:113). Assessment can be undertaken on a summative basis.

Summative assessment represents the aggregate or the final result of student learning (Ewan & White, 1989:188). It also refers to the gathering of information at the conclusion of a programme or finite part of the programme in order to improve learning or to meet accountability demands (Tritelli, 2002; Van Rooyen & Prinsloo, 2003:115).

Various assessment methods are used for assessing knowledge acquisition, attitude change, and skills improvement (Stassen, Doherty & Poe, 2001:34). This study made use of a specific model that acted as framework for all assessments conducted in the study. The ARV therapy training course was evaluated using the Kirkpatrick Model for the evaluation of training programmes.

2.7.1 The Kirkpatrick Model for evaluating training

Assessment has been defined above as the process of passing judgment on an individual's competence. Evaluation is seen as making a judgment about quality, in other words, as relating how good the behaviour or performance is. Evaluation involves the interpretation of what has been gathered through measurement, and measurement is judgment of performance (McMillan, 1997:10; Mehrens & Lehmann, 1991:4). Kirkpatrick, however, uses the terms 'evaluation' and 'assessment' interchangeably

(Kirkpatrick, 1998:283). For the purpose of this study, when referring to a learner's competence, the term assessment will be used.

Assessment takes place at different levels. This study made use of the Kirkpatrick Model for the evaluation of training programmes. The training community has used this model since the late 1950's. Kirkpatrick's model includes the following four levels of outcome evaluation, but for this study only the first two levels were used. (Businessballs.com, [n.d.]; Kirkpatrick, [n.d.]; Kirkpatrick, 1998:20; Winfrey, 1999: Online).

- Level 1 refers to participants' reactions during and at the end of the course.
- Level 2 refers to participants' learning during and at the end of the course.
- Level 3 refers to participants' changed behaviour after training.
- Level 4 refers to organisational results, or improved results for the organisation after participants have been trained.

As Level 1 and Level 2 were applied to this study, they are described in more detail below.

- **Level 1**

The goal of evaluation at this level is to measure participants' reactions to the training programme. This type of evaluation is often called the 'smile sheet'. Participants' reactions should be measured immediately after completion of the programme. Level 1 evaluation relies on the measurement of attitudes, usually by using a questionnaire that should be comprised of closed-ended questions. The anonymous completion of questionnaires would most likely lead to more honest responses. The advantage of a Level 1 evaluation is that the trainer will know how participants felt about the training event. Areas participants felt were missing could be identified and rectified to improve future training (Businessballs.com, [n.d.]; Kirkpatrick, [n.d.]; Kirkpatrick, 1998:20; Winfrey, 1999: Online).

- **Level 2**

Level 2 evaluation moves beyond learner satisfaction, and attempts to assess to what extent participants have advanced in skill and knowledge attainment or attitude change. Level 2 evaluation is done after the training event. Knowledge is measured using available questionnaires that were given to participants after completion of the training event.

A performance test is used to assess skills gained during training. The goal of a performance test is to determine whether participants could perform the skills they were taught during the training event. Attitudes (reactions) are measured using questionnaires similar to those used for the Level 1 evaluation (Businessballs.com, [n.d.]; Kirkpatrick, [n.d.]; Kirkpatrick, 1998:20; Winfrey, 1999:Online). The advantages of a Level 2 evaluation are that demonstrated participant learning assists trainers in promoting their training programmes, and provides information for the improvement of future training programmes (Kirkpatrick, [n.d.]).

In Kirkpatrick's four-level model, each successive evaluation is built on information obtained at the lower level (Winfrey, 1999: Online). In this study, information obtained through the Level 1 evaluation was expected to supplement information obtained at Level 2. The assessment of reaction, knowledge, skill, and attitude is set out in more detail below.

2.7.2 Assessing reaction, knowledge, skill, and attitude

- **Assessing reaction**

Many training departments use questionnaires to collect reactions to training. In this study, participating registered nurses' recorded their responses to the quality and relevance of the training course content, the method of training, the quality of training aids, and the effectiveness of the trainer. A general feedback form, the so-called reactionnaire, taken from the Kirkpatrick Model was modified according to this study's objectives by the researcher and experts from the North-West University.

Registered nurses who completed the ARV therapy training course would complete the reactionnaire to report on how they experienced specific aspects of the course. Reactionnaires often address matters outside the scope of learning. Items addressed by

reactionnaires include domestic arrangements, style and pace of delivery, and training administration (Lanigan, 2002; Rae, 2004). These aspects as well as the nurses' perceptions of the content presented would be covered by the reactionnaire used for this study. The applicable reactionnaire would measure participants' reactions using the Likert scale.

The Likert scale is a technique for measuring reactions to a set of statements. Persons are asked to indicate the measure or degree to which they agree or disagree with the statement or questionnaire item (Trochim, 2002; Underwood, 2003; Usability by design, 2004). By using a well-constructed and effective reactionnaire, useful data can be obtained to help plan future training (Rae, 2004).

- **Assessing knowledge**

According to Schultz and Luckman (1973:79), a health care provider's stock of knowledge consists of a small kernel of distinct and consistent knowledge surrounded by zones of various gradations of vagueness, obscurity, and ambiguity. The emergence of a new subject such as ARV therapy demands acquisition of new knowledge if a health care provider were to maintain the standard of treatment. The level of knowledge about HIV/AIDS among health care providers has been reported to be high by many researchers, but studies varied to such a degree that comparison was difficult (Horsman & Sheeran, 1995:1535).

Knowledge acquisition may be related to registered nurses' willingness to provide ARV therapy. A positive correlation between nurses' knowledge of HIV/AIDS and their attitude toward people living with HIV/AIDS has been reported (Turner, Gauthier, Ellison, & Greiner, 1988:274). A similar positive correlation was observed with respect to physicians treating HIV positive substance abusers (Ding, London, Wilson, Wong, Shapiro & Cleary, 2005:618).

Demographic characteristics were reported to be associated with knowledge. Studies were consistent about a positive association between knowledge of HIV/AIDS and education level (Dow & Knox, 1991:75; Henry, Campbell & Willenbring, 1990:36-37). Knowledge was associated with younger age (Gemson, Colombotos, Elinson, Hynes & Stoneburner, 1991:1102; Heath, Hogg, Singer, Schechter, O'Shaughnessy & Montaner, 1997:381, Krasnik, Fouchard, Bayer & Keiding, 1990:103; Quach, Mayer, McGarvey, Lurie & Do, 2005:335), while a reverse association was reported by Klime, Catalan, Bond and Day (1989:49-51). Formal education and in-service training in HIV/AIDS were

also consistently reported to be associated with greater knowledge (Bond, Rhodes, Phillips & Tieney, 1990:49-51; Klime *et al.*, 1989:313-317; Rae, Brown & Calder, 1992:69, Tieney, Bond, Rhodes & Philips, 1990:49).

Knowledge is seen as the acquisition or awareness of facts, data, information, ideas or principles to which one has access by formal or individual study, research, observation, experience or intuition (IIME, 2004). Knowledge can be assessed using a number of methods; examples being short answer questions, essay questions or oral examinations (Ewan & White, 1989:201). At entering course, school performance was directly measured against acceptable standards. In an effort to eliminate subjectivity, one was exposed to objective testing. These posttests included true-false questions (Nugent & Vitale, 1993:27). In this study, the knowledge of registered nurses would be assessed using questionnaires containing true-false questions based on the subject content registered nurses were taught. The questionnaires would be presented to participants at the end of their ARV therapy training.

- **Assessing skills**

The provision of ARV therapy to clients in need of such therapy requires not only knowledge but also specific skills, and the training of registered nurses in ARV therapy included the acquisition of such skills as a learning outcome. In addition to applying skills, registered nurses make subjective judgments about patients' attitudes and beliefs to determine treatment options.

A skill has been gained if a person is able to perform a task well. Skills are learnt through training or through experience. A systematic and coordinated pattern of mental and or physical activity is followed in order to gain a skill (IIME, 2004).

Since different types of skill exist, it is difficult to find a universally accepted definition of what skill involves. However, there seems to be a general acceptance that learners need to develop the following skills: communication skills, information skills, people skills (such as teamwork) and personal skills (such as time management) (Fallows & Steven, 2000:227). It can be argued that skills assessment is an unavoidable feature of all assessment within education since learners must use some or all of the above skills to produce the work that is assessed (Fallows & Steven, 2000:229).

- **Assessing attitude**

Attitudes are descriptions of how people feel or typically behave, rather than descriptions of what they know or can do. Attitudes reflect tendencies to respond explicitly to social objects (Mehrens & Lehmann, 1991:201).

Attitudes can be stumbling blocks to or reflections of the way people see the world. Attitude is a reflection which is organised and simplified, and which protects the self-esteem from unpleasant truths. It enables reactions which maximise rewards from the environment while allowing expression of fundamental values (Triandis, 1997)

Health care providers are not exempt from the societal attitudes and prejudices toward people living with HIV/AIDS. Attitudes together with knowledge and beliefs provide motivation for behaviour performance. Health care providers with more positive attitudes toward HIV/AIDS patients have been reported to be more comfortable with providing care (Quach, *et al.*, 2005:335-346). However, many health care providers caring for HIV positive patients have reported their fear of getting infected with HIV while treating patients (Gumodoka, Favot, Berege & Dolmans, 1997:133-140; Marchal, *et al.*, 2005:300-304). They may portray this fear as behavioural, emotional or cognitive issues in a patient-carer relationship, either explicitly or implicitly, and, according to Aiken and Sloane (1997:453-477), such attitudes are therefore difficult to target in an intervention. Triandis (1997) defines attitude as having three components, namely a cognitive, affective, and behavioural component. These are measured by verbal statements of affect, belief, and behaviour. Most of the available instruments measuring attitudes toward HIV/AIDS assess these three components. To assess registered nurses' attitudes toward HIV positive patients, a measuring instrument using the Likert scale would be used.

2.8 SUMMARY

In this chapter, literature relating to the evaluation of the ARV training course was explored and analysed in order to determine what was known about the specific ARV training programme. The researcher also conducted the literature study to orientate herself with respect to evaluation models and the different levels of assessment. By exploring studies and research about the above topics, the present study could be located within the existing body of knowledge. The literature study also assisted the researcher in linking theory with practice.

This chapter was organised as follows:

- A brief review of the theoretical foundation of HIV/AIDS.
- A critical analysis of previous and relevant research that might place the present study in an appropriate context.
- A discussion of the ARV training for registered nurses offered by the Free State DOH.
- Aspects that should be taken into account with respect to the evaluation of the ARV training course as an intervention strategy.

In Chapter 3, the research design and methodology applied to this study will be discussed.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Chapter 2 discussed literature relating to the evaluation of an ARV therapy training course for registered nurses in the Free State. This chapter will clarify the plan and structure of this research by discussing the methodology of this study. The study methodology refers to the research design, research techniques, population and sampling, data gathering, the data analysis, validity and reliability of the research, and the ethical considerations taken into account while conducting the study. The research design is discussed by exploring quantitative research and the descriptive, retrospective survey methods used in the study.

The aim of this study was to evaluate the effectiveness of the ARV training for registered nurses in the Thabo Mofutsanyana District in the province of the Free State. The Thabo Mofutsanyana District is comprised of five regions, namely Dihlabeng, Maluti-a-Phofung, Nketoana, Setsoto, and Phumelela. The following study objectives were set to achieve this aim:

- To determine and describe the reaction of registered nurses toward the ARV therapy training;
- To determine and describe the knowledge, skills, and attitudes that registered nurses displayed after completion of the ARV training programme; and
- To make recommendations to the Free State DOH on how to improve future training programmes.

To meet these objectives, research was done at two levels. At Level 1 the participants' reactions toward ARV therapy training were assessed, and at Level 2 the learning acquired by participants was assessed after training. The research design and methodology, including the research instruments, will be discussed as they apply to

each level. Data gathering and data analysis, validity and reliability, and the ethical considerations taken into account will also be explained.

3.2 RESEARCH DESIGN

The research design of a study refers to the defined structures within which the study is implemented. The study design leads the researcher in implementing the research (Burns & Grove, 2005:223). Babbie and Mouton (2003:647) describe the research design as the plan or structured framework of how the researcher intends to conduct the research process in order to solve research problems.

A quantitative research design was followed with respect to both research levels. Quantitative research can be defined as a formal, objective, systematic process to describe and test relationships, and to examine cause and effect interactions among variables (Burns & Grove, 2005:808). Quantitative research is classified into four categories: descriptive, correlational, quasi-experimental and experimental (Burns & Grove, 2005:30).

A descriptive, retrospective research design was used, as the study described the group that occurred naturally in the setting (Burns & Grove, 2005:249) and also measured the variables that occurred in the past. The study evaluated the effectiveness of ARV therapy training programme that registered nurses received in the period 2004 to 2009.

3.2.1 Quantitative research

Quantitative research is conducted to describe and examine relationships and to determine causality among variables (Burns & Grove, 2005:28). Quantitative studies collect data in the form of numbers (Neuman, 1994:28). Babbie and Mouton (2003:646) expanded on Neuman's definition when they stated that quantitative analysis can be seen as the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect. Quantitative research makes use of structured interviews, questionnaires, observations, scales or physiological instruments that generate numerical data. Statistical analyses are conducted to organise data, determine significant relationships, and identify differences among groups (Burns & Grove, 2005:28).

The manner in which data collection in quantitative research is conducted originated from positivism (Babbie & Mouton, 2003:49). Positivists theorised that social sciences should follow the lead of natural sciences and model their own practices on those of successful natural sciences. This led to research emphasising the search for universal laws of human behaviour, quantification of measurement, and the purposeful effort to ensure the objectivity of the researcher toward research subjects (Babbie & Mouton, 2003:645).

Quantitative researchers try to stay as objective as possible when conducting research by not letting their own values influence the study and study outcomes (Burns & Grove, 2005:28). The researcher is expected to follow a logical reasoning pattern. Specific steps are developed with attention to detail, aiming at excluding any non-essential information to ensure that the research findings are an accurate reflection of reality. A clear research purpose and a systematic study design are essential and should be adhered to in this type of research (Burns & Grove, 2005:39). Researcher objectivity and logical reasoning will enhance the validity and reliability of the research at both levels. In this study, a quantitative, descriptive research design was followed to ensure study outcomes that would provide clear answers to the following research questions:

- How did registered nurses react to the ARV therapy training?
- To what extent did registered nurses change their attitudes and improve their knowledge and skills as a result of the ARV therapy training?

Quantitative research instruments, a reactionnaire and questionnaires, containing questions or statements in the form of the Likert scale were constructed to gather data on demographics, knowledge, skills, and attitude.

3.2.2 Descriptive research

A descriptive study is aimed at collecting accurate data about the phenomenon that is studied. The researcher describes accurately and carefully “that which is” (Uys & Basson, 2000:38). The key aim in descriptive research is to describe. This description can be done through narrative type descriptions, classification or through measurement of relationships (Terre Blanche & Durrheim, 2002:39). Description can also be presented through a highly structured statistical analysis, characterised by a systematic

classification of variables by means of frequency tables, arithmetic means, medians or cross tabulations (Babbie & Mouton, 2003:272; Mouton & Marais, 1991:44). The data gathered for this study was retrospective in nature, as data was collected from participants after completion of ARV therapy training programme. Descriptive research should be applied correctly in order to make the most of the strengths of this type of research.

Descriptive research determines the answers to the 'who', 'what', 'when', 'where' and 'how' questions asked by the researcher. It provides important information and is sometimes all that is needed to solve problems. The researcher has to note that no explanation as to the cause of such findings can be given through descriptive research. The expectation was that the findings of this descriptive research study would provide answers to the research questions about the effectiveness of the ARV training course for registered nurses in the Thabo Mofutsanyana District in the Free State.

3.2.3 Retrospective research

Under normal circumstances, an evaluation study must include both a pre-test and a post-test. However, Kirkpatrick's model indicates that evaluation may also be done retrospectively. Retrospective research means *post facto* (Burns and Grove 2005:258). In this study the effectiveness of ARV therapy training was only researched after participants completed the course, in other words, only after training was given. The post-test-only design was thus followed. Burns and Grove (2005:259) explained this design as follows: a post-test-only design is followed when a dependent variable cannot be measured before treatment is administered. No pre-test measurement was administered in this study (Brink, 2003:103).

This study made use of a post-test-only design with non-equivalent groups. Non-equivalent groups refer to groups not selected randomly but rather selected on a convenience basis (Burns & Grove, 2005:260). Registered nurses in the Thabo Mofutsanyana District who completed the ARV therapy training course were selected for participation in the study. Furthermore, only registered nurses within the specific district treating HIV/AIDS clients at ARV clinics and hospitals had the option of attending the course and participating in the study.

All the prospective participants rendered ARV therapy services at specific clinics and hospitals within the district. All the participants were actively involved in managing HIV/AIDS patients and all were exposed to ARV therapy services for a period of at least six months prior to the study. The researcher was unaware of any factors that would have had a confounding influence on the study.

Descriptive, retrospective research was conducted applying the first two levels of the Kirkpatrick Model for the evaluation of training. The research instruments, research techniques, population and sampling, data collection, data analysis, validity and reliability, and ethical considerations are described below in more detail.

3.3 RESEARCH INSTRUMENTS

Different research instruments were used for the gathering of data about the reactions, knowledge, skills, and attitudes of registered nurses who completed an ARV training course in the Free State. The overall aim of the study was to determine the effectiveness of the training programme in enhancing learners' knowledge and skills, and in changing their attitudes toward HIV/AIDS patients. Different research instruments were applied to each level of research.

3.3.1 Level 1: Measuring participants' reaction to course

The purpose of Level 1 assessment, according to Kirkpatrick's training evaluation model, is to determine the reaction of the learner to the training received (Lanigan, 2002; Rae, 2004). The Level 1 objective of this study was to describe the reaction of registered nurses to ARV therapy training received. The reaction of registered nurses who underwent training was measured using a reactionnaire or general feedback form. A reactionnaire usually addresses domestic arrangements, the style and pace of training, training administration, and perceptions of content covered (Lanigan, 2002; Rae, 2004).

3.3.2 Level 2: Measuring participants' knowledge, skills, and attitudes

According to Kirkpatrick's training evaluation model, Level 2 evaluation determines whether or not learning took place during the training event. Learning objectives can

include knowledge, skills and/or attitudes (Kirkpatrick, [n.d.]). This study was aimed at evaluating the acquisition of knowledge and skills, and possible attitude changes after study participants completed a two-week training programme in ARV therapy. These nurses were involved in ARV therapy administration and the comprehensive management and care of HIV/AIDS patients, and this study was aimed at evaluating the effectiveness of the course in enhancing their knowledge and improving their skills. The objectives of Level 2 evaluation were as follows:

- To describe the knowledge gained by registered nurses who underwent ARV therapy training.
- To describe the skills acquired by registered nurses who underwent ARV therapy training programme and to describe the attitudes of registered nurses who completed ARV therapy training programme.

The post-test questionnaire research technique was used for assessing knowledge gained during training. Data was collected using questionnaires that measured knowledge, skill, and attitude.

3.4 RESEARCH TECHNIQUES

The reactionnaire and questionnaires consisted of questions or statements compiled according to the Likert scale measuring technique. Questions in the Likert scale format were compiled by the researcher and a statistician from the North-West University. Questions were based on the ARV therapy module and post-test questions used by the DOH in the Free State after training registered nurses in ARV therapy.

A Likert scale is a technique that is used to determine the opinion or attitude of a participant. It contains a number of declarative sentences with a scale after each sentence or statement (Burns & Grove, 2005:802). Some research designs prefer an even number of possible responses, so that there is no midpoint in the scale. In this study a four-point scale was used, forcing the respondent to make a choice between strongly disagree, disagree, agree or strongly agree (Hitchcock & Porter, [n.d.]). Declarative statements were replaced by keywords forcing learners to rate certain aspects of the ARV module. Aspects highlighted were its content, relevance, mode of presentation, and skill development exercises used. Making use of a Likert scale poses specific advantages and disadvantages the researcher should be aware of.

The advantage of this method is that the scale can be used again and again after a useful set of statements has been set up. It is easy to use, and fairly easy to aggregate the results. It also gives an idea of people's reactions to chosen issues. Information can be collected from a large group, and participants tend to be more comfortable with the choices they make. However, it takes time to set up and test the scale, and the accuracy of the technique depends on the honesty of the person filling in the scale (Development Education Project, 2004; Hitchcock & Porter, [n.d.]).

The researcher included questions that were used by the Free State DOH as part of training. Questionnaires were filled in anonymously, making it easier for respondents to be honest when responding to a statement. The questionnaire included an open-ended question, making it possible for learners to make suggestions about future training. Making comments or suggestions can be seen as a response to an open-ended question since it allowed participants to answer in their own words.

The advantage of using open-ended questions is that the researcher does not have to structure responses and will therefore not overlook some important responses (Babbie, 2004:245; Polit *et al.*, 2001:466). Open-ended questions can also be used by the researcher to explore variables in order to obtain some idea of the range of possible responses (De Vos, 2002:179). Disadvantages of using open-ended questions are that the answers have to be coded before they can be processed by computer analysis. Some respondents may give answers that are essentially irrelevant to the researcher's intent (Babbie, 2004:245). Many open-ended questions lengthen the time of completion and respondents may be tempted to ignore these questions, which decreases the real value of the data obtained from the questionnaire (De Vos, 2002:179).

3.5 POPULATION AND SAMPLING

A population is the entire aggregation of cases (individuals, objects, events or substances) in which a researcher is interested. The researcher's interest is stimulated by common characteristics shared by the specific population (Brink, 2003:213; Burns & Grove, 2005:806; Polit & Beck, 2004:289). A population meeting the sample criterion is also known as the target population (Burns & Grove, 2005:806). In research, sampling and population identification go hand in hand. Subjects included in a sample are those from the population that meet the sample criteria.

A sample by definition is part of a whole, selected by the researcher to participate in a research project. A portion of the population is chosen to represent the entire population (Brink, 2003:133; Burns & Grove, 2005:810; Polit & Beck, 2004:291). In this study, the population was determined by the Level 1 objective, namely to determine the reactions of registered nurses that underwent ARV therapy training programme in a specific district in the province of the Free State.

The study population thus consisted of registered nurses in the Thabo Mofutsanyana District in the Free State who completed a two-week ARV therapy training programme in the period 2004 to 2009, and who worked at ARV clinics and hospitals in the district. While 340 registered nurses completed the ARV training course in this specific period, only 60 were working at ARV clinics and hospitals that constituted the setting of the study. All registered nurses who worked at these clinics and hospitals and who underwent the ARV training course were given the opportunity to complete the reactionnaire and questionnaires. Completed reactionnaires were collected and analysed. Completion of the reactionnaire and questionnaires was voluntary, and the names of participating registered nurses were not made known.

The sample for the study was drawn from the records of the HIV/AIDS/STI district coordinator and specifically from lists of personnel who underwent skills development. The non-probability sampling technique was adopted to select a sample population from registered nurses who completed the ARV therapy training programme. Convenience sampling was conducted, as the sample consisted of registered nurses who were on duty at the time of data collection and who agreed to participate in the research.

3.5.1 Inclusion criteria

The inclusion criteria are listed below:

- Registered nurses;
- Trained in ARV therapy from 2004 to 2009;
- Working at ARV treatment sites (clinics and hospitals);
- Based in the Thabo Mofutsanyana District in the province of the Free State; and
- On duty on the day of data collection.

3.5.2 Exclusion criteria

The following registered nurses were excluded as study participants:

- Registered nurses not working at ARV treatment sites;
- Registered nurses not trained in ARV therapy; and
- Registered nurses from other districts in the Free State.

The study was approved by the North-West University's Ethics Committee. The Free State DOH, participating clinics and hospitals, and all study participants were informed of the study's purpose, scope, benefits and risks, and all gave their consent. Convenience sampling based on the following inclusion criteria was applied: registered nurses trained in ARV therapy, working at ARV treatment sites, and rendering services to HIV/AIDS patients on a daily basis. Those willing to participate, and available, were requested to complete a demographic data sheet, a reactionnaire and questionnaire.

3.6 DATA GATHERING

The post-test questionnaire that is normally used at the end of the ARV training course to assess learning was used in this study for the collection of data in order to determine the effectiveness of the ARV therapy programme. Data was collected retrospectively. Registered nurses who were working at ARV treatments sites and who completed the ARV training course participated in the study by completing a post-test questionnaire that was similar to the one used by course instructors.

A reactionnaire or general feedback form was used to assess study participants' reactions to the content and process of training. This instrument also provided for an open-ended question that invited participants to make recommendations or suggestions for improving future training sessions. The reactionnaire was based on Level 1 of the Kirkpatrick training evaluation model, and tested. Registered nurses who participated in the study had completed the ARV therapy training programme, and their names appeared in the personnel skill development records of the district's HIV/AIDS/STI coordinator. They also received certificates for attending the training programme. The reactionnaire and questionnaire were completed by each study participant individually, and the completed reactionnaires and questionnaires were collected by the researcher.

Data was collected in only Thabo Mofutsanyana District in the province of the Free State. Five municipalities within the Thabo Mofutsanyana District were used to collect data.

3.7 DATA ANALYSIS

The reactionnaire and the questionnaire were piloted to ensure comprehension and clarity. Any ambiguity was eliminated due to the pilot study.

A North-West University statistician assisted with the analysis of data, using the Statistical Program for Social Scientists, SSPS 10. The researcher and a biostatistician from the North-West University Department of Biostatistics analysed the data obtained from the reactionnaire and questionnaire. As a Likert scale was used, each evaluation item was rated, and the results received were added up to arrive at totals. Participants were also given the opportunity to make suggestions for improving future training sessions. Answering open-ended questions does not restrict the respondent's answer to pre-established alternatives (Brink, 2003:212; Polit & Beck, 2004:726). The researcher followed the audit trail proposed by Polit, *et al.* (2001:412) in order to ensure that an independent auditor would come to the same conclusions about the data. All comments received were considered. The raw data was categorised. The frequency of a specific idea was determined; the comments written were thus totalised. Comments and categories receiving a high total reflected high importance to learners.

3.8 RESEARCH VALIDITY

Validity implies the research instrument is actually measuring what it is supposed to measure (Burns, 2000:127; Marneweck & Rouhani, 2000:292; Trochim, 2002).

The reactionnaire used during the Level 1 evaluation had *face validity*, as the instrument seemed to be assessing the reactions of registered nurses to the ARV module. Face validity is however highly subjective and statistically not very strong (Uys & Basson, 2000:81). The fact that registered nurses did not resist completion of the reactionnaire and questionnaire was another indication of face validity. Learners accepted that the

instrument was measuring their reactions to the ARV therapy training programme (Burns, 2000:356; De Vos, 2002:167).

Content validity focuses on a higher degree of balance and representativeness than face validity and is established by determining the extent to which a measure reflects a specific content (Terre Blanche & Durrheim, 1999:85; Uys & Basson, 2000:81). Content validation is a judgmental process that can be undertaken by the researcher alone or with the assistance of others (De Vos, 2002:167). Content validity was achieved by ensuring that the reactionnaire and questionnaire covered all units of the ARV module and used similar headings to guide learners in reflecting their reaction to the course. An expert from the North-West University was consulted on question formulation.

Data obtained by means of a reactionnaire and questionnaire about a specific training event could be transferred to other ARV training courses in another context. The transferability of the data implied that the reactionnaire and questionnaire used for the study had *external validity* (Terre Blanche & Durrheim, 1999:63).

An adequate sample ensures that *generalizability of results* was also enhanced, strengthening external validity (Polit *et al.*, 2001:195). The validity of data obtained about the most and the least useful learning experiences was ensured by following the steps Tesch, Simpson and Kirby (1990:145) suggested for data reduction.

3.9 RESEARCH RELIABILITY

Reliability refers to the consistency with which the same results can be repeated using the same measuring instrument (Burns, 2000:127; Trochim, 2002; Uys & Basson, 2000:75).

Test reliability is influenced by the comprehensiveness of a test. The more comprehensive the test, the better the person's knowledge can be assessed (Uys & Basson, 2000:75). The reactionnaire used for the Level 1 assessment did not assess knowledge, but comprehensively assessed the reaction of learners to the ARV training course, instructors' presentation techniques, and topics covered. The reactionnaire

further covered participants' perceptions about each module and the relevance of module content to their specific jobs (Clark, 1997).

The length of a test also influences test reliability. Increasing the length of a test increases its reliability. The Spearman-Brown formula is often used to determine the number of items needed to get maximum reliability results (Burns & Grove, 2005:346). The researcher made use of an existing reactionnaire but no evidence was found that the reliability of the reactionnaire was tested by means of any formula. However, the face and content validity of the reactionnaire and questionnaire suggested that assessment would not be influenced negatively by their length.

3.10 PILOT TESTING

Cresswell (2008:367) states that after good questions have been developed using the principles of question construction, a researcher tests the questions, which helps to determine whether individuals are capable of understanding the questions correctly and completing the survey. Pilot testing involves making changes to an instrument based on feedback from a small number of individuals who completed and evaluated the instrument. The participants in a pilot test comment on the survey, and the researcher deals with their concerns by modifying the survey (Cresswell, 2008:367).

The questionnaire developed for this study was tested for comprehension and clarity. Ambiguous questions were corrected and the adapted questionnaire was used for data collection. The pilot sample was included in the final sample.

In this research study, a sample of ARV trained registered nurses (n=10) from four ARV treatment sites (three clinics and a hospital in the Thabo Mofutsanyana District) were involved in the pilot test. The pilot study participants (the small group of registered nurses) were requested to respond honestly and note any questions that were confusing. Based on their comments and suggestions the questionnaire was adjusted before it was distributed to the target population.

3.11 ETHICAL CONSIDERATIONS

Ethics is a system of moral values that is concerned with the degree to which the researcher adheres to professional, legal and social obligations with respect to study participants (Polit & Beck, 2004:717). A nurse researcher has the responsibility to conduct nursing research in an ethical manner. Failure to meet this responsibility undermines the whole scientific process and may lead to many unfortunate and problematic consequences (Brink, 2003:38).

Permission was granted by the Free State DOH and the North-West University Ethics Committee to conduct the research study and therefore to make use of data gathered about the effectiveness of the ARV therapy training course. Data was obtained by means of a reactionnaire and questionnaire completed by participating registered nurses. Their participation was subject to informed consent. The researcher therefore obtained the consent of these nurses before commencing with the data gathering process. She also ensured the confidentiality of results and the anonymity of registered nurses who participated in the research.

Researchers have to ensure that their research is not more intrusive than it needs to be and that participants' privacy is maintained throughout the research. Participants have the right to expect that any data they provide shall be kept strictly confidential (Polit & Beck, 2004: 147). In this study, participants were assured that confidentiality would be upheld at all times.

Anonymity is maintained when the researcher cannot link data to specific participants (Polit & Beck, 2004:147; Uys & Basson, 2000:98). The researcher assured the participants that their names would not appear anywhere in the research. Assessing the reaction of learners to training they underwent is extremely important (Level 1 assessment in this study). Learners are aware of what they need to know to accomplish a task. If the training programme fails to satisfy their needs one should be able to determine whether the problem lies with the programme design or delivery. The interest, attention, and motivation of participants are critical to the success of any training programme. People learn better when they react positively to their learning environment (Clark, 1997). Establishing the reaction of registered nurses to the ARV therapy training

was of the utmost importance in evaluating the outcome of the ARV module implementation.

3.12 SUMMARY

The research design and methodology discussed in this chapter were implemented in order to evaluate the effectiveness of the ARV training course for registered nurses presented in the Thabo Mofutsanyana District in the province of the Free State. Data was collected by means of a reactionnaire and questionnaire, and analysed. The results will be illustrated by means of figures and tables in Chapter 4, and inferences be drawn about the effectiveness of the ARV course. Recommendations for future training courses based on this quantitative, descriptive research might be useful to the Free State DOH.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

In this chapter the results of the empirical study are outlined and interpreted. Data was collected to investigate the effectiveness of an ARV therapy training programme for registered nurses in the Thabo Mofutsanyana District in the province of the Free State.

Data analyses reduce, organise, and give meaning to data. The choice of analysis techniques is mainly determined by the research design and level of measurement achieved by the research instrument (Burns & Grove; 2005:44).

This chapter focuses on the analysis and interpretation of data obtained through questionnaires that were distributed to registered nurses at ARV clinics and hospitals in the above district. Data was collected at three hospitals and ten clinics. The hospitals included one regional hospital and two district hospitals. Ten clinics were involved,

Quantitative research was conducted. A convenience sampling technique was applied to select 43 registered nurses who were working at the above ARV sites to participate in the study. These participants were selected conveniently, meaning they were on duty during the day of data collection and willing to be interviewed. Registered nurses who attended meetings or courses on that specific day and those who were absent from work for other reasons were not involved in the study. The researcher delivered the questionnaires personally to nurses at the selected ARV clinics and hospitals in the district. The completed questionnaires were collected from a certain venue on a specific time and date. The results obtained had to be interpreted with caution, as the sample size was relatively small.

The data collected is summarised below.

4.2 DEMOGRAPHIC DATA

Demographic data relates to respondents' biographical information such as age, gender, marital status, dependants, home language, designation, and working experience, as well as their attendance of ARV therapy training courses, other related workshops, seminars, and in-service training. Such information helps the researcher to determine, for example, if results were in any way influenced by respondents' demographic circumstances.

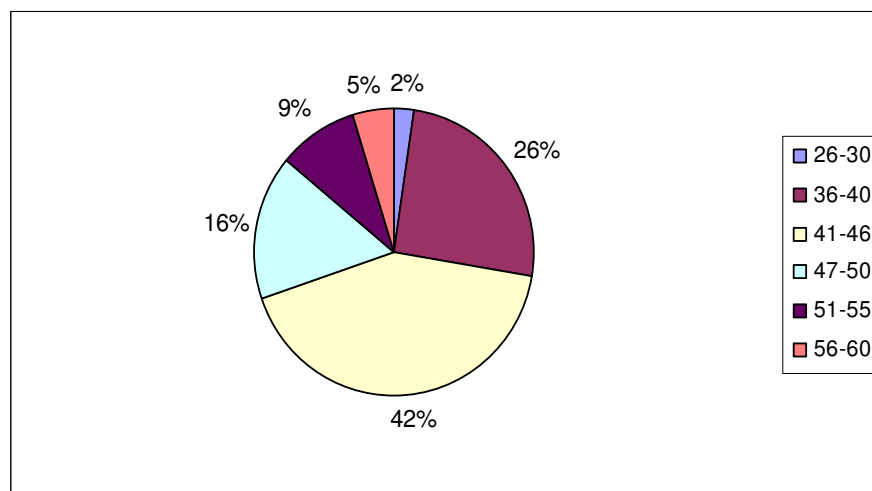


Figure 4.1: Distribution of respondents according to age group

Figure 4.1 indicates that the majority of the respondents (84%) were between the ages 36 and 50 years, while 14% were between 51 and 60 years old. Only 2% of the respondents were younger than 30 years.

These findings suggested that the majority of registered nurses selected for ARV therapy training were older than 36 years. The expectation was that these registered nurses would be empowered with knowledge and skill so as to improve their performance and provision of health care to HIV/AIDS patients at the selected ARV treatment sites.

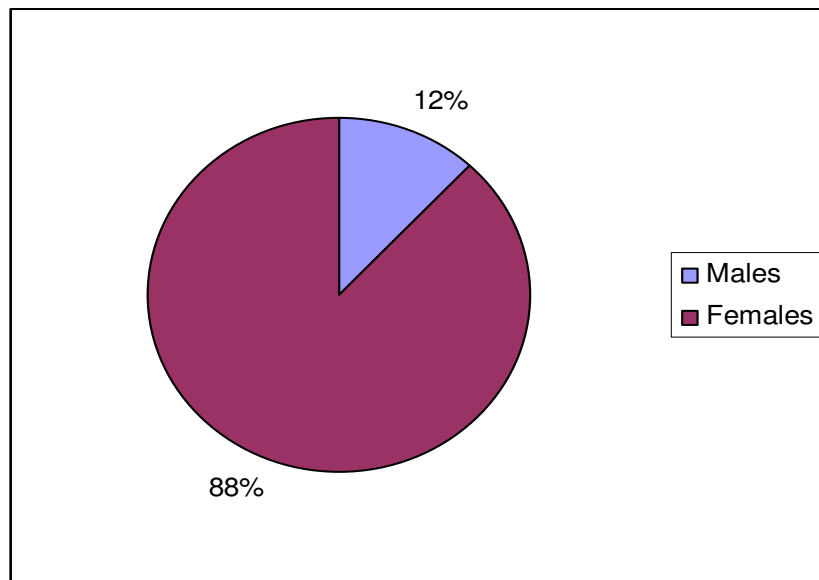


Figure 4.2: Distribution of respondents according to gender

Figure 4.2 indicates that the majority of participating registered nurses (88%) were female nurses. Male nurses (12%) constituted the minority. The assumption is that these percentages reflect the typical distribution of male/female nurses at clinics and hospitals in South Africa. The unequal distribution of male/female respondents confirms the general assumption that the nursing profession is dominated by females and strengthens the perception that mainly female nurses care for the sick.

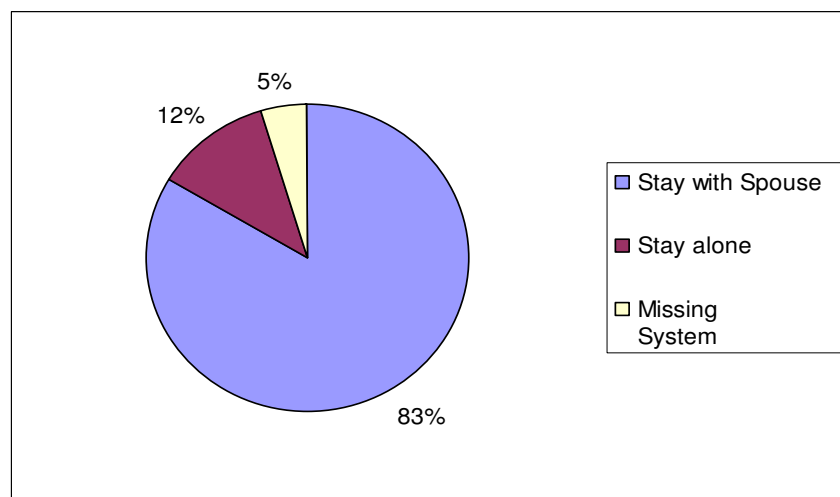


Figure 4.3: Distribution of respondents according to alternative living arrangements

Figure 4.3 indicates that the majority (88%) of registered nurses were living with either their partners, siblings or other adults. Only 12% were living on their own. These

percentages imply that the majority of the respondents were involved in family relationships and probably taking care of family members or loved ones at home.

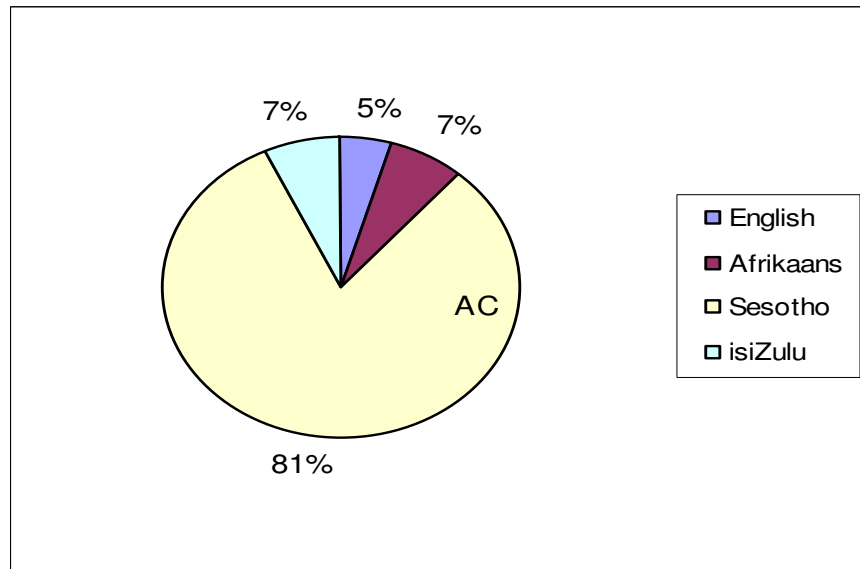


Figure 4.4: Distribution of respondents according to home language

Figure 4.4 indicates that Sesotho (81%) was the mother tongue of the majority of the respondents, while an equal number of respondents (7% each) spoke isiZulu or Afrikaans. English was the mother tongue of only 5% of the respondents. Most of the isiZulu-speaking registered nurses also understood Sesotho, while all participants also spoke English as a second, third or fourth language. These percentages reflect the language preferences of the population in the Thabo Mofutsanyana District in the province of the Free State. The high percentage of Sesotho first language speakers does not mean that some nurses were unable to communicate with patients. The population in certain regions are multicultural. Although they speak mostly isiZulu they also understand Sesotho. Registered nurses who spoke English and Afrikaans were working at clinics and hospitals in towns where these languages were mostly spoken, e.g. Harrismith and Soetwater. Because of the above, language could not be regarded as a barrier to nurse-patient communication.

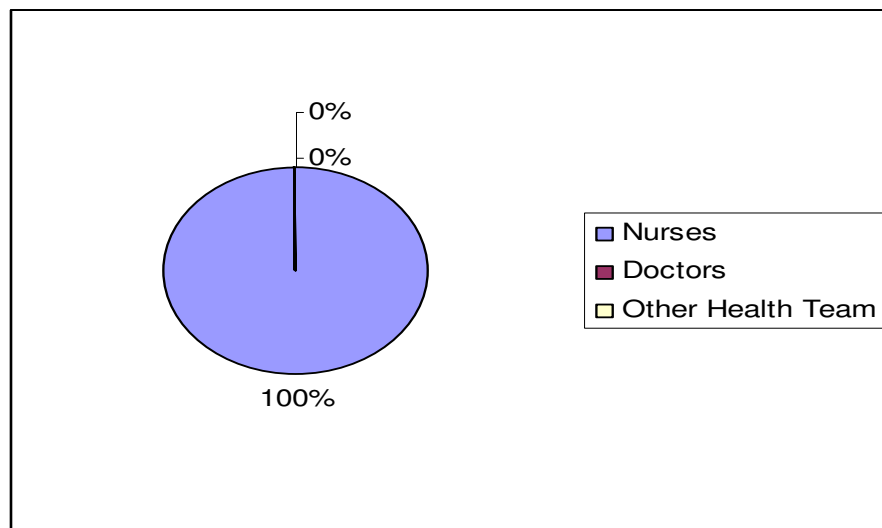


Figure 4.5: Distribution of respondents according to health worker category

Figure 4.5 indicates that all respondents (100%) had a diploma in nursing and were registered with the SANC. No doctors or other members of the health care team participated in the study. The above percentages imply that a diploma in nursing was a prerequisite for attendance of the ARV therapy training course evaluated in this study. These registered nurses were also qualified and capable of learning new skills. Their duties included converting complex issues into simple matters to be understood by patients. These nurses would be able to deal with difficult or sensitive topics, such as conveying test results to patients. They could assess a situation and reach out to the patient, explaining alternatives in a way patients understood.

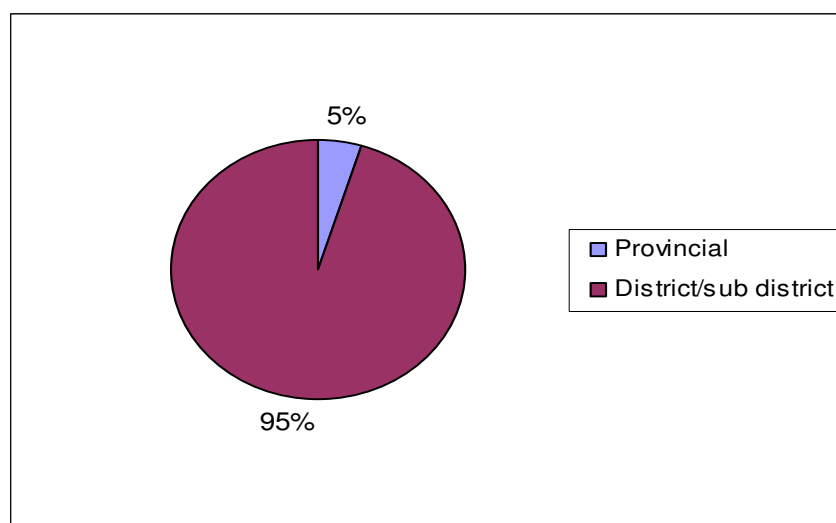


Figure 4.6: Distribution of respondents according to health structure level

Figure 4.6 shows that 95% of the respondents were working in the district where the clinics or hospitals were situated. They were responsible for PHC delivery at these institutions and for seeing patients in need of ARV therapy. To be regarded as good health practitioners they had to be knowledgeable. According to the scope of practice of registered nurses, they could be held accountable for their actions and omissions at these institutions.

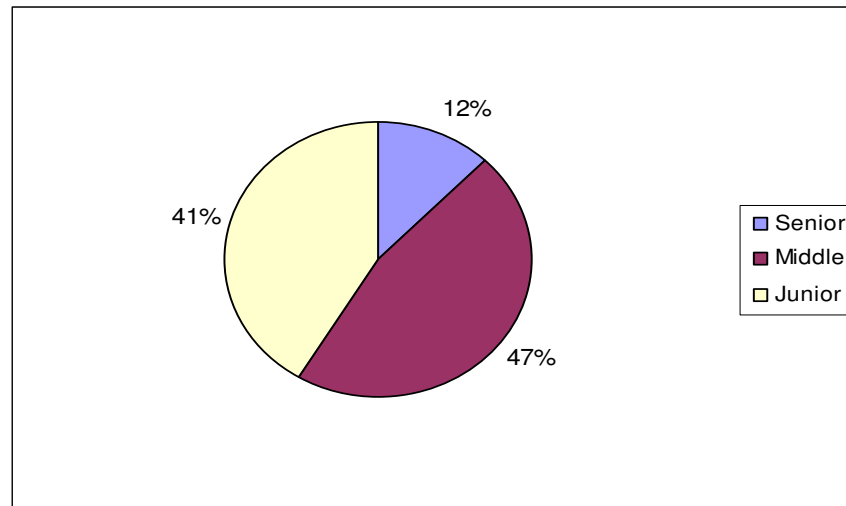


Figure 4.7: Distribution of respondents according to position held at management level

Figure 4.7 shows that the majority (59%) of the respondents held senior and middle management positions, while only 41% of the respondents were juniors. This implies that especially registered nurses in middle and senior management positions were given the responsibility of dealing with patients in need of ARV therapy. At the same time registered nurses in junior positions would be able to learn from senior colleagues with more years of experience in the workplace. Senior nurses would be seen as role models; juniors copied what more experienced staff did at work.

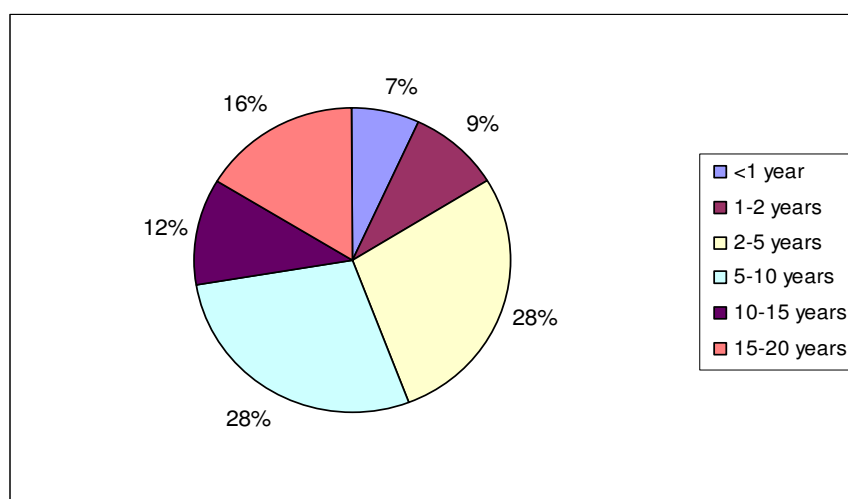


Figure 4.8: Distribution of respondents according to number of years in position held

Figure 4.8 above indicates that 28% of the respondents held their positions for more than 10 years, while another 28% of respondents had between six and 10 years of experience in the positions they held at the time of the survey. Another 28% of respondents had between three and five years of experience, while 16% of participating registered nurses held their positions for less than two years.

The majority of registered nurses (56%) held their positions for a relatively long period (more than five years) and newly registered nurses and nurses in junior positions would be able to learn from senior colleagues. Accompanying newly registered nurses in nursing practice is a key responsibility of nurses in middle and senior management positions and a way of assisting subordinates in acquiring new skills.

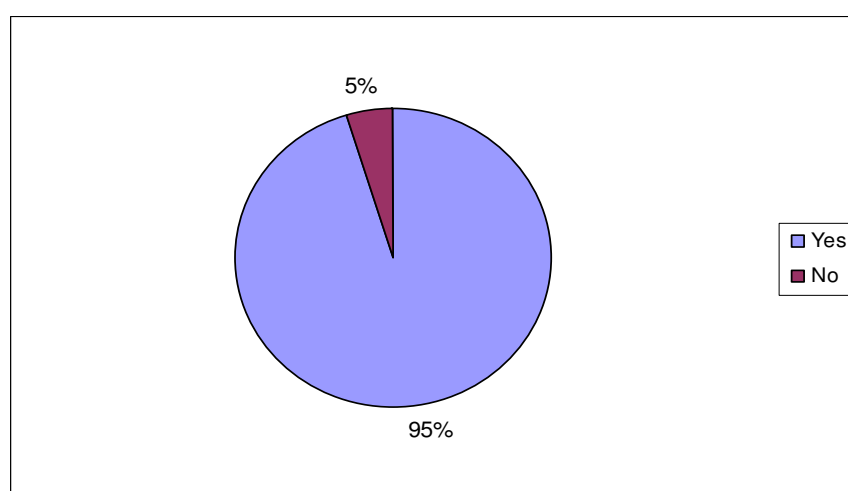


Figure 4.9: Distribution of respondents according to attendance of ARV therapy training

Figure 4.9 indicates that the majority (95%) of registered nurses who participated in this study were trained in ARV therapy. These nurses were empowered and should be able to render quality ARV care to HIV/AIDS patients.

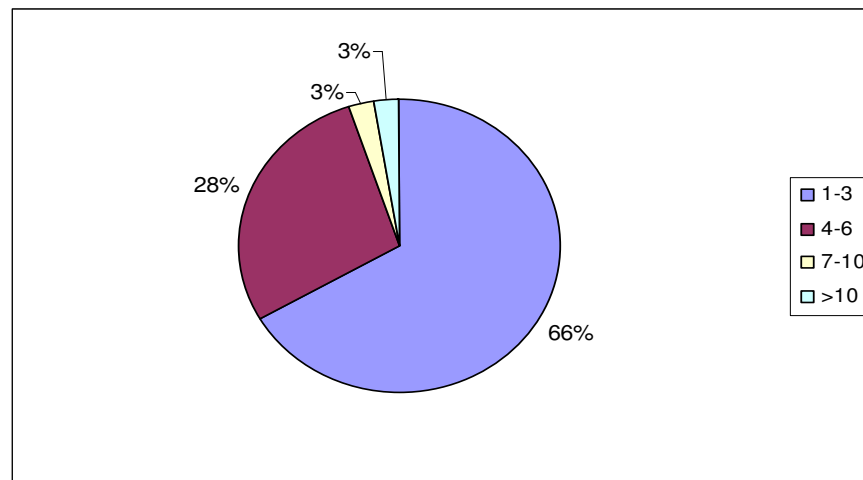


Figure 4.10: Distribution of respondents according to number of HIV/AIDS training sessions attended

Figure 4.10 above depicts that 66% of participating registered nurses attended three or less workshops, seminars or in-service training sessions on HIV/AIDS. Twenty-eight per cent (28%) of the respondents attended such training opportunities four to six times, while 6% of respondents attended more than six training sessions/workshops/seminars on HIV/AIDS.

These percentages confirmed that registered nurses in the Thabo Mofutsanyana District were given training in HIV/AIDS. However, the researcher observed that only certain nurses, including senior and middle managers, were attending these courses. (Also compare to Figure 4.7.) They were then expected to give feedback to staff on new developments. The South African government tries to reduce costs by training trainers (DOH 2004). These trained trainers must then train others so that all nurses are empowered to render quality health care. More comprehensive training in ARV therapy is essential to enhance nurses' performance and productivity in managing HIV/AIDS.

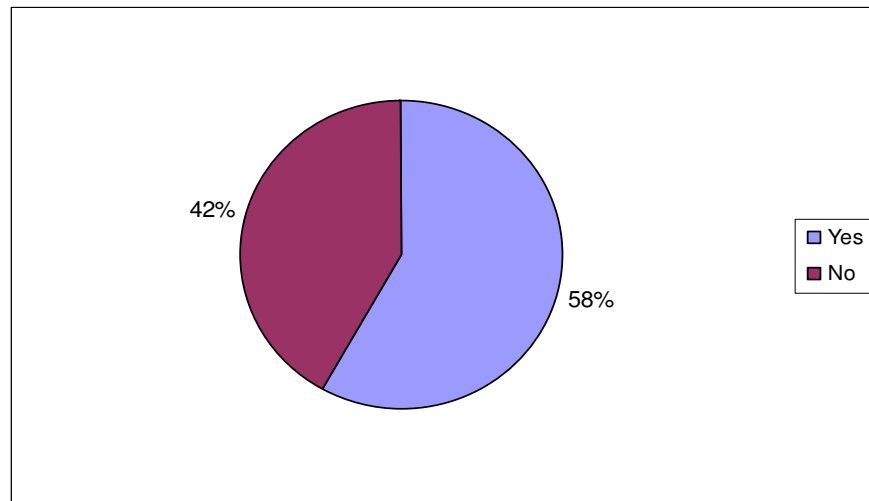


Figure 4.11: Distribution of respondents according to HIV-dedicated clinics/hospitals

Figure 4.11 shows that the majority of the respondents (58%) were working at clinics/hospitals dedicated to caring for HIV/AIDS patients. HIV-dedicated hospitals/clinics is a strategy of the South African government to reduce long waiting hours at clinics rendering PHC (DOH, 2004). At these HIV-dedicated hospitals/clinics assistance is given to HIV/AIDS patients as soon as possible. Only 42% of the respondents were working at clinics that rendered comprehensive PHC. The researcher observed that patients at these PHC institutions were queuing for long hours before they were seen by a health practitioner.

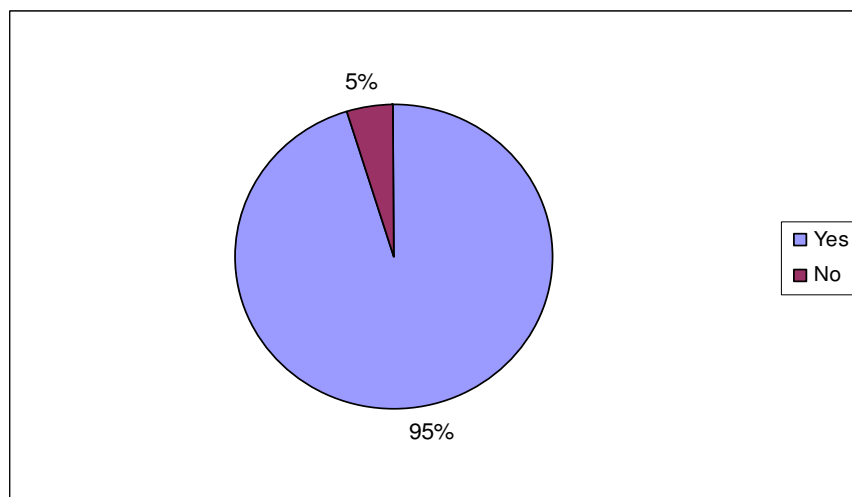


Figure 4.12: Distribution of respondents according to health care delivery to HIV positive patients

Figure 4.12 shows that almost all respondents (95%) were treating HIV/AIDS patients. The implication was that nurses working at PHC institutions not dedicated to serving HIV/AIDS patients were also attending to HIV patients visiting their institutions.

The analysis of the demographic data of the respondents was illustrated above. The researcher also analysed data obtained from a reactionnaire about respondents' reactions to the ARV therapy course attended by them. This analysis measured customer satisfaction, which was important as the employer allowed staff to attend the course and would have expected positive general feedback.

4.3 REACTIONS OF REGISTERED NURSES TO ARV THERAPY TRAINING

Registered nurses were asked to rate the ARV therapy training programme as a way of assessing their reaction to the ARV training programme. Respondents had to indicate whether or not they agreed/disagreed or strongly agreed/disagreed with statements made about training content, duration of training, instructor preparation, the effectiveness of training aids, and the relevance of material supplied. Each response was quantified and the totals were converted into percentages. The results are presented in table format below to facilitate interpretation.

4.3.1 RESPONSES TO REACTIONNAIRE ITEMS

STATEMENT 1: TRAINING MATERIAL SUPPLIED WAS RELEVANT TO RESPONDENTS' JOBS

Table 4.1: Responses to statement: Training material supplied was relevant to respondents' jobs

Respondents	Frequency	Percentage
Strongly agreed	19	44,2%
Agreed	24	55,8%
Total	43	100,0%

Table 4.1 shows that 44,2% of the respondents strongly agreed and 55,8% agreed that the training material supplied was relevant to their jobs. This implies that training

equipment was available and training material, including charts and CDs, well-constructed and relevant to the ARV therapy training offered.

STATEMENT 2: TRAINING MATERIAL WAS PRESENTED IN AN INTERESTING WAY

Table 4.2: Responses to statement: Training material was presented in an interesting way

Respondents	Frequency	Percentage
Strongly agreed	18	41,9%
Agreed	24	55,8%
No response	1	2,3%
Total	43	100,0%

Table 4.2 reflects the responses of participating registered nurses to the presentation of training material. Forty-two per cent of the respondents strongly agreed and 55,8% agreed that training material was presented in an interesting way. This implies that the trainer was well organised. Course instructors are also trained in the presentation of lessons and in forward planning (WHO, 2006). A well-organised presentation motivates learners to learn.

STATEMENT 3: THE INSTRUCTOR WAS AN EFFECTIVE COMMUNICATOR

Table 4.3: Responses to statement: Instructor communicated effectively

Respondents	Frequency	Percentage
Strongly agreed	18	41,9%
Agreed	24	55,8%
Disagreed	1	2,3%
Total	43	100,0%

Table 4.3 shows that the respondents strongly agreed (41,9%) or agreed (55,8%) that the instructor communicated effectively in a language they understood. The ARV therapy curriculum was prepared for nurses, and registered nurses related to the instruction material and the instructor. Only one respondent (2, 3%) was of the opinion

that the instructor did not communicate effectively. Nurses have to view learning as part of their job description and be willing to learn in order to perform well.

STATEMENT 4: THE INSTRUCTOR WAS WELL PREPARED

Table 4.4: Responses to statement: Instructor was well prepared

Respondents	Frequency	Percentage
Strongly agreed	18	41,9%
Agreed	24	55,8%
Disagreed	1	2,3%
Total	43	100,0%

Table 4.4 above shows that 41,9% of the respondents strongly agreed, and 55,8% agreed that the instructor was well prepared. Only one respondent (2, 3%) disagreed with this statement. This implies that the registered nurses evaluated the instructors as well organised, having relevant teaching material and knowledge of the training content presented.

STATEMENT 5: AUDIOVISUAL AIDS WERE EFFECTIVE

Table 4.5: Responses to statement: Audiovisual aids were effective

Respondents	Frequency	Percentage
Strongly agreed	17	39,5%
Agreed	22	51,2%
Disagreed	4	9,3%
Total	43	100,0%

Table 4.5 above shows that 51,2% of the respondents agreed and 39,5% strongly agreed that the audiovisual aids used during training were effective, while 9,3% of the respondents disagreed with this statement. The majority of the respondents (90, 7%) agreed that training aids were effective. This indicated that the trainer of trainers had prepared his/her visual aids before training commenced to enhance understanding of the training content. Visual aids used included a complementary CD, a training kit on the contents of the training manual, information on possible reading material, and contacts for networking.

STATEMENT 6: THE HANDOUT WAS HELPFUL

Table 4.6: Responses to statement: The handout was helpful

Respondents	Frequency	Percentage
Strongly agreed	20	46,5%
Agreed	22	51,2%
No response	1	2,3%
Total	43	100,0%

Table 4.6 above shows that the majority of the respondents (97,7%) agreed or strongly agreed that the handout given to course attendees was helpful, while one respondent (2.3%) did not respond. Registered nurses thus evaluated the handout as a helpful tool, a document they could refer to when they were working.

STATEMENT 7: COURSE MATERIAL COULD BE APPLIED TO RESPONDENTS' JOBS

Table 4.7: Responses to statement: Course material could be applied to respondents' jobs

Respondents	Frequency	Percentage
Strongly agreed	19	44,2%
Agreed	23	53,0%
Disagreed	1	2,3%
Total	43	100,0%

Table 4.7 above shows that 53% of the respondents agreed and 44,2% strongly agreed that the training material was applicable to their jobs. They believed they would be able to apply the material in practice. Only one respondent (2,3%) disagreed with this statement.

The respondents were also asked to react to the statement that the course facilities were suitable. Their reactions are reflected in Table 4.8.

STATEMENT 8: COURSE FACILITY WAS SUITABLE

Table 4.8: Responses to statement: Facility was suitable

Respondents	Frequency	Percentage
Strongly agreed	14	32,6%
Agreed	28	65,1%
Disagreed	1	2,3%
Total	43	100,0%

Table 4.8 above shows that 65,1% of the respondents agreed and 32,6% strongly agreed with the statement that the facility served its purpose. This implies that 97,7% of the respondents agreed that the facility was conducive to learning, free of noise, and clean. Only 2,3% of the respondents believed otherwise.

STATEMENT 9: THE SCHEDULE WAS SUITABLE

Table 4.9: Responses to statement: Schedule was suitable

Respondents	Frequency	Percentage
Strongly agreed	12	27,9%
Agreed	30	69,8%
No response	1	2,3%
Total	43	100,0%

Table 4.9 above shows that 97,7% of the respondents agreed or strongly agreed that the training schedule was suitable, while only one respondent did not agree with the statement. The respondents believed time was well managed, based on the objectives of the training. They also believed that time was well divided among topics and that all objectives were met. There was no need to extend the course and the course was completed in two weeks as planned, which was sufficient time for covering the theory of ARV therapy.

STATEMENT 10: A GOOD BALANCE EXISTED BETWEEN PRESENTATION AND GROUP INVOLVEMENT

Table 4.10: Responses to statement: A balance was maintained between presentation and group involvement

Respondents	Frequency	Percentage
Strongly agreed	14	32,6%
Agreed	25	58,1%
Disagreed	3	7,0%
Total	43	100,0%

Table 4.10 above shows that 58,1% of the respondents agreed and 32,6% strongly agreed that a balance was maintained between presentation of training material and group involvement. The instructor included group discussions in the course as a method of teaching. While presentation of course material by an instructor might imply passive participation by the learner, group discussions invite active participation in learning. Seven per cent of the respondents disagreed with the above statement.

STATEMENT 11: THE WORKSHOP ON ARV WOULD HELP RESPONDENTS DO THEIR JOB

Table 4.11: Responses to statement: ARV workshop would help respondents do their job

Respondents	Frequency	Percentage
Strongly agreed	22	51,2%
Agreed	20	46,5%
Disagreed	1	2,3%
Total	43	100,0%

Table 4.11 shows that most of the respondents (97,7%) strongly agreed or agreed that the ARV therapy workshop would help them do their jobs, while only one respondent (2,3%) disagreed with the statement. The assumption was that registered nurses acquired knowledge about HIV/AIDS and ARV treatment that would enable them to perform better.

STATEMENT 12A: THE INSTRUCTOR MET THE COURSE OBJECTIVE RELATING TO HIV/AIDS AND NUTRITION

Table 4.12: Responses to statement: Instructor met course objective relating to HIV/AIDS and nutrition

Respondents	Frequency	Percentage
Strongly agreed	10	23,3%
Agreed	14	32,6%
No response	19	44,2%
Total	43	100,0%

Table 4.12 above shows that 32,6% of the respondents agreed and 23,3% strongly agreed that the instructor achieved the training objective regarding HIV/AIDS and nutrition. However, 44,2% of the respondents did not respond to this statement. The majority (55,9%) agreed that the objective on nutrition was reached.

STATEMENT 12B: THE INSTRUCTOR MET THE COURSE OBJECTIVE REGARDING OPPORTUNISTIC INFECTIONS

Table 4.13: Responses to statement: Instructor met course objective regarding opportunistic infections

Respondents	Frequency	Percentage
Strongly agreed	9	20,9%
Agreed	12	27,9%
No response	22	51,2%
Total	43	100,0%

Table 4.13 above shows that 27,9% of the respondents agreed and 20,9% strongly agreed that the course objective on opportunistic infections was met. However, the majority of the respondents (51,2%) did not respond to the statement.

STATEMENT 12C: THE INSTRUCTOR MET THE COURSE OBJECTIVE REGARDING PMTCT

Table 4.14: Responses to statement: Instructor met course objective regarding PMTCT

Respondents	Frequency	Percentage
Strongly agreed	14	32,6%
Agreed	12	27,9%
No response	17	39,5%
Total	43	100,0%

Table 4.14 reveals that 14 respondents (32,6%) strongly agreed and 12 respondents (27,9%) agreed that the training objective on PMTCT was achieved. Seventeen respondents (39,5%) did not respond to the statement. The majority of the respondents (61,5%) agreed that the training objective on PMTCT was met. Respondents gained knowledge on the topic and reacted positively to the course objective.

STATEMENT 12D: THE INSTRUCTOR ACHIEVED THE COURSE OBJECTIVE ON LABORATORY INVESTIGATIONS

Table 4.15: Responses to statement: Instructor met course objective on laboratory investigations

Respondents	Frequency	Percentage
Strongly agreed	6	14,0%
Agreed	12	27,9%
Disagreed	1	2,3%
No response	24	55,8%
Total	43	100,0%

Table 4.15 above shows that 27,9% of the respondents agreed and 14% strongly agreed that the course objective on laboratory investigations was achieved. However, the majority of the respondents (55,8%) did not respond, while 2,3% of respondents disagreed with the statement. Agreement with the statement implied that 41,9% of the respondents would be able to take blood tests, interpret laboratory results, and relate them to CD4 cell count, liver function, and viral load objectives.

Participants also responded to statements about the extent of knowledge and skills they acquired during the ARV therapy course, and their attitude toward HIV/AIDS. Their responses were analysed and the results are presented next.

4.4 KNOWLEDGE GAINED DURING ARV THERAPY TRAINING

To measure the extent of knowledge acquisition, respondents were asked to indicate whether they believed the following 12 statements to be true or false. Each statement and the responses to the statement are presented in table format below.

4.4.1 Responses to statements on HIV/AIDS and ARV therapy

STATEMENT 1A: HIV CAUSES DISEASE BY IMMUNOSUPPRESSION

Table 4.16: Responses to statement: HIV causes disease by immunosuppression

Respondents	Frequency	Percentage
True	35	81,4%
False	0	0%
No response	8	18,6%
Total	43	100,0%

Table 4.16 reveals that the majority of the respondents (81,4%) agreed that the HIV virus causes disease by immunosuppression, while eight respondents (18,6%) did not respond. The above information shows that although the majority of the respondents understood the relationship between HIV and AIDS, 18,6% of the respondents did not indicate the relationship between HIV and immunosuppression to be true.

STATEMENT 1B: HIV CAUSES DISEASE BY EPITHELIAL DAMAGE

Table 4.17: Responses to statement: HIV causes disease by epithelial damage

Respondents	Frequency	Percentage
True	15	34,9%
False	12	27,9%
No response	16	37,2%
Total	43	100,0%

Table 4.17 reveals that only 15 of the respondents (34,9%) agreed that HIV causes disease by epithelial damage, while 28 respondents (65,1%) either regarded the statement as false or, for some reason, did not respond. From the above results, it was apparent that some respondents needed further training in the theory of HIV/AIDS.

STATEMENT 2A: IF THE CD4 CELL COUNT OF AN HIV PATIENT IS LESS THAN 200 μ L, HE/SHE SHOULD RECEIVE ARV TREATMENT

Table 4.18: Responses to statement: HIV patient with CD4 cell count <200 μ l qualifies for ARV treatment

Respondents	Frequency	Percentage
True	38	88,4%
False	0	0%
No response	5	11,6%
Total	43	100,0%

Table 4.18 reveals that most of the respondents (88,4%) agreed that HIV positive patients with a CD4 cell count <200 μ l should receive ARV therapy, while 11,6% of the respondents did not respond. None regarded the statement as false. The implication was that most of the respondents were knowledgeable about the initiation of ARV treatment.

STATEMENT 2B: THE CD4 CELL COUNT IS A MEASUREMENT OF THE NUMBER OF HIV VIRUSES IN THE BODY

Table 4.19: Responses to statement: CD4 cell count indicates the number of HIV viruses in body

Respondents	Frequency	Percentage
True	15	34,9%
False	21	48,8%
No response	7	16,3%
Total	43	100,0%

Table 4.19 reveals that twenty-one respondents (48,8%) regarded the above statement as false, while fifteen respondents (34,9%) agreed that the CD4 cell count was an indication of the number of HIV viruses in the body. Seven respondents (16,3%) did not respond. The above results indicate that many respondents still lacked sufficient theoretical knowledge of HIV/AIDS.

STATEMENT 3: A PATIENT ON NEVIRAPINE SHOULD REGULARLY UNDERGO LIVER FUNCTION TESTS

Table 4.20: Responses to statement: Patients on Nevirapine need to undergo regular liver function tests

Respondents	Frequency	Percentage
True	40	93,0%
False	2	4,7%
No response	1	2,3%
Total	43	100,0%

Table 4.20 reveals that the majority (93%) of respondents agreed that patients on *Nevirapine* should undergo regular liver function tests. Only 4,7% of the respondents did not agree with the above statement, while 2,3% of the respondents did not respond. The above results indicate that most of the respondents were knowledgeable about liver function tests that must be performed with respect to patients on ARV treatment.

Nevirapine is particularly associated with liver toxicity.

STATEMENT 4: ST JOHN'S WORT DECREASES THE EFFECTIVENESS OF ARV DRUGS

Table 4.21: Responses to statement: St John's wort decreases effectiveness of ARV drugs

Respondents	Frequency	Percentage
True	27	62,8%
False	11	25,6%
No response	5	11,6%
Total	43	100,0%

Table 4.21 reveals that the majority of the respondents (62,8%) agreed with the statement that St John's wort, a natural antidepressant, decreases the effectiveness of the plasma concentration of ARV drugs, while 25,6% of the respondents regarded the statement as false. Five respondents (11,6%) did not respond.

Although the above results indicate that the majority of the respondents were knowledgeable about drug interactions, 16 respondents (37%) either did not know that St John's wort causes some ARV drugs to be less effective in keeping viral load down or did not care to respond.

STATEMENT 5: THE CD4 CELL COUNT AND VIRAL LOAD OF ALL PATIENTS ON ARV THERAPY SHOULD BE DETERMINED QUARTERLY

Table 4.22: Responses to statement: Baseline assessment of ARV effectiveness includes a CD4 cell count and viral load test

Respondents	Frequency	Percentage
True	28	65,1%
False	14	32,6%
No response	1	2,3%
Total	43	100,0%

Table 4.22 reveals that most of the respondents (65,1%) agreed that a CD4 cell count and viral load test should be done routinely at three-month intervals for all patients on ARV; fourteen respondents (32,6%) disagreed with the above statement; and one respondent (2,3%) did not respond. This implies that the majority of the respondents would request a CD4 cell count and viral load test to determine the effectiveness of ARV therapy.

If the CD4 cell count increases and viral load decreases while a patient is on ARV treatment, the implication would be recovery from the disease.

STATEMENT 6A: PHILANI IS A NUTRITIONAL SUPPLEMENT FOR ADULT HIV/AIDS PATIENTS

Table 4.23: Responses to statement: Philani is a nutritional supplement for adult HIV/AIDS patients

Respondents	Frequency	Percentage
True	34	79,1%
False	5	11,6%
No response	4	9,3%
Total	43	100,0%

Table 4.23 reveals that most respondents (79,1%) agreed that Philani, a tasty, fortified, soy drink with added pre- and probiotics, is used as nutritional supplement for adults suffering from HIV/AIDS, while 20,9% of the respondents either disagreed with the statement or did not respond. The supplement is taken at home before medication is administered.

STATEMENT 6B: FOR BABY THE RISK OF CONTRACTING HIV/AIDS THROUGH BREASTFEEDING IS SMALLER THAN THE RISK OF DYING FROM OTHER INFECTIONS

Table 4.24: Responses to statement: For infant the risk of HIV transmission through breastfeeding is smaller than risk of dying from other infections

Respondents	Frequency	Percentage
True	37	86,0%
False	4	9,3%
No response	2	4,7%
Total	43	100,0%

Table 4.24 shows that 86% of the respondents agreed with the statement that the risk of a baby contracting HIV/AIDS through breastfeeding was smaller than the risk of an infant dying from other infections. Four (9,3%) of the respondents disagreed with the

statement, while two (4,7%) did not respond. The implication was that registered nurses were aware of the advantages for the infant of exclusive breastfeeding in the first six months after birth. They would probably insist on this practice, and would explain the importance of breastfeeding to mothers and encourage them to continue to breastfeed, even if they were HIV positive.

STATEMENT 7: HIV/AIDS PATIENTS HAVE THE RIGHT TO EQUAL TREATMENT AND NOT BEING DISCRIMINATED AGAINST

Table 4.25: Responses to statement: HIV/AIDS patients have right to equal treatment

Respondents	Frequency	Percentage
True	43	100,0%

Table 4.25 shows that all respondents (100%) agreed that HIV/AIDS patients have the right to equal treatment and that they should not be discriminated against. Registered nurses should treat all HIV/AIDS patients with respect and dignity, irrespective of their gender, sexual orientation, race or nationality. The above nurses would regard HIV/AIDS patients as human beings, would not call them names, and would treat the patient not the diagnosis.

STATEMENT 8: POST-EXPOSURE PROPHYLAXIS (PEP) ENTAILS AZT 200 mg 8 HOURLY AND 3TC 150 mg 12 HOURLY

Table 4.26: Responses to statement: PEP entails AZT 200 mg 8 hourly and 3TC 150 mg 12 hourly

Respondents	Frequency	Percentage
True	24	55,8%
False	15	34,9%
No response	4	9,3%
Total	43	100,0%

Table 4.26 shows that 55,8% of the respondents agreed with the composition of the PEP regimen, while 34,9% of the respondents disagreed and 9,3% did not respond. The majority of the respondents accepted the above PEP regimen composition as acceptable, while a total of 44% of the respondents either did not agree or did not

respond. Registered nurses should know how to treat patients seeking help after apparent exposure to the HIV virus. They should know the precautions that should be taken to prevent infection after occupational exposure, such as injury with a needle or splashes of infectious material onto broken skin.

STATEMENT 9: PMTCT: A PREGNANT WOMAN WITH CD4 CELL COUNT $\geq 220 \mu\text{L}$ SHOULD BE TREATED WITH ARV DRUGS

Table 4.27: Responses to statement: A pregnant woman with CD4 cell count $\geq 220 \mu\text{L}$ should receive ARVs

Respondents	Frequency	Percentage
True	39	90,7%
False	4	9,3%
Total	43	100,0%

Table 4.27 shows that 90, 7% of the respondents regarded the statement as true, while 9,3% of the respondents regarded the statement as false. This implies that the majority of the respondents agreed with the statement that an HIV positive pregnant woman with a CD4 cell count of $220 \mu\text{L}$ should receive ARVs. This shows that the respondents were well informed about PMTCT and the motivation for the ARV roll-out programme.

STATEMENT 10A: PULMONARY TB IS A WHO STAGE 4 DISEASE

Table 4.28: Responses to statement: Pulmonary TB is a WHO stage 4 disease

Respondents	Frequency	Percentage
True	20	46,5%
False	16	37,2%
No response	7	16,3%
Total	43	100,0%

Table 4.28 shows that 46,5% of the respondents regarded the statement as true, while 37,2% of the respondents regarded the statement as false. Seven respondents (16,3%) did not respond. The majority of the respondents (46,5%) either did know that pulmonary TB was a WHO stage 4 disease or did not indicate it as such, signifying of knowledge about the topic among registered nurses.

STATEMENT 10B: TB TREATMENT CAN ONLY BE STARTED AFTER ARVs WERE TAKEN FOR TWO MONTHS

Table 4.29: Responses to statement: TB treatment for HIV positive patient follows on a two-month ARV regimen

Respondents	Frequency	Percentage
True	22	51,2%
False	20	46,5%
No response	1	2,3%
Total	43	100,0%

Table 4.29 shows that 51,2% of the respondents regarded the statement to be true, while 46,5% of the respondents believed the statement to be incorrect. Only one respondent (2,3%) did not respond. This implies that a slight majority of registered nurses gained knowledge about HIV positive patients suffering from TB. They knew that TB treatment could only be given after ARVs had been administered for two months.

STATEMENT 11A: THE SYNDROMIC TREATMENT FOR A PENILE DISCHARGE INCLUDES CIPROBAY, DOXYCYCLINE AND FLAGYL

Table 4.30: Responses to statement: Syndromic treatment for penile discharge includes Ciprobay®, doxycycline and Flagyl®

Respondents	Frequency	Percentage
True	21	48,8%
False	18	41,9%
No response	4	9,3%
Total	43	100,0%

Table 4.30 shows that 48,8% of the respondents agreed with the above statement, while 14,9% reported it as false. Four respondents (9, 3%) did not respond. This implies that the majority of the respondents did know what the syndromic management of penile discharge entailed.

STATEMENT 11B: A PREGNANT WOMAN WITH A VAGINAL DISCHARGE MAY BE TREATED WITH DOXYCYCLINE (DOXYCIL®), CIPROFLOXACIN (CIPROBAY®) AND METRONIDAZOLE (FLAGYL®)

Table 4.31: Responses to statement: Treatment of pregnant woman with a vaginal discharge includes doxycycline, Ciprobay® and Flagyl®

Respondents	Frequency	Percentage
True	35	81,4%
False	5	11,6%
No response	3	7,0%
Total	43	100,0%

Table 4.31 above shows that the majority of the respondents (81,4%) reported the statement as false, while five respondents (11,6%) regarded it as true. Three respondents (7, 0%) did not respond. This implies that the respondents were knowledgeable about the treatment of pregnant women with a vaginal discharge.

STATEMENT 12A: THE ARV REGIMEN FOR HIV POSITIVE PATIENTS INCLUDES D4T, 3TC AND EFAVIRENZ

Table 4.32: Responses to statement: The ARV regimen for HIV positive patients includes D4T, 3TC and efavirenz

Respondents	Frequency	Percentage
True	36	83,7%
False	4	9,3%
No response	3	7,0%
Total	43	100,0%

Table 4.32 shows that 83, 7% of the respondents regarded the statement as true, while 9,3% reported the statement to be false. Three (7%) of the participating registered nurses did not respond. This implies that the majority of the respondents were knowledgeable about the ARV drug regimen for HIV positive patients.

STATEMENT 12B: *EFAVIRENZ* CAUSES A RASH

Table 4.33: Responses to statement: Rash is side effect of *efavirenz*

Respondents	Frequency	Percentage
True	17	39,5%
False	21	48,8%
No response	5	11,6%
Total	43	100,0%

Table 4.33 reveals that most of the respondents (60, 4%) either did not know that the drug *efavirenz* causes a rash or did not respond to the question. Seventeen respondents (39, 5%) knew that rash was a common side effect of *efavirenz*. The implication is a lack of knowledge among registered nurses about drug complications.

STATEMENT 12C: AZT CAN CAUSE BONE MARROW SUPPRESSION

Table 4.34: Responses to statement: AZT can cause bone marrow suppression

Respondents	Frequency	Percentage
True	34	79,1%
False	2	4,7%
No response	7	16,3%
Total	43	100,0%

The above table reveals that most of the respondents (79, 1%) agreed that AZT could cause bone marrow suppression, while nine respondents either disagreed with the statement or did not respond. The majority of the respondents knew this potential side effect of the ARV drug, AZT.

The assumption was that the ARV therapy course would enable registered nurses to improve skills relating to ARV administration, interaction and communication with patients, application of the PALSA Plus protocol, and monitoring of regimen adherence.

Data analysed about skills acquisition during or as a result of attending the ARV therapy course is presented next.

4.5 SKILLS ACQUIRED DURING ARV TRAINING

To measure skills acquisition, respondents were asked to indicate whether they strongly agreed, agreed, disagreed or strongly disagreed with each of the following eight statements. Each statement and the respondents' responses are presented in table format to facilitate the presentation of results.

4.5.1 Responses to statements on skills relating to ARV therapy

STATEMENT 1A: DURING COUNSELLING I GREET PATIENTS WITH WARMTH, WITH A SMILE

Table 4.35: Responses to statement: Counselling commenced by greeting patients warmly

Respondents	Frequency	Percentage
Strongly agreed	17	39,5%
Agreed	9	20,9%
No response	17	39,5%
Total	43	100,0%

Table 4.35 reveals that the majority of respondents (60, 4%) either strongly agreed or agreed with the statement, while seventeen respondents (39,5%) did not respond. Although the majority agreed that counselling should begin with establishing a warm, welcoming atmosphere, nearly 40% of the respondents did not care to respond.

STATEMENT 1B: COUNSELLING IS DONE IN A PRIVATE ROOM

Table 4.36: Responses to statement: Counselling is done privately

Respondents	Frequency	Percentage
Strongly agreed	21	48,8%
Agreed	5	11,6%
No response	17	39,5%
Total	43	100,0%

The above table shows that 48, 8% of the respondents strongly agreed and 11, 6% agreed with the statement, while 39,5% of the respondents did not respond. Most of the respondents (60, 4%) agreed that patients should be counselled privately.

STATEMENT 2A: PATIENCE WITH AND RESPECT FOR PATIENTS ARE SHOWN

Table 4.37: Responses to statement: Respondent shows patience with and respect for patients

Respondents	Frequency	Percentage
Strongly agreed	19	44,2%
Agreed	2	4,7%
No response	22	51,2%
Total	43	100,0%

The above table shows that 44,2% of the respondents strongly agreed and 4,7% agreed that they had patience with and respect for their patients, while 51,2% of the respondents did not respond. Twenty-one respondents (48, 9%) exercised patience and treated HIV/AIDS patients with respect.

STATEMENT 2B: WHEN INTERACTING WITH PATIENTS, I TREAT THEM AS INDIVIDUALS

Table 4.38: Responses to statement: Patients treated as individuals

Respondents	Frequency	Percentage
Strongly agreed	22	51,2%
Agreed	6	14,0%
No response	15	34,9%
Total	43	100,0%

The above table shows that 51, 2% of the respondents strongly agreed and 14% agreed that they were treating their patients as individuals, while 34, 9% of the respondents did not respond. This means that most respondents (65, 2%) were treating their patients as individuals. The implication is that most patients were receiving individualised care.

STATEMENT 3: EVERYTHING CONCERNING THE PATIENT'S HIV DIAGNOSIS IS TREATED AS CONFIDENTIAL BY THE RESPONDENT

Table 4.39: Responses to statement: Everything about the patient's HIV diagnosis is kept confidential

Respondents	Frequency	Percentage
Strongly agreed	34	79,1%
Agreed	5	11,6%
No response	4	9,3%
Total	43	100,0%

The above table shows that 79,1% of the respondents strongly agreed and 11,6% agreed that they kept everything about the patient's HIV positive diagnosis confidential, while only four respondents (9,3%) did not respond. This implies that 90, 7% of the respondents kept everything concerning the patient's HIV diagnosis confidential; they did not divulge patient information to anyone.

STATEMENT 4A: DURING CLINIC VISITS, PATIENTS' COMPLAINTS ARE HEARD AND ASSESSMENTS DONE ACCORDINGLY

Table 4.40: Responses to statement: Patients are assessed based on their complaints

Respondents	Frequency	Percentage
Strongly agreed	16	37,2%
Agreed	5	11,6%
No response	22	51,2%
Total	43	100,0%

The above table shows that 37, 2% of the respondents strongly agreed and 11, 6% agreed with the statement that they took their patients' complaints into consideration when they assessed their patients, while 51,2% of the respondents did not respond to the statement. This implies that 48, 8% of the respondents listened to their patients and took patient complaints into consideration when doing assessments, which also signified individualised care.

STATEMENT 4B: PATIENTS ARE TREATED ACCORDING TO THE PALSA PLUS PROTOCOL AND COMPREHENSIVE CARE GUIDELINES

Table 4.41: Responses to statement: PALSA Plus and comprehensive care guidelines are applied when treating HIV positive patients

Respondents	Frequency	Percentage
Strongly agreed	22	51,2%
Agreed	5	11,6%
No response	16	37,2%
Total	43	100,0%

The above table shows that 51,2% of the respondents strongly agreed and 11,6% agreed with the statement that they applied the PALSA Plus protocol together with comprehensive care guidelines when treating HIV/AIDS patients, while 37,2% of the respondents did not respond to the statement. This implies that a total of 27 respondents (62, 8%) listened to their patients' complaints, assessed them accordingly, and applied the PALSA Plus protocol together with comprehensive care guidelines when treating patients.

STATEMENT 4C: CLINICAL ARV MANAGEMENT GUIDELINES ARE USED WHEN TREATING PATIENTS AT THE CLINIC

Table 4.42: Responses to statement: Clinical ARV management guidelines are applied when treating patients at the clinic

Respondents	Frequency	Percentage
Strongly agreed	20	46,5%
Agreed	6	14,0%
No response	17	39,5%
Total	43	100,0%

The above table shows that 46,5% of the respondents strongly agreed and 14% agreed with the statement that they used clinical ARV management guidelines for treating patients at the clinic, while 17 respondents (39,5%) did not respond. The majority of the respondents (60, 5%) were making use of ARV management guidelines when treating HIV/AIDS patients.

STATEMENT 5: REGISTERED NURSES SHOULD ENCOURAGE ALL PATIENTS, IRRESPECTIVE OF STATUS, TO UNDERGO VOLUNTARY COUNSELLING AND TESTING (VCT)

Table 4.43: Responses to statement: Registered nurses should encourage all patients, irrespective of status, to undergo VCT

Respondents	Frequency	Percentage
Strongly agreed	26	60,5%
Agreed	12	27,9%
Strongly disagreed	1	2,3%
No response	4	9,3%
Total	43	100,0%

The above table shows that 60,5% of the respondents strongly agreed and 27,9% agreed to encouraging all patients, irrespective of status, to accept VCT, while only one respondent (2,3%) strongly disagreed to the statement. Four (9, 3%) of the participating registered nurses did not respond. This implies that 88, 4% of the respondents agreed with the statement that all patients should be encouraged to undergo VCT.

STATEMENT 6: PATIENT COUNSELLING INCLUDES ENQUIRING ABOUT PATIENT ADHERENCE TO REGIMENS

Table 4.44: Responses to statement: Regimen adherence is followed up

Respondents	Frequency	Percentage
Strongly agreed	27	62,8%
Agreed	13	30,2%
No response	3	7,0%
Total	43	100,0%

The above table shows that 93% of the respondents either strongly agreed or agreed with the statement that patient adherence to regimens should be followed up, while 7% of the respondents did not respond. This implies that the majority of the respondents enquired about whether patients were regularly taking their medicine, in order to

encourage patient compliance with regimens and detect those who defaulted on treatment.

STATEMENT 7: BREASTFEEDING RATHER THAN BOTTLE-FEEDING BABY IS RECOMMENDED TO HIV POSITIVE MOTHERS

Table 4.45: Responses to statement: Breastfeeding rather than bottle-feeding baby is recommended to HIV positive mothers

Respondents	Frequency	Percentage
Strongly agreed	25	58,1%
Agreed	12	27,9%
Strongly disagreed	3	7,0%
No response	3	7,0%
Total	43	100,0%

The above table shows that 58,1% of the respondents strongly agreed and 27,9% agreed with the statement that a baby should be breastfeed rather than bottle-feed by HIV positive mothers during its first six months, while 7% of the respondents strongly disagreed with this statement and 7% did not respond. This implies that 81% of the respondents would encourage an HIV positive mother to breastfeed rather than bottle-feed the baby during its first six months.

STATEMENT 8: CONDOMS SHOULD BE USED DURING SEXUAL INTERCOURSE

Table 4.46: Responses to statement: Condoms should be used during sexual intercourse

Respondents	Frequency	Percentage
Strongly agreed	31	72,1%
Agreed	9	20,9%
No response	3	7,0%
Total	43	100,0%

The above table shows that 93% of the respondents strongly agreed or agreed that partners should use condoms during sexual intercourse, while 7% of the respondents did not respond to the statement. The implication is that most registered nurses would

encourage patients to use condoms during sexual intercourse as a measure to prevent the spread of STIs, including HIV/AIDS.

4.6 ATTITUDES OF REGISTERED NURSES AFTER UNDERGOING ARV THERAPY TRAINING

Six statements were put to participating registered nurses, assessing their attitudes toward HIV/AIDS after undergoing the ARV therapy programme. The results are tabulated below.

4.6.1 Responses to statements on attitudes toward HIV/AIDS

STATEMENT 1: PEOPLE WITH AIDS ARE LIKE FAMILY TO RESPONDENT

Table 4.47: Responses to statement: People living with AIDS are like family

Respondents	Frequency	Percentage
Strongly agreed	28	65,1%
Agreed	10	23,3%
Disagreed	1	2,3%
No response	4	9,3%
Total	43	100,0%

The above table shows that 65, 1% of the respondents strongly agreed and 23,3% agreed with the statement that people with AIDS were like family to them. One participant (2, 3%) disagreed, while four respondents (9, 3%) did not respond. Most respondents (88, 4%) agreed that people with AIDS were like family to them.

STATEMENT 2: BECAUSE AIDS IS PREVENTABLE, RESOURCES SHOULD BE FOCUSED ON PREVENTION RATHER THAN CURE

Table 4.48: Responses to statement: Resources should be focused on AIDS prevention rather than cure

Respondents	Frequency	Percentage
Strongly agreed	27	62,8%
Agreed	11	25,6%
Strongly disagreed	1	2,3%
No response	4	9,3%
Total	43	100,0%

The above table shows that 62, 8% of the respondents strongly agreed and 25, 6% agreed with the statement that the focus should be on AIDS prevention. One participant (2, 3%) strongly disagreed, while four respondents (9, 3%) did not respond. Most respondents (88, 4%) felt that prevention was better than cure.

STATEMENT 3: PEOPLE WITH AIDS GOT WHAT THEY DESERVED

Table 4.49: Responses to statement: People with AIDS got what they deserved

Respondents	Frequency	Percentage
Strongly agreed	9	20,9%
Agreed	2	4,7%
Disagreed	23	53,5%
Strongly disagreed	5	11,6%
No response	4	9,3%
Total	43	100,0%

Table 4.49 shows that 11,6% of the respondents strongly disagreed and 53,5% disagreed with the statement that people with AIDS should be blamed for contracting the disease. However, nine respondents (20, 9%) strongly agreed and two respondents (4, 7%) agreed with the statement, while four (9, 3%) did not respond. Most respondents (65, 1%) would instead of blaming people try to help patients to manage the disease.

STATEMENT 4: AIDS AFFECTS EVERYBODY

Table 4.50: Responses to statement: AIDS affects everybody

Respondents	Frequency	Percentage
Strongly agreed	30	69,8%
Agreed	7	16,3%
Disagreed	5	11,6%
Strongly disagreed	1	2,3%
Total	43	100,0%

Table 4.50 shows that 69, 8% of the respondents strongly agreed and 16, 3% agreed with the statement that AIDS was affecting everybody. One respondent (2,3%) strongly disagreed and five (11,6%) respondents disagreed with the statement. This implies that 86, 1% of the respondents either strongly agreed or agreed that AIDS was affecting everybody. The AIDS pandemic is affecting patients, families, communities, countries, and the world at large.

STATEMENT 5: PEOPLE WITH AIDS SHOULD BE TREATED LIKE EVERYBODY ELSE

Table 4.51: Responses to statement: People with AIDS should not be treated differently from other persons

Respondents	Frequency	Percentage
Strongly agreed	29	67,4%
Agreed	8	18,6%
Disagreed	1	2,3%
Strongly disagreed	1	2,3%
No response	4	9,3%
Total	43	100,0%

Table 4.51 shows that 67, 4% of the respondents strongly agreed and 18, 6% agreed with the statement that AIDS patients should not be treated differently from other patients. One of the respondents (2, 3%) strongly disagreed with the statement, one (2,3%) disagreed, and four (9,3%) did not respond. Thirty-seven respondents (86%)

agreed that people with AIDS should be treated just like all other people, not be singled out, and be treated as human beings.

STATEMENT 6: “AIDS WILL NEVER HAPPEN TO ME”

Table 4.52: Responses to statement: “Aids will never happen to me”

Respondents	Frequency	Percentage
Agreed	1	2,3%
Disagreed	8	18,6%
Strongly disagreed	30	69,8%
No response	4	9,3%
Total	43	100,0%

Table 4:52 shows that 69,8% of the respondents strongly disagreed and 18,6% disagreed with the statement that they would never contract AIDS, while one patient (2,3%) agreed with the statement. Four (9,3%) of the respondents did not respond. The implication is that 88, 4% of the respondents knew that AIDS was an occupational hazard and a disease that can be contracted by anybody. Most respondents (88,4%) indicated that they had a high risk perception and did not fall victim to the “not me” myth.

4.7 SUMMARY

In this chapter, data was analysed and interpreted, and results were presented by means of graphs and tables. A reactionnaire and questionnaires were used for obtaining feedback from registered nurses who attended an ARV training course, and for measuring the extent of skills and knowledge they acquired during the course. Their attitudes toward HIV/AIDS were determined and described. In Chapter 5, the research findings, recommendations, and conclusions will be discussed.

CHAPTER 5

FINDINGS, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 SUMMARY OF RESEARCH CONDUCTED

This research study was aimed at evaluating the effectiveness of the ARV training course attended by registered nurses in the Thabo Mofutsanyana District in the province of the Free State from 2004 to 2009. It was important to determine how effective the two-week ARV therapy programme was in enhancing the knowledge and skills of registered nurses about ARV treatment and changing their attitudes toward HIV/AIDS. The study setting was limited to 10 clinics, two district hospitals and a regional hospital dedicated to delivering ARV services in the said district, and the focus was on registered nurses who underwent ARV therapy training and who were working at the ARV-dedicated clinics and hospitals. A quantitative research design and methodology were applied to measure knowledge and skill acquisition as well as attitude changes in order to determine the effectiveness of the ARV therapy course.

Self-administered questionnaires, including a reactionnaire, were used as suitable research instruments. The data collected was regarded as confidential: the data analysis did not reflect individual responses, as it was conducted at an aggregate level. Data was analysed using Statistical Programme for Social Scientists 10.

The study objectives led the research to be conducted at two levels: at Level 1 the reaction of registered nurses to ARV therapy training was described and at Level 2 the knowledge, skills, and attitudes displayed by registered nurses after completion of the ARV training were determined and described by applying the first two levels of the Kirkpatrick Model for the evaluation of training programmes.

Data obtained with regard to the evaluation of the ARV training programme for registered nurses in the Thabo Mofutsanyana district was analysed and interpreted. The findings of the research study might assist the Free State DOH, and even the national DOH, in gaining information about the effectiveness of the training programme.

5.2 FINDINGS

Respondents were requested to answer questions that were relevant to the research objectives outlined above, i.e. questions/statements that would determine and describe their reaction to the ARV therapy training programme (Level 1 objective), the reactions that the registered nurses displayed to the ARV therapy training programme (Level 2 objective) the knowledge and skills they acquired during and after ARV therapy training programme, and possible attitude changes toward HIV/AIDS clients.

5.2.1 HOW REGISTERED NURSES REACTED TO ARV TRAINING

Respondents' assessment of the ARV training programme

The training sessions were rated by the registered nurses as a way of assessing their reaction to the training course. Registered nurses rated the content of training, duration of training, lectures, effectiveness of training aids used, and relevance of the training material supplied. The findings are described below:

- *Content of training course:* All respondents (100%) rated the theoretical content of the training course as relevant to their jobs. The reasons for this rating were as follows: the content was prepared first by the trainers of trainers; the curriculum was planned according to the needs of specific countries; teaching strategies were devised to achieve set goals; and the content of the HIV/AIDS/ARV course was new to the respondents; therefore, it was interesting. The majority of the respondents (97,7%) rated the instructor as well prepared and an effective communicator, and agreed that course material was presented in an interesting way. The majority of the respondents believed that the instructor met the course objectives relating to HIV/AIDS and nutrition, and PMTCT, which correlated with the findings on knowledge acquisition described below.
- *Duration of training:* The majority of respondents (97,9%) felt adequate time was dedicated to the course; they were satisfied with the amount of time allocated for training and content.

- *Use of training aids:* Training aids used during training included a training manual, a background document to enhance understanding of the training content, a complementary CD training kit on the contents of the training manual, information on possible reading material, and contacts for networking. The audiovisual aids were rated as very effective by 90,7% of the respondents.

5.2.2 EXTENT TO WHICH REGISTERED NURSES CHANGED ATTITUDES AND IMPROVED KNOWLEDGE AND SKILLS AS A RESULT OF ARV TRAINING

- The objective of the Level 2 evaluation was to determine what registered nurses had learned during the ARV therapy training (Kirkpatrick; [n.d]). The data analysis was aimed at describing the knowledge gained by registered nurses during ARV training. Registered nurses' knowledge, skills and attitudes were measured using the same post-test questionnaire that course attendees completed after training. By analysing the responses of participating registered nurses to the post-test questionnaire items, the extent of knowledge gained by these nurses during ARV training could be assessed.
- The research instruments used in the research setting guided participating registered nurses; these research instruments were compiled to reflect the standard set by the ARV training programme and to be in line with the assessment tool used by course presenters. The same tool used during training was used for assessing the knowledge, skills, and attitudes of registered nurses who attended the ARV training programme in the period 2004 to 2009, and who were working at ARV-dedicated clinics and hospitals.
- The competency of registered nurses who completed the ARV training programme was assessed by administering the post-test questionnaire as an assessment tool.
- The majority of the respondents were found to be competent in ARV therapy management and administration after completing the ARV therapy training; the content covered in the true-false checklist reflected the content of the ARV module, ensuring that content validity was adhered to.

- However, results also indicated that registered nurses needed further training with respect to baseline assessments of HIV/AIDS patients, the treatment of HIV/AIDS patients who were also suffering from TB, and the side effects of ARV therapy.
- The skills assessment tool was used for assessing the extent of skills acquired by registered nurses who completed the ARV therapy training course. This assessment tool could be used for evaluating skills acquisition, application or improvement, as the same instrument was administered two weeks after completion of training as a post-test questionnaire. This tool thus formed part of the ARV module implemented by the DOH.
- Findings were that 90,7% of registered nurses regarded patient confidentiality as very important, 88,4% encouraged patients to undergo VCT, 93% monitored patient compliance to treatment, and 93% promoted the use of condoms to prevent the spread of HIV/AIDS. More than 60% of the respondents applied the PALSA Plus Protocol and ARV management guidelines to clinical practice.
- The majority of the respondents agreed that HIV/AIDS patients should not be treated differently (86%), and indicated that they had not fallen victim to the myth that AIDS would never happen to them (88,4%). The attitude of most respondents was that prevention was better than cure and that resources should therefore be focused on the prevention of HIV/AIDS.

5.3 CONCLUSIONS

- The study results suggested that the ARV training programme was of great benefit to registered nurses involved in the management of HIV/AIDS patients. Well-trained and motivated personnel are needed to promote the treatment and care of HIV/AIDS patients and to sustain the application of an effective and comprehensive HIV/AIDS management programme. Strengths of the ARV training programme included having experienced nurses brought into the programme, making it more sustainable. However, the programme could be improved by allocating more time to its practical component, as well

as ensuring that training content takes cognizance of the peculiar needs of the Free State community and address these needs.

5.4 RECOMMENDATIONS

TRAINING

- Training needs assessment and formative evaluation, as well as a systematic monitoring and evaluation plan, must be put in place for future training, to allow for better monitoring and evaluation processes and to help address the needs of nurses and clients.
- The training programme should be inclusive; the training curriculum should be developed to train all nurses who are involved with ARV therapy management, irrespective of qualifications. Registered nurses not involved with ARV therapy management should also be invited to the course, as it would improve their knowledge and skills, ultimately promoting the health and recovery of patients.
- The duration of training should be increased to allow more time for practical sessions and other competence-based activities.
- Problem solving, support, supervision and refresher courses should be introduced to ensure continuous quality improvement.
- Specific training policies and plans must be put in place to ensure training sustainability, credibility, and continuity.

PRACTICE

- Planning of training and creating the right working environment go hand in hand, as trainees would want to apply their newly acquired skills and knowledge in their working environment.

RESEARCH

- Further research should be done on evaluation of ARV training programme on other methods of research to improve training effectiveness e.g qualitative research as this was on quantitative only.

5.5 LIMITATIONS OF THE STUDY

The study was limited to the Thabo Mofutsanyana District in the province of the Free State and only registered nurses working at selected ARV-dedicated clinics and hospitals were included as study participants.

Only summative evaluations were done, and the post-test research instruments were also used during training. No pretest was used to compare or determine differences.

5.6 CONCLUDING SUMMARY

The South African DOH's Strategic Plan for South Africa (2005) included a framework for multiple responses to HIV/AIDS at all levels of society. The multiple-response framework included a comprehensive package of care for HIV/AIDS patients, and the provisioning of ARV treatment in the public sector. This study was aimed at evaluating the effectiveness of a two-week ARV therapy training course presented to registered nurses in the province of the Free State from 2004 to 2009.

The study results suggested that the ARV training programme was of great benefit to registered nurses involved in the management of HIV/AIDS patients. All respondents rated the theoretical content of the training course as relevant to their jobs. The majority of the respondents were found to be competent in ARV therapy management and administration after completing the ARV therapy training.

The study recommended that training should be inclusive: all nurses involved with ARV therapy management, irrespective of qualifications or years of experience, should receive ARV therapy training as it would improve their knowledge and skills, and ultimately promote the health and recovery of patients.

The evaluation of the effectiveness of the ARV therapy course also reflected the positive attitudes of registered nurses toward HIV/AIDS patients, and indicated that the focus should be on prevention rather than cure. Study findings could guide the DOH in improving the specific ARV course evaluated as well as future training courses.

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ANNEXURE A: ETHIC APPROVAL FROM NORTH WEST UNIVERSITY



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

F.M. Mulaudzi

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: (018) 299-4900
Faks: (018) 299-4910
Web: <http://www.nwu.ac.za>

Ethics Committee

Tel +27 18 299 4850
Fax +27 18 293 5329
Email Ethics@nwu.ac.za

2009-10-31

ETHICS APPROVAL OF PROJECT

The North-West University Ethics Committee (NWU-EC) hereby approves your project as indicated below. This implies that the NWU-EC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title : Evaluating the effectiveness of ARV training
program for registered nurses in Thabo Mofutsanyane District
(Free State Province)

Ethics
number:

N W U - 0 0 0 5 9 - 0 2 - 1 1

Approval date: 23 October 2009

Expiry date: 22 October 2014

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principle investigator) must report in the prescribed format to the NWU-EC:
 - annually (or as otherwise requested) on the progress of the project,
 - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-EC. Would there be deviation from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-EC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-EC retains the right to:
 - request access to any information or data at any time during the course or after completion of the project;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the project are revealed or suspected,
 - it becomes apparent that any relevant information was withheld from the NWU-EC or that information has been false or misrepresented,
 - the required annual report and reporting of adverse events was not done timely and accurately,
 - new institutional rules, national legislation or international conventions deem it necessary.

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

Prof MMJ Lowes
(chair NWU Ethics Committee)

Prof HH Vorster
(Chairman: NWU Ethics Committee: Author)

ANNEXURE B: APPROVAL FROM THE FREE STATE DEPARTMENT OF HEALTH



health

Department of
Health
FREE STATE PROVINCE

P.O. Box 19068
WITSIESHOEK
9870

Attention: MM Mokuena

APPLICATION TO CONDUCT RESEARCH/COMPLETE A STUDY

The above-mentioned communiqué received bears reference.

Permission is hereby granted to conduct a study on the evaluation of the effectiveness of ARV training for registered nurses in Thabo Mafutsunyana District provided that you comply with the following:

- ✓ Voluntary participation with informed consent.
- ✓ The study is conducted in a manner that does not impact negatively on services.
- ✓ The results be shared with the Free State Department of Health before being released to any other party.

Yours faithfully

DR. S. KABANE
ACTING HEAD: HEALTH

DATE: 24/09/09

ANNEXURE C: APPLICATION TO CONDUCT RESEARCH

PO Box 19068
Witsieshoek
9870
13 November 2009
Cell: 0825054877

Mr Maarohanye
Chief Executive Officer
Department of Health
Thabo Mofutsanyana Health District
QwaQwa

Dear Sir

Application To Conduct Research

Researcher:

My name is Masabata Maria Mokuena and I am a student at the North-West University (NWU) doing a master's degree in nursing under the guidance of Prof. Mavis Mulaudzi. My student number is 12332712. Presently, I am working at the Dihlabeng Regional Hospital in Bethlehem as a professional nurse.

I hereby request permission to do the following research in your district:

Title/Topic:

Evaluating the effectiveness of the ARV training programme for registered nurses in the Thabo Mofutsanyana District (Free State Province)

Aim of research:

The aim of the research is to evaluate the effectiveness of the ARV training programme for registered nurses in the Thabo Mofutsanyana District in the province of the Free State.

Significance of the study:

The implementation of the recommendations of the study might result in the improvement of future training programmes, thereby improving the quality of service delivery in the district, especially the performance of registered nurses in managing HIV/AIDS patients.

Study target group:

The study target group consists of registered nurses who underwent the ARV training in the Thabo Mofutsanyana District in the period 2004 to 2009, who are working at HIV-dedicated clinics and hospitals.

Method:

The researcher will use validated questionnaires based on the Kirkpatrick Model and post-test questionnaires that were used at the time of training to evaluate the effectiveness of the ARV training course.

Disruption of services rendered at district health institutions:

Disruption will be minimal, as the researcher will enter consulting rooms only during lunch hours when no consultations occur. The researcher will visit the clinics and hospitals during the day.

Benefits/Risk:

The outcomes of the research study will be communicated with all stakeholders. Participants' informed consent will be obtained and confidentiality maintained.

Proposed date of commencement of research: 19 November 2009

Proposed date of completion of research: 15 November 2011

Thank you, and kind regards

Mrs Masabata Mokuena

ANNEXURE D: INFORMED CONSENT LEAFLET AND FORM

INFORMED CONSENT LEAFLET

STUDY TITLE: EVALUATING THE EFFECTIVENESS OF ARV TRAINING FOR REGISTERED NURSES IN THE THABO MOFUTSANYANA DISTRICT (FREE STATE PROVINCE)

INVESTIGATOR: MASABATA M MOKUENA

Research purpose:

Mrs Masabata Maria Mokuena is a registered nurse studying the effectiveness of ARV training for registered nurses who work with HIV/AIDS clients. The expectation is that your participation in this research will enable the researcher to make recommendations about the effectiveness of ARV training for registered nurses.

Potential benefits:

The study will make recommendations for the improvement of future training programmes. Improved training programmes will directly and positively affect the quality of service delivery, especially the performance of registered nurses in managing HIV/AIDS clients. The study will create awareness among health workers of how ARV treatment should be managed.

Approval:

The study and its procedures have been approved by the appropriate persons and review boards at the North-West University and the Ethics Committee of the Department of Health, province of the Free State.

Potential risk:

The study procedures might cause some participants some degree of discomfort.

Procedures and time commitment:

The procedures include responding to a questionnaire about the content of ARV training that was offered to the registered nurse and completing the demographic data sheet. Participation in this study will not take up more than 15 minutes of your time.

Voluntary participation:

You are free to ask any questions about your possible participation in this study. Your participation in this study is completely voluntary; you are under no obligation to participate and you have the right to withdraw at any time.

Anonymity and confidentiality:

The study data will be coded, and it will be impossible to link any data to a specific person or name. Your identity will not be revealed during the study or when it is reported or published. All study data will be collected by Mrs Mokuena and kept in a safe place. No data will be shared with any person without permission.

INFORMED CONSENT FORM

I have read the informed consent leaflet and agree to participate in this study.

Participant's signature

Date

I have explained the study objectives and scope to the above participant in order to obtain his/her informed consent.

Researcher's signature

Date:

ANNEXURE E – F: RESEARCH INSTRUMENTS

DEMOGRAPHIC PROFILE QUESTIONNAIRE

Please tick the most appropriate answer in the relevant box:

1. Your age group	20 - 25	1
	26 - 30	2
	31 - 35	3
	36 - 40	4
	41 - 45	5
	46 - 50	6
	51 - 55	7
	56 - 60	8
	61 - 65	9
	> 65	10

2. Your gender	Female	1
	Male	2

3. Which one of the following best describes your living arrangements (tick only one)	Living at home with parents	1
	Living with a partner/husband	2
	Living alone with dependent children	3
	Living on my own	4
	Living with partner/husband and dependent children	5
	Living with other adults	6
	Other (please specify)	7

4. Your home language	English	1
	Afrikaans	2
	Setswana	3
	Sesotho	4
	Sepedi	5

isiZulu	6
isiXhosa	7
Tshivenda	8
Siswati	9
Xitsonga	10
isiNdebele	11
Other (specify)	12

5. Your category as a health worker	Nurse	1
	Doctor	2
	Social worker	3
	Pharmacist	4
	Other (specify)	5

6. The health structure level you are at	National	1
	Provincial	2
	District/subdistrict	3

7. Level of management of current position	Senior management	1
	Middle management	2
	Junior management	3

8. Number of years that you have worked in current position	< 1 year	1
	1 – 2 years	2
	3 – 5 years	3
	6 – 10 years	4
	11 – 15 years	5
	16 – 20 years	6

9. Have you attended the ARV training course?	Yes	1
	No	2

10. If yes, specify how many such trainings you attended the past year?	1-3	1
	4-6	2
	7-10	3
	>10	4

11. Are you working in an HIV-dedicated clinic/hospital?	Yes	1
--	-----	---

	No	2
12. Have you ever treated an HIV positive patient?	Yes	1
	No	2

RESEARCH INSTRUMENT: REACTIONNAIRE

In order to determine the effectiveness of the ARV training programme in meeting your needs and interests, we need your input. Please indicate your reactions and make any comments or suggestions that will help us to serve you better.

Please comment on all relevant items and, where scoring ranges are given, circle the score that best represents your views about the ARV training programme that you attended.

	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	The material covered in the ARV training programme was relevant to my job.				
2.	The material was presented in an interesting manner.				
3.	The instructor was an effective communicator.				
4.	The instructor was well prepared.				
5.	The audiovisual aids were effective.				
6.	The handout was of help.				
7.	I will be able to apply much of the material to my job.				
8.	The facilities were suitable.				
9.	The schedule was suitable.				
10.	There was a good balance between presentation and group involvement.				
11.	I feel that the ARV workshop helped me to do my job.				
12.	The instructor met the following course objectives: • Nutrition for HIV/AIDS patients • Opportunistic infections • Prevention of mother-to-child transmission (PMTCT) • Laboratory investigations • Pharmacovigilance and drug interactions				

13. What suggestions do you have for future programmes?
a.
b.

RESEARCH INSTRUMENT: QUESTIONNAIRE ON KNOWLEDGE, SKILLS, AND ATTITUDES

The following statements deal with knowledge and skills acquired during ARV training, and nurses' attitudes toward HIV/AIDS patients.

Please think about the knowledge you acquired during the HIV/AIDS/ARV training programme and then respond to the following statements. Please tick the box that best describe your agreement with each statement.

Statements relating to knowledge acquisition		True	False
1	<u>Basics of HIV/AIDS</u> a) HIV causes disease by immunosuppression. b) HIV causes disease by epithelial damage.		
2	<u>Who qualifies?</u> a) If the CD4 cell count of an HIV positive patient is less than <u>200 μL</u> , he/she should be placed on ARV treatment. b) The CD4 cell count is a measurement of the number of HIV viruses in the body.		
3	<u>Laboratory investigations</u> An HIV patient on Nevirapine should regularly undergo a liver function test.		
4	<u>Drug interaction</u> St. John's wort, a natural antidepressant, decreases the effectiveness of the plasma concentration of drugs in patients using ARVs.		
5	<u>Baseline assessment</u> All patients on ARV drugs should routinely undergo CD4 and viral load tests at three-monthly intervals.		
6	<u>Nutrition for HIV/AIDS patients</u> a) The nutritional supplement Philani is used for adult patients. <u>Infant feeding</u> a) For infant the risk of HIV transmission through breastfeeding is smaller than risk of dying from other infections.		
7	<u>Ethics of HIV/AIDS</u> HIV/AIDS patients have the right to equal treatment, and not being discriminated against.		
8	<u>Postexposure prophylaxis (PEP) for HIV infection</u> a) Zidovudine (AZT) 200 mg 8 hourly plus lamivudine (3TC) 150 mg 12 hourly		

9	<u>PMTCT and ARV roll-out</u> a) A pregnant HIV positive woman with a CD4 cell count of <u>200 μL</u> should receive ARV treatment.		
10	<u>TB and HIV infections</u> a) Pulmonary TB is a WHO Stage 4 disease. b) TB treatment can only be started after the HIV patient has been on ARV drugs for two months.		
11	<u>Opportunistic infections</u> a) The syndromic treatment for a penile discharge includes Ciprobay, <i>doxycycline</i> and Flagyl. b) Pregnant ladies with a vaginal discharge may receive <i>doxycycline</i> , Ciprobay and Flagyl.		
12	<u>ARV regimen and side effects</u> a) The combined drugs in a regimen to treat HIV positive patients are d4T, 3TC and <i>efavirenz</i> . b) <i>Efavirenz</i> mostly causes rash. c) AZT can cause bone marrow suppression.		

RESEARCH INSTRUMENT: QUESTIONNAIRE ON KNOWLEDGE, SKILLS, AND ATTITUDES (continued)

Please think about the skills you acquired during the HIV/AIDS/ARV training programme and then respond to the following statements:

Statements relating to skills acquisition		Strongly Agree	Agree	Disagree	Strongly Disagree
1	During counselling I greet my patients with warmth, with a smile, and counsel them in a private room.				
2	When interacting with patients I exercise patience and show respect, and I treat patients as individuals.				
3	When consulting with my HIV patient, I regard everything concerning the patient diagnosis as confidential.				
4	When a patient visits the clinic, I listen to their complaints, assess them accordingly, and use the PALSA Plus protocol together with comprehensive ARV clinical management guidelines to treat them.				
5	Nurses should encourage all persons, irrespective of their status, to undergo voluntary counselling and testing (VCT).				
6	During adherence counselling I enquire about how patients are taking their medicine.				
7	I recommend to HIV positive mothers to breastfeed the baby rather than bottle-feed it in the first six month after birth.				
8	Partners should use condoms during sexual activities.				

RESEARCH INSTRUMENT: QUESTIONNAIRE ON KNOWLEDGE, SKILLS, AND ATTITUDES (continued)

Please think about your attitude toward HIV/AIDS patients after undergoing ARV training. With respect to each statement in the left-hand column below, indicate (with an x) the extent of your agreement/disagreement.

	Statements relating to attitude change	Strongly Agree	Agree	Disagree	Strongly Disagree
1	People with AIDS are like family.				
2	Because AIDS is preventable, we should focus our resources on prevention rather than cure.				
3	People with AIDS got what they deserved.				
4	AIDS affects all of us.				
5	People with AIDS should be treated just like all other people.				
6	AIDS will never happen to me.				

