

**FACILITY LINKAGES TO HIV CARE AND TREATMENT AS PER ENTRY POINT
AT A NORTON HEALTH CENTRE, ZIMBABWE**

by

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submitted in accordance with the requirements for
the degree of

MASTER OF PUBLIC HEALTH

at the

University of South Africa

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DECLARATION

I declare that **FACILITY LINKAGES TO HIV CARE AND TREATMENT AS PER ENTRY POINT AT A NORTON HEALTH CENTRE, ZIMBABWE** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



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January 2018

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FACILITY LINKAGES TO HIV CARE AND TREATMENT AS PER ENTRY POINT AT A NORTON HEALTH CENTRE, ZIMBABWE

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ABSTRACT

Effective linkage to HIV care and treatment for all people diagnosed with HIV is crucial if positive treatment outcomes are to be realised. The study used the client records for all those newly diagnosed with HIV through the two entry points for HIV testing between January 2016 and December 2016. The aim of the study was to determine the proportions between the linkages to HIV care and treatment as per entry point for the people diagnosed with HIV at a Norton Health Centre in Zimbabwe. More importantly, the study sought to make recommendations to improve linkage per entry point. This was achieved through determining the proportion of individuals diagnosed with HIV that had documented evidence of linkage to HIV care and treatment by entry point. The study also evaluated the association between the entry point of HIV diagnosis and the linkage to HIV care and treatment.. In total, 239 clients' records were reviewed who were over the age of 16 years. Overall, 144 (60%) had documented evidence of being linked to HIV care while about 95 (40%) of the client records had no documented evidence of linkage to HIV care. 143(60%) had documented evidence of initiation on antiretroviral therapy (ART) while about 96 (40%) had no documented evidence of initiation on ART. A statistically significant association between entry point for HIV diagnosis and the linkage to HIV care and treatment was demonstrated. A statistically significant higher proportion of females was demonstrated to be linked to HIV care and treatment than for males. The Prevention of Mother to Child Transmission of HIV (PMTCT) entry point showed higher linkages than OPD and wards entry point. Therefore, there is need to make put measures in place that encourage all clients that are diagnosed with HIV through the various entry points at the health centre to be linked to HIV care and treatment. The study made recommendations based on the findings. It is also recommended that male partners be encouraged to accompany their female expectant partners when attending PMTCT sessions. Youth were found to be lower in terms of linkages and the youth user friendly centre is recommended so as to attract more youths to come for testing.

Key words: Care, treatment; Entry points; Facility linkage; HIV, Norton Health Centre

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Honour and Glory to the Almighty for allowing me to complete this study when all odds were against.

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Dedication

To all the millions of people that the world has lost to HIV and AIDS related deaths.

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LIST OF ABBREVIATIONS

3TC	Lamivudine
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
CD4	Cluster Differentiation 4
EFV	Efavirenz
EMTCT	Elimination of Mother to Child Transmission
ePMS	electronic Patient Monitoring System
HIV	Human Immunodeficiency Virus
MoHCC	Ministry of Health and Child Care
MNCH	Maternal, Newborn and Child Health
MRCZ	Medical Research Council of Zimbabwe
OI	Opportunistic Infection
OPD	Out Patients Department
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission
SRH	Sexual Reproductive Health
START	Strategic Timing of Antiretroviral Therapy
STI	Sexually Transmitted Infection
TB	Tuberculosis
TDF	Tenofovir
UNAIDS	United Nations Joint Programme on HIV/AIDS
VMMC	Voluntary Male Medical Circumcision
WHO	World Health Organisation

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CHAPTER 1

STUDY OVERVIEW

1.1 INTRODUCTION AND ORIENTATION OF THE STUDY

This study focuses on the linkage to HIV (Human Immunodeficiency Virus) care and treatment for clients diagnosed with HIV at a health centre in Norton, Zimbabwe. The study explores the proportions of clients with evidence of linkage to care and treatment as per entry point from which they are diagnosed with HIV. The concept of linkage to care and treatment of HIV positive clients was coined by World Health Organisation (WHO, 2015). More information is discussed in the background to the study as well as paragraphs that follows.

1.2 BACKGROUND OF THE STUDY

The World Health Organisation has considered HIV as a global public health concern (WHO, 2015:112). Approximately 36.9 million people were living with Human Immunodeficiency Virus (HIV) globally by the end of 2014. The majority of these people live in sub-Saharan Africa (WHO, 2015:112). Zimbabwe has the fifth highest HIV infection rates in the sub-Saharan region with a prevalence rate of 15% (AVERT, 2016). As of the year 2013, the highest number of adults living with HIV in Zimbabwe was found in Manicaland Province and the least was found on Matabeleland North Province (Ministry of Health and Childcare [MoHCC], 2014:29).

Although Zimbabwe has seen a decline in new HIV infections among adults by approximately 50% in the last decade, which translated to a reduction in HIV, as well as related deaths by 60%, there is still some concern and more effort is still needed to keep the epidemic under control (MoHCC, 2014:29). Furthermore, this success has been attributed to highly successful HIV prevention, treatment and support programmes. One of these programmes is the Opportunistic Infections and Antiretroviral Therapy (ART) Programme introduced by the Ministry of Health and Child Care in April 2004 which rolled out ART services countrywide (MoHCC, 2015: iii). Despite this success story, Zimbabwe still has low HIV testing rates with approximately 66% of its population knowing their HIV status according to the Zimbabwe Demographic Health Survey of 2010/11 (MoHCC, 2016:9).

The success of any ART programme depends on the timely HIV diagnosis, linkage to care, treatment initiation, and retention in care (Losina, Bassett, Giddy, Chetty, Regan, Walensky, Ross, Scott, Uhler, Katz, Holst & Freedberg, 2010:2). Early treatment is believed to be associated with clinical and HIV prevention benefits, improving survival and reducing the

incidence of HIV infection at community level (MoHCC, 2013: 20). The MoHCC has been using the 2013 WHO guidelines for determining ART eligibility and initiation which recommended that people with a confirmed HIV diagnosis with a CD4 cell count of 500cells/mm³ or less or an advanced stage of disease classified as WHO Clinical Stage 3 or 4 should be started on ART (WHO, 2015:92).

In 2015, the WHO revised the recommendation which then advocated that all adults diagnosed with HIV should be initiated on ART regardless of the CD4 cell count level or the clinical stage (WHO, 2016:74). This treatment approach has become to be known as the “Treat All” approach (WHO, 2017). Moreover, these new recommendations are in line with the United Nations Joint Programme on HIV/AIDS (UNAIDS) ambitious targets called the “90-90-90”, which are aimed at ending the HIV epidemic by the year 2030. These targets aim to have 90% of all people living with HIV knowing their status and of these, 90% of them should receive sustained ART which should translate to 90% of those people on ART having viral suppression by the year 2020 (UNAIDS, 2014:1).

Achievement of the UNAIDS 90-90-90 targets requires all people diagnosed with HIV to be effectively linked to care and treatment. However, these linkages are unacceptably low in sub-Saharan region with an estimated 40% of the people diagnosed with HIV not linked to care and initiating on ART late (WHO, 2016:26). By the end of 2014, approximately 1 168 451 adults in Zimbabwe were eligible for ART based on a CD4 cell count of <500 cells/mm³ yet only 732 919 clients are receiving ART in Zimbabwe, which is only 63% of those eligible (Takarinda, Harries & Mutasa-Apollo, 2016:4).

The overall goal of having all people diagnosed with HIV on sustained ART is to be able to attain viral suppression, which is an HIV viral load below the detectable threshold using viral assays (WHO, 2015: xii). People taking ART who manage to achieve viral suppression will not transmit HIV to their sexual partner making it a key strategy in preventing the spread of HIV and will also allow them to live healthy longer lives (WHO, 2015: 64; CDC, 2016:1). There is a model of sequential stages that people living with HIV go through from HIV diagnosis to achieving viral suppression which is called the ‘HIV Continuum of Care’ or the ‘HIV Treatment Cascade’. In addition, the continuum of care also shows the proportions of the people living with HIV that are engaged at each stage (AVERT, 2016).

The first stage involves the HIV diagnosis and then those people are linked to care as the second stage. The care stage involves determining those eligible to proceed to the third stage of ART initiation while those eligible yet are retained in care. Lastly, sustained ART should then lead

to viral suppression as the last stage (AVERT, 2016; CDC, 2016). Information from the HIV Treatment and Care Programme in Zimbabwe revealed that the highest number of loss to follow-up along the HIV treatment cascade occurs between diagnosis with HIV and enrolment into care and receiving ART (MoHCC, 2012).

Loss to follow-up in HIV care and treatment is a complicated issue that can be influenced by multiple factors on the individual, healthcare system and societal level (Gerdtts, Wagenaar & Farquhar, 2014: e37). The type of HIV testing centre or HIV testing entry point has been found to be associated with the loss to follow-up with studies conducted in Mozambique. This study also suggests that pregnant women diagnosed through prevention of mother to child transmission (PMTCT) centres are less likely to be linked to care and treatment compared to people diagnosed through voluntary counselling and testing (VCT) centres (Gerdtts et al., 2014: e38).

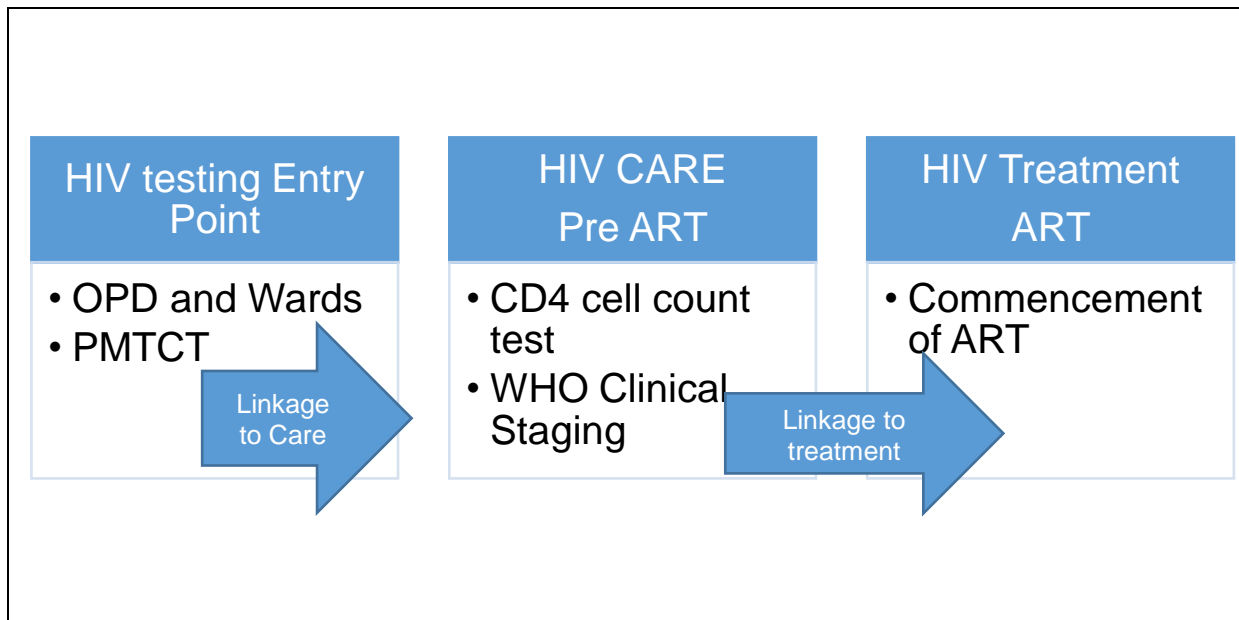


Figure 3.1: Diagrammatic presentation of HIV linkage to care and treatment process at a Norton health centre (Tungwarara, 2017)

Figure 1.1 above demonstrates the process involved in linking people diagnosed with HIV at a Norton Health Centre as described by the WHO (2016:243-251).. The entry point is where the clients are tested and if they test HIV positive are referred to HIV care for pre-ART care. The facility has got two entry points for HIV testing, the first entry point provides testing to all clients coming through the out-patients department (OPD) and the ones tested in the wards. For this research, the entry point will be referred to as the OPD and Wards entry point. The second testing entry point known as the Prevention of Mother to Child Transmission of HIV (PMTCT) provides testing to clients accessing the facility for antenatal care (ANC), post-natal

care (PNC) and maternity services. In pre-ART care, the clients go through CD4 cell count test and the WHO clinical staging so as to determine if they are eligible to be enrolled on ART. CD4 cell count test is a laboratory test that is used to measure the amount of CD4 T lymphocytes in a sample of the blood. It is also used as an indicator of the immune system and predictor of the progression of HIV (Ford, Meintjes, Vitoria, Greene & Chiller, 2017:123). Clinical staging is an HIV classification system that is used in low resource settings that do not have access to CD4 cell count testing methods. The classifications range from stage 1 to 4 (US Department of Health and Human Services and Health Resources and Services Administration 2014:95). Those clients found to be eligible will be linked to HIV treatment, which is being enrolled on ART.

This study aimed at determining the proportions in the linkage to HIV care and treatment as per entry point for HIV diagnosis for the people diagnosed with HIV at a Norton Health Centre. Based on the information above, the following problem statement was developed for this study.

1.3 STATEMENT OF THE RESEARCH PROBLEM

A problem statement is a structured formulation of the problem that is to be addressed or that needs to be fixed. The statement is meant to express the troubling situation that needs to be investigated and that provides a rationale for a new inquiry (Polit & Beck, 2012:82). The success of any ART programme depends on the timely HIV diagnosis, linkage to care, treatment initiation, and retention in care (Losina et al.,2010:2). HIV testing and treatment services are provided through many entry points at the Norton Health Centre and it has been an observation of the researcher from the experiences in other health centres in Zimbabwe that these HIV diagnosed people do not come for the follow up linkages to care and treatment. The study aimed to identify the proportions of client linkage to HIV care and treatment as per entry point of HIV testing as well as to identify whether there is any association between the entry points through which people are diagnosed with HIV and the linkage to HIV care and treatment outcome. The findings would then be used in making recommendations that ensure that almost all clients diagnosed with HIV through the various entry points get treatment.

1.4 RESEARCH AIM/ PURPOSE

The aim of this study was to determine the proportions between the linkages to HIV care and treatment as per entry point for the people diagnosed with HIV at a Norton Health Centre. More importantly, the study sought to make recommendations to improve linkage per entry point. The following objectives were developed based on the purpose of the study.

1.5 RESEARCH OBJECTIVES

In order to achieve the aim of the study, the following objectives were developed:

- To determine the proportion of individuals diagnosed with HIV that have documented evidence of linkage to HIV care and treatment at a Norton Health Centre by entry point.
- To evaluate the association between the entry point of HIV diagnosis and the linkage to HIV care and treatment.
- To make recommendations for improving the linkages to HIV care and treatment as per entry point at a Norton Health Centre.

1.6 RESEARCH HYPOTHESES

Based on the above objectives and aim of the study, the following hypothesis were developed as described by Polit and Beck (2012:84). Research hypotheses is a prediction about the relationship between variables and this hypothesis is applicable when conducting quantitative research (Polit & Beck, 2012:84). In addition, the hypotheses attempt to predict the answers to the proposed research questions in a study and for the purpose of this study, the following hypotheses were made.

H₁: There is a significant relationship between the entry point from which people are diagnosed with HIV at the facility and the subsequent low linkage to HIV care and treatment.

H₂: There are more HIV positive females linked to HIV care and treatment than HIV positive males at the health facility.

1.7 SIGNIFICANCE OF THE STUDY

This study identified the losses occurring at every stage of the HIV continuum of care for people diagnosed with HIV at a Norton Health Centre. The study also identified the various losses in the linkages to care and treatment as per entry point which can be useful in addressing any bottlenecks in some of the entry points. The Ministry of Health and Child Care of Zimbabwe launched the Guidelines for Antiretroviral Therapy for the Prevention and Treatment of HIV in Zimbabwe in December 2016 (MoHCC, 2017:3). More importantly, the guidelines have seen the roll out of the “treat all” approach for all people diagnosed with HIV. So, this retrospective study examines the clients diagnosed prior to “treat all” roll out, therefore serving as a baseline study which can be used to assess the impact of the new intervention. This study purely focuses on the quantitative aspect of the proportions of the clients diagnosed with HIV through the various entry points with evidence to linkage to HIV care and treatment. Any significant losses noted will form basis for a qualitative study aimed at exploring the causes of

these losses envisaged to be very helpful in crafting any intervention plan to improve retention of clients in care and treatment.

1.8 DEFINITION OF KEY CONCEPTS

Facility: In the context of HIV testing, facility-based HIV testing services which is commonly referred to as Provider Initiated Testing and Counselling (PITC) are those services that are offered in a health facility which includes places like clinics, hospitals and primary health centres (WHO, 2016: 26).

HIV: The virus that causes Acquired Immune Deficiency Syndrome (AIDS) and this virus targets the immune cells in the body known as the CD4 cells which result in a weakened immune system (WHO, 2016: xv).

Linkage to HIV Care and Treatment: The WHO defines linkage as a process of actions and activities that supports people testing for HIV and people diagnosed with HIV in engaging with prevention, treatment and care services as appropriate for their HIV status. For people with HIV, linkage refers to the period beginning with HIV diagnosis and ending with enrolment in care or treatment (WHO 2016: xv).

Entry Point: According to the WHO (2016), an entry point is the opportunities or gateways that can be used to identify the people who can benefit from treatment through the provision of HIV testing and counselling.

Zimbabwe: Zimbabwe is a landlocked country that is situated in Southern Africa covering an estimated area of 390 784 km² (Kerina, Pedersen & Muller, 2013:1). Zimbabwe borders Mozambique, South Africa, Botswana, and Zambia. The country has a population of 13 061 239 people with women making up 52% and 48% men as of the 2012 Census (UN 2014).

1.8.1 OPERATIONAL DEFINITION OF TERMS

The definitions given below are the operational definitions that were adopted in this study:

Facility: In this study, a facility is referred to as a health centre that provides HIV testing and treatment services in Norton region.

HIV: HIV refers to the virus that causes the body to lose its defence mechanism and making the body unable to defend itself against any form of infection.

Treatment: In this study, treatment refers to the medication taken for the treatment of HIV in an attempt to strengthen the body.

Linkage to HIV Care and Treatment: In this study, linkage to HIV care will refer to the first documented attendance for CD4 or WHO clinical staging within 60 days of HIV diagnosis. Linkage to HIV treatment will refer to documented initiation on ART within 90 days of HIV diagnosis for those who are recorded as ART eligible.

Entry Point: In this study, the entry points will refer to the gateways through which people can receive HIV testing and treatment services at the health centre and these are namely outpatients' department (OPD), voluntary counselling and testing (VCT), antenatal care (ANC), tuberculosis clinic (TB) and wards that provide HIV testing services. The following paragraphs will discuss the research methodology used in this study.

1.9 RESEARCH DESIGN AND METHOD

1.9.1 Research Methodology

Research methodology is the systematic way in which the researcher intends to solve the research problem, collect the data, analyse, and interpret the findings (Creswell, 2009:233). Accordingly, the study follows a quantitative approach. Quantitative research is an approach that is used to test objective theories through examining the relationship among variables and these variables can be measured using various instruments so that the numbered data can be analysed using statistical procedures (Creswell, 2014:32). More information on the choice of research methodology will be discussed in detail in Chapter Four.

1.9.2 Research Design

According to Kumar (2011: 95), a research design is a strategy or plan of investigation that is used in order to get answers to research questions or problems. This study followed the quantitative approach that utilised a retrospective descriptive research design. Furthermore, descriptive research involves the examination of the situation as it is in its current state and this can be achieved through the identification of attributes of a particular phenomenon based on an observational basis, or the exploration of correlation between two or more phenomena (Williams, 2011:66).

The descriptive study can be conducted as a retrospective study in which the investigator studies a phenomenon, situation or a problem that has occurred in the past and formulates ideas about possible associations and investigate potential relationships (Kumar, 2011:110). More importantly, this design is the most suitable since the study examined a phenomenon of people failing to be linked to HIV care and treatment despite having tested HIV positive. To have an understanding on how the entry points through which the clients were tested for HIV could have an association with the linkage to HIV care and treatment proportions, there is need to

retrospectively visit the records and make evaluations. More information is discussed in detail in Chapter Three.

1.9.3 Research Setting

Research setting is defined as the physical location and conditions in which data collection takes place in a study (Polit & Beck, 2017:744). This research was conducted at Health Centre in a town called Norton in Zimbabwe. Norton is a small town that lies about 40 kilometres west of the capital city Harare along the highway linking Harare and Bulawayo. It is found in Mashonaland West Province. According to the 2010 National Census, Norton has a population of 67 591 people.

1.9.4 Research Population

A population is the entire aggregation of cases in which a researcher is interested (Polit & Beck, 2012:273). It is common practice in descriptive studies to define the study population first and then make observations on the sample taken from it (Banerjee & Chaudhury, 2011:8). The study population was made up of clients who tested HIV positive between January 2016 and December 2016 through the three entry points at Norton Health Centre. The total population for this study was approximately 520 client records. The population was drawn from the various entry points for HIV testing at the health centre.

Inclusion criteria: Clients of 16 years and above testing HIV positive for the first time at the Norton Health Centre between January 2016 to December 2016. The decision of having the age limit at 16 years was to conform with the Ministry of Health and Child Care's consent age for HIV testing services, which is 16 years or older (MoHCC, 2017:34).

Exclusion criteria: Clients under the age of 16 years testing positive for the first time. Clients with an already known HIV positive status. Therefore, any client who does not fit in the period of the study was excluded.

1.9.4.1 Sampling

Kumar (2011:176) define sampling as the process of selecting study units from a defined study population in order to make an inference about the whole population. In this study, proportionate stratified probability sampling was used. According to Polit and Beck (2017:740), probability sampling is defined as the selection of sampling elements from a population using a random procedure. Proportionate stratified probability sampling as defined by Kumar (2011:185) is sampling in which the number of elements in each stratum in relation to its proportion in the population is selected using a random procedure. The entry points will

form the strata and the respective proportions to the total number of HIV positive clients will determine the sample size from each entry point.

The minimum sample size was calculated using the Raosoft Software (Raosoft, 2016). The formula takes into account of the confidence level, margin of error and the population size to be used in the study. The confidence level for this study was 95% and the margin of error was 5% and the population size was approximately 520 client records. The minimum sample size calculated for this population was approximately 258 records. Since there are various entry points that have varying sizes of population, proportionate stratified probability sampling was applied to come up with the 258 records. The formula that was used to determine the sample size is as follows:

$$x = Z^2 \frac{r(100-r)}{100}$$

$$n = \frac{N \cdot x}{(N-1)E^2 + x}$$

$$E = \text{Sqrt}[\frac{(N-n)x}{n(N-1)}]$$

1.9.5 Data Collection

Data collection refers to the process of gathering and measuring information on variables of interest, in an established systematic fashion that allows the researcher to test the stated hypotheses, and evaluate outcomes (Polit & Beck, 2017:725). The data were collected from a Norton Health Centre using the records of the clients who tested HIV positive. The study involved retrospectively tracing clients' records that tested HIV positive between January and December 2016 at the Norton Health Centre to determine documented uptake of subsequent HIV care and treatment services. The data for this study were obtained from the HIV management registers, namely, the HIV Testing and Counselling (HTC) register, Pre-ART register and the ART register from the outpatients' department (OPD), antenatal care (ANC) clinic, Tuberculosis (TB) clinic, voluntary testing and counselling (VCT) entry points and the wards that provide HTS. The electronic patient management system (ePMS) and OI/ART patient care booklets were used to trace some of the individual care and treatment outcomes.

1.9.6 Data Analysis

Data analysis involves the systematic organisation and synthesis of research data and in quantitative data, the testing of hypothesis using the data (Polit & Beck, 2017: 725). The collected data were entered on the data capturing platform. The data were analysed using Epi Info version 7 Statistical Software (Centre for Disease Control and Prevention, Atlanta, GA). Proportions of clients linked to HIV care and treatment were calculated for the three entry points involved in the research. In addition, the data was interpreted using the mean (M), standard deviation (SD) and correlations. Data were kept safe behind lock and key with the researcher and only the people involved in research having access.

1.10 RELIABILITY AND VALIDITY

Reliability is a characteristic of an instrument that reflects the extent to which the instrument provokes consistent responses. Reliability of a research instrument in quantitative research is the extent to which the same results can consistently be obtained upon using the instrument in the same situation on repeated occasions (Heale & Twycross, 2015:66). Reliability of the checklist used in this study were evaluated for equivalence. This is the degree of consistency in providing measurements of the same attributes and is of concern when different observers are using the same instrument to collect data at the same time (Brockopp & Hastings-Tolsma, 2003:217).

Validity is the ability of an instrument to measure what is designed to measure (Kumar, 2011:166). The instrument used in this study included a checklist and the measures taken to ensure content validity and construct validity. Content validity looks at whether the instrument adequately covers almost all the content it should cover with respect to the variables under study which is linkage to HIV care and treatment (Heale & Twycross, 2015:66). Therefore, the researcher ensured content validity by developing a checklist that took into account of all the processes and stages that constituted linkage to HIV care and treatment. The checklist was crafted in a way that every stage of the HIV continuum of care was answered. Construct validity refers to the extent to which inferences can be drawn about test scores in relation to the concept being studied, in this case linkages to HIV care and treatment (Heale & Twycross, 2015:66). It is the extent to which the checklist to be used is measuring the linkages to care and treatment and this was ensured through homogeneity in all the elements of the checklist.

1.11 ETHICAL CONSIDERATIONS

Research ethics govern the standards of conduct of scientific research with the aim of protecting the dignity, rights and welfare of the research participants. An ethics committee to ensure that appropriate ethical standards are being upheld should review the research involving human participants (WHO, 2017). The researcher sought ethical clearance from University of South Africa Higher Degrees Research and Ethics Committee (**Annexure A**) and also from the Medical Research Council of Zimbabwe (MRCZ) (**Annexure C**) to conduct the research. In addition, permission was also sought at the Norton Health Centre to conduct the research (**Annexure D**).

To protect the privacy of the clients that had their records used in the study, no individual client identifiers were included in the data analysis and reporting of findings at all. The researcher saw it appropriate not to seek individual consent from the clients because of the reason

mentioned above. The data collection instruments used in this study was always kept in a secure place and the only people that who had access to them are those that were directly involved in the study. In addition, the selection of the client records that were used for the study was conducted through random processes so as to not prejudice any client's records from being included in the study. The researcher did not hold back any information from the Norton Health Centre Management and also shared the findings of the study with them.

1.12 CONCLUSION

The chapter provided a background about the burden of HIV/AIDS in the world as whole, specifically in the sub-Saharan African region. There was also discussion on the recommendations that have been put in place by the WHO for the management of HIV. The chapter discussed the research problem, aim of the investigation, specific objectives, the research hypotheses, the research design that is going to be employed and also the sampling methods that will be used to select the participants. There was also discussion of the data collection methods, analysis plans and ethical considerations to be taken in conducting the investigations. The next chapter focuses on the detailed literature review for the study.

1.13 Chapter layout

The dissertation will be arranged into five chapters:

Chapter 1: Study overview.

Chapter 2: Literature review.

Chapter 3: Research design and methodology.

Chapter 4: Analysis, presentation and description of research findings.

Chapter 5: Conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter provided the overview of the study. This chapter focuses on the literature review related to the research area. Literature review is a critical summary of research done on

a certain topic of interest with the aim of putting a research problem into context (Polit & Beck, 2012:732). This chapter presents the review of relevant published works related to the linkages of HIV positive people to care and treatment at facility level that guides this study. The literature presented in this chapter was reviewed from journals, textbooks, online articles and operational guidelines and manuals guiding the management of HIV. In reviewing the literature, the following scientific search engines were used google scholar (www.scholar.google.com), PubMed-NCBI (www.ncbi.nlm.nih.gov/pubmed). The reviewed literature is discussed in the paragraphs that follow.

2.2 HIV EPIDEMIC

It is now about 36 years since acquired immunodeficiency syndrome (AIDS) and Human Immunodeficiency Virus (HIV) were first diagnosed and discovered in 1981. There has been considerable progress made in combating the epidemic. In addition, HIV remains a major global public health problem despite the significant decline in the number of new HIV infections and AIDS-related deaths that have been reported worldwide (Granich, Gupta, Hersh, Brian Williams, Montaner, Young & Zuniga, 2015:2). HIV attacks the body's immune system and if left undiagnosed and/or untreated, HIV can gradually weaken the immune system, making it more difficult for the infected person to fight off diseases, ultimately a condition known as AIDS (CDC, 2017). To date, more than 78 million people have been infected with HIV globally, and more than 39 million have died of AIDS. Worldwide, more than 40% of new infections among adults are in young people 15 to 24 years of age (Boston University, 2016). According to the World Health Organisation (WHO) (2017), there were approximately 36.7 million people living with HIV globally by the end of 2015 with the majority of these people living in sub-Saharan Africa. It is also said that one in every 25 (4.4%) adults lives with HIV and accounts for nearly 70% of the people living with HIV worldwide (WHO, 2017; Takarinda, Harries & Mutasa-Apollo, 2016:3).

According to the WHO /UNAIDS estimates, HIV prevention programmes have reduced the annual number of people being infected with HIV to 2.1 million [1.8 million-2.4 million] in 2015, which marks a 35% reduction in the incidence since the year 2000 (WHO, 2016:7). Moreover, there is strong belief that this decline in incidence was driven by changes in risky behaviour (WHO, 2016:11). The expansion in the coverage of antiretroviral therapy (ART) has helped reduce the number of HIV-related deaths worldwide to about 1.1 million [940 000 – 1.3 million] in 2015, which is 45% fewer than in 2005 when HIV-related mortality peaked to 2.2 million [2.1 -2.4 million] (WHO, 2011: 4; WHO, 2016:6).

Sub-Saharan Africa has suffered the most from the burden of the HIV/AIDS pandemic. As of the end of 2015, there were a total of 19 million people living with HIV in East and Southern Africa. Of these 19 million people, women account for more than 50% (UNAIDS, 2017:2). More importantly, the sub-Saharan African region had seen a decline of approximately 14% in the incidence of HIV infections between the year 2010 and 2015 to a figure about 960 000 new HIV infections in 2015. Subsequently, this drop in HIV incidence translated to a reduction in the number of AIDS-related deaths in the year 2015 to 470 000 people, which is a 38% drop from the deaths in 2010 (UNAIDS, 2016:2). Furthermore, this reduction of AIDS-related deaths and also steady decline in the new HIV infections has been attributed to the scale up of antiretroviral therapy (ART) in the last 17 years making it one of the world's greatest public health success stories (Takarinda et al, 2016:3).

2.3 HIV EPIDEMIC IN ZIMBABWE

The first case of HIV in Zimbabwe was reported in 1985, with an estimated 1,4 million people living with HIV in 2013 (Ministry of Health and Child Care [MoHCC], 2014:6, 2015:24). Zimbabwe has the fifth highest HIV infection rates in the sub-Saharan region with a prevalence rate among women and men aged 15-49 of 13.8% (Zimbabwe Demographic Health Survey [ZDHS] 2015:275). The HIV prevalence in the country rose from 1985 and reached a peak of 27.7% in 1997 and then started declining thereafter (MoHCC, 2014:6). The country has a generalised, feminised and homogeneous HIV epidemic with a significantly high level of prevalence in the past as compared to the current levels (MoHCC), 2015:12). According to the ZDHS in 2015, the highest number of adults living with HIV in Zimbabwe was found in Matebeleland South Province and the least was found on Manicaland Province. HIV prevalence is higher among women with primary education than among those with no education or with higher educational attainment while there is very little variation in men (ZDHS, 2015:276). Zimbabwe has seen a decline in new HIV infections among adults by approximately 50% in the last decade, which translated into a reduction in HIV-related deaths by 60% (MoHCC, 2015:12). Zimbabwe's epidemic contracted more steeply and dramatically more than any other epidemic in the East and Southern African region. This decline has been attributed to the impact of the various HIV prevention programmes aimed at behaviour change like but not limited to high condom use and reduction in multiple sexual partners, elimination of Mother to Child Transmission (eMTCT) and successful treatment care and support services (MoHCC, 2014:6).

2.3.1 Modes of Transmission

Transmission is defined as the passing of a pathogen causing a communicable disease from an infected individual or group to another individual or group. HIV transmission. Heterosexual intercourse has remained the main mode of HIV transmission in sub-Saharan Africa although there has been recent epidemiological evidence that indicates some diverse modes of transmission. These include sharing of needles among drug users and unprotected sex among men who have sex with other men (UNAIDS, 2008:1). Zimbabwe has a generalised heterosexually driven HIV epidemic, which accounts for 92% of the transmissions and vertical transmission accounting for 7% of the transmissions (MoHCC, 2015:23).

2.3.2 Zimbabwe's Response to the HIV Pandemic

The government of Zimbabwe joined the rest of the world in the fight against HIV that is evidenced by the development of a policy environment for the prevention of HIV culminating in a multi-sectoral approach led by a national coordination authority and guided by evidence-informed strategic frameworks (National AIDS Council [NAC], 2011:13). The National Policy on HIV and AIDS was adopted in the year 1999 and this led to the creation of the National AIDS Council through an Act of Parliament (NAC, 2011: xii). In the year 2000, the government of Zimbabwe introduced 3% AIDS levy on all taxable income with the funds dedicated towards AIDS programmes and this has led to a 40% increase in the domestic financing for HIV between 2011 and 2014 (UNAIDS 2017).

The Ministry of Health and Child Care introduced the Opportunistic Infections and Antiretroviral Therapy (ART) Programme in April 2004, which rolled out ART services countrywide (MoHCC, 2015: iii). Zimbabwe National HIV and AIDS Strategic Plan 2011-2015 has seen the country adopting a combination of approaches that are meant at reducing transmission of HIV. These approaches include but not limited to prevention of mother-to-child transmission (PMTCT), voluntary medical male circumcision (VMMC), behaviour change communication, condom programming and sexually transmitted infections (STI) management (Avert, 2017).

Accordingly, the Zimbabwean government has joined the rest of the world in trying to eliminate the HIV pandemic by the year 2030. This has been through the implementation of the WHO (2013) consolidated guidelines on the use of antiretroviral drugs for the treatment and prevention of HIV infection. In 2013, the WHO guidelines recommended that ART should be given to all people diagnosed with HIV with a CD4 cell count of less than or equal to 500 cells/mm³ or a WHO clinical staging of 3 and 4 in places where CD4 cell tests are not available (MoHCC, 2013:13). In 2015, WHO issued revised guidelines which recommend the provision

ART to all adults living with HIV regardless of the WHO clinical stage and at any level of CD4 cell count (WHO, 2016:74). As a result, Zimbabwe has since adopted these guidelines with the programme rolled out in 6 learning districts in July 2016 followed by a nationwide roll out in January 2017 (Engelsmann, Chitiyo, Maphosa, Page-Mtongwiza, Patel, Nesara & Webb, 2017:1). This treatment approach has become to be known as the “Treat All” or “Test and Treat” approach and it aims at increasing the uptake of ART and linkage to care and also reduces the time between HIV diagnosis and ART initiation regardless of the baseline CD4 value (Takarinda et al., 2016:3; Fox & Rosen, 2017:2).

With the adoption of this Treat All approach, Zimbabwe has joined the rest of the world in trying to eliminate the HIV epidemic by the year 2030. This ambitious target is being implemented through the 2014 UNAIDS 90-90-90 treatment targets, which aim to have:

- Ninety percent (90%) of all people living with HIV knowing their HIV status by 2020.
- Ninety percent (90%) of those people diagnosed with HIV should be receiving sustained antiretroviral therapy by 2020.
- Ninety percent (90%) of those people receiving antiretroviral therapy should have viral suppression by 2020 (UNAIDS, 2014:1).



Figure 2.4:90-90-90 HIV Treatment Targets

adopted from www.avert.org/global-hiv-targets

The figure 2.1 above shows an infographic adopted from the Avert website showing the 90-90-90 treatment targets.

Reaching Target 1: 90 % of all people living with HIV will know their status by 2020-

According to UNAIDS (2014:16), many African countries are within reach of having 90% of their population having been tested for HIV at least once. However, only 45% of the people living in sub-Saharan Africa know their status, making it imperative to scale up focused and frequent testing and also strategic targeting of HIV testing services. According to the

According to the Zimbabwe Population based HIV Impact Assessment ([ZIMPHIA] 2016: 3), there were 74.2% of PLHIV in Zimbabwe who knew their HIV status.

Reaching Target 2: 90 % of all people living with HIV will receive sustained antiretroviral therapy - The Fast-Track targets call for reducing the number of people dying from HIV-related causes to less than 500 000 globally in 2020 and this can be achieved by making sure that almost all the people diagnosed with HIV are on antiretroviral treatment (WHO 2016:26). Zimbabwe is on course to achieve the 90% target as evidenced by the 62% ART coverage in the year 2015 with 9000 new ART initiations every month (MoHCC, 2016:14).

Reaching Target 3: 90% of all people receiving ART will have viral suppression- Countries and some programmes have managed to achieve the 90% viral load suppression demonstrating the feasibility of this ambition with Rwanda managing to have 83% of people on ART having viral suppression between 2008-2009 (UNAIDS, 2014:20). The ZIMPHIA (2016:3) findings show that Zimbabwe is almost about to achieve the target evidenced by 86.5% of PLHIV aged between 15-64 years having viral suppression.

There are however challenges that Zimbabwe as a country is experiencing in the process of trying to achieve the 90-90-90 targets. The country still has a large number of undiagnosed people living with HIV who could be identified in the early stages of infection (Takarinda et al.,2016:3). There are also other health systems related factors in Zimbabwe that make access to HIV care and treatment difficult. A qualitative study on the challenges for ‘test and treat’ in eastern and southern Africa found that the closeness or distance to HIV services has an effect in shaping the people’s motivation and readiness for testing and starting treatment (Skovdal, M.,Nyamukapa, C., Wamoyi, J., Ddaaki, W., Bukenya, D., Renju,J., McLean, E., Moshabela, M., Seeley, J.,Bonnington,O. & Wringe A (2015:1).The need to increase the cohort size of people on lifelong ART in Zimbabwe will increase the financial burden on the already struggling health financing system (Mudadigwa, 2015) .

2.4 HIV TREATMENT

For people living with HIV to fully benefit from potent combination of ART, there is need for them to get to know that they are infected, be engaged in regular HIV care and receive and adhere to ART (Gardner, Mclees, Steiner, del Rio & Burman 2011:793). The management of people living with HIV is best described using the HIV Treatment Cascade or the HIV Continuum of Care shown in Figure 2.2 below, as these are names that are commonly used interchangeably. First depicted in the United States of America (USA), the HIV treatment cascade is an internationally recognised framework that is used to represent that HIV care as it progresses from the diagnosis, to enrolment in care, initiation on ART treatment and ultimately viral suppression (Kay, Batey & Mugavero, 2016:1). The treatment cascade used in this discussion in figure 2.2 is based on the 2013 WHO ART guidelines and will also be compared to the changes that the “treat all” has brought to the cascade. Similarly, the treatment cascade that is based on the 2013 WHO ART guidelines describes the progression of people living with HIV (PLHIV) through HIV testing and counselling, access to and linkage to care. Furthermore, eligibility assessment and clinical staging for ART, pre-ART care, ART initiation and lifelong ART adherence and retention in care (Layer, Kennedy, Beckham, Mbwambo, Likindikodi, Davis, Kerrigan & Brahmabhatt, 2014:8).

The following paragraphs discuss the HIV treatment cascade as per WHO 2013.

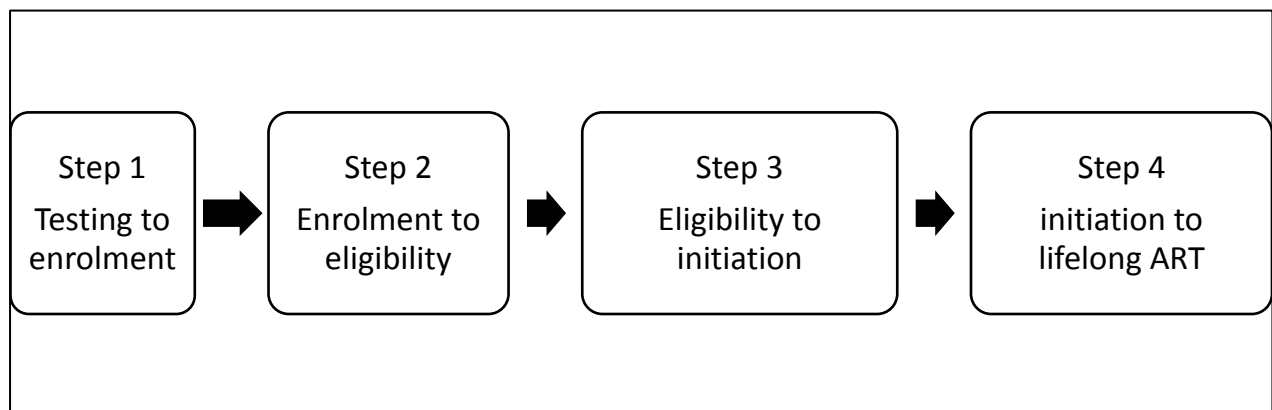


Figure 2.2: HIV Treatment Cascade as per WHO (2013:56)

2.4.1 STEP 1: TESTING TO ENROLMENT

According to the MoHCC (2017:31), accessible and acceptable access to HIV testing services is the first critical step of the HIV treatment cascade. Zimbabwe Demographic and Health Survey (ZDHS) of 2010–2011 showed that only 57% of women and 36% of men aged 15–49 years had ever been tested for HIV (Takarinda et al., 2016:3).

2.4.1.1 HIV Diagnosis

According to WHO (2015:2), HIV testing is the gateway to HIV prevention, care and other support services that may follow. Accordingly, this makes HIV diagnosis the entry route into the treatment cascade. Globally, HIV testing remains the biggest challenge to achieving the first 90 of the UNAIDS 90-90-90 targets as evidenced by 40% of the 36.7 million people around the world living with HIV unaware of their status at the end of 2015 (WHO, 2016:23; MoHCC, 2017:31). HIV testing services (HTS) is a phrase used to refer to the full range of services that are supposed to be provided with HIV testing which include both pre-test and post-test counselling, linkage to the appropriate HIV prevention, treatment and care and other clinical services (WHO, 2015:66). The role of HIV testing is to identify all people with HIV so that they and their families can be effectively linked to HIV treatment, care and support and also HIV prevention services depending on their status (WHO, 2015:66).

According to Ministry of Health and Child Care document (2017: 22), about 1581(96%) of all the facilities in Zimbabwe provide HTS and this has led to 2.2 million people having been tested in 2015. Most African countries are within reach of having 90% of people living with HIV having been tested at least once. However, sub-Saharan Africa has only 45% of PLWHIV who know their status (UNAIDS, 2014:16). According to the Zimbabwe Population based HIV Impact Assessment ([ZIMPHIA] 2016: 3), Zimbabwe is on course to achieve the “*first 90%*” as witnessed by the 74.2% of PLHIV between the ages of 15-64 years reporting to being aware of their HIV status.

2.4.1.2 HIV Testing Models

HIV Counselling and Testing (HCT) serves as an entry point for HIV prevention services that include prevention of mother-to-child transmission (PMTCT), male medical circumcision, access to condoms, and offer counselling for HIV-positives (Mabuto, Latka, Kuwane, Churchyard, Charalambous, & Hoffmann, 2014:1). The WHO recommends that HTS should be made available through a wide range of approaches both in the health facilities, free-standing sites and a wide range of community-based approaches as suitable for the local epidemiology and context and these are known as the “HIV testing models” (WHO, 2015: 38).

2.4.1.3 Facility-based HIV testing services

The WHO (2015) highly recommends the integration of HTS with other clinical services so as to make HTS more accessible to people visiting health facilities for other reasons and also increase the uptake of HTS. Furthermore, WHO (2016:26) postulates that facility-based HIV testing services refers to the HTS provided in a health facility or laboratory setting. Examples of these testing services include voluntary counselling and testing (VCT), provider-initiated

testing and counselling (PITC), testing for TB through HIV services and testing for both HIV and other sexually transmitted infections (STIs) (WHO, 2015:48). The Zimbabwean government through the “HIV differentiated care model” recommends that facility-based HTS should be provided within antenatal care (ANC), at tuberculosis (TB) clinics, at STI and outpatient clinics, in medical, surgical and paediatric wards. In addition, HTS should also be offered in maternal, newborn and child health (MNCH) services, family planning, adolescent sexual reproductive health (SRH), nutrition, mental health and voluntary medical male circumcision services (MoHCC, 2017:31). This recommendation was made as a way of trying to adapt HIV services across the cascade to reflect the preferences and expectations of various groups of people living with HIV (PLHIV) while reducing unnecessary burdens on the health system (MoHCC, 2017:29). However, HIV testing is not an efficient and patient friendly process as the rapid test results can take nearly half an hour to be ready. Therefore, this makes integration to other health services a better option as it will reduce the overall time spent by the client at the facility and also reduce the burden health systems have to go through should the services be offered independently (Kay et al., 2016:2). A study conducted in South Africa on the utilisation of the various HIV testing models found that the proportion of men that tested was slightly higher in the community units compared to the facility based testing (Mabuto et al., 2014: 6).

2.4.1.4 Community based HIV testing services

Community-based HIV testing and counselling is defined as HTC that is conducted outside of a health facility (Sharma, Ying, Tarr & Barnabas, 2015: 2). These modalities include testing conducted at community sites that include places like religious institutions, schools, workplaces, and at home. It also includes mobile testing conducted through mobile vans or tents mainly targeting places of entertainment like bars and clubs (WHO, 2015:27). This testing model mainly targets first-time testers and those people who do not normally use clinical services, and also people from key populations. Existing evaluations indicate that community-based testing greatly increases uptake of HTC and helps identify new HIV cases at earlier stages of the disease as. To add on, the costs of community-based testing are also relatively lower than the facility-based testing (Helleringer, S., Mkandawire, J., Reniers, G., Kalilani-Phiri, L., & Kohler, H. 2012:1).

2.4.2 STEP 2: ENROLMENT TO ELIGIBILITY

The main goal of enrolling people living with HIV in care is to provide the people with

an opportunity for close clinical and laboratory monitoring and early assessment of eligibility for ART and timely initiation and aims to minimise loss to follow-up.

2.4.2.1 Linkage to HIV care and retention

Linkage to care is the second step in the HIV treatment cascade and it has been described as the ‘Achilles heel’ of the treatment cascade (Labhardt, Ringera, Lejone, Masethothi, Thaanyane, Kamele, Gupta, Thin, Cerutti, Klimkait, Fritz & Glass, 2016:2). It is very important for all people living with HIV to enrol into care as soon as possible so as to facilitate early assessment for ART eligibility and timely ART initiation (WHO, 2013:86). There are varying definitions to linkage to care. The CDC and the Institute of Medicine (IOM) refer “linkage to care” as the period of three months or less between the documentation of diagnosis and the beginning of medical treatment with an HIV care provider (Kay et al., 2016:3). On the contrary, WHO defines linkage as a process of actions and activities that support people testing for HIV and people diagnosed with HIV in engaging with prevention, treatment and care services as appropriate for their HIV status. In addition, for people with HIV, linkage refers to the period beginning with HIV diagnosis and ending with enrolment in care or treatment (WHO, 2016: xv).

Low or delays in linking the population to care can lead to those diagnosed with HIV failing to benefit from HIV care which will have a resultant effect of increased transmission of HIV (Sanga, Lerebo, Mushi, Clowes, Olomi, Maboko & Zarowsky, 2016: 2). From a study conducted in 18 states in the USA by CDC, it was revealed that 28% of HIV infected people had delayed entry into care (Mayer, 2011: S205). Another study conducted in the USA in 2009 revealed that 90% of the cases of HIV transmission were attributable to HIV individuals who were either undiagnosed or were diagnosed but not linked to care, with those not linked to care accounting for twice as many cases as the undiagnosed (Mugavero, 2016:116). It is estimated that about 57% of people who are diagnosed with HIV in sub-Saharan Africa are linked to care (WHO, 2015:243). This means that approximately 43% remainder of the people living with HIV are not accessing any treatment exposing them to the risk of spreading the infection and also increasing the risk of dying from HIV-related diseases.

A cohort study conducted in Tanzania that prospectively followed newly HIV diagnosed clients over a period of 3.5 years found that 30% of those who tested HIV positive did not have timely linkage to care and also linkage to HIV treatment was frequently delayed (Reddy, Agala, Maro, Ostermann, Pence, Itemba, Safley, Yao, Thielman & Whetten, 2016:5). These delays will have a negative effect on the treatment prognosis. According to the WHO (2016:243), patient attrition after HIV diagnosis has become a huge global public health problem contributing to

delayed ART initiation, avoidable morbidity, mortality and increased cost of care and preventable HIV transmission. This is the reason why linkage to care immediately after HIV diagnosis is important to prevent these losses.

2.4.2.2 Services offered in the Care Package

The WHO recommends countries to have established general HIV care interventions to compliment ART for all people living with HIV so as to reduce HIV transmission, prevent illness and also improve their quality of life (WHO, 2013:86). This organisation also recommended a package of 13 interventions meant for adults and adolescents living with HIV in low resource settings. The package includes interventions such as but not limited to psychosocial counselling and support, disclosure and partner notification, co-trimoxazole preventative therapy, TB counselling, screening and preventative therapy, preventing fungal infections, preventing STIs and supporting reproductive health needs, malaria prevention and others.

2.4.3 STEP 3: ELIGIBILITY TO ART INITIATION

With its “treat-all” recommendation, the WHO removed all limitations on eligibility for ART among people living with HIV; all populations and age groups are now eligible for treatment, including pregnant women and children (WHO, 2016: iii).

2.4.3.1 ART Eligibility

ART eligibility refers to the people living HIV for whom ART is indicated based on meeting the clinical and immunological thresholds as defined by the WHO treatment guidelines (WHO, 2013:14). According to the WHO (2013:86) ART guidelines, not all people who were diagnosed with HIV were eligible for ART. This meant that once an individual had been diagnosed with being HIV positive, enrolment into care would allow close monitoring until the time an individual is deemed eligible to be initiated on ART. Accordingly, the eligibility for ART enrolment in Zimbabwe was until late 2016, based on a CD4 cell count equal to or less than 500cells/mm³ or a WHO clinical stage 3 and 4 (WHO, 2013:13) as discussed in the paragraphs to follow. The Zimbabwean government with the support from the United States Presidential Emergency Plan for AIDS Relief (PEPFAR) began implementing the Treat All approach in six priority districts with a national rollout following in October 2016 (PEPFAR Zimbabwe, 2016:6).

2.4.3.2 CD4 Cell Count

The CD4 lymphocytes are also called the T-helper cells are a type of white blood cells that are responsible for fighting germs and infection in the body making them an important part of the

immune system. In addition, HIV destroys the CD4 cells in the body thereby weakening the immune system (The Well Project, 2017). The CD4 cell count provides an indication on the overall immune function of an HIV-infected patient (Kumar, Kumar, Mahdi & Dhole, 2017:1). CD4 cell count is a useful test that is conducted before an HIV positive person is initiated on ART and also used on decisions regarding screening for opportunistic infections and provision of prophylaxis (Meintjes et al., 2017:123). The mean normal value for most laboratories is approximately 500-1,300 cells/mm³. However, the WHO and national guidelines do recommend that PLHIV should be initiated on ART at higher CD4 counts but this is not the case as noticed in sub-Saharan Africa. There is sufficient evidence to the benefits of initiating people on ART at or below the CD4 threshold of 500cell/mm³ which include reduced mortality, disease progression and vertical HIV transmission (Hoffman, Van Griensven, Colebunders & McKellar, 2010:28). The PLHIV delay starting ART until when median CD4 cell counts is below 200cell/mm³ (WHO, 2015:248). This could be attributed to lack of financial resources and high numbers of PLHIV in this region of the world. Infrastructure for conducting CD4 count tests is not always available especially in those low resource settings and such settings require the use of clinical staging for determining the level of immunocompromise (Weinberg & Kovarik, 2010:202).

2.4.3.3 The WHO Clinical Staging

The WHO developed a clinical staging system for HIV/AIDS in 1990 and later this staging was revised in 2007, which uses various clinical parameters to guide in the clinical decision making for the management of HIV/AIDS patients (WHO, 2005:2). This method has proved to be very useful especially in Africa where there is limited access to infrastructure for conducting CD4 cell count tests. The clients are categorised into one of four hierarchical clinical stages ranging from stage 1 (asymptomatic) to stage 4 (AIDS). In addition, patients are assigned to a particular stage when they demonstrate at least one clinical condition in that stage's criteria (Weinberg et al., 2010:203). Patients remain at a higher stage after they recover from the clinical condition that placed them in that stage.

Table 2.1 below shows the different stages according to the WHO and associated HIV symptoms.

HIV- associated symptoms	WHO Clinical Stage
--------------------------	--------------------

Asymptomatic	1
Mild symptoms	2
Advanced symptoms	3
Severe symptoms	4

Source: Interim WHO Clinical Staging HIV/AIDS, 2005

Table 2.2: WHO clinical staging of established HIV infection

The WHO staging	Description of the stages
Stage 1:	This category is assigned to a person diagnosed with HIV who is either asymptomatic or has generalised lymphadenopathy for longer than six months.
Stage 2	This category is a mild symptomatic stage demonstrated by several clinical manifestations which include but not limited to an unexplained weight loss of less than 10% of total body weight, recurrent respiratory infections and a range of dermatological conditions.
Stage 3	This is the moderately symptomatic category demonstrated by weight loss greater than 10% of total body weight, prolonged diarrhoea, pulmonary tuberculosis, severe bacterial infections and other opportunistic infections.
Stage 4	This category is evidenced by severe symptoms that can allow diagnosis of AIDS to be made based on clinical findings that include but not limited to HIV wasting syndrome, Pneumocystis pneumonia and others.

Table 2.2: The WHO staging as according to Weinberg et al. (2010:203)

Table 2.2 above depicts the stages that are used for linkages as postulated by WHO (2005) as cited by Weinberg et al., (2010:203). The staging also helps in making following the criterion for linkage to treatment.

2.4.3.4 Implications of “Treat All” on the ART eligibility criteria

The third step in the treatment cascade as discussed above covers the interval from the period of enrolment into HIV care to the time someone is eligible to be initiated on ART. According to the new “treat all” approach, every person testing HIV positive is to be initiated immediately regardless of CD4 or WHO stage meaning that this step will cease to exist and will rather be combined with the second step of the treatment cascade (Fox et al., 2017:3). The implications of the “treat all” approach on the number of people eligible for ART is a positive one as it will

resultantly increase the number of asymptomatic HIV positive people accessing ART. In other words, by the end of 2014, approximately 1 168 451 people were eligible for ART based on the CD4 cell count of <math><500\text{ cell/mm}^3</math> out of the 1 403 426 people living with HIV aged ≥ 15 years (Takarinda et al., 2016:4). Under the “treat all” guidelines, it would mean that all the 1 403 426 people would now be eligible for ART initiation.

2.4.4 STEP 4: INITIATION TO LIFELONG ART

According to the WHO (2016:75), Global ART coverage for all people living with HIV had reached approximately 41% – or 15 million people – by March 2015.

2.4.4.1 Initiation and Retention on ART

According to the MoHCC (2013:20), early treatment initiation is associated with some clinical and HIV prevention gains, improving survival and reducing new HIV infections at community level. Following the eligibility assessment for ART initiation, the next stage in the treatment cascade involves initiating all people living with HIV on ART. The WHO (2016:97) guidelines on ART recommend a fixed dose combination of first line ART for adults. This first line regimen is made up of Tenofovir (TDF)+ Lamivudine (3TC) + Efavirenz (EFV) which is commonly known *Tenolam E*. The Zimbabwe National ART programme has adopted the same first line regimen recommended by the WHO (MoHCC, 2013:28). Findings from a strategic timing of antiretroviral therapy (START) that was conducted at 215 sites located in 35 countries demonstrated that early ART initiation (‘test and treat’) as compared to delayed awaiting certain CD4 thresholds resulted in a 53% decrease in the risk of developing AIDS-related events and death (Koirala, Eeuba, Nampaisan, Marrone & Ekstrom, 2017: 3). Studies have revealed that initiating ART early has many clinical benefits. Despite the access to treatment reaching 12.9 million people globally by the end of 2013, only about 37% of the people living with HIV were receiving ART (Granich, Gupta, Hersh, Williams, Montaner, Young & Zuniga, 2015:2). Zimbabwe is on track towards achieving the 2020 targets for ART initiations as evidenced by almost 62% of all the people living with HIV receiving ART as of December 2015 (MoHCC, 2016:14). The number of people receiving ART is expected to increase with the roll out of the Treat All approach in 2016.

2.4.4.2 Adherence

The success of any treatment regime is dependent on the level of adherence to the therapies being provided (WHO, 2016:255). The WHO defines adherence to treatment as ‘the extent to which a person’s behaviour-taking medication, following a diet and/or executes lifestyle changes’ corresponds with the agreed recommendations from a health care provider (MoHCC, 2013:23). Retention of all those initiated on ART remains a very critical part of the treatment

cascade (Fox et al., 2017:4). In order to attain a successful treatment outcome evidenced by viral suppression, ART for people living with HIV requires more than 95% adherence levels (Letta, Demissie, Oljira & Dessie, 2014:1). Zimbabwe has witnessed an increase in the retention of adults on ART over a period of 12 months as evidenced by the increase from 78% to 85% for the year 2012 and 2015 respectively (MoHCC, 2016:16).

2.4.4.3 Viral Suppression

Viral load monitoring is the gold standard for measuring adherence and monitoring treatment response for people on ART (WHO, 2016:258). The HIV-1 viral load is a measurement used to indicate the number of copies of HIV-1 Ribonucleic Acid (RNA) per millilitre of plasma. The plasma measurement is a very accurate reflection of the burden of infection and the magnitude of viral replication. It is used to assess the risk of disease progression and is critical in monitoring virologic response to ART (MoHCC, 2017:74). According to Takarinda et al., (2016: 1), prompt initiation of and adherence to ART will result in the suppression of viral load to undetectable levels. This brings with it individual health benefits and also prevents the transmission of HIV infection. There have been tremendous achievements by individual countries in trying to achieve viral suppression despite the world having about 13 million PLHIV who were not virally suppressed in 2016 (UNAIDS, 2016). Countries and programmes have done well in trying to achieve high levels of viral suppression with Rwanda managing viral suppression among 83% of the clients receiving ART after 18 months of ART in 2008 to 2009 (UNAIDS, 2014:20). According to the findings of the ZIMPHIA (2016:3), about 86.5% of the PLHIV who report ART use have managed to achieve viral suppression that puts Zimbabwe on the right course towards achieving the last 90.

2.5 FACILITY LINKAGES TO HIV CARE AND TREATMENT

A huge body of programmatic reporting exists on the loss to follow-up and mortality for patients who are receiving ART. However, little is known on the linkage to care and treatment for individuals prior to the start of ART (Krazner et al., 2010:2; Govindasamy et al., 2011:1). Of the studies conducted on the facility linkages to care and treatment, findings have reflected unacceptably low linkages. Some of these studies were conducted in sub-Saharan African settings with the proportion of HIV positive clients enrolled into HIV care varying from a low of 38% from a study in urban Zambia to 68% six months after HIV diagnosis in rural northern Tanzania (Kayigamba et al., 2012:1). A study conducted in Mozambique in 18 clinics found poor linkages between HIV diagnosis and enrolment into care (Gerdtts et al., 2014: 1). Various

factors are associated with the loss to follow-up that can occur along the HIV treatment cascade. These losses can be influenced by multiple factors on the health care system, individual and societal level (Gerdtts et al., 2014: 1).

2.5.1 Timing for linkage to care and treatment

Timely linkage to HIV care and treatment are key if improved outcomes are to be realised and this calls for CD4 cell count, HIV staging and evaluation of the client's need for ART to be performed in the shortest time possible (Reddy et al., 2016:4). Studies conducted in sub-Saharan Africa measured the average time that HIV positive clients have taken to move from one stage of the of the treatment cascade to the other. Findings from a facility-based registers review in eight Rwandan health facilities had only 42% of the clients enrolled into HIV care and treatment with 90 days of HIV diagnosis. In addition, of those that had enrolled in care and treatment within the 90-day period, 24% of them had enrolled by seven days, 37% by 30 days and 40% by 60 days (Kayigamba et al., 2012:4). According to the UNAIDS (2016), there is evidence that shows that early ART initiation has got some immunological benefits for the clients and the community. This was evident in studies conducted at clinics in Kigali, Rwanda, which saw median CD4 cell counts of people on ART initiation doubling from the figures of 2003 to 2012 owing to the successful implementation of guidelines that enabled early ART initiation. Furthermore, as of mid-2016, about 78% of PLHIV in Rwanda were on receiving ART, and 86% of these people had managed to achieve viral suppression putting the country within reach of the 90-90-90 targets (UNAIDS, 2016:30).

2.5.2 Entry Point for HIV testing vs linkage to care and treatment

According to WHO (2016), an entry point is the opportunities or gateways that can be used to identify the people who can benefit from treatment through the provision of HIV testing and counselling. There have been studies conducted that directly focused on how the entry points through which HIV diagnosis was made were associated with the linkage to care and treatment outcomes. In a study conducted in Cape Town, South Africa, linkages to HIV care and treatment were found to be low despite the fact that these services are being offered for free within close proximity (Krazner et al., 2010:1). This study compared the linkages across different entry points for HIV testing at two facilities and found that the highest linkages to HIV care (84.1%) was among clients who had been tested through the STIs entry point while clients tested through the voluntary counselling and testing (VCT) had the lowest linkages (53.5%) (Krazner et al., 2010: 1). In terms of linkage to HIV treatment, it was highest (72.2%) among the clients that were tested through antenatal care (ANC) (Krazner et al., 2010: 1). Findings from the study conducted in Mozambique contradicted the findings of the former

study as it found that women diagnosed with HIV through the PMTCT were less likely to be linked to HIV care and treatment as compared to clients diagnosed through VCT (Gerdtts et al., 2014: 1). A cohort-based study of clients testing positive through PMTCT and VCT in 18 health facilities was conducted in Mozambique. With regards to the HIV treatment cascade of testing to enrolment, enrolment to CD4 test and CD4 to ART initiation for those eligible, PMTCT had huge leakages of 7%, 48% and 75% respectively as compared to VCT with 3%, 34% and 54% respectively (Gerdtts et al., 2014:5). This study concluded that an increased loss to follow-up among women diagnosed in PMTCT relative to VCT. This then warrants further qualitative research to be able to establish the barriers that may be peculiar to the PMTCT entry point as far as linkage to HIV care and treatment is concerned.

An extended analysis conducted on the findings of the Zimbabwe Demographic Health Survey (ZDHS) 2010-11 investigated factors that are associated with ever being tested in Zimbabwe. The study found that the odds of being tested for HIV at the facility were higher for men accessing services through the STI clinic while it was higher for women accessing ANC services (Takarinda et al., 2015). This study demonstrates the association that exists between the entry point for health care at the facility and the chances of HIV testing.

2.6 CONCLUSION

The chapter reviewed literature on the HIV epidemic at a global level and also at the regional and national level. The review also looked at how Zimbabwe has managed to respond as far as the management of HIV is concerned. This management was reviewed based on the guidelines that have been set by the WHO as far as the linkage to HIV care and treatment for those people diagnosed with HIV. Focus was made on literature on the facility-based linkages to HIV care and treatment. The literature on studies conducted mostly in the sub-Saharan region indicated that there were significantly low linkages to care and treatment following HIV diagnosis. There was also evidence of client loss at every stage of the HIV treatment cascade and also this being sometimes associated to the entry point through which the clients are diagnosed.

The research design and methodology for this study on facility linkages to HIV care and treatment as per entry point at a Norton Health Centre was guided by the findings of the literature review. The design, methodology, study population and the processes to be employed for data collection and analysis and also ethical considerations will be discussed in the next chapter.

CHAPTER THREE

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

The previous chapter focused on the literature review related to the research area. This chapter presents the research design and research methodology that were followed in addressing the research questions in the study that investigated facility linkages to HIV care and treatment as per entry point at a Norton Health Centre, Zimbabwe. In this chapter, there will be a presentation of the research design, methods used for data collection including the data collection instruments, study population and sampling methods used. The chapter will also discuss the processes that were followed in the data collection, the ethical considerations and the measures taken to ensure reliability and validity. The procedure for analysis of the data will also be presented in this chapter.

3.2 RESEARCH DESIGN

Research design is a strategy or plan of investigation that is used in order to get answers to research questions or problems (Kumar, 2011:95). In addition, Creswell (2014:41) describes research design as the type of inquiry that a researcher will use that is within the qualitative, quantitative or mixed methods approach that provides specific direction for procedures in a research design. This study followed a quantitative approach that utilised a retrospective descriptive research design as it was found to be the best research design that could answer the research question involved. The retrospective descriptive design was the most suitable design since the study was looking at a phenomenon of clients' linkage to HIV care and treatment outcomes after being diagnosed as HIV positive through two different entry points.

3.2.1 Retrospective Descriptive Study

Retrospective descriptive research involves the investigator studying a phenomenon, situation or a problem that has occurred in the past and formulates ideas about possible associations and investigates potential relationships (Kumar, 2011:110). Descriptive research involves the examination of the situation as it is in its current state and this can be achieved through the identification of attributes of a particular phenomenon based on an observational basis, or the exploration of correlation between two or more phenomena (Williams, 2011:66). In order to have an understanding on how the entry points through which the clients were tested for HIV could have an association with the proportions of linkages to HIV care and treatment, there was need to retrospectively visit the clients' records and make evaluations.

3.3 RESEARCH METHODOLOGY

This study followed a quantitative research methodology. Research methodology is the systematic way in which the researcher intends to solve the research problem, collect the data, analyse, and interpret the findings (Creswell, 2009:233). The quantitative research methodology was used in this study. Quantitative research methodology is described as an approach used to answer questions about relationships among measured variables with the purpose of explaining, predicting and controlling phenomena. In addition, the intent of the methodology is to establish, confirm or validate relationships and to develop generalisations (de Vos, Strydom, Fouche & Delpont, 2011:63). The choice to use a quantitative approach for this study was based on the fact that the variables under study were numerical and the conclusions to be made came from the calculations of associations based on the proportions of the linkages to HIV care and treatment from the entry points. This section will also discuss the population, sampling and the procedures that were used to select the sample for this study. It also presents the data collection and analysis procedures that were followed. The research setting for this study will be discussed in the following paragraph.

3.3.3 Research Setting

Research setting refers to the specific place from where information for a research is gathered (Polit & Beck, 2012:49). This study research was conducted at Norton District Health Centre in a town called Norton in Zimbabwe. The decision to have the study conducted on health center was based on the fact of it being the largest health center in the district. This would allow for results that would be more representative due to the high numbers of people who access health services at the health center.



Figure 3.1: Norton location on Zimbabwe map (worldatlas.com 2017)

Figure 3.1 shows the location of Norton on the map of Zimbabwe. Norton is a small town that lies about 40 kilometres west of the capital city Harare along the highway linking Harare and Bulawayo. It is found in Mashonaland West Province. According to the 2010 National Census, Norton has a population of 67 591 people. The hospital falls under the administration of the Norton Town Council Department of Health. This hospital was chosen because it is the biggest health facility in the area.

3.3.1 Population

A population is the entire aggregation of cases in which a researcher is interested (Polit & Beck, 2012:273). It is common practice in descriptive studies to define the study population first and then make observations on the sample taken from it (Banerjee & Chaudhury, 2011). The study population were the records of clients who tested HIV positive between January 2016 and December 2016 through the two entry points for HIV testing and counselling at a Norton Health Centre. These entry points are the Outpatients Department (OPD) and Wards entry point and the Prevention of Mother to Child Transmission (PMTCT). The population for this study was approximately 504 client records. The OPD and Wards entry point provides HIV testing for the clients that come to the facility through the out patients' department and also to those patients admitted in the various wards at the hospital. The PMTCT entry point provides HIV testing to clients coming for antenatal care, maternity and postnatal care. In order for the records to be included in the study, the client had to meet the following criteria.

Inclusion criteria: Clients of 16 years and above testing HIV positive for the first time at the Norton Health Centre between January 2016 to December 2016. The decision of having the

age limit at 16 years was to conform with the Ministry of Health and Child Care’s consent age for HIV testing services, which is 16 years or older (MoHCC, 2017:34).

Exclusion criteria: Clients under the age of 16 years testing positive. Clients with an already known HIV positive status were also excluded from the study. The study also excluded clients who had documented evidence of having been tested before the study period with known HIV diagnosis.

3.3.2 Sample and Sampling

Kumar (2011:176) defines sampling as the process of selecting study units from a defined study population in order to make an inference about the whole population. In this study, proportionate stratified probability sampling was used. According to Polit and Beck (2017:740), probability sampling is defined as the selection of sampling elements from a population using a random procedure. Stratified probability sampling involves dividing the population into two or more homogenous subsets from which an appropriate number of elements are selected through random processes (Polit & Beck, 2012:281). Proportionate stratified probability sampling as defined by Kumar (2011:185) as sampling in which elements are selected in proportion to the size of the stratum in the population. The population was subdivided into three strata based on the entry point for HIV testing with the sample size for each entry point based on the proportion it contributed to the population size.

The minimum sample size was calculated using the Raosoft Software (Raosoft, 2016). The formula takes into account of the confidence level, margin of error and the population size to be used in the study. The confidence level for this study was set at 95% and the margin of error was 5% and the population size was approximately 504 client records. The minimum sample size calculated for this population was approximately 219 records. Furthermore, the researcher decided to increase the sample size from the minimum value of approximately 219 to approximately 242 to cater for some of the records that could be dropped out owing to some failing to meet the requirements. The formula that was used to determine the sample size is as follows:

$$x = Z^2 \frac{r(100-r)}{100}$$

$$n = \frac{N \cdot x}{(N-1)E^2 + x}$$

$$E = \text{Sqrt}[\frac{(N-n)x}{n(N-1)}]$$

A simple random sampling procedure was applied to the stratified populations using computer software. Polit and Beck (2012:280) define simple random sampling as the approach in which the researcher establishes a sampling frame from which the sample will be chosen. The

sampling frame in this research was all the adults who tested HIV positive between January 2016 to December 2016 at Norton Health Centre. Table 3.1 below shows the proportionate stratified sampling outcomes for the entry points involved in the research.

Entry Point	HTC Positive	Proportion	Sample size
OPD and Wards	381	75.56%	183
PMTCT	123	24.40%	59
Total Population	504	100%	242

Table 3.1. Sampling table for the entry points for HIV Testing and Counselling (Researcher made, 2017)

3.3.4 Data Collection

The data collection process involves gathering and measuring information on variables of interest in an established systematic fashion that allows the researcher to test the stated hypotheses, and evaluate outcomes (Polit & Beck, 2017:725). The data for this study were collected from Norton District Health Centre using the records of the clients who tested HIV positive between January and December 2016. The data collection involved retrospectively tracing clients' records that tested HIV positive between January 2016 and December 2016 at the Norton Health Centre to determine documented uptake of subsequent HIV care and treatment services.

The data for this study were obtained from the HIV treatment services records which are the HIV Testing and Counselling (HTC) register, Pre-ART register and the ART register from the three entry points that provide HIV testing and counselling which are the combined OPD and Wards entry point and PMTCT entry point. The electronic patient management system (ePMS) and Opportunistic Infections/Antiretroviral therapy (OI/ART) patient care booklets were also used to trace some of the individual care and treatment outcomes.

3.3.4.1 Data Collection Instrument

When conducting quantitative research, it is very critical to have accurate and systematic data collection mechanisms in place (Abawi, 2014:2). To collect this data various research designs, call for different data collection instruments that are the tools that are used in collecting data in a study. Data collection for this study was done using a self-designed checklist (**Annexure E**). A checklist is an instrument observer use to record observed phenomenon (Polit & Beck, 2012:315). A checklist helps in extracting data in a useful manner and is mostly used in evaluating databases and collecting data on occurrences of incidents, events, tasks or problems and also provides room for documenting other observed comments (Action-Based Research, 2017).

The checklist developed was guided by the research objectives and had sections meant at collecting, demographic information, clinical, and medical information of the sampled records. The following paragraphs discuss the sections in the checklist (**Annexure E**).

SECTIONS 1, 2 and 3: These sections collected the demographic information of the clients and the entry point through which HIV testing was conducted. For those clients that managed

to get enrolled either in Pre-ART or ART care, the OI/ART numbers were also documented. The client's initials, age and gender were also documented. The client initials have been documented so that they can be used by the facility should they decide to make follow-ups on clients that have not been linked to care and treatment. The initials were not captured during the data capturing for analysis.

SECTION 4, 5 and 6: These sections collected data that is related to the linkage to HIV care for the clients. This information included documentation of client in Pre-ART register, CD 4 test information and WHO clinical staging results (Chapter 1, Section 1.1).

SECTION 7 and 8: Information on the linkage to HIV treatment was documented in this section. The sections collected information on the ART initiation outcomes and the source of information used to verify this information.

SECTION 9: This section was used to document any relevant observations that would have been made for all the clients that had no documented evidence of being initiated on ART.

3.3.4.2 Data Collection Procedure

The data collection procedure included initially retrieving the records of all clients that tested HIV positive during the research period and then drawing the required sample from the three entry points. The clients' demographic data and clinical information on linkage to HIV care and treatment were retrieved from the HTS registers, individual client OI/ART booklets and the ePMS. The information was then transcribed from these sources to the self-designed checklist (**Annexure E**) by the researcher aided by trained enumerators.

3.3.5 Data Analysis

Data analysis involves the systematic organisation and synthesis of research data and in quantitative data, the testing of hypothesis using the data (Polit & Beck, 2017: 725). Data collection for this research was conducted in August 2017 looking at 242 client records. The data were then analysed using Epi Info version 7 Statistical Software (Centre for Disease Control and Prevention, Atlanta, GA). Although the researcher was knowledgeable in the process of data analysis using the above-mentioned statistical package, a neutral statistician was involved in the validation of the process and results.

3.3.4.3 Ethical Considerations

Research ethics govern the standards of conduct of scientific research with the aim of protecting the dignity, rights and welfare of the research participants. An ethics committee ensured that appropriate ethical standards are being upheld, especially if research involves human participants (WHO, 2017). To comply with the ethical requirements for the study, ethical clearance to conduct the research was obtained from the University of South Africa Higher Degrees Research and Ethics Committee (**Appendix A**) to conduct the research and also from the Medical Research Council of Zimbabwe (**Annexure C**). The Norton Town Council Department of Health also granted permission for the study to be conducted at Norton Hospital (**Annexure D**).

There are three core ethical principles in research that involves human respondents whether directly or indirectly, namely, beneficence, respect for human dignity and justice (Polit & Beck, 2012:152). The principle of beneficence imposes the responsibility on researchers to make sure that research conducted minimises harm and maximises the benefits on the research participants (Polit & Beck, 2012:152; Joubert, Ehrlich, Katzenellenbogen & Karim, 2007:33). In line with this principle, the process of data collection involved reviewing the client's medical records at the facility without any direct interaction with the clients. However, this method of data collection did not expose the participants to any form of physical or emotional harm. The health benefit of this exercise lies in the fact that all the findings of this research will be used by the health facility to develop means of enrolling to care and treatment those clients that will have been found not to be in care.

Respect for human dignity calls for all human beings participating in research to be treated as autonomous agents capable of controlling their actions and hence should be accorded the right to self-determination and the right to full disclosure (Polit & Beck, 2012:154). The research involved accessing the clients' records that have the names and contact details which in itself had a potential of violating the clients' privacy. In order to protect the privacy of the clients that had their records used in the study, no individual client identifiers were included in the data analysis and reporting of findings at all. Because of this absence of the individual client identifiers for the records that were used, the researcher found it appropriate not to seek individual consent from the clients. The data collection instruments used in this study were

always kept in a secured place and the only people that had access to them are those that were directly involved in the study.

The principle of justice entails that all study participants should be treated fairly in terms of the benefits or risks that might arise from the research. In addition, participant selection should be made on the research requirements and not vulnerability (Polit & Beck, 2012:155). The selection of the participants was made purely on the requirement of HIV positive outcome for clients tested between January 2016 to December 2016. The selection of the client records that were used for the study was conducted through random sampling to avoid prejudice any client's records from being included in the study. More importantly, the researcher did not hold back any information from the Norton Health Centre Management and shared the findings of the research with them.

3.4 MEASURES TO ENSURE RELIABILITY AND VALIDITY

3.4.1 Reliability

The reliability of a quantitative instrument is a major criterion used to assess the quality of the instrument (Polit & Beck, 2012:331). Reliability of a research instrument in quantitative research is the extent to which the same results can consistently be obtained upon using the instrument in the same situation on repeated occasions (Heale & Twycross, 2015:66). In addition, reliability can be assessed through three types of validity, namely, stability, internal consistency and equivalence that are commonly used to evaluate it. Reliability of the checklist to be used in this study was evaluated for equivalence. Equivalence is the degree of consistency in providing measurements of the same attributes and is of concern when different observers are using the same instrument to collect data at the same time (Brockopp & Hastings-Tolsma, 2003:217). The second major criterion for evaluating an instrument is its validity (Polit & Beck, 2012:336).

3.4.2 Validity

Validity is the ability of an instrument to measure what is designed to measure (Kumar, 2011:166). Unlike in reliability, the validity of a research instrument is difficult to evaluate (Polit & Beck, 2012:336). There are different kinds of validity that can be used to assess a given instrument for validity. The instrument used in this study was a checklist and it was assessed for validity based on content validity and construct validity and face validity.

3.4.2.1 Content validity

Content validity looks at whether the instrument adequately covers almost all the content it should cover with respect to the variables under study, namely, linkage to HIV care and treatment (Heale et al, 2015:66). In this research, the checklist used was designed based on the HIV continuum of care such that it captures elements from the diagnosis of HIV to the point of initiation on ART.

3.4.2.2 Construct validity

Construct validity is the extent to which inferences can be drawn about test scores in relation to the concept being studied (Heale & Twycross, 2015:66), in this case linkages to HIV care and treatment. This is a key criterion as it helps to have an understanding of exactly what the instrument is really measuring (Polit & Beck, 2012:339). It is the extent to which the checklist to be used is measuring the linkages to care and treatment and this will be ensured through homogeneity in all the elements of the checklist. Linkage to HIV care was determined by the client accessing CD4 test and WHO clinical staging. These would then determine the eligibility of a client for linkage to HIV treatment, which was determined by the outcome for ART initiation. The checklist was valid as it only measured the outcomes for linkages to HIV care and treatment for the clients that were diagnosed through the three entry points.

3.4.2.3 Face validity

Polit and Beck (2012:336) define face validity as the extent to which an instrument looks like it is measuring the target construct. A test in which most people would agree that the test items appear to measure what the test is intended to measure would have strong face validity (Taderhoost, 2016:29). Face validity about the self-designed checklist used in this study would be to evaluate how much the instrument measured attributes related to linkage to HIV care and treatment after an HIV diagnosis. However, the enumerators who assisted the researcher did not experience any challenges in interpreting the requirements of the various sections of the checklist. This response from the users of the instrument can be used to demonstrate the face validity of the instrument.

3.5 CONCLUSION

Figure 3.1 below shows a diagrammatic flow summary of the research design and research methodology that was used in the study. This chapter covered the research design, research methodology with focus on the research population, sample and the sampling procedures, data collection and analysis that were used in the study. Ethical considerations that were made for the study were discussed including the measures that were taken to ensure that all the processes were compliant with the ethical requirements. The chapter also discussed on how the issues of reliability and validity for the data collection instrument would be ascertained. The following chapter discusses the presentation of the study findings through the analysed data in detail. Interpretations and description of the findings from that analysis of the data are also provided.

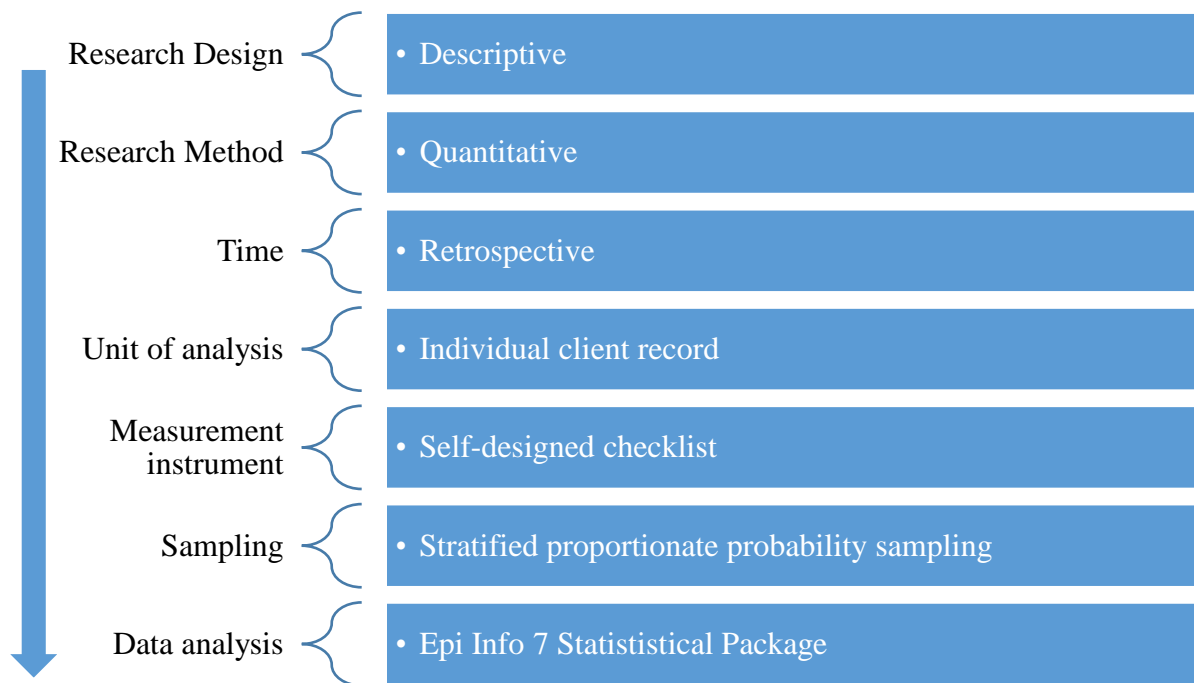


Figure 3.2: The research methodology flow summary for the study (researcher made, 2017)

CHAPTER FOUR

ANALYSIS, PRESENTATION AND DESCRIPTION OF RESEARCH FINDINGS

4.0 INTRODUCTION

The previous chapter focused on the research design and research methodology that was used in collection of the data. The researcher collected the data with the assistance from 3 trained enumerators, 1 male and 3 female enumerators. The instrument used for the data collection was a self-designed checklist. The sample size was calculated using the Raosoft Sample calculator (refer to Chapter Three). The client records used for the sample were drawn using a stratified proportionate probability sampling approach. The data collection for this study was done in August 2017. The data collected was transferred from the self-designed checklist to an electronic database on the Epi Info 7 Statistical Package. This chapter presents and describes the findings of the study. The aim of this study was to determine the proportion between the linkages to HIV care and treatment as per entry point for the people diagnosed with HIV at a Norton Health facility to make recommendations to improve linkage per entry point. The researcher used a quantitative, retrospective descriptive research design. The results were presented in the form of frequency distribution, graphs and charts, and measures of central tendency. The findings of the study were presented in the sequential order of the HIV treatment cascade at the Norton Health Centre as presented in Chapter One. Findings were presented under the HIV diagnosis, linkage to HIV care and linkage to HIV treatment.

4.1 DEMOGRAPHIC DATA

Demographic data is the statistical data of a population, especially those showing average age, income, education, of or relating to demography, the science of vital and social statistics (Dictionary.com, 2017). The demographic data of this study are described in the paragraphs that follow and will include age, gender and entry point. Obviously, clients at this health centre are all Zimbabweans based on the geographical region.

4.1.2 HIV prevalence at Norton Health care centre

A total of 242 of the HIV positive client records who met the inclusion criteria from January 2016 to December 2016 for this research were reviewed. About three (1%) of the records were excluded from the study as it was noticed that the clients were already known HIV positive clients at the time they tested during the period of study. Of the approximately 239 (100%) remaining records, 183(77%) of the clients were diagnosed through the OPD and Wards entry point and 56(23%) diagnosed through the PMTCT entry point.

The OPD and Wards entry point had a higher proportion of the client records that were used in this research than the PMTCT entry point owing to the high volumes of clients that are seen in the OPD and the wards at the hospital as compared to the number of clients that access PMTCT services annually. This finding is consistent with the study that conducted in Cape Town by

Kranzer et al., (2010:3) which had about 1990 clients diagnosed as HIV positive with only 320 (16%) of the clients diagnosed through the antenatal clinic (ANC) and about 1670 (84%) diagnosed through STI, TB and VCT entry points. The ANC entry point in this study is equivalent to the PMTCT entry point and the combined STI, TB and VCT are equivalent to the OPD and Wards entry point.

Of the 239 (100%) clients diagnosed in the year 2016, about 143(60%) had documented evidence of initiation on ART while about 96 (40%) had no documented evidence of initiation on ART.

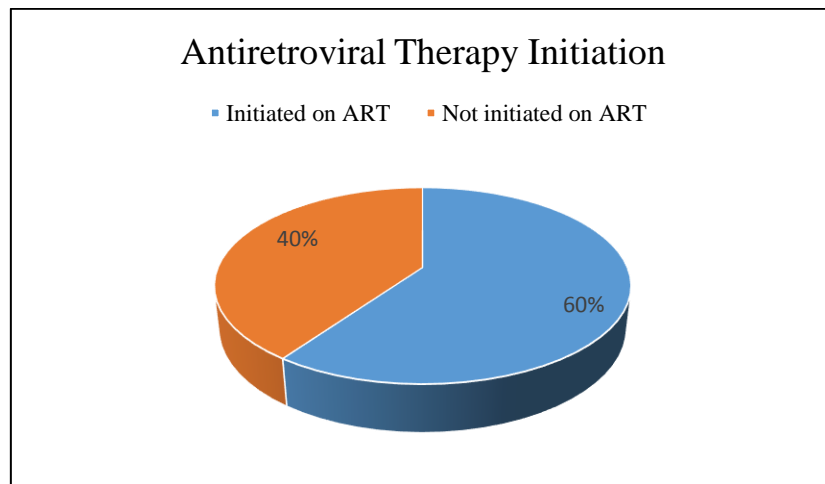


Figure 4.1: ART initiation pie chart

As evidenced by the ART initiation pie chart in Figure 4.1 above, there was a low proportion of diagnosed clients that were initiated on ART. Linkage to HIV treatment will be discussed in more detail in the section 4.3 to follow in this chapter.

4.1.3 Gender distribution

Understanding gender norms and gender inequalities is essential in reducing the risks for HIV transmission among men and women. Although there are similarities in HIV risk factors and behaviours across genders, differences exist and some gender groups are far more affected than others (CDC, 2017).

Table 4.1 Gender distribution

Client's gender	Frequency	Percent
Male	107	44.77%
Female	132	55.23%
TOTAL	239	100.00%

Table 4.1 above shows that more females 132(55%) were diagnosed with HIV than the males 107(45%) during the study period. The higher number of females that were diagnosed as HIV positive than males can be attributed to the relatively higher proportion of women (80%) who access HIV testing services than men (62%) in Zimbabwe (ZDHS, 2015:243). ZIMPHIA (2017:1) also reported an annual HIV incidence rate in Zimbabwe of about 0.59% among females and 0.31% among males. Therefore, there is a need for the health centre to further investigate the reasons that may be behind the low uptake of HIV testing by men at the centre. In addition, there is also a need to develop interventions that are targeted at increasing the number of males who access HIV testing services as indicated in the differentiated HIV care model, which recommends for a client centred approach in the provision of HIV services (MoHCC, 2017:35).

4.1.4 Age Distribution

The data for the study were collected from records of clients that were 16 years and above between January to December 2016. The decision of having the age limit at 16 years was to conform to the Ministry of Health and Child Care's consent age for HIV testing services, which is 16 years or older (MoHCC, 2017:34).

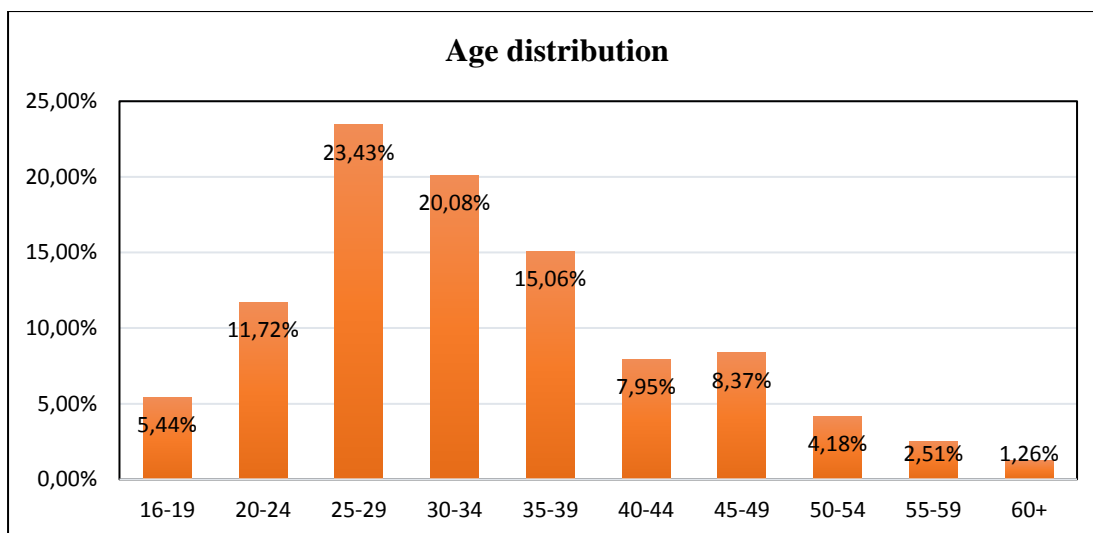


Figure 4.2: Histogram of age distribution

The median age [Interquartile range (IQR)] of the clients that were diagnosed with HIV was 32 years [26-39 years]. Figure 4.2 above shows the proportions of HIV positive clients by age group. The 25-29 years age group had the highest number of clients 56(23%) testing HIV positive followed by the 30-34 years age group 48(20%) and the 35-39 years age group 36 (15%). The lowest number of client records with an HIV positive result was among the 60 years and older age group 3 (1%).

The majority of the clients 207(87%) were from the 20-49 years age group and of these clients, about 111(54%) were females and about 96(46%) were males. This represents higher HIV incident rates among females. Similarly, this finding correlate with the UNAIDS (2017:2) report that in 2015, women accounted for 50% of the people living with HIV in East and Southern Africa. Kapiamba et al., (2016:197) also reported that the 20-49 years' age group made up the majority 57 (93.4%) of the participants that were HIV positive in a study conducted in KwaZulu-Natal Province of South Africa.

Of concern was the relative low numbers of client records that were recorded in the 16-19 years and 20-24 years' age groups of approximately 13 (5%) and 28 (12%) respectively. The UNAIDS (2015:8) reports that HIV remains particularly devastating for adolescents and young adults aged 15–24 years who account for approximately 50% of all new HIV infections and 33% of persons living with HIV/AIDS worldwide.

4.1.5 Entry point for HIV testing

As described in Chapter One, entry point for this study is the gateway through which people can receive HIV testing and treatment services at the health centre. These include Outpatients Department (OPD) and prevention of mother to child transmission (PMTCT) entry point.

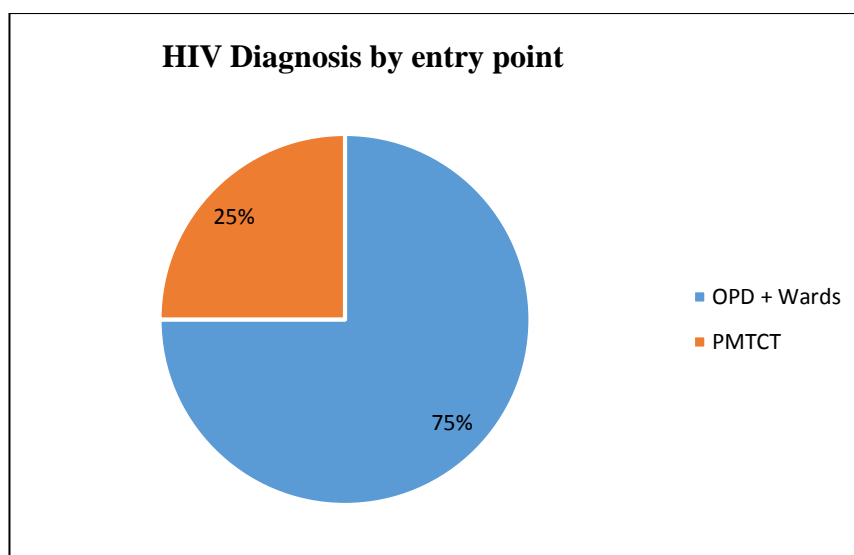


Figure 4.3: HIV diagnosis by entry point

Figure 4.3 above shows a pie chart of the client records diagnosed with HIV through the two entry points at the health centre. Majority of the clients 180(75%) were diagnosed through the entry point that caters for OPD and Wards while 59 (25%) were diagnosed through the entry point for PMTCT of HIV. Of the 180 clients diagnosed at the OPD and Wards entry point, 94(52%) were males and 86(48%) were females which represents an almost balanced proportion in terms of gender. There were more females 46(78%) than males 13(22%) who were diagnosed through the PMTCT entry point. This is because the PMTCT entry point mainly caters for females accessing the health centre for antenatal, maternity and post-natal care. The males who were tested in the PMTCT entry were mainly those accompanying their spouses for antenatal care. The Ministry of Health and Child care of Zimbabwe recommends for couple HIV testing during antenatal care as a way of eliminating mother to child to transmission of HIV (MoHCC, 2017:33).

4.2 ENROLMENT TO HIV CARE

Enrolment to HIV care is the second step in the HIV treatment cascade and it has been described as the ‘Achilles heel’ of the treatment cascade (Labhardt et al., 2016:2). According to WHO (2013:86), it is very important for all people living with HIV to enrol into care as soon as possible to facilitate early assessment for ART eligibility and timely ART initiation. In this study, linkage to HIV care referred to the first documented attendance for CD4 or the WHO clinical staging after a positive HIV diagnosis. The linkage to HIV care was presented in the following sections in terms of the gender of the clients and entry point for HIV diagnosis.

4.2.1 Linkage to HIV care by gender

Out of the 239 client records that had a documented HIV positive result during the study period, about 144(60%) had documented evidence of being linked to HIV care. Conversely, 95 (40%) of the client records had no documented evidence of linkage to HIV care. Figure 4.3 below shows the stacked column for linkage to HIV care by gender. Among the 144 clients that had documented evidence for linkage to HIV care, there was a higher proportion of females as compared to males, 87 (66 %) vs 57 (53%) respectively. However, the difference in the proportions is not significant at a 95% confidence interval, $p=0.062$ for the period January 2016 to December 2016.

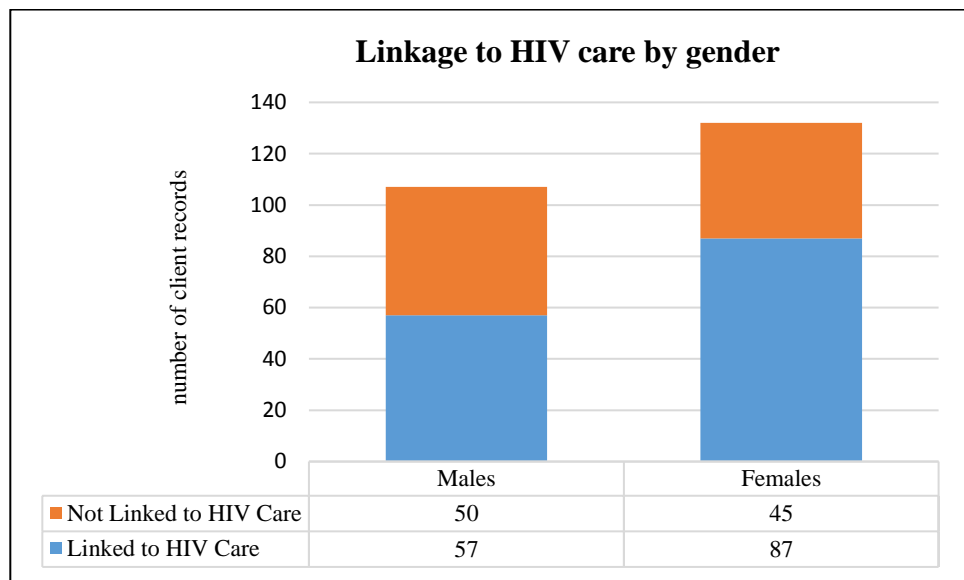


Figure 4.3: Linkage to HIV care by gender

4.2.2 Evidence linkage to HIV care by entry point

Figure 4.4 shows the proportions of linkage to HIV care based on the entry point from which the clients were diagnosed with HIV. The entry point that had the highest number of client records with evidence for linkage to HIV care was the PMTCT that had about 50(85%) linked to HIV care and 9 (15%) not linked to HIV care. The OPD and Wards entry point had the lowest proportion of clients linked to HIV care of about 94(52%) while 86(48%) of the clients not having evidence for linkage to HIV care. There was a statistically significant variation in proportions of clients with documented evidence of linkage to HIV care between entry points ($p=0.00002$) at 95% confidence interval.

This finding contradicts a study in Mozambique that found clients diagnosed with HIV through the PMTCT centre were less likely to be linked to HIV care and treatment as compared to

clients diagnosed through the voluntary counselling and testing (VCT) centre (Gerdtts et al., 2014:1). The same contradictory finding was reported in a study carried out in Cape Town by Kranzer et al., (2010:3) where patients diagnosed with HIV early through the antenatal care were less likely to link to HIV care.

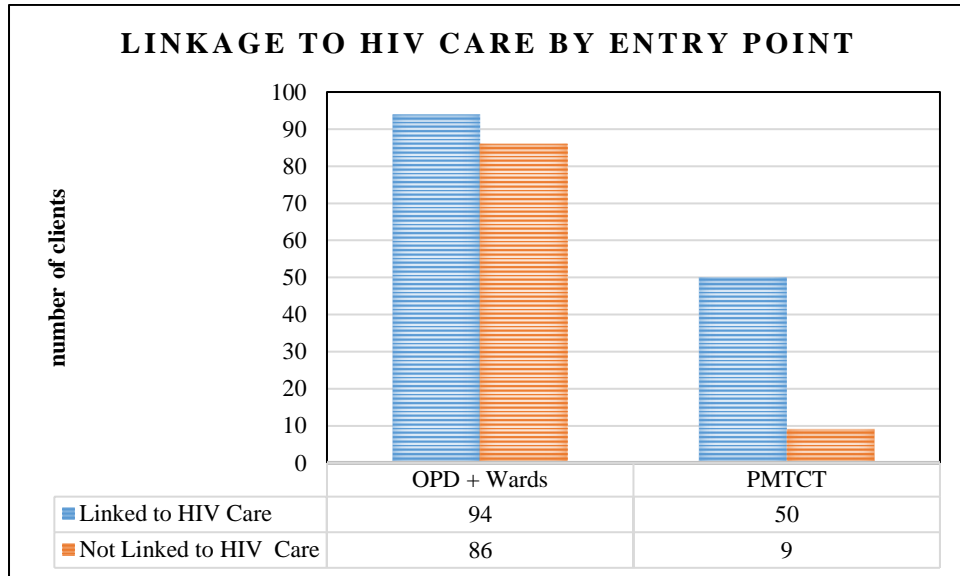


Figure 4.4: Linkage to HIV care by entry point

4.2.3 ART eligibility

ART eligibility refers to the people living HIV for whom ART is indicated based on meeting the clinical and immunological thresholds as defined by the WHO treatment guidelines (WHO, 2013:14). The eligibility for ART enrolment in Zimbabwe was until late 2016, based on a CD4 cell count equal to or less than 500 cells/mm³ or a WHO clinical stage 3 and 4 (WHO, 2013:13)

4.2.3.1 CD4 Cell Count

A baseline CD4 cell count for a newly HIV diagnosed individual serves as a significant prognostic indicator for treatment outcome (Hoffmann et al., 2010: 29). Of the 239 clients' records diagnosed with HIV, about 119 (50%) of the clients had a documented CD4 test done while the other 120 (50%) had no documentation of a CD4 test having been done. The median for the CD4 test results was 523 cell/mm³ [240-867 cell/mm³], which is an indication that the clients would have a better treatment prognosis. This median CD4 cell count was higher for the clients that enrolled into care when compared to some median CD4 cell counts from a study that were conducted in Rwanda by Kayigamba et al, (2012:242) with median of 387. According to the WHO 2013 guidelines for ART initiation based on a CD4 cell count of 500 cell/mm³ or below, about 59 (50%) of the clients that had a CD4 cell count result were eligible for ART initiation and about 60(50%) would not been eligible for initiation at the time of HIV diagnosis.

4.2.3.2 The WHO clinical staging

The WHO has four staging system used for clients diagnosed with HIV to add on the clients are categorised into one of four hierarchical clinical stages ranging from stage 1 (asymptomatic) to stage 4 (AIDS) (Weinberg et al., 2010:203). Table 4.2 below shows the frequency distribution for WHO clinical staging results for the clients that had documented evidence for the WHO clinical staging.

WHO stage	Frequency	Percent
Stage 1	39	27.86%
Stage 2	71	50.71%
Stage 3	30	21.43%
Stage 4	0	0%
TOTAL	140	100.00%

Table 4.2: The WHO clinical staging frequency distribution

About 140 (59%) of the clients had documented evidence of having gone through the WHO clinical staging while 99 (41%) had no evidence of having done the clinical staging. The majority of the clients 71 (51%) were documented to be in WHO stage 2. This stage is a mild symptomatic stage demonstrated by several clinical manifestations, which include but not limited to an unexplained weight loss of less than 10% of total body weight, recurrent respiratory infections and a range of dermatological conditions (Weinberg et al., 2010:203). There were no clients that were documented to have a stage 4 outcome. Of the clients who received the staging 140 (100%), about 30 (21%) of the clients were eligible for ART initiation at the time of HIV diagnosis based on the WHO clinical stage 3 or 4 according to the WHO (2013) guidelines. Following the eligibility assessment for ART initiation, the next step in the treatment cascade involves initiating all people living with HIV on antiretroviral therapy.

4.3 LINKAGE TO HIV TREATMENT: ART INITIATION

Linkage to HIV treatment in this research was defined in Chapter One as documented initiation on ART following HIV diagnosis. The Ministry of Health and Child Care in Zimbabwe recommends early treatment initiation as it is believed to be associated with some clinical and HIV prevention gains, improving survival and reducing new HIV infections at community level (MoHCC, 2013:20).

4.3.1 Linkage to HIV treatment by gender

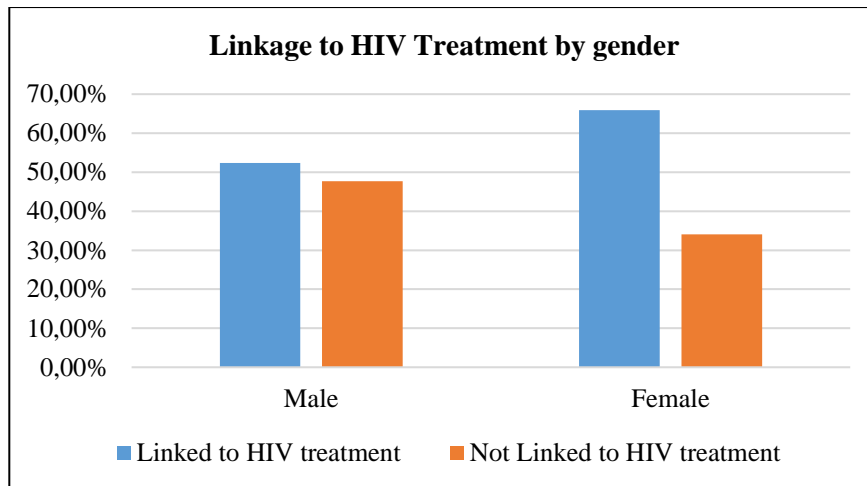


Figure 4.5: Linkage to HIV treatment by gender

Figure 4.5 above shows the bar graph of the variation in proportions for linkage to HIV treatment between gender. There is a higher proportion of females (66%) who had documented evidence of having been linked to HIV treatment than for males (52%). The difference in the proportions between linkage to treatment for females and males is statistically significant at a 95% confidence interval ($p=0.046$). WHO (2016:9) has also reported the high proportion of females than males initiating on ART after an HIV diagnosis, where only 40% of the males around the world living with HIV access treatment. In addition, this low ART initiation among the males stem from the fact that few males get access to HIV testing with only 30% of HIV tests done globally having being done on males.

4.3.2 Linkage to HIV treatment by entry point

Clients at the Norton Health Centre are initiated on ART through the opportunistic infections (OI) clinic. The OI clinic receives clients that will have been diagnosed with HIV through the OPD and Wards and the PMTCT entry points.

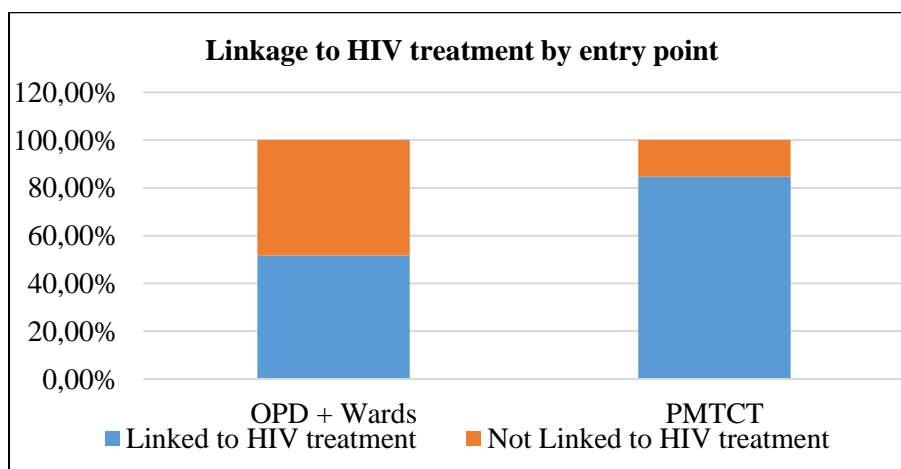


Figure 4.6 Linkage to HIV treatment by entry point

Figure 4.6 shows the linkage to HIV treatment outcomes between entry points of HIV diagnosis. The OPD and Wards entry point had approximately 93 (52%) client records with documented evidence of ART initiation while about 87 (48%) client records had no evidence of ART initiation. For the clients diagnosed with HIV through the PMTCT entry point, about 50 (85%) had documented evidence of ART initiation while approximately 9 (15%) had no evidence of ART initiation. There was a statistically significant variation in the proportions of clients that had documented evidence of linkage to HIV treatment between the two entry points ($p < 0.05$) at a 95% confidence interval. These findings contradict the Gerdtts et al.'s (2014:5) study that found that clients that were diagnosed through the PMTCT centres were less likely to initiate on ART when compared with patients diagnosed through VCT centres.

4.4 The HIV treatment cascade for Norton Health Centre

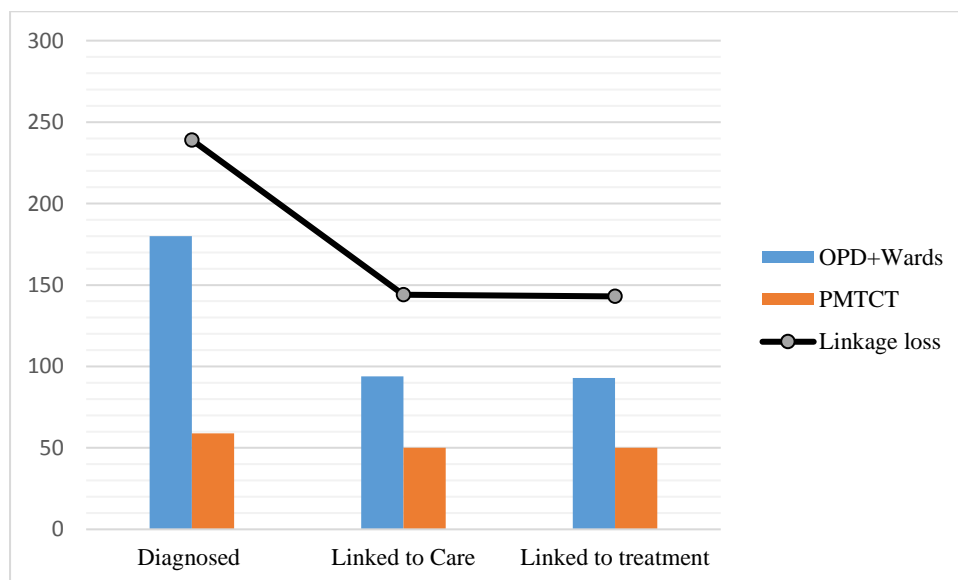


Figure 4.6: HIV treatment cascade for the Norton Health Centre

Figure 4.6 above shows the HIV treatment cascade for the client records that were used in the research. The treatment cascade describes the progression of people living with HIV (PLHIV) through HIV testing and counselling, access to and linkage to care, eligibility assessment and clinical staging for ART, pre-ART care, ART initiation and lifelong ART adherence and retention in care (Layer et al., 2014:8). Proportionally, 60% ($n=144$) of the 239 client records had documented evidence of linkage to HIV care evidenced by a CD4 test done or WHO clinical staging. Of the 144 clients linked to care, 99% ($n=143$) client records had documented linkage to HIV treatment evidenced by documented ART initiation. The linkage loss can be defined as the missed opportunities for linkage to HIV care and treatment for clients diagnosed with HIV. The highest linkage loss 40% occurred between the diagnosis of the clients and the

enrolment into HIV care with almost no linkage loss 1% from those clients that had been linked to HIV care.

This finding is in line with the findings of a previous study that has been conducted in Durban which found that there were significant losses between HIV testing and enrolment into care for clients who tested HIV positive from all the entry points involved in the study (Losina et al., 2010:7). More importantly, the 99% ART initiation rate is evidence that had all the clients been enrolled in care, there would be a high chance of having them also initiated on ART. Any intervention that is going to be crafted by the Norton health facility should pay special attention in ensuring that all the clients that are diagnosed with HIV at the health centre are retained in care so that they will be able to fully benefit from the HIV treatment package.

4.5 CONCLUSION

This chapter presented and described the findings of the study. The findings of the study were presented in terms of the demographic characteristics of the client records that were reviewed. The presentation was structured to follow the steps in the HIV treatment cascade of HIV diagnosis, linkage to HIV care and finally linkage to HIV treatment. It was reported that the overall proportion of clients with documented linkage to HIV treatment for the period of the study was 60%. The chapter presented the proportions for HIV diagnosis, linkage to HIV care and treatment. Furthermore, the variations in proportions between the two entry points and also between the gender were evaluated at every level and determinations of statistical significance were made. The findings from this study were also compared with findings from similar studies that have been conducted in order to establish any similarities and contradictions. The next chapter discusses the recommendations that have arisen from the findings of this study. The limitations that were faced during the study and also the conclusions that were arrived at will also be discussed.

CHAPTER FIVE

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented and discussed the findings of the study and compared it with other related studies that have been conducted in the past. A brief summary of the research

design and method utilised in conducting the study will be presented. The findings from Chapter Four will be used to answer the hypotheses proposed in Chapter One. This chapter will also look at the recommendations in light of the findings of the study. This chapter will discuss the conclusion that was arrived at based on the findings from the analysis of the data. Any limitations that were faced in conducting the study will also be discussed. The aim of this study was to determine the proportions of linkages to HIV care and treatment as per entry point for the people diagnosed with HIV at a Norton Health Centre. The study also sought to make recommendations to improve linkages to HIV care and treatment per entry point where there is a need. This study identified the proportions of clients enrolled at every stage of the HIV continuum of care for people diagnosed with HIV at a Norton Health Centre. The study also identified the any losses in the linkages to care and treatment as per entry point. This can be useful in addressing any bottlenecks in some of the entry points. The research findings from Chapter Four will help to test the following hypotheses that were formulated for this study. They are as follows:

- **H₁:** There is a significant relationship between the entry point from which people are diagnosed with HIV at the facility and the linkage to HIV care and treatment outcome.
- **H₂:** There are more HIV positive females linked to HIV care and treatment than HIV positive males at the health facility.

The research design and methods that were used are summarised in the section below.

5.2 RESEARCH DESIGN AND METHOD

A quantitative, retrospective, descriptive research design was used to conduct the study at a Norton Health Centre, in the Mashonaland West Province of Zimbabwe. A self-designed checklist was used to collect data from the clients' records. Data were collected regarding demographic information, HIV diagnosis at the two HIV testing entry points and the outcomes as far as being enrolled HIV care and ART initiation is concerned. The information was collected from the health centre's HIV testing services registers for the clients that had been diagnosed between January 2016 and December 2016.

The client records that were used came from the OPD and Wards and the PMTCT entry points. A total of 504 records were meeting the inclusion criteria and selection of the 242 client records that were used was selected through stratified proportionate random sampling. The records were stratified by the entry point from which the client would have been diagnosed with HIV and proportionate representation had to be factored in too. The sample comprised 183 client

records from the OPD and Wards entry point and 59 client records from the PMTCT entry point. Data collection was done in the period between August 2017 and October 2017. The data that were retrieved from this randomly selected sample was analysed using the Epi Info 7 Statistical Package and the findings of the analysis were presented in detail in Chapter four. A qualified statistician validated the results from the data analysis and the findings are discussed in the following section.

5.3 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS

This section will discuss the findings of the analysed data from the study conducted at a Norton Health Centre. The aim of the study was to determine the proportions of clients' records that had documented evidence of linkage to HIV care and treatment as per entry point following an HIV diagnosis for the period January 2016 to December 2016. The determinant for ART eligibility for the clients that were diagnosed with HIV at Norton Health Centre was based on the WHO (2013) guidelines for initiating ART at the time the concept for the study was developed in 2016. The WHO (2013) guidelines recommended that ART should be given to all people diagnosed with HIV with a CD4 cell count of less than or equal to 500 cells/mm³ or a WHO clinical staging of 3 and 4 in places where CD4 cell tests are not available (MoHCC, 2013:13). Accordingly, the Ministry of Health and Child Care adopted the WHO (2015) guidelines for ART initiation in the beginning of the year 2017 which are referred to as the "Treat All" approach. The "Treat All" approach recommends initiation of ART to all adults living with HIV regardless of the WHO clinical stage and at any level of CD4 cell count (WHO, 2016:74). Under these new guidelines, all the client records that were sampled were eligible for ART initiation.

It was observed that there were more females 132(55%) who were documented to have been diagnosed with HIV than the males 107(45%) during the study period. This finding confirms the gendered vulnerability that females are exposed and vulnerable regarding the risk of HIV infection. The ZDHS (2015:276) found the HIV prevalence to be higher (16.7) among females aged 15-49 years than males (10.5%) of the same age group. The higher number of females diagnosed with HIV at the health centre might not be necessarily all because of the high infection rates in females. It could also have been attributed to by the low number of males who generally get tested for HIV which in turn will reduce the HIV positivity yield for the male gender during the study period. The WHO (2016:6) reports that males account for approximately 30% of the HIV tests that are conducted globally in year.

The median age for the clients' records that were reviewed during the study period was 32 years [26-39 years]. The 25-29 years age group had the highest number of clients 56(23%) and the lowest number of client records was in the 60 years and older age group (15%). The 20-49 years age group had the highest number 207(87%) of client that were diagnosed with HIV comprised of about 111(54%) females and about 96(46%) males. These findings reflect higher infection rates among the 20-49 years age group with the gender disparity discussed in the paragraph above also being demonstrated. Of concern was the relative low numbers of client records that were recorded in the 16-19 years and 20-24 years' age groups of approximately 13 (5%) and 28 (12%) respectively. These age groups make up the part of the adolescents and young adults that contributed to almost 3.9 million people who were living with HIV in 2014 (UNAIDS, 2015).

The data that were analysed in the study came from the points for HIV testing at the health centre which were the OPD and Wards entry point and the PMTCT entry points. A higher number of the client records 180(75%) reviewed were tested for HIV from the OPD and Wards entry point compared to those tested through the PMTCT entry point 59 (25%). This difference can be attributed to the relative high volumes of clients that are seen through the OPD for any kind of illness and those that are admitted in the hospital wards annually. The PMTCT entry point only caters for clients that access the antenatal, maternity and postnatal services at the hospital. It was also observed that more females 46(78%) than males 13(22%) were diagnosed through the PMTCT entry point. It was inferred that males that were diagnosed through the PMTCT entry point were accompanying their spouses who were accessing PMTCT services for pregnancy. There is need to recommend more testing of male spouses in PMTCT as this will help to reduce the risk of transmission of HIV to the child. The Ministry of Health and Child Care of Zimbabwe recommends for couple HIV testing during antenatal care as a way of eliminating mother to child to transmission of HIV (MoHCC, 2017:33).

In this study, linkage to HIV care referred to the first documented attendance for CD4 or the WHO clinical staging after a positive HIV diagnosis. Approximately 144 (60%) of the client records reviewed had documented evidence of having been linked to HIV care while 95 (40%) did not have any documented evidence of linkage to HIV care. There was a higher proportion of females 87(66 %) than males 57(53%) among those linked to HIV care although the variation was not statistically significant ($p=0.062$) at a 95% confidence interval. There were statistically significant variations ($p=0.00002$, CI 95%) in the proportions of client records with

documented evidence of linkage to HIV care between entry points for HIV testing. The PMTCT entry point had a higher proportion of its clients 50(85%) linked to HIV care as compared to the OPD and Wards entry point that had about 94(52%) of its clients linked to HIV care.

The variations in the linkages to care between these entry points may be attributed to the different models of HIV care that are used in these entry points. The PMTCT entry point at the Norton Health Centre along with the whole of Zimbabwe adopted the Option B+ model for initiating ART in HIV positive pregnant women and breastfeeding women in 2013. In addition, the Option B+ is a policy that provides immediate and lifelong ART to all pregnant and breastfeeding women who test HIV positive (WHO, 2016:43). The high linkage to HIV care proportions for PMTCT clients correlates to the success stories of the Option B+ policy as reported by the WHO (2016:43) that has seen many HIV high burden countries reporting an uptake of more than 90% in HIV testing of pregnant women. Furthermore, it is believed that identifying HIV-positive pregnant women and promptly enrolling them in treatment has benefits for the woman, the infant and the woman's sexual partner.

The policies used in the Option B+ model are almost similar to the 'Treat All' approach in that every person diagnosed with HIV is now eligible for lifelong ART (WHO, 2016:43;76). This means that at the time of the data collection for the study, all the clients who had been diagnosed with HIV prior to 2017 should have been linked to HIV care and treatment. Therefore, there were no differences in proportions of clients linked to care and treatment that were expected from the different entry points. The eligibility for ART enrolment in Zimbabwe was until late 2016 based on a CD4 cell count equal to or less than 500 cells/mm³ or a WHO clinical stage 3 and 4 (WHO, 2013:13). Of the clients' records that were reviewed in the study period, approximately 119 (50%) had a documented CD4 test done and the other 120 (50%) had no record of a CD4 having been done. The median CD4 cell count for those clients that had a CD4 test done was 523 cell/mm³ [240-867 cell/mm³]. About 59 (50%) of the clients that had a CD4 cell count result were eligible for ART initiation and about 60(50%) would not been eligible for initiation at the time of HIV diagnosis based on the 500 cell/mm³ CD4 count threshold. More importantly, the higher median CD4 cell count recorded was a positive development as these clients would have a better treatment prognosis if initiated on ART. The WHO (2016) has cited growing evidence of the clinical benefits of earlier ART initiation. An analysis of the HPTN052 results found that study participants that were randomized to the early treatment arm

(CD4 cell count 250-500) had higher median CD4 counts during two years of follow-up. Specifically, they were 27% less likely to experience a primary clinical event, 36% less likely to experience an AIDS-defining clinical event and 51% less likely to be diagnosed with tuberculosis (UNAIDS, 2014:3).

In terms of documented evidence for the WHO clinical staging, approximately 140(59%) of the clients had received the WHO clinical staging and about 99(41%) had no evidence of having received the WHO clinical staging. The highest number of the clients were documented to be in WHO clinical stage 2 which represented 71(51%) of the clients. There were no clients that were documented to be in the WHO clinical stage 4, which is the most severe stage of HIV infection. Of the clients who received the staging, about 30 (21%) of the clients were eligible for ART initiation at the time of HIV diagnosis based on the WHO clinical stage 3 or 4 according to the WHO (2013) guidelines.

Linkage to HIV treatment in this research was defined in Chapter 1 as documented initiation on ART following HIV diagnosis. Of the clients' records that were reviewed, more clients had documented evidence of linkage to HIV treatment 143 (60%) than those that did not have any evidence of linkage to HIV treatment 96 (40%). The uptake of ART following HIV diagnosis for the period under study was relatively lower than the national uptake that was reported by ZIMPHIA (2017: 3) of 87.3% among people 15-64 years old who know their HIV status. When proportions for linkage to HIV treatment were assessed between gender, it was observed that females had a higher proportion of clients 66% that had documented evidence for linkage to HIV treatment as compared to the males that had 52% of the clients. This variation in proportions was statistically significant ($p=0.046$) at a 95% confidence interval.

There was an almost balanced pattern in linkage to HIV treatment for the clients that were diagnosed through the OPD and Wards entry point which had about 93(52%) linked to HIV treatment while 87(48%) were not linked. For the PMTCT entry point, a greater proportion of the clients had documented linkage to HIV treatment 50(85%) compared to those with no linkage 9(15%). Furthermore, there was a statistically significant variation for the proportions of the linkage to HIV treatment between the entry points with the PMTCT entry point having a higher proportion (85%) compared to the OPD and Wards entry point (52%). This pattern may also be attributed to the availability of the Option B+ policy for ART initiation in the PMTCT entry point as discussed previously in the section above.

The process of linking clients that have been diagnosed with HIV at the Norton Health Centre is based on the HIV treatment cascade. The study went on to analyse the treatment cascade for the clients' records that were reviewed during the study period for any linkage loss. The linkage loss can be defined as the missed opportunities for linkage to HIV care and treatment for clients diagnosed with HIV. It was observed that the greatest loss in clients occurred between HIV diagnosis and linkage to HIV care which had a linkage loss of about 40%. There was very little linkage loss observed between HIV care and ART initiation (1%).

5.4 HYPOTHESIS TESTING

In this study, the findings demonstrated statistically significant variations in proportions for linkage to HIV care and treatment between the entry points of testing led to the researcher failing to reject the hypotheses:

- **H₁:** There is a significant relationship between the entry point from which clients are diagnosed with HIV at the facility and the linkage to HIV care and treatment.

This hypothesis is accepted based on the following findings of this study:

There was a statistically significant variation in proportions of clients with documented evidence of linkage to HIV care between entry points ($p=0.00002$) at 95% confidence interval. The high numbers of linked clients as shown in Figure 5.1 below demonstrate this.

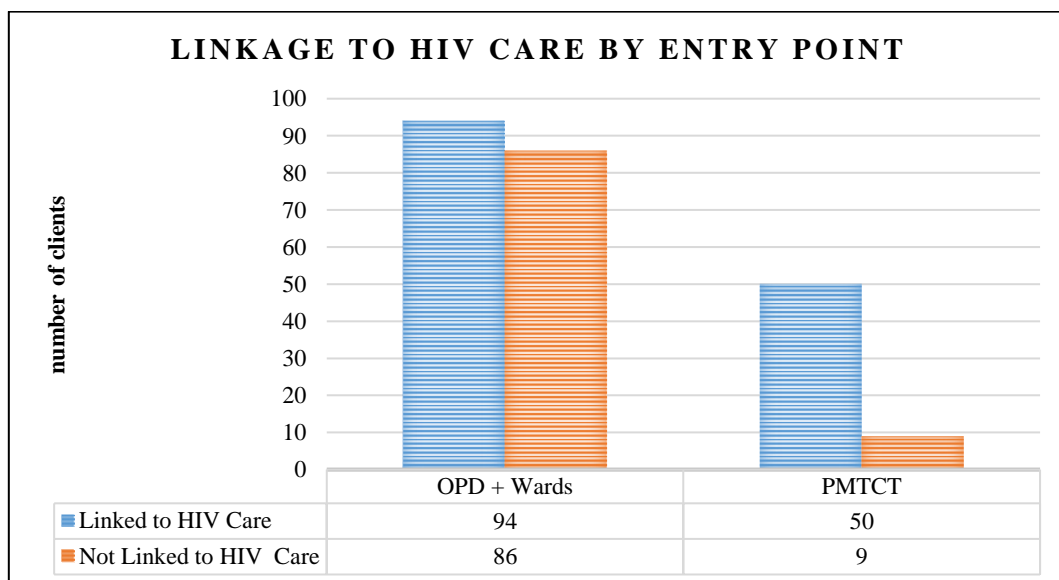


Figure 5.1: Linkage to HIV care by entry point

As demonstrated in Figure 5.1 above, there were more clients that were linked to HIV care and treatment from both entry points at Norton Health Centre. PMTCT had the highest linkages, which then calls for people to be encouraged to use this entry point including men, as there

were few identified to have used this entry point. This should be done when encouraging expectant females to come with their male partners.

- **H₂:** There are more HIV positive females linked to HIV care and treatment than HIV positive males at the health facility.

This hypothesis is accepted based on the following findings of the study:

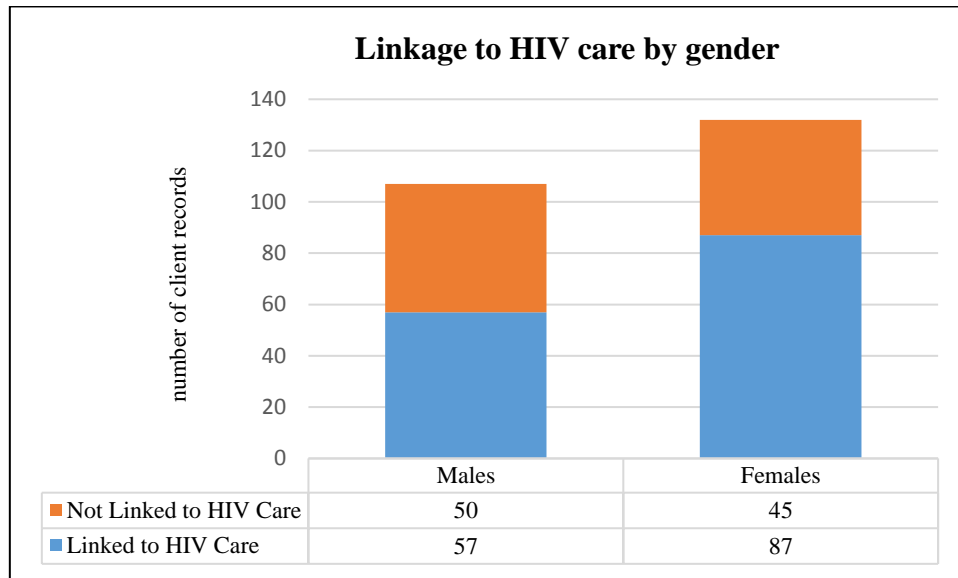


Figure 5.2: Linkage to HIV care and treatment by gender

Based on the findings as shown in Figure 5.2 above, it was concluded that the hypothesis be accepted. It was also concluded that clients diagnosed with HIV between January 2016 and December 2016 which was the study period, there were more females linked to HIV care and treatment than the males at Norton Health Centre. There is a need to make sure that measures are put in place that encourage clients especially males that are diagnosed with HIV at the health centre to be linked to HIV care and treatment. More importantly, ensuring that all clients that are diagnosed with HIV are effectively linked to care and treatment may help in improving the treatment outcomes of the individual and drive towards the elimination of the spread of the HIV infection.

5.5 LIMITATIONS OF THE STUDY

Some limitations to this study were noted. The findings of this study cannot be generalised to the whole Norton town as the study was conducted using the records of clients that were seen at one health centre as opposed many health centres that exist in this town. There are possibilities that some of the clients documented as not linked to care and treatment could have accessed these services from other facilities.

The retrospective design that was used meant that the researcher had to put up with the documentation errors that existed. Some client records had gaps in terms of documentation of the services the client would have received. Nevertheless, these identified gaps did not have any effect on the results and findings. Where the gaps had significant effect on the study, the researcher made all attempts to find the missing information. The information used in the study was collected solely from the client records to determine the linkage outcomes. Yet other factors at institution level could have had an influence on the treatment outcomes.

5.6 RECOMMENDATIONS

Based on the findings of this study, conclusions and limitations discussed in the sections above, the following recommendations are made for both the health centre and the research community aimed at improving the linkages of people living with HIV to effective care and lifelong treatment.

5.6.1 Recommendations for the Health Centre

It was noted that there is a significant association between the entry point from which HIV diagnosis is done and the subsequent linkage to care and treatment outcomes at the Norton Health Centre. It was also noted that more females were linked to HIV care and treatment than males. In light of these findings, the following recommendations were made:

- To implement programmes that are meant to make HIV testing services easily accessible to key populations like men, the adolescents and young people.
- To ensure that the health centre identifies all the bottlenecks that maybe hindering the effective linkage of all diagnosed clients to HIV care and treatment.
- There is also need to learn lessons from the certain sections of the systems that will be performing well to help improve services in the other sections. Lessons can be learnt from the PMTCT entry point that can help the OPD and Wards improve its linkages to care and treatment.
- The study also showed few men who used PMTCT as an entry point. It is also recommended that male partners be encouraged to accompany their expectant female partners attending the PMTCT sessions.
- There is need to have multiple entry points at the health centre as opposed to having one entry point that caters for all the OPD clients without specific points that cater for STI, TB clients as recommended in the Operation and Service Delivery Manual for the Prevention, Care and Treatment of HIV in Zimbabwe (MoHCC, 2017).

5.6.2 Recommendations for future research

Based on the findings of this study, the following recommendations were made for further research to:

- To determine the health facility, health staff bottlenecks and enablers to improving linkages to HIV care and treatment for people diagnosed with HIV.
- To investigate on how various social, cultural and psychological standings of people diagnosed with HIV may interact with the linkages to care and treatment.
- To determine the treatment retention patterns of clients following initiation on lifelong ART.
- To prospectively follow a cohort of newly diagnosed HIV clients to establish factors they go through in their journey towards viral suppression.
- Qualitative research that will explore and describe the reasons for not being linked to treatment and care especially for the HIV positive men.
- Destigmatisation of the HIV infection studies among the youth and young adults as there was few that were linked to HIV care and treatment.
- Mixed methods research that will use the clients' own views and perceptions rather than using the records only.

5.6.3 Recommendations for public health

- More health education to destigmatise the HIV infections to have community being open about their HIV status.
- Involvement of community health care workers in the follow-up on defaulters.
- Involvement of community-based facilities like churches and societies to pass on education.
- The community-based health care centres to be equipped with more staff and equipment to deal with the demands of the community.
- Youth friendly services for the young adults to be encouraged where youths can have their own centre to share their feelings.
- The centres to have the facility tracking system that will assist in identifying the defaulters.
- Health care centres to use the mobile devices (eHealth) to remind the clients about their appointments.
- Health care facilities to operate for the whole week to cater for the working class clients.

6.0 CONCLUSION

This chapter presented a summary of the research findings, the conclusions that were reached on based on the findings of the study. The recommendations and the study limitations were discussed. The aim of this study as discussed in Chapter One, was to determine the proportions of linkages to HIV care and treatment as per entry point for the people diagnosed with HIV at a Norton Health Centre. The study also sought to make recommendations to improve linkages to HIV care and treatment per entry point where there is a need. The study managed to meet the following objectives:

- To determine the proportion of individuals diagnosed with HIV that had documented evidence of linkage to HIV care and treatment at a Norton Health Centre by entry point. This objective was met through the demonstrated proportions of linkages to HIV care and treatment that were presented in Chapter 4 of the study.
- To evaluate the association between the entry point of HIV diagnosis and the linkage to HIV care and treatment. Based on the findings of the study, a statistically significant variation in proportions of clients with documented evidence of linkage to HIV care between entry points ($p=0.00002$) at 95% confidence interval.
- To make recommendations for improving the linkages to HIV care and treatment as per entry point at a Norton Health Centre. Recommendations were made based on the findings of the study. These recommendations were targeted at the health centre, future research and public health development.

The findings of the study led to acceptance of the hypotheses that there is a significant relationship between the entry point from which clients are diagnosed with HIV at the facility and the linkage to HIV care and treatment. The second hypotheses that there are more HIV positive females linked to HIV care and treatment than HIV positive males at the health facility was also accepted based on the research findings.

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**ANNEXURE A
ETHICAL CLEARANCE UNIVERSITY OF SOUTH AFRICA HIGHER DEGREES
RESEARCH AND ETHICS COMMITTEE**



**RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES
REC-012714-039 (NHERC)**

1 March 2017

Dear Mr NL Tungwarara

Decision: Ethics Approval

HS HDC/669/2017

Mr NL Tungwarara

Student: 3484-675-1

Supervisor: Dr DD Mphuthi

Qualification: PhD

Joint Supervisor: -

Name: Mr NL Tungwarara

Proposal: Facility linkages to HIV care and treatment as per entry point at a Norton Health Centre, Zimbabwe.

Qualification: MPCHS94

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted for the duration of the research period as indicated in your application.

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 1 March 2017.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*



Open Rubric

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za


3) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*

4) *[Stipulate any reporting requirements if applicable].*

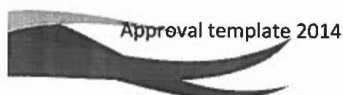
Note:

The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.

Kind regards,


Prof L Roets
CHAIRPERSON
roetsl@unisa.ac.za


Prof MM Moleki
ACADEMIC CHAIRPERSON
molekmm@unisa.ac.za



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ANNEXURE B
REQUEST TO CONDUCT RESEARCH
REQUEST FOR PERMISSION TO CONDUCT RESEARCH

Norton Town Council
Department of Health
Norton, Zimbabwe

19 June 2017

Dear Sir/ Madam

RE: Application for permission to conduct research at the health centre

My name is Nigel Leon Tungwarara currently studying for a Masters in Public Health (MPH) degree with the University of South Africa (UNISA). I am conducting a research titled: "*Facility linkages to HIV care and treatment as per entry point at a Norton health centre, Zimbabwe*". The research will be conducted under the supervision of Dr DD Mphuthi from the UNISA Department of Health Studies. I would like to apply for permission to conduct this research at **Norton District Hospital**.

This study aims to investigate the losses to linkages to HIV care and treatment for the clients diagnosed with HIV that occur in the various entry points providing HIV testing at the hospital. This will allow recommendations to be made that can improve linkages in the entry points. The health centre has been selected for this study because it is located in a small town that is surrounded by mining and farming communities which are a HIV transmission high risk areas. The study will involve collecting information from the hospital registers on clients who were diagnosed of HIV between January and December 2016 through various entry points and determining if they managed to be linked to HIV care and initiated on antiretroviral therapy. The individual client identifiers like names will not be recorded so as maintain the privacy and anonymity. The recorded information will be kept in a safe place and will only be accessed by those people or institutions directly involved with the research.

The findings from this study will help in identifying the entry points that will be having significantly low linkages to care and treatment which can help to identify any bottlenecks in these entry points. The findings can also be used as a baseline for any program that will be implemented to improve the linkages to care and treatment. A bound copy of the full research copy will be provided to the health centre upon completion of the study. Should any further

information be required, I can be contacted on mobile phone number: +263 777 369 590 and email: nigelltung@gmail.com. My supervisor Dr DD Mphuthi can be contacted on email: mphutdd@unisa.ac.za.

Yours Sincerely

Nigel Tungwarara

ANNEXURE C
MEDICAL RESEARCH COUNCIL OF ZIMBABWE ETHICAL CLEARANCE

Telephone: 791792/791193
Telefax: (263) - 4 - 790715
E-mail: mrcz@mrcz.org.zw
Website: <http://www.mrcz.org.zw>



Medical Research Council of Zimbabwe
Josiah Tongogara / Mazoe Street
P. O. Box CY 573
Causeway
Harare

APPROVAL LETTER

REF: MRCZ/B/1320

07 July, 2017

Nigel L. Tungwarara
P.O.Box 1
Norton

RE: FACILITY LINKAGES TO HIV CARE AND TREATMENT AS PER ENTRY POINT AT A NORTON HEALTH CENTRE, ZIMBABWE

Thank you for the above titled proposal that you submitted to the Medical Research Council of Zimbabwe (MRCZ) for review. Please be advised that the Medical Research Council of Zimbabwe has **reviewed** and **approved** your application to conduct the above titled study. This is based on the following documents that were submitted to the MRCZ for review:

- a) Study proposal
- b) Data collection tools

APPROVAL NUMBER : MRCZ/B/1320

This number should be used on all correspondence, consent forms and documents as appropriate.

- **APPROVAL DATE** : 07 July, 2017
- **TYPE OF MEETING** : Expedited
- **EXPIRATION DATE** : 06 July, 2018

After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ Offices should be submitted one month before the expiration date for continuing review.

- **SERIOUS ADVERSE EVENT REPORTING:** All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ Offices.
- **MODIFICATIONS:** Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ Offices is required before implementing any changes in the Protocol (including changes in the consent documents).
- **TERMINATION OF STUDY:** On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ Offices.
- **QUESTIONS:** Please contact the MRCZ on Telephone No. (04) 791792, 791193 or by e-mail on mrcz@mrcz.org.zw.

Other

- Please be reminded to send in copies of your research results for our records as well as for Health Research Database.
- You're also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours Faithfully

MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE

MEDICAL RESEARCH COUNCIL OF ZIMBABWE

2017 -07- 07

APPROVED

P.O. BOX CY 573 CAUSEWAY HARARE

PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH

ANNEXURE D
PERMISSION TO CONDUCT RESEARCH AT NORTON HOSPITAL



NORTON TOWN COUNCIL

ALL COMMUNICATIONS TO BE ADDRESSED TO THE TOWN SECRETARY

208 Galloway Road
P. Bag 904
Norton, Zimbabwe
20 June 2017

Phone: +263 062 2226/7/8
Fax: +263 062 2219
Email: ceo@nortontc.org.zw

Mr Nigel L Tungwarara
P. O Box 01
Norton

Dear Mr Tungwarara

RE: REQUEST FOR PERMISSION TO UNDERTAKE A RESEARCH

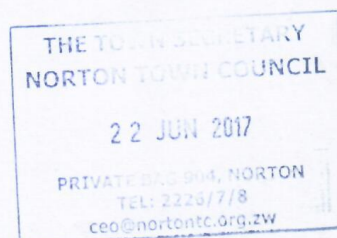
We refer to your letter dated 19 June 2017 requesting to carry out a research using Norton Town Council (Norton Hospital) as your case study.

We have no objection to your request. However, you shall only be allowed to conduct your research on the following conditions:-

- a) That in conducting your research you respect the Council Procedure and protocol with regards to communication and permission to enter premises or interview Council employees, and obtaining information (whether verbal or documented) from Council employees/officials and Councillors.
- b) That in conducting your research you will give due respect to employees and individuals irrespective of their grades.
- c) That during the course of your research you shall not behave or conduct yourself by (action, expression or statements) in a manner that is likely to cause alarm and despondency among Council employees and Hospital patients.
- d) That you submit a written undertaking to handover a copy of omission research is completed so that Council may also benefit from the research findings.
- e) That you make a written undertaking that the findings of your research shall not be published without the prior written consent of the Council and that the findings shall be treated as strictly confidential information to be used for no other purposes other than your academic requirements only.

Yours faithfully


J Chishakwe
Admin & Human Resources Officer



ANNEXURE E SELF-DESIGNED CHECKLIST

Instructions: Please complete for every individual testing HIV positive from **ALL the HTS Registers**.

The Entry point to be documented is entry point for HIV Diagnosis as documented in the HTC registers

1 January 2016 to 31 December 2016

#	1) Initial HIV Diagnosis	2) Entry Point Code for HIV testing	3) Gender & Age	5) Recorded in Pre-ART register	6) CD4 Test	7) WHO staging	8) ART Initiated	9) Source of Information for ART initiation	11) If not initiated any comments recorded or other observational information relevant
1	Date: dd/mm/yyyy OI/ART No.:	OPD ....[1] ANC and Martenity...[2] TB....[3] OI department...[4] Wards.....[5]	Male.....[1] Female.....[2] Age.....	Yes.....[1] No.....[2] Date enrolled:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[2] Date:	EMPS.....[1] Green book.....[2] ART Register.....[3] Pre ART register.....[4] Other: Specify .....	.....
	Client's Initials: .....	.....	.....	Date enrolled:	Result:	WHO Stage	Date: .....	.....	.....
2	Date: dd/mm/yyyy OI/ART No.:	OPD ....[1] ANC and Martenity...[2] TB....[3] OI department...[4] Wards.....[5]	Male.....[1] Female.....[2] Age.....	Yes.....[1] No.....[2] Date enrolled:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[2] Date:	EMPS.....[1] Green book.....[2] ART Register.....[3] Pre ART register.....[4] Other: Specify .....	.....
	Client's Initials: .....	.....	.....	Date enrolled:	Result:	WHO Stage	Date: .....	.....	.....
3	Date: dd/mm/yyyy OI/ART No.:	OPD ....[1] ANC and Martenity...[2] TB....[3] OI department...[4] Wards.....[5]	Male.....[1] Female.....[2] Age.....	Yes.....[1] No.....[2] Date enrolled:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[2] Date:	EMPS.....[1] Green book.....[2] ART Register.....[3] Pre ART register.....[4] Other: Specify .....	.....
	Client's Initials: .....	.....	.....	Date enrolled:	Result:	WHO Stage	Date: .....	.....	.....
4	Date: dd/mm/yyyy OI/ART No.:	OPD ....[1] ANC and Martenity...[2] TB....[3] OI department...[4] Wards.....[5]	Male.....[1] Female.....[2] Age.....	Yes.....[1] No.....[2] Date enrolled:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[0] Date:	Yes.....[1] No.....[2] Date:	EMPS.....[1] Green book.....[2] ART Register.....[3] Pre ART register.....[4] Other: Specify .....	.....
	Client's Initials: .....	.....	.....	Date enrolled:	Result:	WHO Stage	Date: .....	.....	.....

ANNEXURE F

EDITING AND PROOFREADING CERTIFICATE

EDITING AND PROOFREADING CERTIFICATE

7542 Galangal Street

Lotus Gardens

Pretoria

0008

07 December 2017

TO WHOM IT MAY CONCERN

This letter serves to confirm that I have edited and proofread Mr NL Tungwarara entitled: **“FACILITY LINKAGES TO HIV CARE AND TREATMENT AS PER ENTRY POINT AT A NORTON HEALTH CENTRE, ZIMBABWE”**. I found the work easy and intriguing to read. Much of my editing basically dealt with obstructionist technical aspects of language which could have otherwise compromised smooth reading as well as the sense of the information being conveyed. I hope that the work will be found to be of an acceptable standard. I am a member of Professional Editors Guild.

Hereunder are my particulars:

Jack Chokwe

Jack Chokwe (Mr)

Contact numbers: 072 214 5489

jmb@executivemail.co.za

Professional
EDITORS
Guild