THE EFFECT OF HEALTH FACILITY RENOVATION ON HIV COUNSELLING AND TESTING (HCT) SERVICE UTILISATION IN HEALTH FACILITIES IN THE OTJOZONDJUPA REGION, NAMIBIA

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ABSTRACT

The Ministry of Health and Social Services in Namibia has embarked on a fight against the human immunodeficiency virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) pandemic. The human immunodeficiency virus counselling and testing (HCT) services comprises the core component of the prevention, treatment and care pertaining to HIV. The purpose of this study was to investigate the effect of the renovation of health facilities on the HCT service utilisation.

The study used a quantitative, quasi-experimental research design to determine the effect of health facilities' renovations on the utilisation of the HCT service. The study population included health facilities that have been renovated, as well as health facilities that have not been renovated, but which met the inclusion criteria. The study sample comprised eight public health facilities that had offered HCT services between 2005 and 2011. Of the eight public health facilities 25% were hospitals, 25% were primary health care centres and 50% were primary health care clinics.

Permission was obtained from the ethical review committees of the University of Namibia and the Ministry of Health and Social Services to conduct a pilot study and the actual research study as well as the confidentiality of the clinical records was assured.

The study concluded that there was no significant effect of the renovations to health facilities on HCT service utilisation. However, the study also revealed that 50% of the health facilities that formed the study sample had not been renovated. The study also found that 50% of the health facilities included an adolescents friendly health services (AFHS) room while the remainder did not have such rooms. As part of the study's confounding factors it was found that the catchment population of the health facilities had increased by a margin of 1.4 from before the renovations to after the renovations. Furthermore, with

regard to the distances from one health facility to the next, 37.5 % of the health facilities were found to be situated in excess of 91 kilometres away from the closest health facility.

Although the study did not show significant evidence of an effect of the renovations to health facilities on the HCT service utilization, from a systems point of view, the study recommends an increased investment of resources in studies to determine the factors that affect HCT service utilisation, minor capital budget decentralisation, more maintenance and repair to health facilities, the inclusion of AFHS rooms, reduction in distances between health facilities, the use of various HCT models, the integration of HCT into primary health care outreach services and a large-scale study on other factors that affect HCT utilisation with the focus on the dynamics of the catchment population.

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LIST OF ABREVIATIONS

AFHS   Adolescents friendly health services

ART   Antiretroviral therapy

ARVs   Antiretrovirals

ANC   Antenatal care

AIDS   Acquired Immuno Deficiency Syndrome

CNAS   Centre for Nepal and Asian Studies

CRHCS   Commonwealth Regional Health Community Secretariat

HAART   Highly Active Antiretroviral Therapy

HBHCT   Home-based human immunodeficiency virus counselling and testing

HCT   Human immunodeficiency virus counselling and testing

HFC   Health Facility Census

HIV   Human immunodeficiency virus

HIS   Health Information System

MDGs   Millennium Development Goals

MOH   Ministry of Health (in Kenya)

MoHSS   Ministry of Health and Social Services

NSF   National Science Foundation

NURHI   Nigeria Urban Reproductive Health Initiative

OAU   Organisation of African Unity

PAC   Post abortion care

PEP   Post exposure prophylaxis

PHC   Primary health care

PIFs   Project identification forms

PITC   Patient initiated testing and counseling

PNC   Post-natal care

RCT   Routine counselling and testing

SPSS   Statistical Package for Social Sciences

VCT   Voluntary counselling and testing

UN   United Nations

UNFPA   United Nations Population Fund

WHO   World Health Organization

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DEDICATION

I would like to dedicate this work, which is the culmination of hard work, persistence, perseverance and commitment, to my late grandmother, who always showed a keen interest in my studies and who always encouraged me to work hard. Secondly, this work is also dedicated to all health professionals who have a keen interest in aspects of public health and with specific emphasis on health facilities' renovations and HIV counselling and testing services.

DECLARATIONS

I, Jeremia Natangwe Shikulo, hereby declare that this study **"The effect of health facility renovation on HIV Counselling and Testing (HCT) service utilisation of health facilities in the Otjozondjupa Region, Namibia"** is a true reflection of my own research and that neither this work nor part thereof has been submitted for a degree at any other institution of higher education.

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Jeremia Natangwe Shikulo

CHAPTER 1

BACKGROUND OF THE STUDY

1.1 INTRODUCTION

This chapter provides an overview of the study. This overview includes the background to the study, the problem statement, the purpose and objectives of the study and the significance of the study. The chapter also contains definitions of the concepts used in the study.

1.2 BACKGROUND/ORIENTATION

The prominence and significant attention accorded the human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) on the international agenda in recent years has resulted in the initiation of vertical programmes which have compelled countries to improve their health services particularly as they relate to HIV/AIDS. In addition, declarations by the United Nations (UN) and the international community have been aimed at addressing the HIV/AIDS pandemic. These declarations have resulted in a number of initiatives aimed at ensuring a strong and effective response to HIV (El-Sadr & Abrams, 2007). For example, the Alma-Ata declaration urged both governments and the international community to attain a level of health that will permit all the people of the world to lead socially and economically productive lives (De Savigny, Kasale, Mbuya, & Reid, 2008).

As a continent, Africa under the auspices of the Organisation of African Unity (OAU) now African Unity (AU), put in place the Abuja Declaration that had, as its aim, the undertaking of a critical review and assessment of the prevailing situation with regard to disease and the consequences of such diseases. HIV/AIDS is one of these diseases. The declaration urged Africa to reinforce the successful

interventions that have been undertaken and to develop new and more appropriate policies, practical strategies, effective implementation mechanisms and concrete monitoring structures to ensure the adequate and effective control of HIV/AIDS (WHO, 2010). The Ministry of Health and Social Services (MoHSS) in Namibia has a mandate derived from Article 95 of the Namibian Constitution to promote and protect the health of the Namibian people and to provide quality social services to all (MoHSS, 2014a).

Both AIDS and its cause, HIV were first recognised by the United States Centers for Disease Control and Prevention (CDC) as early as 1981. Since the discovery of the virus it had caused an estimated 36 million deaths worldwide by 2012, while globally 35.5 million were living with HIV. HIV/AIDS is regarded as pandemic, an outbreak of a disease over a large area and still actively spreading. HIV/AIDS has attracted international medical and political attention as well as large-scale funding since it was first identified in the 1980s. For example, in terms of the Abuja Declaration the heads of African states and the Organisation of African Unity expressed their deep concern over the rapid spread of HIV infection in their countries and the millions of deaths caused by AIDS, despite the serious efforts made to control HIV/AIDS. The Abuja Declaration recognised the severe impact of HIV/AIDS on the social system (WHO, 2010).

HIV/AIDS is a pandemic of which the impact on societies is without precedent in recorded human history. It has affected all segments of society, devastating families and communities, overwhelming health care services and depleting schools of both students and teachers (figure 1.1 illustrates the effect of the pandemic on Namibia). Businesses have suffered and are continuing to suffer as a result of losing their productive personnel and the reduction in their profits. The HIV/AIDS pandemic has negatively affected economic growth, while scarce resources have to be diverted to address its consequences. In addition, already strained health care systems are further burdened by AIDS (Karim & Karim, 2010).

Health facilities comprise an integral component of health service delivery as they carry out the role of creating a beneficial environment for both health care clients and health care providers (MoHSS, 2011; MoHSS & ICF Macro, 2011). There are several factors that affect the client utilisation of health care services, for example crowded waiting rooms and the limited private space for one-on-one patient-provider interactions as a result of limited space in health facilities in Namibia (MoHSS & ICF Macro, 2011). The shortage of physical health infrastructure is recognised as a fundamental impediment in the fight against the HIV/AIDS pandemic in both developed and developing countries (Lyman & Fox, 2004).

Research conducted at the Monkey Bay Health Centre, Malawi, revealed that there were concerns about the poor quality of the physical infrastructure of government health care services and claimed that renovations to health care facilities brought about changes (Gunnlaugsson & Einarsdöttir, 2009). The renovation of health facilities has the potential to provide comfortable, new environments which promote confidential interviewing, examination and counselling (El-Sadr & Abrams, 2007). The authors further argued that in settings in which HIV services are integrated, the renovation of health facilities benefits all the patients using such facilities. It is, therefore, likely that, when the physical infrastructure of a health facility is renovated, the quality of the services offered improves, thus also enhancing human immunodeficiency virus counselling and testing (HCT) service utilisation.

Despite the need to put more resources in place regarding the physical infrastructure required to address HIV/AIDS and thus to improve the HCT service utilisation rate (Lisk, 2010), it has been found that it is possible to provide relatively good health services even in minimal service delivery settings. Both clients and providers are likely to be satisfied if basic amenities such as a clean environment for clients and infrastructure components such as a constant, supply of clean water and a regular electricity supply are made available (MoHSS & ICF Macro, 2011). According to a Health Facility Census (HFC) study conducted in 2009 (MoHSS & ICF Macro, 2011) in the Otjozondjupa Region, 52% of the health

facilities did not have basic amenities such as a clean environment for clients and infrastructure components such as a constant supply of clean water and a regular electricity supply.

There is a shortage of the infrastructure in health facilities that is required to ensure that health facilities are able to respond to public needs and adequately address health programmes which are focused on the fight against HIV/AIDS, for example HCT. This shortage of infrastructure highlights the need for health facilities to be renovated and redesigned in order to integrate and accommodate health programmes such as HCT service (MoHSS, 2004). It is essential that the health system caters for the renovation of the physical infrastructure in the health facilities to ensure that HIV/AIDS is addressed and the utilisation of HCT services improved (Lisk, 2010). The development of health infrastructure in accordance with the MoHSS mandate to develop the necessary health and social services infrastructure and to maintain and upgrade the existing facilities is aimed at contributing to the provision of quality health care and social services and HCT services (MoHSS, 2014b). For the purpose of this study renovations refer to the alterations, extensions and additions made to health facilities in terms of the capital development budget and minor capital works of the MoHSS.

1.3 PROBLEM STATEMENT

The MoHSS has embarked on a fight against the HIV/AIDS pandemic, with HCT services comprising the core component of this initiative. The goal of the HCT services is to reach out to more people, particularly those with undiagnosed HIV infections, and to successfully link them up with treatment, care and support. The National Policy on HIV/AIDS has obliged the state to promote the provision of HCT services that are accessible and attractive to young men and women and to vulnerable groups (MoHSS, 2007).

There is a great demand for more space in the health facilities for HCT rooms, rapid testing laboratories and adolescents' friendly health services (AFHS); this demand affects the optimum utilisation of the HCT services. Moreover, the demand for HIV/AIDS services has stretched the capacity of the existing health facilities and thus these health facilities are in urgent need of renovation to enable them to cater for the full integration of the HCT services (Lyman & Fox, 2004; Health Infrastructures, 2011). The MoHSS is continuing to renovate health facilities and its capital expenditure that has increased from 7% in 2007 to 17% of its total expenditure in 2011(Sasman, 2011).

According to the discussion paper of McIntyre, Chitah, Mabandi, Mbeeli and Shamu (2007), in many African countries, Namibia included, there is the problem of health care spending levels which differ markedly between regions and districts. The discussion paper further stated that it is an important health policy goal in almost all African countries to provide equitable access to health care services for all citizens. The discussion paper also revealed that it is common practice for financial resources to be allocated to existing facilities or according to existing utilisation patterns instead of being allocated in accordance with the distribution of the population's health needs. Namibia's resource allocation formula is based on the size of the population in each region and weighted by the demographic composition of the population and the level of deprivation.

By 2008, government expenditure on health in Namibia had exceeded 10% of the annual government expenditure although it still fell short of the 15% set by the Abuja Declaration (MoHSS, 2008a). This 15% allocation of the annual budget to health was a target set by the heads of African states and governments belonging to the Organisation of African Unity whereby they pledged to improve the health sector. This Declaration was known as the Abuja Declaration. The Abuja Declaration sets the precedent in the fight against HIV/AIDS. It acknowledged that HIV/AIDS constituted not only a health crisis, but also a threat to Africa's development, social cohesion, political stability and food security as well as the survival and life expectancy of the African people.

The World Bank (CIA World factbook, 2012) rated health expenditure in Namibia at 5.9% by 2009. However, Namibia's capital budgetary allocation remains lower than the international norms. This situation is further exacerbated by maintenance backlogs, ongoing maintenance and new constructions. The majority of African Union (AU) countries are not yet on track to achieve the health Millennium Development Goals (MDGs) and this has been attributed to lack of financial resources available to these countries.

The problem relating to the scarcity of resources and the presence of several competing priorities have been compounded by a lack of clear evidence on the contribution of improved built environments to service provision and utilization. This has resulted in reluctance on the part of policy makers and financiers to fund the renovation of health facilities in the developing countries. Consequently, this research study aimed to ascertain whether the renovation of public health facilities brought about a difference in health service utilisation in the Otjozondjupa Region with the researcher aiming to determine the effect of the renovation of health facilities on HCT service utilisation in the Otjozondjupa Region.

Figure 1.1: Map of Namibia showing HIV prevalence by sentinel site, and population density (MoHSS, 2008c).

1.4 THE PURPOSE AND STUDY OBJECTIVES

The purpose and objectives of the study are described as follow:

1.4.1 Purpose

The purpose of the study was to determine the effect of the renovation of health facilities on the HCT service utilisation in the Otjozondjupa Region.

1.4.2 Objectives

The objectives of the study were:

- To compare the human immunodeficiency virus counseling and testing (HCT) service utilisation rate between renovated and non-renovated health facilities in the Otjozondjupa Region.

- To compare the mean differences in pre and post interventions in the human immunodeficiency virus counseling and testing (HCT) service utilisation between renovated and non-renovated health facilities in the Otjozondjupa Region.

1.5 SIGNIFICANCE OF THE STUDY

It is hoped that the scientific evidence-based knowledge and findings on the effects of the renovation of the physical infrastructure in the health facilities on HCT service utilisation, may assist in future reviews of the planning and designs of health facilities for the integration of HCT services. In addition, the study findings may strengthen the motivation for resource allocation for the renovation of physical infrastructure in the health facilities in terms of the capital development budget and minor capital works of the MoHSS, as well as assist in the development of the necessary health and social services infrastructure and the upgrading and maintenance of existing facilities in order to contribute to the provision of quality health and social services.

1.6 DEFINITION OF CONCEPTS

Counselling: refers to any interaction during which a person consults a professional about a problem in life, a conflict or a dilemma that is preventing the person concerned from living his/her life in the way in which the person would wish to (McLeod & McLeod, 2011). For the purpose of this study, counselling refers to any interactions during which someone seeks to explore, understand or resolve his/her HIV status, how to prevent infection and how to live a positive life if already infected.

Effect: is the change that results when something is done or happens; an event, condition or state of affairs that is produced by a cause (Effect n.d, 2015, Merriam-Webster Dictionary, 2015). For the

purposes of this study, effect refers to the change that result in either an increase or decrease in the utilisation of HCT services. This is measured in the presence or absence of the renovations of the health facilities concerned.

Health facilities: are places that provide health care. Health facilities include hospitals, clinics, outpatient centres and specialised care centres such as birthing centres and psychiatric care centres. In context of this study, the primary health care (PHC) clinics provide maternal and child care services, nutrition promotion, treatment of common diseases, control of communicable diseases and health education while PHC centres provide basic curative services. The PHC team offices, the doctor's consultancy rooms and the hospitals are the ultimate referral points that provide comprehensive care (promotive, preventative, curative and rehabilitative) on a 24-hour basis (MoHSS, 2011).

Human immunodeficiency virus infection/Acquired Immunodeficiency Syndrome (HIV/AIDS): HIV/AIDS is a disease of the human immune system and is caused by the human immunodeficiency virus. It is an infectious disease in terms of which the virus attacks the cells of the immune system and thereby renders the body susceptible to microorganisms that would otherwise be held in check. (Sonenklar, 2011, Fan, Conner & Villarreal, 2011, Weeks & Alcamo, 2010, James, 2009, CIA World Factbook, 2012).

Renovations: Hassanien, Dale and Clarke (2010) define renovation as the process of retaining or improving the business image by modifying the tangible product as a result of a variety of reasons and through any changes in the layout (e.g. property structure-new extension) and/or any additions or replacement of materials, furniture, fixture and equipment. The process incorporates different levels of activities while its broad scope may include replacement, restoration, redesign, redecoration and reinstatement. For the purpose of this study renovations refer to the alterations, extensions and additions

to health facilities under the capital development budget and minor capital works of the Ministry of Health and Social   Services.

Utilization: according to the Community Tool Box (2014), is the extent to which people make use of a particular service already available in the community or at an organisation in a specified period. For the purpose of this study utilisation refers to the extent to which clients are using HCT services by attending counselling and testing sites at hospitals, health centres and clinics in the Otjozondjupa Region of Namibia.

1.7 SUMMARY

The HIV/AIDS pandemic has become an important issue and has been accorded considerable attention. In fact, it has become a main priority on the international agenda. A number of initiatives have been put in place to ensure a forceful, effective response to the problem. Namibia is bound by constitutional mandate to promote and protect the health of all Namibians. HIV/AIDS has affected all segments of the society and is resulting on a considerable strain being imposed on the health system.

Health facilities constitute an important component in the creation of a beneficial environment for both the health care clients and the health care providers. The status of the health facilities' infrastructure may be said to affect the health services utilisation. The shortage of such infrastructure is a serious stumbling block in the fight against HIV/AIDS while the renovation of health facilities has the potential to improve the quality of the health services provided. In addition, it is of vital importance that the health needs of the adolescents are met in the renovation of health facilities.

The study aimed to determine the effect of the renovation of health facilities on HCT service utilisation. The utilisation of HCT services at the health facilities remains low despite the increased investment of

resources in the renovation of health facilities. HCT service is considered to be the corner-stone in the fight against the HIV/AIDS. It is anticipated that the study findings will inform the policy makers and interest groups of the requirements relating to the health facilities renovations. The focus of the study was limited to public health facilities as per the inclusion and exclusion criteria. This chapter focused on the background to the study problem, problem statement, purpose and objectives of the study, justification for the study as well as definition of the relevant concepts used in the study. The next chapter presents the literature review.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter focused on the background to the study, problem statement, purpose and objectives of the study, significance of the study, definition of the relevant concepts and the inclusions and exclusion criteria of the study. The literature review focuses on the existing literature related to the effect of the renovation of health facilities on HCT service utilisation. In addition, literature related to the effect of physical infrastructure on the utilisation of other health services is reviewed in parallel to HCT services utilisation.

2.2 LITERATURE REVIEW ON HEALTH FACILITIES RENOVATION AND HCT SERVICE UTILISATION

The number of people infected with HIV worldwide has increased exponentially from a mere handful of cases in the early 1980s to approximately 33 million people by 2007. More than 20 million people have already died as a result of AIDS. Africa is bearing the brunt of the HIV pandemic with the southern part of the African continent bearing the highest burden of the disease on the continent (Karim & Karim, 2010).

The World Health Organization (WHO), Joint United Nations Programme on HIV/AIDS (UNAIDS), and many other organisations have endorsed the concept of "universal access" to knowledge of HIV status. They have also endorsed the concepts of universal access to HIV prevention, treatment, care, and support, as well as protection from discrimination based on an HIV-positive status. This stance is articulated in UNAIDS's vision of: zero new HIV infections, zero discrimination, and zero AIDS-related deaths as well as in the Global Health Sector Strategy on HIV/AIDS 2011-2015 (WHO, 2011).

The WHO (2012) highlights that, since the first antibody tests became available in 1985, HCT has been offered in clinical settings in order to assist clinical management of the disease. Initially, HCT was offered when a health-care provider "suspected" an HIV infection in a symptomatic patient or when an

individual had been identified as belonging to a "higher risk category". Outside of the clinical setting HCT was first offered more widely through client-initiated, voluntary HCT. It became apparent, however, that the health-care provider's patient risk assessments and people's own concerns were not sufficient to achieve high rates of uptake of HCT and promote early diagnosis of HIV.

The status of health infrastructure in the world, sub-Saharan Africa and in Namibia

According to Bhandari & Dutta (2007), in India, the majority of reports and evaluation studies on the status of health infrastructure in the villages have pointed to a lack of equipment, poor or lack of repairs, improper functioning or a lack of complementary facilities such as 24-hour running water and electricity back-ups.

In sub-Saharan Africa, health care infrastructure is limited and this is likely to impact negatively on the utilisation of health care services. The physical infrastructure of health facilities should provide and fulfil the role of creating a beneficial environment for both patients and health care providers (Gunnlaugsson & Einarsdöttir, 2009). A research study conducted at the Monkey Bay Health Centre, Malawi revealed that the respondents had concerns about the poor quality of the physical infrastructure of government health facilities, while the study also found that there were changes in the utilization of health care services after the renovations (Gunnlaugsson & Einarsdöttir, 2009). The study further revealed that a functional transport fleet was also crucial in order to bring the services closer to the population in those villages with difficult access. It was also claimed that the service delivery of these clinics improved with better access to transport vehicles. In the same vein, the lack of appropriate facilities in the villages that provided protection from sun and rain hampered service delivery and utilisation.

However, contrary to the above findings, the Namibia Health Facility Census conducted in 2009, revealed that it was possible to provide relatively good health services even in minimal service delivery settings (MoHSS & ICF Macro, 2011). However, the census also concluded that both the clients and health care providers were likely to be satisfied, if basic amenities and infrastructure components were

available (MoHSS & ICF Macro, 2011). It was further found that practically all the health facilities in Namibia had an HIV testing system and that 80% of the health facilities possessed the capacity to test HIV either on-site or in an affiliated laboratory, 90% of which had a register recording HIV test results.

The assessment study of facilities conducted by Nigerian Urban Reproductive Health Initiative (NURHI) (2013) in Nigeria, further supported the findings of the Namibia Health Facility Census conducted in 2009 by stating that, although the majority of the facilities assessed had been observed to be functioning and providing a range of health services, including HIV services, there was also evidence of the need to strengthen systems in order to support quality services. Although it is possible for services to be rendered under a wide range of conditions, there are nevertheless, certain standards that promote quality services, for example a clean and healthy environment.

The assessment study further stated that an enabling environment is critical for the effective and efficient delivery of quality services to clients and patients by health workers and that this may improve service utilisation. Such an enabling environment includes the physical infrastructure as well as other basic requirements for delivering quality services. According to the assessment of health facilities conducted in Nigeria, an enabling environment was defined as an environment with a regular power supply, a system for external communication, computer or email, emergency transportation, clean water on site, client toilets, good building infrastructure and at least one area which ensured visual and auditory privacy for outpatient service consultations. The assessment found that the infrastructure of facilities assessed was in a deplorable condition and that this could compromise the quality of provided (NURHI, 2013).

In support of the finding that an enabling environment that includes the physical infrastructure and other basic requirements that contribute to increased service utilisation, the Nigeria Urban Reproductive Health Initiative introduced a concept termed the "72-hour clinic makeover" which proved that the

renovation of health facilities increased the rate of health services utilisation. This concept resulted in family planning clinics, PHC centres and other integration sites (antenatal care [ANC], delivery, postnatal care [PNC], immunisation clinics, post abortion care [PAC], HCT and antiretroviral therapy) being renovated, refurbished and equipped for optimal services within 72 hours (NURHI, 2013).

The focus on HIV counseling and testing

It has been proved that HCT reduce AIDS related morbidity and mortality by functioning as the gateway to all systems related to AIDS related care. In Ghana, both the government and international partners have made investments in capital infrastructure in order to increase access for HIV testing across the country. Nevertheless, as was proved to be the case in other African countries, despite these high investments, there are still inequalities existing in the distribution of testing programmes and facilities across the country (Yawson, Dako-Gyeke, Addo, Dornoo & Addo,2014).

Yawson, et al (2014) further indicated that several studies not only suggested the differential use of testing programmes, but also raised concerns that the facility-based HCT was underutilised among various sub-populations.

For the purposes of this study, the availability of HIV counselling rooms, HIV rapid testing rooms and AFHS rooms were considered as critical components that create an enabling environment for the utilisation of HCT services.

In Namibia health facilities are classified into the following levels: central hospitals or specialised health institutions (class A), intermediate referral hospitals (class B level 1), regional referral hospitals (class B level 2), district hospitals (class C), health centres (class D) and clinics (class E) (MoHSS, 2014b). This study focused on district hospitals (class C), health centres (class D) and clinics (class E). The clinics

(class E) constitute the lowest level of the hierarchy in the health system and represent the first contact between patients and the health care system.

In Kenya, the dispensaries, which are at the same level as clinics (class E) in Namibia, constitute the lowest level of the health care system hierarchy as compared to district hospitals and health centres. The dispensaries also represent the first contact point between patients and the health care system (Muga et al., 2004).

On the other hand, the health facilities in India comprise a three tier structure based on predetermined population norms. The sub-centre is the most peripheral institution and the first contact point between the PHC system and the community. The primary health centres make up the second tier in the rural health care structure while the community health centres form the upper-most tier (Bhandari & Dutta, 2007).

In addition to the health facilities, it would appear that other factors are also associated with the utilisation rate of the health services. According to the Sebastopol O'Reilly Media (2013), it is not easy to identify which determinants are the most influential in the decision making on the part of the clients to utilise the health services and there is a number of factors that are likely to affect the health service (including HCT) utilisation in addition to the renovation of the health facilities. A number of qualitative and quantitative studies have examined the barriers to accessing HCT services, accepting HCT and receiving test results. These barriers to HCT have been identified as a lack of knowledge, misconceptions, low risk perceptions, fear, lack of motivation/time, fatalism, economic barriers, gender barriers and readiness barriers (Orkis, 2008).

The impact of poor/lack of health infrastructure on quality service delivery in Africa and Namibia

In the report "Improving the health facility-based services in Nyanza province, Kenya: the APHIA (AIDS, Population and Integrated Assistance) II Nyanza project, Kombo (2009) asserted that health facility renovations were linked to the need for improved and expanded space for specific services arising from both the lack of services at certain health facilities as well as an increased demand created by community outreach and advocacy. The improvement and expansion of health facility-based services ensure that the creation of community demand for health services is matched with the availability of improved services within the health facilities. In encouraging the increase in the uptake of specific services, including HCT, health facilities require dedicated spaces that guarantee confidentiality.

Da Silva,Contandriopoulos,Pineault and Tousignant (2011) state that another factor that may affect the HCT services utilisation includes the accessibility to such services. Accessibility refers to an attribute of an institution or service that allows it to be entered easily. Accessibility refers to characteristics that either facilitate or hinder efforts to reach the care services. Thus, access refers to a group of factors that intervene between the capacity to provide services and the actual provision or consumption of such services. Access may be classified into geographical accessibility, which is based on the distance between the location of the users and the provision of services, organisational accessibility, which is based on the schedules and procedures to be followed and that constitute constraints for individuals, social accessibility, which involves the compatibility between the services offered and the socio-cultural characteristics of the individuals wishing to access the services and economic accessibility, which is linked to the cost of services in relation to socio-economic status of individuals (Da Silva,Contandriopoulos,Pineault and Tousignant, 2011). In spite of the availability of public sector health services, they are often underutilised as a result of overcrowding and socio-economic reasons. Accordingly, access to health facilities is often a problem.

The government of the Republic of Namibia, under the Country Programme Action Plan (CPAP), which is an agreement between the government and the United Nations Population Fund (UNFPA),

emphasised that the response to HIV/AIDS was to be strengthened through increased access to prevention, treatment, care and impact mitigation services. The government focused on increased access to as well as the utilisation and provision of comprehensive, high quality reproductive health services, including HIV prevention and VCT and strengthened the institutional capacity for the effective delivery and utilisation of critical health services. The overall goal of the Country Programme Action Plan is to support efforts for HIV prevention and impact mitigation. The Otjozondjupa Region was one of the three regions selected by the United Nations Population Fund, in consultation with the government of the Republic of Namibia for the Country Programme Action Plan implementation.

The causes and remedies proposed to address the impact of poor/lack of health infrastructure

The report of the WHO study group on primary health care in urban areas (WHO, 2006b) found that it was necessary to strengthen and upgrade the health centres or to establish at least one of them as a reference health centre in each district with a sizeable population. The strengthening and upgrading of health centres was aimed at supporting and strengthening local primary health care and improving access and quality (WHO, 2006b).

The WHO study group further identified that information, awareness and health promotion, the reorientation of urban health services, leadership, organisation, management and capacity building are key issues in improving primary health care. In the context of this study, these key issues may play a vital role in the improvement in the utilization of HCT services. It is clear that there are several factors that may affect the utilisation of HCT services and that need to be considered when identifying the most effective and efficient interventions aimed at improving HCT service utilisation. It is therefore, evident that the identification of the most effective and efficient interventions requires that strategic options be examined, a choice of policy objectives made and the implications of these choices in terms of

resources, information, research, education and training and organisation be identified before the service utilisation may be determined.

According to the WHO (2006b) the determination of the level of resources for any health system requires a political decision unique to the particular location. The way in which the available resources are distributed may raise fundamental ethical questions about social justice. It is a common phenomenon that the budgets most at risk of being cut are those relating to the particular types of health service and infrastructure that affect the health of the poorest. In the absence of appropriate planning, infrastructure such as PHC clinics, PHC centres and hospitals for service provision is lacking and diseases and social problems occur that are difficult to address without central political action and the injection of substantial external resources.

In addition to the need for central political action and the injection of substantial external resources, according to the National HIV/AIDS Division Federal Ministry of Health and Measure Evaluation (2004) the involvement of facilities at the primary care level in HIV/AIDS programming has been identified by the Nigerian government as an effective way of meeting the rising demand for services in Nigeria. The assessment that was conducted on the readiness of facilities was vital in respect of evidence-based decision making in order to increase the coverage of HIV services.

The assessment study conducted in Nigeria on the readiness of facilities for HIV services further revealed that, despite the increasing demand for HIV/AIDS services, there was evidence of inequity in terms of service provision. The study found that in order to achieve the goal of universal access to HIV/AIDS services and the MDGs, it was incumbent on the Nigerian government to commit to increased funding, health system strengthening, decentralisation and integration in order to increase access to services (National HIV/AIDS Division Federal Ministry of Health & Measure Evaluation, 2014).

It is anticipated, that this study on the effect of the renovation of health facilities on HCT service utilisation on stakeholders, particularly policy makers, programme managers and planners will help to ensure maximization of scarce resources in order to improve the wellbeing of those infected or affected by HIV/AIDS. In this vein the finding of the Indian Chamber of Commerce that the public health system in India was experiencing inefficiencies and inequities, resulted in the implementation of the new, innovative financing mechanisms which were required to address health infrastructural development (Indian Chamber of Commerce, 2012).

The WHO (2012) indicated that, despite the many models of HCT services that are available, until recently HCT has been offered primarily in healthcare facilities and stand-alone VCT sites. However, new community-based approaches are being developed to better serve those people who would otherwise, lack ready access to HCT. In many settings, community-based approaches may offer the greatest potential for progress toward the universal access to HCT which supports the principle of universal access to treatment and prevention.

The following are deemed to be important criteria as regards the selection of approaches to and models of HCT services, namely, the nature of the epidemic, for example the generalised high prevalence of the epidemic concentration in key affected populations (such as men who have sex with men and individuals who inject drugs) or a low level epidemic. For example, a generalised epidemic necessitates prioritising PITC in virtually all health-care contacts. In contrast, in a concentrated or high-level epidemic, PITC may focus on facilities that may attract people with HIV or who have been exposed to HIV, such as tuberculosis (TB) clinics/services for people who inject drugs and clinics that treat sexually transmitted infections (STIs).

A further criterion is the comparative cost-effectiveness of approaches, as measured by the number of infections newly identified in terms of the number of tests performed. The cost-effectiveness of an approach varies with the nature of the epidemic. For example, door-to-door visits may be productive in high-prevalence areas, but would probably result in only a small percentage infected in a low prevalence setting. Combining HIV testing with other health screening and services in multi-disease campaigns may be cost-effective, offer a broader health impact than may otherwise have been the case and reduce stigma.

Yet a further criterion is the equity of access. On the whole, a combination of approaches should reach all areas and serve all populations that could benefit from such strategy. In generalised epidemics, this criterion highlights the use of mobile and outreach strategies that may reach remote areas that are underserved by health facilities. On the other hand, in concentrated epidemics this criterion draws attention to innovative services for key populations operating in these underserved communities and perhaps operated by the members of such communities.

The resources available are also a determining factor as the various HCT models have different requirements in respect of resources, including appropriately trained workers and adequate infrastructure. Ideally, the combination of approaches should take maximum advantage of the resources available and at the same time work around the resource gaps and help in finding additional resources to scale up operations.

In the renovation of the physical infrastructure in the health facilities, it is vitally important that the health needs of adolescents are taken into consideration by incorporating the concept of adolescent friendly health services. AFHS has an important role to play in promoting the healthy development of adolescents and preventing health problems among them. Specialised services dedicated to adolescents

may help in the early detection of health problems and the prompt effective response to the health problems affecting the adolescents (Olyai &Dutta, 2011).

Adolescents often experience constraints in seeking help from the existing health facilities/services. The barriers to adolescents seeking help from the existing health facilities/services are related to problems such as crowding, the absence of dedicated spaces or services for adolescents and policies that make it difficult to ensure privacy and confidentiality. Health facilities that are able to overcome these barriers are likely to attract adolescents and young adults. A health facility is classified as an AFHS facility when it is welcoming to all, has enough amenities, is accessible, provides quality care, is clean and provides privacy (Olyai &Dutta, 2011).

The WHO has placed the focus on adolescents because the number of adolescents is increasing with this age group comprising a large segment of a country's population. In addition, they are the future citizens and drivers of economic growth as productive workers. In addition, adolescents are likely to be sexually active and thus they may be exposed to several health risks such as HIV/AIDS. The health of young people is a key element in social and economic progress and therefore, neglecting the health of the young people may result in high social and economic costs. For example, it has been estimated that the labour force in Thailand has lost an estimated 400 000 lives from premature deaths as a result of the HIV/AIDS (WHO, 2006a). In addition, the Abuja Declaration recognised the special needs and challenges posed by the HIV/AIDS pandemic for the youth as it renders them vulnerable to infection as well as the adverse effects of the pandemic (WHO,2010).

HCT may be classified into the following four approaches to counselling and testing, namely, voluntary counselling and testing (VCT), home-based HIVcounseling and testing (HBHCT), routine counseling and testing (RCT) and HIV testing for post exposure prophylaxis (PEP). VCT is initiated by the client and is offered in stand-alone sites or health/and outreach centres. The clients are assured of full

confidentiality. VCT for the family members of individuals with HIV effectively identifies both children and adults with HIV as well as HIV discordant couples.

The provision of condoms to such discordant couples as part of VCT has been associated with an 80 to 90% reduction in HIV transmission in Africa (Colindres et al, 2008). HBHCT is provided to individuals or families in the home environment, either through campaigns or for the families with HIV infected persons who are enrolled in the treatment and care programmes. RCT is a provider-initiated method of HCT and is offered to patients during clinical evaluation, together with any other recommended tests or investigations. It includes prevention of mother to child transmission and diagnostic HCT. HIV testing for post exposure prophylaxis (PEP) is provided after accidental exposure to body fluids. It is common to test both the exposed person as well as the source person although the source person is tested only after he/she has provided his/her consents. HCT has benefits for prevention, treatment, care and support.

The HIV virus was first reported in Namibia in 1986. The country is characterized by marked variations in HIV prevalence, as measured by HIV sentinel surveillance in ANC clinics. This HIV surveillance is conducted by testing blood collected from the pregnant women attending selected ANC clinics, as recommended by the WHO. The HIV estimates generated through the process are critical and are used for planning purposes. For example, the estimates may be used to plan the infrastructural development of the health care facilities that could provide HCT services. In addition, these estimates could also be used for advocacy efforts in order to understand the magnitude of the epidemic and thus to determine the extent of the preventive measures and resources required (MoHSS, 2008a).

The estimates of the number of new HIV infections have been found to be critical because they reflect how well the prevention interventions such as HCT services are performing. The estimates also provide projections regarding the future of the HIV epidemic in the country (MoHSS, 2008a).

According to McKee, Bertrand and Becker-Benton (2004) the term voluntary counseling and testing (VCT) was commonly used in the 1990s instead of human immunodeficiency virus counseling and testing (HCT). VCT emerged as bridge between prevention and care, support and treatment and provides people with an opportunity to learn their HIV status relatively quickly and confidentially. Those individuals who have tested negative may feel empowered and motivated to protect themselves against future infection, while those who tested positive may be able to take steps toward living in a constructive way.

The VCT was launched in 2003 with the inception of antiretroviral therapy (ART) in Namibia's public health facilities. The number of people accessing VCT increased from 4083 in 2003 to 178 926 in 2008 although the national target for VCT in 2008 was 275 000 (MoHSS, 2008a).

In the main VCT has been accorded a low priority as a strategy for combating HIV in the developing countries as a result of the cost, lack of laboratory and medical infrastructure and the lack of evidence regarding its effectiveness in reducing HIV transmission (Soroses, 2006). This assertion was further confirmed by Fikadie, Bedimo and Alamrew (2014) who found that, despite the high levels of benefits offered by the VCT service, the rate of VCT utilisation was low. Globally, approximately only 40% of people living with HIV know their HIV status while only 11%of adults in 45 countries in sub-Saharan Africa underwent HIV testing in 2009.

HCT is an important component of the continuum of HIV prevention and treatment services. It uses short, client-centered counselling that may be effective in increasing condom use and preventing sexually transmitted diseases (STDs), including HIV. Knowing one's HIV status is key both to preventing the spread of HIV and to accessing counselling and medical care. According to the Centre for AIDS prevention studies and AIDS Research Institute, University of California, San Francisco, a survey of young men who had sexual intercourse with men (MSM) found that 14% of young black men who

had sexual intercourse with men were HIV positive and that 93% of them were unaware of their infection (Traux & De Carlo, 2004).

HCT comprises the following three components, namely, risk assessment and counselling before the blood sample is taken, testing of the blood sample, counselling and referral subsequent to the test results. In addition to the three components, properly trained and experienced counsellors who protect the confidentiality of client information, obtaining informed consent before testing and providing effective counselling services and appropriate referrals, stable temperatures and adequate lighting are required to ensure efficient HCT services. The stigma that continues to surround HIV infection means that attention to patient privacy and confidentiality is an extremely important component HCT. The importance of the counselling infrastructure is often underestimated by managers with this creating barriers and bottlenecks in HIV service delivery (Traux & De Carlo, 2004).

An awareness of HCT services may also be an important factor in the use of HCT services. It is believed that significant proportions of Namibians still do not possess complete and accurate information about HIV/AIDS (UNFPA, 2009). In particular, this is more severe among rural women, while it would appear that two thirds of the young people in the country do not believe that they are at risk of contracting HIV. According to UNFPA (2009) many Namibians do not know whether either they or their partners are infected with HIV. This highlights the likelihood that a lack of information, inadequate access to testing services, fear of stigma and discrimination and the difficulty involved in obtaining treatment if infected, may be some of the reasons for the low testing rates.

National health campaigns that involve large-scale, intensive efforts, which are of a defined duration, and which use extensive communication activities to promote healthy behaviour, including the uptake of health-care services are the additional factors that may affect the utilisation of HCT services. These campaigns may take many different forms with HCT campaigns seeking to increase the uptake of HIV

testing either by providing HCT directly as part of the campaign through, for example, mobile or outreach services or by increasing the awareness of the benefits of HCT and providing information about where to access established HCT services (UNFPA, 2009).

The campaigns may be either general, addressing the population as a whole, or targeted in order to improve access to testing for specific sub-populations. In addition, they may be either national or local campaigns, they may last for a finite period or stretch over years, or they may be associated with a specific event. They may also be specific to HIV or part of multi-disease prevention campaigns.

The Ministry of Health and Social Services (MoHSS) and ICF Macro (2008) indicated a high level of literacy in Namibia, with an overall 91% of women and 89% of men who are literate. A high literacy level is likely to help health professionals to reach the community with messages on the HIV counseling and testing services and may thus be another factor that may affect the utilisation of HIV counseling and testing services. The survey further indicated that education is a key determinant in lifestyle, with studies consistently showing that educational attainment has a marked impact on health behaviours and attitudes.

A study conducted in Uganda indicated that factors, such as proximity to health care facilities, perceived quality of care, user fees and the perceived severity of illness, all affect access to and utilisation of health services (Pariyo, 2009). Thus, proximity to health care facilities is undoubtedly, a factor that may affect the health services utilisation and HCT service utilization. The MoHSS health system review (MoHSS, 2008b) found that 41.5% of the population travelled less than five kilometres, 27% travelled five to ten kilometres, 8% travelled 11-20 kilometres and 13% travelled more than 21kilometres to access the nearest health facility. The MoHSS health system review also revealed that the distances between health facilities in Namibia constitute a significant challenge to the provision of health services, access to health services and utilisation of health services. The review stressed that long distances to hospitals

were a significant barrier to health service utilisation. It further revealed that there were insufficient resources available for the maintenance of the hospitals' infrastructure with the inadequate level of hospital infrastructure for health service delivery being regarded as the most critical constraint with regard to health service utilization.

Another study concluded that the physical environment, social support, organisational culture and technology may improve the health, safety, effectiveness and satisfaction of the health care team (Joseph, 2006). There is, thus little doubt that the renovation of health facilities is one of the factors likely to be related with changes in both the health services utilisation and the HCT service utilisation.

The physical work environment often influences (positively or negatively) the mind-set of the service providers and their efficiency and ability with regard to innovations in delivering expanded services. A positive work environment should result in improved HIV services. Functional counselling rooms for HIV counselling require visual and auditory privacy, but may otherwise include less formal spaces such as booths. Counselling and testing may be conducted in a number of different private spaces including allocated rooms or other spaces, while rapid testing may be conducted in consulting or counselling rooms provided a work surface is available (Dejene, 2001).

A situational analysis conducted in Ethiopia where the demand for HCT service was growing, found that service provision by government health facilities was limited as a result of the shortage of physical facilities (Dejene, 2001). A number of initiatives aimed at mobilising resources to strengthen effective HIV/AIDS response resulted in the improvement of the physical health facilities (Lisk, 2010).

As recommended by McIntyre, et al. (2007), the resource allocation formula adopted by Namibia was based on the size of the population in each region and weighed by the demographic composition of the population and level of deprivation. This is a clear indication that there has been no equitable allocation

of resources despite the progress made towards the equitable allocation of resources. The equitable resource allocation should be based on the needs-based resource allocation formula. Equitable resource allocation is one factor that is believed to address the health infrastructure needs and create both an enabling environment and equal access to the HCT services provision and utilisation.

The UNAIDS World AIDS day report 2012 of the WHO (WHO, 2006a) confirmed that adolescents require special attention to their needs through the provision of youth-friendly counselling and testing and follow-up services. It is essential that the healthcare infrastructure is improved so that quality services which take into account adolescents in the face of the increased demand for testing, treatment, and related services and which ensure effective monitoring and evaluation are in place.

Anderson, Betuel and Maughan-Brown (2007) found that, for many reasons, HCT services for adolescents may be highly beneficial to adolescents, defined as those aged 10 to 19 years of age and in terms of which the main mode of HIV transmission is unprotected heterosexual sex. Adolescents are also often exposed to HIV transmission as a result of injecting drug use, sex work, and male homosexual sex.

Current HCT approaches do not adequately meet the needs of adolescents. A study conducted in South Africa on four models of HIV counseling and testing found that a high proportion of adolescents were interested in knowing their HIV status and yet few had ever been tested. Another important issue for adolescents is the lack of consensus regarding the legal age of self-consent to HCT. The resultant need for parental consent often acts as a barrier to some adolescents as regards their accessing HCT services (Tonderai,Latka, Kuwane,Churchyard, Charalambous and Hoffman, 2014).

Tonderai, et al. (2014) found that, in South Africa HCT utilisation is lower among adolescents, the elderly and men compared to other segments of the population. The low uptake of HCT in South Africa

has also been associated with educational level, occupation, fear of involuntary disclosure, and access to HCT. In addition, some groups which are at higher risk of HIV infection, including men who have sex with men and young women and possibly other groups, may be less likely to receive HCT than the lower risk groups.

The WHO HCT delivery framework advocates a strategic mix of innovative, community-based HCT delivery models and traditional health facility-based HCT delivery models in order to achieve universal and equitable access to HCT. However, it would appear that ensuring universal and equitable access to HCT services remains a challenge for many sub-Saharan African countries. As was shown in the study conducted on four models of HCT utilisation in South Africa, HCT utilisation is lower among adolescents, the elderly and men than other groups (Tonderai,et al., 2014).

The study on four models of HCT utilisation and test results in South Africa further found that there are variations in the characteristics of HCT models. The study found that the mobile units in both rural and urban areas reached a larger proportion of people who had not been previously tested for HIV. This suggested that the mobile HCT approach or model may have achieved broad based uptake and served a population that was not accessing other options either as a result of access (distance) or acceptability (Tonderai,et al., 2014).

Tonderai,et al. (2014) also revealed that there were variations in the uptake of HCT services depending on the setting, namely, rural or urban areas with the mobile HCT units in the urban areas achieving a slightly higher uptake of men, a group that generally revealed a low utilisation of traditional, clinic based HCT services. On the other hand, in the rural areas the mobile HCT units recorded a high proportion of first time testers.

The MoHSS health system review (MoHSS, 2008b) indicated that the infrastructure and facilities' maintenance in Namibia lagged far behind in the delivery of health services. The MoHSS implemented the Health Information System (HIS) to provide data on hospital, health centre and clinic services although the system does not include information on property (buildings and plant inventory). In addition, the MoHSS does not have its own property asset register. The review further indicated that the creation of a facility management and maintenance unit by the MoHSS would significantly improve the provision of health services, increase the life span of the facilities, ensure higher staff morale and promote a healthy environment. It is clear that the improvement of the physical health facilities would probably have a positive effect on the HCT service utilisation rate.

Namibia is continuing to experience a severe, generalised HIV epidemic with an estimated 174 000 HIV infected adults and children. Approximately 5 400 persons died of AIDS related causes in the 2007/2008 year. Nevertheless, the number of persons dying from AIDS related causes decreased from an estimated 9 200 deaths in the 2003/2004 year before the roll out of ART. The number of AIDS related deaths was projected to increase slightly over a five year period to 7 500 in 2012/2013 as a result of the fact that the physiological systems of certain individuals do not respond to treatment, some individuals avoid treatment while some stop taking their medicines or default (MoHSS, 2008c).

The adult HIV prevalence in Namibia is estimated to be 13.3% for persons aged between 15 and 49, while the HIV prevalence among pregnant women attending ANC in Namibia was 17.8% in 2008. In addition, an estimated 5 163 individuals were newly infected with HIV in 2009/2010. In sub-Saharan Africa, from 2007 to 2009, between only 30 to 70% of the population was aware of its HIV status. It is also a matter of great concern that, in Namibia, by 2008 approximately 51% of Namibian women and 32% of Namibian men only had received HCT as compared to the National Science Foundation's (NSF) 2015 goal that 90% of Namibian women and 70% of Namibian men should receive HCT by 2015

(PEPFAR, 2011). HIV/AIDS has had an immense impact on society, both as an illness and as a source of discrimination. In addition, the disease also has significant economic impacts (MoHSS, 2008a).

2.3 SUMMARY

The literature review in this chapter highlighted a number of findings regarding the effect of the renovation of health facilities on HCT services utilisation and related studies. The literature review forms an important part of a research study as it ensures that the mistakes made in research studies are not repeated, expands knowledge, provides rationale and insights as regards the research topic, clarifies relevant concepts and sheds light on the steps to be followed in the research study. The research study design is a crucial step in the research study and is discussed in chapter 3.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. INTRODUCTION

The preceding chapter presented the literature review. This chapter discusses the study setting, research design, study population, sample and sampling, data collection, data entry, data analysis, data organisation, the various methods used in this study as well as the issue of research ethics.

3.2. STUDY SETTING

A sound understanding of the research problem requires background information of the area in which a study is to be carried out. Namibia is divided into the following fourteen regions, namely, Zambezi (Caprivi), Kavango East and Kavango West (Kavango), Otjozondjupa, Oshikoto, Oshana, Ohangwena, Omusati, Kunene, Erongo, Hardap, Omaheke, Khomas and //Karas as illustrated in figure 3.1. These fourteen regions are further subdivided into constituencies and health districts to ensure smooth administration.

The Otjozondjupa region is situated in central northern Namibia and borders the Khomas region in the south, Erongo region in the south west, Kunene region in the north west, Oshikoto region in the north, Kavango East and Kavango West regions (Kavango) in the north east and Omaheke region in the south east. The Otjozondjupa region covers a total area of 105 460 square kilometres. The region has a population of 142 400 and a population density of 1.4/square kilometre. Four of the seven constituencies in the region are linked by rail while the main tarred road connects the southern and northern parts of the country. Mining activities in the form of gold, fluorite and manganese mining are carried out in the region. Farming activities comprise mainly cattle farming with crop farming to a lesser extent.

The Otjozondjupa region in which this research study was conducted is subdivided into seven constituencies, namely, Grootfontein, Okahandja, Okakarara, Omatako, Otavi, Otjiwarongo and Tsumkwe. In addition to these constituencies, the region is also divided into four health districts, namely, Okahandja, Okakarara, Otjiwarongo and Grootfontein.

The study was carried out at two hospitals in Okahandja and Okakarara respectively, two health centres in Otavi in the Otjiwarongo health district and Mangetti Dune in the Grootfontein health district respectively and four clinics, namely, Coblenz in the Okakarara health district, Otjituuo and Poly in the Grootfontein health district and Orwetoveni in the Otjiwarongo health district.
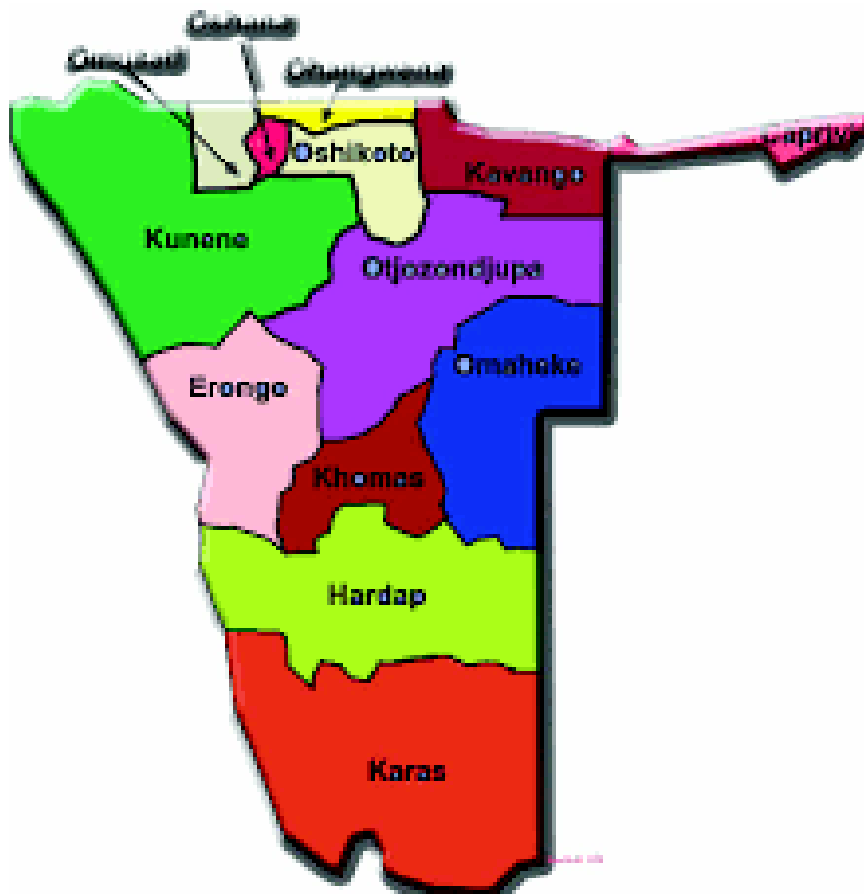
Figure 3.1: Location of Otjozondjupa Region in Namibia (www.google.com.na/search)

3.3. RESEARCH DESIGN

The research design comprises the set of logical steps taken by the researcher in order to answer a research question. It forms the blueprint of the study (Van Der Walt & Van Rensburg, 2006). This study used a quasi-experimental design. A pre-post analysis with control was used to determine whether an intervention in the form of renovations had the intended effect on the improvement in HCT service utilisation with a comparison being made of before and after effect of such intervention (Jha, 2014, Van Der Walt & Van Rensburg, 2006; Hansen & Klopfer, 2006; Ross, 2011; Price, 2011; Naff, 2004, Utts, 2005). A quasi-experimental design aims to determine whether a programme or intervention has the intended effect. In this study renovation represented the intervention while HCT service utilisation represented the effect. The change in HCT utilisation between two time points corresponding with 'before' and 'after' the renovations was compared in terms of the intervention (renovated health facilities) and the control (non-renovated health facilities). The counts of monthly, new HCT service users were obtained for a two-year period before and after renovations in both the interventions and the control facilities.

The quasi-experimental design used in the study was quantitative as it focused on measuring the relationships between variables. One variable was classified as the independent (an intervention) variable while the other was classified as the dependent (an outcome) variable. The researcher was interested in the effect of the independent variable on the dependent variable and this required the quantifying of the variables of interests. For the purposes of this research study the researcher identified the health facilities as the population of interests, the renovation of health facilities as the intervention under study, the non-renovated health facilities as a comparison that made up the control and the effect of health facilities renovation on the HCT service utilisation as the outcome of interest (Creswell, 2009, De Vaus, 2001, Houser, 2008).

3.4. STUDY POPULATION

The study population is the entire group of persons or objects that is of interest to the researcher and that meets the relevant criteria (Van der Walt & Van Rensburg, 2006). In this study the study population consisted of two groups of health facilities, namely, health facilities that had been renovated (Okakarara hospital, Mangetti Dune health centre, Coblenz clinic, Otjituuo clinic) and health facilities that had not been renovated (Okahandja hospital, Otavi health centre, Poly clinic, Orwetoveni clinic), but which met the inclusion criteria and that had offered HCT services from 2005 until 2011. The three levels of health facilities that formed part of the study population included primary health care (PHC) clinics; PHC centres health centres and hospitals. The PHC clinics used in the study all provided maternal and child care services, nutrition promotion, treatment of common diseases, control of communicable diseases, health education and health promotion. The functions of the PHC centres used in the study were similar to those of the PHC clinics but also provided basic curative services as well as offices for the PHC team. In addition, the PHC centres had a doctor's consultancy with regular visits being made by a medical practitioner. Hospitals provide comprehensive care (promotive, preventative, curative and rehabilitative) on a 24-hour basis (MoHSS, 2011). The hospitals are the ultimate referral point at the district level and provide essential back up services and care to individuals who have been referred from the PHC centres and clinics.

The study population comprised two hospitals (one renovated and the other not renovated), two PHC centres (one renovated and the other not renovated) and four PHC clinics of which two had been renovated and two not. All eight of these health facilities were under the MoHSS and had offered HCT services from 2005 until 2011 in the Otjozondjupa region.

3.5 SAMPLE AND SAMPLING

The sample is a part of a whole or a subset of a larger set and is selected by the researcher to participate in the research study (Van Der Walt & Van Rensburg, 2006). For the purposes of this study the sampling frame as the list of units from which the sample is selected consisted of health facilities that had been renovated and those that had not been renovated that had offered HCT services from 2005 until 2011 in the Otjozondjupa Regional Health Directorate. The list of these health facilities was obtained from the subdivision of Facility Planning of the MoHSS– a subdivision responsible for the planning and coordination of the health infrastructure development. A purposive sampling method – a type of non-probability sampling technique in terms of which selection is based on the knowledge of the population and the purpose of the study – was used as the sampling technique in this study (Cohen & Grabtree, 2006). All eight of the public health facilities that had offered HCT services 2005 until 2011 and which comprised the population for the study were selected by the researcher to participate in the research study, hence formed the sample of four non-renovated and four renovated health facilities.

3.6. DATA COLLECTION

Data collection in this study covered the data collection instrument, validity and reliability, pilot study, data collection procedure and process discussed as follows:

3.6.1. Data Collection Instrument

The researcher modified and used an existing standardised data extraction form (Egan, Petticrew, Hamilton, & Ogilvie, 2003; CVISION Technologies, 2011). The data extraction form (Appendix 1) was used to obtain data on HCT service utilisation in the selected health facilities during a two years period

before and after the renovations of health facilities. The data included data on the number of HIV clients registered and the results of the HIV clients tested that was received from the facility and regional HCT records/data bases. As regards the required data on the renovation status of the selected health facilities data was collected on the availability of HIV counselling rooms, HIV rapid testing rooms and AFHS rooms as components of the facilities. The pre-test and post-test counselling was standard practice and thus no data were captured on the number of clients who received pre-test and post-test counselling. The national capital and minor capital project data bases were used as data sources to ascertain when the renovations had taken place and which components of the facilities had been renovated. Data on the type of facility, catchment population and average distance from one health facility to the nearest health facility was captured as potential confounding factors.

The data abstraction form included the following sections: the health facility level, HCT services utilisation during two years before renovation of health facilities, HCT services utilisation during two years after renovation of health facilities, renovation status of the health facilities and other factors (confounding factors).

3.6.2. Validity and Reliability

Validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. Validity comprises internal and external validity. The internal validity refers to whether the results of the study (e.g. mean differences between intervention and control groups) are legitimate based on the way in which the groups were selected, the data was recorded or the data analysis was performed (Last, 2001). In this study the researcher ensured three types of internal validity, namely, content, criterion validity and construct validity.

For the purposes of this study the researcher used a quasi-experimental study design that replicates the control and rigour of true experiments in an attempt to eliminate the confounding factors. This created a high internal validity (Gravetter & Forzano, 2009).

Content validity refers to whether the tool appears to others to be measuring what it purports to measure (Peat, 2002). In this study the researcher consulted experts in the field of HCT service and health facilities renovations for their input on the content covered by this study, thus ensuring content validity.

Criterion validity refers to the use of already existing and well accepted measures against which the new measure is compared (Peat, 2002). In this study the researcher maintained criterion validity by using a data abstraction form that had been used in a study conducted at the Monkey Bay Health Centre in Malawi (Gunnlaugsson & Einarsdöttir, 2009). However, this form was modified to fit the study context.

Construct validity refers to the degree to which inferences made from a study may be generalised to the concepts underlying the study (Peat, 2002). In this study the researcher defined the concept of HCT service utilisation and health facilities renovation before these concepts were measured. This meant that inadequate, preoperational explications of any threats to construct validity were reduced. The construct validity of the study was also ensured by linking items in the data extraction form to specific components of the HCT service records. In addition, the researcher conducted a pilot study in the Khomas Regional Health Directorate to assess and ensure the construct validity of the study.

External validity refers to whether the results of the study are transferable to other groups (Last, 2001). The researcher in this study used the quasi-experimental study design in terms of which the study took place in the real-world environment. This created a relatively high external validity (Gravetter & Forzano, 2009). Although it is not possible to generalise the results of this research study to all fourteen Regional Health Directorates in Namibia it may be applied to outside contexts as researchers could transfer the methods, results and ideas from this research study to their own contexts. The results of this study are, therefore, transferable (Barnes, Conrad, Demont-Heinrich, Graziano, Kowalski, Neufeld, et al., 2012).

In addition, the researcher used the following measures to ensure the internal validity of the study: reducing risks to validity inherent in the single group by adding a control group (non-renovated health facilities) that was comparable to the intervention group (renovated health facilities), performing the test in the same way for the intervention and control groups and by accounting for confounding variables in the study design and data analysis. There were no testing threats and instrumentation threats to internal validity as the pre and post effects of the HCT service utilisation were carried out retrospectively.

Reliability refers to the consistency of the measurement or degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects (Peat, 2002). Reliability

is estimated and is not measured. In this study the researcher ensured that the reliability of the study was maintained by the internal consistency of the data collection instrument that included two sets of questions or statements that measured HCT service utilisation. Internal consistency involves one administration of the data collection instrument only. The data collection instrument gathered data on both HCT service utilisation (number of clients registered and number of clients tested for HIV) before the renovation of the health facilities and HCT service utilisation (number of clients registered and number of clients tested for HIV) after the renovation of the health facilities.

Table 3.1: Strategies to ensure validity and reliability

Strategy	Application in the research study
Internal validity	Reducing single group threats by adding a control group (non-renovated health facilities) Performing the test in the same way in both the intervention and the control groups
Content validity	The researcher held consultations with experts in the fields of HCT service and health facilities renovation
Criterion validity	The researcher used a data abstraction form that was a modified version of an existing and well accepted data collection instrument The existing standardised data abstraction form was modified to fit the study context The researcher reviewed relevant information from published studies, books and journal articles
Construct validity	The researcher defined the concept of HCT service utilisation and health facilities renovations

	The items in the data abstraction form were linked to specific components of the HCT service records
	A pilot study was conducted
	Statistical tests were used in data analysis
External validity	The researcher conducted a study in the real-world environment and ensured that the study results could be applied to other contexts
Reliability	The researcher maintained the consistency of the data collection instrument for all the health facilities studied

3.6.3. Pilot study

During a pilot study unforeseen problems may arise during the course of the project. Thus, carrying out a pilot study enables the researcher to identify and address some of these problems by obtaining more information via a further literature review and, therefore, to improve the project, to adjust the data collection instrument or re-assess the feasibility of conducting the study. Accordingly, a pilot study may result in changes to the study methodology, data collection process and data analysis methods before the actual data collection starts (Booyens, 2001, Brink, 2006).

The data abstraction form which was used as the data collection instrument was piloted in the Khomas Regional Health Directorate prior to the actual data collection in order to ensure validity and reliability of the instrument (Ickowicz, 2006).

The main goal of the pilot study was to test the logistics (data collection instrument and programming) that the researcher needed to put in place, the data collection instrument and the time required to carry out the data collection exercise. In addition, the pilot study was intended to test the variables in the data collection instrument as regards the relevant data required to determine the association between the renovation of health facilities and the HCT service utilisation.

As a result of the pilot study the researcher adjusted the data collection instrument by incorporating the health districts into the data abstraction form. The researcher also discovered that the reporting format of the HCT services has changed since 2009 and thus the questions on the HCT services utilisation were adjusted to reflect the new reporting format that includes data that was captured under the old reporting format. It was not possible for the researcher to collect data pertaining to the year when the health facilities were established, the year when the HCT services started at a particular health facility, the education level and income level of clients and the mode of transport commonly used by clients from home to the health facility. It was also not possible to obtain this data from the HCT service record review and thus these statements were omitted from the data abstraction form. The pilot study also afforded the researcher a window of opportunity to review the data collection instrument in terms of the relevance of the data to be collected in respect of the research purpose and research objectives, remove irrelevant items from the data collection instrument, ensure the availability of data in the records that were part of the HCT services records review and to ascertain the length of time required to collect requisite data.

3.6.4. Data Collection Procedure and Process

The researcher conducted a review of the facility service records of the HCT service in order to extract a count of the monthly HCT user data for two years before and two years after renovation of the health

facilities using the modified data extraction forms. The period under study ranged from January 2005 until December 2011.

The National Population Census and Demographic Health surveys were used as a source of data on the potential confounding factors. The renovations referred in the study included alterations, extensions and additions made under the capital development budget and minor capital works maintenance and repairs of the Ministry of Health and Social Services.

The researcher conducted the data collection and thus it was the researcher's responsibility to check the data abstraction forms for completeness and verification. On average the data collection process took one day for two health facilities and half a day per health facility for the data verification of the two health facilities where the data verification was carried out.

3.6.4.1 Health facility levels

This section of the research instrument collected data on the type of facilities, namely, whether the health facility was classified as a hospital, PHC centre or PHC clinic. This data was deemed to be necessary in view of the fact that the various types of health facilities offer different health services packages according to their ranking in the health service delivery hierarchy. Data was also collected on the location of the health districts as different health districts, although similar, may face different challenges. This data also helped the researcher to draw inferences about the HCT service utilisation on a district basis while also assisting the researcher to determine whether there were differences in HCT service utilisation at the various levels of health facilities in the different health districts.

3.6.4.2 HCT services utilization two years prior to renovation

Data was collected on the number of clients registered at the health facilities and the number of clients who had been tested and received their results prior to renovation. This helped to determine the outcome of the HCT services utilisation prior to renovation. This section of the data extraction form established the baseline on the HCT service utilisation in relation to the renovation of the health facilities with was created as the pre-intervention basis of HCT service utilisation in both renovated and non-renovated health facilities.

3.6.4.3 HCT services utilization two years after renovation

Data was collected on the number of clients registered at the health facilities after the renovations had been carried out and the number of clients who had been tested and received their results. This assisted in determining the outcome of the HCT service utilisation after renovation. This section of the data abstraction form determined the effect of the renovation of health facilities on HCT service utilisation as compared to the baseline data collected in the previous section of the data abstraction form. The main aim of this section was to compare the mean differences in the pre-intervention and post-intervention period with regard to HCT service utilisation between the renovated and non-renovated health facilities.

3.6.4.4 Renovation status of health facilities

The aim of this section was to gather data on whether the health facilities had been renovated or not during the period under study and also to ascertain the year in which renovation had taken place. In this case the term renovation referred to alterations, extensions and additions made to health facilities under the capital development budget and minor capital works of the MoHSS. Thus, this section provided an

indication of the percentage of health facilities that had been renovated and those that had not been renovated during the period under review.

The health facilities were deemed to be able to offer quality HCT services when HIV counselling rooms, HIV rapid testing rooms and AFHS rooms were available. Studies indicate that the availability of these important components of the HCT service as regards the renovation status of health facilities could affect the HCT service utilisation. The HCT service is regarded as the major component of the fight against HIV/AIDS. Data was therefore collected on the availability of HIV counselling rooms, HIV rapid testing rooms and AFHS rooms at those health facilities that had either been renovated or which had not been renovated.

3.6.4.5 Other (confounding factors)

This section of the data abstraction form collected data on other factors that were likely to affect the utilisation of the HCT services in addition to the renovation of the health facilities. Accordingly, data was collected on the catchment populations of the facilities at the start of the period under study, the catchment populations of the facilities at the end of the period under study and the average distance from one health facility to the next. The distance from one facility to the nearest facility has been associated with the low uptake of health services in several studies.

The step by step process of how the data was collected is now discussed:

<u>Step 1:</u> The researcher visited the office of the Otjozondjupa Regional Health Director as a courtesy call. The researcher introduced himself in terms of his name, institution of learning and the research study topic, explained the purpose and objectives of the study, listed the health facilities that would form part of the research study and described the data collection instrument that would be used.

Step 2: After the visit to the office of the Otjozondjupa Regional Health Director, the researcher was directed to the contact person at the Management Information System office who then referred him to the Special Programmes office. The officers at the Special Programmes office provided the researcher with the required data in the form of a soft copy that was emailed to the researcher's e-mail address and the hard copy that was handed to the researcher.

Step 3: The researcher commenced abstracting the data facility by facility, using the data obtained from the documents received from the officers at the Special Programmes office and paper-based data abstraction forms.

Step 4: After the researcher had completed abstracting the required data using the paper-based data abstraction forms, a view on the computer software program, Epi Info 7 was opened and transferred data in the paper-based data abstraction forms into the computer program software, Epi Info 7.

Step 5: The data that had been collected was verified by comparing it with the relevant data obtained from the Orwetoveni PHC clinic and the data contained in the registers and the monthly tally sheets/books at the Otavi Health Centre. The aim of this verification of the data was to ensure that the data that had been abstracted from the Otjozondjupa Regional Health Directorate data bases reflected the actual data generated at the specific health facilities.

Step 6: The data that had been collected was stored in an electronic format protected by an access password, while the paper-based data was stored in a lockable cabinet accessible by the researcher.
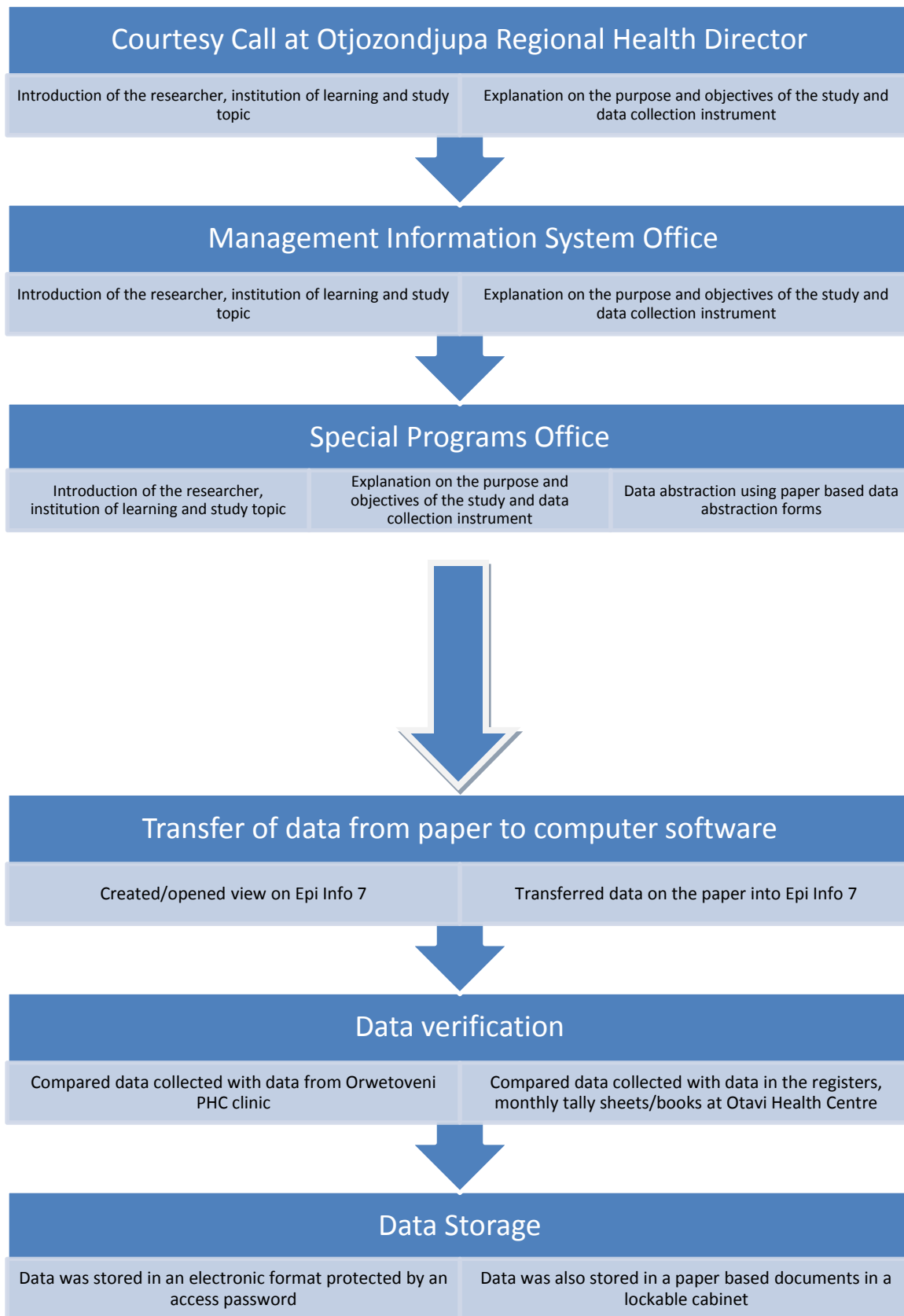
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┌─────────────────────────────────────────────────────────────────────┐
│         Courtesy Call at Otjozondjupa Regional Health Director        │
├──────────────────────────────────┬──────────────────────────────────┤
│ Introduction of the researcher,   │ Explanation on the purpose and    │
│ institution of learning and study │ objectives of the study and       │
│ topic                             │ data collection instrument        │
└──────────────────────────────────┴──────────────────────────────────┘
                                   ↓
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│              Management Information System Office                      │
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│ Introduction of the researcher,   │ Explanation on the purpose and    │
│ institution of learning and study │ objectives of the study and       │
│ topic                             │ data collection instrument        │
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│                     Special Programs Office                           │
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│ Introduction of     │ Explanation on the     │ Data abstraction using │
│ the researcher,     │ purpose and            │ paper based data       │
│ institution of      │ objectives of the      │ abstraction forms      │
│ learning and study  │ study and data         │                        │
│ topic               │ collection instrument  │                        │
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                                   ↓
┌─────────────────────────────────────────────────────────────────────┐
│           Transfer of data from paper to computer software            │
├──────────────────────────────────┬──────────────────────────────────┤
│ Created/opened view on Epi Info 7 │ Transferred data on the paper     │
│                                   │ into Epi Info 7                   │
└──────────────────────────────────┴──────────────────────────────────┘
                                   ↓
┌─────────────────────────────────────────────────────────────────────┐
│                        Data verification                              │
├──────────────────────────────────┬──────────────────────────────────┤
│ Compared data collected with data │ Compared data collected with data │
│ from Orwetoveni PHC clinic        │ in the registers, monthly tally   │
│                                   │ sheets/books at Otavi Health Centre│
└──────────────────────────────────┴──────────────────────────────────┘
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┌─────────────────────────────────────────────────────────────────────┐
│                           Data Storage                                │
├──────────────────────────────────┬──────────────────────────────────┤
│ Data was stored in an electronic  │ Data was also stored in a paper   │
│ format protected by an access     │ based documents in a lockable     │
│ password                          │ cabinet                           │
└──────────────────────────────────┴──────────────────────────────────┘
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Figure 3.2: Step by Step data collection process

3.7. DATA ANALYSIS

The study used a descriptive data analysis process. The descriptive data analysis reveals the patterns in the data and the relationships between different variables in the data set. A descriptive data analysis is performed to enable the researcher to present the quantitative descriptions of the data in a manageable form and to provide a meaningful summary that enables comparisons across groups or units (Aasland, 2008). The data analysis took into account the research objectives as well as elements contained in the study design.

The data analysis was conducted using the Epi Info 7 software program and the Statistical Package for the Social Sciences (SPSS) in order to generate tabulated reports, plots of distribution trends and descriptive statistics. The data that had been collected was coded and entered into Epi Info 7 (CDC, 2012). Thereafter the data was exported, cleaned and analysed using the Statistical Package for Social Sciences (SPSS). The Epi Info 7 software program is a public domain software package designed for the global community of public health practitioners and researchers, while the SPSS is a comprehensive and flexible statistical analysis and data management software program that is able to accommodate data from almost any type of file and use this data to generate tabulated reports, charts and plots of distribution trends and descriptive statistics and to conduct complex statistical analyses (IBM SPSS,2014).

The data was entered on the paper-based data extraction form. The researcher then created a data extraction form which was exactly the same as the paper-based data extraction form using the Epi Info 7 software program. The researcher also created a data entry view on the Epi Info 7 software program and entered the data from the paper-based data extraction form. Eight entries were created.

The data was organised/line listed in accordance with the sections in the data abstraction form. The researcher had assigned reference codes to all the health facilities studied. These reference codes were composed of the three to four letters of the health facility name as well as the month and year of the data collection.

The line-list sorted out the specific information such as the type of health facility, health district, clients registered before renovation, clients tested/received results before renovation, clients registered after renovation, clients tested/received results after renovation, whether health facility had been renovated or

not, year of renovation (if renovated), availability of HIV counselling rooms, availability of HIV rapid testing rooms, availability of AFHS, catchment population at the start of the study period, catchment population at the end of the study period and average distance from one facility to the nearest health facility. Frequency tables, graphs, ratios and percentages were constructed and formulated to ensure the orderly organisation of the data that had been collected.

The data analysis was carried out in order to organise and reduce the volume of data that had been collected and to provide meaning to the data to enable both the researcher and readers to make sense of the study.

T-tests were used to determine the effect of renovation on the HCT service utilisation of the renovated and non-renovated health facilities by comparing the mean differences in the HCT service utilisation before and after renovations between the renovated and non-renovated health facilities. Chi-squared tests were used to determine and control the effect of confounding factors on the categorical variables such as the type of facility. However, it was not possible to use chi-squared tests on the catchment population and average distance from one health facility to the nearest health facility as these are continuous variables. The data was descriptively analysed and presented in the form of tables, graphs, ratios and percentages.

3.8. RESEARCH ETHICS

Ethics refer to the norms for conduct and distinguish between acceptable and unacceptable behaviour (Resnik, 2011). In the research context ethics promote the aims of research, for example, knowledge, truth and the avoidance of error, while also promoting the values that are essential to collaborative work such as trust, accountability, mutual respect and fairness. Ethics help to ensure that researchers may be held accountable to the public for their acts of omission or commission and also help to build public support for research. This means funders are more likely to fund research projects if they have confidence in such projects and are able to trust the quality and integrity of the research. The ethical considerations upheld in this study included submitting the research proposal to ethical review committees, obtaining permission to conduct both a pilot study and the actual research study, inclusion

and exclusion criteria, confidentiality, research benefits and the quality of research with the researcher complying with ethical guidelines throughout the entire research study.

3.8.1 Ethical Review Committees

The research proposal was submitted to the Post-Graduate Studies Committee of the Faculty of Health Sciences as well as the Postgraduate Studies Committee of the University of Namibia. The University of Namibia Research Ethics Committee issued an Ethical Clearance Certificate to the researcher (Appendix 2).

Thereafter, the researcher applied for the approval and permission to conduct the study of the Research Ethical Committee of the Ministry of Health and Social Services. Permission was granted to carry out the research study (Appendix 3).

3.8.2 Permission to conduct a pilot study and the actual research study

The researcher requested access to the HCT services data in writing through the office of the Khomas Regional Health Directorate prior to the piloting of the study and through the Otjozondjupa Regional Health Directorate prior to the commencement of the data collection. The researcher was granted access to the HCT services data (Appendices 4 and 5). The researcher visited the office of the Khomas Regional Health Directorate and Otjozondjupa Regional Health Directorate to explain the purpose and objectives of the research study. The requisite data were obtained from the Special Programs Office at the Khomas Regional Health Directorate and Otjozondjupa Regional Health Directorate office respectively. The data collected for the purposes of the actual research study was verified at the Orwetoveni PHC Clinic and the Otavi Health Centre respectively.

3.8.3 Inclusion and exclusion criteria

Inclusion criteria refer to the characteristics that prospective subjects must possess if they are to be included in a research study while exclusion criteria refer to those characteristics that disqualify prospective subjects from participating in the study (Bankert & Amdur, 2006, Coreil, 2010). The researcher provided a detailed description of the study population in the design protocol and also ensured that the subject population possessed the attributes that made it possible to accomplish the purpose and the objectives of the research study. The research study did not involve human subjects as it comprised a facility service record review and, therefore, there was no likelihood of either harm to the subjects or the exploitation of vulnerable subjects. Based upon the target population of the research study the researcher formulated adequate justifications for the inclusion and exclusion of health facilities in and from the study population.

3.8.4 Confidentiality

The research study involved the collection or study of existing data, documents or records, the sources of which were all available. The researcher recorded the data in such a way that it was not possible to directly identify the participants in the records (registers) or through identifiers linked to them (Bankert & Amdur, 2006). Confidentiality was ensured by ensuring that references to names/identities in the HCT service records were not divulged to unauthorised persons, while the data was stored in an electronic format protected by an access password and the paper-based data in a lockable cabinet. In addition, the research results were presented as aggregated data and with no reference to specific names.

3.11. SUMMARY

This chapter contained a description of the research methodology and research design used in the study. This included the study setting, study design, study population, sampling and sampling process, data

collection, data collection instrument, validity and reliability of the study, pre-testing of the data collection instrument and research ethical considerations. The study used a quantitative, quasi-experimental research design as the true experimental research design was deemed not to be practical for the purposes of this study. The sample comprised the study population and included both renovated health facilities and non-renovated health facilities. The sample consisted of a total of eight health facilities. The researcher modified an existing standardised data extraction form for the data collection process. This data collection instrument helped to ensure both the validity and reliability of the study. The pilot study was conducted in the Khomas Region, a neighbouring region to the region where the actual study was carried out. The data entry and data analysis were done with the aid of the Epi Info 7 software program and the Statistical Package for the Social Sciences. The data was organised so that it reflected the same order as the data collection instrument. As discussed the researcher ensured that the study adhered to the ethical principles and processes. The next chapter (chapter 4) presents the study findings/results.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The previous chapter contained a description of the research methodology and research design used in the study. The quantitative, quasi-experimental design which was used in the study was deemed appropriate to measure the effect of the renovation of health facilities on the rate of HCT service utilisation. This design was, therefore, relevant for the purpose of the study with regard to determining the effect of the renovation status of the health facilities on the rate of HCT service utilisation. This chapter presents and illustrates, using tables and graphs, the findings of the research study. The research study findings were organised in accordance with the information obtained from the data abstraction form which was used as a data collection instrument. The data which had been collected was then analysed to enable the researcher to present the statistical findings of the study.

4.2 PRESENTATION OF RESULTS

The sections below present the study results according to the categories included in the data abstraction form.

4.2.1 Health facility levels

As part of the study both the renovated and non-renovated health facilities were classified into different levels. The HIV counselling rooms, rapid testing room and AFHS room were considered critical in terms of the renovation status of the health facilities. The catchment populations of the health facilities and the average distances from one facility to the next were considered as the other or confounding

factors that were likely to affect the HCT service utilisation in addition to the renovation status of the health facilities. The comparison between the clients registered before and after renovation in the renovated and non-renovated health facilities was deemed to provide a measure of the HCT service utilisation for two years prior to and two years after the renovations.
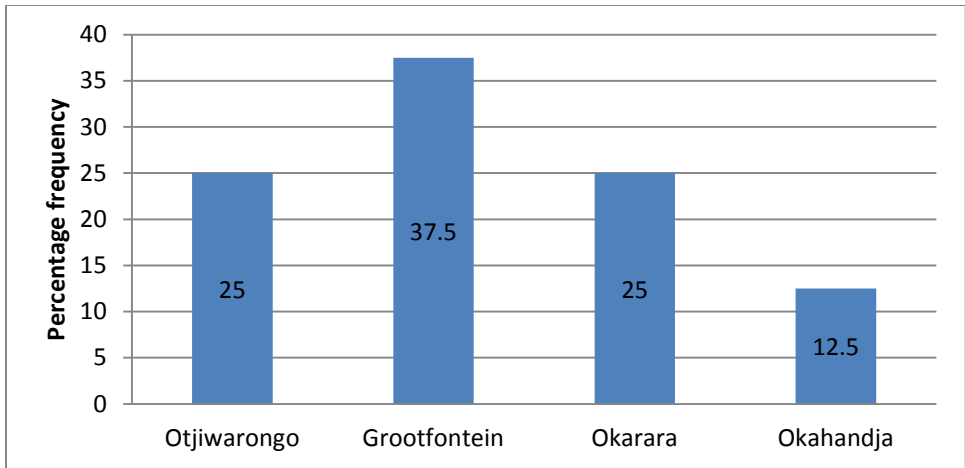

Figure 4.1: Percentage of health facilities per health district

Four health districts, namely, Otjiwarongo, Grootfontein, Okakarara and Okahandja, were included in the study. As illustrated in figure 4.1 above, the majority of health facilities were covered in the Grootfontein health district (37.5%), while the Otjiwarongo and Okakarara health districts both had 25% of the health facilities, with Okahandja health district having the lowest percentage of health facilities, namely, 12.5%.

Different types or levels of health facilities per health district were included in the study. One hospital and one PHC clinic from the Okakarara health district were included in the study, one PHC centre and one PHC clinic from the Otjiwarongo health district, one PHC centre and two PHC clinics from the Grootfontein health district and one hospital only from the Okahandja health district.

The study was carried out at the eight identified health facilities in the four districts of the Otjozondjupa Regional Health Directorate. The study sample comprised 25% hospitals, 25% PHC centres and 50% PHC clinics.

4.2.2 HCT services utilization two years prior and after renovation

The aim of the study was to determine the effect of the renovation of health facilities on the rate of Human Immunodeficiency Virus Counseling and Testing (HCT) service utilization in the Otjozondjupa Region. Hence, the comparison of the rate of HCT service utilization in renovated and non-renovated health facilities as well as their mean differences in pre and post renovation period were carried out. This aspect was included to determine and describe the trends in the effect of public health facilities renovation on HCT service utilization rate of the renovated public health facilities (before and after renovation) compared to public health facilities that were not renovated in the same period of time.

Table 4.1: Paired samples test

Renovated						95% Confidence Interval of the Difference		
			Mean	Std. Deviation	Std. Error Mean	Lower	Upper	Sig. (2-tailed)
No	Pair 1	Reg_before - Reg_after	1020.750	1003.516	501.758	-576.068	2617.568	.135
	Pair 2	Results_before - Results_after	1025.500	965.718	482.859	-511.173	2562.173	.124
	Pair 3	Catchment_before - Catchment_after	-2.446500	.841803	.420902	-3.785997	-1.107003	.010
	Pair 1	Reg_before - Reg_after	240.500	491.157	245.579	-541.041	1022.041	.400
Yes	Pair 2	Results_before - Results_after	233.750	484.550	242.275	-537.278	1004.778	.406
	Pair 3	Catchment_before - Catchment_after	-1.406250	.464173	.232086	-2.144852	-.667648	.009

The comparison between the number of registered clients before renovation and after renovation for those facilities that were renovated, indicated that there were on average 241(240.500) more registered clients before renovation as compared to after renovation as illustrated in table 4.1. The difference was not significant with p-value=0.400.

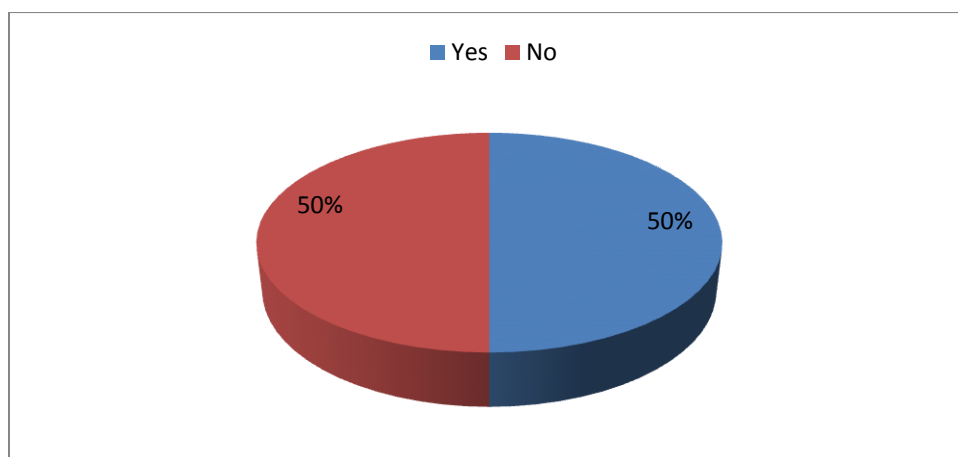### 4.2.3 Renovation status of health facilities

Figure 4.2: Distribution of renovated facilities

The renovated health facilities represented 50% (4) of the health facilities included in the study while the other half comprised the health facilities that had not been renovated as illustrated in figure 4.2.

Availability of HIV counselling rooms and rapid testing rooms

There were HIV counselling rooms and rapid testing rooms available in both the renovated and the non-renovated health facilities.
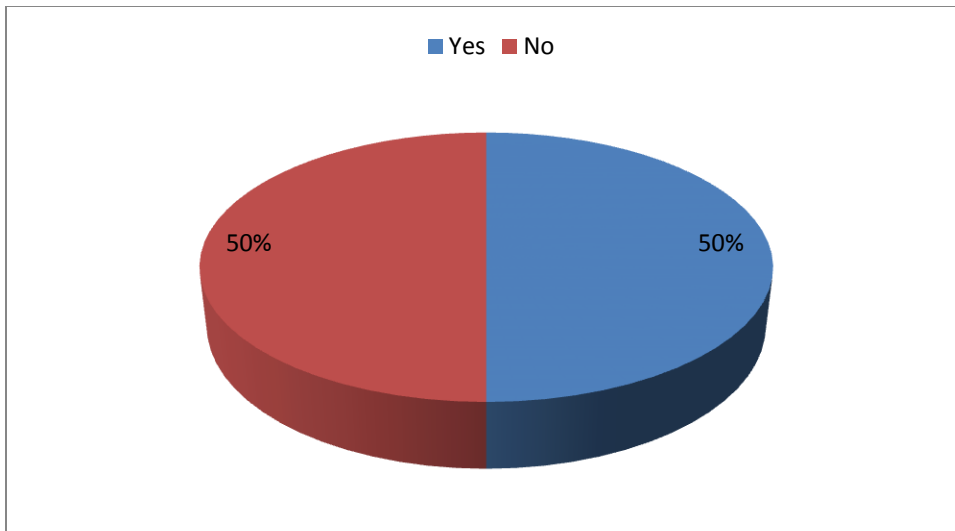
Figure 4.3: Availability of adolescent friendly health services room

The figure above (figure 4.3) reflects the availability of AFHS rooms in the eight health facilities in the four health districts in the Otjozondjupa Regional Health Directorate that were included in the study. The study results have shown that there were AFHS rooms available in 50% of the health facilities and not in the other 50% of the health facilities irrespective of whether they were renovated or non-renovated health facilities (figure 4.3).

As regards the renovation status of the health facilities studied, there was one non-renovated hospital in the Okahandja health district, while both the PHC clinic and PHC centre in the Otjiwarongo health district had not been renovated. On the other hand, in the Okakarara health district both the hospital and the PHC clinic had been renovated while, in the Grootfontein health district, there was one non-renovated PHC clinic, one renovated PHC clinic and one renovated PHC centre.

4.2.4 Other (confounding factors)

Two confounding factors, the catchment populations of the health facilities and the distances from one health facility to the nearest health facility, were identified and considered as variables that change simultaneously with the rate of HCT services utilisation. Despite the fact that the catchment populations

of the health facilities and the distances from one health facility to the nearest health facility were not the focus of the study, several studies have revealed these factors may be deemed to provide alternative explanations for the rate of HCT service utilisation.

The catchment populations of the health facilities studied had increased by a margin of 1.4 between 2005 and 2011. This was deemed to be significant at a 5% level with a p-value of 0.009 (Table 4.1), although this increase could not be linked to either the renovation of the health facilities or the rate of HCT service utilisation.
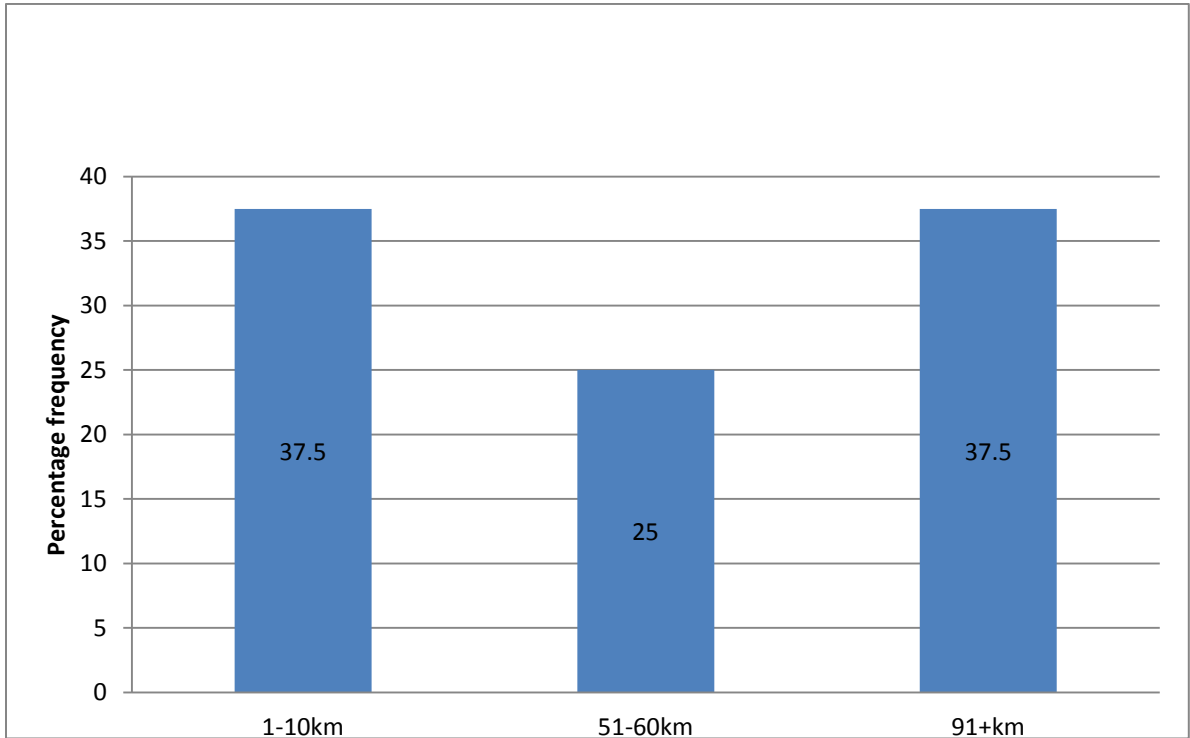

Figure 4.4: Distribution of health facilities in terms of distance to nearest facility

Of the eight health facilities that were included in the study, 37.5% were 0 to 10 kilometres away from the closest health facility, 25% of the health facilities were between 51 and 60 kilometres away from the closest health facility, while the other 37.5% of the health facilities were 91+ kilometres away from the closest health facility. The study revealed that 67% of health facilities in the rural areas were more than 91kilometres away from the closest health facility compared to urban areas where 100% of health facilities studied were less than 91kilometres in away from the closest health facility. The distance of a health facility away from the closest health facility may affect the facility's HCT service utilization.

4.3 DISCUSSION OF RESULTS

4.3.1 HEALTH FACILITIES' RENOVATION AND HCT SERVICES UTILIZATION

The sections below present the discussions of the study findings according to the categories included in the data abstraction form.

4.3.2 Health facility levels

In Namibia the health facilities are classified into the following levels, namely, central hospitals or specialised health institutions (class A), intermediate referral hospitals (class B level 1), regional referral hospitals (class B level 2), district hospitals (class C), health centres (class D) and health clinics (class E) (MoHSS, 2014). For the purpose of this study district hospitals (class C), health centres (class D) and health clinics (class E) were used. However, the study observed no association effect of the type of health facility, the renovation status of the facility on the HCT service utilisation.

The study was carried out at eight health facilities in four health districts in the Otjozondjupa Regional Health Directorate, namely, the Otjiwarongo, Grootfontein, Okakarara and Okahandja health districts. The study found that 37.5% of the health facilities studied was in the Grootfontein health district, 25% of the health facilities in both the Otjiwarongo and Okakarara health districts and the lowest percentage of the health facilities, namely, 12.5%, in the Okahandja health district.

Of the health facilities studied 25% were hospitals, 25% PHC centres and 50% PHC clinics. There were thus more PHC clinics as compared to other types of health facilities such as hospitals and PHC centres. PHC clinics comprise the lowest segment in the hierarchy of health care service system in Namibia. This study sample included more PHC clinics compared to the other types or levels of health facilities in the

hierarchy of the health care system. This highlighted the important role that the PHC clinics play in the health care service delivery as well as the provision of HCT services.

Similarly, in Kenya, the dispensaries, which are at the same level as the clinics (class E) in Namibia, comprise the lowest segment of the health care system hierarchy as the first contact point between the health care system and the patients (Muga et al., 2004).

4.3.3 HCT services utilization two years prior and after renovation

The research study findings revealed that the comparison between the number of registered clients before the renovation and after the renovation of those facilities which had been renovated indicated an average of 241 (240.500) more registered clients before the renovations as compared to after the renovations. However, the difference was not significantly different (p-value = 0.400). As regards the number of clients being tested and receiving their result before and after the renovations, there was also no significant difference between the results numbers (p-value = 0.406). As regards the number of clients registered at the health facilities before and after the renovations, the study found that there were more clients registered before the renovations as compared to after the renovations (table 4.1). Thus, the research findings painted a paradoxical picture which was contrary to the results of several other studies that had found that an increased number of clients had registered and utilised the health services after the renovation of the health facilities concerned.

The research findings of this study as reflected in table 4.1 revealed that the renovation of the health facilities had not resulted in an increase in the number of clients registered for HCT services. This is, however, contrary to other studies that confirmed that the renovation of health facilities had increased the rate of health service utilisation. For example, a research study conducted at the Monkey Bay Health Centre, Malawi revealed that the respondents had expressed concerns about the poor quality of the

physical infrastructure at government health facilities and that the renovations to the facilities had increased the rate of health care service utilisation (Gunnlaugsson & Einarsdöttir, 2009). In addition, according to Kombo (2009) in the report, "Improving the health facility-based services in Nyanza province, Kenya: the APHIA (AIDS, Population and Integrated Assistance) II Nyanza project, in order to encourage an increase in the utilisation of specific services including HCT, health facilities require dedicated spaces that guarantee confidentiality.

Although this study found that no significant effect of the renovation of health facilities on the rate of HCT service utilisation, the study did confirm that, as reflected by the HCT statistics and service records used in the study, the HCT services were being utilised in the Otjozondjupa region. This provided an indication that HCT services play an important role in the fight against the HIV/AIDS pandemic and should be promoted. The renovation of health facilities enables the improvement of infrastructures and the addition of space for services such as HCT that require separate and adequate space, special times, convenient hours, privacy and comfortable surroundings, particularly for the adolescents who comprise a large proportion of the population (Kombo, 2009). This is in line with findings of the Namibia Health Facility Census conducted in 2009 and that revealed that, despite the poor state of health facility infrastructure, it is possible to provide relatively good health services, even in minimal service delivery settings (MoHSS & ICF Macro, 2011).

The findings of this study contradicted the concept known as the "72-hour clinic makeover" that was introduced in Nigeria by the Nigeria Urban Reproductive Health Initiative and which proved that the renovation of health facilities increased the health services utilisation. This study found that the renovation of health facilities did not increase the HCT services utilisation. The "72-hour clinic makeover" concept meant that family planning clinics, PHC centres and other integration sites (ANC, delivery, PNC, immunisation clinics, PAC, HCT and antiretroviral therapy) were renovated, refurbished and equipped for optimal services within 72 hours (NURHI, 2013).

4.3.4 Renovation status of health facilities

Fifty percent of the health facilities studied in the four health districts of the Otjozondjupa Regional Health Directorate had been renovated while the other half had not been renovated. This study revealed that the renovation status of the health facilities in the Otjozondjupa Regional Health Directorate had not increased the utilisation of HCT services. This study finding has shown that the renovation of health facilities has no significant effect on the HCT service utilisation; hence implying that resources no longer need to be directed into the renovation of health facilities.

The findings of this study are contrary to the following studies' findings:
According to Joseph (2006), the physical environment is one of the factors that may improve the health, safety, effectiveness and satisfaction of the health care teams.

According to Bock (2009) in a study on "Factors influencing the uptake of HIV voluntary counselling and testing in Namibia", by the end of 2008 VCT services were being offered in 208 public health facilities in Namibia. Bock (2009) further highlighted the need for the renovation of health facilities as she stated that some health facilities were not providing VCT as a result of inadequate space. She also acknowledged that the existing health facilities were not able to cope with the demand for HIV related services. At the time VCT services required separate rooms and many of the health facilities had not been constructed in such a way so as to accommodate all the services required and this was impacting negatively on the provision of VCT services.

A study carried out by Lyman and Fox (2004) revealed that the demand for HIV/AIDS services stretched the capacity of the existing health facilities and, therefore, health facilities required renovations in order to be able to cater for the full integration of the HCT services. According to Lyman and Fox

(2004), the shortage of physical health infrastructures was recognised as the fundamental impediment in the fight against HIV/AIDS pandemic in both the developed and the developing countries. However, this study findings revealed that there was no significant effect of the renovation of health facilities on HCT service utilisation. Nevertheless, contrary to these findings, in their research study conducted at the Monkey Bay health centre in Malawi, Gunnlaugsson and Einarsdottir (2009) claimed that renovations of the health centre facilities had brought about changes in the health services utilisation.

In order to enable a health facility to provide quality services, the facility must have the means to ensure that the facility's equipment and infrastructure are in good working condition. The buildings and infrastructure also require routine maintenance and periodic repair. According to the Health Facility Census carried out in Namibia in 2009, only 24% of the health facilities in the Otjozondjupa Region had a system in place for the maintenance and repair of building infrastructure (MoHSS, 2011).

There were HIV counselling rooms and rapid testing rooms available in all (100%) the health facilities that were included in this study. This is an indication that all the facilities had at their disposal the components required for the HIV counselling and rapid testing to take place. This finding was in line with the findings of the Namibia Health Facility Census conducted in 2009 which revealed that practically all the health facilities in Namibia had in place an HIV testing system and that 80% of the health facilities had HIV testing capacity on site (MoHSS & ICF Macro, 2011). The study conducted by the Centre for AIDS Prevention Studies and the AIDS Research Institute, University of California, San Francisco, indicated that HCT is regarded as an important strategy in the prevention, treatment and care of HIV/AIDS (Traux & De Carlo, 2004).

This study found that 50% of the health facilities in the Okakarara, Okahandja, Otjiwarongo and Grootfontein health districts of the Otjozondjupa Regional Health Directorate had AFHS rooms which are regarded as essential components that promote HCT service utilisation. This showed that more needs

to be done in terms of the adolescent friendly HIV testing services offered by the Otjozondjupa Regional Health Directorate to ensure that this crucial component of HCT services is included in the physical infrastructures of the health facilities. The findings of the Health Facility Census conducted in 2009 concluded that, of the health facilities in Namibia that offered adolescent friendly HIV testing services, 7% were hospitals, 45% health centres and 19% clinics (MoHSS & ICF Macro, 2011). According to the MoHSS & ICF Macro (2011) it was found that 23% of the health facilities in the Otjozondjupa region in particular, irrespective of the type or level of facilities, offered adolescent friendly HIV testing services. This was an indication that many health facilities in Namibia and, specifically, in the Otjozondjupa region, did not have AFHS rooms and thus were unable to offer adolescent friendly HIV testing services as part of the HCT services.

The issue of AFHS room as a necessary component of a health facility to enable a health facility to offer adolescent friendly HIV testing services and to facilitate the important role that the HCT services play in the fight against HIV/AIDS needs to be addressed. According to Ibrahim, Ipadeola, Adebayo, and Fatusi (2008), in their study conducted in Nigeria on the socio-demographic determinants of HCT uptake among young people, the uptake of HCT among young people aged 15 to 24 years in Nigeria was extremely low. Young people in particular are affected by the HIV and thus constitute the focal point of the interventions in most African countries. In addition, according to Obaid (2003), more than 50% of the new HIV/AIDS cases every year are among the 15 to 24 age group. This highlights the fact that AFHS rooms are of vital importance in the provision of HCT services and may affect the HCT service utilisation. The costs of the pandemic in terms of arrested development, lost agricultural output, lost education, excess training costs to provide for personnel losses, health facility overloads and treatment and care are enormous (James, 2009).

HIV/AIDS prevention among the youth has been estimated to be 28 times more cost effective than the provision of highly active antiretroviral therapy (HAART). Obaid (2003) further stated that, for a health facility to be categorised as offering AFHS it should have separate and adequate spaces, special times, convenient hours, privacy and comfortable surroundings. AFHS rooms as a component of all health facilities are essential to enable the health facilities to offer the adolescent friendly HIV testing services which form part of the HCT service – a cornerstone in the fight against HIV/AIDS.

According to Anderson et al. (2007), HCT services are extremely beneficial for adolescents who are often exposed to HIV through injecting with drug, sex work and male homosexual sex. In their study conducted in South Africa, Anderson et al. (2007) found that although a high proportion of adolescents were interested in knowing their HIV status, only a few had ever been tested.

In the study on "Factors influencing the uptake of HIV voluntary counselling and testing in Namibia", renovation of health facilities was found to have increased the health services utilisation (Bock, 2009). Bock (2009) further confirmed that youth friendly services are crucial to increase the uptake of VCT services among young people under the age of 19 years. However, the study did not focus on the effect of the renovations of health facilities on the availability of the HIV counselling rooms, HIV rapid testing rooms and AFHS rooms which target the renovations to health facilities to improve HCT service delivery.

4.3.5 Other (confounding factors)

The confounding factors did not form part of either the purpose or objectives of the study. However, they were considered as other factors that could affect the rate of HCT service utilisation as the literature and numerous studies have identified the confounding factors as playing a role.

Accordingly, the study also took cognisance of other factors that may have an effect on the HCT service utilisation, namely, the average distances from one health facility to the nearest health facility and the catchment populations of the specific health facilities.

The research findings indicated that more than 60% of health facilities were at some distance from the nearest health facilities. According to the Sebastopol O'Reilly Media (2013), it is not easy to identify which determinants are the most influential in the decision making of clients to utilise the health services. There are a considerable number of factors that may affect the health services (including HCT) utilisation. In this study the focus was on the effect of the renovation of health facilities on the HCT service utilisation. The study conducted at the Monkey Bay Health Centre in Mangochi, Malawi (Gunnlaugsson & Einarsdottir, 2009) revealed that, in addition to the physical infrastructure that could act as an impediment to the provision and utilisation of the health care services, transport, communication and human resources were other factors that could affect the uptake and utilisation of health care services. This finding was further substantiated by the study conducted in Uganda which affirmed that factors such as proximity to the health facility affected the access to and utilisation of health services (Pariyo et al., 2009).

The study conducted at the Monkey Bay Health Centre in Malawi (Gunnlaugsson & Einarsdottir, 2009) further concluded that distance away from a health facility to the closest health facility often discouraged people from seeking care, while those populations that lived far away from health facilities were identified as being excluded from the services. It is thus important that the distance from the health facility to people's homes be considered as a confounding factor that may affect the utilisation of HCT service.

The catchment population of the health facilities studied had increased by a margin of 1.4 between 2005 and 2011. This was significant at a 5% level with a p-value of 0.009 (table 4.1). Nevertheless, it would

appear that the significant increase in the catchment population did not bring about an increase in the number of clients registered for HCT services. According to a study conducted on the utilisation of HIV testing and counselling in Ghana, the HIV testing and counselling in all locations had increased in the four-year period from 2007 to 2010. The dramatic increase was the result of a large number of HCT "know your status" (KYS) campaigns, while the significant increases in HCT utilisation were identified as having taken place in regions with high populations throughout the country. The most populous region of Ashanti demonstrated the highest increase in HCT utilisation, while the second most populous region of Greater Accra demonstrated the second highest increase in HCT utilisation over the four-year period in question (Yawson et al., 2014). Therefore, it could be concluded that the population growth was not necessarily a factor that increased HCT service utilisation, other factors for example campaigns influenced HCT utilisation rates.

Although this study focused on the average distances from one health facility to the nearest health facility and the catchment population of the health facilities as confounding factors, there are several factors that affect the utilisation of HCT services. According to Bock (2009), stigma, fear of a positive HIV test, low risk perception, lack of access to health facilities offering HCT, including same day test results, and inconvenient opening hours were pointed out as factors influencing the uptake of VCT in Namibia.

4.4 SUMMARY

This chapter presented and illustrated, using graphs and tables, the study findings in respect of five designated categories, namely, health facility levels, HCT services utilisation two years prior to renovations, HCT services utilisation two years after renovation, health facility renovation status and other factors (confounding factors). Descriptive statistics were used with the findings being presented

and illustrated by means of pie charts, percentages, bar charts and tables combined with narrative explanations/descriptions.

Eight health facilities from four health districts in the Otjozondjupa Regional Health Directorate were studied, with 50% of these health facilities being situated at the PHC clinic level. Of the four health districts studied, the Grootfontein health district contributed more to the health facilities (37.5%) that participated in the study. However, the study found that HIV counselling room and rapid testing rooms were available at all the health facilities, while half of all the health facilities studied had AFHS rooms. In addition to the renovation of the health facilities, the catchment populations of the health facilities and the distances from one health facility to the next were found to be other factors that affected the HCT service utilisation. The catchment populations of the health facilities had increased significantly by a margin of 1.4 before and after the renovation period. The study further revealed that the distances from one health facility to the next remained a challenge to the Ministry and those wishing to access the health facilities. The next chapter presents the conclusions, recommendations and limitations of the study as well as certain concluding remarks.

CHAPTER 5:

CONCLUSIONS, RECCOMMENDATIONS AND LIMITATIONS

5.1 INTRODUCTION

The previous chapter presented both the research study findings and a discussion of the findings. This chapter focuses on the conclusions derived from the study findings, recommendations of the study, suggestions for further research studies, the study's contribution to the existing body of knowledge and the limitations of the study.

The purpose of the study was to determine the effect of the renovation of health facilities on the HCT service utilisation in the Otjozondjupa region.

The objectives of the study included the following:

1) To compare the human immunodeficiency virus counselling and testing (HCT) services utilisation rate between renovated and non-renovated health facilities

2) To compare the mean differences between the pre and post intervention in the human immunodeficiency virus counselling and testing (HCT) service utilisation between renovated and non-renovated health facilities.

5.2 CONCLUSION

The study objectives focused on determining the association between the renovation of health facilities and the HCT service utilisation in the Otjozondjupa Region. The conclusions with regard to the specific study objectives are discussed below.

5.2.1 Study objective 1: To compare the human immunodeficiency virus counselling and testing (HCT) service utilisation rate between renovated and non-renovated health facilities

The researcher modified an existing, standardised data abstraction form in order to collect data from the health facility and regional HCT records/databases in order to determine the effect of HCT service utilisation rate between the renovated and non-renovated health facilities.

The study findings indicated that the rate of HCT services utilisation decreased after the renovation of health facilities as there were, on average, 241 (240.500) more registered clients before renovations as compared to after renovations of health facilities (table 4.1). However, the decrease in the rate of HCT services utilisation after renovations was not significant with a p-value = 0.400.

The study findings indicated that there was no significant effect of the renovation of health facilities on HCT service utilisation. This painted a paradoxical picture which is contrary to the conclusions drawn in several studies which found an increased number of clients to be registered after the renovation of the health facilities.

5.2.2 Study objective 2: To compare the mean differences in the pre and post interventions in human immunodeficiency virus counselling and testing (HCT) service utilisation between renovated and non-renovated health facilities

The health facilities that had not been renovated demonstrated a mean difference of 1021 (1020.750) more HCT registered clients before the period under study compared to after the period under study.. The mean difference in the non-renovated health facilities was not significant with a p-value = 0.135, while the mean difference in the renovated health facilities was also not significant at a p-value = 0.400. This study revealed that with the mean difference of 241 (240.500), more HCT registered clients before the renovation compared to the HCT registered clients after renovation in the renovated health facilities.

5.3 RECOMMENDATIONS

The recommendations are aimed at providing policy makers; interest groups and all the stakeholders involved in the management of HCT service and the development of physical health infrastructure with a basis on which to make informed decisions in respect of planning and resource allocation related to HCT services.

Although the research study findings and the conclusions drawn reflect no significant effect of the renovation of health facilities on the rate of HCT service utilisation, the following recommendations are made based on the theoretical information obtained from relevant literature on previous studies as well as related policy decisions.

The theoretical information obtained from the relevant literature on previous studies as well as related policy decisions formed the basis for the researcher's recommendations regarding possible actions to improve the provision of HCT services and to combat the HIV/AIDS pandemic. The chapter also contains conclusions based on the research findings.

- **Budget**

It is recommended that the budgetary allocation for capital projects be increased to meet the 15% suggested in the Abuja Declaration. In addition, there should be a clearly defined policy and set of guidelines for the successful implementation and sustainability of the health care public/private partnership models to complement the budget allocated to improve the provision of HCT services and to combat the HIV/AIDS pandemic.

- **Decentralisation**

It is recommended that information pertaining to the health facilities level be made available for the completion of project identification forms (PIFs), as such forms will provide details on programme resources and services planning. In addition, instead of the national level preparing the PIFs for the regions, the regions themselves should prepare their project identification forms. Furthermore, the maintenance and repair of physical health facilities in accordance with their budgets should be fully decentralised.

- **Renovations**

It is recommended that the Namibian government and other stakeholders invest more in the maintenance and repair to health facilities in order to create and maintain an enabling environment for the delivery of quality HCT services and to increase HCT service utilisation. The physical facilities management unit should be strengthened by ensuring that it has the capacity and the necessary competencies to undertake maintenance and capital planning. The MoHSS should establish departments or units responsible for the maintenance of health infrastructure at the national level but decentralised at the regional and district

levels. In addition, a well-structured and more targeted expansion of facility-based HCT sites and access to HCT should be implemented.

- **Adolescent friendly health services**

It is recommended that the planning and designs of both new and existing health facilities aimed at the integration of the HCT services include AFHS rooms at all health facilities to ensure that adolescents are catered for in an adolescent friendly environment as this plays a vital role in the fight against HIV/AIDS. The regional management teams should be strengthened so as to improve the monitoring and supervision of AFHS by applying a checklist for monitoring in relation to the HCT services. The increased availability of AFHS including HCT would ensure access to as well as the provision and utilisation of high quality services.

- **Distances and catchment population**

Although the catchment populations of the health facilities and distances from one health facility to the nearest facility were not part of the study's research purpose and specific objectives they have, nevertheless, been considered in several studies as regards providing alternative explanations for the relationship between the renovation of health facilities and the rate of HCT service utilisation. It is recommended that the distance of a facility from the residence be explored.

The MoHSS should determine other ways to increase HCT uptake rather than continuing to construct and renovate more health facilities in the Otjozondjupa Regional Health Directorate, although the research findings indicated that more than 60% of the health facilities were far away from the nearest health facilities and also that the catchment populations of the health facilities were continuing to increase. Increased access to, as well as the utilisation and provision of high quality HCT services

through the reduction of the vast distances between health facilities, the improvement of the transport network (appropriate outreach vehicles) and the appropriate design, maintenance and repair of health facilities would enhance the quality of the HCT service provided and ensure that it caters for adolescents. It is further recommended that advocacy campaigns targeted at leaders and policy makers at all levels be put in place to ensure that HCT services take their place as an important component in the fight against HIV/AIDS. Such services should be aimed at ensuring universal access to HCT services and also that all HCT issues are adequately taken into account in government policy documents and programmes. In addition, the criteria for the establishment of health facilities need to be revised and the revision of the standards and norms for health facilities completed.

- **Use of HCT models**

The use of a variety of models such as home testing, mobile testing and other models that provide easy access to HCT service should be encouraged. The HCT supplies security in the country should be ensured by providing technical assistance and support to capacity building activities, as well as the procurement of HCT commodities to improve the coordination, forecasting and logistical capacity of the MoHSS.

- **Integration of HCT into PHC outreach services**

It is recommended that the HCT services be integrated in the PHC outreach services to increase HCT service uptake. Improved access to the HIV/AIDS information, services and support systems that promote and sustain HCT services will help to increase the access to as well as the provision and utilisation of high quality HCT services. Community awareness and involvement, support services for the clients of HCT services and the reduction of the stigma attached to undergoing testing are all important elements in this endeavour, while it is vital to ensure that the health facilities have sufficient

capacity to provide quality counselling, particularly as the client numbers increase. It is recommended that the HCT services be expanded into the communities through the recruitment of paid health extension workers who would then be able to expand PHC services in these communities. In addition, the location and establishment of testing programmes and facilities in the under-served and high HIV prevalence geographical areas of the country should be considered.

- **HCT services awareness**

It is recommended that the government together with private health providers should establish the consumer information programmes. The dissemination of such information should be computerised and there should be an online complaint forum. The users of this forum should have access to any information on health and be able to post their grievances online to the designated authority.

- **Transport and other factors affecting HCT utilisation**

The government together with the private health providers should put in place measures to improve the public transport system to enable community members to access health facilities. It is not only the renovation of the health facilities that affects the HCT service utilisation but other factors (transport etc.) are also likely to affect the HCT service utilisation in addition to the renovation status of the health facility infrastructure.

5.4 FURTHER RESEARCH

Future research as proposed below would help to generate a greater understanding of the health facility milieu and its effect on the HCT services utilisation:

- A large scale research study should be conducted to determine other factors that affect the utilisation of HCT services in all the regional health directorates in Namibia, including the Otjozondjupa Regional Health Directorate.

- Study on the investments into determining the factors that affect the HCT service utilisation other than the renovations of health facilities

- Research should be conducted into Namibia's population dynamics and the effect of the catchment population on HCT services utilisation. Coreil (2010) highlights the importance of population dynamics when asserting that, as a branch of science, demography investigates the vital statistics of the population and is an important area of research into public health because public health practice is organised around defined populations and their unique health profiles. This study identified the dynamics of the catchment population and emphasised the need for further research to be conducted into the way in which the catchment population affects the HCT service utilisation.

- The improvements required in the provision of HCT services in order to meet the increasing demand for HIV prevention, treatment and care should be explored.

- Research should be conducted into the contribution of policies and guidelines in addressing the HCT service utilisation. This would assist the policy makers on public health and interest groups, specifically as regards the HCT service, to advocate and formulate policies that would be relevant and which would be aimed at addressing the factors that affect the HCT service utilisation.

- The role of AFHS initiatives as part of HCT services should be investigated.

- The effect of the integration of HCT services into the PHC outreach services in order to increase HCT service uptake, access to as well as the provision and utilisation of high quality HCT services should be interrogated.

- Research should be conducted into the role of transport and road networks in HCT service utilisation.

- The various strategies employed to prevent HIV/AIDS and to treat and care for the HIV infected and affected persons should be examined.

5.5 LIMITATIONS

5.5.1 Limitations of the health facilities

The health facilities investigated in the study included health facilities from both the urban and the rural settings and thus it is possible that factors other than the renovation of health facilities may have affected the HCT service utilisation in different ways.

The health facilities in the rural areas are more likely to experience confounding factors such as the average distance from one health facility to the nearest health facility as compared to those in the urban areas which may be less affected by the average distance from one health facility to the nearest health facility as a confounding factor that may affect the HCT service utilisation at the health facilities in question. This is confirmed by the health and social services systems review 2008 (MoHSS, 2008b).

The organisation of the health facilities and the leadership role of the nurses in charge of the facilities were experienced as limitations during the data collection and data verification processes. One of the health facilities where data collection and data verification took place was not able to provide the HCT service facility records that the researcher required for the purposes of the facility service record review data collection and data verification processes. As a result, the requisite for this particular facility had to be obtained from the district's health information system (HIS) in order to verify the data which had been obtained from Otjozondjupa Regional Health Directorate on the HCT service utilisation at this specific health facility.

5.5.2 Limitations of the new health and social welfare facilities or services establishment criteria

The differences between the rural and urban clinics posed a challenge to the researcher as all the PHC clinics are classified under one level (class D), despite differences in location, catchment population and establishment criteria. The researcher experienced difficulties in ascertaining whether it was the renovation of the health facilities or the establishment criteria such as location, catchment population and distances that were affecting the rate of HCT service utilisation.

The policy of the MoHSS on establishing new health and social welfare facilities or services stipulates the criteria for the establishment of a new clinic or a new health centre. The policy sets different minimum requirements for rural areas and urban areas as regards the distance from the new or proposed health facility to the nearest existing health facility and the minimum population required to warrant the establishment of either a new clinic or a new health centre.

According to the policy document on establishing new health and social welfare facilities or services, a new clinic in the rural areas of the Otjozondjupa Region should not be closer than 40 kilometres to an existing health facility while a new clinic in the urban areas of the Otjozondjupa Region should not be closer than five kilometres to an existing health facility. Similarly, a new health centre in the rural areas of the Otjozondjupa Region should not be closer than 30 kilometres from the nearest hospital and 15 kilometres from the surrounding clinics while a new health centre in the urban areas of the Otjozondjupa Region should not be closer than 5 kilometres to an existing hospital.

These policy requirements may impact in different ways on the average distances from one health facility to the nearest health facility and on the catchment populations of the various health facilities in the rural and urban areas. It is possible that this may have affected the researcher's interpretation of the HCT utilisation at health facilities in different settings.

5.5.3 Limitations of the literature

The restriction that primary and secondary sources of information to be cited in a research study should not be more than 10 years old posed certain limitations. The researcher encountered challenges in obtaining literature, especially on previous research studies, on the study topic. It is stated that only sources that are regarded critical to the area of research are exempt from the restriction. There were a number of sources that did not meet the requirements set although they may have provided valuable information on various aspects of the research study.

5.5.4 Limitations relating to HCT service reporting and data availability

It was possible that there may have been problems of reliability and validity in respect of clinical records as the information in these records is collected by a number of different persons who may have different definitions and methods of obtaining data. It may thus be that errors may have occurred when the data in the clinical records was recorded. Furthermore, clinical records are not maintained for research purposes but, rather, for clinical, administrative or other purposes.

It was discovered during the pilot study in the Khomas Regional Health Directorate that the reporting format of the HCT services had changed. This change came about after the Red Cross Society had handed back the responsibility for the HCT programme to the Ministry of Health and Social Services in 2009. This created a challenge as regards retrieving data related to the study period which ranged from January 2005 to December 2011. The data that was available in the health facilities records and data bases of the Otjozondjupa Regional Health Directorate pertained mainly to the period from 2007 to 2014. The Otavi health centre was an exception as it proved to have all the data available since the inception of the HCT service and all this data was recorded in a register at the health facility.

5.5.5 Limitations relating to sample size

The small sample size used in the study might have an influence on the study's significance as a common limitation with small sample sizes.

5.7 CONCLUDING REMARKS

In conclusion, the purpose of the study was to determine the effect of the renovation of health facilities on the HCT service utilisation in the Otjozondjupa region. The research study findings revealed that there was no significant effect of the renovation of health facilities on the rate of HCT service utilisation as it was found that there were more clients that had been registered before the renovation of the health facilities as compared to the number of clients registered after the renovation of the health facilities. This was contrary to the results of previous studies which suggested that the renovation of health facilities brought about an increase in the utilisation of health services as compared to the utilisation of the health services before the renovation of health facilities and after the renovation of health facilities.

In line with the specific objectives of the study the rate of HCT service utilisation in the renovated and non-renovated health facilities, as well as the mean differences between the pre and post intervention period in the HCT service utilisation between the renovated and non-renovated health facilities were compared. The comparison between the number of registered clients before the renovation of the health facilities and the number of registered clients after the renovation of the health facilities indicated that there were 241 more HCT clients registered before renovation compared to the number of HCT clients registered after renovation. This implies no significant mean difference, as was indicated by the p-value of 0.400. As regarding to the number of clients who had been tested for HIV and received their HIV test results before the renovation of the health facilities and the number after the renovation of the health facilities, there also indicated no significant mean difference, the p-value of 0.406.

The research study carried out at the Monkey Bay Health Centre in Malawi indicated that the renovations carried out at the health centre had resulted in changes in the rate of utilisation of the health facility However, the findings of this study showed that there had been no significant changes in the rate of HCT service utilisation in the renovated and non-renovated health facilities of the Otjozondjupa region. Contrary to the findings of previous research study carried out at the Monkey Bay Health Centre in Malawi and which had suggested that the rate of service utilisation had increased after the health facilities had been renovated, this study showed a negative trend in utilisation in the before and after renovation period as more clients had utilised the HCT service before the renovations as opposed to the number after the renovations. Thus, there was no significant difference in the mean differences between the pre and post renovation periods with regard to the rate of HCT service utilisation of the renovated and non-renovated health facilities.

In addition to the effect of the renovation of health facilities on the rate of HCT service utilisation, the study found that changes in the catchment populations of the health facilities, the average distances from one health facility to the nearest health facility as well as several other factors merited consideration regarding their effect on the rate of HCT service utilisation at health facilities. The research study revealed that the catchment population of the health facilities studied had increased significantly by a margin of 1.4 from the period before the renovation of the health facilities to the period after the renovation of the health facilities. In addition, the average distances from one health facility to the nearest health facility remained high as reflected by the findings of the Ministry of Health and Social Services health system review.

The significant increase in the catchment populations of the health facilities may be an indication that a broader scale study is required to investigate the dynamics of the catchment population growth and its effect on the rate of HCT service utilisation in the health facilities to ensure that relevant measures are

put in place to make sure that the health facilities remain relevant and responsive to the changing needs of the communities they serve.

Finally, the research study findings and the conclusions drawn reflect no significant effect of the renovation of health facilities on the rate of HCT service utilisation and thus the recommendations discussed above were based on the theoretical information which was obtained from relevant literature on previous studies, related policy decisions as well as this study findings.

The aim of the recommendations was to promote the improved management of the HCT service, health infrastructure maintenance and informed decision making in planning and resource allocation related to the provision of HCT services. Specific recommendations made in the study focused on budgetary allocations for maintenance and repair to health facilities rather than renovations of health facilities, the importance of including AFHS room in HCT programmes, the reduction of the distances from one health facility to the nearest health facility and the use of various HIV testing models to boost access to HCT services. The research study's limitations were all discussed. It is believed that the study contributed to the existing body of scientific knowledge by discovering ways in which HCT services may be further improved. The study identified the dynamics of the catchment population on the HCT service, it broadened the knowledge that the renovation of health facilities has no significant effect on HCT service utilisation and it revealed that there are other factors that are also likely to impact on HCT service utilisation. In addition, the study also found that, as an integral aspect of HCT service, AFHS is an important component of any investment in the future of Namibia.

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Appendix 1: Data Collection Tool/Instrument

UNIVERSITY OF NAMIBIA

SCHOOL OF NURSING AND PUBLIC HEALTH

THE EFFECT OF HEALTH FACILITY RENOVATION ON HIV COUNSELLING AND TESTING (HCT) SERVICE UTILIZATION OF HEALTH FACILITIES IN THE OTJOZONDJUPA REGION, NAMIBIA

DATA ABSTRACTION FORM FOR RENOVATED/NON-RENOVATED HEALTH FACILITIES

Reference Number: ☐

1. INTRODUCTION

This data extraction form is to be used to assist, Jeremia Natangwe Shikulo (Mr.); a University of Namibia student studying toward a Master of Public Health to collect data on HCT (HIV Counseling and Testing) service utilization from the health facilities that have been offering HCT services during the period spanning from 2005 to 2011 in the Otjozondjupa Region, Namibia.

No references will be made to names/ identities (HCT clients) and neither will the names be included in the data base or any report. The research findings /results will be presented as aggregated data, with no reference to names.

The data will be utilized by the University of Namibia for academic purposes, Ministry of Health and Social Services and organizations supporting the HCT services for planning purposes.

2. HEATH FACILITIES LEVELS

2.1. Type of facility: Hospital ☐ PHC Centre ☐ PHC Clinic ☐

2.2. Health District: ☐

3. HCT SERVICES UTILIZATION TWO YEARS PRIOR TO RENOVATION

3.1. Number of clients registered   ☐

3.2. Number of clients tested and received results   ☐

4. HCT SERVICES UTILIZATION TWO YEARS AFTER RENOVATION

4.1. Number of clients registered   ☐

4.2. Number of clients tested and received results   ☐

5. HEALTH FACILITIES' RENOVATION STATUS

5.1. Renovated: Yes ☐ No ☐

5.2. Year of renovation(if yes in 5.1) ☐

5.3. Availability of HIV counseling rooms: Yes ☐ No ☐

5.4. Availability of HIV rapid testing rooms: Yes ☐ No ☐

5.5. Availability of Adolescents Friendly Health Services rooms: Yes ☐ No ☐

6. OTHER (Confounding Factors)

6.1. Catchment population of the facility at the start of the period under study ☐

6.2. Catchment population of the facility at the end of the period under study ☐

6.3. The average distance from this health facility to the nearest health facility ☐

Appendix 2: Ethical Clearance Certificate from the University of Namibia Research Ethics Committee

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SEC/SoNPH/39/2014   Date: 23 June, 2014

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's **Research Ethics Policy and Guidelines**. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: The Effect of Health Facility Renovation On HIV Counselling And Testing (HCT) Service Utilization of Health Facilities In The Otjozondjupa Region, Namibia
Nature/Level of Project: Masters

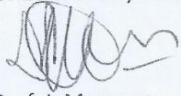**Principal Researcher**:   Jeremia Shikulo(Student Nr: 9964878)

Host Department & Faculty: School of Nursing and Public Health

Supervisor : M. Koen (Main) L. van der Westhuizen(Co)

Take note of the following:
(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
(d) The UREC retains the right to:
 (i). withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
 (ii). request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

Prof. I. Mapaure
UNAM Research Coordinator
ON BEHALF OF UREC

Appendix 3: Letter of permission/approval to conduct the research study from the Ministry of Health and Social Services

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198	Ministerial Building	Tel: 061 – 203 2125
Windhoek	Harvey Street	Fax: 061 – 222558
Namibia	Windhoek	E-mail: msimasiku@mhss.gov.na

OFFICE OF THE PERMANENT SECRETARY

Ref: 17/3/3
Enquiries: Mr. M. Simasiku

Date: 08 August 2014

Mr.Jeremia Natangwe Shikulo
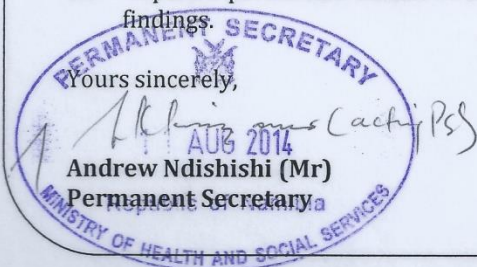**P.O. Box 63480**
Katutura
Namibia

Dear Mr. Shikulo

__Re: The effect of Health Facility Renovation on HIV Counselling and Testing (HCT) Service Utilization of Health Facilities in the Otjozondjupa Region, Namibia.__

1.   Reference is made to your application to conduct the above-mentioned study.

2.   The proposal has been evaluated and found to have merit.

3.   **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1   The data to be collected must only be used for purpose stated in proposal and the permission Requesting letter;
3.2   No other data should be collected other than the data stated in the proposal;
3.3   A quarterly report to be submitted to the Ministry's Research Unit;
3.4   Preliminary findings to be submitted upon completion of the study;
3.5   Final report to be submitted upon completion of the study;
3.6   Separate permission should be sought from the Ministry for the publication of the findings.

Yours sincerely,

Andrew Ndishishi (Mr)
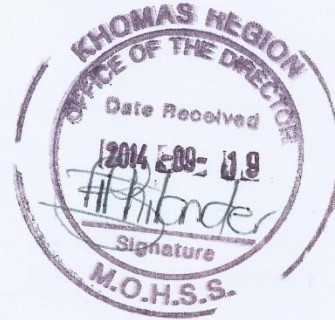**Permanent Secretary**

"Health for All"

Appendix 4: Letter for the Khomas Regional Health Directorate to grant the researcher access to

HIV Counseling and Testing Data

J. N. Shikulo
P.O.BOX 63480
Katutura, Windhoek
19 September 2014

Regional Health Director
Khomas Regional Health Directorate
Private Bag 13322
Windhoek
Namibia

Dear Ms. Muremi

**DATA COLLECTION INSTRUMENT PILOTING FOR THE RESEARCH STUDY
TITLED: THE EFFECT OF HEALTH FACILITY RENOVATION ON HIV
COUNSELING AND TESTING (HCT) SERVICE UTILIZATION OF HEALTH
FACILITIES IN THE OTJOZONDJUPA REGION, NAMIBIA.**

I, Jeremia Natangwe Shikulo; a University of Namibia student studying toward a Master of
Public Health would like to pilot the data collection instrument on HCT (HIV Counseling and
Testing) service utilization from the health facilities that have been offering HCT services during
the period spanning from 2005 to 2011 in the Khomas Region, Namibia. The actual research
study will be conducted in the Otjozondjupa Region.

I have obtained the permission to conduct the above stated research study from the Ministry of
Health and Social Services and prior to that I have received the Ethical clearance certificate from
the University of Namibia Research Ethics Committee to conduct the research project.

I would like your esteemed office to grant me access to the HIV Counseling and Testing data as
part of my study data collection instrument pilot exercise on the 2nd October 2014.

Attached please find the letter of permission to conduct the study from the Ministry of Health
and Social Services, the Ethical clearance certificate from the University of Namibia and the data
collection instrument piloting program.

Yours faithfully

....

Jeremia Natangwe Shikulo(Mr)

0812709356

Data collection Instrument Piloting programme-Khomas Region

Time	Date	Place	Activity
08h00-17h00	02 Oct 2014	Khomas Regional HCT QA office	Data collection instrument piloting
08h00-17h00	03 Oct 2014	Robert Mugabe PHC Clinic	Data verification and Revising Data collection instrument

Appendix 5: Letter for the Otjozondjupa Regional Health Directorate to grant the researcher

access to HIV Counseling and Testing Data

J. N. Shikulo
P.O.BOX 63480
Katutura, Windhoek
19 September 2014

Regional Health Director
Otjozondjupa Regional Health Directorate
Private Bag 2612
Otjiwarongo
Namibia

Dear Ms. Kavezembi

**DATA COLLECTION FOR THE RESEARCH STUDY TITLED: THE EFFECT OF
HEALTH FACILITY RENOVATION ON HIV COUNSELING AND TESTING (HCT)
SERVICE UTILIZATION OF HEALTH FACILITIES IN THE OTJOZONDJUPA
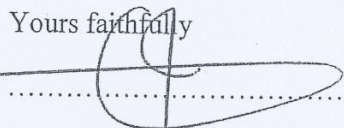REGION, NAMIBIA.**

I, Jeremia Natangwe Shikulo; a University of Namibia student studying toward a Master of
Public Health would like to collect data on HCT (HIV Counseling and Testing) service
utilization from the health facilities that have been offering HCT services during the period
spanning from 2005 to 2011 in the Otjozondjupa Region, Namibia.

I have obtained the permission to conduct the above stated research study from the Ministry of
Health and Social Services and prior to that I have received the Ethical clearance certificate from
the University of Namibia Research Ethics Committee to conduct the research project.

I would like your esteemed office to grant me access to the HIV Counseling and Testing data as
part of my study data collection exercise from the 6th October 2014 to the 10th October 2014.

Attached please find the letter of permission to conduct the study from the Ministry of Health
and Social Services, the Ethical clearance certificate from the University of Namibia and the data
collection program.

Yours faithfully

....

Jeremia Natangwe Shikulo(Mr)

0812709356

Data collection programme-Otjozondjupa Region

Time	Date	Place	Activity
08h00-17h00	06 Oct 2014	Otjozondjupa Regional HCT QA office	Data collection
08h00-17h00	07 Oct 2014	Otjozondjupa Regional HCT QA office	Data collection
08h00-17h00	08 Oct 2014	Otjozondjupa Regional HCT QA office	Data collection
08h00-17h00	09 Oct 2014	Orwetoveni PHC Clinic	Data Validation/verification
08h00-17h00	10 Oct 2014	Otavi Health Centre	Data Validation/verification