



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**ASSESSING THE ROLES OF COMMUNITY BASED SERVICE PROVIDERS AND HEALTHCARE
WORKERS IN THE PREVENTION OF RELAPSE AMONG TB INFECTED PATIENTS IN NAMIBIA**

By

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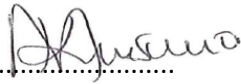
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DECLARATION

I, Milka Musuuu hereby declare that the work contained in the thesis entitled “Assessing the Impact of Community Based Service Providers in the Prevention of Relapse among TB Infected Patients in Namibia” is my own original work and that I have not previously in its entirety or in part submitted it at any university or other higher education institution for the award of a degree.

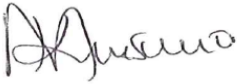
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ABSTRACT

Background: *Mycobacterium Tuberculosis* commonly referred to as (TB) is still one of the major health concerns, with high prevalence globally as well as in Namibia. While significant progress has been achieved in the prevention and treatment services of TB in the country, including use of community-based service providers and community-based health workers, the number of relapse cases remained high. The study aimed at assessing the role of Community Based Service Providers in the prevention of relapse among TB infected patients in Namibia.

Methodology: A quantitative research approach was adopted using purposive sampling method. Data was collected from three regions (Ohangwena, Khomas and Erongo). All Community Based Health Workers and Community Based Service Providers in the three regions were included in the sample. The data were analysed using SPSS software version 22.

Results: The study showed that 43% of CBHWs were employed and 57% were unemployed. Majority of CBHW respondents were female at 68% with 32% males while for CBSP respondents, 81.1% were females with 18.9% males. The CBHW's who access their clients by walking, through public transport and hospital vehicles were 72.2%, 26.2% and 1.6% respectively. All respondents (100%) agreed that the factors that militate against the effectiveness of their duties include shortage of funds for logistics, unavailability of transport, untrained CBHWs, shortage of IEC materials, lack of human resources and outdated policies used by the CBSP. The majority of respondents, 89.2%, alluded to the provision of a basic kit to CBHW and availing of transport and raising of acceptability to reduce stigma while 94.6%, indicate promotion of family & community awareness of disease prevention & care related to chronic illness will play a vital role in the improvement of health service delivery. Improvement measures showed some association with the health facility.

Discussion and Conclusion: In general, the study showed that factors such as shortage of human resources, insufficient funding, unavailability of transport, shortage of IEC materials and insufficient incentives to CBHWs are factors that hinder the effectiveness of CBO. Factors that militate against the effectiveness of the duties of CBHWs were shown to be associated with region and health facility of origin. Appropriate measures to be taken to reduce relapse among TB infected patients in these regions include introducing DOT points in different districts, establishment of elderly homes and provision of awareness on alcohol and drug abuse.

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Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
CBHW	Community Based Health workers
CBI	Community Based Intervention
CBO	Community Based Organisation
CBS	Community Based Service
CBSP	Community Based Service Providers
CCW	Community Care Workers
CDC	Communicable Disease Control
CEO	Chief Executive Officer
CHCW	Community Health Care Workers
CHW	Community Health Worker
CNR	Case Notification Rate
CSO	Civil Society Organisations
DOT	Direct Observed Treatment
DOTS	Direct Observed Treatment Short Course
EPTB	Extra Pulmonary Tuberculosis
HIV	Human Immuno Virus
IDoP	Infectious Diseases of Poverty
IEC	Information Education and Communication
KAP	Knowledge Attitude Practise
KNVC	koninklijke Nederlandse Centrale Vereniging tot bestrijding der Tuberculose (Dutch Tuberculosis Foundation)
MDR	Multi Drug Resistance
MoHSS	Ministry of Health and Social Services
NGO	Non-governmental Organisation
PTB	Pulmonary Tuberculosis
SPSS	Statistical Package for the Social Science
TB	Tuberculosis
USAID	United State Agency for International Development
WHO	World Health Organisation
XDR-TB	Extensively Drug Resistant Tuberculosis

Definitions of Terms

Tuberculosis: Tuberculosis is an infectious, chronic, acute or sub-acute notifiable disease characterised by lesion formation in the tissues and organs of the body, by far the most frequent being in the lungs which are the only source of communal spread (Kapweya 2010).

Patient: A patient is any person who is ill and received medical attention or treatment from health workers. For the purpose of this study, a patient is a person who is diagnosed and is suffering from tuberculosis.

Healthcare Workers: Healthcare workers are employed in health institutions or in the community to provide health care services, such as preventative, curative and rehabilitative services. Healthcare workers play a crucial role in implementing the DOT programme and therefore in the management of TB. For the purpose of this study, Healthcare workers are DOT Supporters, Health Extension Workers, Home-based Caregivers, and Health Educators who deal with TB patients.

Relapse: Relapse is defined as a TB patient who was declared cured or treatment completed by a physician, but who reports back to the health service and is now found to be sputum smear positive (Marx et al., 2014).

Defaulters: Are patients who interrupted treatment for two consecutive months or more, as defined by WHO and followed by (Da Silva et al., 2012).

Community Based Service Providers: These are defined as voluntary organisations or associations of community members who reflect the interests of a broader constituency. They are generally small, informal organisations, often membership based, initiated by local residents and located within the community they serve.

Adherence: Denotes the regular taking of the prescribed medications through monitoring the quantity and timing of the medication taken by the patient (Dick, Schoeman, Mohammed & Lombard, 1996).

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Mycobacterium tuberculosis commonly referred to as (TB) and Acquired-Immune-Deficiency Syndrome (AIDS) are of major health concerns at global level. Africa and Sub-Saharan part of Africa have the highest prevalence rate in the world (Dye, 2006). Namibia, with a population of about 2, 237, 894 share a good part of this prevalence, ranking 5th highest in the world (MoHSS, 2016). While significant progress has been achieved with TB/HIV treatment services, the percentage of defaulters stood at 9% and the death rate of 19% remain significantly high (MoHSS, 2015). According to WHO (2014), one third of people estimated to have been infected with TB are either not reachable for diagnosis and treatment by the current healthcare system or are not being reported. Even in patients that are identified, TB is often diagnosed and treated late.

In order to identify and access this category of TB patients early, a wide range of stakeholders involved in community-based activities needs to be engaged (WHO, 2012). Some of the stakeholders include Non-Governmental Organizations (NGOs) e.g. USAID and other Civil Society Organisations (CSOs) that are active in Community-Based Services/Development (CBS) particularly in Primary Health Care. In an attempt to improve health care service delivery, leading to higher curative rate, community-based groups were set up to ensure among other things: (i) identification of TB patients within the community (ii) registration of patients with the community primary healthcare services (iii) monitoring and ensuring adherence to treatment (iv) follow-up monitoring and (v) community mobilisation to promote effective communication and stimulate interest in TB prevention, diagnosis and treatment.

According to WHO (2014), out of 4335 bacteriologically confirmed and reported cases of TB in Namibia, a total of 1133 (26%) were incidences of relapse. In view of this high rate of relapse, it becomes necessary to evaluate the effectiveness of the healthcare service provider's structures so as to identify and make appropriate corrections and improvements. Since the Community-Based Service (CBS) providers are the primary "contact/liaison" between the patients and the community primary healthcare centres, they become the first in line to be evaluated in terms of their roles and effectiveness. In this regard, the study intends to assess the role of Community Based Service Providers (CBOs and CHCWs) in the prevention of relapse among TB infected patients in Namibia.

1.2 Statement of the Problem

The World Health Organisation (WHO), together with the Ministry of Health and Social Services (MoHSS) successfully introduced medications for people suffering from TB and HIV WHO (2014). Despite all efforts, including the setting up of CBS delivery structures to prevent development of TB drug resistance by patients due to relapse as well as TB/HIV co-infection, the rate of TB relapse remains high (MoHSS, 2015). This is an indication that the interventions have not reached the desired level of expected effectiveness. The care and support interventions are essential components of the treatment programmes. Among this is also the role of food security in enhancing retention and adherence to treatment. In addition, like other illnesses, TB and AIDs have social connotations that require strong family, friends, community and other societal institutional support (Morris, Quezada, Bhat, Moser, Smith et al., 2013). Despite the world-wide decline in TB incidence and mortality, the disease still remains the second leading cause of death (Zhang, Ehiri, Yang, Tang, LI, 2016).

One of the major reported barrier in the success of TB eradication programme is non-adherence mainly due to lack of support (Archad, Salam, Lassi, Das, Naqvi, 2014). Zhang et al. (2016) claim that drug resistance primarily arises from poor treatment adherence or incorrect drug usage. Namibia reported 9882 cases of all forms of TB (8972 of these were new and relapse cases) in 2014, translating to a case notification rate (CNR) of 442 cases per 100 000 population (MoHSS, 2014). Khomas region continues to have the highest disease burden accounting for 14% of cases reported in 2014. Other regions with relatively high TB case numbers are Ohangwena (12%), Erongo (10%) and Okavango (10%) (MoHSS, 2014). High incidence of TB and its significant financial burden makes it imperative to find a plausible strategy to cope with this disease (Archad et al., 2014). The fact that it affects lower socio-economic groups further compounds the problem. Gender inequality, social stigma and poverty are also recognised as important barriers for successful TB prevention and control programmes (Atre, Kudale, Morankar, Rangan, Weiss, 2014). Considering the above situation, it becomes imperative to assess the effectiveness of the measures directed towards preventing TB relapse among infected patients that can possibly lead to the development of resistance to medications. Directly Observed Treatment Short course (DOTS) provides a successful and cost-effective strategy to deal with the burden of TB (Archad et al., 2014). Hence, the focus of the study is to assess the roles of and possible challenges that the CBS might be encountering in the prevention of TB relapse among infected patients.

1.3 Aim of the Study

The aim of the study was to assess the roles of community-based service providers and healthcare workers in the prevention of relapse among TB infected patients in Namibia.

Study objectives include:

- To examine the impact of Community Based Structures in the prevention of TB relapse incidence among infected patients under treatment.
- To evaluate factors that are militating against proper functioning of CBS relapse among TB infected patients.
- To establish appropriate measures that will strengthen the roles of CBS in achieving its objectives.

1.4 Research Questions

- What impact does CBS have in the prevention of relapse among TB infected patients in the study area?
- Are there issues that are militating against proper functioning of CBS in the discharge of their duties?
- What measures can be taken to assist in ensuring the realisation of the purpose of the CBS programme?

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter relevant literature from various books, articles, journals and internet sources was studied in order to provide more insight into the research problem. Certain aspects of TB and DOTS as well as previous related studies were discussed in order to enhance knowledge about the problem and clarify knowledge gaps. In addition, literature review was done in order to enrich the focus of the research topic, assess research approaches used by other researchers that could be of use to the current study as well as obtain an understanding of the functions of Community Based Organisations. Kapweya (2010) defines literature review as a process that involves finding, reading, understanding and forming conclusions about the published research and theory on a particular topic.

The literature review is discussed according to the following headings:

- Tuberculosis prevalence and its relapse
- Tuberculosis treatment
- Community Based Organisations
- DOT service and patient support systems
- Activities of Community Based Health Workers

2.1.1 Tuberculosis prevalence and its relapse

Tuberculosis is a preventable, treatable and curable disease, despite that, it is still a major cause of high morbidity and mortality rate globally. It is classified as the second disease that is responsible for the cause of death worldwide. The high number of deaths attributed to TB is worrisome in view of the fact that it is a preventable disease. TB is an infectious disease caused by the bacillus *Mycobacterium tuberculosis*. It mostly affects the lungs as Pulmonary TB (PTB) but can also affect other sites as extra pulmonary TB (EPTB). The disease is spread when people who are sick with pulmonary TB expel bacteria into the air, for example by coughing (MoHSS, 2012).

In 2016, the largest number of new TB cases occurred in Asia, with 45% of new cases, followed by Africa, with 25% of new cases (WHO, 2017). According to WHO (2017) tuberculosis (TB) is one of the top 10 causes of death worldwide. In 2015, 10.4 million people fell ill with TB and 1.8 million died from the disease, over 95% of TB deaths occur in low- and middle-income countries (WHO, 2017). An estimated number of 6.4 million new cases of TB was officially reported as at 2017. However, the figure only represents 64% of the estimated 10.0 million new cases that occur in the year 2017. As a

result of the effective diagnosis and treatment programme by the WHO, about 54 million lives have been saved between years 2000-2017 (WHO, 2018).

Of major concern in the global strategy for the treatment of TB cases is the development of resistance to TB drugs by patients. These are patients that develop resistance to rifampicin which is the most effective first-line drug for TB treatment. In total, about 558,000 cases of patients who developed Multiple Drug Resistant to TB (MDR-TB) has been officially reported as at 2017 (WHO, 2018). In 2017 alone, about 160, 684 cases of MDR/RR-TB were detected and notified globally, which was a small increase from 153, 119 cases in 2016. From this, a total of 139 114 patients (87%) were enrolled on treatment with a second-line regimen, up from 129, 689 that were enrolled in 2016.

In sub-Saharan Africa, TB is the most common serious opportunistic infection and is the leading cause of death in HIV-infected adults before and while receiving highly active antiretroviral therapy (ART) (Macpherson et al., 2011). In addition, there has been an increase in number of MDR-TB and XDR-TB among HIV positive individuals, making treatment and management more difficult. From the WHO 2017 Global TB report, Namibia has the 6th highest incidence of TB in the world which was estimated at 446/100,000 population. However, incidence of TB/HIV positive cases was estimated at 171/100,000 population, representing 36% co-infection rate (PEPFAR, 2018).

Namibia, like most countries in the world, adopted the Directly Observed Treatment (DOT) strategy in order to effectively manage TB cases. Despite these strategies, high reported cases of TB-relapse due to laxity in patients' follow-up remain a challenge (MoHSS, 2012). Most of these patients may at a later stage progress and develop multi-drug resistant tuberculosis (MDR-TB). Of the 2015 TB patient cohort, Namibia had 6% cases of relapse as a result of lack of follow-up amongst the susceptible TB cases. Resistance to TB drug treatment continue to rise in Namibia with 480 estimated multi-drug resistant TB cases notified in 2017, representing 12% of previously treated cases and 3% of new cases. In 2016, the country reported 387 cases of drug resistant TB, 195 of which had multidrug resistant TB (MDR-TB) and 10 with extensively drug resistant TB (XDR-TB).

Early interventions with appropriate treatment reduce the time of infectiousness. Conversely, prolonged transmission occurs where TB goes unrecognized as well as when TB is diagnosed and treatment is initiated, but the treatment is inadequate due to improper medicine combinations, poor adherence, lower dosages and TB strains resistant to the prescribed medicines (MoHSS, 2012). The community-based health worker program is one of the measures that was adopted by

government of Namibia to improve drug compliance and reduce cases of relapse whilst overall ensuring the success of TB prevention, treatment and control programs.

2.1.2 TB treatment

Namibia adopted the DOT strategy in 1993 and in 1996, had achieved country wide coverage. The strategy has been expanded at community level with assistance from partners such as KNCV, who recruited CBHWs, called field DOT promoters or lifestyle ambassadors, who implement the strategy and educate communities on TB treatment and control. They have scaled up the success rate and helped in reducing the TB defaulter rate as well (Sagwa et al., 2012). The World Health Organization (WHO) recommends Stop TB strategy based on the Directly Observed Therapy, Short-course of Chemotherapy under guided supervision to cure the disease as well as to prevent transmission (Archad et al., 2014). According to the National Guidelines for the Management of TB, all patients are supposed to be on DOT with a treatment supporter (MoHSS, 2014). In Namibia, community-based TB care is provided by TB field promoters who are employed by community-based TB care organisations.

Archad et al. (2014), urges that Community based intervention coupled with DOTS seems to be an effective approach as they have the potential to maximize the outreach and minimise the cost. Zhang et al. (2016) also elucidates DOT as one key component of community involvement in TB control that can improve TB treatment outcomes. Poor adherence to TB treatment can lead to prolonged infection and poor treatment outcomes. Directly observed treatment seeks to improve adherence to TB treatment by directly observing patients as they take their anti-TB medication (Zhang et al. 2016). DOTS supervisors are required to encourage, observe and ensure that patients swallow their anti-TB drugs during the course of their treatment. Zhang et al. (2016) explained that a DOT supervisor can be a clinical staff member, an employer, a teacher, a family member, or lay volunteer who may be professional. Key components reported for a successful community delivery strategy to prevent TB include pre-existing TB DOTS infrastructure and adherence support from trained Community Health Workers (CHW) and family members (Ferreira, Brito, Portela, Escosteguy & Lima, 2011).

2.1.3 Community Based Organizations

Community Based Structures are organisations that empower and motivate communities to initiate activities that will promote health, reduce ill-health and mortality among children, adolescents and adults. The main aim of Community-based TB Care is to maximize treatment as close to the patient's

home as possible to avoid complications of TB and co-infection (Zvavamwe & Ehlers, 2007). These community-based organizations are formed in order to try and find solutions to pertinent health problems affecting the different communities. They also come in to complement efforts by governments in combating public health challenges. Though their operations and functions are independent, community based organisations rely on external funding from developmental agencies, donor NGOs, and sometimes governments in order to accomplish their set goals.

Mburu and Richardson (2013), states that community-based organisations train their staff on how to provide TB screening and on referring clients who have TB for proper diagnosis and treatment. They also refer HIV co-infected patients to access lifesaving antiretroviral therapy (ART) in addition to TB treatment. In Namibia, the Ministry of Health and Social Services and non-governmental organizations such as USAID, together with the TB/HIV treatment programme provides counselling, health education outreach and psychological support for patients in addition to DOT treatment (Mburu & Richardson, 2013). This is a good example of how all TB partners can work together to improve client-centered care for people with TB/HIV (WHO, 2012).

Involvement of NGOs has also been reported as an essential component of TB programs (Kamineni, Turk, Wilson, Satyanarayana, & Chauhan 2011). Community based TB care refers to the decentralised programme of TB services that is implemented at patients' settings e.g. work, home and school (Zhang et al. 2016). If Community based care services are running efficiently and are as close as possible at the household level, it will alleviate the government limitations such as shortages of resources, including staff, transport and time (Zvavamwe & Ehlers, 2007). Lack of access to care and resources will impacts negatively on patient's efforts to adhere to TB treatment (Zvavamwe & Ehlers, 2007).

One of the main challenges of TB care in Namibia is the difficulty in accessing health facilities due to the sparsely distributed population. This means that patients live in inaccessible areas which are many kilometers away from health facilities resulting in an inability to conduct follow-up visits to monitor discharged TB patients by health care workers due to lack of transport (Zvavamwe, & Ehlers 2007). Archad et al. (2014), suggest that Community Based Intervention (CBI) is effective in TB detection and treatment but its role in preventing TB cases has not been comprehensively evaluated. Overall, CBI for TB prevention and case detection showed significant increase in TB detection rates (Archad et al., 2014). He further suggests that interventions may involve community-based delivery of DOTS; community mobilisation and support; education and training; and monetary

incentives for treatment adherence. Most of the CBI utilized community health workers as part of the delivery system. Archad et al. (2014) also added that intervention for TB programmes involve community-based delivery of DOTS, community mobilization and support, education and training. Moreover, a community-based approach helps empower each community to deal with its own problems and also provides patient with a greater degree of autonomy and satisfaction with the treatment regime (Archad et al., 2014).

2.1.4 Community based health workers

Community based health workers play a crucial role in health delivery and increase and improve equitable coverage for various health programmes focusing on preventive, promotive and curative services (Maher & Cometto, 2016). Their contribution to health delivery outcomes is relevant particularly in less developed and rural areas. They are frontline health worker who are usually trusted people or members of a community with the same or similar language, culture and living within the community as the patients and whose knowledge and advised can be trusted by the community they serve. By this, they contribute to and are channels towards improved access to healthcare services (Hall & Taylor, 2003). They carry out duties within the healthcare delivery system and undergo some training in various healthcare interventions programmes. Possession of higher academic qualifications however was not a prerequisite for participation as a community healthcare worker (Lehmann et al., 2004).

CBHWs are entrusted with several functions within the communities they serve under the supervision of healthcare professionals. With very good knowledge of the community, the CBHWs tend to visit and attend to patients at homes. The basic aim of this strategy is to take healthcare delivery directly to the homes of patients who might be challenged in one way or another in accessing the central community clinic. Contributions of CBHWs are relevant to service delivery priorities of primary health care. CBHWs are considered as the agents of change in transforming community health yet they perceive challenges in field-based training, outreach team oversight and supervision by health professionals (Austin-Evelyn et al., 2017).

The Ministry of Health and Social Services (MoHSS) has been experiencing challenges to ensure equitable access to health services for families and communities. Communities especially those in rural and peri-urban areas of Namibia are underutilizing health services mainly due to poor access. This could be due to distance from service delivery points, inability to afford transport and insufficient information. Shortage of health professionals also contribute to these challenges

(Namibia Demographic Health Survey, 2013; Namibia Vision 2030, 2004). The health delivery challenges in Namibia prompted the MoHSS to adopt the CBHW program. This is a program initiated to provide comprehensive, universal, equitable and affordable health services for urban, rural and peri-urban populations. The program focuses on health promotion and –education which targets households, particularly mothers and women through house to house visits (Gebru, Taha, & Kassahun, 2014).

2.1.5 Roles and Activities of CBHWs

Community base health workers perform a variety of roles and activities dependent on the health programme being implemented, the health need of the community as well as resources at their disposable. Some of the generic roles established for CBHW include the following:

- Creating connections between vulnerable populations and healthcare systems.
- Facilitating healthcare and social service navigation.
- Managing care and care transitions for vulnerable populations.
- Reducing social isolation among patient populations.
- Determining eligibility and enrolling individuals into healthcare programs.
- Ensuring cultural competence among healthcare professionals serving vulnerable populations.
- Educating health system providers and stakeholders about community health needs.
- Providing cultural appropriate health education on topic related to chronic disease prevention, physical activity and nutrition.
- Advocating for underserved individuals to receive appropriate services
- Collecting data and relaying information to policy makers to inform policy change and development.
- Providing informal counselling, health screening and referrals to health facilities in the community.
- Building community capacity to address community health issues.
- Improving adherence to health recommendations (CHWNS, 2017).

With regards to TB treatment, prevention and control, CBHWs have been reported to perform a variety of roles that ensure treatment success and a reduction in relapse. Uwimana, Zarowsky, Hasuler, Jackson, (2012) states that CHWs can assist in creating connections in integrating TB/HIV/PMTC service delivery at the community level. Community involvement and participation have been shown to contribute greatly to the achievement of program goals such as by promoting

community awareness of disease prevention and care related to chronic illnesses (MoHSS, 2009). Community based TB treatment delivery through CBHWs does not only improved access and service utilisation but also contributed to capacity building and improving routine TB recording and reporting systems through regular supportive supervision (Archad et al 2014). Community based TB care makes it easier for patients to access treatment without travelling long distances involving transportation expenses or waiting long hours to be served at clinics thus reducing co-infection and promoting health (Zvavamwe, & Ehlers 2007).

Archad et al. (2014) clearly indicates that limited coverage of public health services has continued to impede accelerated access to TB control services due to inadequate health service infrastructure, insufficient decentralization of services and inadequate human, material and financial resources. Hence, community delivery platforms offer improved access and equitable distribution of care.

2.1.6 Challenges faced by CBHWs

The above roles of the CBHWs are quite notable in view of the drive of the government in ensuring the eradication of the menace of TB and the emergence of TB-drug resistant patients. However, there are also some challenges since the number of reported TB-relapse case was still a cause of concern to the government and health service providers. One of the identified issues that hinged on the effectiveness of the CBHWs was lack of requisite skills (technical and socio-psychological) to handle health issues that they were not trained for or did not possess knowledge. There are also other challenges that impedes CBHW from optimally performing their prescribed roles. Irrespective of their parent organization (government or non-governmental), the challenges that CBHWs face are the same. Some of the challenges include:

- Lack of standardized training programmes to ensure effective and efficient program delivery and support
- Lack of or poor supervision by health professionals to ensure maintenance of quality during delivery of CBHW functions
- Lack of adequate resources, both monetary and material, due to limited funding of host organisations.
- Poor incentives for CBHWs due to poor funding (Alam, Tasneem & Oliveras, 2012).

In light of these challenges, there was a need to investigate possible other factors that may be affecting the roles and effectiveness of the CBHWs in the discharge of their duties in view of the high number of TB-relapse cases that were reported in Namibia.

2.2 Conceptual framework

This conceptual framework of this study revolves around objectives, inputs, processes, outputs, outcome and impacts. Lassi, Salam, Das, Bhutta (2014) uses the same conceptual framework to analyse the existing community-based intervention in preventing and controlling of Infectious Diseases of Poverty (IDoPs). The framework is based on capacity building and training for the preventive and curative interventions in community settings. Community Based Interventions (CBI) include community mobilization, education and training, and referral to health facilities. Community mobilization comprises the formation of support groups, educating the community members on recognizing the danger signs as early as possible. Lassi et al. (2014) states that other CBIs are disease focused and include the provision of disease specific preventative and curative chemotherapy. These interventions when implemented in a synergistic manner will lead to positive changes at the household, community and facility levels. According to Lassi et al. (2014) these changes would in turn improve knowledge, attitude and practices (KAP), coverage and access, and lead to reduced morbidity and mortality related to Infectious Diseases of Poverty (IDoPs). Hence the study will use the same framework because Tuberculosis is rated as an infectious disease and poverty is recognized as a barrier for the success of TB prevention and control (Atre et al., 2014).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the research methodology used during this study. It includes the research design, the population of the study, the data collection procedure and the ethical considerations. The development of the data collection instrument as well as the methods for ensuring validity and reliability were also discussed.

3.2 Research Design

A research design is the complete strategy for approaching the central research problem. A research design refers to the structured approach followed by a researcher to answer a particular research question (Sagwa, et al., 2012). According to Kapweya (2010), a descriptive study aims at determining the what, when and how of a phenomenon which is the concern of this study. The quantitative descriptive survey approach was used because it enabled relatively more data to be collected in a short time using questionnaires. The survey approach was also relatively less time consuming.

3.3 The target population

The target population of this study comprised of CBHWs and CBSPs from the three regions, namely, Erongo, Ohangwena and Khomas. These regions were chosen based on the high prevalence of TB relapse cases relative to other regions (MoHSS, 2014). For the purpose of this study, both employed and unemployed CBHWs were included in the population. All the available members of the population were included in the study as the size of population was relatively small. The total population size was 163 and distributed by their region as indicated in Table 3.1.

Table 3.1 Population and sample distribution in the study

	Ohangwena	Khomas	Erongo
Working CBHW	18	17	20
Not Working (contract expires) CBHW	28	26	17
CBSP	14	11	12

3.4 The sample size and sampling procedure

A purposive sampling procedure was used to select respondents with characteristics of interest, which best answered the research questions. All available CBHWs and CBSPs were included in the study because the targeted population was small. No further sampling procedure was applied, and the total sample size was 163.

3.5 Method of data collection and procedure

Data were collected using self-administered questionnaires. A self-administered questionnaire offers the possibility of complete anonymity, which may be crucial when obtaining information about illegal, immoral, and deviant behaviours and about embarrassing characteristics (Kapweya, 2010).

There were two sets for questionnaires; one for CBHW (**Appendix A**) and the other for CBSP (**Appendix B**). The questionnaire for CBHW had six sections: section A covered demographic characteristics; section B covered information on facilitation and provision of Health Services; section C assessed the role of CBHW in the prevention and treatment of relapse in TB patients; section D covered the effect of CBHW in Health Service delivery; section E covered possible militating factors against the effectiveness of the roles of CBHW and section F covered the measures that may lead to improvement in the prevention of TB treatment. The questionnaire for CBSP had five sections: section A covered the demographic characteristics; section B covered roles of CBSP in the prevention and treatment of relapse in TB patients; section C covered the effect of CBSP in Health Service delivery; section D covered possible militating factors against the effectiveness of the roles of CBSP and lastly section E covered the measures that can lead to improvement in Health Care Service delivery.

The researcher personally hand delivered and distributed the questionnaires, and these were completed in the researcher's presence. This enabled clarification of any questions that might arise, ensure that respondents answered the questionnaire themselves and that all the questionnaires were returned. Respondents were informed that participation in the study was voluntary and that they could withdraw from the study at any stage if they so wished.

3.6 Validity of data collection instrument

Validity of data collected was attained through designing questions that cross-checked each other. The answers in some questions were used to verify and clarify earlier given answers. The questions were properly phrased and logically sequenced.

3.7 Reliability of data collection instrument

Reliability of the data collection instrument was ensured through conducting a pilot study before administering the questionnaire to the respondents. The results of the pilot study were used to make improvements and adjustments to the questions in the instrument before the instrument was finalised and printed.

3.7.1 Pilot Study

A pilot study was conducted on health workers working in Khomas region where ten randomly selected CBHWs and CBSPs completed the questionnaire. The conclusion from the pilot study was that most questions were clearly understood with no major adjustments required. A few issues were however raised and corrected especially with regards to the CBHW questionnaire. The first correction was on section D: question four, concerning the rating of the effect of CBHW work in their respective regions, 1 being low and 5 the highest, without necessary stating what the other middle figures stands for. The question responses were corrected and stated as: 5- Extraordinary, 4- Excellent, 3- Good, 2- Average and 1 being poor. The second correction was on question three; section D and question seven; section E, where the questions did not specify whether the respondents should answer yes or no, as a result the respondents were just answering the questions with a tick. Lastly some typos were rectified and missed words and space between words were inserted.

3.8 Statistical Analysis of Data

It is important to discuss the data obtained from statistical analysis for conclusions and interpretations of the results. Data analysis was done using statistical Package of Social Science (SPSS) version 22, as well as Microsoft Excel. Descriptive statistics in the form of frequency (f) and percentage (%) were used in the expression of the proportion of responses from participants and the results were shown in tables. Further analysis using inferential statistics, i.e. Pearson chi-squared (p -value) and Pearson Correlation Co-efficient (r), were applied in order to establish possible association between variables and their significance. The alpha level for all inferential analysis was set at $\alpha=0.005$. Results from these analyses were also presented in tables.

3.9 Study Limitation

Although, it was expected that respondents would answer honestly and with integrity, there was also a possibility that some might have hidden the truth when giving answers. This might affect the study results and should be considered as a study limitation. Another limitation is related to the study context as only three regions in Namibia were included and this may limit the generalization of findings to other areas that are not similar to the above regions. Lastly health workers in the pilot study were also involved in the actual research study and this may have an effect on the results; however, they could have not been left behind because the population and the sample size were the same.

3.10 Ethical Consideration

The following ethical issues were observed during the process of conducting this study:

Permission to collect data: Prior to data collection, permission to conduct this study was sought from and granted by the Permanent Secretary of the Ministry of Health and Social Services (APPENDIX C).

Privacy: Respondent's privacy was protected in such a way that they were informed that data gathered was for academic purposes and would only be shared with people involved in the research. No names or information that could identify the individual respondents was collected.

Confidentiality and anonymity: In this study respondents were informed that their identity would be protected and any information they furnished would remain anonymous because their names would not be recorded. The respondents were also informed that the data would be used for academic purposes and that no unauthorised person would have access to it.

Informed consent: Informed consent was obtained from each individual respondent prior to administering of the questionnaires. Refusal to participate was respected as participation was on a voluntarily basis. Respondents were informed that they could withdraw from the study at any stage without any consequences.

CHAPTER FOUR: RESULTS

4.0 Introduction

This chapter presents the findings of the study together with a brief synopsis of the outlook. The study set out to answer the following questions: The role of Community Based Structure in the prevention of TB relapse incidences among infected patients under treatment; Factors that are militating against proper functioning of CBS towards preventing relapse among TB infected patients and appropriate measures that will strengthen the roles of CBS in achieving its objectives. The data from the CBHW and CBSP were analysed separately. The data was analysed using Statistical Package of Social Science version 22. Analysed data from the CBHW's is presented first and then lastly the analyses data from CBSP.

4.1 Demographic characteristics

Table 4.1 presents the demographic information for CBHW in the three regions. The Table revealed that Ohangwena has the highest number of CBHW followed by Khomas and Erongo region. The contracts of CBHWs workers are sometimes renewed depending on the availability of donors. When the study was conducted, only 43% were employed and 57% were unemployed, meaning their contract had ceased. The number of female respondents were higher with 68% compared to the male respondents with 32%. Majority of respondents (96.8%) attended secondary school and 2.4% attained the tertiary level, while 0.8% dropout at primary level. Regarding their work experience, 69.8% of the CBHWs had working experience of between 1-4 years while 23.8% had 10-14 years of experience. Only two (2) CBHWs at Erongo region had over fifteen (5) years of experience while the rest did not have any at the level of years of experience. In terms of the number of clinics in each of the three regions, there were 28, 25 and 16 at Erongo, Ohangwena and Khomas regions respectively. Regarding health centres, there were 10, 18 and 25 whilst hospitals were 0, 3 and 1 for Erongo, Ohangwena and Khomas regions respectively.

Table 4.1: Demographic Information for CBHWs in the Three Regions

	Regions				
Criteria	Erongo	Ohangwena	Khomas	Total	%
<i>Gender</i>					
Male	11	16	13	40	32
Female	27	30	29	86	68
Total	38	46	42	126	100
<i>Employment Status</i>					
Employed	20	18	16	54	43
Unemployed	18	28	26	72	57
Total	38	46	42	126	100
<i>Age (in years)</i>					
20-29	0	5	6	11	8.7
30-39	20	26	30	76	60.3
40-49	17	15	6	38	30.2
> 50	1	0	0	1	0.8
Total	38	46	42	126	100
<i>Educational level</i>					
Primary	0	1	0	1	0.8
Secondary	38	44	40	122	96.8
Tertiary	0	1	2	3	2.4
Total	38	46	42	126	100
<i>Years of Experience</i>					
< 1	0	0	1	1	0.8
1-4	12	42	34	88	69.8
5-9	0	3	2	5	4.0
10-14	24	1	5	3	23.8
> 15	2	0	0	2	1.6
Total	38	46	42	126	100
<i>Health Facilities</i>					
Clinic	28	25	16	69	54.8
Health Centre	10	18	25	53	42
Hospital	0	3	1	4	3.2
Total	38	46	42	126	100

Training of CBHWs

As shown in Table 4.2, out of the sampled CBHWs in the three regions, 99.2% were trained in TB management and only 0.8% were not trained. The majority, 60.3%, were trained at the beginning of the employment period whereas 39.7% received their training through a workshop programme. Regarding duration of training, 71.4% of CBHWs training lasted for 1 week and 24.6% lasted for 2 weeks followed by 1.6% that were trained for <1 week and for 3 weeks respectively. The respondents were asked how they accessed their patients and 72.2% responded that they accessed them by walking, 26.2% reached the patients by means of public transport and 1.6% through transportation provided by the employer.

Table 4.2: Training of CBHWs

Was training given	Yes	No
	125 (99.2%)	1 (0.8%)
Form of training	Beginning of training	76 (60.3%)
	Through workshop	50 (39.7%)
Duration of training	<1week	2 (1.6%)
	1 week	90 (71.4%)
	2 weeks	31 (24.6%)
	3 weeks	2 (1.6%)
	Continuous training	1 (0.8%)
Mode of access to patients	Walking	91 (72.2%)
	Public Transport	33 (26.2%)
	Work Transport	2 (1.6%)

4.2 Roles of CBHWs in the prevention of relapse in TB patients

When it comes to the roles of CBHWs in preventing and treating TB relapse cases as presented in Table 4.3a, 47.6% agreed that they act as a bridge between the community, formal health services and other sectors, while 42.9% strongly agreed to the same statement. Regarding referring of patient/clients to clinics for treatment, 64.3% strongly agreed that it is part of their roles and 34.9% simply agreed to the same statement. On their roles in collecting and recording data to feed into the community health system, 57.9% of the respondents strongly agreed while 39.7% only agreed that it's their role. A majority, 61.1%, strongly agreed that they conduct follow up on TB patients to assess whether medications are being taken promptly and 37.3% agreed that this is part of their roles. On whether they share knowledge, 72.2% strongly agreed that they share knowledge about TB and also transfer skills to community members and 53% agreed that they recognise norms and taboos values of the community when working among them, while 4.8% neither agreed and nor disagreed to this statement. The majority, 53.9% strongly agreed that they work according to the structure of the community, 42.1% agreed and 2.4% neither agreed nor disagreed with the same statement. With regards to their roles (77.8%) strongly agreed that part of their roles is to write and submit reports and to provide feedback while (21.4%) only agreed to this. On awareness, 83.3% strongly agreed that they provide awareness related to the prevention and control of common diseases in the communities.

Table 4.3a: Summary of Roles of CBHWs in the Prevention of Relapse in TB patients

		Regions				
Criteria		Erongo	Ohangwena	Khomas	Total	%
Role agent for change	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	3	0	0	3	2.4
	A	22	23	12	57	45.2
	SA	13	23	30	66	52.4
Total		38	46	42	126	100
Act as Bridge between the community formal health services and other sectors	SD	0	0	0	0	0
	D	1	0	0	1	0.8
	N	11	0	0	11	8.7
	A	18	22	20	60	47.6
	SA	8	24	22	54	42.9
Total		38	46	42	126	100
Refer patients to client to clinics, health centres	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	1	0	0	1	0.8
	A	14	9	21	44	34.9
	SA	23	37	21	81	64.3
Total		38	46	42	126	100
Guide community in identification of their needs, prioritization & implementation of appropriate actions	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	1	1	0	2	1.6
	A	22	22	25	69	54.7
	SA	15	23	17	55	43.7
Total		38	46	42	126	100
Role in collecting and recording data to feed into community-based information system	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	3	0	0	3	2.4
	A	18	21	11	50	39.7
	SA	17	25	31	73	57.9
Total		38	46	42	126	100
Conduct follow up on TB patient to access whether medication is taken promptly	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	2	0	0	2	1.6
	A	15	15	17	47	37.3
	SA	21	31	25	77	61.1
Total		38	46		126	100

Key: SA = Strongly Agree; A = Agree; N= Neutral; D= Disagree; SD= Strongly Disagree

Table 4.3b: Summary of Roles of CBHWs in the Prevention of Relapse in TB patients

		Regions				
Criteria		Erongo	Ohangwena	Khomas	Total	%
Share knowledge and transfer skills to other community members	SD	0	0	1	1	0.8
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	27	4	3	34	27
	SA	11	42	38	91	72.2
Total		38	46	42	126	100
Attend positively to vulnerable groups	SD	0	0	0	0	0
	D	0	1	0	1	0.8
	N	1	0	0	1	0.8
	A	30	14	17	61	48.4
	SA	7	31	25	63	50
Total		38	46	42	126	100
Recognize norms & taboos values of the community	SD	1	1	0	2	1.6
	D	1	0	0	1	0.8
	N	5	1	0	6	4.8
	A	25	17	25	67	53.2
	SA	6	27	17	50	39.6
Total		38	46	42	126	100
Work according to community structure of the community	SD	1	0	0	1	0.8
	D	1	0	0	1	0.8
	N	1	1	1	3	2.4
	A	14	18	21	53	42.1
	SA	21	27	20	68	53.9
Total		38	46	42	126	100
Write and submit report and provide feedback	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	1	0	1	0.8
	A	9	7	11	27	21.4
	SA	29	38	31	98	77.8
Total		38	46	42	126	100
Support one another in volunteer roles	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	12	12	13	37	29.3
	SA	26	34	29	89	70.6
Total		38	46	42	126	100
Provide awareness related to prevention and control of CDC	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	6	10	5	21	16.7
	SA	32	36	37	105	83.3
Total		38	46	42	126	100

Key: SA = Strongly Agree; A = Agree; N= Neutral; D= Disagree; SD= Strongly Disagree

4.3 Association of roles as reported by CBHWs and demographic characteristics

Further analysis was done to check if reported roles by CBHWs vary with the region, health facility of CBHW, age of CBHW, years of experience of CHBW, gender of CBHW and employment status of CBHW. Multiway contingency tables were used to analyse the association and Pearson chi-squared test was used to test for significance of association. Table 4.3c shows the p-values obtained for each demographic variable.

Table 4.3c Association of roles of CBHWs and demographic characteristics

Roles of CBHWs:	p-Value					
	Region	Health facility	Age groups	Years of experience	Gender	Employment status
Agent for change	0.002	0.861	0.094	0.032	0.409	0.296
Act as bridge	0.000	0.002	0.001	0.000	0.575	0.078
Refer patient or client	0.022	0.028	0.287	0.700	0.791	0.495
Guide community in identification of diseases	0.672	0.001	0.326	0.006	0.574	0.201
Collect and record statistics	0.012	0.164	0.124	0.043	0.315	0.605
Follow up TB patient	0.232	0.223	0.049	0.306	0.622	0.460

Most of the roles showed significant differences across the regions with the exception of the roles 'Guide community in identification of diseases and follow up TB patients' of which variation was not significant, $p=0.672$ and $p=0.232$ respectively. The role 'Guide community in identification of diseases and act as bridge' showed significant association with the health facility ($p=0.001$ and $p=0.002$) and years of experience ($p=0.006$ and $p=0.000$) respectively. Only acting as a bridge was significantly associated with the CHBWs age ($p=0.001$). This shows that the understanding of CHBWs role is influenced to a large extent by their region of origin and to a lesser extent by their health facility, age and years of experience.

4.3.1 Correlation of findings across regions

The Pearson Correlation Co-efficient (r) was applied to establish possible relationship or association between variables from the results obtained.

Table 4.3d: Correlation of knowledge and skill transfer among CBHWs in the regions

Regions	Erongo	Ohangwena	Khomas
Erongo	1		
Ohangwena	-0.02	1	
Khomas	-0.06	0.99	1

From Table 4.3d, there was negative correlation ($r = -0.02$) between the CBHWs in the Erongo and Ohangwena regions as well as between Erongo and Khomas ($r = -0.06$). However, there was near perfect correlations ($r = 0.99$) between Ohangwena and Khomas regions. This positive and high correlation shows association i.e. possible communication among the CBHWs in the two regions.

Table 4.3e: Association of adherence of CBHWs to community Structures during discharge of duties in the regions

Regions	Erongo	Ohangwena	Khomas
Erongo	1		
Ohangwena	0.99	1	
Khomas	0.95	0.96	1

Table 4.3e revealed very strong/near perfect correlation between the CBHWs in the Erongo, Ohangwena and Khomas regions. This association shows possible communication and relationships among the CBHWs with respect to rules and regulations they might have been inducted during training. This factor is very important due to the fact that CBHWs are sometime seen as role models within the community and hence should be at the forefront of adherence to community structures in the discharge of their duties. This can alleviate one of the issues that are militating against proper functioning of CBS in the discharge of their duties.

4.4 Impact of CBHWs in Health Service delivery at community level

All Community Based Health Workers agreed that training the health workers on communicable diseases e.g. TB and improving their monthly payment will have an effect on health service delivery. In addition, 96.8% agreed that recruiting of more CBHW's to reduce the workload will have an impact on health service delivery. Apart from the above mentioned, other effects were also specified such as: provision of recharge cards for CBHWs to call their clients during follow up (47.6%), renewal of employment contracts before termination (19.8%), good network coverage in order for CBHWs to reach their client far in the villages (11.1%). When asked to rate their work, 87.3% rated the effect of their work as extra ordinary while 12.7% rated it as excellent simply because they did contact tracing (46%), provided health education (20.6%), conducted home visits (19.8%), are involved in the collection of sputum (8.7%), provision of cold jacket (4.8%) with a minority indicating that they do DOT support (1.6%).

Table 4.4: Impact of CBHWs on Health Service Delivery

		Regions				
Criteria		Erongo	Ohangwena	Khomas	Total	%
Training of CBHW on CD	Yes	38	46	42	126	100
	No	0	0	0	0	0
Total		38	46	42	126	100
Improved by monthly payment of CBHW	Yes	38	45	41	124	98.4
	No	0	1	1	2	1.6
Total		38	46	42	126	100
Recruitment of more CBHW to reduce workload	Yes	37	46	39	122	96.8
	No	1	0	3	4	3.2
Total		38	46	42	126	100
Refilling of Health Based Care kit regularly for health care workers	Yes	38	45	39	122	96.8
	No	0	1	3	4	3.2
Total		38	46	42	126	100

4.4.1 Association of reported impact of CBHWs with religion and health facility

The reported impact of CBHW across seven domains was analysed for association with the region of origin of CBHW and the health facility. Contingency tables were used to evaluate the association and Pearson chi-squared test was used to test for significance of the association. Table 4.4.1 below shows the resultant chi-squared p-values for region and health facility across the seven impacts.

Table 4.4a Association of reported impact of CBHWs with religion and health facility

Impact of CBHW	p-Value	
	Region	Health facility
Share knowledge and transfers skills	0.000	0.177
Attend to vulnerable groups	0.000	0.827
Recognize norms and taboos values	0.002	0.250
Work according to community structure	0.632	0.089
Write and submit report and provide feedback	0.503	0.000
Support one another in volunteer roles	0.827	0.505
Provide awareness related to prevention and control of CDC	0.459	0.640

The results in Table 4.4.1 show that the impact to share knowledge and transfer skills, attend to vulnerable groups and recognise norms and taboo values showed significant association with the region of origin, $p=0.000$, $p=0.000$ and $p=0.002$ respectively. This highlight that the region of origin affected significantly how the CBHWs perceived their impact. The impact to write and submit report and provide feedback was the only impact that was significantly associated with the health facility.

4.5 Possible militating factors against effectiveness of roles/duties of CBHW

Shortage of funds to reward CBHW was one of the factors that hindered effectiveness of the duties of CBHW as agreed by all respondents. In addition, all (100%) CBHWs indicated that unavailability of transport and shortage of human resources are factors that hinder the effectiveness of CBHW duties. Other factors included: shortage of IEC materials 98.4%, long distances to reach the clinics, treatment being too long and patients not feeling sick any more hence they stop taking the medication, all these were rated at 96%, while stigmatization of TB clients from community members was rated at 91.3%.

4.5.1 Association of possible militating factors against CBHWs effectiveness with region and health facility

Factors that militate against CHBWs effectiveness in their roles were further analysed to see their association with the region and health facility of origin. Multiway table was used with Pearson chi-squared test for significance. Table 4.5 shows the resultant p-values for region and health facilities for each militating factor.

Table 4.5 Association of militating factors with region and health facility

Militating factors against effectiveness:	p-Value	
	Region	Health Facility
Shortage of CBHW	0.131	0.247
Shortage of IEC materials	0.001	0.075
Long distance to clinic	0.173	0.503
Treatment too long	0.016	0.900
Patients don't feel sick anymore	0.259	0.000
Stigmatization from community	0.005	0.048

From the results in Table 4.5, shortage of IEC materials ($p=0.001$), treatment too long ($p=0.016$) and stigmatisation from community ($p=0.005$) showed significant association with the region of origin whilst patient don't feel sick anymore ($p=0.000$) and stigmatisation from community ($p=0.048$) showed significant variation with health facility. The findings showed that there were areas of similarities and differences in the reported militating factors across the regions and health facilities.

4.6 Measures to improve TB treatment and prevent relapse cases in Namibia

Table 4.6 show that 85.7% of the respondents strongly agree that provision of basic training kit will improve and prevent TB relapse cases, 87.3% believed that if the organisation can avail transport to trace patients there will be drastic improvement, while 88.9% indicated that an increase in the number of CBHWs would greatly improve service provision. Other respondent believed that proper training (87.3%) and improvement in incentives (73%) would bring a reduction in TB relapse cases.

Table 4.6: Measures to improve TB treatment and prevent relapse cases in Namibia

		Regions				
Criteria		Erongo	Ohangwena	Khomas	Total	%
Provision of basic training kit	SD	0	0	0	0	0
CBHW with conjunction with	D	0	0	0	0	0
MoHSS	N	0	0	0	0	0
	A	6	8	4	18	14.3
	SA	32	38	38	108	85.7
Total		38	46	42	126	100
Availing transport to trace TB patients	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	5	5	6	16	12.7
	SA	33	41	36	110	87.3
Total		38	46	42	126	100
Improve incentives to CBHW	SD	0	0	0	0	0
	D	0	1	1	2	1.6
	N	0	0	2	2	1.6
	A	10	9	11	30	23.8
	SA	28	36	28	92	73
Total		38	46	42	126	100
Service providers to provide training & refresher courses and supervision	SD	0	1	0	1	0.8
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	13	12	16	41	32.5
	SA	25	33	26	84	66.7
Total		38	46	42	126	100
Involve community members at all stages of the programme	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	1	0	1	2	1.6
	A	18	20	19	57	45.2
	SA	19	26	22	67	53.2
Total		38	46	42	126	100
Raise acceptability of patients by family/community hence to reduce stigma	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	1	1	2	1.6
	A	18	20	18	56	44.4
	SA	20	25	23	68	54
Total		38	46	42	126	100
Promote community awareness campaign on the prevention of TB	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	11	13	10	34	27
	SA	27	33	32	92	73
Total		38	46	42	126	100
Increase CBHW to reduce workload	SD	1	0	0	1	0.8
	D	0	0	1	1	0.8
	N	1	0	0	1	0.8
	A	4	1	6	11	8.7
	SA	32	45	35	112	88.9
Total		38	46	42	126	100
Proper training about TB to the CBHW	SD	0	0	0	0	0
	D	0	0	0	0	0
	N	0	0	0	0	0
	A	7	3	6	16	12.7
	SA	31	43	36	110	87.3
Total		38	46	42	126	100

Key: SA = Strongly Agree; A = Agree; N= Neutral; D= Disagree; SD= Strongly Disagree

4.7 Association of reported measures that lead to improvement with region and health facilities.

Measure that were indicated to lead to improvement in prevention of relapse were further analysed to check how they were associated with region and health facility of origin. Pearson chi-squared p-values were used to indicate strength of this association as shown in Table 4.7.

Table 4.7 Association of measures that lead to improvement with region and health facilities

Measures that lead to improvement	p-Value	
	Region	Health facility
Measures that lead to improvement - provision of training kit	0.546	0.033
Measures that lead to improvement - availing transport to trace patients	0.886	0.183
Measures that lead to improvement - improve incentives	0.443	0.765
Measures that lead to improvement - provision of training and supervision	0.544	0.369
Measures that lead to improvement - involve community at all stages	0.844	0.111
Measures that lead to improvement - acceptability of patients by family	0.911	0.243
Measures that lead to improvement - promote community awareness	0.849	0.046
Measures that lead to improvement - increase CBHW to reduce workload	0.192	0.777
Measures that lead to improvement - training about TB to CBHW	0.246	0.646

From Table 4.7, only provision of training kit and promotion of community awareness showed significant association with the health facility ($p=0.033$ and $p=0.046$). All other measures showed no significant variation across region or health facilities indicating that they all recommended the same measures. This means that all the regions recommended similar measures that might lead to improvement in prevention of TB relapse. However, provision of training kit and promotion of community awareness were recommended differently between hospital, health centre and clinic CBHWS which might reflect the different responsibilities of CBHWs in these facilities.

4.8 Demographic Information for CBSP

Table 4.8 shows that Ohangwena has the highest number of CBSP, 37.8%, followed by Erongo, 32.4%, and then Khomas, 29.7%. There were 18.9% male and 81.1% females. The majority, 73%, had 5-9 years working experience while 16.2% and 10.8% had 1-4 years and 10-14 years working experience. All the respondents had reached university level. The majority of the respondents, 86.5%, are based at the Health facility, 10.8% are at the hospital and only 2.7% are based at the clinic.

Table 4.8: Demographic Details of the CBSP

Criteria		Frequency	Percent (%)
Region	Erongo	12	32.4
	Ohangwena	14	37.8
	Khomas	11	29.7
	Total	37	100.0
Gender	Male	7	18.9
	Female	30	81.1
	Total	37	100.0
Age range	30-39yrs	21	56.8
	40-49yrs	16	43.2
	Total	37	100.0
Education level	Tertiary level	37	100.0
Years of experience	1-4yrs	6	16.2
	5-9yrs	27	73.0
	10-14yrs	4	10.8
	Total	37	100.0
Health Facility	Clinic	1	2.7
	Health Facility	32	86.5
	Hospital	4	10.8
	Total	37	100.0

4.9 Roles of CBSP in the prevention & treatment of relapse in the TB patients

Table 4.9 shows the different roles that the CBSP plays in the prevention and treatment of relapse cases in TB patients. The majority, 51.4%, strongly agreed that they play a role in health service delivery at grass root level while 54.1% agreed that they contribute to health quality at community level. When it comes to the roles of CBSP not being felt at community level, 59.5% agreed, 5.4% strongly disagreed and a minority 2.7% neither agreed nor disagreed. Deterioration in health services can be linked to ineffectiveness of CBSP at community level, 18% of the respondents strongly agreed and 75.7% agreed while 5.4% neither agreed nor disagreed with this statement. The majority of the respondents, 70.3%, agreed that CBSP is faced with challenges of coordination & effectiveness in complimenting health service delivery at community level when it comes to the prevention of relapse cases among TB patients and 27% strongly agreed while 2.7% neither agreed nor disagreed with the same statement.

Table 4.9: Roles of CBSP in the prevention and treatment of relapse in the TB patients

Factors	Responses					Total
	SD	D	N	A	SA	
CBSP have positive roles in health service delivery at grass root level	0	0	0	18 (48.6)	19 9 (51.4)	37 (100)
CBSP contribute to the improvement of quality health at community level	0	0	0	20	17	37 (100)
CBSP roles not adequately felt at community	2 (5.4)	0	1 (2.7)	22 (59.5)	12 (32.4)	37 (100)
Deterioration in health services can be linked to ineffectiveness of CBSP	0	0	2 (5.4)	28 (75.7)	7 (18.9)	37 (100)
CBSP is faced with challenges of coordination & effectiveness in complimenting health service delivery at community level	0	0	1 (2.7)	26 (70.3)	10 (27.0)	37 (100)
Roles of CBSP be felt by improvement of services in remote areas	0	0	0	2 (5.4)	35 (94.6)	37 (100)
Roles of CBSP be felt by streamlining and integrating services so as to be more effective	0	0	0	4 (10.8)	33 (89.2)	37 (100)
Roles of CBSP be felt by better coordination with health management authority	0	0	0	19 (51.4)	18 (48.6)	37 (100)
Roles of CBSP be felt by sets standards for CBHW guidelines development to ensure the effective implementation of quality programmes	0	0	0	13 (35.1)	24 (64.9)	37 (100)
Roles of CBSP be felt by involvement of community at all stages of the programmes	0	0	0	11 (29.7)	26 (70.3)	37 (100)
Roles of CBSP be felt by ensuring that community health and welfare are supported	2 (5.4)	0	0	3 (8.1)	32 (86.5)	37 (100)

Key: SA = Strongly Agree; A = Agree; N= Neutral; D= Disagree; SD= Strongly Disagree. Values in () = %

4.10 Possible militating factors against effectiveness of Roles/duties

Possible factors that can be affecting the organisation effectiveness were also rated by CBSP. All factors were rated at 100% meaning they all played part in hindering effectiveness of the different organisations. These factors were: shortage of funds for logistics, unavailability of transport, untrained CBHWs, shortage of IEC materials, lack of manpower (CBHW) and outdated policies used by the CBSP as shown in Table 4.10.

Table 4.10: Factors affecting effectiveness of roles of CBSP

		Region			Total
		Erongo	Ohangwena	Khomas	
Shortage of funds for logistics	Yes	12	14	11	37
Total		12	14	11	37
Unavailability of transport	Yes	12	14	11	37
Total		12	14	11	37
Untrained/unskilled CBHW	Yes	12	14	11	37
Total		12	14	11	37
Shortage of basic supplies, equipment & information Education Communication IEC materials	Yes	12	14	11	37
Total		12	14	11	37
Lack of volunteers	Yes	12	14	11	37
Total		12	14	11	37
Outdated policy of CBSP	Yes	12	14	11	37
Total		12	14	11	37

4.11 Measures that can lead to improvement in Health Care Service Delivery in Namibia

There are certain measures that can be adopted to assist in the realisation of the purpose of these healthcare service providers and hence reduce TB relapse cases in Namibia. The majority of respondents (89.2%) strongly agreed that provision of basic kit to CBHW, availing of transport and reducing stigma are some of the measures that can be taken to improve health care service delivery. Promotion of family and community awareness of disease prevention and care related to chronic illness will also play a vital role in the improvement of health service delivery (94.6%) while 91.1% agreed that involvement of community members at all stages of the programme was very important as shown in Table 4.11.

Table 4.11: Measures to improve health service delivery in Namibia

Criteria		Frequency	Percent (%)
Provision of basic kit to CBHW with conjunction with MoHSS	A	4	10.8
	SA	33	89.2
	N	0	0
	D	0	0
	SD	0	0
	Total	37	100.0
Avail transport to be used by the CBHW when tracing clients	A	4	10.8
	SA	33	89.2
	N	0	0
	D	0	0
	SD	0	0
	Total	37	100.0
Involve community at all stages of the programme	A	3	8.1
	SA	34	91.9
	N	0	0
	D	0	0
	SD	0	0
	Total	37	100.0
Raise acceptability of TB patients by family/community, hence reducing the stigma associated with TB	A	4	10.8
	SA	33	89.2
	N	0	0
	D	0	0
	SD	0	0
	Total	37	100.0
Conduct training need assessment of the community on the regular basis	A	6	16.2
	SA	31	83.8
	N	0	0
	D	0	0
	SD	0	0
	Total	37	100.0
Promote family & community awareness of disease prevention & care related to chronic illness	A	2	5.4
	SA	35	94.6
	N	0	0
	D	0	0
	SD	0	0
	Total	37	100.0

Key: SA = Strongly Agree; A = Agree; N= Neutral; D= Disagree; SD= Strongly Disagree

4.12 Safety Precautions

The respondents were also asked to indicate the safety precautions measures that are in place when CBSP are providing their service. The precautions mentioned includes provision of N95 mask when in contact with TB patients and annual TB screening of staff members. Besides these safety precautions, the CBSP also recommended appropriate measures to be taken to reduce relapse among TB infected patients in their regions. A significant 91.9% believed that having DOT points in different districts would alleviate the burden while 73% stated that there should be elderly homes in

different district to accommodate elders so that they will not be roaming around in shebeens while on treatment. A few of the respondents, 16.2%, recommended provision of awareness on alcohol and drug use especially for those suffering from TB infection as shown in Table 4.12.

Table 4.12 Safety Precautions

		Frequency	Percent
Recommend Appropriate measures to be recommended	Awareness on alcohol consumption	6	16.2
	Provide elderly homes in district	21	56.8
	Have DOT points in different districts	7	18.9
	Close contact of smear positive patients to be traced and screened	3	8.1
	Total	37	100.0

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This chapter discusses the findings of this study in line with the literature and the research questions.

5.1.1 Discussions of findings on demographic characteristics of respondents

The findings of this study revealed that 43% of CBHWs were employed and 57% were unemployed, meaning their contract has ceased at the time of the study. This is an indication that CBO depends on external funding and donors. Once the funding has stopped for the contract of CBHW's to be renewed becomes impossible until another donor comes on board. In the study conducted in Namibia by Kapweya (2010) reports that the sustainability of CBO will always be at stake once the external funding ceases. He further argues that CBO heavily depends on external funds to do their business and while this may appear effective in the short term and activities are accomplished, there seems to be no viable plan for sustainability. CBO needs to explore projects for income generation that can be used to supplement external funding and reduce dependency on NGOs and donors.

The study further shows that the majority of CBHW respondents were female (68%) with 32% males while for CBSP respondents 81.1% were females with 18.9% males. This confirms the trend that there are more female than male health workers in Namibia as reported by Sagwa et al. (2012). Kapweya (2010) also explicates that the reason why the health profession is dominated by females in particular is because it has been viewed as a female profession or domain. The study also shows that all CBSP respondents had reached university level.

With regards to accessing patients/client, the CBHW's reach their clients by walking (72.2%) no matter the distance, 26.2% reach their client by means of public transport and 1.6% by work transport. The mode of transport could have implication on the prevention and treatment of TB relapse since a lot of the patients do not have access to health facilities and the CBHW have to reach these patients by themselves without assistance from CBO. As discussed by Zvavamwe & Ehlers (2007) in the study conducted in Namibia that there is difficulty in accessing TB care as the sparsely distributed population means that many patients live in inaccessible areas many kilometres away from clinics.

5.1.2 Roles and Impact of CBHW's in the Prevention of Relapse in TB Patients

With regards to the roles and the impact of CBHW in improve health service delivery, the respondents cited training of health workers on communicable diseases e.g. TB as a major factor. The increment of monthly salary payment and recruitment of more CBHW to reduce workload was emphasised. Thus, increasing the number of CBHW, training and educating them, providing them with incentives is crucial for the community-based prevention and control of these infectious diseases (Zvavamwe, & Ehlers 2007). Provision of monetary benefits as a source of motivation is important for the successful delivery of health services at community level. The study also showed that for the health service delivery to be improved the CBHW need to be provided with mobile phone recharge cards and good mobile phone network coverage to reach their clients. There is an inability to conduct follow-up visits to monitor discharged TB patients as health care workers lack transport and communication means as supported by Zvavamwe & Ehlers (2007), thus the provision of credit cards can alleviate the problem.

The CBHWs also mentioned that they act as a bridge between the community, formal health services and other sector (47.6%). They also refer patients to clinics, 64.3%; they actively play an important role in the collection and recording of data to feed the community health system, 57.9%, and conduct follow up on TB patients to assess whether medications are taken promptly, 61.1%. As cited in the literature, Archad et al. (2014) explained that patients are assisted through their treatment regimen and encouraged to complete their treatment in order to prevent resistance to the available anti-TB drugs. The author also indicated that community-based TB treatment delivery through CBHW not only improved access and service utilization but also contribute towards capacity building and improvement in TB recording and reporting systems. However, in the current study the role of acting as a bridge varied significantly across the regions ($p=0.000$), health facility ($p=0.002$), the age groups ($p=0.001$) as well as the years of experience ($p=0.000$). More CHBW's from Ohangwena region and clinics reported this as their role compared to others, showing that there are differences in expectations towards this role in these areas. Age and years of experience indicate the level of personal and professional maturity which might influence how one perceives their roles and function with regard to acting as a bridge for CHBW's.

The result of the study also shows that 19.8% of the CBHWs appealed that their contract be renewed before being terminated. This is again due to the limited funding from the donors that makes the work of the CBO very challenging.

The majority of respondents, 87.3%, rated the effect of their work as extra ordinary while 12.7% rated it as excellent simply because they do contact tracing, 46%, provide health education, 20.6%, conduct home visits, 19.8%, are involved in the collection of sputum, 8.7% and do DOT support, 1.6%. Zhang et al. (2016) elucidates that in Canada, Directly Observed Treatment seeks to improve adherence to TB treatment by observing patients while they take their anti-TB medication.

Deterioration of health services can be linked to ineffectiveness of CBSP at community level. A high number of respondents, 75.7% and 70.3%, indicated that CBSP are faced with challenges of coordination & effectiveness in complimenting health service delivery at community level respectively. This is a problem because resource management was found to have a direct relationship with CBO effectiveness in the study conducted in Windhoek (Kapweya, 2010). Over half of the respondents, 51.4%, believed that Community Based Service Providers play a role in health service delivery at grass root level, while 54.1% indicated that they contributed to health quality at community level.

Of all the respondents in the study, 72.2% share the knowledge that they have on TB and also transfer skills to community members while 83.3% provide awareness related to the prevention and control of common diseases in the communities. According to a study done in Brazil, Da Silva et al. (2012) describes that receiving sufficient explanation on disease makes it easier for patients to understand treatment requirements, and the need to comply with TB treatment.

5.1.3 Possible militating m against effectiveness of roles/duties of CBHW

With regards to the possible factors that militate against effectiveness of the roles of CBHWs and CBSP, the findings of the study showed that shortage of funds, unavailability of transport and shortage of human resources are some of the factors that hinder effectiveness. These challenges were also encountered in the study conducted in Namibia (Zvavamwe, & Ehlers 2007). The author further stated that there is difficulty in accessing TB care as the sparsely distributed population means that many patients live in inaccessible areas many kilometres from clinics. Shortage of IEC materials to render health education and long distances to reach the clinics by patients were also reported as challenges in the current study. However, this shortage varied significantly across the regions ($P=0.001$), with more CHBWs in Ohangwena reporting this compared to other regions. This might be due to differences in allocation of resources between the regions. The National Tuberculosis and Leprosy Programme Annual Report by MoHSS (2015) also stated the distribution of IEC materials to health workers and inadequate transport as challenges. Other challenges revealed

by the current study also include stigmatization and outdated policies being used. Stigmatisation varied significantly across the regions ($p=0.005$) and health facilities ($p=0.048$) whereby more CBHWs from Erongo region and from clinics reported this as a militating factor. A study conducted in India demonstrated that despite good performance from the TB programme, stigma in TB still remains a problem and there is a need for social mobilization (Dhingira & Khan 2009). In addition, they explained that reducing TB stigma is therefore essential because it hinders care seeking, tracing infected contacts, outbreak investigations, treatment initiation, adherence, and quality of care.

Other challenges are that patients complain of treatment being too long and patients not feeling sick any more hence they stop taking the medication. Significant differences in CBHWs who reported that treatment being too long was a factor were seen between the different regions ($p=0.016$) with Ohangwena having the highest number. More CBHWs from the clinics reported 'patients don't feel sick anymore' as a factor compared to other health facilities ($p=0.000$) showing that awareness might still be a problem in the areas they serve. In the study conducted in South Africa Marx et al. (2014) argues that even when the patients start to feel better, they can still have bacteria alive in their body. Consequently, the person needs to continue the TB treatment until all the bacteria are dead. Compliance with TB treatment is the responsibility of the patient as well as the health worker, so it is imperative to support and supervise the patient and to mobilize the community on TB treatment and prevention. In Namibia, Sagwa et al. (2012) found out that one of the causes of failing to eradicate TB is the lack of knowledge among TB patients which lead to patients failing to take TB drugs regularly and efficiently to render their cure.

5.1.4 Measures to improve TB treatment and reduce relapse cases in Namibia

When CBHWs were asked about possible measures that can enhanced TB treatment and prevent relapse, the following were the responses: provision of basic training kit 85.7%, availing of transport to trace patients 87.3%, increment in the number of CBHWs 88.9%, proper training in TB management 87.3% and increment of incentives 73%. Only provision of training kit and promotion of community awareness showed significant variation with the health facility ($p=0.033$ and $p=0.046$) whereby more CBHWs from the clinic reported these compared to other health facilities. This could be an indication of disparities in allocation of resources between the health facilities. Lassi et al. (2014) and Zvavamwe & Ehlers, (2007) emphasised that increasing the number of CBHWs, training and educating them, providing them with incentives is crucial for the community-based prevention and control of these infectious diseases. However, in Kenya resource mobilization and effective internal management combined are statistically significant in relation to CBO effectiveness (Luvai,

2012). Da Silva et al. (2012) in Brazil found that inadequate knowledge is a significant factor for defaulting of patients. Receiving sufficient explanation on disease makes patients understand treatment requirements and the need to comply with TB treatment.

The following are the responses from CBSPs with regards to measures that will ensure the realisation of the healthcare service providers and hence reduce the relapse cases in Namibia: Provision of basic kit to CBHWs, availing of transport and reducing stigma among TB patients, promote family & community awareness on disease prevention and the involvement of community members at all stages of the programme. These measures are similar to interventions suggested by Archad et al. (2014) that involve community-based delivery of DOTS, community mobilization and support, education and training and monetary incentives. These interventions, when implemented in a synergistic manner, will lead to positive changes at the household, community, and facility level (Lassi et al., 2014).

These changes would in turn improve knowledge, attitude and practices, coverage and access which will lead to reduced morbidity and mortality. It is well recognised that community participation is important for the successful delivery of health services at community level (Lassi et al., 2014). KNCV (2017) and Dhingra & Khan (2009) highlighted that stigma and discrimination are recognised as some of the most common barriers to fighting the TB epidemic. Reducing TB stigma is therefore essential because it hinders care seeking, tracing of infected contacts, outbreak investigations, treatment initiation, adherence and quality of care. The study revealed that all factors that militate against the effectiveness of the duties of CBHWs are cross cutting from region to region. Factor such as the unavailability of transport and shortage of funds were rated by respondents from all three regions. From the results of the study there are no underlying factors that indicates why Khomas region was ranked number one region with the highest cases of relapse. The researcher believes that the only reason it has higher cases than the other regions could be the possibility that everyone migrates to Windhoek for better living conditions and employment resulting in a significantly higher population.

5.1.5 Safety Precautions

When asked what safety precaution measures are in place when the CBSP are providing their service, the following are the precautions that were mentioned: provision of N95 mask when in contact with TB patients and annual TB screening of staff members. Besides these safety precautions, the CBSP also recommended appropriate measures to be taken to reduce the relapse of TB infected patients in their regions. The majority of CBSP, 91.9%, stated that there should be DOT

points in different districts to alleviate the burden, 73% stated that elderly homes in different district are needed to accommodate elders so that they will not be moving around from one place to another and going to shebeens while on treatment, and provision of awareness on alcohol and drug use especially to those suffering from TB. As reported in a study conducted in South Africa, defaulters and relapse cases is a result of migration, side effects of treatment, alcohol and substance abuse (Kigozi, Heunis, Chikobvu, Botha, Rensburg, 2017). Da Silva et al. (2012) articulates that alcoholism is one of the factors related to treatment defaulter, therefore this calls for more emphasis when conducting DOT.

5.2 Conclusions

In conclusion, the study demonstrated that despite the excellent effort from the CBOs, there is still a lot to be done. CBHW were aware of their roles in health delivery and these include;

- acting as a bridge between the community, formal health services and other sector;
- referring patients to clinics;
- collection and recording of data to feed the community health system and
- Following up on TB patients.

The study revealed several factors that militate against the effectiveness of the duties of CBHWs in reducing TB relapse in the community including the following;

- shortage of human resources,
- insufficient funding,
- unavailability of transport,
- shortage of IEC materials and
- insufficient incentives to CBHW

All factors that militate against the effectiveness of the duties of CBHWs are similar from region to region. The study respondents proposed appropriate measures that can be taken to reduce TB relapse among infected patients including;

- Provision of basic kit to CBHWs;
- Availing of transport and mobile communication devices;
- Reducing stigma among TB patients;
- Promotion of family & community awareness on disease prevention;
- Having DOT points in different districts;
- Establishment of elderly homes and
- Provision of awareness on alcohol and drug usage.

5.3 Recommendations

Based on the study findings, the following recommendations are made:

- CBO need to explore income generating projects that can be used to supplement external funding and reduce dependency on NGOs and donors.
- There is a need for communication, social mobilization and advocacy to reduce stigma problem among TB patients for effective control of TB
- Health education on consequences of alcohol and drug usage while on TB treatment need to be carried out.
- Establishment of Tuberculosis Sanatoriums so as to confine the elderly in these homes thus make the supervisions of treatment effective.
- Need for constant policy review on TB treatment and control.

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APPENDICES

APPENDIX A: RESEARCH QUESTIONNAIRE FOR CBHW

NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH AND APPLIED SCIENCES; DEPARTMENT OF HEALTH SCIENCES

RESEARCH QUESTIONNAIRE

(For Community Based Healthcare Workers)

RESEARCH TITLE: ASSESSMENT OF THE ROLES OF COMMUNITY BASED SERVICE PROVIDERS AND HEALTHCARE WORKERS IN THE PREVENTION OF RELAPSE AMONG TB INFECTED PATIENTS IN NAMIBIA

Questionnaire ID:

Date of Interview:

Region:

Health Facility:

CONSENT OF PARTICIPATION IN THE STUDY

Dear Respondent,

My name is Miss Milka Musuuu, studying towards Master of Health Science at Namibia University of Science and Technology. This questionnaire is intended to assess the roles of Community Based Service Providers and those of the Healthcare Workers in the Prevention of Relapse among TB infected Patients in Khomas, Ohangwena and Erongo regions of Namibia.

Please do not write your name on the questionnaire to maintain and assure complete anonymity. Participation in this survey is completely voluntary and you have the right not to provide answer to any question(s) that you do not wish to respond.

I hereby affirm that I am willing to participate voluntarily in this study and I have the right to withdraw from participating at any time during the study without giving reasons thereto.

Signature.....

General instruction:

- i. Answer all questions by ticking in the appropriate box or filling in the answer in the blank space provided.
- ii. Please, do not provide your name.

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

1. **Gender:**(a) Male [] (b) Female []
2. **Kindly indicate the age group you belong:** (a) Less than 20 years []; (b) 20 – 29 years []; (c) 30-39 years []; (d) 40 – 49 years []; (e) 50 years and above []

3. **To which category of health workers did you belong?**

a	Community Based Health Workers	
b	DOT supporter	
c	Health Extension Worker	
d	Home-Based Caregivers	
e	Peer Counsellors	
f	Health Educators	
g	Others	

If others, please specify:

4. **Kindly indicate your educational level**

a	Never attended school	
b	Primary school level	
c	Secondary school level	
d	Tertiary level	
e	Others	

If others, please specify:

5. **How many years of experience do you have as health worker?**
(a) Less than 1 year []; (b) 1-4 years []; (c) 5-9 years []; (d) 10-14 years []; (e) 15 and above []
6. **Which type of health facility are you affiliated to?**
(a) Clinic []; (b) Health Centre []; (c) Hospital []

SECTION B: CAPACITY OF FACILITATION AND PROVISION OF SERVICES

7. Have you ever been trained in TB management? (a) Yes [] (b) No []

If “Yes”, in which form did you receive the training?

- (a) At the beginning of the employment []; (b) Through a workshop [] (c) Others []

If others, please specify:

8. **Kindly indicate the duration of the training**

(a) Less than a week []; (b) one week []; (c) 2 weeks []; (d) 3 weeks []; (e) Others []

If others, please specify:

9. How do you access or get to your patients?

(a) By walking []; (b) Use of bicycle []; (c) By public transport []; (d) Work transport []

(e) Others []

If others, please specify:

SECTION C

Roles of CBHW in the prevention and treatment of Relapse in the TB patients

1. How would you rate the role of your organisation as a CBHWs in the?

Use the options below to answer questions I- V. [write the chosen number in the box]

5= strongly agree, 4 = agree; 3 = neither agree nor disagree, 2 = Disagree, 1 =strongly disagree

i.	Act as agents for change & promotes activities for development - from encouraging literacy to raising awareness on health & wellness needs	
ii.	Act as a bridge between the community, formal health services & other sectors. To participate in outreach services & mobile clinics	
iii.	Refer patients/clients to clinics, health centers & other related services if & when necessary	
iv.	Guide the community in the identification of their needs, prioritization & implementation of appropriate actions	
v	Play a role in collecting & recording data to feed into community based information system through the nearest health facilities	
vi	Conduct follow up on TB patients to assess whether medication are taken promptly	

2. The roles and impacts of CBHWs be felt more by:

(Please, indicate how much you agree or disagree with the following statements:

	SA	A	NA/ ND	D	SD
Share knowledge that they have & transfer their skills to other community members e.g. household care givers					
Attend positively to vulnerable groups					
Recognize the norms, values & taboos of the community					
Work according to the structure of the community					
Write & submit regular reports as necessary & provide feedback					
Support one another in the volunteer roles					
Provide awareness related to the prevention & control of common diseases in the communities					

Section D: Effect/impact of CBHW in health services delivery at the community level

3. Can service delivery be improved through implementation of the following? **(Yes/No)**

I	Training of CBHW on communicable diseases e.g. TB	
li	Provision of transport to the CBHW contact tracing on their patients	
lii	Monthly payment of CBHW to motivate them	
v	Recruit more CBHW to reduce the workload	
vi	Refilling of Health Based Care (HBC) kit regularly for Healthcare workers	
v	Specify others	

4. How would you rate the effects/impacts of your work as CBHW in your region? Rate at a scale of 1-5 (1=poor; 2 = Average; 3= Good; 4= Excellent and 5 = Extraordinary)

.....Please
motivate your answer

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5. Are there any local interference in the execution of your duties as CBHWs? Yes [] No []

6. If answer to (5) above is “Yes”, can any of the items below be contributing factors? **(may choose more than one)**

i	Tb is contagious	
li	Lack of knowledge on TB	
lii	TB patients not often cooperative	
iv	No proper reward at the end of the month	
v	Dot is time consuming	
vi	Not interested in managing TB patients	
vii	Travelling distance is far to reach the patients	

Others (please, specify):
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.....

Research question 2:

Are there issues that are militating against the roles or effectiveness of the CBHWs in the discharge of their duties?

Section E: Possible militating factors against effectiveness of roles/duties

7. Could any of the factors below be affecting your organisation effectiveness? (Yes/No)

i	Shortage of funds to reward the CBHW	
ii	Unavailability of transport	
iii	Shortage of CBHW	
iv	Shortage of basic supplies, equipment's and Information Education Communication (IEC) materials to conduct proper awareness in the community	
v	Long distances to clinic	
vi	Treatment is too long	
vii	Patients/clients do not feel sick anymore	
viii	Stigmatization of TB from community members	

Others (please, specify):

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Research question 3:

What measures can be deduced to assist in ensuring the realisation of the purpose of these Healthcare Service Providers and hence, influence policy review?

Section F: Measures that can lead to improvement in the prevention of TB treatment & relapse cases in Namibia

8. What measures can be taken to improve health care service delivery in Namibia

TICK THE MOST APPRIOPRATE ANSWER TO YOU.

(SA = STRONGLY AGREE; A = AGREE; NA/ND = NEITHER AGREE/NOR DISAGREE; D = DISAGREE; SD = STRONGLY DISAGREE)

	STATEMENTS	SA	A	NA/ND	D	SD
1	Provision of basic training kit to CBHW with conjunction with MoHSS					
2	Avail transport to be used by the CBHW when tracing their clients					
3	Improves incentives to the CBHW					
4	Service providers to provide training, refresher courses and supportive supervision to CBHW for capacity building					
5	Involve community members at all stages of the programme					
6	Raise the acceptability of TB patients by family/community, hence reducing the stigma associated with TB					
7	Promote family & community awareness campaign on the prevention of TB					
8	Increase the number of CBHW to reduce the workload					
9	Proper training about TB to the CBHW					

THANK YOU FOR PARTICIPATING IN THE STUDY!!

APPENDIX B: RESEARCH QUESTIONNAIRE FOR CBSP

NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH AND APPLIED SCIENCES; DEPARTMENT OF HEALTH SCIENCES

RESEARCH QUESTIONNAIRE

(For Community Based Service Providers)

RESEARCH TITLE: ASSESSMENT OF THE ROLES OF COMMUNITY BASED SERVICE PROVIDERS AND HEALTHCARE WORKERS IN THE PREVENTION OF RELAPSE AMONG TB INFECTED PATIENTS IN NAMIBIA

Questionnaire ID:

Date of Interview:

Region:

Health Facility:

CONSENT OF PARTICIPATION IN THE STUDY

Dear Respondent

My name is Miss Milka Musuuu, studying towards Master of Health Science at Namibia University of Science and Technology. This questionnaire is intended to assess the roles of Community Based Service Providers and those of the Healthcare Workers in the Prevention of Relapse among TB infected Patients in Khomas, Ohangwena and Erongo of Namibia.

Please do not write your name on the questionnaire to maintain and assure complete anonymity. Participation in this survey is completely voluntary and you have the right not to provide answer to any question(s) that you do not wish to respond.

I hereby affirm that I am willing to participate voluntarily in this study and I have the right to withdraw from participating at any time during the study without giving reasons thereto.

Signature.....

General instruction:

- iii. Answer all questions by ticking in the appropriate box or filling in the answer in the blank space provided.
- iv. Please, do not provide your name

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

3. **1. Gender:**(a) Male [] (b) Female []

2. WHAT IS YOUR AGE RANGE?

(a) Less than 20 years []; (b) 20-29 years []; (c) 30-39 years []; (d) 40-49 years []
(e) 50 and above years []

3. EDUCATIONAL LEVEL

(a) Never attended school []; (b) Primary school level []; (c) Secondary school level []; (d) Tertiary level [] (e) Others []

If others, please specify:

4. YEARS OF EXPERIENCE AS A CBSP-staff

(a) Less than 1 year []; (b) 1-4 years []; (c) 5-9 years []; (d) 10-14 years [] (e) 15 and above []

5. TYPE OF HEALTH FACILITY

(a) Clinic []; (b) Health Centre []; (c) Hospital []; (d) Other []

If others, please specify:

SECTION B: Roles of CBSPs in the prevention and treatment of Relapse in the TB patients

3. How would you rate the performance of your organisation as a CBSP in the prevention of TB relapse cases in your region?

Use the options below to answer questions I- V. [write the chosen number in the box]

5= strongly agree, 4 = agree; 3 = neither agree nor disagree, 2 = Disagree, 1 =strongly disagree

i.	CBSPs have positive roles to play in health services at the grass root level	
ii.	CBSP contribute to improved quality of health at community level	
iii.	CBSP's role and impact have not adequately been felt at community level.	
iv.	Deterioration in health services (e.g. high TB relapse) can also be linked to ineffectiveness of CBSPs	
v	CBSPs is faced with internal challenges of coordination and effectiveness in complimenting health service delivery at community level	

4. The roles of CBSPs can be felt more by:

(Please, indicate how much you agree or disagree with the following statements:

	SA	A	NA/ DisA	D	SD
Improvement in capacity of services in remote areas					
Streamlining and integrating service so as to be more effective					
Provide simpler access and enhance better co-ordination with local health management authority					
Set standards for CBHC guidelines development to ensure the effective implementation of quality programmes					
Involvement of community at all stages of the programmes					
Working in partnership with MoHSS to provide tools for the volunteers					
Increase awareness & knowledge related to the prevention, treatment, care & rehabilitation of most common diseases in communities					
Ensure that community & households attitudes & practices are improved through health education					
Ensure that community health & welfare initiatives are supported & ill health prevented					
SA = Strongly Agree; A = Agree; NA/DisA = Neither Agree Nor Dis Agree, D = Disagree and SD = Strongly disagree					

Section C: Effect/impact of CBCPs in health services delivery at the community level

1. The following factors/issues may affect the quality and effectiveness of CBSPs in Health Care service delivery

i.	Inadequate human resources to plan, organize & recommend CBHC activities	
ii.	Partnerships and relationships with other parts of the health system	
iii.	Pressure on expectations from the community prioritized needs	
iv.	High number of health projects compared to available financial resources	
v.	Financial resources, supplies & transport to implement CBHC activities	
vi.	Shortage of funding	
vii.	Lack of enough number of local volunteers	
viii.	Costs and logistics of covering patients in small and dispersed population	
ix.	Lack of enthusiasm and support from local residents/community members	
x.	Lack of transport to reach the community members	

2. Can service delivery be improved through implementation of the following?

i.	Distances covered with remote service delivery	
ii.	Adequate costs and logistics of covering patients in small and dispersed population	
iii.	Enduring issues in recent years include lack of expertise and capacity at the local level	
iv.	Disbursement of funding	
v.	Sufficient number of local volunteers	
vi.	Refilling of Health Based Care kit regularly for Healthcare workers	

3. Are there any local interference in the execution of your duties as CBSP? Yes [] No []
4. If answer to (5) above is “Yes”, can any of the items below be contributing factors? **(may choose more than one)**

i.	Interference from government agencies	
ii.	Non-flexibility of the National Policy on CBSPs	
iii.	Lack of adequate support from local/district hospital management	
iv.	Variations in the ways how Volunteers are rewarded from different CBSPs	
v.	Lack of appropriate & reliable indicator to guide, monitor & evaluate CBHC activities	

5. Do you think there are any problems in the current service delivery process?

i	Lack of adequate capacity at the local level e.g. community	
ii	Ineffective mode of current service delivery	
iii.	Lack of coordination, management & planning for CBHC activities	
iv.	Outdated legislation to guide the CBHS activities	

Research question 2:

Are there issues that are militating against the roles or effectiveness of the CBSPs and CBHWs in the discharge of their duties?

Section D: Possible militating factors against effectiveness of roles/duties

1. Could any of the factors below be affecting your organisation effectiveness?

i	Shortage of funds for logistics	
ii	Unavailability of transport	
iii	Untrained/unskilled CBHW	
iv	Shortage of basic supplies, equipment's and Information Education Communication (IEC) materials	
v	Lack of volunteers	
vi	Outdated policy o CBSPs	

Others (please, specify):

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Research question 3:

What measures can be deduced to assist in ensuring the realisation of the purpose of these Healthcare Service Providers and hence, influence policy review?

Section E: Measures that can lead to improvement in health care service delivery in Namibia

1. What measures can be taken to improve health care service delivery in Namibia?

TICK THE MOST APPRIOPRATE ANSWER TO YOU.

(SA = STRONGLY AGREE; A = AGREE; NA/ND = NEITHER AGREE/NOR DISAGREE; D = DISAGREE; SD = STRONGLY DISAGREE)

	STATEMENTS	SA	A	NA/ND	D	SD
i.	Provision of basic training kit to CBHW with conjunction with MoHSS					
ii.	Avail transport to be used by the CBHW when tracing clients					
iii.	Provide incentives to the CBHW					
iv.	Service providers to provide training, refresher courses and supportive supervision to CBHW for capacity building					
v.	Involve community members at all stages of the programme					
vi.	Conduct a training need assessment of the community on the regular basis					
vii.	Raise the acceptability of TB patients by family/community, hence reducing the stigma associated with TB					
viii.	Promote family & community awareness of disease prevention & care related to chronic illness					

2. ANY SAFETY PRECAUTIONAERY MEASURES IN PLACE WHEN PROVIDING SERVICE?

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3. RECOMMEND APPROPRIATE MEASURES TO REDUCE THE RELAPSE OF TB INFECTED PATIENTS IN YOUR REGOIN/COUNTRY?

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APPENDIX C: PERMISSION LETTER FROM MOHSS



REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: 061 – 2032537
Fax: 061 – 222558
Email: shimenghipangelwa71@gmail.com

OFFICE OF THE PERMANENT SECRETARY

Ref: 18/3/3 MM

Enquiries: Mr. J. Nghipangelwa

Date 06 February 2018

Ms. Milka Musuuo
NUST
Windhoek

Dear Ms. Musuuo

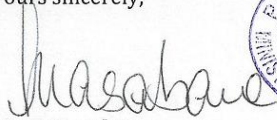
RE: Assessment of the roles of Community Based Services and Health Care Workers in the prevention of relapse among TB infected patients in Namibia

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 academic purposes;
 - 3.2 No other data should be collected other than the data stated in the proposal;
 - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects' should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;
 - 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
 - 3.5 Preliminary findings to be submitted upon completion of the study;

3.6 Final report to be submitted upon completion of the study;

3.7 Separate permission should be sought from the Ministry of Health and Social Services for the publication of the findings.

Yours sincerely,



Ms. P Masabane
Acting Permanent Secretary

