ASSESSMENT OF HEALTH SYSTEM FACTORS INFLUENCING TREATMENT OF MULT-DRUG RESISTANT TUBERCULOSIS: A CASE OF AMBULATORY AND HOSPITAL BASED CARE MODELS

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By

Ramla Nandala

A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Arts (Health Policy and Management) of

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled ***''Assessment of Health system factors influencing treatment of multi-drug resistant tuberculosis: a case of ambulatory and hospital based care models''***, in (partial) fulfillment of the requirements for the degree of Master of Arts (Health Policy and Management) of Muhimbili University of Health and Allied Sciences.

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Prof. Angwara Kiwara

(Supervisor)

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Date

DECLARATION AND COPYRIGHT

I, **Ramla Nandala,** declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature…….. **Date**……

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DEDICATION

I dedicate my dissertation work to my Husband, Solomon Thomas Mwenda: His words of encouragement continue to ring in my ears. I also dedicate this work and give special thanks to my wonderful children Ryan and Jovial, my sisters Rehema, Rabia, Latifa and brother Salum not forgetting my Lovely mother Zainabu Nandala for her support in all the ways she could and being there for me, their tolerance and unconditional support throughout the entire study period.

ABSTRACT

Background

The two approaches, i.e. Ambulatory and Hospital Care models used in the treatment of multi-drug resistant tuberculosis require a functioning health care system with a multidisciplinary team of providers, including physicians, pharmacists, laboratory experts, nurses, social workers, community health workers and volunteers.

Aim: This study was intended to assess factors in the health system influencing treatment of multi-drug resistant tuberculosis in ambulatory and hospital care model.

Methodology: A cross sectional study design was used to gather information from respondents in the hospital and ambulatory models. A qualitative study design was used in three districts of Dar es Salaam Region and Kibongoto Infectious disease Hospital. Purposeful sampling was used in selecting the three districts of Ilala (Ukonga Prisons Health Centre), Temeke (Rangi Tatu Health Centre) and Kinondoni (Sinza Health Centre) which are in Dar es Salaam Region and have MDR-TB patients. Sample of 24 respondents was purposefully selected based on their position they hold in their institution: include 2 Clinicians, 2 nurses who were working at the TB Clinic or TB ward, 1 CHMT members (DTLC) and staff at (2 Laboratory, 2 Pharmacy). In depth interview of key informants was the method used to collect data by using interview guide and digital tape recorder to record the conversations.

Results: The findings of this study revealed that the decentralisation of MDR TB Services is a new approach and hence the health workers do not yet have experience on management of the ambulatory model in all departments.

Health workers are afraid of working in the TB department for the reason that they may contract the disease. On integration of service delivery points is excellent as patients turn up from other departments and there is no discrimination. Due to the layout of the infrastructures, i.e. waiting area, injection room, and dispensing room) in our health facilities, the threat of spreading infection is high.

Conclusion: The study has shown that both ambulatory and hospital models are needed and they are both accepted by the community members. However, there are barriers that should be overcome and strategic initiatives should be adopted to address those challenges in a timely manner, especially in the new ambulatory model.

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

AFB	Acid fast bacilli
CHMT	Council health management Team
CMO	Community mobilization officer
DOT	Directly observed therapy
IC	Infection Control
KIDH	Kibong'oto Infectious Diseases hospital
MDR TB	Multi Drug Resistant Tuberculosis
MoHCDGEC	Ministry of Health Community Development, Gender, Elderly and children
PCT	Patient centered treatment
PO-RALG	President's Office-Regional Administration and Local Government
SOP	Standard Operational Procedure
TB	Tuberculosis
XDR TB	Extensively drug resistant tuberculosis

DEFINITION OF TERMS

Tuberculosis

According to WHO (2016), Tuberculosis (TB) is caused by bacteria (Mycobacterium tuberculosis) that most often affect the lungs. Tuberculosis is curable and preventable. TB spreads from person to person through air. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air.

Multi drug resistant

The bacteria that cause tuberculosis (TB) can develop resistance to the antimicrobial drugs used to cure the disease. Multi-drug-resistant TB (MDR-TB) is TB that does not respond to at least isoniazid and rifampicin, the two most powerful anti-TB drugs.

Extensively drug resistant tuberculosis (XDR-TB)

Is defined as resistance to rifampicin, isoniazid, any fluoroquinolone and resistance to one or more of the following injectable anti-TB drugs: kanamycin, amikacin, and capreomycin.

Hospital based model

This is the model where patients stay in hospital only to receive treatment until the end of the intensive phase or until they convert to smear negative/culture negative status.

Ambulatory care

Is the care that takes place as a day attendance at a health care facility or at the patient's home. Patients care is provided on an outpatient basis, including diagnosis, observation, consultation, treatment, intervention, and rehabilitation services.

Health system

Is defined as the organization of people, institutions, and resources that deliver health care services to meet the health needs of target populations.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Multi-drug-resistant tuberculosis (MDR-TB) is tuberculosis that does not respond to at least Isoniazid and Rifampicin, the two most powerful anti-TB drugs. Inappropriate or incorrect use of antimicrobial drugs or ineffective formulations of drugs (e.g. use of single drug or poor quality medicines), improper treatment of patients including premature treatment interruption, poor management of supplies, can cause drug resistance, which can then be transmitted, especially in crowded settings such as prisons and hospitals (1).

Globally, in 2014, there was an estimated 3.3% of new cases and 20% of previously treated cases with MDR-TB. Drug resistance surveillance data shows that an estimated 480,000 people developed MDR-TB in 2014 and 190,000 people died. A total of 300,000 cases of MDR-TB patients were reported by national TB programmes in 2014 (2). Drug-resistant TB (XDR-TB) was extensively reported by 105 countries in 2014. On average, an estimated 9.7% of people with MDR-TB have XDR-TB.(3)

South Africa has one of the largest drug-resistant TB epidemics in the world, whereby KwaZulu-Natal Province has emerged as a global hotspot of the TB, drug-resistant TB, and MDR-TB mortality rates of 71%. Also Kenya is one of the high TB burden and MDR TB case. The estimation of TB burden in 2015 was 4.3 per 100,000 people, of which MDR TB cases among notified pulmonary TB cases were 1,400; previously treated cases were 9.4% and new cases were 1.3%. The MDR-TB team established community-based programmes with either home-based DOT or local facility-based DOT (4).

Tanzania's health system is complex and works in an environment of Very limited financial and human resources. The ongoing process of Decentralization by D evolution (D by D) adds a layer of complexity that stretches the managerial ability of staff to coordinate across different ministries and fulfill their roles within the Ministry of Health a, community Development, Gender, Elderly and children (MoHCDGEC) and Prime Minister's Office-Regional Administration and Local Government (PMO-RALG) structures.(5)

A good health system delivers quality services to all people, when and where they need them. The exact configuration of services varies from country to country, but in all cases requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; well-maintained facilities and logistics to deliver quality medicines and technologies.(6)

Tanzania is one of the 30 high TB burden countries in the World and has the 6th highest TB burden in Africa. At global level in 2015, there were an estimated 480,000 new cases of MDR-TB and an additional 100,000 people with rifampicin-resistant TB who were also newly eligible for MDR-TB treatment (7).

Tanzania launched *Programmatic Management of Multi-Drug Resistant TB (PMDT)* in 2009 with centralised patient management at Kibong'oto Infectious Disease Hospital. The model of treatment adopted was admission of all identified MDR TB patients for 8 months for the intensive phase followed by a 12-month ambulatory continuation phase (8) The MoHCDGEC through the National TB and Leprosy Programme (NTLP) is currently implementing scale-up of treatment for diagnosed MDR TB cases.

Under current arrangements TB patients have been managed through a Patient Centred Treatment (PCT) approach countrywide. Patients are given an option to choose where they would like to be supervised during their daily TB treatment - whether at a health facility (facility-based DOT) or at home (home-based DOT). Besides, patients have the liberty to choose a treatment supporter (5). The backbone of ambulatory-based MDR-TB care is often an ambulatory MDR-TB supporter, who may come from the same neighbourhood where the patient lives. Ambulatory MDR-TB supporters must respect and preserve patient confidentiality at all times, educate the community on MDR TB, and help to reduce stigma surrounding the disease (9).

On hospital-based model of MDR-TB treatment and care, patients stay in hospital only to receive treatment until the end of the intensive phase or until they convert to smear negative/culture negative status. Resources to be considered are hospital bed occupancy, and respiratory isolation rooms for all patients who remain smear positive/culture positive (10).

In both models, staff needs to be trained and adhere to administrative protocols for TB infection control. Sufficient staff should be available to guarantee management of all patients, open and safe space should be available for patients to socialise and conduct occupational therapy activities. In hospital, protocols must be in place for effective communication and coordination with laboratories during treatment and with peripheral units receiving patients after being discharged from hospital (10). Whichever model is chosen to provide treatment for drug-resistant TB, care should be delivered by a multidisciplinary team of providers. The roles and responsibilities of each of these groups of providers will vary depending on the needs and resources available in specific settings (9).

Now in Tanzania there the ambulatory service has been introduced for the initiation phase (phased-implementation) in Kigoma, Dodoma, Kagera, Mwanza, Morogoro, Arusha, and Dar es Salaam (Kinondoni, Temeke and Ilala). All places in which the ambulatory care model has started treatment of MDR TB, there were 133 patients up to 30th September 2016 (8).

1.2 Problem statement

In Tanzania, the number of MDR TB cases detected increased exponentially every year from 15 MDR TB cases in 2009 to 272 in 2015. Global TB reports by WHO in 2014 estimated the annual MDR TB burden in Tanzania to be 500 cases. The model of MDR-TB treatment has been hospital-based, with patients admitted at Kibong'oto for the intensive and long phase of treatment which usually means a minimum of 8 months (11). Kibong'oto National TB hospital has a limited bed capacity of 90 beds to accommodate all estimated MDR TB cases in the country (8). The need to improve access to care for patients with multi-drug resistant tuberculosis (MDR TB) is a major concern.

A total of 380 MDR TB cases have been enrolled for treatment from 2009 to 2017 and for 2014 alone a total of 143 MDR TB patients were enrolled on 2nd line treatment (1). The NTLP intends to provide MDR TB services using a model that reduces hospital admission to a minimum and mainly shifting treatment to an ambulatory basis, with more emphasis on community engagement (8). The approach will require close monitoring for potential side effects, access to necessary monitoring tests and provision of health education and counselling to the patient, MDR TB treatment supporter and the family. Increasing skills and human resources at the local level will also strengthen MDR TB suspect identification and scale-up intensified case finding through MDR TB contract investigation (6).

Other low resource countries like Kenya and Uganda have recorded higher success and are having better outcome in the management of MDR TB patients using ambulatory model.

Research done in Kenya and Uganda indicates that the success there is attributable to well-functioning points of integration of service delivery, available health workers with experience, and workers who support the approach (12).

Given the decision taken by the NLTP, and the fact that Tanzania is also a low resource country, this research sought to assess purposively selected areas in Tanzania in relation to the factors, points of integration of service, infrastructure, availability of health workers and perceived benefits of health workers, in implementing the ambulatory model which has led to better performance in Kenya and Uganda. This research has contributed to information on how to implement the new approach to manage MDR TB in Tanzania. Below is a figure that represents the conceptual framework of the study.

1.3 Conceptual framework

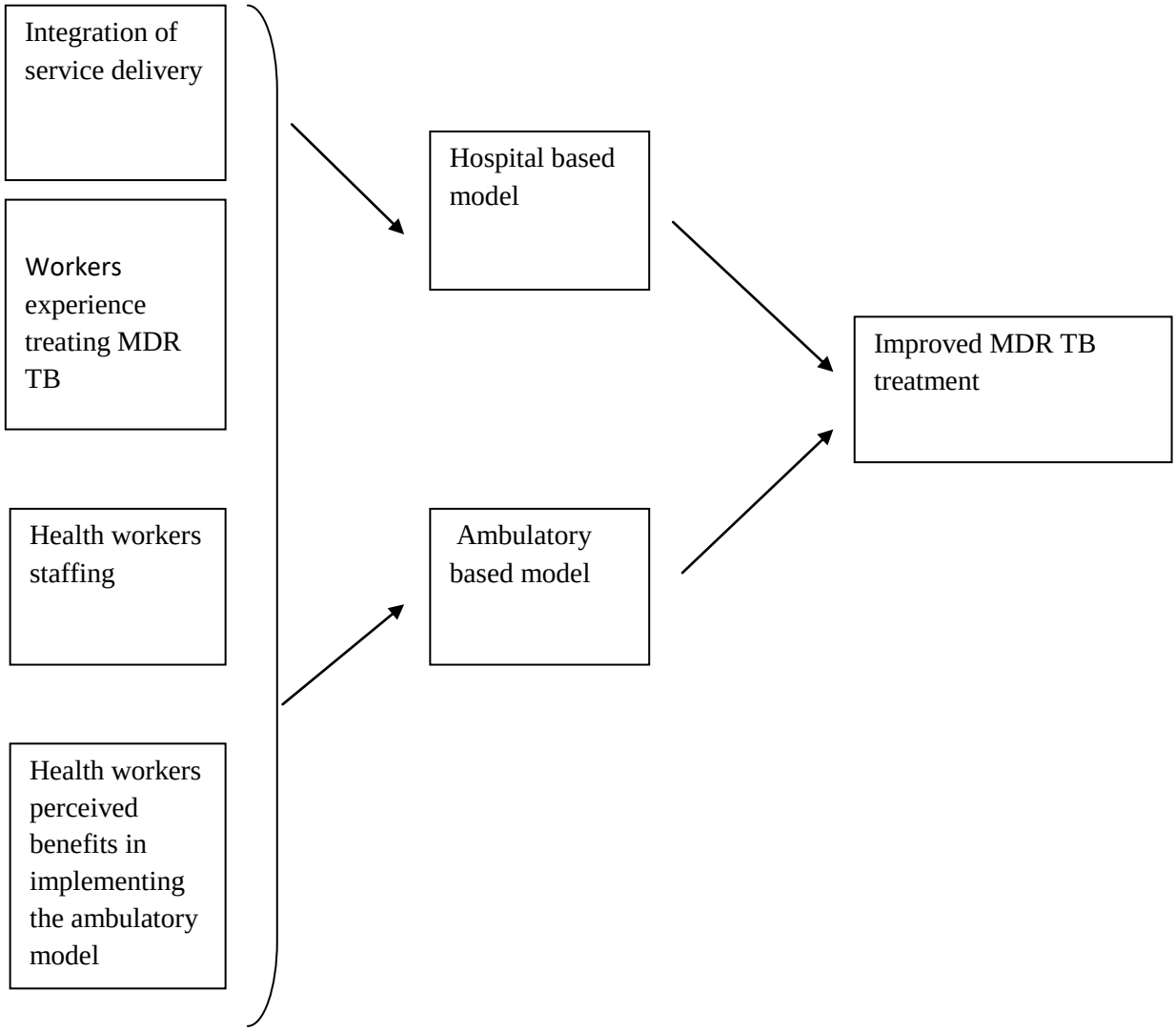

Figure 1: Conceptual Framework illustrating the assessment of health system factors influencing treatment of multi-drug resistance tuberculosis using ambulatory care and hospital care models.

Source Researchers own formulation (from literature and field data)

In order to function properly, a health system needs adequate funding, staff information, supplies, transport, and communications – in short infrastructure (13).

Workforce is the key input component because without health workers working effectively, and who have experience on treatment of MDR TB in ambulatory care and hospital care model, patients will not be satisfied with the service. Service delivery points are needed in different departments and this will reflect immediate system outputs.

1.4 Rationale of the study

The findings from the study will be used to assess the actual situation concerning the health system factors on treatment of multi-drug resistant tuberculosis using ambulatory and hospital care in selected facilities. In tandem, the findings will help policy and decision makers in the Ministry of Health Community Development, Gender, Elderly and Children (MoHCDGEC) through the National Tuberculosis and Leprosy Programme (NTLP) to formulate appropriate strategies for improving access to service and improve health service points including training health workers.

Furthermore, since the MoHCDGEC through the NTLP plans for country-wide scale-up of treatment for diagnosed MDR TB cases and expansion of services in other regions, the findings will help in planning to improve other places which have not yet started ambulatory care.

1.5 Research questions

1.5.1 Main research question

What are the health system factors influencing treatment of multi-drug resistant tuberculosis patients on ambulatory care and hospital based models?

1.5.2 Sub research questions

1. Do health workers have the experience on treatment of multi-drug resistance TB patients on ambulatory care and hospital-based model?
2. Are health workers available to manage treatment of multi-drug resistance TB patients on ambulatory care and hospital-based models?
3. Which are the service delivery points in the health care system that can be integrated with the current service on ambulatory care and hospital-based models?
4. What are the health workers perceived benefits on provision of multi-drug resistant TB treatment on ambulatory care and hospital-based models?

1.6 Objectives

1.6.1 Broad objective

The broad objective of the study was to assess health system factors influencing treatment of multi-drug resistant tuberculosis patients in ambulatory and hospital based models.

1.6.2 Specific objectives

1. To examine health workers' experience on treatment of multi-drug resistance TB patients on ambulatory care and hospital-based models.
2. To explore health workers availability in managing treatment of multi-drug resistance TB patients on ambulatory care and hospital-based models.
3. To describe service delivery points in the health system that can be integrated with the current service on ambulatory care and hospital-based models.
4. To identify perceived benefits of health workers on provision of multi-drug resistant TB treatment on ambulatory care and hospital-based models.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews empirical literature on multi-drug resistance tuberculosis, and health system factors that are influencing treatment of multi-drug resistance tuberculosis in ambulatory and hospital-based models.

2.2 Global situation

"Countries of the WHO European Region have been at the forefront in tuberculosis (TB) prevention and control for centuries; however, the emergence of multi-drug-resistant and extensively drug-resistant TB (M/XDR-TB) in the region has seriously complicated efforts to achieve the Millennium Development Goals. Despite the steady decline of TB incidences, the European Region has faced the largest proportion of M/XDR-TB among individuals diagnosed with TB, requiring a stronger link between health system strengthening and M/XDR-TB control, to adequately prevent and treat this deadly disease" (14).

In tandem, there is an increasing number of countries which are providing care to MDR-TB patients in an ambulatory manner, minimising the requirement of hospital beds and reducing the potential for nosocomial transmission of MDR−TB (14) The two new drugs, bedaquiline and delamanid, are the first new TB drugs for almost 50 years, being progressively approved by drug regulatory authorities for use in treatment of MDR−TB patients (15). In countries with a rapidly increasing number of drug resistant TB patients, emphasis on hospitalisation can become a serious bottleneck to scale up (16).

2.3 Health workers experience on treatment of multi-drug resistance TB patients on ambulatory care and hospital based models

In Nigeria, it has been established that health workers' experience is a vital contribution to the success of the MDR-TB management. From the views of health workers, shared experiences and interdependence of MDR-TB patients involved in patient-centered support systems would likely help to reduce stigma, promote access to care and support services,

and potentially impact on the outcome of treatment. Also, providers are limited to experiences of home-based care (17).

Reports in Nigeria indicate that they have a total of 3,600 MDR-TB cases who have been started treatment; because the experience of their health workers in relation to this problem is low it is only less than 5% of all estimated 3,600 MDR-TB patients who have started treatment. Given the expected scale-up of MDR-TB care, and the little experience of health workers, the hospitalised model was a challenge and the national TB programme was contemplating to move to ambulatory care. This has enabled them to use both ambulatory and hospitalised approaches, with the latter being reserved for selected high-risk groups. This decision has called for deployment of community contact persons instead of full reliance on long-term and professionally trained health workers who are not available (18)(19).

2.4 Health worker availability on managing treatment of multi-drug resistance TB patients on ambulatory care and hospital-based models

In Kenya, health workers informed that they were available but not in optimal numbers, and they emphasised that availability is a key input for this programme. The lesser numbers has slowed down their rate of success. Under optimal situations in the ambulatory care model, the team should institute a home visit, identify and hire a DOT worker, train family and local health care professionals in MDR-TB care, and initiate a community-based MDR-TB treatment. For good performance of the ambulatory programme, health workers need to be available in the first 24 months (4).

Multiple challenges towards the programme were experienced including stigma, limited funding and system delays (20). As far as the health system is concerned the following challenges were experienced:

i) Delay in diagnosis of MDR TB
ii) Delay in home visits from the health worker (DOT worker)
iii) Difficulties in identifying and recruiting DOT worker
iv) Delays in follow up and monthly evaluations,
v) Inadequate contact tracing and screening of patients (21)

The health workers further indicated that availability of human resource was the main barrier to rapidly expanding access to diagnosis and treatment of MDR TB in the health care system including, among others, the lack of quality laboratory workers for culture and drug susceptibility testing.

A systematic review of the literature was conducted on the effectiveness of MDR-TB management. A meta-analysis of treatment outcomes of patients treated in hospitals versus ambulatory-based model was performed in accordance with PRISMA guidelines.

The pooled treatment success rate was 66.4% (95% confidence interval [CI] 61.4–71.1%), with no statistical difference between ambulatory (65.5%; 55.1–74.6%) and hospital-based models (66.7%; 61.0–72.0%). The pooled death rate was 10.4% (6.3–16.5%), the pooled treatment failure rate was 9.5% (7.3–12.4%), and the defaulter rate was 14.3% (10.5–19.1%). None of the differences between the two models were statistically significant for any of the outcomes considered.

This work improves the quality of the evidence available, supporting the World Health Organisation's recommendation that patients be treated using mainly ambulatory care due to availability of treatment support to facilitate adherence to treatment, and provisions for backup facility to manage patients who need inpatient treatment care (17).

2.5 Integration of service to reduce delay in diagnosis and treatment of MDR TB

Integrated" is frequently used to refer to a package of preventive and curative health interventions for a particular population group often (but not always) this group is distinguished by its stage in the life cycle .This can be very important - for example, TB services have to deal with the fact that many of their clients may be HIV positive, malnourished, smoke or have diabetes.

Key questions under this definition are: Exactly what interventions should be packaged together? How management support systems are best organized to service these interventions. Integrating new activities into an existing system cannot be continued indefinitely without the system as a whole being better resourced.

Reports from Bangladesh, one of the 27 high burden countries for multi-drug resistant tuberculosis, indicated that it is important to integrate services to reduce delayed diagnosis and delayed start of treatment. It also would require only minimal community mobilisation and support (22). In KwaZulu-Natal, South Africa, it has been documented that there is

direct relationship between integrated health systems and patient treatment outcomes. The chance of treatment success is greater if decentralised MDR-TB services are integrated into existing ones.

To optimise successful treatment outcomes, regular monitoring and support are needed at district, facility, and individual levels to ensure that the local context is supportive of new programmes and implementation is according to guidelines (23).

In Suneka Sub-County in Kenya, delay in presenting at public health facilities after the onset of TB is a major challenge. Since TB services are integrated in the general health care system, findings from health workers highlight the need by the Ministry of Health (MOH) to improve service delivery at integrated health facilities and thereby encourage patients to seek early diagnosis and treatment of TB to reduce patient delays (24).

In Uganda, WHO recommends that treatment of TB in HIV infected patients should be integrated with HIV care. In December 2008, a separate, outdoor integrated TB/HIV clinic was instituted for attendees of a large urban HIV clinic in Uganda. Integration of TB and HIV care has led to improved TB treatment outcomes and earlier prioritised ART initiation. This supports roll-out of a fully integrated TB/HIV service delivery model throughout high-prevalence TB and HIV settings (25).

2.6 Perceived benefits of health workers on provision of multi-drug resistant TB treatment on ambulatory and hospital-based care

In Northern Uganda, in the rural Kitgum and Lamwo districts ambulatory MDR TB care was perceived to be effective in multiple settings with high cure rates. The service was acceptable to patients, families, communities and health care workers and was seen as preferable to hospital-based care by most respondents. These reports show that health workers have accepted the service and could contribute to development of an adaptive treatment approach strategy at national level elsewhere (21)(26). However, they were of the view that without the national TB control programmes, introducing a national electronic TB register system would cause the programme to fail.

A study done by Burtscher *et al.*, (2016) on health workers perceived benefit in treatment of drug resistant TB in ambulatory and hospital care model came out with the result that

the patient-centered approach (ambulatory) is more favorable to them than the centralised hospital (hospitalisation). The former aims at creating the most acceptable and comfortable environment to reduce nasocomial infection for the patients, their families and caregivers themselves (27).

In Uganda, preference is on home-based treatment and care as a model of MDR-TB treatment. It is also preferred by patients, family and community members. This is because of fear of contracting other infections within hospital settings; and the identification of MDR-TB developing through poor adherence to and inadequate treatment regimens for drug sensitive TB. Home-based care was perceived as safe, conducive to recovery, facilitating psychosocial support and allowing more free time and earning potential for patients and caretakers. These findings could contribute to the development of an adaptation of treatment approach strategy at national level (28).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study area

Dar es Salaam is the largest city in Tanzania. With a population increase of 5.6% per year from 2002 to 2012, the city is the third fastest growing in Africa (sixth fastest in the world). It is the capital of Dar es Salaam's Regional administrative province and consists of five boroughs or administrative districts: Northern Kinondoni, Central Ilala, Ubungo, Southern Temeke, and Kigamboni. The region had a population of 4,364,541 as of the official 2012 census. Dar es Salaam is located at 6°48' South, 39°17' East (−6.8000, 39.2833), on a natural harbour on the Eastern Coast of Africa, with sandy beaches in some areas.

Health facilities which are providing service of ambulatory are not enough and other patients have to work or taking public transport from very far in order to get the service and cost are very high. As this program has been started the infrastructure are enough to accommodate the entire patient in health wise.

The study was conducted in Dar es Salaam in its three districts out of five which were Ilala, Temeke and Kinondoni. The three districts were purposefully chosen because they were on the first phase of expanded MDR TB decentralisation of services on ambulatory care model. The health facilities which were used in the three districts are Sinza Health Centre (in Kinondoni Ward), Rangi Tatu Health Centre (in Temeke Ward), Ukonga Prisons Health Centre (in Ilala Ward). These have MDR TB patients who are being treated in ambulatory care model.

On the other hand, Kibong'oto Infection Disease Hospital was used as it was the first hospital in Tanzania to be selected as the MDR TB centre of excellence for MDR TB management of patients using institutionalised care (Hospital-based model), for the intensive phase followed by ambulatory treatment in their respective districts at the nearest health facilities.

3.2 Study design

This study applied a cross sectional study design using qualitative methods of data collection and analysis.

A qualitative research method (in-depth interview) was the most suitable for this study because the investigator explored how people interpreted their experiences, how they constructed their worlds, and what meaning they attributed to their experiences. This qualitative method is considered to be well-suited for locating the meanings that people place on the events, process and structure of their lives and their perceptions, presuppositions and assumptions. Also in order to verify the information on availability of protocol (standards operating procedure), SOPs, treatment algorithms, adequate support and infection control we ask for the document and argument equipment physically.

3.3 Study population

Participants for this study included clinicians, nurses who were working at the TB Clinic or TB ward, CHMT members (RTLC/DTLC) and staff at laboratories and pharmacies in the three districts: Sinza Health Centre (in Ubungo Ward), Rangi Tatu Health Centre (in Temeke Ward), Ukonga Prisons Health Centre (in Ilala Ward).The facilities were used because they had started the ambulatory care model on MDR TB patients and were representative of other districts which had not yet started the service. Kibong'oto Infectious Disease Hospital (KIDH) had key informants for this study because they were using the hospital care model.

3.4 Sample size

Purposeful sampling is commonly used in qualitative research. It involves selecting research participants according to the needs of the study (Palys, 2008); that is, researchers choose participants who give a richness of information that is suitable for the intended research. A purposeful sampling technique was used to recruit the participants of this study. According to Dolores (2007), choosing the purposive sample is fundamental to the quality of the data gathered; thus, reliability and competence of the informant must be ensured. This study purposively selected 24 respondents purposefully basing on the position they held in their institution; these included 1 clinician, 1 nurse working at the TB Clinic or TB ward, 1 RHMT member (RTLC), 2 CHMT members (DTLC), DMO and staff at (1

Laboratory, 1 Pharmacy, in all three districts at Dar es Salaam Municipalities and Kibong'oto Infectious Disease Hospital (KIDH).

3.5 Data collection procedure

An interview guide was prepared to guide the researcher in the process of data collection. Different sets of questions were designed depending on the department of the health worker or if she/he was a CHMT/RHMT member. Two experienced research assistants were trained and coached on how to use the interview guide.

In-depth interview of key informants was the major method of data collection. This method was found to be useful because a deep understanding of a health worker on ambulatory and hospital model requires exploration through probing and dialogue. The research team obtained written consent from the participants before conducting the interview. An interview guide and digital recorders were used to guide the in-depth interviews and record the conversations. The in-depth interviews were conducted at the participants' office or in meeting rooms which provided the privacy needed for a research inquiry. Nevertheless, sometimes the interviewing area was a bit noisy as staffs was busy working. Approximately each interview took between 45 and 60 minutes.

3.6 Data analysis

Data was analysed using a thematic approach. According to Marshall and Rossman (1999) thematic data analysis is the process of bringing order, structure and interpretation to the mass of collected data. The collected qualitative data in the form of notes and rich texts was cleaned, summarised and organised to create established, meaningful patterns with the aim of identifying themes within the data. This process provides an avenue for the researcher to familiarise oneself with the collected information.

3.7 Ethical consideration

Ethical clearance was sought from Muhimbili University of Health and Allied Sciences Review Board. Permission to conduct the study was sought from the office of Regional Administrative Secretary as well as from the District Administrative Secretaries of Kinondoni, Ilala and Temeke districts. All participants were informed about the purpose of this study and an informed consent to participate was obtained from all participants before being interviewed.

All measures to maintain human rights including the right to privacy and confidentiality and the right to prevention from any type of harm were put into consideration.

The tapes which were given to research assistants were counted and put under the responsibility of the principle investigator. Research assistants returned the tapes to the principal investigator daily after finishing the daily work. Upon their receipt they were counted and checked. To ensure maximum security of data they were stored safely in the data storage box of which access was limited to the principal investigator.

3.8 Dissemination of the research findings

The final dissertation report was submitted to MUHAS for evaluation. Even though MUHAS was the owner of the data collected, KNVC and NTLP will have access to the database for quality assurance and support with analyses. All attempts will be made to ensure that policy makers share the results of the research, by publishing the findings in peer reviewed journals and presenting the findings in scientific meetings and health related conferences. The findings from the study will also be discussed with Dar es Salaam Municipal and KIDH in order get the necessary feedback.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This section presents the findings of the study collected from the field. The section is divided into the following four parts:

i) Health workers' experience on treatment of multi-drug resistance TB patients on ambulatory care and hospital based model.
ii) Health workers' availability in managing treatment of multi-drug resistance TB patients on ambulatory care and hospital based model.
iii) Findings on service delivery points in the health system that could be integrated with the current service on ambulatory care and hospital based model.
iv) Findings about perceived benefits of health workers on provision of multi-drug resistant TB treatment on ambulatory care and hospital based model.

4.2 Socio-demographic information of the participants

Twenty four (24) participants were involved in this study. Their ages ranged from twenty five (25) years to forty six (46) years. Their academic qualifications ranged from diploma, advanced diploma, first degree and master degree. Six of the participants were working at KIDH and the remaining eighteen were working in Dar es Salaam Municipality. The participants had between two (2) and ten (10) years of experience working in the TB department and until the time of the research they were dealing with MDR TB patients.

4.3 Key information on data collection and participants

Data was collected from key informants through in depth interviews from Ilala (Prison Dispensary), Ubungo (Sinza Hospital), Temeke (Mbagala Rangi Tatu) and Kibong'oto Infectious Disease Hospital. In-depth interviews included key informants from the public sector only. An observation check list was used as a method to verify the availability of equipment, and integration points were reviewed to obtain more insights into the subject matter.

The findings are categorised into various themes which emerged during data analysis as presented in the following sub-sections.

4.4 Health workers experience on treatment of MDR

In the assessment of experience, respondents were asked to tell for how long they had been dealing/working in the department of Tuberculosis especially dealing with MDR TB treatment, the knowledge on the ambulatory and hospital model, and if they had received any prior training concerning MDR treatment.

Experience

In Dar es Salaam Region, the respondents explained that, they had been managing patients with TB for about 2 to 10 years; but with regard to MDR TB, respondents had started to provide care after their health facilities had been chosen to be pilot areas.

"…we do not have much experience because the ambulatory service only started last year, but we have been managing patients with normal TB so we are using the same experience" **(Clinical Officer)**

In KIDH participants had a lot of experience as in their schedule they usually rotate after every three months in different departments; so everyone knows the kind of work involved in different departments or wards. One respondent admitted:

"…here most of us are doing this work because of experience; we have been dealing with patients with MDR TB and Normal TB throughout our employment…" **(Nurse, Lab Tech)**

Knowledge of participants on MDR treatment

In both KIDH and Dar es Salaam Municipality respondents were asked to explain the knowledge they have in the ambulatory and hospital model of MDR treatment.

"… when the patient has been identified either by culture or gene expert, we looking for the criteria to start the medication; after that they come every day in the morning for their medication (injection) accompanied by their relatives. Even if the other investigations have not yet been taken because of lack of resources, we do start the medication" **(DTLC –Dar es Salaam).**

On top of that one participant from KIDH responded on his knowledge of ambulatory and hospital model; he said:

"…first we were using the early discharge criteria - after spending eight month in the hospital, the patients stay at home whilst attending the hospital for their medication but in 2013 the government started to think of offering service using the model used in the other countries worldwide which is ambulatory. Patients are staying at home and go every day to the hospital with their relative to receive medication" **(DMO).**

The preceding responses indicate that there are different levels of knowledge concerning MDR treatment between the two categories of respondents. Respondents from KIDH seemed to be knowledgeable on both MDR treatment models while those from Dar es Salaam Municipality were more knowledgeable on ambulatory models as a number of them had received training and others on-the-job training. This could be due to the fact that in the past all the MDR TB patients were taken to Kibong'oto. The other regions were just calling for the ambulance from Kibong'oto to take the patients from where they were available. With regard to the hospital model, Dar es Salaam Municipal staff seemed to be informed of such treatment after the patients had been sent back from Kibong'oto; that was normally after the eight months period. Thus, they were aware of the ambulatory model but did not have details on the hospital model because after patients had been sent to Kibong'oto that was the end of any knowledge and information regarding such patients. Health workers from Kibong'oto however were very much aware on both models.

Training/Education

Participants were further asked if they had received any training concerning MDR TB treatment. One respondent admitted

"…few of us were trained during the beginning of the programme; after that we have been conducting on-the-job training to our fellow health workers but most of us have no experience. We need training on MDR TB, so once in a while we are given refresher courses because this disease is very dangerous and it keeps growing and spreading" **(Lab Tech).**

Another participant pointed out that the following:

"…most of the staff are given training, or on-the-job training for the TB department, but if there is shortage in other departments these members are taken to other departments without considering the shortage they create in the TB department. Occasionally, the administration allocates staffs to the TB department who have no interest in working in

this department. They are normally afraid of contracting the disease. As a health worker in the TB department, one has to be committed to the job otherwise one will not deliver the services as Expected" **(Nurse).**

Respondents reported that the training provided was for everyone not only for TB department staff but even the staff from other departments such as OPD, CTC, Laboratory, and Pharmacy departments were included in the training. The participants acknowledged that the training equipped them with enough skills to deal with MDR TB. However, few health workers in different departments admitted that they did not have the capacity to deal with the ambulatory model as it was a new model. They claimed that having been given exposure and training by their colleagues was not enough for them to have the experience needed.

"…we are short of staff in the department and on top of that most of us have no experience and have not received any specific training but only on job training" **(Pharmacy, Lab tech).**

Working Condition

Staff from Dar es Salaam Region was complaining specifically on the size of the area (room) for providing services to MDR TB and TB patients. In some health facilities patients were asked to come on specific days, while for MDR TB, they were scheduled to come very early in the morning so that they could finish and leave. They have done all this in order to reduce more infections among patients. The respondents kept complaining about the small area they were using, which forced them to mix patients of MDR TB and normal TB.

"…to say the truth I am not happy with my working conditions as the disease spreads through air and the area is very small. We cannot mix the patients with normal TB and MDR TB, even those with MDR TB can't be mixed with those who have started the dose and those who are continuing the dose. We need an area where we can separate the patients accordingly and the air allowed to circulate otherwise in coming years patients with normal TB will contact MDR TB to XDR TB" **(Nurse).**

They kept saying that after a patients with MDR TB has received the health education they really do understand the risk involved and that they do not want to mix with those who are just starting the treatment **(smear positive).**

"…we are not satisfied with the infrastructure and the working area in general; the infrastructure has not been renovated, and the facility has not been prepared for this ambulatory model for. We cannot give service comfortably **(Nurse).**

However, respondents from KIDH were satisfied with their working area because in every stage which the patient reaches they transfer them to other building until they finish their medication. The only complaint was the laboratory, which they said was due to the size of the building.

One of the respondents said that:

"…the building we have is not enough for the kind of work which we are doing, they need to put more resources in the building and maintenance of the machines once in a while and lastly ordering of reagents. There are some reagents which we do not order from MSD but through CTRL and from time to time review of the ordering chain is not good" **(Lab tech).**

On top of that another respondent said:

"……here at KIDH there are different wards where patients are staying, initially they are admitted in a first ward until the scheduled monthly check up and when they are confirmed smear negative they are transferred to the next ward but other patient can take even 2 months. They stay at this ward until they are discharged" ***(RTLC)***

4.5 Availability of health workers to manage the treatment of MDR TB

The study also wanted to explore the availability of health workers to manage and treat MDR TB patients. Respondents were asked to say if there were enough health workers for managing the treatment of MDR TB.

''…from last year many staff have not been to work; some have left on their own will, while others have been terminated by the government because they did not have the required paper qualifications. Now we have real shortage of staff, we are busier than could be imagined. **(Nurse)**

Also another respondent gave the following clarification:

"... In reality many staff members do not like the TB department; you can hear they say 'here is your patient' (when a MDR TB patient arrives). They see it as a very dangerous disease. It is extremely discouraging to see other staff being paid for working overtime, while staffs in the TB department are left with no motivation". **(DTLC)**

Respondents were concerned with the way health workers were being allocated during recruitment of staff. One of them said:

"...even if the Ministry of Health, Community Development, Gender, Elderly and Children employs new staff, the way our leaders/administrators allocate those new staff is like they don't consider the importance of the TB/MDR TB department. They normally consider the labour ward or the outpatient department, and not the TB department. The irony of it is that patients with MDR TB are increasing in numbers not like before" **(Nurse).**

Another responded added:

''... You can find that the facilities have enough staff but they are not distributed equitably. Years back it was true, staffs were not enough but now the problem is with administration, they just do not know how to assign them to the neediest units. **(DTLC)**

Generally, most of the interviewed key informants from KIDH and Dar es Salaam Regions revealed the following problems which are associated with shortage of health workers:

ii) Health workers are afraid to work in the TB ward because of contracting the disease, and now with the MDR TB the problem has becomes more severe in Dar es Salam Region.

iii) Health workers are not enough compared to the needs of the patients in Dar es Salaam Region, but at KIDH the health workers cannot complain much although they still need more staff in order to give proper service.

In addition, most of the key informants insisted that leaders from the ministry should consider employing new staff as soon as possible because there is severe shortage at the moment. This situation forces health workers to work under pressure, a situation that might prompt those who are present to leave.

Availability of medicines, medical supplies and equipment

The researcher also was interested to find out whether or not medicines, medical supplies and equipment were deposited by the authorities. All respondents from KIDH reported having adequate supply of medicines and admitted that no medicines have ever been out of stock. The majority from Dar es Salaam Region reported that medicine was not a problem because the nurses were ordering from a pharmacist and the pharmacist was ordering supplies straight from KIDH. The supplies would be received within 3 to 4 days through EMS, after placing the order. The system is expected to change soon and orders will be placed through ILS. However, few health workers from Dar es Salaam Region reported that sometimes the drugs ran out. One respondent had the following to say:

"…We are ordering our drugs depending on the number of patients we have, but when such drugs are received at the Regional Hospital, they are distributed to other facilities which did not place any order. This leads to the confusion and our patient start to complain, otherwise if one orders medicine on time, the package is received in good time. The administration should look into this problem **(DTLC).**

Availability of a laboratory and reagents

All respondents from both KIDH and Dar es Salaam Region reported that laboratories were available in all facilities but chemicals things were in short supply for example reagents. Patients with MDR TB needed to be checked monthly for drug side-effects, smear conversion and many other tests. This was reported in both places in Dar es Salam Region and KIDH.

*"…Like now the gene expert cartilages are not available for almost six month now, also we are not doing liver and renal function test which is very important for detecting drug side effect"***(Nurse, Lab Tech).**

In addition most of the respondent from KIDH commented:

*"… it is very dangerous for the patients to take drugs before doing laboratory tests for example the renal and liver function test, until we notice that the patient's condition is deteriorating fast, then we take the sample to KCMC"***(Nurse).**

On the other hand, respondents from Dar es Salaam Region complained about the machines; they said that they had taken the samples to Muhimbili National Hospital, which involves a very long process for them due to shortage of staff.

4.6 Integration of service delivery point

Participants were asked to provide their opinion whether the MDR TB service could be integrated with other health services in the health facilities. Health workers opined that there was a need of integration, others were not in favour of integration.

One respondent argued:

"...in our facility we have integrated them, it is good for this service to be under one roof, because when we get a patient from another department we should also have a nurse from the same department come to the TB/MDR TB department and take the medication" **(Nurse).**

*"...It is good to integrate because it reduces stigma between the patients and also remove layers/classes between health workers as CTC or TB alone; so it should be like TB/HIV under one roof"***(DTLC).**

"……..There is no space for integration; rooms are very small it is very dangerous for the patient and health worker" **(RTLC).**

Lastly, respondents from KIDH gave the following comment:

*"...the aim of decentralisation is to integrate the services so that we can reduce stigma, so MDR TB should be integrated in those services just like any other service"***(DMO).**

On top of that, the respondents insisted that together with the benefits that come with integrating MDR TB services with other services, there should be some renovation of the infrastructure as it was very dangerous to mix patient with TB and those with MDR TB, including health workers themselves. Two participants were totally against integration and argued that integration could speed up transmission of MDR TB to other patients who were not yet infected with MDR TB.

A nurse had this to say:

"...the way they have separated them should remain like that in their respective departments, they should stay by themselves" (Nurse).

4.7 Perceived benefits of health workers on provision of multi-drug resistant TB treatment

The respondents were asked about benefits of health workers on provision of treatment. Health workers from Dar es Salaam Region claimed that the system (ambulatory model) was more beneficial to patients than to healthcare workers. In the case of KIDH staff, is the situation was considered normal because they managed patients with TB or MDR TB or patients with normal sickness (outpatient department). One respondent from Dar es Salaam Region observed that the following:

"….from the start of the ambulatory model, staff have been over-worked due to shortage of staff" **(RTLC).**

Furthermore the findings show that there are more benefits on the patients' side because some start medication early and are also converted early. This is good for them as they can start their daily activities earlier and can sustain their families.

Patients were happy to stay close to their families compared to their counterparts in KIDH, who could eat anything they want and get the necessary support from their families.

"…the patient is in good hands receiving assistance from the family" **(RTLC).**

Also one respondent commented:

"…for example, there is a secondary school student, he has started medication and now as he has been converted to smear negative, he is continuing with his studies, but if he was in KIDH he would be missing his studies for 8 months" **(Nurse).**

The study found out that many staff does not like to work at the TB department, and now with the ambulatory model, the condition is worse. The only benefit of this model is that as a health worker one is able to monitor the patient's condition until she/he recovers from the illness.

The key informant insisted that in order for them to get benefit from the ambulatory model, the administration or the government should give health care workers breakfast facilities, allowances and if possible to renovate the building in order for these health workers to provide service in a conducive environment.

Family support

The interviewed key informants reported that patients, who had started taking medication (ambulatory), were receiving a lot of support from their families. Interviewing one respondent from one health facility she stated that the following:

"…it's good and if the patient is disturbing us we call the relatives; they come we discuss the matter until we reach a conclusion. So I can say they have good cooperation" **(Clinical Officer).**

The respondent insisted that there was teamwork between health workers and family members, as the treatment of the patient continues. Heath workers usually screen the family of the patient early when they discover the patient has MDR TB; after that the family receives health education from the health workers so that they maintain close relationship with the patient and give the necessary support to the patient.

4.8 Challenges with the ambulatory model

Several challenges were reported during the interviews. Health workers were given the chance to explain the challenges which patients were facing and they felt concerned although they had their own challenges at the workplace. In the following sections, the challenges that were identified during interviews are listed.

4.8.1 Patients

i/ Patients cannot afford bus fair to and from hospital, every morning, in order to take medication.

> *"…sometime they are not coming to the health facilities due to lack of transport money, and for most of them that is the main problem"* **(Nurse).**
>
> *"…the money which is given by KNCV foundation to support them for transport should be given every month and not after three month*" **(Clinical Officer).**

ii/Some families cannot afford balanced diet for the patients due to financial difficulties.

iii/There is stigma from the family members, although this may not be for many patients.

iii/Many patients' details on data base are missing which makes it difficult to trace them.

> *"…few patients provide false information when they are registering; e.g. false phone number, which is very important"* **(Nurse).**

iv/In many health centres in the TB department, there are no waiting or resting rooms which patients could use after they have been injected (MDR TB patient) and taken their medication.

> *"…there should be a place where someone can have rest for a few minutes after they have been injected then they can go home"* **(Nurse).**

v/When the MDR TB patient is sick and needs to get blood transfusion or ALU drip, it becomes very challenging; there is no place to admit him/her in order to get the service.

4.8.2 Health worker

i/Infrastructure in the hospital is not conducive for the management of MDR TB patient – rooms are small, space for TB and MDR TB patients is not enough.

ii/There is no motivation or risk allowance, because staff might contract the disease.

iii/Many health workers are afraid of contracting TB and MDR TB.

iv/There is shortage of staff in the department; as a result workers in the said department are over-worked.

v/Cartridges for the gene expert machine are difficult to find, and this have become a very big problem.

> *"…like our gene expert, now for six month it's not working, cartridges are not supplied consistently so it becomes a big problem to us and to the patient"*(**Lab Tech)**

"*…if electricity goes off and in the machine there are samples then all of them are destroyed if the UPS is not working properly; it is hard to explain this to the patient so that you can draw another blood sample* **(Lab Tech).**

4.9 Opinion

Health workers had different viewpoints regarding the challenges they faced in their health facility and gave their suggestions on what should be done so that the ambulatory model would succeed.

4.9.1 Building a Zonal hospital

Health workers suggested that the government should build a centre for medication or admission for ambulatory patients for the first two months, especially for those who are very weak. One respondent made the following comment:

"…they should build a hospital in all zones, for example in the Eastern Zone because travelling to KIDH is very far. For the first one or two months, patients should be able to stay in the Zonal hospital until their sputum has been converted to smear negative, then they can start ambulatory model treatment" **(RTLC)**

4.9.2 Education

Health education to the community and health workers should continue; as alluded to earlier, patients who had suffered from TB are helping at the health facilities to give health education to newly infected patients.

"…health education should not be only for patients and their relatives, but also for the health worker in the facilities" **(DTLC).**

The health workers' point of view was that other health workers at the facilities were stigmatising the patients and the health workers who were working in the TB department; which is very dangerous.

4.9.3 Recruitment of health workers

Participants insisted on that the government should employ new staff, but also when these employees report at the health facilities the administration department should allocate them equitably while giving priority to the TB department.

"…those new staff and current staff both should be given training so that they are familiar with the current model and regime" **(Clinical Officer).**

Respondents insisted that in KIDH health workers were rotating in every department, e.g in the out-patient department, in-patient department etc. This makes every health worker familiar with other departments, but this it is different with Dar es Salaam Region health workers who are working in the TB department, who might stay there for years without been moved. Most of them during the interview disclosed that had been in that department for 2 to 10 years.

4.9.4 Laboratory and Reagents

Respondents reported that in the hospitals and health centres, lab machines were not enough; for example the screen master (for liver and renal function test) was not functioning. The gene expert machine uses a cartridge, but these types of cartridges are not available; every time they are out of stock.

"…maintenance of the machine should be regular so that it is possible to discover the problem early enough; there should also be a stand-by generator in case of power cut"(**Lab Tech).**

In addition, respondents advised that MDH should not supply the cartridges following the number of patients; sometime there is an emergency and patients keep coming and no cartridge; the cartridges should be supplied in sufficient quantity. The respondents from Dar es Salaam Region also complained that the UPSs do not save power; so new UPS, should be purchased together with a backup generator in case of emergency.

CHAPTER FIVE

5.0 DISCUSSION

This chapter discusses the key findings of the study and a review of secondary data. The discussion of the study findings focuses on the following four key areas:

i) Health workers' experience on treatment of multi-drug resistance TB patients, on ambulatory care and hospital-based model.
ii) Health workers' availability in managing treatment of multi-drug resistance TB patients on ambulatory care and hospital-based model.
iii) Service delivery points in the health system that can be integrated with the current service on ambulatory care and hospital-based model.
iv) Perceived benefits of health workers on the provision of multi-drug resistant TB treatment on ambulatory care and hospital-based model.

5.1 Health workers' experience on treatment of multi-drug resistance TB patients

The key findings of this study reveal that health workers experience in managing patients is considered to be very crucial and most of the health workers have been managing patients with normal TB and not MDR TB. The key informants especially from Dar es Salaam Municipality were complaining and they have reported that the ambulatory model was put into operation before the government was prepared. Workers need training, some on-job-training and any update of the system because the disease is threatening the health workers and their family members too.

In Ethiopia, they carried out a study on "Home is where the patient is" the qualitative analysis of a patient-centred model of care for multi-drug resistant tuberculosis using experience of scaling-up a decentralised, ambulatory model of care for management of MDR TB. They started with specific capacity building efforts for health care providers and programme managers through trainings on clinical and programmatic management of MDR TB. To ensure ongoing learning and skills improvement they prepared, printed and distributed provider support tools including pocket guides, clinician desk references, cohort monitoring charts, and wall charts adapted from national guidelines (29).

However, the findings of this study have revealed that health workers in Dar es Salaam need to be assisted, unlike KIDH where is receiving patients with MDR TB and hospitalising them from the beginning. In order for the health worker to have adequate experience, there should be on-going learning and skills improvement; this will make all health workers comfortable not only in Dar es Salaam Municipality but also in KIDH. It motivates them and they will be secured to have more education to improve their performance in managing patients.

Furthermore, a study done in Nigeria established that health workers' experience is a vital contribution to the success of the MDR-TB management (17). Contrary to the case of ambulatory, most of service providers use the experience of normal TB in managing treatment of MDR TB.

5.2 Health worker availability on management of treatment of multi-drug resistance

The key findings have vividly showed that there is shortage of staff in every health facility in Dar es Salaam Municipalities. Health workers are giving service but not as effectively as it should be because they are over-worked with patients. At first there were TB patients only, but with the initiation of ambulatory care, health workers have been forced to work overtime.

According to a study done in Kenya, health workers reported that they were available but not in optimal numbers, but emphasised that availability of adequate staff was a key input for this programme. The lesser numbers have slowed down the rate of success. For good performance of the ambulatory program health workers need to be available in the first 24 months (4).

Even in Ethiopia, some of the challenges identified at baseline and anticipated to be encountered in the longer term necessitated prompt innovative interventions. Limited experience of the clinical team and irregularities in laboratory monitoring systems were some of the key challenges identified at baseline stage (29).

Moreover, respondents explained that most of the health workers did not like to work in the TB department because of the risk of being infected. The TB departments have no extra duty allowance or overtime, which would motivate them, taking into consideration that they are risking their lives.

A study done in Russia found that most FGD participants reported shortages of staff, heavy work overload and competing priorities, low salaries and low motivation. Professionals also identified burdens that they felt went largely unrecognised such as working in a high risk environment, demand for additional work hours and increased job responsibility. Broadly, human resource planning in relation to TB was widely seen as sub-optimal (30).

As mentioned earlier, there were complaints directed at the way allocation of staff in the TB department was being done; this department was being undermined because it was not being considered as a key unit. One respondent insisted that there should be more health education even to the health workers because sometimes staffs are available but the way they are allocated is not proper.

The key finding also show there are several challenges tied to the availability of medicines, medical supplies and equipment. Respondents explained that medicines were available and sufficient for their patients except in one health centre where there was a problem of ordering. The respondents kept insisting that the problem was on infrastructure, laboratory and reagents, both in Dar es Salaam and KIDH. In all health facilities laboratories are available but not conducive for the work expected to be done. The reagents are not available regularly; this in turn becomes a huge problem to health workers and patients. Patients with MDR TB need to be checked for drug side-effects and many other tests but it becomes impossible and they keep taking the drugs without being tested in the laboratory.

Other studies have shown that one of the health system barriers was resource shortage resulting from insufficient financing, especially the chronic shortfall of funding for recurrent expenditure for MDR TB services. Sources of problems in the health system leading to restricted access to care were inadequate diagnostic capacity, lack of drugs, poor maintenance, low salaries and poor motivation of staff. The under-resourced health care system was seen as unable to respond to the growing burden of the disease.

5.3 Service delivery points in the health system that can be integrated with the current service

The study looked at the way the MDR TB service could be integrated with other services which would give out better result. Patients will visit all departments because they will be looking at the criteria for patients who are suspected to have MDR TB. It may provide some savings and integrating new activities into an existing system is an excellent thing because it will continue to be sustainable (31).

Resources are really needed because if you integrate the service it means you are widening the service delivery point, so for example protective gear should be used in the entire department.

In Kwazulu Natal, South Africa, it has been documented that there is direct relationship between integrated health systems and patient treatment outcomes. The chances of success after treatment are greater if decentralised MDR-TB services are integrated into existing services (23).

Also, reports from Bangladesh, one of the 27 high burden countries for multi-drug resistant tuberculosis indicated that it is important to integrate service to reduce delayed diagnosis, delayed start of treatment and minimal community mobilisation and support (22).

Very few respondents thought it was not helpful to integrate the services, because of the infrastructure of the health centre. Health worker argued that integrating services could transmit the disease to all people rather than preventing it.

5.4 Perceived benefits of health workers on provision of multi-drug resistant TB treatment

Many respondents are supporting the services from the way patient are comfortable with the ambulatory care service. These reports show that health workers have accepted the service and could contribute to development of an adaptive treatment approach strategy at national level elsewhere (32).

Two regions in Ethiopia, have had the experience of scaling-up a decentralised, ambulatory model of care for management of multi-drug resistant tuberculosis was impressive.

The cumulative number of MDR TB patients put on treatment increased from 56 to 760 and the treatment success rate was 75%. So rapid expansion of the ambulatory model of MDR-TB care was feasible and achieved a high treatment success rate in two regions of Ethiopia. However, more effort is needed to sustain the gains and further decentralise services to the community level (29).

Furthermore, if health workers could be given motivation, increase number of staff, enough equipment supplies and good infrastructure they could deliver the quality service.

In 2002 the Russian federation undertook a qualitative study to explore health care providers' perceptions of existing barriers to access to TB services in Samara Oblast in Russia. Funding has been identified as an underlying problem resulting in a decrease in screening coverage, low motivation, staff shortages, irregularities in laboratory supplies and outdated infrastructure (30).

This study has shown that patients are happier with the ambulatory model rather than hospitalisation because in the hospital they feel like prisoners as they stay away from their family for a long time. A home environment has been accepted, the challenge is for the patient in the first two month because medications are very strong and they become weak in moving back and forth.

A study done by Burtscher *et al*. (2016) on health workers perceived benefits in treatment of multi-drug resistant tuberculosis in ambulatory and hospital care model found that the patient centred approach (ambulatory) was far more favourable than centralised hospital (hospitalisation) as it aimed at creating the most acceptable and comfortable environment to reduce nasocomial infection for the patients, their families and caregivers themselves.

CHAPTER SIX

5.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Findings from this study show that both ambulatory and hospital-based cares are good models and they depend on one another. This is clearly evident to the health worker who have stated ambulatory model in pilot areas.

The study has revealed that for those receiving the initiation medication by the ambulatory model, during the first one to two months (which they have not converted to smear negative), it is very hard for them to visit the health facilities because they are weak. It is difficult for them to use public transport due to their weakness, but also getting bus fare is also a challenge. In addition, health workers are complaining of the unavailability of staff and laboratory supplies for liver and renal function test. Infrastructure is the major problem in most of the places except KIDH. Buildings are also not designed to handle both TB and MDR TB patients.

Also health workers are in high risk, they are taking sputum, drawing blood for HIV test, and sometimes they prick themselves and they have to use PEP in case of HIV, so it will be much convenient and better for them to be given risk allowance as compensation.

MoHCDGEC should employ new staffs in order to deliver quality service to the community and health worker who are committed to work at Tuberculosis department.

This study concludes that we can use both models because they are equally important. To patients who are extremely ill, those who are stigmatised by their families and those who feel that if they stay at home they will not adhere to medication, can still be taken to KIDH. In the ambulatory model, the government should look for ways to help patients stay for the first one to two months until they are converted to smear negative. Also the government should support them with money for transport and food.

Health workers should be considered for motivation or incentives, risk allowance and adequate buildings (infrastructure improvement for the safety of health workers, patients and their relatives).

Lastly, measures should be taken to ensure there are more zonal centres for use by patients for the first one to two months before smear negative convention, as they gain strength and improve their health. This way it will also reduce the spread of infection on public transportation to masses of people, (public buses, long trip passenger buses, trains, ships etc) with people having MDR TB or even normal TB. More health education is needed not only to the already infected patients but also for the health workers and community as a whole.

In community education should be continued every day, when there is new patient at the community, during the community meeting and house to house education from community health workers.

6.2 Recommendations

Taking into consideration the study findings, the study recommends the following:

6.2.1 Increase in human resources

To address the shortage of health workers, MoHCDGEC should employ new health workers to ensure better quality health services; otherwise health service provision will remain to be poor. This should go hand in hand with assurance of their performance by monitoring their productivity, responsiveness and competence.

6.2.2 Capacity building

Qualified human resources are essential for adequate health service provision; staffs need to be competent, productive and responsive. Poor performance is a result of insufficient numbers of health staff or staff not providing care according to standards, and not being responsive to the needs of the community and patients. Standards of care will be met if the administration in the district will provide proper training, mentorship and continuous supportive supervision.

6.2.3 Infrastructure (renovation and expansion of the clinics)

In any workplace, job satisfaction is influenced by health facility factors, such as working conditions, professional advancement and safety at work. The ambulatory model has already started but the buildings are not ready conducive for the models. Extra effort should be made by region, districts, development partners and community in order to renovate or expand the buildings for the safety of health workers, relatives and patients.

6.2.4 Risk allowance and motivation

The Regional and District should consider providing good care for those health workers who are working in the MDR TB department because they are working at risky places where they could very easily contract TB or MDR TB. The administration should champion for the staff benefits and provide support where there are gaps to motivate them more.

6.2.5 Health education and information

When new diseases or new programmes are starting, there should be appropriate introduction from the district to the community and health workers. Good health education will give excellent performance to the programme because there will be team work between community and staff. The Ministry of Health should consider giving more health education to staff and relatives using different ways of communication.

6.2.6 Building Zonal Hospital

Regional with the help of the Government should build a centre for medication or admission for ambulatory patients for the first one to two month, especially for those who are very weak until they again strength and improving their health.

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APPENDICES

Appendix I: Consent form English Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
DIRECTORATE OF RESEARCH AND PUBLICATIONS.

STUDY ON HEALTH SYSTEM FACTORS INFLUENCING TREATMENT OF MULTIDRUG RESISTANT TUBERCULOSIS: A CASE OF AMBULATORY AND HOSPITAL CARE MODEL

Dear Sir/Madam

You are here by invited to participate in a study conducted by Ramla Nandala who is a student at Muhimbili University of Health and Allied Sciences. Ramla Nandala is conducting this study for her Masters Dissertation.

Your participation in this study is entirely voluntary. You should read the information below and ask questions about anything you do not understand, before deciding whether or not to participate in the study. You are being asked to participate in this study because you are among the employees working at Dar es Salaam Municipality and Kibongoto Infectious Disease Hospital

Purpose of the Study

The purpose of the study is to explore health care system factors contributing on the provision of multi-drug resistant treatment using ambulatory and hospital care. We hope to use all the information from this study to assess the health system factors influencing treatment of multidrug resistant tuberculosis using ambulatory and hospital care. You will be informed of the findings through the planned means of results dissemination through publication and thesis for academic purpose.

Voluntary participation

Please note that your participation in this study is voluntary and you have the right to refuse to consent. If you agree to join this study, you will be required to sign this consent form and answer the question that you will be asked by the interviewer.

Benefits

There are no direct benefits for participating in the study. However the findings from the study will derive key components to assess health system factors influencing treatment of multidrug resistant tuberculosis using ambulatory and hospital care. This will help the administration, policy makers and health system in general to put in place the best system on the provision of treatment to multidrug resistant patients.

Risks and discomfort

There are no risks or discomforts involved in this study. Participants will be asked questions through in depth interviews that they will be able to give their views and ideas concerning the study.

Compensation for time

You will not receive any payment or other compensation for participation in this study. There is also no cost to you to participate in the study.

Confidentiality

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. We will not use your name in any of the information we get from this study in any way we think is best for publication or education. Any information we use for publication will not identify your name.

Consent form

I confirm that I have read carefully and I have understood the information provided and consent to participate in the study. I am aware that I can freely withdraw from this study anytime I wish to do so.

Whom to contact if you have any question about the study

If you ever have questions about this study, you should contact the Principal Investigator Ramla Nandala, from Muhimbili University of Health and Allied Sciences, P.O .Box 65001, Dar-es-salaam. If you ever have questions about your rights as a participant, you may call Prof. Said Aboud Chairman of the Research and Publications Committee, P.O. Box 65001, Dar es Salaam. Tel: 2150302-6.

Do you agree? Yes…….. No……

Participant agrees ……..... Participants does not Agree. ……...…

I, …… Have read the contents of this consent form and my questions have been adequately answered. I therefore agree to participate in this study.

Signature of the participant ……. Date ……

Signature of the interviewer ……..... Date ……

Appendix II: Ridhaa ya kushiriki katika utafiti (Kiswahili Version)

CHUO CHA SAYANSI ZA TIBA MUHIMBILI

MKURUGENZI YA UTAFITI NA MACHAPISHO

Habari,

Nakukaribisha kushiriki katika utafiti unaofanywa na Ramla Nandala mwanafunzi kutoka katika chuo kikuu cha sayansi za tiba za asili Muhimbili. Ramla Nandala anafanya utafiti huu kwa ajili yastashahada ya pili.

Kushiriki kwako katika utafiti huu ni kwa hiari unatakiwa kusoma taarifa zote katika fomu hii na kama kuna swali kuhusu jambo lolote ambalo halikueleweka unaweza kuuliza kabla hujaamua kushiriki au kutokushiriki

katika utafiti huu. Umeombwa kushiriki katika utafiti huu kwa kuwa ni mmoja wa wafanyakazi ambao wanafanya kazi Kinondoni Manispaa

Madhumuni ya utafiti

Dhumuni la utafiti huu ni kuangalia sababu mbali mbali za mifumo ya Afya inayopelekea wagonjwa wa kifua kikuu sugu kupewa huduma kwa kutokea nyumbani and hosipitalini.

Ushiriki

Ushiriki wako katika utafiti huu ni wa hiari na una haki ya kukataakushiriki katika utafiti. Kama umekubali kushiriki utatakiwa kuweka sahihi yako katika fomu hii na kujibu maswali utakayokuwa unaulizwa na msahili

Faida: Hamna faida ya moja kwa moja kwa wewe kushiriki katika utafiti huu. Ila matokeo ya utafiti huu yatasaidia katika kutengeneza sera za afya kwa wafanyakazi wa afya na kuweza kutafuta njia mbadala za kuwawezesha madaktari kukaa katika kazi zao za kitabibu kwa muda mrefu.

Hasara

Hakuna hasara za moja kwa moja zitakazotokana na utafiti huu.Washiriki wataulizwa maswali kwa mahojiano na msahili ambapo watakuwa na uhuru wa kutoa majibu na mawazo yao kutokana na maswali watakayoulizwa.

Malipo

Hakutakuwa na malipo yoyote kutokana na ushiriki wa utafiti huu na pia kama mshiriki hutakuwa na gharama zozote za wewekushiriki katika utafiti huu.

Usiri

Taarifa zote zitakazokusanywazitashughulikiwakwausiri wa hali ya juu na pia zinatolewa kwa ruhusa yako maalum kutokana na taratibu na sheria. Jina lako halitatumika katika taarifa zozote zitakazopatikana katika utafiti huu.

Fomu ya utafiti

Nakiri kwamba nimesoma maelezo yote kwa umakini na nimeelewa kila kilichoandikwa katika fomu hii. Ninaelewakwamba ninaweza kujitoa muda wowote nitakaota kakujitoa.

Mawasiliano

Kwa mawasiliano zaidi kuhusu utafiti huu Unawezakuwasiliana na mtafiti ,Ramla Nandala kutoka chuo kikuu Muhimbili, S.L.P 165001,Dar es Salaam au kama kuna maswali kuhusu haki zako kama mshiriki unaweza kuwasiliana na Prof Said Aboud mwenyekiti wa idara ya utafiti, S.L.P 65001,Dar es Salaam.Namba ya simu 2150302-6.

Je Unakubali Kushiriki? Ndio..... Hapana.....

Mshiriki amekubali..... Mashiriki amekataa.....

Mimi, …… Nimesoma maelezo yote katika fomu hii na maswali yangu yameweza kujibiwa.Nakubali kushiriki katika utafiti huu.

Sahihi ya Mshiriki..... Tarehe ……

Sahihi ya Msahili ……..... Tarehe ……

Appendix III: Key Informant Interview Guide – English Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

DIRECTORATE OF RESEARCH AND PUBLICATIONS

ASSESSMENT OF HEALTH SYSTEM FACTORS INFLUENCING TREATMENT OF MULTIDRUG RESISTANT TUBERCULOSIS: A CASE OF AMBULATORY AND HOSPITAL CARE MODEL

IDENTIFICATION

NAME OF THE DEPARTMENT ……..

Serial No.…….

Date; ……

Age ……years…….

Sex……

Education Level ……..

Job Title …….

INSTRUCTIONS TO INTERVIEWER

1. The interview will be conducted in Privacy.
2. Introduce yourself and assign an ID number to the interviewee.
3. The interview will take approximately 45 to 60 minutes.
4. Every bit of the interview should be clearly tape recorded and notes will also be taken to compliment recorded interviews.
5. This question will be administered only to health care workers.

ADMINISTRATION (DMO RTLC, DTLC AND MOI)

1. For how long you have been working in the TB department?
    - Probe more if he/she is satisfied with his /her workings are?
2. From your understanding and your experience can you explain to us the ambulatory model of care to patients with MDR TB?
3. From your understanding and your experience can you explain to us the hospitalization model of care to patients with MDR TB in (KIDH)?
4. Have you ever receive any training on the ambulatory model of care on patient with MDR TB?
    - Probe on training to health worker at health facilities?
    - Probe if the one trained is from TB department only or and other department?
    - Probe if the health workers are enough to do the work after the introduction of ambulatory model?
5. Are health worker having much experience on managing the patient with MDR TB?
6. On delivering health service in your municipality what do you say about medicine, Medical equipment, availability of laboratory and reagents?
    - Probe on the transportation of patients to KIDH?
7. What is your opinion on the service delivery points that's can be integrated in your department and other department?
8. What do you think are the main challenges in the health care system between ambulatory care and hospital care model?
9. What is your suggestion to overcome those challenges?
10. What is your perception on health care system in Tanzania regarding management of MDR TB patients and the model of care?
    - Do you think the system is working properly ?
    - Do you think the existing health care system in Tanzania operates to fulfill the desires of the health workers?
    - Do you think the existing health care system in Tanzania operates to fulfill the desires of the community?

11. What do you perceive as a benefit on introduction of ambulatory care on treatment of MDR TB patients (To health worker and patients)
    - Probe about availability of family support

MEDICAL DOCTOR, CLINICAL OFFICER AND NURSE

1. For how long you have been working in the TB department?
    - Probe more if he/she is satisfied with his /her workings are?
2. From your understanding and your experience can you explain to us the ambulatory model of care to patients with MDR TB?
3. From your understanding and your experience can you explain to us the hospitalization model of care to patients with MDR TB in (KIDH)?
4. Have you ever receive any training on the ambulatory model of care on patient with MDR TB?
    - Probe on training to health worker at health facilities?
    - Probe if the one trained is from TB department only or and other department?
    - Probe if the health workers are enough to do the work after the introduction of ambulatory model?
5. Are health worker having much experience on managing the patient with MDR TB?
6. On delivering health service in your department what do you say about medicine, Medical equipment, availability of laboratory and reagents?
    - Probe on the transportation of patients to KIDH?
7. What is your opinion on the service delivery points that's can be integrated in your department and other department?
8. What do you think are the main challenges in the health care system between ambulatory care and hospital care model in your department?
9. What is your suggestion to overcome those challenges?
10. What is your perception on health care system in Tanzania regarding management of MDR TB patients and the model of care?
    - Do you think the system is working properly?

- Do you think the existing health care system in Tanzania operates to fulfill the desires of the health workers?
- Do you think the existing health care system in Tanzania operates to fulfill the desires of the community?

11. What do you perceive as a benefit on introduction of ambulatory care on treatment of MDR TB patients (To health worker and patients)
    - Probe about availability of family support

PHARMACY

1. For how long you have been working in the pharmacy department?
    - Probe more if he/she is satisfied with his /her workings are?
2. From your understanding and your experience can you explain to us the system of medication ambulatory model of care to patients with MDR TB?
3. From your understanding and your experience can you explain to us the system of medication in hospitalization model of care to patients with MDR TB in (KIDH)?
4. Have you ever receive any training on the system of medication on the patient with MDR TB?
    - Probe on training to other pharmacist at health facilities?
    - Probe if the pharmacist trained is one distributing the MDR TB drug only or and other pharmacist?
    - Probe if the pharmacists are enough to do the work after the introduction of ambulatory model?
5. Are pharmacists having much experience on managing the patient with MDR TB?
6. On delivering health service in your department what do you say about medicine, Medical equipment, availability of laboratory and reagents?
7. What do you think are the main challenges in your department in delivering the health care system in your department?
8. What is your suggestion to overcome those challenges?
9. What is your perception on health care system in Tanzania regarding management of MDR TB patients and the model of care?
    - Do you think the system is working properly?

- Do you think the existing health care system in Tanzania operates to fulfill the desires of the health workers?
- Do you think the existing health care system in Tanzania operates to fulfill the desires of the community?

10. What do you perceive as a benefit on introduction of ambulatory care on treatment of MDR TB patients (To health worker and patients)
    - Probe about availability of family support

LABORATORY

1. For how long you have been working in the laboratory department?
    - Probe more if he/she is satisfied with his /her workings are?
2. From your understanding and your experience can you explain to us the system of laboratory test in ambulatory model of care to patients with MDR TB?
3. From your understanding and your experience can you explain to us the system of laboratory test in hospitalization model of care to patients with MDR TB in (KIDH)?
4. Have you ever receive any training on the system of laboratory on the patient with MDR TB?
    - Probe on training to other laboratory member at health facilities?
    - Probe if the laboratory health worker trained is one testing the MDR TB patient only or and other laboratory staff?
    - Probe if the laboratories are enough to do the work after the introduction of ambulatory model?
5. Are laboratory staffs having much experience on managing the patient with MDR TB?
6. On delivering health service in your department what do you say about availability of laboratory and reagents?
7. What do you think are the main challenges in your department in delivering the health care system in your department?
8. What is your suggestion to overcome those challenges?

9. What is your perception on health care system in Tanzania regarding management of MDR TB patients and the model of care?
    - Do you think the system is working properly?
    - Do you think the existing health care system in Tanzania operates to fulfill the desires of the health workers?
    - Do you think the existing health care system in Tanzania operates to fulfill the desires of the community?
10. What do you perceive as a benefit on introduction of ambulatory care on treatment of MDR TB patients (To health worker and patients)
    - Probe about availability of family support

Appendix IV: Ridhaa ya kushiriki katika utafiti (Kiswahili Version)

CHUO CHA SAYANSI ZA TIBA MUHIMBILI

MKURUGENZI YA UTAFITI NA MACHAPISHO

UCHUNGUZI KUHUSU MFUMO WA AFYA NA SABABU YA USHAWISHI WA MATIBABU YA KIFUA KIKUU SUGU : KESI YA HUDUMA MAJUMBANI NA HUDUMA ZA MAHOSPITALINI

KITAMBULISHO

JINA LA IDARA……

Namba ya Utambulishi…….

Tarehe……..

Umri …… Miaka…….

Jinsia……

Kiwango cha Elimu

Nafasi ya Kazi

MAELEKEZO KWA MUULIZA MASWALI

1. Mahojiano yatafanyika kwa usiri.
2. Jitambulishe wewe na mpe namba ya utambulisho kwa mhojiwa.
3. Mahojiano yatachukua takribani dakika 45 mpaka 60.
4. Kila kipengele cha mahojiano kinatakiwa kurekodiwa kwa usahihi na vidokezo kuandikwa pia ili kusaidia mahojiano yaliyorekodiwa.

UTAWALA (DMO, RTLC, DTLC NA MOI)

1. Kwa muda gani umekuwa ukifanya kazi katika kitengo cha kifua kikuu?
    - Uliza zaidi kama anaridhishwa na maeneo yake ya kazi? **(NOT DMO AND MOI ONLY RTLC AND DTLC)**
2. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa utoaji huduma za kifua kikuu sugu majumbani?
3. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa utoaji huduma za kifua kikuu sugu hospitalini(Kibong'oto)?
4. Je ulipata mafunzo yoyote kuhusu mfumo wa utoaji wa huduma za kifua kikuu sugu majumbani?
    - Je vipi watumishi wa vituoni walipata mafunzo?
    - Je waliopata mafunzo ni wale wanao husika na matibabu ya kifua kikuu sugu tu pekeyao?
    - Waliopata hayo mafunzo wanajitosheleza kufanya kazi hiyo?
    - Na je wanauzoefu wa kutosha kuwapa huduma wagonjwa wenye kifua kikuu sugu?
5. Katika utoaji wa huduma kwenye manispaa yako unazungumziaje suala la vifaa tiba, madawa,uwepo wa maabara na vitendanishi.
6. Vipi kuhusu usafirishaji wa wagonjwa kwenda hospitali (Kibongoto)
7. Nini maoni yako juu ya sehemu za kutolea huduma ambazo zinaweza kuambatanishwa kutoa matibabu ya kifua kikuu sugu na Idara nyingine?
8. Unafikiri nini ni changamoto kuu kwenye mifumo ya Afya katika utoaji huduma ambatanishi za kifua kikuu sugu katika Idara yako na Idara nyingine ?
9. Nini maoni yako ya jinsi ya kutatua changamoto hizo?
10. Nini uelewa wako juu ya mpangilio wa kutoa tiba ya kifua kikuu sugu kuanzia ngazi ya wizara mpaka Zahanati Nchini Tanzania.
11. Unafikiri mfumo huu upo sawa katika ufanyaji kazi wake?
    - Je ufanyaji kazi wake Unakidhi matakwa ya wafanyakazi wa Afya?
    - Je ufanyaji kazi wake Unakidhi matakwa ya huduma kwa wananchi?
    - Je unafikiria ni faida gani zitapatikana kwa kutambulishwa huduma za afya majumbani?

12. Ushirikiano kutoka kwa familia

TABIBU MSAIDIZI NA NESI

1. Kwa muda gani umekuwa ukifanya kazi katika kitengo cha kifua kikuu?
    - Uliza zaidi kama anaridhishwa na maeneo yake ya kazi?
2. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa utoaji huduma za kifua kikuu sugu majumbani?
3. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa utoaji huduma za kifua kikuu sugu hospitalini(Kibong'oto)?
4. Je ulipata mafunzo yoyote kuhusu mfumo wa utoaji wa huduma za kifua kikuu sugu majumbani?
    - Je vipi watumishi wengine walipata mafunzo haya?
    - Je waliopata mafunzo ni wale wanao husika na matibabu ya kifua kikuu sugu tu pekeyao?
    - Waliopata hayo mafunzo wanajitosheleza kufanya kazi hiyo?
5. Na je wanauzoefu wa kutosha kuwapa huduma wagonjwa wenye kifua kikuu sugu?
6. Katika utoaji wa huduma kwenye sehemu yako ya kazi unazungumziaje suala la vifaa tiba, madawa, uwepo wa maabara na vitendanishi.
    - Vipi kuhusu usafirishaji wa wagonjwa kwenda hospitali (Kibong'oto)
7. Nini maoni yako juu ya sehemu za kutolea huduma ambazo zinaweza kuambatanishwa kutoa matibabu ya kifua kikuu sugu majumbani na mahospitalini?
8. Unafikiri nini ni changamoto kuu kwenye mifumo ya Afya katika utoaji huduma za ambatanishi za kifua kikuu sugu katika Idara yako?
9. Nini maoni yako ya jinsi ya kutatua changamoto hizo?
    - Nini uelewa wako juu ya mpangilio kutoa tiba ya kifua kikuu sugu kuanzia ngazi ya wizara mpaka Zahanati Nchini Tanzania.
    - Nini uelewa wako juu ya mpangilio wa kutoa tiba ya kifua kikuu sugu kuanzia ngazi ya wizara mpaka Zahanati Nchini Tanzania.
10. Unafikiri mfumo huu upo sawa katika ufanyaji kazi wake?
    - Je ufanyaji kazi wake Unakidhi matakwa ya wafanyakazi wa Afya?
    - Je ufanyaji kazi wake Unakidhi matakwa ya huduma kwa wananchi?

11. Je unafikiria nini ni faida gani zitapatikana kwa kutambulishwa huduma za afya majumbani?
    - Ushirikiano kutoka kwa familia

MFAMASIA

1. Kwa muda gani umekuwa ukifanya kazi katika kitengo cha dawa(pharmacy)?
    - Uliza zaidi kama anaridhishwa na maeneo yake ya kazi?
2. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa utoaji dawa za kifua kikuu sugu majumbani?
3. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa utoaji dawa za kifua kikuu sugu hospitalini(Kibong'oto)?
4. Je ulipata mafunzo yoyote kuhusu utoaji dawa za wagonjwa wa kifua kikuu sugu majumbani?
5. Je vipi watumishi wengine wa famasi walipata mafunzo hayo?
    - Je waliopata mafunzo ni wale wanao husika na kutoa matibabu ya kifua kikuu sugu tu pekeyao?
    - Waliopata hayo mafunzo katika kitengo chako wanajitosheleza kufanya kazi hiyo?
6. Na je wanauzoefu wa kutosha kuwapa huduma wagonjwa wenye kifua kikuu sugu?
7. Katika utoaji wa huduma kwenye sehemu yako ya kazi unazungumziaje suala la vifaa tiba, uwepo wa madawa na vitendanishi.
8. Unafikiri nini changamoto kuu kwenye kitengo chako katika kutoa huduma za dawa za kifua kikuu sugu Idara yako?
9. Nini maoni yako ya jinsi ya kutatua changamoto hizo?
10. Nini uelewa wako juu ya mpangilio wa kutoa tiba ya kifua kikuu sugu kuanzia ngazi ya wizara mpaka Zahanati Nchini Tanzania.
    - Unafikiri mfumo huu upo sawa katika ufanyaji kazi wake?
    - Je ufanyaji kazi wake Unakidhi matakwa ya wafanyakazi wa Afya?
    - Je ufanyaji kazi wake Unakidhi matakwa ya huduma kwa wananchi?
11. Je unafikiria ni faida gani zitapatikana kwa kutambulishwa huduma za afya majumbani?
    - Ushirikiano kutoka kwa familia

MAABARA

1. Kwa muda gani umekuwa ukifanya kazi katika kitengo cha maabara
    - Uliza zaidi kama anaridhishwa na maeneo yake ya kazi?
2. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa maabara kwa wagonjwa wa kifua kikuu sugu majumbani?
3. Kwa ufahamu wako na uzoefu wako unaweza kutueleze kuhusu mfumo wa maabara kwa wagonjwa wa kifua kikuu sugu hospitalini(Kibong'oto)?
4. Je ulipata mafunzo yoyote kuhusu vipimo vya maabara kwa wagonjwa wa kifua kikuu sugu majumbani?
    - Je vipi watumishi wengine wa maabara walipata mafunzo hayo?
    - Je waliopata mafunzo ni wale wanao husika kupima wagojwa wa kifua kikuu sugu tu pekeyao?
    - Waliopata hayo mafunzo katika kitengo chako wanajitosheleza kufanya kazi hiyo?
5. Na je wanauzoefu wa kutosha kuwapa huduma wagonjwa wenye kifua kikuu sugu?
6. Katika utoaji wa huduma kwenye sehemu yako ya kazi unazungumziaje suala la vifaa tiba na vitendanishi.
7. Unafikiri nini changamoto kuu kwenye kitengo chako katika kutoa huduma za dawa za kifua kikuu sugu Idara yako?
8. Nini maoni yako ya jinsi ya kutatua changamoto hizo?
9. Nini uelewa wako juu ya mpangilio wa kutoa tiba ya kifua kikuu sugu kuanzia ngazi ya wizara mpaka Zahanati Nchini Tanzania.
    - Unafikiri mfumo huu upo sawa katika ufanyaji kazi wake?
    - Je ufanyaji kazi wake Unakidhi matakwa ya wafanyakazi wa Afya?
    - Je ufanyaji kazi wake Unakidhi matakwa ya huduma kwa wananchi?
10. Je unafikiria ni faida gani zitapatikana kwa kutambulishwa huduma za afya majumbani?
    - Ushirikiano kutoka kwa familia