FACTORS HINDERING CASE TRACING OF PAEDIATRIC TUBERCULOSIS IN DODOMA MUNICIPALITY, TANZANIA

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FACTORS HINDERING CASE TRACING OF PAEDIATRIC TUBERCULOSIS IN DODOMA MUNICIPALITY, TANZANIA

By

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A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Public Health of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certifies that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled; "**Factors Hindering Case Tracing of Paediatric Tuberculosis in Dodoma Municipality, Tanzania",** in Partial fulfillment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

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Prof. A. Kiwara

(Supervisor)

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Date

DECLARATION AND COPYRIGHT

I, **Devotha Leonard**, 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.

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This dissertation work would not have been possible without the support from my lovely husband Dr. Frank S. Kessy and my family.

DEDICATION

I dedicate this work to the memory of my late father Mr. Leonard Rutayongibwa, my lovely mother Mrs. Christina Leonard and my lovely husband Dr. Frank S. Kessy.

ABSTRACT

Background: Childhood Tuberculosis (TB) is among the top ten causes of childhood morbidity and mortality particularly in high-burden TB settings. According to 2012 Annual Report, the TB cases diagnosed and notified in Dodoma Municipal was 198/100,000; which is only 59% of what WHO recommends (333/100,000); the municipality diagnosed and notified only 39 TB cases of children aged 0-14 years. For children this figure is only 4.8% of the WHO recommendations.

Aim of the study: The study aimed at finding out specific factors hindering case tracing of Tuberculosis in children in Dodoma Municipality.

Methodology: A cross sectional descriptive study was done in April 2014 in Dodoma Municipality. It used purposive sampling technique to obtain 80 health care workers (HCWs) on convenience basis from all twelve TB diagnostic facilities and multistage cluster sampling technique to obtain 385 community members of Nzuguni ward. Self-administered questionnaire and interviewer guide were used for HCWs and community members respectively to collect demographic data, number of HCWs trained on TB related interventions, availability of TB tools/job aids, contact case tracing strategies and awareness of TB signs in children among community members. Data were sorted and processed using SPSS version 17. Descriptive statistics were generated and summarized for socio-demographic characteristics, TB trainings attended by HCWs, availability of job aids/tools and equipment, contact case tracing strategies. Community awareness of the signs and symptoms of TB in children were also analysed using descriptive statistics to find out those who had received any health education of Paediatric TB or had any information on TB sigs and symptoms in children.

Results: Study population composed of 80 HCWs and 385 community members. Among the HCWs, 43(53.8%) were males and 37(46.2%) females. HCWs included 10(12.5%) Medical Officers, 20(25%) Assistant Medical Officers, 21(26%) were Clinical Officers and 2(2.5%) Clinical Assistants; Laboratory technicians were 13(16.2%), Laboratory Assistants 10(12.5%) the rest were put under others 4(5%). Among the community

members, 167 (43.4%) were males and 218 (56.6%) females. The age of community members ranged from 18 to 81 years (mean =27.79 ± 10.80) and majority of them 304 (79%) were in the age group (18-34) years. Most of the study community members 192(49.9%) had secondary school education and only few 34 (8.8%) had no formal education.

The most mentioned paediatric TB case detection challenges included; few staff trained on TB related trainings 53 (66.3%), about 17(31.5% and 15(57.7%) clinicians and laboratory staff had not attended any TB related training respectively; lack of awareness of parents about Paediatric TB 34 (62.9%), inadequate support for HCWs to visit homes of index patient 37 (68.5%) and difficult to read and interpret chest x-ray 33 (61.1%). None of HCWs reported to have Gene X-pert MTB/RIF at their facility.

Conclusion: This field based study has established that; few HCWs are trained on TB related interventions, there is low awareness of the community of TB among children; difficult interpretation of chest x-ray results, unavailability of currently used equipment such as Gene X-pert MTB/RIF and inadequate TB contact case tracing strategies are factors influencing TB case tracing among children in Dodoma Municipality.

Recommendations: The MOHSW/NTLP need to train more HCWs on Paediatric TB and other TB related trainings, in-service educational programs among HCWs will emphasize TB case detection, treatment as well as prevention of TB in children aged 0-14 years. The Provision of equipment (gene x-pert)/job aids to TB diagnostic health facilities in Dodoma Municipality is also very important ; more effort is needed to raise community awareness through health education towards TB in children and further studies are needed on why parents/caregivers provide wrong information/address when they have index TB patients (children & adults) .

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ABBREVIATIONS & ACRONYMS

AFB	Acid-Fast Bacillus
AIDS	Acquired Immunodeficiency Syndrome
AMO	Assistant Medical Officer
BCG	Bacille Calmette–Guérin
CA	Clinical Assistant
CDC	Center for Disease Control
CDs	Compact Discs
CO	Clinical Officer
CTC	Care and Treatment Centre
CXR	Chest x-ray
IEC	Information, Education and Communication
EQA	External Quality Assurance
HCWs	Health Care Workers
HEWs	Health Extension Workers
HIV	Human Immunodeficiency Virus
ICAP	International Center for AIDS & Treatment Program
IEC	Information, Education &Communication
I-TECH	International Training and Education Center for Health
IPD	In patient department
LED	Light Emitting Diode
MD	Doctor of Medicine

MDR	Multidrug Resistance
MOHSW	Ministry of Health and Social welfare
MUHAS	Muhimbili University of Health and Allied Sciences
NGO	Non-Governmental Organization
NTLP	National Tuberculosis and Leprosy Programme
OPD	Out Patient Department
PATH	Programme for Appropriate Technology for Health
PHC	Public Health Care
PLHIV	People Living with HIV
QI	Quality Improvement
RCH	Reproductive and Child Health
SBCC	Social and Behaviour Change Communication
SPHSS	School of Public Health and Social Sciences
SPSS	Statistical Package for Social Sciences
TB	Tuberculosis
TNGMTBC	Tanzania National Guidelines for Management of TB in children
TST	Tuberculin Skin Test
TSQ	TB Screening Questionnaire
USAID	United States Agency for International Development
WHO	World Health Organization
ZN	Ziehl-Nelsen

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Tuberculosis (TB) is a chronic disease caused by infection with *Mycobacterium tuberculosis,* a bacterium which is an acid fast bacillus (AFB). A child is exposed to the organism during contact with an infectious adult or adolescent bearing the bacteria in their lungs. Immunosuppressed children and those less than four years of age can develop complicated and unusual forms of lethal disease, which may present as TB meningitis or miliary TB due to altered or deficient immune responses to the *Mycobacterium tuberculosis*.

Children younger than 10 years generally have a disease with few bacteria and non-productive cough. Thus they present low risk of transmitting the infection to others. However, children with laryngeal disease can be infectious, even at a very young age (Tanzania National Guidelines for Management of Tuberculosis in children 2012). Adolescents are at particular risk of developing adult type disease, and they are often sputum smear-positive and highly infectious.

Tuberculosis is still a leading cause of death in low income and middle-income countries, especially those of sub-saharan Africa, where TB is an epidemic because of the increased susceptibility by human immunodeficiency virus (HIV) infection. Childhood TB has been largely absent from the global public health agenda despite being a major contributor to childhood morbidity and mortality particularly in high-burden TB settings (Tanzania National Guidelines for Management of Tuberculosis in children 2012).

The WHO estimated that there were 530,000 TB cases in children in 2012 and 74,000 deaths among children who were HIV negative (WHO Global Tuberculosis Report, 2013). The global number of TB case notifications among children (aged <15 years) was estimated at 349,000 in 2012(Sedden A.J et al, 2012).

Children account for around half a million new cases annually. The actual burden of TB in children is likely higher especially the challenge in diagnosing childhood TB.

Diagnosing TB in infants and children is extremely difficult due to lack of appropriate diagnostic tools for their age group. As a result; children are misdiagnosed and treated inappropriately (USAID and PATH Tanzania, 2014).

Seventy five percent of childhood TB cases occur annually in the 22 high burden countries that together account for 80% of the world's estimated incident cases. More than 11% of TB cases notified in Kenya are children below 15 years. This is thought to be an under estimate considering the challenges faced in diagnosing TB in children (Kenyan National Guidelines on Management of Tuberculosis in children, 2013).

Tanzania ranked number 20 among the 22 high TB burden countries (WHO's Global TB Control 2011 report). In Tanzania like in many other countries TB Control Program relies on passive case-finding to detect cases and screening people living with HIV (PLHIV).

Detection of tuberculosis in the population is one of the preventive measures which is essential to the control of the disease. Prompt case finding is an important pillar of global tuberculosis control (Raviglione MC, 2007). The 5.8million cases that were notified globally in 2009 represented only 63% of the estimated number of new TB cases, and case detection was lower in the African region (WHO report,2010) TB case finding in countries with a high TB-burden but low income is mostly passive and relies on self-reporting of symptomatic persons to the health service. Delays in diagnosis through passive case detection have been associated with patient and provider related factors (Sreeramareddy et al, 2009).

The accuracy of diagnosis and clinical validity of reported cases is very important. Managing children with TB in routine practice is possible but without adequate operational guidelines, expanding services and follow up, it can lead to suboptimal results (Safdar, 2010).

There is a need for increased action to implement contact investigation to detect TB in children; advocacy for research on new diagnostics, drugs and vaccines for childhood TB; scaling up capacity building of health workers to diagnose and manage children with TB; antenatal screening for TB – diagnose, treat or prevent TB in mothers, are some of the urgent steps that must be taken (Surya, 2013).

Due to inadequate TB case detection in children, which results to low proportion of childhood TB case notification, it is estimated that a large number of children suffering from TB are not appropriately managed.

We need to ensure that all children exposed to TB or suffering from TB are detected and correctly managed but this will be achieved if the diagnostic tools and equipment, knowledgeable and skilled healthcare workers are available. It is of paramount importance for the community to be aware of signs and symptoms of childhood TB so that they bring the children manifesting those symptoms for health services.

1.2 Literature Review

TB represents one of the world's public health greatest challenges. This section looked at several studies on factors hindering case detection of TB in children. Among the factors, include; availability of diagnostic tools and equipment, training of HCWs and reference materials on childhood TB for health care workers. Others are the strategies for intensified case finding, contact case tracing and integrated family and community centred strategies to provide comprehensive and effective services at the community level.

1.2.1 Training of Health Care workers on TB related Trainings

Tuberculosis (TB) is a leading killer of children worldwide, yet in most countries, efforts to find, diagnose, and treat TB focus on adults only. In 2010 in Tanzania, there were 5,216 TB case notifications in children (less than 15 years of age), which accounted for 8.7 percent of the total new case notifications. However, because it is difficult to diagnose TB in children and health workers do not often receive training in the management of TB in children, the true magnitude of the disease is expected to be much greater (USAID and PATH, 2014).

A study done in Tanga Tanzania by Bjerrum et al, 2012 on primary Health Care Workers (HCWs) perceptions of childhood TB revealed that, HCWs not feel adequately equipped for identifying children suspect of TB. Lack of training and diagnostic tools was ranked as the most significant barrier to identifying children with suspect TB, and training of staff was perceived to be the most important intervention to improve performance at PHC level. In-depth discussions revealed that few had received training in TB since college, and no one had specific training in childhood TB. Moreover, support and supervision was perceived to be inadequate and a missed opportunity for education, continuous training and for motivating the health staff at dispensaries and health centres.

A qualitative study conducted in Tanzania on Factors underlying diagnostic delay in tuberculosis patients in rural area in Tanzania identified that Failure to identify TB cases by formal and non-formal health providers indicates that the education of both communities as well health workers is essential in order to reduce diagnostic delays (Verhagen,et al ,2010)

A report from International Center for AIDS & Treatment Program Report (ICAP) on Addressing childhood Tuberculosis at Dar es Salaam's center of excellence indicated that; before implementing that project TB cases were often thought to be recurrent pneumonias, confirmed childhood TB case notification has increased from seven cases per quarter to around 30 after building capacity of health care workers through training to identify TB cases in children. (ICAP Tanzania Report, 2014).

According to the Road Map for childhood tuberculosis, activities to improve diagnosis of TB cases in children should focus on skills required by primary health care workers to fulfil their responsibility and reflect primary health care level capacities and challenges. When HCWs are trained on diagnosis and treatment of TB in children, it becomes easy for them to identify the signs and symptoms of TB in children. The HCWs will be guided on how to overcome the challenges of diagnosis and treatment of childhood TB, at different health facility levels (Road Map for childhood TB, 2013).

1.2.2 Availability of Diagnostic Tools and Equipment

Lack of an accurate diagnostic test for TB in young children is a major challenge, and adds to under-diagnosis of TB cases in children. Bacteriological confirmation is achieved in only 30-40% of TB cases in children (Tanzania National Guidelines for Management of TB in children, 2012).

Diagnosis is often based on the presence of history of contact with a smear positive adult with TB, signs and symptoms suggestive of TB, suggestive laboratory results or radiographic findings and a positive tuberculin skin test (TST). The sputum smear microscopy using a Ziehl Nelsen (ZN) stained smear or Light Emitting Diode (LED) fluorescence microscopy is the main diagnostic test mostly used in Tanzania. In some parts of Tanzania mycobacterial culture and Gene X-pert MTB/RIF are being used.

According to ICAP report of 1st April 2014 together with other interventions, the use of Xpert MTB/RIF technology for rapid diagnosis and identification of drug resistant strains in paediatric care have dramatically expanded diagnosis of TB in this population, 193 new

paediatric TB cases were detected, representing 83% of all paediatric cases in the region recorded by the national TB program (ICAP Tanzania Report, 2014).

A study done in Tanga Tanzania revealed that lack of diagnostic tools is a major obstacle for reliable diagnosis of TB in children, although lack of awareness of the burden of childhood TB, lack of specific training, limited resources and poverty also present challenges for the diagnosis of TB in children (Sandra et all ,2012).

Another study done in Tanzania found that lack of guidelines for the management of tuberculosis in children, working tools and guidelines; supervision and referral feedback were mentioned by health care workers as the main factors influencing case identification of childhood tuberculosis in other developing countries (Bjerrum et al, 2012).

1.2.3 TB contact Case Tracing strategies

Passive case finding, the detection of TB cases among persons presenting to health facilities with symptoms suggestive of TB, has remained the principal public health approach for TB diagnosis together with intensified case findings (screening all PLHIV for TB). While this approach, in combination with improved treatment, has led to substantial global progress, the overall epidemiological impact has been inadequate. Stagnating case notifications and sluggish decline in incidence prompt the pursuit of a more active approach to TB case detection.

Active case finding approaches include screening high risk groups and contact tracing to increase the rate of TB case identification. The goal of contact tracing is to reduce the time required to detect and treat a case and hence reduce the ability of infectious patients to transmit the disease. (Begun et al, 2013).

A study done by Yassin et al. in 2013 in Ethiopia on active TB case findings used female Health Extension Workers (HEWs) at village level. HEWs conducted house-to-house visits, identified individuals with a cough for two or more weeks, with or without other symptoms, collected sputum, prepared smears and supervised treatment. Supervisors transported smears for microscopy, started treatment, screened contacts and initiated Isoniazid preventive therapy (IPT) for children. The Outcomes of the study were

compared with the pre-implementation period and a control zone. The results of the study showed that the number of children diagnosed to have TB increased.

Young children living in close contact with a source case of smear –positive pulmonary TB are at a particular risk of TB infection and disease thus WHO guidelines advised that all children less than 5 years who are in close contact with smear positive index patient should be actively traced, screened for TB and provided preventive chemotherapy after active TB has been excluded (WHO Guidelines, 2006).

Among the strategies to detect more TB cases South Africa was tracing contacts of TB patients using the paper slips method. That method was found to be a simple and acceptable way to ensure that contacts are screened for TB, and may be a useful adjunct to home visit programs, and a replacement in situations where home visits are not possible. It has the potential to improve TB case detection significantly, prevent TB transmission, reduce TB incidence and generally improve success of TB programs (Mwansa-Kambafwile J et al, 2013).

More emphasis should therefore be placed on contact tracing of close relatives, friends or persons connected with TB patients. Contact tracing is very necessary to establish the primary source of the TB disease and to detect all those who are secondarily infected for proper diagnosis and prompt treatment (Omotowo et al, 2012).

1.2.4 Community Awareness on signs and symptoms of TB in children

Community level programming is an important piece of the response to paediatric TB care and control, and may include case finding including screening and referral, contact tracing ,support of treatment and preventive therapy, community mobilization.

Children with TB present to health services in the same context as children with common childhood illnesses, which is generally at primary and secondary care settings. The most obvious point of entry into the health system for many children with TB (or those who are contacts of someone with TB) is at the community level, where the child's parent, guardian or other household contacts have been diagnosed with TB or where they are being managed (Road Map for childhood TB, 2013).

Decentralizing TB control measures beyond health facilities by harnessing the contribution of the community could increase access to effective childhood TB care. The activity could be combined with a variety of complementary activities: disseminating messages to increase awareness and promote adherence, tracing patients who interrupt treatment, recognizing adverse effects, and case detection (Hadley et al, 2000).

The study on Health-seeking norms for TB symptoms in southern Angola: implications for behaviour change communications concluded that knowledge about TB should include key symptoms, perceived curability and information on access to services when designing interventions to improve case detection (Luis et al, 2011).

Underreporting of childhood TB means that its impact on children's survival has been underestimated and under recognized. The responsibility to end the neglect and overcome barriers in order to improve the prevention and management of childhood TB lies with a wide range of individuals and with services at all levels of the health care system; however, the responsibility starts in the community where the burden of TB exists (Road Map for childhood TB, 2013).

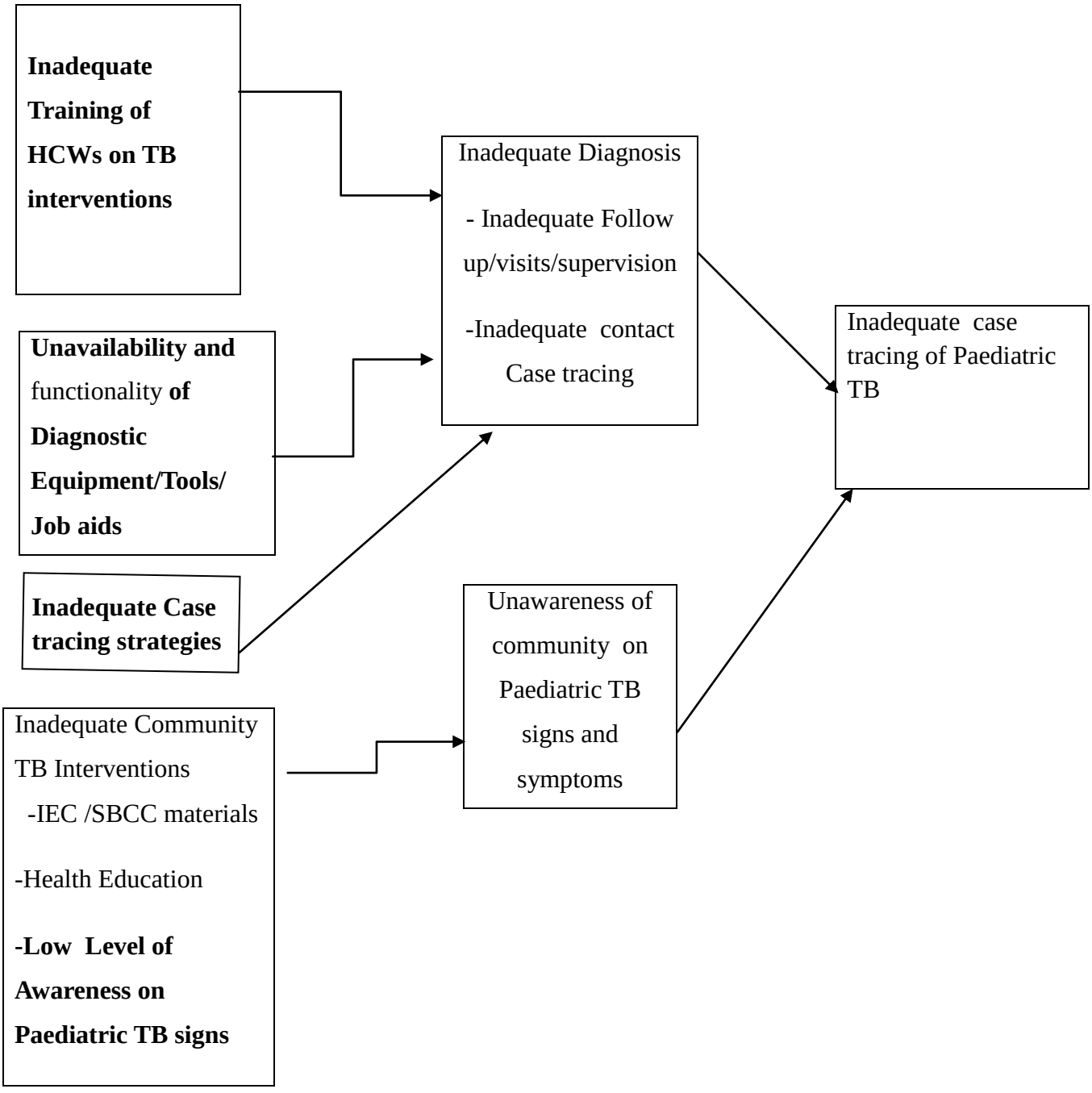
The study done in Mpwapwa district, Tanzania on Community knowledge, attitudes and practices towards tuberculosis and its treatment concluded that, rural communities of Mpwapwa District have a low knowledge on the causes and the transmission of tuberculosis which is a likely cause of the delay in seeking treatment. An intensive appropriate community health education is required for a positive behavioural change in tuberculosis control (Mangesho et al, 2007).

1.3 Conceptual Framework

The figure 1 below shows some factors which contribute to TB case detection among children aged 0-14 years. Availability of diagnostic tools and equipment, capacity of health care workers to detect Paediatric TB and contact case tracing strategies are among the issues which may lead to improved case tracing of TB in children. It is important to consider the community awareness as an important factor towards TB case tracing in children because if the community is not aware they will not bring their children for TB diagnosis.

Inadequate case tracing of TB in children is associated with different variables but for the case of this study few factors were looked at to describe what is existing at the level of trained staff on TB related trainings, availability of tools/ job aids and equipment, community awareness of TB and contact case tracing strategies used by HCWs to track children/patients with TB. Further studies need to look at other factors associated with improved TB case tracing in children as it is shown in the conceptual framework (Figure 1).

Figure 1: Conceptual Framework



1.4 Statement of the problem

TB is among the top 10 causes of death among children worldwide. WHO estimated that the annual global burden of TB in children in 2012 was approximately 530,000 cases (or 6% of global TB burden), the estimates in 2012 revealed that up to 74,000 children die from TB disease each year and children account for around half a million new TB cases annually. According to WHO TB cases among children aged 0-14 years represent about 15–20% of the global burden of tuberculosis.

In the year 2011, a total of 61,838 TB cases of all forms were diagnosed and notified in Tanzania. The country diagnosed and notified only 4,940 (8.4%) cases of children aged 0-14 years among new cases which is less than the WHO estimate (NTLP annual report, 2011). Dodoma Municipality is among the districts in Tanzania with low childhood TB case notification. In 2012 Dodoma Municipal notified only 39 TB cases for children aged 0-14 years which is about 4.8% only of WHO recommendations in a high burden situation like Tanzania (Dodoma region Annual Report, 2012).

Although the Tanzania national guidelines for the management of tuberculosis in children and some interventions are in place, there has been a disparity in provision of services among regions, districts and facilities; some districts have managed to increase the proportion of children cases diagnosed for TB but in Dodoma Municipality the childhood TB is still low.

This study assessed factors hindering case tracing of Paediatric Tuberculosis in Dodoma Municipality.

1.5 Rationale

Early diagnosis of Tuberculosis cases is crucial for reduction of infection rate and improving treatment outcome. Despite efforts made through media and community sensitization on warning symptoms of TB, still there are few cases diagnosed with TB among children. There are few studies which have tried to explore the reasons for low case detection of TB in children.

The findings from this study will provide useful information on the factors related to low childhood TB cases in Dodoma municipality. The information from the study will be useful to others who will do studies in this area and for planning of Paediatric TB activities thus increase the uptake of children in TB services which in turn will decrease the burden of TB disease among children aged 0-14 years of age.

The findings of the study will also contribute towards improving Paediatric TB services in Dodoma Municipality and Dodoma Region as a whole with the support of the National Tuberculosis and Leprosy Programme (NTLP).This will help to expand support provided by the MOHSW to other districts and find the sustainable means of expanding the services especially in areas with high burden of TB diseases and less reported TB cases among children.

1.6 Research Question

What are the factors hindering case detection of Paediatric Tuberculosis in Dodoma Municipality?

1.7 Objectives

1.7.1 Broad Objective

To assess the factors hindering case tracing of Paediatric Tuberculosis in Dodoma Municipality

1.7.2 Specific Objectives

1. To determine the proportion of HCWs trained on TB-related interventions
2. To identify challenges experienced by HCWs in case tracing of TB in children
3. To determine the level of community awareness on Tuberculosis signs and symptoms in children

CHAPTER TWO

2.0 MATERIALS AND METHODS

2.1 Type of the study

A descriptive cross-sectional study that employed two methods; questionnaire and interview guide comprising of both structured/closed ended and open ended questions.

2.2 Study population

- The study involved two study population; Health Care Workers (Clinicians, Laboratory staff) from 12 TB diagnostic centres in Dodoma Municipality and adult community members aged 18 years and above from Nzuguni ward

- The reason to choose this study population was that case detection challenges of children with TB are associated with the capacity of health care workers who are clinicians and laboratory staff to detect the disease together with availability of diagnostic tool/job aids/equipment and community awareness of the disease for them to bring their children for health services.

2.3 Sample Size

- Health care workers were obtained on convenience basis since the 12 TB diagnostic sites have about 80 HCWs working in children related department ,all who were available and willing to participate in the study were given a questionnaire

- A minimum sample size 'n'of 384 Community members was arrived at using the Cochran formula

$$n = \frac{Z^2 P (1-P)}{\varepsilon^2}$$

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2}$$

Where n=Sample size; Z=level of confidence, set at 95% (1.96); P= Proportion of community members estimated not to be aware of Paediatric TB signs and symptoms is unknown, therefore 50% (0.5) was used; $\mathcal{E}$ =margin of error**,** set at 5% (0.05).

2.4 Sampling Procedure

Health Care Workers: Non probability convenient sampling procedure was used to obtain the study subjects. All clinicians working at the OPD, RCH, Paediatric, adult female and male, adult wards, CTC, TB clinics and laboratory personnel at a time when the study was taking place were recruited after giving consent. HCWs were from all 12 Public TB diagnostic facilities from Dodoma Municipality; these facilities were purposive selected.

Community members: A multistage cluster sampling technique was used at the level of division, wards, villages /street, the households were selected randomly to obtain adult individuals aged 18 years and over.

- The layout primary sampling involved 4 Divisions (Dodoma Town, Hombolo, Kikombo and Zuzu) of which 1 division; Dodoma Town was selected randomly.
- The secondary layout sampling involved 22 wards from Dodoma town division, Nzuguni ward was selected randomly
- Since there was only one street (Nzuguni) in Nzuguni ward there was no Sampling at this level.
- Households were selected randomly to obtain adult community members aged 18 years and above.

2.4.1 Eligibility criteria

2.4.1.1 Inclusion criteria for Health care workers

Health Care workers (clinicians and laboratory personnel) working in Outpatient departments (OPD), Reproductive and child health (RCH), Paediatric wards, adult Male and Female wards, HIV care and treatment clinic (CTC,) TB clinics and TB Laboratory diagnostic units/sections who were willing to participate during the study period were included.

2.4.1.2 Exclusion Criteria for Health care workers

- HCWs not working in children related TB services
- HCWs that were not present during data collection and not willing to participate in the study

2.4.1.3 Inclusion criteria for community members

Adult Community members aged 18 and above who were willing to be interviewed.

2.4.1.4 Exclusion Criteria for community members

Community members who were not able to speak Kiswahili

2.5 Study area

- The study was conducted in Dodoma Municipality, Tanzania. It focused on twelve TB diagnostic Health Facilities considering child related services including Outpatient departments (OPD), Reproductive and child health (RCH), Paediatric wards, adult Male and Female wards, HIV care and treatment clinic (CTC), TB clinics and TB Laboratory diagnostic units/sections.

- The study was also conducted in the community in Nzuguni ward of Dodoma Municipality.

2.6 Data collection methods

2.6.1 Data collection tools

Health Care Workers: Interviewee administered questionnaire with open and structured/closed ended questions was used to gather background information, availability and usage of job aids and diagnostic tools. Information of TB related training attended, technique used for contact case tracing.

Community members: Interviewer Guide (structured/open questions) was administered by trained research assistants to obtain information about their background, awareness of TB transmission, warning signs of TB among children and if they had any health education on TB.

2.6.2 Piloting the data collection tools

Both tools were piloted before data collection; English questionnaires were translated to Swahili and back translation. The Kiswahili questionnaires were piloted in one of the health facilities to observe if it is understood by research participants, the questions were adjusted according to the pilot results in order to achieve better clarity.

2.6.3 Recruiting and training of research assistants

The research assistants were chosen on the basis of having at least completed clinical medicine or nursing training.

Four research assistants were trained for one day on how to administer the research instrument to the respondents. This helped to be familiar with them with the intent and meaning of questions, sampling, and administration of tools and to give them enough experience in conducting interview in the field.

2.7 Variables

- Training of Health Care Workers on TB related interventions
- Availability of Diagnostic tools/job aids &equipment
- Contact case tracing strategies
- Community awareness on TB in children.

2.8 Data management and analysis

The data collected was checked, coded and entered into computer software (SPSS version 17) for cleaning and further processing.

Descriptive statistics such as frequency, percentage and mean were generated for socio-demographic characteristics, TB training attended by HCWs, availability of job aids, diagnostic tools/equipment, contact case tracing strategies, awareness of TB signs in children among community members to describe and summarize the data.

2.9 Ethical issues

Ethical clearance was sought from the Directorate of Research and Publications of Muhimbili University of Health and Allied Sciences (MUHAS) prior to the study. Permission to conduct the study in the health facilities was asked from the Municipal Executive Director and the Municipal Medical officer and other health authorities (in-charges of the health facilities). Permission to obtain community members was sought from the municipal authorities and the village/street leaders.

The written informed consent was sought and obtained from participants before participating in the study. All participants were informed about the objectives of the study and that their participation was voluntary as there was no any kind of cohesion for participation. Participants were free to decline or withdraw at any time in the course of the study without any repercussion. It was clearly clarified that the information provided by participants will be for research purposes and would therefore be strictly anonymous and dealt with confidentially.

CHAPTER THREE

3.0 RESULTS

3.1 Demographic Characteristic of samples

The population under the study composed of 80 health care workers and 385 community members.

Among the health care workers 54 (67.5%) were clinicians and 26 (32.5%) laboratory staff. Thirty four HCWs (42.5%) were from the hospitals, 41(51.3%) from health centres and 5 (6.3%) from dispensaries. Among the HCWs, 43(53.8%) were males and 37(46.2%) females. The HCWs included 10(12.5%) Medical Officers, 20(25%) Assistant Medical Officers, 21(26%) were Clinical Officers and 2(2.5%) Clinical Assistants; Laboratory technician were 13(16.2%), Laboratory Assistant 10(12.5%) and the rest were put under others 4(5%) (Table 1).

Among the community members involved in the study, 167(43.4%) were males and 218 (56.6%) females. The age of community members ranged from 18 to 81 years (mean = 27.79 ± 10.80) and majority of them 304 (79%) were in the age group (18-34) years.

Most of the study community members 192(49.9%) had secondary school education and only few 34 (8.8%) had no formal education. Regarding the marital status and religion of the study community members, most of them 212(55.1%) were single and the majority were Christians 286(74.3%) (Table 2)

Table 1: Socio-demographic characteristics of Health Care workers (n=80)

Social demographic factors	Frequency	Percentage
Sex		
Male	43	53.8
Female	37	46.2
Age group(in years)		
20 – 29	20	25.0
30 – 39	22	27.5
40 – 49	21	26.3
50 – 59	15	18.8
60+	2	2.5
Cadre		
Medical Officer	10	12.5
Assistant Medical Officer	20	25.0
Clinical officer	21	26.2
Clinical Assistant	2	2.5
Laboratory technician	13	16.2
Laboratory assistant	10	12.5
Others	4	5.0

Table 2: Socio-demographic characteristics of community members (n=385)

Social demographic factors	Frequency	Percentage
Sex		
Male	167	43.4
Female	218	56.6
Age group(in years)		
18 – 34	304	79.0
35 – 44	46	11.9
45 – 64	29	7.5
65+	6	1.6
Education level		
College/ university degree	66	17.1
Secondary education	192	49.9
Primary education	93	24.2
None	34	8.8
Religion		
Christian	286	74.3
Muslim	97	25.2
Traditional	2	0.5
Marital status		
Single	212	55.1
Married	129	33.5
Cohabiting	14	3.6
Divorced/separated	17	4.4
Widowed	13	3.4

3.2 HCWs trained on TB-related interventions

Thirty six HCWs (45%) reported to have attended at least one TB- related training. Among the clinicians, 16(29.6%) attended collaborative TB/HIV activities training, 13(24.1%) paediatric TB training, 7(12.9%) chest X-Ray reading and interpretation training and 1(1.9%) attended Multidrug Resistance (MDR) training. About 17(31.5%) had not attended any TB related training (Figure 1).Training attended by laboratory staff included LED 4(15.4%), TB testing 4(15.4%) and 3(11.5%) attended EQA/QI training and 15(57.7%) laboratory staff had not participated in any TB related training (Figure 2).

Figure 2: Trainings attended by clinicians (n=54)

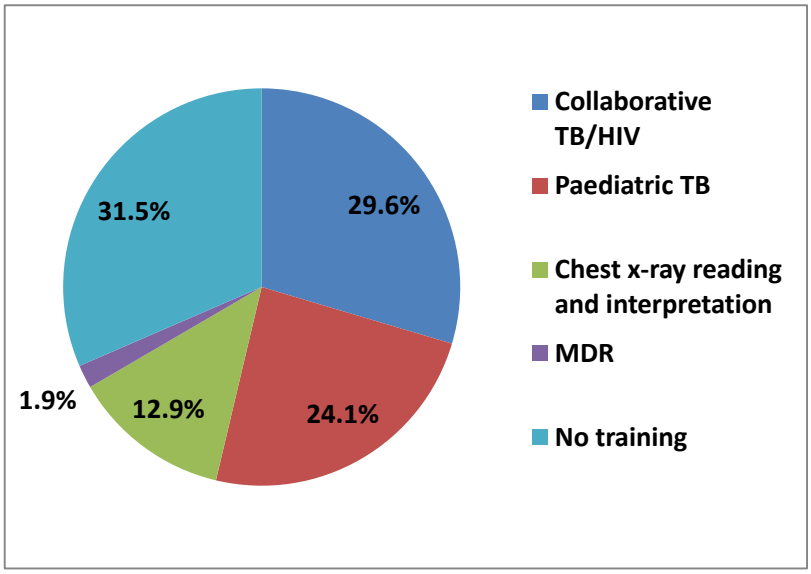
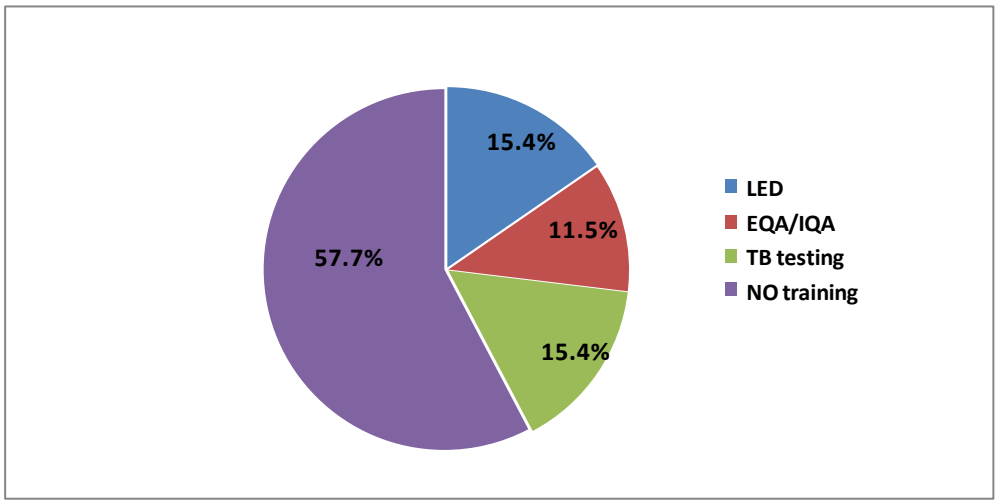


Figure 3: Trainings attended by laboratory staff (n=26)



3.3 TB Case tracing challenges faced by HCWs in Paediatric TB

Health care workers were asked about the challenges they are facing in case tracing of TB in children. There are challenges facing clinicians and laboratory staff respectively and those facing both clinicians and laboratory staff. Challenges mentioned by clinicians alone were contact case tracing, reading and interpretation of chest x-rays, inability to differentiating paediatric TB from other diseases and unawareness of parents on the signs and symptoms of TB in children hence bringing children in late stage (Figure 4). Laboratory staff had challenges of which are also faced clinicians (Figure 5).

Case detection challenges facing by both clinicians and laboratory staff were difficult in obtaining sputum sample from children especially the young ones, few staff trained on management of TB in children and inadequate job aids/tools and equipment (Figure 6).

Figure 4: TB case tracing challenges faced by clinicians alone (n=54)

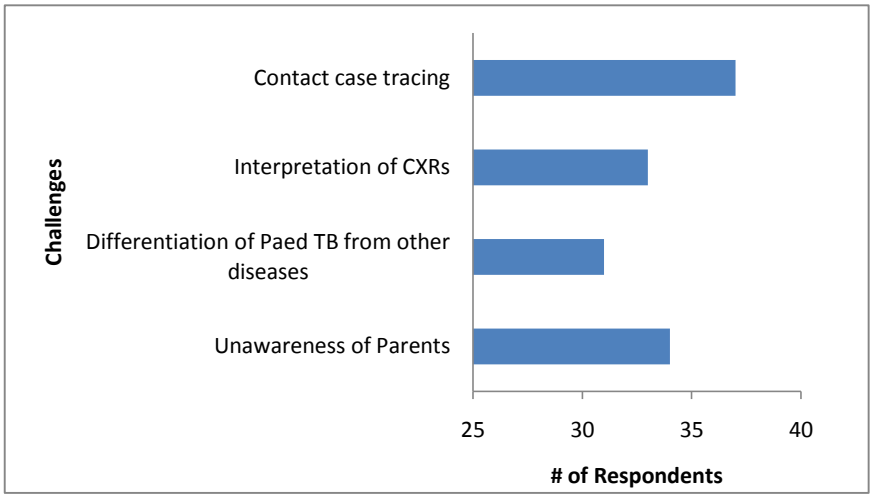


Figure 5: TB case tracing challenges faced by lab staff (n=26)

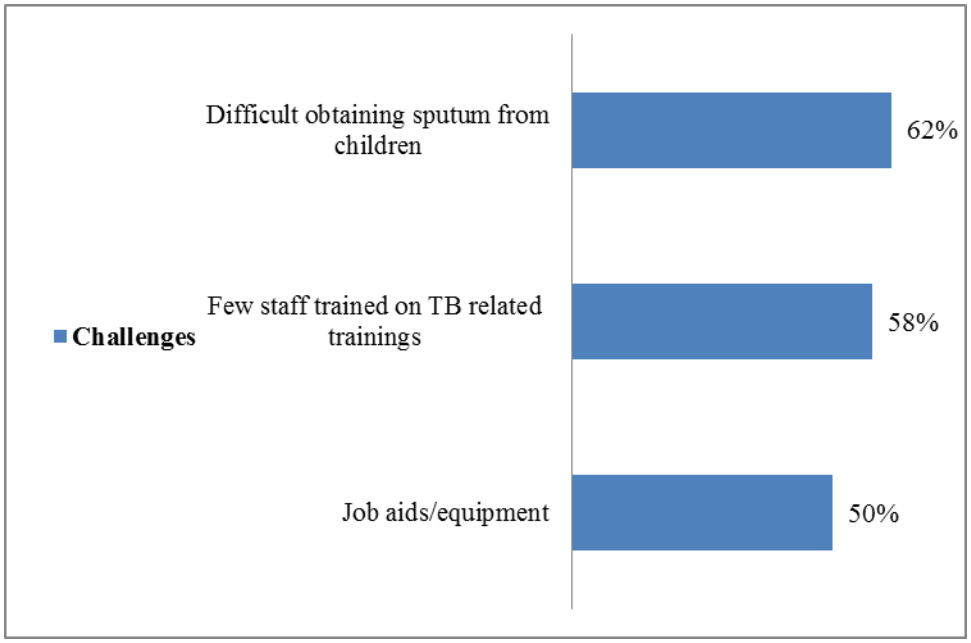
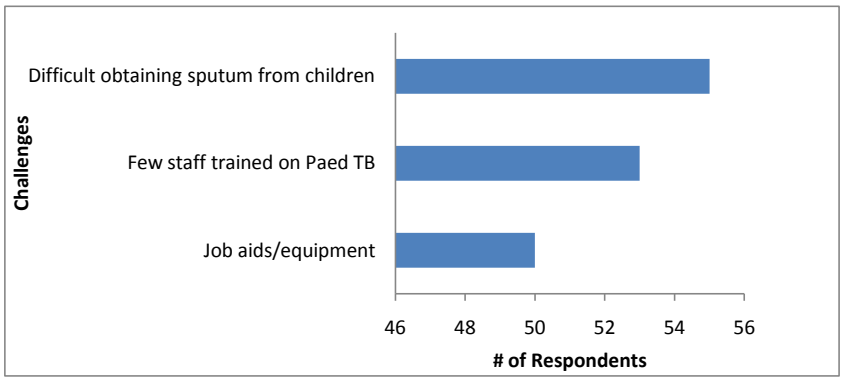


Figure 6: TB case tracing challenges faced by clinicians and lab staff (n=80)



3.3.1 Availability of Job aids/Tools and Equipment

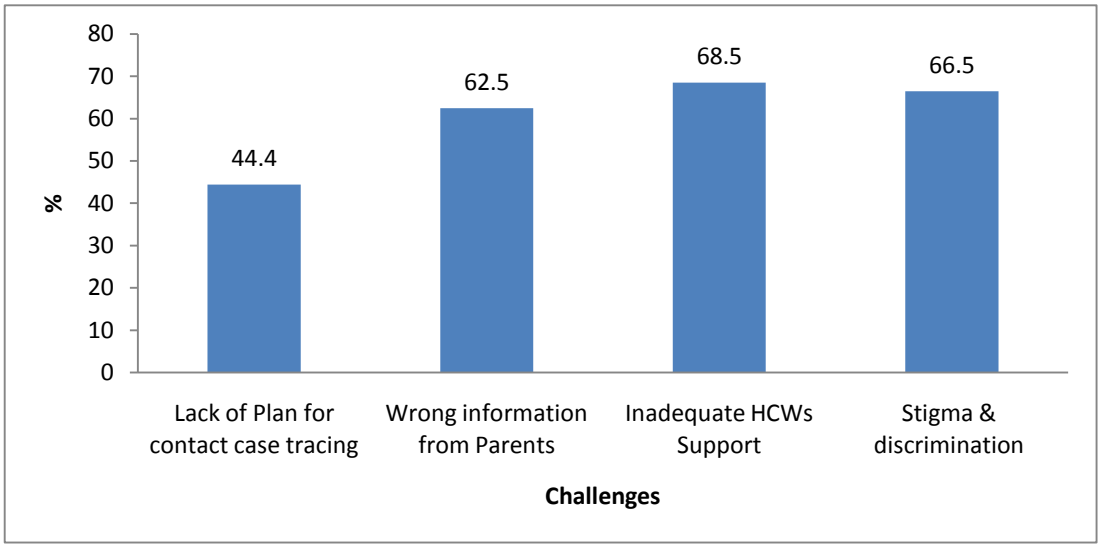
Diagnostic challenges of paediatric patients mentioned by both clinicians and laboratory staff were un-availability of job aids and equipment (62.5%), most (46.3%) of them reported to have used the diagnostic algorithm. Few (23.7%) HCWs reported to have been using TSQ. Among the tests that are performed and used mostly by clinicians is chest x-ray 63.8%. None of the participants reported to have Gene X-pert MTB/RIF at their facility.

3.3.2 Contact tracing strategies

Clinicians were asked whether there is any existing system of contact case tracing when they get index patients with sputum positive for AFB and 28(51.9%) reported to have a system/plan. Among the strategies they use for contact case tracing is asking the index patients to bring people they have been living with 18(33.3%).

The mostly mentioned challenges in contact case tracing were; wrong information/address) from parents/care givers 34(62.5%), lack of support like transport/allowances 37 (68.5%) and stigma and discrimination among community members 36(66.7%) (Figure 7).

Figure 7: Challenges faced by Clinicians in TB Contact Case Tracing (n=54)



3.3.3 Other case contact challenges

Other challenges mentioned by Clinicians were lack of awareness of parents/guardians/care takers about Paediatric TB makes them bring children in late stage of the disease 34(62.9%). It is also difficult for clinicians to differentiate TB and other conditions like malnutrition, other respiratory diseases 31(57.4%) and difficult to read and interpret chest x-ray 33(61.1%).

3.4 Community awareness on Tuberculosis signs and symptoms in children

3.4.1 Awareness of TB signs and symptoms in general population

All community members 385 (100%) reported to have heard about Tuberculosis and gave the meaning of TB according to their understandings. Majority of community members mentioned TB to be transmitted through air (97.9%) and that anybody in the community can get TB (99.2%). Few participants mentioned other means of transmission including sharing utensils with infected person.

Among the signs and symptoms of TB that was mentioned by community members were coughing 246(63.9%), coughing up blood 239(62.1%), chest pain 202(52.5%), loss of weight 171(44.4%), Fatigue/weakness 157 (40.8%), breathlessness 152(39.5%), loss of appetite 134(34.8%), fever 131 (34.0%) and night sweat 30 (7.8%).

3.4.2 Community awareness on Tuberculosis infection and disease in children

Awareness of TB infection and transmission in general

All community members 385 (100%) reported to have heard about Tuberculosis and gave the meaning of TB according to their understandings. Majority of community members mentioned TB to be transmitted through air (97.9%) and that anybody in the community can get TB (99.2%). Few participants mentioned other means of transmission including sharing utensils with infected person (Table 3).

Table 3: Awareness of TB infection and transmission in general (n=385)

	Frequency	Percentage
Meaning of TB		
Coughing for a long time with pain	110	28.6
Disease that affect lungs and respiratory system	73	19.0
Disease transmitted through air	179	46.5
Disease associated with dust	23	6.0
Transmission		
Through air	377	97.9
Through body contact	3	0.8
Through witchcraft	2	0.5
Other	3	0.8
Who can get TB		
Anybody in the community	382	99.2
Men only	1	0.3
Children only	2	0.5

Community Awareness of the TB signs and symptoms in general population

Majority of the community members mentioned coughing (63.9%) and coughing up blood (62.1%) as signs and symptoms for TB and night sweat (7.8%) was the least mentioned (Table 4)

Table 4: Awareness of Signs and symptoms in general (n=385)

	Yes		No	
	N	(%)	N	(%)
Signs and symptoms				
Coughing	246	63.9	139	36.1
Coughing up blood	239	62.1	146	37.9
Breathlessness	152	39.5	233	60.5
Chest pain	202	52.5	183	47.5
Fever	131	34.0	254	66.0
Fatique/weakness	157	40.8	228	59.2
Loss of weight	171	44.4	214	55.6
Loss of appetite	134	34.8	251	65.2
night sweat	30	7.8	355	92.2

Few community members (27.8%) mentioned to have seen a child with TB (Table 5).

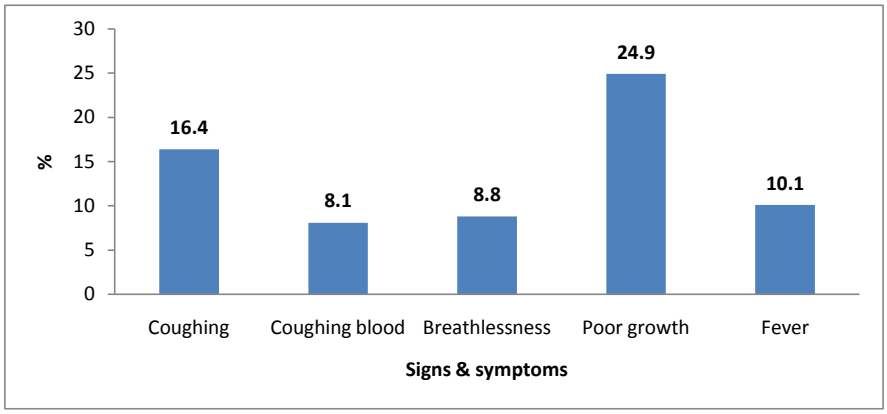
Table 5: Awareness of TB in children (n=385)

	Frequency	Percentage
Ever seen Pediatric Patient		
Yes	107	27.8
No	278	72.2
Ever heard signs of TB in children		
Yes	142	36.9
No	243	63.1

3.4.3 Awareness of TB signs and symptoms in children

When community members were asked about the signs and symptoms of TB in children; Poor growth was mention by 96 (24.9%) community members and the least mentioned as sign of TB in children was coughing up blood 31(8.1%)(Figure 8).

Figure 8: Community members awareness of TB signsa and symptoms in children (n=385)



Less than 50% of the community members reported to have knowledge on the relationship of different condition with TB in children. Majority 179 (46.5%) associated TB as a disease with failure to thrive. Malnutrition (21.6%), HIV and AIDS (32.5%), Meningitis (11.9%) and Pneumonia (25.5%) (Table 6)

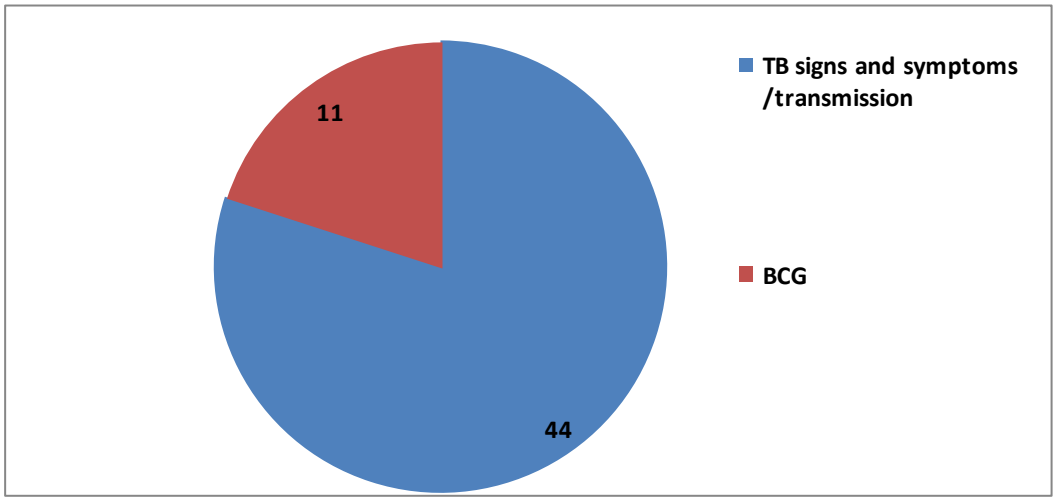
Table 6: Knowledge on Relationship of different conditions with TB (n=385)

	Yes		No	
	N	(%)	N	(%)
Condition				
Malnutrition	83	21.6	302	78.4
HIV and AIDS	125	32.5	260	67.5
Meningitis	46	11.9	339	88.1
Pneumonia	98	25.5	287	74.5
Failure to thrive	179	46.5	206	53.5

Community members were also asked to mention if they ever attended any community occasion/gathering in their area related to TB education in children and only 34 (8.8%) expressed this to happen to them.

Only 49 (12.7%) community members had ever received health education about TB in children while obtaining health services, among these 44 (89.8%) were given health education on TB signs and symptoms /transmission and 11 (22.4%) on BCG (Figure 9).

Figure 9: Community members given health education about TB in children while obtaining health services (n=49)



When community members were asked to give their suggestions of TB in children, majority of the community members (72.8%) suggested to be given health education on TB in children (Table 7).

Table 7: Community members' Suggestions on Paediatric TB (n=28)

	Frequency	**Percentage**
Comment		
Health Education to community members about TB in children	238	72.8
Government to provide drugs and other services to children	48	14.7
Parents to take care of their children by wearing sweaters and not playing in dust	41	12.5
Total	327	100

CHAPTER FOUR

4.0 DISCUSSION

4.1 Introduction

This present study was conducted in Dodoma Municipality aimed at finding out specific factors hindering case tracing of paediatric TB; the study population included health care workers and community members. The reason to choose this study population was that ;case detection challenges of children with TB are associated with the capacity of health care workers who are clinicians and laboratory staff to diagnose the disease together with availability of diagnostic tool/job aids/equipment and community awareness of the disease for them to bring their children for health services.

In this study the most mentioned paediatric TB case tracing challenges included; few staff trained on TB related trainings, lack of awareness of parents about Paediatric TB, inadequate support for HCWs to visit homes of index patient and difficult to read and interpret chest x-ray 33 (61.1%). Inadequate availability and usage of TB tools and job aids and unavailability of some equipment such as Gene X-pert MTB/RIF as none of HCWs reported to have Gene X-pert MTB/RIF at their facility.

4.2 Health Care workers trained on TB - related interventions

According to the Roadmap for childhood tuberculosis, empowering healthcare workers through training is among the key important aspect toward zero deaths (Road Map for childhood TB, 2013). This is in line with the finding of this study in which few children (only about 4.8% of the total TB cases) are diagnosed with TB among the reason could be only few clinicians are trained on paediatric TB. TB was only rarely suspected in children. Respondents stated that childhood TB was not present in their community, but mentioned that they probably saw very little childhood TB because they were not able to diagnose it (Bjerrum et al. 2012).

With PATH support, Tanzania had made significant strides in improving the detection and management of pediatric TB. In 2010–2011, pediatric TB cases accounted for 6.7 to 8 percent of all TB notifications in Tanzania. This percentage had increased steadily since the initiation of pediatric TB trainings in June 2012. As of the middle of 2014, paediatric TB case notification in the six PATH supported-regions has increased to 12.7 percent of total case notification—a notable increase from previous quarters and more likely capturing the true (USAID and PATH Tanzania, 2014). Dodoma is not among the region supported by PATH Tanzania

With this therefore, there is a need to train more HCWs so as to enable them trace more children with TB in Dodoma Municipality.

4.3 Diagnostic Tools and Equipment

The study has revealed that unavailability of job aids/tools/equipment is among the challenges expressed by HCWs that may contribute to low number of children being diagnosed with TB. This finding is in line with that from another study done in Tanzania which found that lack of guidelines and working tools for the management of tuberculosis in children was the main factors influencing case identification of childhood tuberculosis in developing countries (Bjerrum et al, 2012).

None of the HCWs participated in this study reported to have Gene Xpert MTB/RIF for rapid diagnosis of TB at their facility. This may be one of the factors influencing case detection of TB in children hence leading to few children with TB being notified. An experience from the International Center for AIDS and Treatment Programs (ICAP) Tanzania at Mwananyamala Hospital Center of Excellence in Dar es Salaam showed that using Gene Xpert MTB/RIF technology for rapid diagnosis and identification of drug resistant strains significantly increased the number of paediatric TB cases by 83% of all paediatric TB cases in the region recorded by the national TB program (ICAP Tanzania Report, 2014).

The prospective study by Zar et al,2013 on Rapid diagnosis of pulmonary TB in African children in a primary care setting by use of x pert MTB/RIF on respiratory ;the findings of

that study suggested that Xpert MTB/RIF on respiratory secretions is a useful test for rapid diagnosis of paediatric pulmonary tuberculosis in primary care.

It is therefore high time for the MOHSW/NTLP and other donors to consider providing Gene Xpert MTB/RIF technology in Dodoma Municipality as it may increase uptake of children with TB into care.

4.4 Contact case tracing strategies

Lack of plan for contact case tracing was among the challenges reported by clinicians as being experienced in TB contact case tracing. This may contribute to inadequate diagnosis of children with TB. A study done by Yassin et al in 2013 in Ethiopia on active TB case findings using female Health Extension Workers (HEWs) to conduct house-to-house visits resulted into increased number of children diagnosed of TB. Use of similar strategy/plan in Dodoma Municipality, may also increase the number of children with TB.

This study also revealed that, stigma and discrimination in the community, was another challenge in contact case tracing hence influencing case detection of TB in children. This is a reflection of the Pastoralist Community's from Shinille Area of Ethiopia (Samuel et al, 2013) that found people feeling ashamed if relative/family member gets infected with TB, keeping it secret if self or family member/relative gets TB infection, and being afraid of TB patients, considering the disease as a punishment for sinful act.

This could be the reasons of why parents/care givers in Dodoma Municipality provide wrong information as it was reported by clinicians as the challenge for contact case tracing.

It is of paramount important to educate people on TB disease to stop stigma and discrimination so that they bring their family members including children for TB diagnosis.

4.4 Community awareness on TB signs and symptoms in children

Majority of community members mentioned coughing and coughing blood as signs and symptoms of TB in general. This corresponds to findings from the study on awareness of the warning signs, risk factors, and treatment of TB among urban Nigerians where by majority of the subjects were aware of at least one warning sign of TB (Olufemi et al, 2013). This result of this study is contrary with the study by Vukovic et al, 2008 where they found that almost a third of the subjects could not identify the signs of TB.

Another study by Omotowo et al, 2012 in Nigeria found that knowledge of the aetiologic agent and route of transmission of tuberculosis disease was poor as less than half of the community members correctly identified bacteria (germ) as the cause and airborne as the main transmission route, the study had different results from this study.

Although majority could mention the sign of TB in general population, awareness of signs and symptoms of TB in children is low among the community members. Few community members mentioned poor growth, coughing, fever, breathlessness, and coughing blood as signs and symptoms of TB in children.

This study has also revealed that only few community members had ever received health education about TB in children while obtaining health services. It is therefore high time for the Tanzania MOHSW/NTLP to advocate this problem (TB in children) in Dodoma Municipality and elsewhere so that children with TB are timely diagnosed and consequently get timely treatment according to the National guidelines.

4.5 Study Limitations

- Getting HCWs time for the questionnaires was challenging due to overwhelming number of patients that they had to attend. Patience was the key to mitigate this challenge.
- Duration for data collection was limited considering presence of two sample groups (HCWs and community members).

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study has revealed the challenges experienced by health care workers in providing care to children with TB which include unavailability of working tools/job aids, advanced technology such as Gene X-pert MTB/RIF, difficulty to obtain sputum from children, difficult to interpret chest x-ray, parents giving wrong information/address and inadequate system for contact case tracing.

Majority of the community members were unaware of the signs and symptoms of TB in children, they also have myths about the definition of TB. This study has therefore demonstrated a need for in-service for educational programs among HCWs that will emphasize case tracing, treatment as well as preventive strategy of TB in children. Health education to the community members is also very important to raises awareness on signs and symptoms of TB in children.

5.2 Recommendations

- The Ministry of Health and Social Welfare (MOHSW)/ National TB and Leprosy program (NTLP) need to increase capacity of health care workers through trainings specifically those related to Paediatric TB.

- The MOHSW /NTLP in collaboration with the Dodoma Regional TB Team to provide equipment (gene x-pert)/job aids to diagnostic health facilities in Dodoma Municipality.

- More effort is needed to raise awareness towards TB in children among community members by improving health education at: individuals' level when providing health services, Community level –e.g community gatherings/markets, national events (TB day) and National level through media (IEC Materials, radio and television programs).

- Further studies on why parents/caregivers provide wrong information/address when the children are diagnosed to have TB.

- Further studies on other factors associated with inadequate /low case detection of Paediatric TB are also very important to improve Paediatric TB services

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APPENDICES

Appendix I: Questionnaire for Health Care Workers - English Version

Instruction: Laboratory personnel please answer ALL questions except number 17,18 & 19; clinicians please answer ALL except question number 13 &14 .

Code number | | | | Date of Interview | | | |

Type of Facility ☐Hospital ☐Health Centre ☐Dispensary

Background Information

1. Age (In completed years) …….

2. Gender *(put a tick)*

2.1. ☐Male

2.2. ☐Female

3. What is your marital status? *(Please, tick only one that applies)*

3.1. ☐ Single

3.2. ☐ Married

3.3. ☐ Cohabiting

3.4. ☐ Divorced/Separated

3.5. ☐ Widow

4. What is your Cadre? *(Please, tick only one that applies)*

4.1. ☐ Medical Officer (MO)

4.2. ☐ Assistant Medical Officer (AMO)

4.3. ☐ Clinical Officer (CO)

4.4. ☐ Clinical Assistant (CA)

4.5. ☐ Laboratory Technician

4.6. ☐ Laboratory Assistant

4.7. ☐ Other……

5. Which department/section do you work and provide services? *(Please, tick only one that applies)*

5.1. ☐ General Outpatient departments (OPD)

5.2. ☐ Reproductive and child health (RCH)

5.3. ☐ Paediatric Inpatient department (Ward)

5.4. ☐ Adult Male wards

5.5. ☐ Adult Female wards

5.6. ☐ HIV care and treatment clinic (CTC)

5.7. ☐ TB/TBHIV clinics

5.8. ☐ Laboratory

6. For how long have you been providing services to children?

6.1. ☐ Less than 1 year

6.2. ☐ 1 year

6.3. ☐ More than 1 year

Availability of Job aids/tools and equipment &Capacity of HCWs

7. Do you use the following job aids that help in providing TB services for children? *(Tick all that apply)*

7.1. TB Manuals ☐YES ☐NO

7.2. National TB Guidelines for children ☐YES ☐NO

7.3. Diagnostic Algorithm ☐YES ☐NO

7.4. Score Chart for Diagnosis of TB in Children ☐YES ☐NO

7.5. TB Screening Questionnaire (TSQ) for children ☐YES ☐NO

7.6. Others *(mention)*……

8. Are forms/tools mentioned above always available? ☐YES ☐NO

9. Have you ever attended any TB related training provided by the Ministry of Health and Social welfare or Developmental partner (NGOs) ☐YES ☐NO

10. (If YES in *#10 above),* what was that (please mention all TB related training you have attended and the year you attended by *filling the table below)*

Name of Training attended	**Year**

10.1. (If NO in *#10)*, which TB related training do you think are important for you so as to provide better services to children suspected or have TB disease? *(Please mention)*_____

_____

_____

11. How common do you think is TB infection/disease in children?

11.1. ☐Very common

11.2. ☐Just common

11.3. ☐Not common

11.4. ☐Rare

What signs or symptoms make you suspect TB in children? (please mention) _____

_____

_____

_____

12. Which method do you use in obtaining sputum for bacteriological confirmation of TB in children? *(Tick all that apply)*

12.1. Expectoration (coughing up sputum) ☐YES ☐NO

12.2. Sputum induction ☐YES ☐NO

12.3. Gastric aspiration ☐YES ☐NO

12.4. None ☐YES ☐NO

13. Which type of microscope do you use to examine sputum for AFB at your facility? *(Tick all that apply)*

13.1. Conventional/traditional microscope ☐YES ☐NO

13.2. Light Emitting Diode (LED) fluorescence microscope ☐YES ☐NO

13.3. Other… ☐YES ☐NO …… (Mention)

13.4. None ☐YES ☐NO

14. *If you ticked in #14.4*, where do you send sputum for bacteriological confirmation? *(please, mention)*

_____

15. What other tests do you use to diagnose TB in children? *(Tick all that apply)*

15.1. Mycobacterial culture ☐YES ☐NO

15.2. Gene X-pert MTB/RIF ☐YES ☐NO

15.3. Tuberculin Skin Test ☐YES ☐NO

15.4. Chest x-ray ☐YES ☐NO

16. Which challenges do you face as a HCW in diagnosis of children with TB? *(please, mention)*

_____

_____

_____

_____

Contact Case tracing strategies

17. Do you have any existing system of contact case tracing when you get patients with sputum positive for AFB? ☐YES ☐NO

18. (If YES in #17 above), How do you do the contact case tracing?

18.1. Ask index patients to bring people they have been leaving with ☐YES☐NO

18.2. People from the facility going to patients home physically ☐YES ☐NO

18.3. Link the index patients to community support groups (e.g. X-TB patients) who can help tracing contact cases ☐YES ☐NO

18.4. Any other approaches *(please mention)* ☐YES ☐NO

_____

19. Which challenges do you face in contact case tracing? *(please mention)*

_____

_____

Appendix II: Dodoso la wafanyakazi wa huduma ya afya - Swahili Version

Utangulizi :

Mimi ni mwanafunzi kutoka Chuo cha Afya na Sayansi Muhimbili ,nafanya utafiti kuhusu kifua kikuu kwa watoto. Ujazwaji wa dodoso hili unatarajiwa kuchukua mda usiozidi nusu saa,tafadhali nivumilie ili uweze kujibu haya maswali.

Maelekezo: Wafanyakazi wa Maabara tafadhali jibu maswali yote isipokuwa swali namba 13 & 14; madaktari tafadhali jibu maswali yote isipokuwa swali namba 15.

Namba ya dodoso | | | | Tarehe ya usaili | | | |

Aina ya kituo ☐Hospitali ☐Kituo cha Afya ☐Zahanati

TAKWIMU ZA MDODOSWAJI

1. Nitajie umri wako.. ……..(miaka)

2. Jinsia

2.1 ☐ Mwanamume

2.2 ☐ Mwanamke

3. Hali ya ndoa *(Tafadhali chagua moja)*

3.1 ☐ Sijao/sijaolewa

3.2 ☐ Nimeoa/nimeolewa

3.3 ☐ Tunaishi pamoja bila ndoa

3.4 ☐ Tumeachana

3.5 ☐ Mjane/mgane

4. Taja kada yako? (Tafadhali chagua moja)

4.1 ☐ Daktari (MO)

4.2 ☐ Daktari Msaidizi(AMO)

4.3 ☐ Afisa Tabibu(CO)

4.4 ☐ Tabibu Msaidizi (CA)

4.5 ☐ Fundi sanifu maabara

4.6 ☐ Fundi sanifu msaidizi wa maabara

4.7 ☐ Nyingine……

5. Ni idara gani unakofanyia kazi *(Tafadhali chagua moja)*

5.1 ☐ Idara ya magonjwa ya nje (OPD)

5.2 ☐ Huduma ya mama na mtoto (RCH)

5.3 ☐ Wodi ya watoto

5.4 ☐ Wodi ya wanaume (Adult Male wards)

5.6 ☐ Wodi ya wanawake (Adult Female wards)

5.7 ☐ Kliniki ya virusi vya ukimwi na ukimwi (CTC)

5.7 ☐ Kliniki ya kifua kikuu

5.8 ☐ Maabara

6. Umefanya kazi kwa muda gani katika kutoa huduma kwa watoto?

6.1 ☐ Chini ya mwaka mmoja

6.2 ☐ Mwaka mmoja

6.3 ☐ Zaidi ya mwaka mmoja

---

7. Je, huwa unatumia vitendea kazi vifuatavyo katika kutoa huduma kwa watoto (tafadhali chagua yote yanayohusika)

7.1 Kitini cha Kifua kikuu ☐NDIYO ☐HAPANA

7.2 Mwongozo wa Taifa wa kifua kikuu kwa watoto ☐NDIYO ☐HAPANA

7.3 'Diagnostic Algorithm' ☐NDIYO ☐HAPANA

7.4 Chati ya uchunguzi wa watoto wenye kifua kikuu ☐NDIYO ☐HAPANA

7.5 Kidadisi cha uchujaji/upimaji wa Kifua Kikuu(TSQ) ☐NDIYO☐HAPANA

8. Je vitendea kazi vilivyotajwa hapo juu ,nikila mara vinapatikana kituoni kwako?

☐NDIYO ☐HAPANA

9. Ulishawahi kuhudhuria mafunzo yoyote yanayohusiana na kifua kikuu,yanayotolewa na wizara ya Afya na ustawi wa jamii au wafadhili? (NGOs) ☐ NDIYO ☐HAPANA

10. Kama NDIYO *#10 juu*, tafadhali itaje/zitaje na mwaka uliohudhuria

Aina ya mafunzo	**Mwezi na Mwaka wa mafunzo**

10.1 Kama HAPANA *#10,* ni mafunzo gani ya kifua kikuu unafikiri ni ya muhimu sana kwako ili uweze kutoa huduma nzuri kwa watoto wenye kifua kikuu?*(Tafadhali taja)*

_____

_____

11. Ni kwa kwa kiwango gani unafikiri ugonjwa wa kifua kikuu huko kwa?

11.1. ☐Upo sana

11.2. ☐upo kawaida

11.3. ☐sio kawaida

11.4. ☐Mara chache

12. Je ni mbinu gani unatumia kupata makohozi kwa ajili ya kupima vimelea vya kifua kikuu kwa watoto? *(chagua yote yanayofaa))*

12.1 ☐ 'Kutoa makohozi,

12.2 ☐ 'Sputum induction'

12.3 ☐ 'Gastric aspiration'

12.4 ☐ Situmii yoyote

13. Ni darubini gani unayotumia kupima vimelea vya kifua kikuu (*Chagua yote yanayofaa)*

13.1 ☐ Darubini ya kawaida

13.2 ☐ Darubini ya mng'ao (LED)

13.3 ☐ Nyingine…….. (taja)

13.4 ☐ Situmii yoyote

14. Kama umechagua jibu #15.4, ni wapi unapopeleka makohozi kwa ajili ya kuhakikisa uwepo vimelea vya kifua kikuu? *(Tafadhali ,taja)*

_____

15. Ni testi gani nyingine unatumia kugundua watoto wenye TB?(Tafadhali chagua yote yanayohusika*)*

15.1 ☐ Uoteshwaji wa vimelea vya kifua kikuu

15.2 ☐ Kipimo cha kuonyesha vina saba vya vimelea vya kifua kikuu

15.3 ☐ Kipimo cha ngozi cha kifua kikuu

15.4 ☐ Eksilei ya kifua

16.Kama muhudumu wa afya ni changamoto gani unazopata katika kutambua watoto wenye kifua kikuu?*(tafadhali,taja)*

_____

_____

_____

_____

17.Kuna mfumo wowote unatumika katika kutafuta watu wanaofikiriwa kupata maambukizi ya kifua kikuu kutoka kwa mtu aliyepima makohozi yakaonekana kuwa na vimelea vya kifua kikuu ? ☐NDIYO ☐HAPANA

18.Kama NDIYO#19 HAPO JUU), Ni kwa jinsi gani mnaweza kupata watu wanaofikiriwa kuambukiza wadudu wa Kifua kikuu?(chagua inayofaa)

18.1☐ Kumwambia mgonjwa mwenye kifua kikuu kuleta watu anaoishi nao

18.2 ☐ Wafanyakazi wa afya kwenda nyumbani kwa mgonjwa mwenye kifua kikuu

18.3 ☐ Kumuunganisha mgonjwa wa kifua kikuu na vikundi vya wagonjwa ambao walishawahi kuumwa kifua kikuu(e.g. X-TB patients) na jamii

18.4 Njia nyingine (tafadhali ,taja) _____

19. Ni changamoto gani unazopata katika kufuatilia watu wanafikiriwa kuwa na maambukizi ya kifua kikuu? *(Tafadhali ,taja)*

_____

_____

_____

_____

_____

Appendix III: Interview guide for Community members - English Version

Introduction:

I am from MUHAS doing a research on Tuberculosis in children. I am intending to take not more than half an hour, so kindly spare sometime so that we can go over the questions together.

Code Number ☐☐☐ Date of Interview ☐☐☐☐

Name of the Interviewer _____

1. Gender

a. ☐ Male

b. ☐ Female

2. How old are you?.....(complete years)

3. What is your religion? *(Please, tick only one that applies)*

3.1 ☐ Christian

3.2 ☐ Muslim

3.3 ☐ Traditional

3.4 ☐ Others (specify)…….

4. What is your marital status? *(Please check only one)*

4.1 ☐ Single

4.2 ☐ Married

4.3 ☐ Cohabiting

4.4 ☐ Divorced/Separated

4.5 ☐ Widowed

5. What is the highest level of education that you completed? *(Please check only one)*

5.1 ☐ Advanced diploma or University degree

5.2 ☐ Diploma

5.3 ☐ Certificate

5.4 ☐ Secondary Education

5.5 ☐ Primary Education

5.6 ☐ Never been to school 1.

6.

7. Have you ever heard of the term Tuberculosis? ☐YES ☐NO

8. If YES in #8 above, what does TB mean?

_____

_____

9. How is TB transmitted from one person to the other

10.1 ☐ Through air

10.2 ☐Through body contact

10.3 ☐ Through witchcraft

10.4 ☐ Others means *(please mention)* _____

11. Who do you think can get TB infection in the community?

11.1. ☐ Anybody in the community

11.2 ☐ Women only

11.3 ☐ Men only

11.4 ☐ Children only

12. Have you ever seen an adult patient who has a TB disease? ☐YES ☐NO

13.If NO in #12, have you ever heard (in media or anywhere) of signs of TB in an adult patient? ☐YES ☐NO

14. If YES in either #12 or 13, what are the signs of TB, the patients present with? (please, let him/her mention)

14.1 ☐ Cough

14.2 ☐ Coughing blood

14.3 ☐ Breathlessness

14.4 ☐ Chest pain

14.5 ☐ Fever

14.6 ☐ Fatigue/weakness

14.7 ☐ Loss of weight

14.8 ☐ Loss of appetite

14.9 ☐Others(Specify)

_____

_____

_____

15 . Have you ever seen a child who has a TB disease? ☐YES ☐NO

16. If NO in #15, have you ever heard (in media or anywhere) of signs of TB in a child? ☐YES ☐NO

17. If YES in either #15 or 16, what are the signs of TB, the child presents with? (please, let him/her mention)

_____

_____

_____

_____

18. Can you tell me that, if children with following conditions may be related to TB?

18.1 Malnutrition ☐YES ☐NO

18.2 HIV/AIDS ☐YES ☐NO

18.3 Meningitis ☐YES ☐NO

18.4 Pneumonia ☐YES ☐NO

18.5 Failure to thrive ☐YES ☐NO

19. Have you ever given health education about TB in children while obtaining health services? ☐YES ☐NO (If NO in #18 above, skip to #20)

20. If YES in #19, what was it about?

_____

_____

21. Have you ever attended any community occasion/gathering related to TB education in your area? ☐YES ☐NO

22. If YES, in #21, was there any information mentioned specifically for children? ☐ YES☐NO

23. Do you have any suggestion/opinions regarding TB in children? *(Please state)*

_____

_____

_____

Thank You Very Much for Your Time

Appendix IV: Interview guide for Community members - Swahili Version

Utangulizi :

Mimi ni mwanafunzi kutoka Chuo cha Afya na Sayansi Muhimbili ,nafanya utafiti kuhusu kifua kikuu kwa watoto. Natarajia kuchukua mda usiozidi nusu saa,tafadhali nivumilie ili tuweze kupitia haya maswali pamoja..

Namba ya dodoso | | | | Tarehe | | | |

Jina la mdodosaji _____

TAKWIMU ZA MDODOSWAJI

1. Jinsia

1.1 ☐ Mwanamume

1.2 ☐ Mwanamke

2. Nitajie umri wako.. ……..(miaka)

3. Nitajie dini yako? (Tafadhali, chagua jibu moja)

3.1 ☐ Mkristo

3.2 ☐ Mwislamu

3.3 ☐ Dini ya jadi

3.4 ☐ Nyingine (taja)…….

4. Hali ya ndoa (Tafadhali chagua moja)

4.1 ☐ Sijao/sijaolewa

4.2 ☐ Nimeoa/nimeolewa

4.3 ☐ Tunaishi pamoja bila ndoa

4.4 ☐ Tumeachana

4.5 ☐ Mjane/mgane

5. Kiwango chako cha elimu (chagua jibu moja)

5.1 ☐ Chuo kikuu

5.2 ☐ Diploma

5.3 ☐ Cheti

5.4 ☐ Shule ya sekondari

5.6 ☐ Shule ya msingi

5.6 ☐ Sikusoma

6. Unaishi kijiji au mtaa gani ?.....

7. Unafanya kazi gani? **(Mpe nafasi ataje mwenyewe)…….**

8. Ulishawahi kusikia ugonjwa wa kifua kikuu? ☐NDIYO ☐HAPANA

9. Kama ni NDIYO kwenye swali #8 juu, Kifua kikuu ni nini?

_____

_____

10. Ugonjwa wa kifua kikuu unaweza kuambukiza kutoka kwa mtu mmoja hadi mwingine kupitia

10.1 ☐ Hewa

10.2 ☐ Kugusana

10.3 ☐ Uchawi

10.4 ☐ Njia Nyingine *(tafadhali taja)* _____

11. Unafikiri ni nani anaweza kupata ugonjwa wa kifua kikuu katika jamii?

11.1 ☐ Mtu yeyote

11.2 ☐ Wanawake tu

11.3 ☐ Wanaume tu

11.4 ☐ Watoto tu

12. Ulishawahi kuona mtu mzima mwenye kifua kikuu? ☐NDIYO ☐HAPANA

13.Kama HAPANA swali #12, ulishawahi kusikia (kutoka kwenye vyombo vya habari au sehemu nyingine) kuhusu dalili za ugonjwa wa kifua kikuu kwa watu wazima ? ☐ NDIYO ☐HAPANA

14. Kama NDIYO swali #12 au 13, ni dalili zipi mtu mwenye kifua kikuu anaweza kuwa nazo? (tafadhali, taja)

14.1 ☐ Kukohoa

14.2 ☐ Kukooa damu

14.3 ☐ Kushindwa kupumua

14.4 ☐ Maumivu ya kifua

14.5 ☐ Homa

14.6 ☐ Udhaifu/ uchovu

14.7 ☐ Kupungua uzito

14.8 ☐ Kukosa hamu ya kula

14.9 ☐Nyinginezo

(Taja)_____

_____

15 . Ulishawahi kuona mtoto mwenye kifua kikuu?☐NDIYO ☐HAPANA

16. Kama HAPANA kwenye swali #15, ulishawi kusikia kwenye vyombo vya habari au sehemu nyingine dalili za mtoto mwenye kifua kikuu? ☐NDIYO ☐HAPANA

17. Kama ndiyo swali #15 au 16, ni dalili zipi mtoto mwenye kifua kikuu anaweza kuwa nazo? (tafadhali ,taja)

_____

_____

_____

18. Tafadhali niambie, kama mtoto ana dalili zifuatazo zinaweza kuhusishwa na kifua kikuu?

18.1 Utapia mlo ☐NDIYO ☐HAPANA

18.2 Virusi vya ukimwi/ukimwi ☐NDIYO ☐HAPANA

18.3 Uti wa mgongo ☐NDIYO ☐HAPANA

18.4 Pneumonia ☐NDIYO ☐HAPANA

18.5 Kushindwa kukua vizuri ☐NDIYO ☐HAPANA

19. Ulishawahi kupata elimu kuhusu kifua kikuu kwa watoto katika kituo chochote cha afya

☐NDIYO ☐HAPANA (Kama HAPANA #19, NENDA swali #21)

20. Kama NDIYO #19, hiyo elimu ya kifua kikuu ilikuwa ni ya nini hasa?

_____

_____

21 Ulishawahi kuhudhuria mkusanyiko wowote katika jamii/mtaa wako iliyohusu elimu ya kifua kikuu ☐NDIYO ☐HAPANA

22. Kama NDIYO #21, hiyo elimu iliyotolewa ilikuwa inagusa kifua kikuu kwa watoto n?

☐NDIYO ☐HAPANA

23. Una maoni yoyote kuhusu kifua kikuu kwa watoto? *(tafadhali taja)*

_____

_____

_____

_____

_____

Asante sana kwa mda wako

Appendix V: Informed consent - English version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATION

INFORMED CONSENT

ID-NO …….

Consent to participate in this study

Greetings!

My name is Devotha Leonard.

I am a student at Muhimbili University of Health and Allied Sciences doing research on Paediatric Tuberculosis Case Notification in Dodoma Municipality

The aim of this study is to determine factors associated with low paediatric Tuberculosis notification in Dodoma Municipality.

What Participation Involves

If you agree to participate in this study you will be required to answer a series of question as required by the research Assistant or Principal Investigator.

Confidentiality

All the information which will be kept confidential and we shall use only the Identification number.

Rights to withdraw and Alternatives

Your involvement in this study is your choice. You may get out of the study any moment you wish and no any penalty, even if you have already given your consent.

Benefits

Your participation in this study will provide useful information for us and others stakeholders.

In case of Injury:

We do not expect any harm to occur to you or your family as a result of participating in this study

Whom to contact

In case of any inquiry please contact the Principal investigator, Devotha Leonard Muhimbili University of Health and Allied Sciences (MUHAS), P. O BOX 65001, Dar es Salaam, Mobile no. 0755 919 052 or Professor A. Kiwara , Muhimbili University of Allied Sciences, P.O BOX 65001, Dar es Salaam. In case of any enquiry about this study you may call, the Chairman of the Senate Research and Publications committee, P.O BOX 65001 Dar es Salaam, Tel no. 2150302-6

Signature

Do you agree?

Participant agrees ……

Participant disagrees ……

I have read/understood the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of Participant …….

Signature of witness (if participant cannot read)

Signature of research assistant …….

Date of signed consent ……..

Appendix VI: Informed consent - Swahili version

CHUO KIKUU CHA SAYANSI ZA AFYA MUHIMBILI

KURUGENZI YA UTAFITI NA MACHAPISHO

FOMU YA RIDHAA

Namba ya utambulisho ……

Ridhaa ya Kushiriki katika utafiti huu

Jina langu ni Devotha Leonard , mwanachuo wa chuo cha Sayansi za Afya Muhimbili, ninafanya utafiti juu ya sababu zinazopelekea kuibua namba ndo ya watoto wenye wenye dalili za kifua kikuu na ugonjwa wa kifua kikuu.

Lengo la utafiti

Utafiti huu una lengo la kukusanya taarifa kuhusu sababu zinazopelekea kuandikishwa watoto wachache wenye matatizo ya kifua kikuu.

Usiri

Habari zote tutakazo zipata kutoka kwako zitakuwa ni siri, wala hatutatumia jina bali namba yako ya utambulisho

Madhara

Hatutegemei kuwa utapata Madhara yoyote katika utafiti huu

Haki ya kujitoa na vinginevyo

Kushiriki katika utafiti huu ni uamzi wako. Kama utaamua kutoshiriki au utaamua kukatisha ushiriki hutapata Madhara yoyote. Uko huru kusimamisha Kushiriki wakati wowote hata kama ulikwisha toa ridhaa kushiriki.

Faida

Kama utakubali Kushiriki utafiti huu, tunategemea kwamba taarifa tutakazo zipata kutoka kwako zitakuwa na maana kwetu na kwa wadau wengine katika huduma za afya.

Watu wa kuwasiliana nao

Kama unamaswali katika utafiti huu unaweza kuwasiliana na Mtafiti , Devotha Leonard chuo kikuu cha Muhimbili, S.L.P 65001, Dar Es Salaam, simu Na. 0755 919 052, au msimamizi wake Prof.A.Kiwara. Chuo Kikuu cha Muhimbili, S.L.P 65001, Dar Es Salaam, Simu Na. 0716 580 657

Kama utakuwa na swali lolote kuhusu kushiriki utafiti huu, unaweza kupiga simu kwa Mwenyekiti wa kamati ya chuo ya utafiti na machapisho, S.L.P 65001, Dar Es Salaam. Simu Na. 2150302-6

Sahihi

Je Unakubali?

Mshiriki amekubali [ ]

Mshiriki amekataa [ ]

Mimi…… nimeisoma/nimeelewa hii fomu, maswali yangu yamejibiwa.

Nakubali kushiriki katika utafiti huu

Sahihi ya Mshiriki ……

Sahihi ya Shahidi kama mshiriki hawezi kusoma na kuandika

……..

Sahihi ya Mtafiti

…….....

Tarehe ya Makubaliano

……