

**INTEGRATION OF TUBERCULOSIS SCREENING IN HEALTH FACILITY
DEPARTMENTS; A CASE STUDY OF THREE FACILITIES IN DAR ES
SALAAM, TANZANIA**

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Masters of Project Management, Monitoring and Evaluation in Health

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TANZANIA**

by

Doreen Deogratus Philbert ,MD

**A Dissertation submitted in (partial) Fulfillment of the requirements for the Degree of
Master of Project Management, Monitoring and Evaluation in Health of Muhimbili
University of Health and Allied Sciences**

October, 2021

CERTIFICATION

The undersigned certifies that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled *“Integration of Tuberculosis screening in health facility departments; a case study of three facilities in Dar es salaam, Tanzania”* in fulfillment of the requirements for the degree of Master of Project Management, Monitoring and Evaluation in Health of Muhimbili University of Health and Allied Sciences

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Date: _____

DECLARATION AND COPYRIGHT

I, **Doreen Philbert**, 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 this to my son Liam Denis Moshi for the unconditional love even though I stole some of the time we meant to be together to complete my degree and this work.

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LIST OF ABBREVIATIONS

CHWs	Community health workers
CTC	Care and Treatment Clinic
DTLC	District Tuberculosis and Leprosy Coordinator
IRB	Institutional Review Board
HIV	Human Immunodeficiency Virus
KCMC	Kilimanjaro Christian Medical Centre
MUHAS	Muhimbili University of Health and Allied Sciences
NIMR	National Institute for Medical Research
NTLP	National Tuberculosis and Leprosy Programme
OPD	Outpatient department
QI	Quality Improvement
RCH	Reproductive and Child health
TB	Tuberculosis
WHO	World Health Organization

DEFINITION OF TERMS

Integration: In health, Integration of health services is an approach of combining services of multiple interrelated diseases to increase overall efficiency of the health system and patient convenience (1)

TB screening: Identification of people with suspected active TB using tests, examinations, and other procedures that can be applied rapidly (2).

TB case notification: Number of new and relapse TB cases diagnosed in a given year, per 100 000 population (3).

Screening algorithms: A set of methods composed of one or more screening methods that seek to help identify individuals suspected to have a certain disease (2)

ABSTRACT

Background: There is growing evidence that integrating health services has improved services and lowered loss to follow-up rates. Tuberculosis (TB) is among the leading causes of mortality in the world, especially in the developing world. By 2035 World Health Organization aims to have reduced Tuberculosis incidence by 90%. In Tanzania, intensive screening in all facility departments was initiated as part of the Quality Improvement (QI) initiative in 2017. Furthermore, integration and scaling up screening in facility departments has been done in selected facilities since April 2019 by the EXIT TB project. This project aimed at increasing Tuberculosis case detection.

Broad Objective: To assess the integration of Tuberculosis screening in health facility departments towards increasing Tuberculosis notification following the implementation of the EXIT TB project in Dar as salaam.

Materials and Methods: A cross-sectional study that adopted qualitative and quantitative data collection methods was carried out in three health facilities between April-May 2021. The study involved health facility departments as well as health care workers and community health workers. A total of 13 participants were interviewed. Analysis was done using Microsoft excel for quantitative data, which generated descriptive analyses. On the other hand, qualitative data was analyzed through content analysis where after transcription texts were reduced to codes and patterned to identify categories.

Findings

The findings of this study show that Tuberculosis screening tools were available in the health facilities and they included Tuberculosis screening questionnaires, Tuberculosis screening forms at the Tuberculosis and Tuberculosis presumptive registers. There was positive attitude towards their use but the practice of using them was poor. The algorithm that was used to screen for Tuberculosis included the five Tuberculosis screening symptoms. Additionally, clients with cough for less than 2 weeks were also screened as presumptive patients and X-rays were used for screening. Capacity building has been done through training although frequent refresher training

is needed. The Community Health workers were involved in multiple roles in the implementation of integrating Tuberculosis screening in all departments. They helped Health care workers in the initial screening of clients, followed up with the patients and also supported patients. Among the factors that influenced the integration process were cooperation among the staff, support from stakeholders and the administration. Then again, the lack of continuous pay for the Community Health workers and lack of continuous diagnostic facilities availability challenged the process.

Conclusion

The findings of this study propose that integration of Tuberculosis screening in health facility departments is still poorly implemented. Hence this calls upon the government, health facilities, health care workers, Community Health workers and different stakeholders to improve the process in order to integrate TB screening in all departments that will in turn increase Tuberculosis notification.

CHAPTER ONE-INTRODUCTION

1.1 BACKGROUND

Tuberculosis is the number one killer disease with a single infectious agent which is *Mycobacterium tuberculosis* (3). Almost a quarter of the world's population is infected with Tuberculosis (TB), putting them at risk of developing TB disease. About 10 million people worldwide suffer from TB (3,4). Globally WHO aims to end the TB epidemic by 2030 as stipulated in the Sustainable development goals. In so saying World Health Organisation(WHO), has put forward an END-TB strategy that aims to reduce TB incidence by 90% by the year 2035 (5). TB screening has been one of the golden tools that have been used to reduce the TB burden globally. Since integrating Services has resulted in better services integrating TB screening into the healthcare system especially in facilities could play a role in increasing case notification (6).

Early TB diagnosis still poses a great barrier towards reaching the mentioned goals. In some cases, TB disease has remained undiagnosed until death, or if it was diagnosed it would be late leaving its casualties with catastrophic outcomes both health and socio-economically (7). In recent years, 3.6 million people with TB have been estimated to go undetected (8). Causes of late diagnosis have been reported to be poor access to diagnostic facilities, poor health-seeking behaviour and factors involving capacities of the diagnostic facilities to make diagnosis and treatment (9–12).

Most high burden countries are still moving slowly towards the goals of end TB strategy (3). Access to early diagnosis and treatment is still a setback towards that goal. Most of these countries being Low- and middle-income countries, thus the disease is frequently described as the disease of the poor due to several reasons (3). TB in low and income countries finds its roots in the consequences of poverty like indoor air pollution due to congestion, poor health education and poor health services (13). For many years TB diagnosis was based on smear microscopy. Smear microscopy might be cheap and easy to use but it's faced by problems like low sensitivity and the challenges around the users (14). This method of diagnosis can detect only cases with a substantial bacterial load. On the other hand, Culture and sensitivity have remained to be the gold standard for TB diagnosis but it's not readily available in most resource-limited settings

because it requires a special sophisticated lab. In addition to that Culture will need around 4-8 weeks before a result is sent hence not user friendly(15,16).

WHO has endorsed the use of Xpert assay for TB diagnosis since 2013 (3). While the tool has revolutionized TB diagnosis by its quick turnaround time and its ability to detect rifampicin resistance, its high-cost TB remains a limit towards its wide use (15).

There is growing evidence that integrating health services example HIV/TB services has improved services and lowered loss to follow-up rates (6). This comes in a time where it was noted that fragmentation of health services leaves both providers and clients discontent. Integration of services henceforth mitigates some of these challenges (17).

Integrating screening of TB patients helps to realise TB screening as one of the key tools WHO has recommended in line with the fight against TB (18). Screening is an important strategy towards the End of TB. This is because of the long infectious course of the disease making need of a way to reduce both infectious periods and poor outcomes hence the need of early diagnosis (7).

Integrating TB screening services in the Outpatient departments (OPDs) of health facilities are a feasible and cost-effective settings to reach out a vast majority of the population. Even though they don't constitute a specific TB risk group but reach out to a large population that could otherwise be missed (19). On the other hand, HIV clinics are among settings that screening is done among high-risk group (20). Similarly, evidence has shown that diabetics are among the high-risk population (21). Therefore, screening in all the mentioned above would be expected to yield TB cases (19).

Women and Children could also be easily reached for screening through Reproductive and child health clinics. About 3.8% of presumptive women in the Reproductive and child health (RCH) clinic were found to have active pulmonary tuberculosis in Tanzania. Likewise, most of these women reported to have visited the health facilities prior and still left undiagnosed (22). In Pakistan, capacity building and screening in health facilities increased children notification by three-fold (23). Interventions integrating TB screening in all Reproductive and child health care should be practised to increase TB notification among these groups (22).

Tanzania is one of the 30 high burden countries, and one of the 13 countries that account for 75% of missing people with TB (24). The 2020 World Health Organization report on TB Tanzania ranked among the 30 countries with the highest tuberculosis burden worldwide (25). To reduce this TB burden Tanzania will need the healthcare systems to detect more cases of TB at an earlier stage of the illness (26). Nevertheless, there are estimates of undetected TB cases. For Tanzania, WHO estimated 137,000 people had TB disease and only 75,845 were the notified cases (25,27). This shows a huge gap that was neither reported nor treated. Such a gap has called for aggressive case finding for TB. TB screening at the facility level has shown promising addition of TB notification. Other methods put in place to close this gap include Active case finding through contact tracing in households of TB contacts (28).

In Tanzania, intensive screening in all facility departments was initiated as part of the Quality improvement (QI) initiative in 2017. Furthermore, different projects have been put in place to aid in the reduction of the TB burden in the country. The EXIT-TB project done by the national institute of medical research is one of these projects. As the name of the project denotes the exiting of TB, the project undertakes interventions with the sole goal of departing TB from the country by increasing TB notification and reducing treatment delays. The project started in April 2019 whereby there is an upscale of TB screening in selected facilities in Dar es Salaam, Morogoro and Kilimanjaro. The facilities involved in the project are Sinza Hospital, Mbagala Rangi tatu hospital, Buguruni health facility, Huruma hospital, Himo OPD, KCMC referral hospital and Kilosa district Hospital. The project integrates TB screening in all facility departments including RCH, OPD, Cara and treatment clinic (CTC) and the Diabetic Clinic. In addition to that this project has put a screening algorithm that includes the screening of all patients for TB irrespective of their cough duration in the departments and the use of Chest X-ray as a screening tool.

Even though there is still a slight increase in the notification rate in the country. The notification in 2018 was around 138/100000. This is low compared to the notification rate that was documented in the 2015 Tanzania TB prevalence survey that was 293/100,000 a yield from the community (26,27).

Screening in health facilities as a routine has been quite studied. Among the challenges documented were overburdened staff, poor motivation, gaps in clinical practice, and poor

collaboration between the TB units with the involved units like it was seen in the Diabetic Clinic. Additionally, poorly trained personnel and poor compliance to screening protocols was documented. An increase in the number of staff and trainings were among the known facilitators (29,30). Some challenges facing integration of TB screening in all departments though not broadly studied are low uptake of screening tools by overburdened staff (31). Patients also find the practice delaying while non-TB health care workers find it disturbing to their routines (29).

1.2 PROBLEM STATEMENT

The NTLP in Tanzania made efforts to find the missing TB patients by identifying evidence-driven innovations to provide high Quality services and improve screening. NTLP increased access to TB screening activities by integration of screening in all clinics. This involved increasing index of screening among Health care providers, capacity building on diagnostic algorithms (27). Additionally, the EXIT-TB project was put in place to emphasize on TB screening for all.

However, WHO has shown that Tanzania has only managed to notify 53% of the estimated TB incidence (3). TB notification has been increasing in Tanzania as a total of 75,845 cases of all forms were notified in 2018 which is an increase by 9% of TB cases compared to the year 2017. Regardless the TB notification rate of 138/100,000 is lower compared to that to the prevalence of bacteriologically diagnosed TB 293 per 100,000 that was found in the Tanzania prevalence survey of 2012 (26,27).

Despite the introduction of EXIT TB project which has advocated integration of TB services in all health facility departments, TB notification has remained low. This poses a major question to the integration process of TB screening in all departments. Anecdotally a few factors behind the low TB notification rate include; slow uptake of screening tools, poor coordination, overburdened staff and poor staff commitment due to lack of incentives. Therefore, this study aims to assess the integration process of TB screening in all facility departments in the increasing TB notification

1.3 RATIONALE

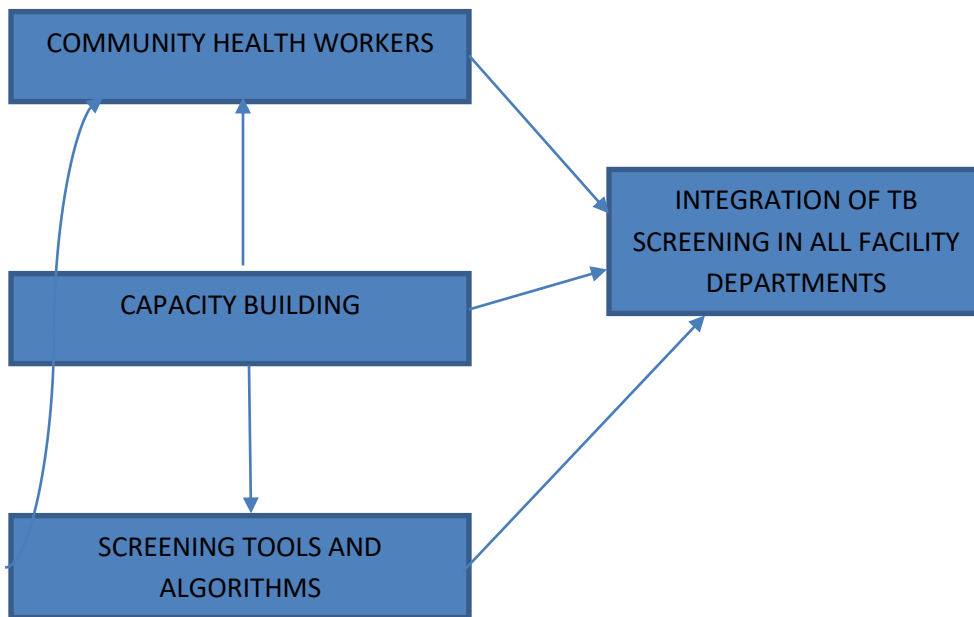
Tanzania is still reported to have a large proportion of missed TB cases and defective screening being one of the major reasons. The study will be done in an era where The NTLP has put strategies to upscale screening in the country through Quality Improvement Initiative (25,27).

The results of this study will have implications to the EXIT-TB project implementers and other stakeholders as it seeks to find reasons why the screening efforts in Tanzania do not yield enough TB cases to cover the notification gap between notified TB cases and prevalent cases. The results of the study set as an eye-opener regarding challenges facing the process of integration of TB screening in all departments to ensure an appropriate strategy is fashioned to increase TB case notification. This study will increase knowledge on the process of integrating TB screening in all departments.

1.4 CONCEPTUAL FRAMEWORK

This conceptual framework shows the process of integrating TB screening in all facility departments that consequently results into Increasing the TB notification. This process will need CHWs, Capacity Building and screening tools and algorithms. The community health workers will need capacity building on the process TB screening as well as the available screening algorithms and tools which will assist in the integration process. Additionally, the training will need to be done to health care workers in all available departments in order to ensure TB screening is done well and in accordance with the available tools and algorithms.

Screening tools and algorithms will be the main guides that will be use by both health care workers and community health workers in TB screening. Having these thoroughly known through capacity building in all departments can successfully lead to integration of TB screening in all health department.



1.5 RESEARCH QUESTIONS

Broad Research questions

How do facilities integrate TB screening in all health facility departments to increase TB notification?

Specific research questions

1. How do facilities use TB screening tools and algorithms?
2. How was capacity building conducted?

3. What is the contribution of Community Health care workers in the initial process of integration?
4. What are the factors influencing the process of integration?

Hypothesis: Integration of TB screening in all health facility departments in order to increase TB case notification is being implemented.

1.6 OBJECTIVES

Broad Objective

To assess the Integration process of TB screening in all health facility departments

Specific Objectives

1. To describe the use of TB screening tools and algorithms in the health facilities.
2. To analyse how the capacity building was conducted in the health facilities.
3. To assess the role of Community health workers in the initial process of integration in the health facilities.
4. To determine factors influencing the process of integration in the health facilities.

CHAPTER TWO-LITERATURE REVIEW

2.1 TB screening tools and algorithms

Globally screening is done differently depending on the TB prevalence and the feasibility of the screening methods (32). TB screening in most developed countries has been based on sophisticated means as well as screening for high-risk groups (33). On the other hand, most resource-limited countries screen TB using symptomatic TB screening (34). There has not been a consensus on what symptoms to be included in the TB screening questionnaire. Different countries have the authority to customize the WHO-proposed questionnaire to increase notification (2). In Ghana it has been documented that screening should be added in routine designated clinics like the OPD, diabetic clinics, antenatal, and wards (29). Uganda on the other hand has integrated the screening tool within medical clinical records (35).

TB screening for many years has been done based on cough of more than two weeks and other constitutional TB symptoms. Even though studies have shown that 2% of TB patients with TB may present with a cough of fewer than two weeks (36). The NTLP in Tanzania has used a screening tool that uses symptomatic screening. This tool was found to have a high false-negative rate which would be reduced by the use of chest X-ray (37). Different studies globally have agreed with the use of combined symptoms rather than a single symptom with the adjunct of an X-ray (38,39). Evidence also denotes that the use of Chest x-ray as a screening tool may help identify missed cases and reduce laboratory workload, however, the test is not routinely available (19).

2.2 Capacity building

Knowledge gaps among health care workers may constrain integration of new interventions in health facilities. This calls upon training on additional knowledge and skills on how to integrate services into their daily practice (40). Nevertheless capacity building goes hand in hand with environmental interaction to shape individual behaviour (41).

Training, technical assistance, and other capacity-building strategies can be effective at increasing adoption and implementation of different health-based interventions (41). Capacity building strategies include training, technical assistance, tools, and other strategies. A met

analysis analysed different modes of capacity building and suggested trainings and workshops were found to enhance outcomes of capacity building like knowledge, skill, confidence, improvements in practice and policy, behavior change, and application of knowledge (41).

In integration of TB screening, Trainings, continued medical education in clinical meetings, on job mentorship and supportive supervision have been put in place in Tanzania. These have helped in raising the index of TB suspicion among health care providers. Health care workers were trained on how to conduct systematic symptom screening to all TB patients presenting in health facilities in order to enhance TB case detection. With presence of tools this showed an increase in TB notification within one-year though challenged with lack of incentives to health care workers (31,42).

2.3 Community health workers for initial screening in increasing TB case notification

Community health workers (CHWs) are largely used to deliver community interventions in Sub-Saharan Africa (43). The use of Community health workers (CHWs) in health interventions has been found to be a cost-effective method of reaching a large community in health promotion (44). In Tanzania the use of CHWs in the health system has prevailed for over a decade now. Even though most of them work for Vertical programs. Different mechanisms have been put in place to make sure CHWs are effective. These include Logistic support, Supervisions, Integration with the health care workforce, community support and support from organizing bodies (45).

Community health care workers (CHWs) have knowledge on health system and are on the other hand trusted members in their communities. They can act as navigators making sure that patients complete their diagnosis and treatment pathways (46). Focused active screening, using Community Health Workers, can improve the number of people who are diagnosed with TB and further early treatment. Moreover, it can push towards the targets of the WHO's End TB Strategy. Different studies in sub-Saharan Africa have realized the use of CHWs to increase case notification (47,48). A study done in Mozambique demonstrated an increase of TB notification by 54% due to use of Community health workers in screening. Additionally, CHWs also worked to bring back 88% of TB patients who were lost before treatment initiation (48).

Community health workers (CHWs) are increasingly engaged in TB screening and outreach activities in integrated HIV/TB services (49) . The use of CHWs in initial screening in health facilities can help the already overburdened staff in TB screening (31).Even though trainings need to be done on screening algorithm and communication (50) . In addition to that CHWs need training on clinical ethics (44). Motivation of CHWs to engage better in screening included incentives as well as being regarded as part of the health team in facilities (51) . A study done in Tanzania has shown that most Health care workers can handle multiple tasks at the same time nevertheless overburdening them with new tasks has been shown to be one of the barriers to success in their duties (51,52).

2.4 Factors influencing the process of integration.

Integration of TB screening service in all facility settings could face resistance from both policy makers and staff expected to implement the intervention. This is due to not understanding the benefits as well as noticing extra work (29,53). Although by integrating health services the use available human resources can be optimally used for efficiency. Integration of services has been documented to reduce patient waiting time and movements (53).

A study done in Iran has shown poor policies and strategies, poor coordination, issues around human resources, resource availability, nature and methods used for TB screening as factors found to affect TB screening in their National TB program. In the case of Human Resources Inappropriate knowledge and poor performance of health personnel were reported. Most health personnel did not follow the national TB diagnosis protocol. The Health care providers also reported being under motivated to perform TB screening due poor benefits, extra work having negative attitude towards TB screening (54).

In Tanzania a study showed that presence of guidelines for integrated services, protocols as well as time to time training of Health care workers (55). In integration of health care services three domains need to present. These include Staff, guidelines, diagnostic equipment and medicine. Tanzania has been documented multiple times to have health facilities that were not adequately equipped to provide integrated services (56–58). Similarly in TB integration within other services especially particularly in screening Trainings have been found of importance for engagement of health care workers in screening (31,59).

CHAPTER THREE-METHODOLOGY.

3.1 STUDY CONTEXT

The health system of Tanzania is organized in pyramid of leadership that contains three levels of health facilities. These include primary, secondary and tertiary levels. The primary level is composed of the district hospitals and all facilities below them. The secondary level is comprised of regional hospitals and regional referral hospitals and the tertiary level contains the national hospital, zonal referral hospitals and consultant hospitals. Tanzania mainland has 26 administrative regions.

The study was conducted in Dar es salaam which is one of the regions in Tanzania where EXIT-TB project is being implemented. Dar es salaam has a population of about 6.4 million and has fast growing urbanization (60). EXIT TB project is a project that started in April 2019 to upscale TB screening in selected facilities in Dar es salaam, Morogoro and Kilimanjaro. The facilities involved in the project are Sinza Hospital, Mbagala Rangi tatu hospital, Buguruni health facility, Huruma hospital, Himo OPD, KCMC referral hospital and Kilosa district Hospital. These facilities were purposefully selected with the virtue of having GeneXpert machines, chest Xray and being high volume facilities.

The facilities where this study took place are Sinza Hospital, Mbagala Rangi tatu hospital and Buguruni health facility. They are in Ubungo district, Temeke and Ilala districts respectively. The participating facilities are among large TB clinics in Dar es salaam. The facilities provide outpatient services and delivery services except Sinza hospital that provides inpatient services as well. The outpatient patient services provided include reproductive and child health clinics, Diabetic clinics, Dental clinics, general outpatient clinics, care and treatment clinics and ophthalmology clinics.

In the studied facilities TB screening was done in the four main departments which were OPD, IPD, CTC and RCH. In the mentioned department every attendee was screened for TB after registration.

3.2 STUDY DESIGN

A cross-sectional design was adopted. This design helped to assess a sample at one specific point in time. The use of both qualitative and quantitative methods complemented the strengths of both

approaches (61). This design suited best to studying the process of integrating TB screening in health facility departments because it's an emerging phenomenon (62).

3.3 STUDY POPULATION.

For quantitative data, four main departments where patients are being attended were included in each facility. These departments are Outpatient department, Inpatient department, Care and treatment unit and Reproductive and child health department. All the selected facilities contain the mentioned departments. From the selected departments relevant data was collected from screening tools, registers as well observing the use of screening tools.

In the Qualitative part, clinicians were recruited in the study to get insight on screening, issues around the use of community health workers in initial screening, how the process of capacity building is done and maintained and the influencers and barriers of integrating screening in the health facility departments. The study also involved clinicians

and community health workers who play part in the Intervention. For Health care providers the study recruited Clinicians from different departments where the TB screening has been integrated. Clinicians included all cadres from assistant clinical officers all the way through to medical officers. Additionally, community health workers who were recruited were those working in the project by doing preliminary TB screening for hospital attendees.

3.4 SAMPLING.

Purposive sampling was used to get a sample of Clinicians and Community health workers who were engaged on issues about TB in the health facilities. The TB clinic was the entry point where clinicians and community health care workers were selected. With the help of the District TB and Leprosy coordinators from all the three facilities, Clinicians were selected based on how much effort and time they spent working on issues pertaining to TB. Effort was determined by whether they did screening and the number of patients they had notified in the past year. This was done by the help of the DTLC. From different departments TB focal personnel who were responsible for overseeing TB activities in their specific departments including TB screening were selected. This would give more insights on TB integration activities. Community health workers were selected among CHWs who engaged in TB screening. The CHWs were involved in providing education among clients, screening for TB, contact tracing among TB patients and making follow up for TB patients on treatment and who have been diagnosed to have TB. To

capture views on the TB integration process CHWs were selected based on the time they had spent in the TB department. CHWs who were selected were those who had spent more time working under the TB department

3.5 SAMPLE SIZE ESTIMATION.

Checklists were filled in the three facilities with EXIT-TB implementation. A checklist was filled from each of the four main departments i.e. OPD, IPD, CTC and RCH. A total of 12 checklists were filled. These departments were involved in data collection because the TB screening was already integrated into the departments in all three facilities.

A total of 13 participants were recruited in this study. 5 in-depth interviews were done with Community health workers and 8 interviews with clinicians in facilities where EXIT-TB project is being implemented. The main determinant of the number of interviews being done was information saturation. Data was analyzed after every interview to pick the critical issues that arise. After the 13th interview with community health workers no more issues were found and saturation was attained.

3.6 STUDY DURATION.

The study was conducted for a period of 2 months from April 2021 to May 2021.

3.7 DATA COLLECTION METHOD, TOOLS AND PROCEDURE

3.7.1 DATA COLLECTION

This research employed both qualitative and quantitative data collection methods.

For the quantitative approach, the observational checklist was administered to healthcare workers in the selected facilities in each department to assess the use of screening tools and algorithms. Data was collected by the researcher and a well-trained research assistant. The research assistant had a diploma in health related field. This was an advantage for it was easy to understand the purpose of the research.

3.7.2 DATA COLLECTION TOOLS

The checklists were designed to collect data and observe the present screening tools and their use. The interview guides used factual questions that were asked on experiences, views, and opinions about the objectives. explored the use of tools, algorithms in place for TB screening,

capacity buildings processes conducted, the contribution of health care workers and factors influencing the integration process.

3.7.3 DATA COLLECTION PROCEDURES

For qualitative data collection, In-depth interviews were done by the researcher and a trained research assistant to seek an understanding of the integration of screening in health facilities. The interviews were recorded by a digital tape recorder. Interviews were done in the presence of two data collectors, where the researcher did the interviews and the other data collector was a note-taker. Data collected were sorted and checked on daily basis to check their completeness and consistence. The audio files from the interviews are kept in a secure place where the principal researcher can only access when any information is required. Quantitative data was also collected during the same time where checklists were filled by the researcher and research assistant.

3.8 DATA QUALITY AND MANAGEMENT

Validity.

Validity is defined as the degree to which an instrument measures what is supposed to measure, the accuracy, soundness, and effectiveness with which it is intended to measure. There is external and internal validity. External validity is the generalization of research findings to populations setting treatment variables and measurement variables. The checklist used for quantitative data collection were given to the supervisor to evaluate and ensure that it captured every necessary information that was intended for the study. The unclear questions or information were reviewed and adjusted before constructing the final research tools.

3.9 TRUSTWORTHINESS

The trustworthiness criteria include credibility, dependability, confirmability, and transferability (63). Each of these criteria and the typically used procedures will be as follows;

Credibility; To ensure credibility, during interviews there was an opportunity to have continued engagement with the respondents. They were introduced to the study by the investigator. This helped the respondents to be familiar with the research objectives and make it easy for them to give their views. Prolonged engagement with participants in order to allow reflective descriptions.

Dependability; To ensure dependability the study was developed from early stages through a systematic search of literature with regards to Integration of TB screening. Detailed proposal draft was prepared in consultation with my supervisors and a final draft was generated to obtain ethical approvals. Able assistants were found debriefing among them on the study was done The debriefing included the objectives of the study, the aim of the study and what was expected from them. The debriefing also included the study tools. Data collection was done in accordance to the proposal and an audit trail was done among the assistants. Prior to analysis the transcripts were reviewed against audio files for accuracy.

Confirmability; The study demonstrated confirmability by triangulation, data sources. During analysis codes and categories were obtained directly from the participants. Rich quotes were also provided directly from participants.

Transferability;

This study provided sufficient information settings, participants and data collection in the method section. This allows other researchers to transfer the information to other similar settings and determine if similar findings can be collected.

3.10 DATA ANALYSIS

Checklists were filled for all the four main department in each facility to determine the use of TB screening tools. Data collected was checked for completeness and consistence. Data were entered into the computer using excel sheet. Descriptive analysis was performed using Microsoft excel to generate descriptive statistics of different variables of interest, then presented in the result section. Different variables that showed different attributes of use of TB screening tools were explained by department. These attributes included the presence of screening tools, their use, timely filling of tools and completeness of the screening tools.

All audio-recorded interviews were first transcribed verbatim. Qualitative content analysis was used in the analysis of the data. The transcripts were read and re read for familiarity with the data. Data was reduced into meaningful units that were re-read to form codes. Coding was done through an inductive approach. Coding process was iterative and whenever newer codes were identified they were added as new codes. Similar Codes were then grouped and abstracted into sub categories. Further these subcategories were grouped into categories based on their similarities and differences. Categories that were formed reflected the latent content of the

interviews. Back and forth review of the texts ensured that appropriate codes, sub categories and categories were generated to interpret the latent content hence respond to the research Questions. A matrix with categories, subcategories, codes and selected codes was presented and subsequently results section prepared and presented.

3.11 ETHICAL CONSIDERATIONS.

The research proposal was presented to the Research and Ethics committee of Muhimbili University of Health and Allied Sciences for ethical clearance. Permission to conduct the study was obtained from the Regional and District Medical Officer in charge of the Dar es salaam region and its district councils. Furthermore, authorization was sought from facility heads and department heads to involve staff in the study. All clients participating in the study were given a brief verbal and written description of the study and consented before participation. They were also given assurance on confidentiality, protection of privacy and personal information and anonymity. The recorded audio and transcribed data have been kept in a personal computer that is managed using passwords known to the writer. There were no incentives given to the study participants.

CHAPTER FOUR-RESULTS

A total of 13 KIIs were done together with 12 Checklists filled from the three facilities. The KIIs involved 8KIIs from Clinical officers, Assistant medical officers and Medical officers and 5KIIs from Community health care workers. The interviewed community health workers were between the ages of 32-45 and had an average of 16 years working as CHWs in the TB unit. On the other hand, clinicians were between the age groups of 30-55 and had an average of 15years in their areas of duty.

Table 1; Table showing sociodemographic characteristics of participants

Variable	Sex	
	Male, n=7	Female, n=6
Cadre		
AMOs	0	3
CHWs	2	3
Medical Officer	5	0
Age group		
30-39	3	0
40-49	3	5
50+	1	1
Years of experience		
1-5	1	0
6-10	1	2
11-15	4	4
15+	1	0

This study wanted to assess the integration of TB screening in health facility departments. From the analysis of the interviews four categories emerged which are poor use of available screening tools, Inadequate trainings, Community Health workers supplementing HCWs and supporting patients and three levels of factors influencing the integration process.

Table 2: Summary of categories, sub categories and selected quotes

Codes	Sub-categories	Categories
<ul style="list-style-type: none"> • Screening is done by different cadres in the facilities • Screening tools are present in different departments • All doctors rooms have registers 	Screening using screening tools	Poor use of available screening tools
<ul style="list-style-type: none"> • There are different tools used for screening • Screening tools are from different stakeholders 	Availability of different tools by different stakeholders	
<ul style="list-style-type: none"> • Coordination of these tools is done DTLC • Doctors understand why it's important to fill registers • Doctors still don't fill the tools completely and on time 	Poor practice of use of screening tools	
<ul style="list-style-type: none"> • All clients are screened after registration • Screening symptoms • Screening is done using x-rays too 	Presence of algorithm for screening	
<ul style="list-style-type: none"> • Different trainings have been done • Trainings have been done by different stakeholders • Trainings have increased understanding of the integration process 	Trainings are done by different stakeholders	Inadequate trainings done
<ul style="list-style-type: none"> • Infrequent trainings provided • Few personnel are being trained • Few refresher trainings are having been done 	Missed opportunity in the trainings	
<ul style="list-style-type: none"> • They provide the initial education • They do the initial screening 	Involvement in the initial processes of Integration	CHWs supplement HCWs and support clients
<ul style="list-style-type: none"> • They follow up clients • Contact tracing • Can be of use in other departments 	Patients follow-up at the facility and community	
<ul style="list-style-type: none"> • They are more involved with clients 	CHWs provide moral support for clients	
<ul style="list-style-type: none"> • Cooperation among staff • Good support system • Trainings equip staff • Good staff commitment • Poor suspicion index • Involvement of staff in the whole process 	Factors among staff members	There three groups of influencing factors affecting the process of integration
<ul style="list-style-type: none"> • Clients have poor knowledge of the process • Clients can't afford some services • Discontinuity of services disturb clients 	Factors among patients	
<ul style="list-style-type: none"> • Lack of working equipment • Unavailability of screening and diagnostic tools 	Facility factors	

4.1 Poor use of available screening tools

In this analysis we found that in all health facilities screening of patients was done in each department. The screening was done by use of available tools even though there was poor practice in the use of the tools. The available tools were from different stakeholders. We also found an algorithm that was in place for augmenting the TB screening process.

4.1.1 Screening using screening tools

Informants revealed that screening tools were in different departments and they were used by different cadres for screening. Respondents mentioned that all Clinicians were responsible to do screening and all doctors, rooms had screening registers. CHWs did screening using a questionnaire that had the five TB questions and nurses also had their own registers.

“It depends where the tools are being filled, if it’s the doctors room at the OPD, the OPD doctor fills them, if it’s in the pediatric unit pediatric doctor fills them but if it’s at the level of a community health workers then the CHW will fill it since all the tools are different, and if it’s the dot nurse she will fill them herself” CHW A Buguruni

4.1.2 Availability of different tools by different stakeholders

From the checklists filled we found different screening tools were found in different departments. All health facilities were found to have screening tools. The following tools were found in the facilities; TB presumptive registers, EXIT-TB screening form and CTC TB screening forms. These tools were originated from different stakeholders. Respondents mentioned there were screening registers from the Ministry of Health. There was also screening questionnaires that were used by community health workers which were part of the EXIT-TB project.

“... There are screening forms which guide use from EXIT-TB project, they have the five questions, but also we have counter books which we record initial information and we have registers, there different registers for CHWs, DOT nurses and doctors which are in the rooms and every presumptive patient is recorded in them..... these registers are from the ministry of health” CHW A, Buguruni

4.1.3 Poor practice of use of screening tools

From the checklist we noted that most of the studied departments used their screening tools except in the In-patient department where only one facility was found to use the screening tools. Timely filling of screening tools was observed in 3 departments in all facilities. These were 2 OPDs and 1 CTC. Similar findings were observed in the completeness of screening tools

Findings from this study revealed that both Clinicians and CHWs had positive attitude towards the use of the screening tools. Respondents understood the importance of using these tools. Clinicians reported that using these tools would help in getting statistics, patient follow up and resource allocation. The District TB and leprosy coordinator was responsible to coordinate the use of the tools. They had to make sure the registers were available and in use. Additionally, CHWs mentioned that it was important for them to fill these tools because it was what they were paid to do.

“It’s important we get the right information, it’s very important because data is everything, it gives us the total number of patients we have in a day then in a week and then in a month, we can even tell if the target that each facility has been given has been reached using the tools.”

AMO, Sinza

However, tools were not filled completely and on time. Clinicians informed that it was hard for them to fill the registers because there was a lot of repetition in different registers. Clients would have to be filled in multiple registers including presumptive registers. They also informed that due to a lot of work on their palate it was hard to complete all the registers in time.

“ There is no opportunity to fill the registers in time due to a lot of responsibilities to be done, the same doctor is expected is expected to fill the GOTHOMIS, the same doctor fills the same patient TB registers. This results one having multiple registers to fill hence one being lazy to do so. The doctor will then notice there are still clients awaiting outside hence finding themselves not in place to fill these registers hence the supervisor needs to put effort to encourage them to fill the registers and sometimes fill the registers one after another” –
(Medical officer B, Mbagala)

4.1.4 Presence of algorithm for screening

A screening algorithm was present in the facilities that aided in the screening. This algorithm helped to make sure that all clients that made attendance in the facilities were screened for TB. They used guides from the Ministry of health and augmented by other stakeholder. In these facilities x-rays were also used for TB screening.

4.1.4.1 TB screening procedures

In the screening process any person that attended at these facilities was screened in whatever departments they attended. Majority of the respondents informed that at the health facility entry points patients were screened using the screening questionnaire. When these patients get to the doctors' rooms the doctor from this questionnaire could already articulate that was a presumed TB patient and go on with further screening and investigations if necessary. CHWs mentioned that the screening was done in respect of the clients' confidentiality. The respondents mentioned that after screening and seeing the doctor, a presumptive patient would be sent for x-rays and the further after for lab investigations. In case the client was diagnosed to be TB positive from their departments then he/she would be linked to the TB clinic for treatment.

"..... Any client or patient who enters the facility gates will be registered and then screened using a form with the TB symptoms provided by the EXIT-TB project. After registration they are asked the five questions and they move with this form. In case you are found with any of the symptoms the doctor will see the form and the doctor will do further examination" – (Assistant medical officer, Buguruni)

4.1.4.2 TB screening symptoms

The screening that was done was done used the Five symptoms that were in the guidelines from the Ministry of Health. Majority of the respondents said that the symptoms used to screen for TB were the 5 symptoms that have been in place by the TB guideline. These symptoms were mentioned to be Cough, Fever, Night sweats, bloody sputum and loss of weight. The clinicians also mentioned that

"The first symptoms are coughing for one, three, four days you have a fever, you lose weight, you sweat a lot, you have no appetite, you can cough with normal sputum or sputum mixed with blood". (CHW A, Sinza)

4.1.4.3 Use of X-rays for TB screening

X-rays was one of the tool that is used for TB screening as was reported by the respondents both CHWs and Clinicians. It was mentioned that after a doctor's consultation presumptive patients would be sent for X-ray. After X-rays were read, the results were put together with the history and used to make decision if someone had to go for TB lab investigations. CHWs reported that with the use of X-ray for screening helps clients to be more cooperative to produce sputum later for TB investigation.

“others say that they can't produce sputum, they say they have a dry cough but if they get an x-ray and are told they have TB they will produce sputum since they are told they have the disease” – (CHWA, Buguruni)

4.2 Inadequate trainings done

In this analysis we found that capacity building was done through trainings, Trainings were given by different stakeholders and different contents pertaining to TB were taught. However, these trainings were either in frequent or only few personnel were trained.

4.2.1 Trainings are done by different stakeholders

In the facilities that were visited respondents reported to have received different trainings over the years. The trainings on TB issues included TB/HIV, pediatric TB, TB screening, Use of TB screening tools and X-ray as a tool for TB screening. Most of the respondents said they have been trained a couple of times on issues pertaining to TB. Theses trainings that were from both government institutions and Non-governmental organizations. Respondents from Mbagala also reported that they have had TB topics in their Continuous medical education sessions.

“There are trainings that have been done by the EXIT-TB project even CHWs attended. The hospital has also organized a pediatric TB seminar but we also have CME in our facility that remind us in our departments” Medical officer, Mbagala

The trainings that have been conducted were termed to be helpful in equipping both clinicians and community health workers with the appropriate knowledge and skills to conduct TB screening. CHWs from all facilities also reported that these trainings provide them further with

courage when screening patients. After they have been trained they report that they are sure of what they are doing. They also said that trainings help them to be trusted by their clients since even clinicians trust in them now. The respondents applauded the trainings that have been provided by different stakeholders for involving everyone in the facilities including Clinicians, lab personnel, nurses as well as Community health workers.

“.....eehe they have a contribution, because initially we were trained and then sent to the field, refresher trainings help us to improve our skills. Hence forth we work more efficiently. Even now if we are trained it will help us because expertise changes what was taught a few years back might have changed.”—(CHW A, Buguruni)

4.2.2 Missed opportunity in the trainings

The training that have been done have not exhausted the chances of capacity building among the staff. The informants reported that the training provided were infrequent and further more few trainees received them. They reported that refresher trainings were necessary though not readily implemented. They gave their views that trainings should be frequent since at times some trained personnel move.

“We were trained in 2007 on the diagnosis of TB but it has been a while we have not received any refresher trainings we are just using our experiences” AMO, Sinza

4.3 CHWs supplement HCWs and support clients

The analysis unveiled 3 main roles that are played by CHWs as a contribution to the integration process. These included the playing part in the initial process of integration, making patient follow up and as a support system to patients.

4.3.1 Involvement in the initial processes of Integration

The community health workers were involved in providing education to clients when they visited the hospital. CHWs mentioned that every morning first and fore most they give education in their respective departments. The education they provided was about TB, its causes and its treatment. The health education they provided also meant to motivate clients to seek for care as early as possible.

“Provide education if a person is healthy they should come and test and if found with TB start treatment early when they can take medications and continue with their daily activities” CHW A, Mbagala

The community health workers also did initial screening in their facilities. They mentioned that they were responsible to receive clients screen them and then direct them to the doctors’ rooms. This helped the doctors to screen further patients that were already pointed as presumptive patients from the initial screening. Clinicians reported that the CHWs had the ability to notify patients and many patients have been notified due to their efforts. The CHWs were very keen in what they did and showed persistence when they received a client with symptoms. A clinician mentioned that some CHWs would bring back a client with symptoms if they thought if they thought improper management was done.

“they are good, as I have said before they might bring back the patient to the doctor if they know and the see the symptoms from the patient this shows they know what they are doing” AMO, Sinza

4.3.2 Patients follow-up at the facility and community

Community health workers were as well involved in following up clients in the facilities as well as communities. With integration of screening in all departments the CHWs would screen the attendants and then let them see the doctors. During screening CHWs would also thake the patient contact details. In case the clients were presumptive TB patients and were sent for diagnosis they would make follow ups of these clients to the final results. They did physical follow ups as well as contacted them if they went missing. The CHWs mentioned that they requested for their phone numbers and also their consent on the use of these contacts. In the facilities they also make sure that clients follow all the procedures including providing quality sputum.

“following the patient as he/she enters to the time he/she leaves, and you will ask for his/her contacts that’s available in order to do follow ups and telling him/her I will be your friend and I’ll need your cooperation so as to improve your health, the patient will agree and give me his/her contacts and I will ask for consent to be calling him/her, CHW”, Buguruni

They also mentioned that these CHWs are responsible for contact tracing in the communities. The CHWs mentioned that in the communities they go to household and motivate the members to go for TB testing on their own will. They also collect sputum samples from presumptive patients in the communities.

“When we go to the streets we divide into 2 o 3 people, when we reach to the household we introduce our selves we are MKUKUTE we inspire people to screen for TB and take samples for people who think have sings also we go to camps of drug abusers” – CHW A, Mbagala

Additionally, clinicians added that at times CHWs in the TB department can be of use in other departments when in need. In case of need in other interventions other than TB these CHWs are trained and they can help in the intervention as well.

“when we use HBCS they are firstly well trained to identify different disease not only TB but also others diseases so as when needed for other/new diseases like COVID-19 its just small training which needed because they already have the capacity, we don't just use an random person they must be well trained to qualify” MO, Sinza

4.3.3 CHWs provide moral support for clients

The CHWs involved in the integration of screening were formerly TB patients. They thought it was easy for them to be the first ones to see the patients since they understood what it was like to be a TB patient and it was easy for them to talk to patients. They reported that since doctors were busy they had ample time with these clients and treated them more like friends. They reported that giving the clients their own TB stories made the patients at ease to test and receive TB treatment. They informed that it was also easy for them to be trusted by the clients since they lived in similar communities.

“We ourselves have suffered from TB we know the struggles of TB, hence we can educate people who are stigmatized and isolated, we teach people on TB symptoms and its transmission...” (CHWA, Mbagala)

4.4. Three groups of influencing factors affecting the process of integration

In our findings we analysed the factors that could influence the TB screening integration into departments. Among others we found that there were three groups of factors that which were factors among staff members, factors among patients as well as health facility factors.

4.4.1 Factors among staff members

We found that elements around staff members in the facilities played a role in influencing screening either positively or negatively. It was mentioned by respondents that cooperation among staff members of different cadres and from different departments positively influenced the process of integrating screening in all departments. The cooperation that was there among the staff and CHWs also motivated the CHWs to do their job. This motivated them and gave them a sense of belonging.

“Reasons that facilitate the screening are cooperation among Community health workers, doctors and all health care including those in the laboratory if we cooperate things move in the right direction.....” CHW, Buguruni

“It has to be like that because every department has a responsibility of cooperating and screen for TB. Every department has to make sure there is supervision because TB can affect anyone in the CTC or even RCH” Medical officer, Mbagala

The staff from different departments being committed to do screening is an advantage to the process. We also found that having the health care workers involved in the integration from the initiation and its trainings brought sense of belonging. Supervision from every department helped to make sure screening takes place. Integration being a new phenomenon training has equipped staff and brought understanding of the process.

“The first thing is commitment of health care workers, if you want to integrate any services if the staff members are not ready it becomes difficult. However, trainings given can help the people to engage in TB issues. The third thing is that we have good leadership that engages people in case there is any stumbling blocks they also help out” ...Medical officer, Mbagala

On the other hand, low index suspicion among clinicians challenges the process of screening in all departments. We were informed that Clinicians still needed training on TB screening because some of them had low index of suspicion for clients who might have TB.

4.4.2 Factors among patients

On the other side patients played a role in influencing the process of integrating TB screening in all departments. Patients had poor awareness on the process hence lack of cooperation. We were informed that the lack of cooperation from the clients brought a challenge to the process. Patients would have their samples taken for TB diagnosis and never return for their results. Respondents reported that even when these patients are contacted they refuse to return or some of them even refuse to take TB treatment.

“Patients might do x-rays but never come for their results, also the same patient might do gene-xpert or sputum microscopy and never come for their results either. Other clients might be TB positive and never come for treatment with the excuse that they have cardiac problems. Some patients are followed at home and even there they refuse and say they want to go for prayers”-
CHW A, Mbagala

TB screening makes use of X-rays which are costly at about 15,000 Tshs per X-ray. Some clients cannot complete the screening process because they can afford the X-rays. Even though an exemption procedure is in place it involves a number of procedures to get one. The clients who fail to get exemption end up leaving the facility without getting care. Also clients would find it disturbing and get lost when they are asked to go get x-rays in neighboring facilities when x-rays in the facility they visited were not working.

“Patients cannot afford to pay for X-rays , gene-xpert and sputum microscopy are free tests patients but x-rays have to be paid for and most clients after they send their sputum samples they end there so most of the patients are lost in that manner.”- Medical officer Mbagala

4.4.3 Facility factors

Continuity of service provision in facilities has been mentioned as a challenge. This includes x-rays which from time to time do not work due to technical problems. On the other hand, some equipment necessary for TB diagnosis may not be available hence affecting the whole process. We were informed that when x-rays are not working the following day might have a lot of

patients and it would be hard for all of them to be served properly. Gene Xpert machines have also not worked properly hence the use sputum microscopy.

“In our department we have a problem when either the x-ray is not working or sputum containers are not available. In that case the following day there are a lot of clients to be served” CHW, Sinza

CHAPTER FIVE-DISCUSSION

This study aimed to assess the integration process of TB screening in Facility departments in 3 health facilities in Dar es salaam. We found that available TB screening tools included TB screening questionnaire, TB screening forms in the CTC department and TB presumptive registers. There was positive attitude towards their use moreover the practice of using them was poor. An algorithm was in place for TB screening that included TB screening with five symptoms, use of X-ray and history taking. Inadequate trainings were done among staff members and CHWs. The CHWs were involved in multiple roles in the implementation of integrating TB screening in all departments. They helped HCWs in the initial screening of clients, followed up the patients and also supported patients. Factors that affected TB screening integration were in three groups which were staff based, facility based and patient centered.

5.1 Use of screening tools and algorithm

With Integration of TB screening in place our study revealed that in these facilities TB screening starts at the clinic/department waiting area by the CHWs with priority being given to patients that presented with a cough. Studies have shown that screening of all attendees plays a role in decreasing the number of missed TB cases (64) and hence forth substantially increasing TB case notification(65). Different studies within a similar context have highlighted the importance of integrating screening within the facility context in increasing the TB case detection(66). Similarly employing CHWs as part of the TB screening cascade in health facilities has shown to improve the yield of TB cases(48). The current study has shown similarities with these studies due to implementation studies being in place as a common context. However the integration TB services in different clinics in some studies has been shown to lack fully effectiveness because of lack of trainings and poor infection control measures (67,68) . Therefore, as much as TB screening integration is fruitful it initially needs proper resource allocation and staffing for effectiveness to be witnessed.

The use of TB screening tools in the facilities that were visited was found as an important element in TB screening in all departments. It helps to keep data that in turn helped in client following up. However, clinicians have declared that filling a couple of tools for a single client is tiring. To improve the use of these tools one system would be put in place to accommodate a client as an entity for all the facility requirements be it TB or any other disease. Similar challenges have been seen in studies in Uganda poor recording and reporting of TB-HIV

surveillance data was a barrier to the collaboration of TB/HIV services(69). Similar findings were recorded elsewhere in the world(70–72). On the contrary a study in South Africa showed that the staff were satisfied with the data collecting system and the main difference was because their system was electronic based rather than routine paper based registers(73). Electronic systems may help simplify data collection and ascertain data quality including on time collection and completeness. However, in LMICs this the practicability of the use of electronic system maybe challenging especially in remote areas.

The study revealed the screening algorithm in place included the routine NTLP guideline algorithm that used the standard five TB symptoms to presume TB suspects. Additionally, in the studied facilities all clients that presented with a cough of any duration were presumed to have TB and sent for further screening. The facilities also used X-rays as one of the TB screening instruments. These modes of screening showed to increase TB case notification in the studied facilities. An increased contribution in the TB notification was found in other studies from Ethiopia, Cambodia and South Africa(36,74,75). The similarity in these findings was likely due to the high burden of TB still facing Tanzania and these countries. Using Chest X-ray as an adjunct to symptomatic screening has been cited to increase sensitivity of a screening algorithm(75–77). Therefore, NTLP needs to develop a screening algorithm that puts into account the missed cases missed due to having short duration cough also including chest x-rays as part of the screening algorithm because it increases the sensitivity index of the algorithm.

5.2 Capacity building

Training that were conducted in the facilities had an increased advantage to both HCWs and CHWs. Above all CHWs felt that the trainings increased their skills and knowledge hence recognition in the facilities and communities. However, setbacks were found that the trainings were not enough and needed to include more people, including increasing the training frequencies. A study that was done in South Africa showed that trainings was an avenue that maximized the integration of services TB case finding inclusive(78). With the added advantage trainings had a review has shown the importance of constant evaluations on both the technical and cost impact of these trainings(79). Trainings are important to fully see the impact of Integration of TB screening however close evaluation of these trainings should be done.

5.3 Contribution of CHWs

CHW role in TB screening has been acknowledged in this study. Their role didn't only end in the screening part but they also educated and followed up the clients. Most of these CHWs were former TB patients increasing their understanding in the disease. The use of former TB patients and CHWs has shown impact in increasing TB case notification and TB knowledge in Tanzania and different parts of the world(80–84). The similarity that was found in all the mentioned studies were all the CHWs were part of a project or program. This sets a wakeup call that using CHWs in an organized system can increase the yield of TB case notification interventions.

The use of CHWs for screening has helped doctors in TB screening. Shifting of tasks from doctors to CHWs increased screening efficiency due to less tasks that CHWs had. In Mozambique results from a study showed that task shifting from doctors to lower trained health care workers and auxiliary workers are accepted and are feasible(85). Both countries have shortage of health care workers. Giving the role of screening to CHWs with training might help to increase efficiency of screening from doctors who are busy and mostly understaffed.

5.4 Facilitators for integration

In the integration of TB screening services, the use of CHWs was found handy. However, the main setback in the use of CHWs was poor and unsustainable training as well as lack of consistent financial support system for them. A study Viet-Nam showed that engaging full-time salaried CHWs had a greater impact in improving TB services(84). Comparable challenges among health care workers were seen in different studies impacting TB notification and integration of services negatively(86–88). Nevertheless, CHWs from higher income countries have been found to have no problem with volunteering(87). This would possibly be due to the availability of other income sources on their side. A studies done among CHWs in Nepal and Uganda documented that CHWs were interested more in religious merit by serving the community and developing new knowledge and skills respectively were more important than being paid (87). We find that organizational capacity, support for CHWs and clarity about their roles can help in the integration of services.

Lack of continuous flow of diagnostic services which included Gene-Xpert and X-rays was found as a challenge to the TB screening integration. Even with integration of screening in all departments without diagnostic tools in place it would be challenging to diagnose TB and

increase the notification. A study in Mozambique showed similar findings where by lack of diagnostic facilities was bottle neck in TB care cascade which begins with screening(85). African countries still lack continued supply of medical goods, equipment and diagnostic facilities. This leads to an implication in initiatives aiming to increase case notification.

5.5 LIMITATION

Biasness of the information provided is one of the limitation of this study. Clinicians and CHWs were selected by purposive sampling this might have caused bias as information were only obtained from clinicians and CHWs who were willing to participate. Those not willing to participate may have known key issues pertaining to integration. To mitigate this the researcher, provided adequate information about the research and its significance.

Another limitation was social desirability. The researcher clearly explained to the participants the importance and objectives of this study so that they understood and provided actual facts without consideration that the researcher could have hold them accountable of their responses. However, interviewees were encouraged to respond to the questions while considering that there was no right or wrong answers.

CHAPTER 6: CONCLUSION AND RECCOMENDATION

6.1 CONCLUSION

The findings of this study show that integration of TB screening in all health facility departments is being implemented. We found that available TB screening tools included TB screening questionnaire, TB screening forms in the CTC department and TB presumptive registers. There was positive attitude towards their use moreover the practice of using them was poor. An algorithm was in place for TB screening that included TB screening with five symptoms, use of X-ray and history taking. Proper supervision is needed in order to make sure these tools are filled correctly and in time. Capacity building in necessary increasing knowledge and skills to the staff. However adequate capacity building is needed that includes training a good number of staff and frequent refresher courses. CHWs played a great role into the integration process.

6.2 RECOMMENDATION

Based on the findings of this study I recommend the following

1. The Ministry of Health should aggregate the data collection system in health facilities into an electronic system to simplify data collection for health care workers as the do their daily service provision activities.
2. The Ministry of health should mobilize stakeholders to allocate resources for frequent trainings and refresher trainings around issues pertaining to TB
3. An organizational plan should be laid by the NTLP that will accommodate CHWs roles in initial screening officially
4. To increase staff commitment an efficiency in any intervention health care workers need to be involved from the beginning of the intervention to understand and get involved fully.
5. Awareness programs should be created for the community on different issues pertaining to TB including its transmission and treatment in order to reduce stigma.

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APPENDIX

Appendix 1A: Checklist

1. Name of health facility; _____
2. Availability of TB screening tools Yes _____ No _____
3. Mention TB screening tools available;

4. Are the screening tools filled Yes _____ No _____
5. Are the screening tools filled in time Yes _____ No _____
6. Are tools complete Yes _____ No _____

Appendix 1B; Interview Guide for Clinicians (English version)

1. Please may you introduce yourself, age, cadre, years of experiences
2. What do you understand on Integration of TB screening in health facility departments?
 Probe – The practice in the health facility
 The importance of integration
3. What TB screening tools are present in this facility in this facility?
 Probe- Where are they located
 Who is responsible to fill and compile them?
 What is the practice of their use? If used why, if not used why?
 Are they easy to use?
4. What are the perceptions of clinicians in filling the screening tools?
5. What is the TB screening algorithm that is in use in this facility?
 Probe if it's being followed, if yes why and if not why
6. What trainings were conducted on integration of TB screening
 Probe-frequency, what was taught, where CHWs involved
7. Who were involved in the trainings provided?
 Probe, who did it, who was trained
8. What impact has the training had on normal practice?
9. How are CHWs involved in TB screening.
 Probe- their ability to screen
10. What is the added advantage of involving Community health workers for workers?
11. What are the facilitators involved in the process of integration?
12. What are the challenges involved in the process of integration?

Appendix 1C; Interview Guide for Clinicians (Kiswahili version)

1. Naomba ujitambulishe (umri,kazi na miaka katika kazi hyo)
2. Unaelewa nini unaposikia ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.
 - a. Chunguza – Taratibu katika kituo kikuu
 - Umuhimu wa kujumuisha uchunguzi wa awali wa Kifua kikuu
3. Ni nyenzo gani za kufanyia uchunguzi wa awali wa kifua kikuu zinatumiwa katika kituo hiki?
 - a. Chunguza- Mahali zinapopatikana nyenzo hizi
 - Nani anajaza nyenzo hizi
 - Taratibu za matumizi ya nyenzo hizi
 - Na nini kinapelekea matumizi hayo
4. Ni nini mtazamo wa madaktari katika ujazaji wa nyenzo hizo za uchunguzi wa awali wa Kifua kikuu?
5. Ni kanuni gani inatumika kufanya Uchunguzi wa awali wa Kifua kikuu katika kituo hiki?
 - Chunguza kama zinafuatwa, ni nini sababu ya kufuatwa au kutofwata
6. Ni mafunzo gani yalifanywa juu ya ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.
 - Chunguza- Nini kilifundishwa, Wafanyakazi ngazi ya jamii walihusishwa, mafunzo yalifanywa mara ngapi.
7. Nani alihusishwa katika mafunzo hayo?
 - a. Chunguza Nani alitoa mafunzo, nani alifundishwa
8. Mafunzo hayo yamekua na mchango wowote katika taratibu za kawaida za kufanya uchunguzi wa awali wa kifua kikuu katika kituo?
9. Ni kwa namna gani wafanyakazi katika ngazi ya jamii wanahusishwa katika kufanya uchunguzi wa awali wa kifua kikuu,

– Chunguza- Nafasi yao katika ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

- Uwezo wao katika kufanya uchunguzi wa awali

10. Nini umuhimu wa kutumia wafanyakazi katika ngazi ya jamii katika ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

11. Nini sababu zinazoweza ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

12. Nini Changamoto zilizopo katika wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

Appendix 1D; Interview Guide for Community health workers (English version)

1. Please may you introduce yourself, age, cadre, years of experiences
2. What do you understand on Integration of TB screening in health facility departments?
 Probe – The practice in the health facility
 The importance of integration
3. What TB screening tools are present in this facility in this facility?
 Probe- Where are they located
 Who is responsible to fill and compile them?
 What is the practice of their use? If used why, if not used why?
 Are they easy to use?
4. What are the perceptions of community health workers in filling the screening tools?
5. What is the TB screening algorithm that is in use in this facility?
 Probe if it's being followed, if yes why and if not why
6. What trainings were conducted on integration of TB screening
 Probe-frequency, what was taught.
7. Who were involved in the trainings?
 Probe, who did it, who was trained
8. What impact has the training had on normal practice?
9. How are CHWs involved in TB screening.
 Probe- their ability to screen
10. What is the added advantage of involving Community health workers for workers?
11. Challenges facing CHWs in screening for TB
12. What are the facilitators involved in the process of integration?
13. What are the challenges involved in the process of integration?

Appendix 1E; Interview Guide for Community Health Workers (Kiswahili version)

1.Naomba ujitambulishe (umri,kazi na miaka katika kazi hyo)

2.Unaelewa nini unaposikia ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

Chunguza – Taratibu katika kituo kikuu

– Umuhimu wa kujumuisha uchunguzi wa awali wa Kifua kikuu

3.Ni nyenzo gani za kufanyia uchunguzi wa awali wa kifua kikuu zinatumiwa katika kituo hiki?

Chunguza- Mahali zinapopatikana nyenzo hizi

Nani anajaza nyenzo hizi

Taratibu za matumizi ya nyenzo hizi

Na nini kinapelekea matumizi hayo

4.Ni nini mtazamo wa wafanyakazi wa ngazi ya jamii katika ujazaji wa nyenzo hizo za uchunguzi wa awali wa Kifua kikuu?

5.Ni kanuni gani inatumika kufanya Uchunguzi wa awali wa Kifua kikuu katika kituo hiki?

Chunguza kama zinafuatwa, ni nini sababu ya kufuatwa au kutofwata

6.Ni mafunzo gani yalifanywa juu ya ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

Chunguza- Nini kilifundishwa, Wafanyakazi ngazi ya jamii walihusishwa, mafunzo yalifanywa mara ngapi.

7.Nani alihusishwa katika mafunzo hayo?

Chunguza Nani alitoa mafunzo, nani alifundishwa

8.Mafunzo hayo yamekua na mchango wowote katika taratibu za kawaida za kufanya uchunguzi wa awali wa kifua kikuu katika kituo?

9.Ni kwa namna gani wafanyakazi katika ngazi ya jamii wanahusishwa katika kufanya uchunguzi wa awali wa kifua kikuu,

Chunguza- Nafasi yao katika ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

- Uwezo wao katika kufanya uchunguzi wa awali

10.Nini umuhimu wa kutumia wafanyakazi katika ngazi ya jamii katika ya ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

11.Nini Changamoto za wafanya kazi katika ngazi ya jamii katika kufanya uchunguzi wa wali wa Kifua kikuu katika kituo hiki.

12.Nini sababu zinazoweza ujumuishwaji wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

13.Nini Changamoto zilizopo katika wa uchunguzi wa awali wa Kifua kikuu katika idara zote za kimatibabu katika vituo vya afya.

Appendix 2A- Consent Form



CONSENT FORM TO PARTICIPATE IN RESEARCH

Introduction

This Consent form has 2 parts:

- Information sheet (**information to the participants about the research**)
- Consent part (**for signature if the participant has agreed to participate in the research**)

Part 1: Information sheet

Introduction

Hello! My name is from Muhimbili University of Health and Allied Sciences. We are doing a research on the status of integration of tuberculosis screening in health facility departments; a case study of three facilities in Dar es salaam. I would like to give you information about this research and invite you to take part in it. It is possible that this consent form has information that you do not understand, please don't hesitate to stop the conversation for me to explain the part that is not understood. If you have any questions, you can ask me or another researcher who accompanied me.

Purpose of the research

To assess the integration of TB screening in health facility departments towards increasing TB notification following implementation of EXIT TB project in Dar es salaam. This will give a

better understanding of the process of integrating TB screening as well as the factors that are facing the process.

What does your participation involve?

Your participation involves to agree to answer questions and give information to the principal investigator or the research assistant during the interview. You should be aware that you are free to decide not to participate or to withdraw at any time without affecting your relationship with a researcher. Some of the questions might be sensitive regarding day to day work, but rest be assured that all information given will be confidential and anonymous.

Confidentiality

All the information that will be obtained in this research, will be well preserved and will be used for the research purposes only. However, your name will not be associated with the research findings in any way, and your identity as a participant will be known only to the researchers.

Right to withdraw

Your participation is voluntary. Refusal to participate or withdrawal at any time after you consented, won't affect you or bring effects to another person related to you.

Benefits

There will be no direct benefits that you will obtain when you participate in this research, although your participation is very important in answering the research questions that will enable better understanding of the process integrating of TB screening in health facility departments towards increasing TB notification following implementation of EXIT TB project in Dar es salaam.

Risks

We do not anticipate any negative impacts when you participate in this study.

Feedback questions

Incase we will need more explanation after our previous conversation or if we require to ask for further questions after previous responses, we ask you to respond to us when we come back or make phone calls.

Who to contact for further questions or instructions

If you have any questions about the study, you can contact Dr. Doreen Philbert from Muhimbili University of Health and Allied Sciences, P.O. Box 65001 Dar es Salaam, phone number: +255 738 902666/ 0652333340.

Concerning your rights as a participant, you can contact Chairman of Senate Research and Publications Committee (SRPC) of Muhimbili University of Health and Allied sciences, Dr. Bruno Sunguya, phone number: 0685 217 272 or P.O. Box 65001 Dar es Salaam.

Signature (Researcher).....

Part two: Consent

I have been invited to participate in a study on status of integration of tuberculosis screening in health facility departments; a case study of three facilities in Dar es salaam.

I have read / someone has read for me the basic information on this study. I have had the opportunity to ask questions related to this study and I have been answered enough to my satisfaction. By my own free will, I agree to participate in this study.

Name of participant _____

Signature of participant _____

Date _____
Day/Month/Year

Researcher's Statement

I certify that the participant has been given the opportunity to ask questions and all the questions he or she has asked have been answered correctly according to my understanding. I certify that the participant has given consent to voluntary participate without coercion or deceit.

A copy of this consent form has been provided to the participant;

Name of researcher _____

Signature of researcher _____

Date _____
Day/Month/Year

Phone number of the participant: _____

Appendix 2B- Fomu ya Idhini



FOMU YA IDHINI YA KIISHIRIKI

Utanguzi

Fomu hii ya idhini ina sehemu mbili:

- Fomu ya taarifa (Taarifa kuhusiana na utafiti kwa washiriki)
- Hati ya idhini (Kwa ajili ya sahihi ikiwa mshiriki amekubali kushiriki)

Sehemu ya 1: Fomu ya taarifa

Utangulizi

Habari. Majina yangu nikutoka chuo kikuu cha afya na sayansi shirikishi Za afya Muhimbili. Tunafanya utafiti juu ya hali ya ujumuishaji wa uchunguzi wa awali wa kifua kikuu katika idara za matibabu katika vituo vya afya; utafiti katika vituo vitatu jijini Dar es salaam. Ningependa kukuelezea na kukualika katika utafiti huu. Inawezekana fomu hii ya idhini ikawa na maneno ambayo huyaelewi, tafadhali usisite kunisimamisha kusudi nielezee pale ambapo hapajaeleweka. Kama utakuwa na maswali wawezakuniuliza mimi au kumuuliza mtafiti mwingine aliyeambatana nami.

Lengo la utafiti

Kujifunza kuhusu ya hali ya ujumuishaji wa uchunguzi wa awali wa kifua kikuu katika idara za matibabu katika vituo vya afya ili kuweza kubaini changamoto zilizopo na namna zinavyokabiliwa.

Ushiriki wako unahusisha nini?

Kushiriki kwako kunamaanisha kukubali kujibu maswali kutoka kwa mtafiti mkuu au Msaidizi wakati wa mahojiano. Unapaswa kujua kuwa uko huru kuamua kutoshiriki au kujiondoa wakati wowote bila kuathiri uhusiano wako na mtafiti. Maswali mengine yanaweza kuwa nyeti kuhusu kazi ya siku hadi siku, lakini hakikisha kuwa habari zote zitakazotolewa zitakuwa za siri na hazijulikani.

Usiri

Taarifa zote zitazopatikana katika utafiti huu zitatumizwa kwa usiri mkubwa na zitatumika kwa malengo tu ya utafiti huu. Hakuna chapisho lolote au andiko litakalobainisha utambulisho wako. Walakini, jina lako halitahusishwa na matokeo ya utafiti kwa njia yoyote, na utambulisho wako kama mshiriki utajulikana tu kwa watafiti.

Haki ya kujiondoa

Ushiriki wako ni wa hiari. Kukataa kushiriki au kujiondoa wakati wowote baada ya kutoa idhini hakutasababisha athari wala madhara yoyote kwako au kwa mtu yeyote Yule anayekuhusu.

Faida

Hakuna faida yoyote ya moja kwa moja utakayoipata kutokana na ushiriki wako katika utafiti huu, hata hivyo ushiriki wako ni muhimu sana katika kuwezesha kujibu maswali ya utafiti huu ambayo huweza yakasaidia katika kuboresha hali ya hali ya ujumuishaji wa uchunguzi wa awali wa kifua kikuu katika idara za matibabu katika vituo vya afya hivyo kuleta tija kwenye sekta ya afya na kwa jamii nzima.

Athari

Hatutegemei ikiwa kuna athari hasi zozote zitakazotokana na ushiriki wako katika utafiti huu.

Maswali mrejesho

Ikiwa tutahitaji ufafanuzi baada ya mazungumzo ya awali au kuhitaji kuuliza maswali ya nyongeza baada ya kujibiwa ya awali tutaomba tunaporudi au kupigia simu utupokee.

Nani wa kuwasiliana nao Kwa maswali kuhusiana na utafiti huu waweza kuwasiliana Dr. Doreen Philbert kutoka Chuo kikuu cha Afya na Sayansi Shirikishi Muhimbili, SLP 65001 Dar es Salaam, Simu nambari: +255 738 902666/ 0652333340.

Kuhusu haki zako katika ushiriki, waweza kuwasiliana na Mwenyekiti wa kamati ya Seneti ya Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili inayohusika na Tafiti na Machapisho, Dkt. Bruno Sunguya kwa simu nambari 0685 217 272 au SLP 65001 Dar es Salaam.

Sahihi**(Mtafiti).....****Sehemu ya pili: Hati ya idhini**

Nimealikwa kushiriki katika utafiti juu ya juu ya hali ya ujumuishaji wa uchunguzi wa awali wa kifua kikuu katika idara za matibabu katika vituo vya afya; utafiti katika vituo vitatu jijini Dar es salaam. Nimesoma/kusomewa maelezo ya msingi juu ya utafiti huu. Nimepata fursa ya kuuliza maswali kuhusiana na utafiti huu na nimejibiwa kiasi cha kuniridhisha. Kwa hiari yangu mwenyewe nakubali kushiriki katika utafiti huu.

Jina la Mshiriki _____**Sahihi ya Mshiriki** _____**Tarehe** _____**Siku/mwezi/mwaka**Maelezo ya mtafiti au muomba idhini

Nathibitisha kuwa mshiriki amepewa fursa ya kuuliza maswali na maswali yote aliyouliza yamejibiwa kwa ufasaha kwa mujibu wa ufahamu wangu. Nathibitisha kuwa mshiriki ametoa idhini ya kushiriki kwa hiari yake mwenye bila shuruti wala kurubuniwa.

Nakala ya fomu hii ya idhini imetolewa kwa mshiriki;

Jina la mtafiti/ muomba idhini _____**Sahihi ya mtafiti/ muomba idhini** _____**Tarehe** _____

Siku/mwezi/Mwaka

Nambari ya mshiriki: _____