SATISFACTION WITH LABORATORY SERVICES AMONG PATIENTS ATTENDING OUTPATIENT DEPARTMENTS OF REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM, TANZANIA

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By

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A Dissertation Submitted in (Partial) Fulfilment 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 recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled "***Satisfaction with laboratory services among patients attending Outpatient Departments of Regional referral hospitals in Dar es Salaam, Tanzania",*** in fulfillment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

_____

Dr. Bruno Sunguya

(Supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I **Rehema Muhali,** 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 work to my dear Mother and my sisters Dr. Fatma Muhali and Dr. Sophia Muhali and My dear Husband Khaleed Juma who endlessly showed me love, support and encouragement during the entire course.

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OPERATIONAL DEFINITIONS

Satisfaction - Satisfaction is a subjective phenomenon and could be measured by asking simply how satisfied or not patients may be about the service they were offered.

Patient satisfaction - Patient Satisfaction is an expression of the gap between the expected and perceived characteristics of a service.

Medical/Clinical Laboratory -Is a laboratory where tests are usually done on clinical specimens in order to obtain information about the health of a patient as pertaining to the diagnosis, treatment, and prevention of disease.

Laboratory services - Are a subset of diagnostic services which include the medically-based services that assist in monitoring diseases in populations (public health component) or assist a managing physician to make a definitive diagnosis on a patient (personal health care component).

ABSTRACT

Introduction: Patient satisfaction is one of the key determinants for clinical outcome, compliance to medical treatment, and therefore health status. Satisfaction to laboratory service satisfaction can significantly enhance patients' quality of life and enable health service providers to determine specific problems of clients. Monitoring client's satisfaction in clinical laboratory is therefore an important and useful for quality and service improvement. Moreover, knowing factors associated with such satisfaction can be an entry point towards improving it. Despite such importance, only handful evidence is available, and none is from Tanzania. Therefore, this study evaluated patients' satisfaction and factors associated with satisfaction with laboratory services among patients above 18 years attending regional referral hospital laboratories in Dar es salaam, Tanzania.

Methodology: This descriptive cross-sectional study design was conducted in the three regional referral hospitals in Dar es Salaam, Tanzania. The three referral hospitals are Amana, Temeke and Mwananyamala referral regional hospitals. The study included a total of 406 patients aged 18 years and above attending the laboratory from the Outpatients department (OPD). Data was collected using face to face interviews. The sampling frame used to pick the participants was the list of patients who needed laboratory service per each day of the data collection in the hospital. The systematic sampling method was used to get the study participants for each hospital. Thus, since the number of questionnaires to be filled in each day was 20 (basing on 20 minutes estimated time of completion of one interview), the sampling interval was calculated by dividing the number of patients in need of laboratory services per day by number of questionnaire to be filled per day. After obtaining the sampling interval, the first study participant was selected randomly. Thereafter the calculated sampling interval (n^{th}) was used to pick the subsequent patients to be interviewed.

Dependent variable was patients' satisfaction while independent variables included sociodemographic, socioeconomic, and facility characteristics. Data analysis were conducted using descriptive and logistic regression analyses to address the specific objectives using SPSS version 20 software. P-value <0.05 was considered as statistically significant.

Results: Only about 39.2% of 406 participants were satisfied with laboratory services in the three referral hospitals in Dar es salaam, Tanzania. Mwananyamala had the higher proportion of satisfaction compared to Temeke and Amana. Based on multiple logistic regression analyses: compared to young patients, those who aged above 58 years were less likely to be satisfied with laboratory services (p=0.009). There was no significant association between satisfaction and wealth index. However, compared to those with primary education, those with higher education levels were less likely to be satisfied with laboratory services.

Conclusion and recommendations: This study reported low satisfaction with laboratory services (39%) among patients attending the regional referral laboratories. Such pattern has a great impact on patients as they can opt not to go for laboratory tests and take medication without proper diagnosis.

This study also reported older patients, those with higher than primary education and professional occupation were not satisfied with laboratory services.

CHAPTER ONE

INTRODUCTION

1.1 Background

Patient satisfaction is a key determinant in clinical outcome and compliance to medical treatment and health status (1–3). A good health care giver-patient communication is important to realize a quality medical care (4). This can in turn increase patient's satisfaction. Patient's satisfaction in turn can influence whether a person seeks medical advice, complies with treatment, and maintains a continuing relationship with practitioners (5). To this end, such communication can improve health outcomes, patient compliance, and patient satisfaction. As a result, it may decrease malpractice claims and therefore hospital running costs (6). Besides other undesirable impact on health outcomes, non-compliance to treatment would also cause an increased financial burden for society (7). For most medical conditions, correct diagnosis and effective medical treatment are essential to a patient's survival and quality of life (8). In some disease conditions, more than 40% of patients sustain significant risks by non-compliance to medical treatment (8). A good level of health service quality generates high patient's satisfaction and effective compliance to medical treatment (9). Improving the effectiveness of compliance interventions may have a great impact on the health of population (10).

One of the important determinants of poor compliance in health patient-health care provider relationship (11). Good communication between the patient and the health care provider results into a positive impact on compliance to medical regimens (12). Satisfaction on the quality of service may positively improve the confidence of users and subsequent behaviors on the usage of health care facilities. Patients' satisfaction has been associated with health services outcome through its impact on patient's recall (1). Unsatisfied individuals may avoid the system, use it as a measure of last resort, or seek help from other countries to those who can afford it (13).

Patient satisfaction is also an important tool in the design and implementation of laboratory services (14). It is therefore important for any laboratory to measure patient's satisfaction for quality improvement of its services. Research has shown that laboratory health service satisfaction can significantly enhance patients' quality of life and enable health service providers to determine specific problems of clients(14).

In Tanzania as in many other developing countries, there's renewed attention to quality in health care particularly technical quality in the public health sector (15). Patient satisfaction has emerged as an increasingly important health outcome and is used to identify which aspects of a service need to be changed to improve patient satisfaction(16).

In Tanzania, research has been done on patient satisfaction on general aspects of care (15,17,18). Clinical laboratories are part of the health department which produces important information for the health care. Monitoring client's satisfaction in clinical laboratory is an important and useful for quality and service improvement (19). Despite the fact that studies have been done on patient's satisfaction in health services, little is known on client's satisfaction in the role of care of clinical laboratories services. The main objective in this study was to determine patient's satisfaction with laboratory services among adults above 18 years who sought care in regional referral laboratories.

1.2 Problem statement

The importance of customer satisfaction in driving quality improvement has been increasing in laboratory medicine (18). Patients' satisfaction is one of the most important quality indicators in Laboratory medicine. Clinical laboratories are required to assess satisfaction of clients in order to validate and maintain accreditation (14).

Factors affecting patients satisfaction in general health services in Tanzania include waiting time (17), patient time spent with physician (3), patient participation in decision making process (20) receiving clear information from medical personnel,(5) courtesy and respectful treatment (2,5,21). Improvement on communication skills among OPD staff in showing compassion (22), politeness and active listening (10) ensure availability of essential reagents (23), managing demand and capacity (24), and delivering the needed quality of services (25), are among factors that should be considered to improve quality of laboratory services so as to Improve satisfaction level (13,18). Evaluating patient experience (in this case Satisfaction with laboratory services) will help to improve quality of care (26) and this is clinically relevant as satisfied patients are more likely to comply with treatment. About 80% of patients in Tanzania hospitals are outpatients (27).

Diagnostic services are important in the treatment and prevention of diseases and therefore measuring satisfaction in the laboratory is important and useful in quality improvement and strategic planning process (28). In Tanzania, most studies have been carried out in general health service either in patient or outpatient department, three studies have been done on patient's satisfaction in the role of care in the laboratory(20,28). One study on patient's satisfaction was conducted on general health services in Muhimbili, a tertiary referral hospital and therefore the results is not generalizable to other facilities that offer less than optimal quality of care (29). Another study on patient satisfaction in Dar Es Salaam Tanzania was on patient's satisfaction on general health services in OPD (22). A study done on satisfaction with laboratory services in public and private laboratories was only on the ones conducting HIV related testing (28). Hence not enough evidence is available on patient satisfaction with

laboratory services at OPD in regional referral hospitals in Dar es Salaam, Tanzania. This study fills the knowledge and evidence gaps that may help to improve quality of laboratory services in Dar es Salaam and other areas with similar context.

1.3 Research questions

1. What is the level of patient's satisfaction with laboratory services at OPD in the regional hospitals in Dar es Salaam, Tanzania?
2. What are the factors associated with laboratory services at OPD in the regional referral hospitals in Dar es salaam, Tanzania?

1.4 Objectives

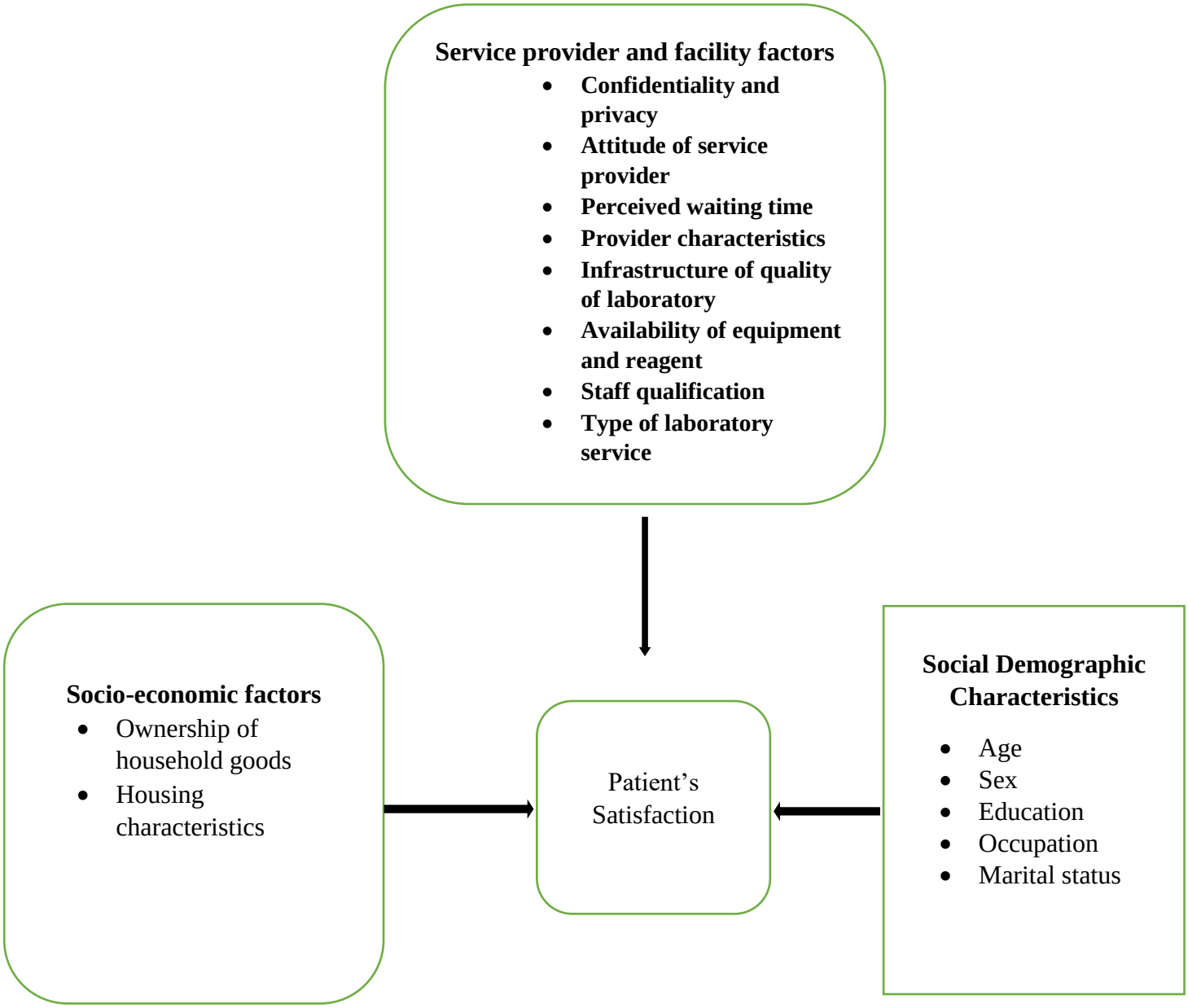
1.4.1 Broad Objective

To determine the patients' satisfaction with laboratory services and factors associated with satisfaction among patients aged above 18 years at OPD in the regional referral hospital in Dar es Salaam, Tanzania.

1.4.2 Specific Objectives

1. To determine patients' satisfaction with laboratory services among patients above 18 years at the regional referral hospital laboratories OPD in Dar Es salaam, Tanzania.
2. To determine factors associated with satisfaction with laboratory services among patients aged above 18 years at the regional referral laboratories OPD in Dar es Salaam, Tanzania.

1.5 Conceptual Framework



The conceptual Framework for Satisfaction of laboratory patient's attending the Regional Referral Hospitals. Source: Adapted from Mindaye 2012 (30)

This study adopted the Donabedian model in explaining association between attributes of quality of care. This model was used because its three domains, structure, process, and outcome are interrelated and in order to improve quality of care, all must function well to achieve the expected outcome, such as patients' satisfaction (31). Donabedian model had been found successful to be used in various patient's satisfaction previous studies (3,19,32,33). According to the model, information about quality of care can be drawn from three categories: "structure", "process," and "outcomes." (34) Structure describes the context in which care is delivered, including Cleanliness, availability equipment and reagent and patient characteristics which are age, sex and education level. Process denotes the transactions between patients and providers throughout the delivery of healthcare that is, facility factors and service provider factors. Finally, outcomes refer to the effects of healthcare on the health status of patients and populations.

The conceptual framework above illustrates how the dependent variable patients' satisfaction is influenced by the following factors, socio demographic characteristics, facility factors and service provider factors. The socio demographic factors include age, sex and education. The elderly patients are likely to be more impatient compared to the young and that's why in most of the government hospitals in Tanzania there is a special room or service for them. Therefore, if the laboratory services take a long time, the elderly people will be likely to be dissatisfied. Female patients are more likely to be satisfied if the services are provided on time as many of them have greater roles in the societies especially taking care of the household than their counterpart. The educated patients are likely to have a tight a schedule due to a number of activities such as employment or private business and therefore they may be impatient with waiting for laboratory services. In addition to that, they may be able to raise a concern about the provider service factors like competence, confidentiality and also the facility factors such as availability of equipment.

Furthermore, Patients may be satisfied or dissatisfied if the service provider factors such competence and confidentiality are provided in a proper manner example in HIV testing, high confidentiality is needed during sample collection, testing and giving results.

Facility factors such as availability of reagent and equipment may play a greater role in patients' satisfaction if the machines are not working or there is shortage of reagent, this may hinder testing of samples and may result to delay service and likely to result in patient dissatisfaction.

1.6 Rationale

Optimal and adequate utilization of laboratory testing greatly contributes to the overall quality and efficiency of laboratory services (35). Patients' satisfaction with clinical laboratory services is one of the most important quality indicators in laboratory medicine (18). In clinical laboratory service, patients are one of the primary focus of survey of satisfaction in many countries (34). Studies have been done on patients' satisfaction in general health services. However, patients' satisfaction with laboratory services at OPD in regional referral hospital in Dar es Salaam, Tanzania has not been addressed. Therefore, this study aimed at exploring patient's satisfaction with laboratory services among adults above 18 years attending the laboratory from the OPD of the regional referral hospitals' laboratories. Findings from this study will help the management and stakeholders to improve quality of care and strategic planning in the regional referral laboratories and hospital at large. Improving the quality of care in laboratory will attract patients to use the services effectively for a good health care outcome.

CHAPTER TWO

LITERATURE REVIEW

2.1 Patient's satisfaction and quality of laboratory services

Patients' satisfactions of the provided services in the healthcare institutes are considered as essential key performance indictor of quality (14). Data obtained from a patient satisfaction survey can be used for different purposes, such as the identification of potential areas for health care services improvement (25). A number of studies done in Africa have reported a low level of patients' satisfaction with health services (2,21,22,36). Clinical laboratory services are critical, yet often neglected components of essential health systems in resource-limited countries (37). Laboratory provides important information on patient care (34). However, comprehensive quality laboratory service is a challenging process (19). Patient's satisfaction on the quality of laboratory services is a relevant tool for improvement of health care (22). Disregard of patient's feedback on the laboratory service may cause disruption of testing leading to poor treatment and control. Therefore there is clear evidence that monitoring patient's satisfaction is a useful tool on quality indicator of clinical laboratory (19,27,34). Perception of clients is now considered to be an important source of information in improving quality of care in the laboratory (27).

2.2 Factors associated with satisfaction of patients to laboratory services

Determining factors affecting satisfaction, is considered an indirect way to achieve real patient satisfaction, in this regard, evaluating patient satisfaction by determining factors affecting satisfaction and understanding expectations and needs of patients and eliminating dissatisfaction causes can enhance service provision level and as a result increase satisfaction of patients and improvement of their physical and mental health will be better and rapid (38). Issues of concern in clients seeking laboratory services can be shortage of equipment and reagent, cleanliness, care givers attitude to clients, cleanliness of facility, waiting time for service, information and communication to clients by health care giver and privacy of client.

2.3 Shortage of equipment and reagent

Laboratories should be well planned and supplied with all essential facilities plus recommended equipment to enable staff perform essential tests and offer quality service to patients (39). Effective management of equipment and reagent contributes to improved patient health care in the laboratory (40). In a study done to assess outcomes of preconception care findings revealed that availability of equipment has been encountered to improve work efficiency and make a positive impact on health workers motivation (41). Besides, availability of laboratory equipment has been associated with high client's satisfaction (13). Functioning, good-quality equipment and uninterrupted supplies of test kits, reagents and other consumable are mandatory for effective laboratory services.

2.4 Care givers attitude towards clients

Studies have suggested that patients judgments on quality of health care provider rely on the responsiveness provider on patient's needs (1,20,42). Generally, patients define quality of health service more on the basis of attribute of respect and compassion than technical competence of staff (43). It has been noted that health care worker leave a little room for patient negotiation because they have fixed ideas on what is best for the patient (36). It is eminent that patients' opinion should supplement the usual indicators of quality in health care (44). Patients have defined good quality of health service on the basis of social emotional aspect of health provider's behavior such as respect and compassion (45). Therefore a good laboratory health care giver attitude towards patients can be a result into high patients' satisfaction.

2.5 Cleanliness of laboratory facility

Cleanliness makes a statement to patients and visitors about the attitudes of staff, managers and the trust board and it reflects attention to detail, the level of care and the way the laboratory is organized and run (46). Cleanliness has had a great impact on patients' satisfaction (3). A study done in Iran, Tehran university identified cleanliness as one of the key factors effective in improving patient satisfaction (38). Furthermore, Patients have shown a low level of satisfaction in health facilities with poor cleanliness. Cleanliness is one of the

majority of concerns in the health institutions to improve quality of care (47). Improving environment in which patients receive care in the laboratory, will improve patients satisfaction.

2.6 Perceived waiting time for service

Perceived waiting time for service has been significantly associated with patient's satisfaction whereby level of satisfaction decrease with increase in waiting time (2). Long waiting time in laboratory results can be a cause of delay in treatment and therefore can increase in length in hospital (48). Long waiting time had been a cause of clients to leave the clinic before getting the important services and others postponing their visits (49). Direct assessment of accuracy, precision and turnaround time helps laboratory managers understand whether local performance is improving and how it compares to published norms (50). If laboratory services are to support health care effectively, they need to provide reliable, valid and timely results.

2.7 Patient' satisfaction on information and communication

Many patients lack understanding of their flow of service in laboratory. however, some studies have indicated that patients understanding of their medical procedure is statistically significant on patient's satisfaction with caregiver consultation (6). The expertise in healthcare givers way of conveying information affects patients satisfaction (51). Aspects related to laboratory staff communication, such as staff availability, handling telephone enquiries, and answering enquires regarding missing test result may affect patients' satisfaction (50). There is a need for proper instruction and guidelines, such as preparation of patients for laboratory tests, and the collection and handling of samples which affects samples collection and generating patients results (14). The clearer the service provider informs patients, the more likely a patient is to be satisfied with services (36). Timeliness of information received from health care provider may have an impact on patients level of satisfaction (52). Poor communication negatively affects patient compliance and outcomes (4).

2.8 Patient's perceived privacy

Privacy is a broader term including physical privacy, informational privacy, protection of personal identity and the ability to make choices without interference (53). Caregivers can breach confidentiality intentionally by directly disclosing patient information to an unauthorized person by discussing patient information in such a way that an unauthorized person can overhear it (54). Privacy during consultation has been found to be a high determinant of patients' satisfaction (33) that is, for patients to be able to give or be given information freely, visual and audio privacy is considered important (27). Patients confidentiality and privacy is important in a laboratory service delivery system (55). Lack of patient's privacy can result into dissatisfaction and poor compliance to treatment (56).

CHAPTER THREE

METHODOLOGY

3.1 Study area

This study was conducted in Dar Es Salaam regional referral hospitals where most patients attend (22). Dar Es Salaam has five Municipalities, which are Ilala, Temeke and Mwananyamala, Ubungo and Kigamboni. Among the five municipalities, there are three regional referral hospitals which are Amana, Temeke and Mwananyamala. The hospitals were purposively selected because, as regional referral hospitals, they serve a large number of patients and play a great role in the healthcare system in Tanzania. The referral systems in Dar es Salaam region are unique compared to other regions in the country. This is due to the larger population size and higher number of health facilities than other parts in the country. The referral system in the region passes through the following channels: a client from a dispensary goes to a health Centre and from there he/she can be referred to Amana, Temeke or Mwananyamala regional referral hospitals. However, due to geographical reasons, some patients may pass directly from dispensary to regional level and sometimes without passing through any facility (client self-referral) (57).

The hospitals have an average of 328 health workers from different cadres which are Administration department and Supportive services department, Outpatient department and Inpatient department.

Patients from Outpatient departments of these hospitals were involved in this study where there is an average of 800 to 1200 visits per day. Patients attending the laboratory from the OPD of the regional referral hospital laboratories are on overage of 120 to 150. Laboratory services offered in these hospitals include Phlebotomy and sample collection and Sample Testing. The clients visiting the laboratory passes through the following channels: 1. Reception where they registration is done, 2. phlebotomy and sample collection where their samples are collected and 3. Testing area. There is a waiting area for the clients to wait for the respective procedures.

3.2 Study design

This descriptive cross-sectional study design was conducted in the three regional referral hospitals in Dar es Salaam Tanzania.

3.3 Study population

The study population was patients aged above 18 years attending the laboratory from the Outpatients department in regional hospitals in Dar Es Salaam. In Tanzania, 80% of all patients attending health facilities are attended at out-patient-department (OPD), hence making OPD a key area to assess quality of care. Clinical laboratories are part of the health institution team which produces important information for the patients' care. Measuring and improving laboratory satisfaction with clinical laboratory services are essential aspects of laboratory medicine.

The out patients aged 18 years and above were purposely selected due to the following reasons: Outpatients usually do not have invasive procedures such as surgery which may make a patient unable to focus during the interview; Outpatient do not require rest as much as the inpatients due to their conditions. Furthermore, outpatients are direct user of the laboratory compared to inpatients who use lab services indirectly whilst in the ward, that means the nurse, doctor or other personnel for the job normally takes the samples to the laboratory.

3.3.1 Inclusion criteria

This study included patients above 18 years visiting the regional referral laboratory from Outpatient department hospital department.

3.3.2 Exclusion criteria

1. Critical ill patients: These patients are not able to answer the questionnaires due to their condition.
2. Mental patients: Will not be able to respond well to questionnaires due to the condition.
3. Unconscious patients will not be able to respond to the questions due to their condition.

3.4 Sample size and Sampling

3.4.1 Sample size

Sample size was estimated by using the formula for estimating a single proportion

$$n = Z^2 P (100-P) / E^2$$

Where by: n= required sample size

Z=standard normal deviate at 95% confidence interval (1.96)

E= accepted margin of error on P (set at 5%)

P= estimated proportion of patients satisfied with laboratory services (40%) (28).This was according to a study conducted in Tanzania on patient's satisfaction on public and private laboratory services on conducting HIV related testing.

$$n = (1.96)^2 \text{ X } 40 (100-40) / (5)^2$$

$$n = 369$$

10% was added in case of non-response; the sample size was 406

The total calculated sample of 406 was equally divided by 3 to get a total number of study participants in each of the three-selected study hospital. This was done because the number of patients who uses laboratory services in each of the three hospitals was unknown. Otherwise, proportional to size quota allocation of sample would have been done basing on the number of caseload for individual hospital. Thus, final sample had 135 participants in each regional referral hospital.

3.4.2 Sampling method

The sampling frame used to pick the participants was the list of patients who needed laboratory service per each day of the data collection in the hospital. This was obtained at the general laboratory of the hospital. The systematic sampling method was used to get the study participants for each hospital. Thus, since the number of questionnaires to be filled in each day was 20 (based on 20 minutes estimated time of completion of one interview), the sampling interval was calculated by dividing the number of patients in need of laboratory services per day by number of questionnaire to be filled per day, using the formula given below.

Sample per day = N/n where:

N = Total number of clients needing laboratory service per day.

n = Number of study participants to be interviewed per day (20).

After obtaining the sampling interval, the first study participant was selected randomly.

3.5 Variables

3.5.1 Dependent variables

This was assessed using a 5 point Likert scale (20,27,34). This scale was adopted from a similar study done in Ethiopia about Patient's satisfaction with laboratory services at ART clinics in public hospitals. The scale was successful in achieving patients' satisfaction level with a result of 86.7% satisfaction.The scale was categorized into: poor (1-point), fair (2-points), good (3-points), very good (4-points) and excellent (5-points) (5,20). This scale captured the intensity of feelings of the clients seeking service from the regional referral laboratories. This was determined by asking patients to rate their satisfaction levels on a number of parameters. Poor and fair responses was considered dissatisfaction, whereas good, very good and excellent was considered satisfaction.

Perceived quality of the service provided: This is the extent to which patients rate the level of satisfaction with service provided by the laboratory.

3.5.2 Independent variables

Socio-demographic characteristics:

1. Age: Age was measured in years. The question used was extracted from the Tanzania Demographic and Health Survey's men and women's questionnaire. This tool had been used for national surveys in Tanzania (58).
2. Sex: Observation was sorted into two mutually exclusive and exhaustive categories, either Male or Female. The study participant names were either male or female. This tool had been used for national surveys in Tanzania (58).

3. Occupation: The respondents were asked to state their principle occupation The questions used were extracted from The TDHS men's and women's questionnaire (58).
4. Marital status: The respondents were asked to name their current marital status. The questions used were extracted from the TDHS Men's and women's questionnaire. This tool had been used for national surveys in Tanzania (58).
5. Education level of client: study participants were asked if they have ever attended school and to name the highest level of education they have attained. The questions was extracted from the TDHS Men's and women's questionnaire. This tool had been used for national surveys in Tanzania
6. Name of selected hospital: The selected hospitals are Amana, Temeke and Mwananyamala.
7. Health Insurance: Respondents were asked if they are covered by health insurance for the laboratory services and to name the type of insurance they are using. The question used was extracted from the Tanzania Demographic and Health Survey' women's questionnaire (58).
8. Mode of payment: The respondent were asked to name their mode of payment for laboratory services. Questions used were extracted from adult patient questionnaire. This tool had been used to assess health system performance in developing countries (41).

Social-economic characteristics:

Economic status was assessed using a Weighted Wealth Index incorporating household assets ownership, housing characteristics, fuel for lighting and cooking, type of toilet, source of water, and feeding characteristics. Dichotomous variables were constructed and factor analysis using principle component analysis (PCA) used to reduce 48 items to 13 that were in component one to three. These were the most important components before the hinge of the scree plot. Factor loadings were used as item weights, which were totaled to yield the wealth index for each household. The total Weighted Wealth Index score was then equally divided into quintiles designating lowest to the highest quintiles of the economic status.

Facility characteristics:

a) Waiting time of getting laboratory services: This is the amount of time a client awaits to receive services starting from registration, payment of service, sample collection up to receiving laboratory test results.

b) Cleanliness of the laboratory facility: Patients were asked to rate their satisfaction level by the five Likert scale on the cleanliness of laboratory reception area, toilets, sample collection and waiting area.

c) Attitude of the laboratory service provider: Patients were asked to rate their perceived attitude of the laboratory health care provider by the five point Likert scale.

d) Availability of reagent and equipment: Patients were asked to rate their level of satisfaction on the availability of laboratory reagents and equipment for their tests to be done by using the five point Likert scale.

e) Information and communication by laboratory service provider: Patients were asked to rate their level of satisfaction with the mode of instructions during reception, sample collection and deliverance of results by using the five point Likert scale.

f) Privacy of patient: Patients were asked to rate their level of satisfaction on privacy at the reception area, during sample collection, deliverance of the results, services by the five point Likert scale.

3.6 Data collection technique and tools

Data collection was done by the principal investigator (PI) for a period of four weeks. Data were collected from Monday to Saturday. A questionnaire with semi-structured questions was used. The questionnaire was designed and pre-tested at Muhimbili referral hospital. This enabled PI to ensure validity of the questionnaire. Ambiguous questions and improper wording were amended accordingly. Time to interview one patient was estimated to be 20 minutes, on average.

The questionnaire was administered using face to face interviews to all patients eligible for the study. A brief introduction on study objectives, a written consent was sought. In order to facilitate privacy, a quiet place was selected for administration of the questionnaire and in case

privacy was interfered, the exercise was stopped and continued later after restoration of privacy.

3.7 Data Analysis

Data cleaning was done after data collection. Data entry and analysis was made using Statistical Package for Social Sciences (SPSS) version 20 computer software.

Data was analyzed using descriptive and regression analyses according to the objectives. For the first objective, descriptive analysis was conducted using chi-square tests. First, frequency table was made to find the level of satisfaction, and characteristics of the study participants. Second, cross tabulations were conducted and therefore chi-square test was used to describe participants stratified by their satisfaction with laboratory services. A p-value of less than 0.05 was considered statistically significant. Third, bivariate logistic regression was conducted to examine bivariate association between independent variables and the outcome variable (patient's satisfaction).Such independent variables included sociodemographic, socioeconomic, and facility characteristics, according to the conceptual framework. Odds ratio and 95% CI were reported. Associations with $p<0.2$ were introduced into the fourth step. Fourth, multiple logistic regression analysis was conducted where adjusted odds ratio and 95% CI were reported. Because of multicollinearity, several variables that were significant at bivariate level were not included into multiple regression model. This was because of high correlation coefficients between independent variables themselves.

3.8 Ethical consideration

Ethical clearance was sought and given by Muhimbili University of Health and Allied science (MUHAS), Research and Publication Ethics Committee. Introduction letters was submitted to Amana, Temeke and Mwananyamala District Medical Officers seeking for permission to conduct the study. Individuals were given the right to participate on voluntary basis**.** Informed written consent was obtained from each study participant after explaining the purpose of the study and if they did not volunteer to continue or from the beginning of the study, they were given the right to withdrawal.

Confidentiality was maintained throughout the study. Respondents were informed that their responses will be treated with high confidentiality. They were assured that their names will not appear or linked to any report in anyway. In addition, they were told that research findings will help in understanding patients' experiences on laboratory services along with identifying limitations in service delivery so as to inform strategies for improvement.

Use of study codes on questionnaire was applied and completed questionnaire was secured stored and locked in its location and access to it was restricted only to the principle investigator, furthermore, access to identifiable information was limited. All portable devices were password protected to prevent unauthorized use of the device. In case of mobile phones, both PIN and login password were used.

CHAPTER FOUR

RESULTS

4.1 Socio demographic characteristics of the respondents

A total of 406 patients were selected as the sample of the study for the three referral regional hospitals in Dar es Salaam. A total of 135 study participants in Temeke and Mwananyamala were interviewed. Only about 39% study participants were satisfied with laboratory services in three health facilities.

The response rate in this study was 100%. Based on the results of this study, majority of the respondents were females 222 (54.7%) Age group 38 – 47, 99 (24.4%) with an occupation of domestic services 133 (32.8%). Majority of the study participants had attended school 355 (87.4%) however most of them had an education level of primary education 193 (47.5%).

TABLE 1. SOCIO DEMOGRAPHIC CHARACTERISTICS OF THE STUDY PARTICIPANTS (N=406)

Variable	Frequency	Percent
Health facility name		
Temeke hospital	135	33.3
Amana hospital	136	33.5
Mwananyamala hospital	135	33.3
Sex		
Male	184	45.3
Female	222	54.7
Age		
18-27	71	17.5
28-37	82	20.2
38-47	99	24.4
48-57	58	14.3
>58	96	23.6
Highest education level attained		
Primary	193	47.5
Post primary training	25	6.2
Secondary 'O' level	69	17
Post-secondary 'O' level training	21	5.2
Secondary 'A' level	1	0.2
Post-secondary 'A' level training	12	3
University	34	8.4
Not attended school	51	12.6
Occupation		
Professional/Technical/Managerial	20	4.9
Clerical	40	9.9
Sales and Services	74	18.2
Skilled manual	62	15.3
Unskilled manual	47	11.6
Domestic services	133	32.8
Agriculture	30	7.4
Marital status		
Married/Living together	284	70
Divorced/separated	39	9.6
Widowed	24	5.9
Never married/Never lived together	59	14.5

4.2 The level of patients' satisfaction with laboratory services

Table 2 below shows the level of satisfaction with laboratory services among patients interviewed. Overall results by sex show that females (32.4%) were more satisfied than males (19.9%). Those with age category 18 -27 were more satisfied (32.4%) than those in other age categories. Further, those who attended school appear to be less satisfied than those who did not attend school. For instance, 42.3% of those who did not attend school reported that they were satisfied with the laboratory service, and this was the highest proportion of satisfied customers than any other educational level group. Participant who had primary school level of education (34.5%) were more the second group to be more likely to be satisfied with the service. It appears that as the level of education of some individual increases the likelihood of being satisfied with the service decreases. Furthermore, participants who did domestic services as their occupation were more satisfied (41.8%) compared to other types of occupation. Results in Table 2 also show that, participants who were widowed (29.2%) were more satisfied than those of other categories of marital status. Patients with highest socio economic status more likely to be satisfied than their counterparts of lower wealth index (39.2%). As regards to type of health insurance ownership, the results show that patients with social security health insurance constituted the highest proportion of being satisfied (72.7%) than other groups, and those without any insurance policy constitutes the lowest likelihood of being satisfied (18.8%).

TABLE 2. PERCENTAGE OF CUSTOMERS WHO WERE SATISFIED WITH LABORATORY SERVICES

Variable	Satisfied		Not satisfied	
Sex	*n*	%	*n*	%
Male	37	19.9%	149	80.1%
Female	73	32.4%	152	67.6%
Age				
18-27	23	32.4%	48	67.6%
28-37	27	32.5%	56	67.5%
38-47	28	127.7%	73	72.3%
48-57	17	29.3%	41	70.7%
>58	15	15.3%	83	84.7%
Education				
Primary	67	34.5%	127	65.5%
Post primary training	19	16.0%	100	84.0%
Post-secondary	2	4.3%	44	95.7%
Not attended	22	42.3%	30	57.7%
Occupation				
Professional	2	3.3%	59	96.7%
Sales and Services	22	29.3%	53	70.7%
Skilled manual	10	16.1%	52	83.9%
Unskilled manual	11	23.4%	36	76.6%
Domestic services	56	41.8%	78	58.2%
Agriculture	9	28.1%	23	71.9%
Marital status				
Married	82	28.5%	206	71.5%
Divorced	7	17.9%	32	82.1%
Widowed	7	29.2%	17	70.8%
Never married	14	23.3%	46	76.7%
Wealth Index				
Lowest	15	15.3%	83	84.7%
Second	24	25.3%	71	74.7%
Middle	15	31.2%	33	68.8%
Fourth	27	28.1%	69	71.9%
Highest	29	39.2%	45	60.8%
Health insurance type				
Community based	13	18.8%	56	81.2%
Employer	3	33.3%	6	66.7%
Social security	8	72.7%	3	27.3%
None	86	26.7%	236	73.3%
Facility				
Temeke hospital	32	23.7	103	76.3%
Amana hospital	34	24.8%	103	75.2%
Mwananyamala hospital	44	31.7%	95	68.3%

Table 2 also shows that, a higher proportion of patients from Temeke Hospital were satisfied with laboratory services as compared with their counterparts in other health facilities (3.7%), followed by customers in Amana hospital (24.8%) and Mwananyamala hospital (31.7%). Therefore, it came into light that Mwananyamala hospital had the largest proportion of customers who were satisfied with the service as compared with other hospitals. Similarly, Temeke Hospital constitutes the lowest proportion of customers who were satisfied with laboratory service as compared with other hospitals (Table 2).

4.3 Factors associated with patient's satisfaction with laboratory services

Table 3 below shows the association between socio-demographic characteristics of the respondents and overall satisfaction with laboratory services. The results show that at 95% level of confidence, there was no statistical significant association between overall satisfaction with laboratory services and marital status of the client (p>0.05); wealth index (p> 0.05). In addition, the results in Table 3 above shows that at 95% level of confidence, there were associations between age, sex , attendance of school, occupation, level of education attained.

Results in Table 3 also shows that socio demographic characteristics which at 95% confidence level, showed a significant association with satisfaction with laboratory services were sex (p< 0.01); age (p< 0.1); education (p< 0.01); occupation (p< 0.01); type of health insurance (p < 0.01) and health facility (p < 0.1).

TABLE 3. ASSOCIATION BETWEEN CUSTOMER SATISFACTIONS WITH THEIR SOCIO DEMOGRAPHIC AND SOCIO ECONOMIC CHARACTERISTICS

Variable	Total		**Satisfied**		**Not satisfied**		χ^2	***p***
	n	%	**n**	**%**	**n**	**%**		
Sex								
Male	186	45.26%	37	19.9%	149	80.1%	8.19	0.004***
Female	225	54.74%	73	32.4%	152	67.6%		
Age								
18-27	71	17.24%	23	32.4%	48	67.6%	9.36	0.053***
28-37	83	20.19%	27	32.5%	56	67.5%		
38-47	101	24.57%	28	127.7%	73	72.3%		
48-57	58	14.11%	17	29.3%	41	70.7%		
>58	98	23.84%	15	15.3%	83	84.7%		
Education								
Primary	194	47.20%	67	34.5%	127	65.5%	31.26	0.000***
Post primary training	119	28.95%	19	16.0%	100	84.0%		
Post-secondary	46	11.19%	2	4.3%	44	95.7%		
Not attended	52	12.65%	22	42.3%	30	57.7%		
Occupation								
Professional	61	14.84%	2	3.3%	59	96.7%	36.73	0.000***
Sales and Services	75	18.24%	22	29.3%	53	70.7%		
Skilled manual	62	15.09%	10	16.1%	52	83.9%		
Unskilled manual	47	11.44%	11	23.4%	36	76.6%		
Domestic services	134	32.60%	56	41.8%	78	58.2%		
Agriculture	32	7.78%	9	28.1%	23	71.9%		
Marital status								
Married	288	70.07%	82	28.5%	206	71.5%	2.41	0.493
Divorced	39	9.49%	7	17.9%	32	82.1%		
Widowed	24	5.84%	7	29.2%	17	70.8%		
Never married	60	14.59%	14	23.3%	46	76.7%		
Wealth Index								
Lowest	98	23.84%	15	15.3%	83	84.7%	1.106	0.036
Second	95	23.11%	24	25.3%	71	74.7%		
Middle	48	11.68%	15	31.2%	33	68.8%		
Fourth	96	23.36%	27	28.1%	69	71.9%		
Highest	74	18.00%	29	39.2%	45	60.8%		
Facility								
Temeke hospital	135	32.85%	32	23.7%	103	76.3%	37.341	0.000***
Amana hospital	137	33.33%	34	24.8%	103	75.2%		
Mwananyamala hospital	139	33.82%	44	31.7%	95	68.3%		

Significant values P<0.05 = ***

Results of bivariate logistic regression on factors associated with Satisfaction of laboratory services among patients attending regional referral laboratories in Dar es Salaam are shown in Table 4 below. Compared to male patients, females were less likely to be satisfied with laboratory services (OR 0.517, 95% CI: 0.33-0.82, P=0.005). The participants of age groups 28-37 (odds 2.65, 95% CI: 1.26 - 5.56, p=0.010), 38-37 (OR 2.67, 95% CI 1.30 – 5.46, P=0.007), 48-57 OR 2.12, CI: 1.05 – 4.28, p=0.036) and above 58 (OR 2.29, 95% CI 1.04 – 5.05, p=0.039) years were more likely to be satisfied with laboratory services than those of age group 18-27. Participants who did not attend school (odds 0.44, 95% CI 0.24-0.81, p=0.008) were less likely to be satisfied with laboratory services compared to those who attended school. The association between this was statistically significant. Compared to primary level of education, those who attained post primary training (OR 0.73 95% CI: 0.33 – 0.89, p=0.424) Post-secondary O level training (OR: 0.28 95% CI: 0.11 – 0.71 p= 0.424) Not attended school (OR 0.07, 95% CI 0.01 – 0.54, *p*=0.011) were less likely to be satisfied with laboratory services compared to those who attained primary education. These results were statistically significant.

Participants whose occupation were sales and services (OR 0.07, 95% CI: 0.008 – 0.67, *p*=0.021) Unskilled manual (OR 0.36, 95% CI: 0.09 – 1.43, *p*=0.15) Domestic (OR 0.75, 95% CI: 0.20 – 2.82, p=0.68) were less likely to be satisfied with laboratory services compared to those who had Professional/Technical/Managerial occupation. However, those with agriculture occupation (OR 1.54, 95% CI: 0.51 – 4.63, *p*=0.45) and Skilled manual (OR 1.19, 95% CI: 0.36 – 3.93, *p*=0.79) were more likely to be satisfied with laboratory services compared to technical/managerial occupation. Compared to participants who had the lowestwealth index, those with second wealth index (OR 0.28 95% CI: 0.14 – 0.58, p=0.001), middle wealth index (OR 0.53, 95% CI: 0.27 –1.01,p=0.054), fourth wealth index (OR 0.71, 95% CI: 0.33 – 1.52, p=0.373) and highest (OR 0.61, 95% CI: 0.32 – 1.16, p=0.607) were less likely to be satisfied (Table 4).

TABLE 4. BIVARIATE LOGISTIC REGRESSION ON SOCIO DEMOGRAPHIC FACTORS ASSOCIATED WITH OVERALL SATISFACTION

Variable	Satisfied		Dissatisfied		Odds Ratio	95% CI	*p*
Sex	n	%	n	%			
Male	37	19.9%	149	80.1%	1		
Female	73	32.4%	152	67.6%	0.517	0.33 - 0.82	0.005***
Age							
18-27	23	32.4%	48	67.6%	1		
28-37	27	32.5%	56	67.5%	2.65	1.26 – 5.56	0.01***
38-47	28	27.7%	73	72.3%	2.67	1.30 – 5.46	0.007***
48-57	17	29.3%	41	70.7%	2.12	1.05 – 4.28	0.036***
>58	15	15.3%	83	84.7%	2.29	1.04 – 5.05	0.039***
Education level attained							
Primary	67	34.5%	127	65.5%	1		
Post primary training	19	16.0%	100	84.0%	0.73	0.33 – 0.89	0.424
Post-Secondary O level training	2	4.3%	44	95.7%	0.28	0.11 – 0.71	0.007***
Not attended school	22	42.3%	30	57.7%	0.07	0.01 – 0.54	0.011***
Occupation							
Profession/Technical/Managerial	2	3.3%	59	96.7%	1		
Sales and services	22	29.3%	53	70.7%	0.07	0.008 – 0.67	0.21
Skilled manual	10	16.1%	52	83.9%	1.19	0.36 – 3.93	0.79
Unskilled manual	11	23.4%	36	76.6%	0.36	0.09 – 1.43	0.15
Domestic	56	41.8%	78	58.2%	0.75	0.20 – 2.82	0.68
Agriculture	9	28.1%	23	71.9%	1.54	0.51 – 4.63	0.45
Marital status							
Married/Living together	82	28.5%	206	71.5%	1		
Divorced/Separated	7	17.9%	32	82.1%	1.31	0.68 – 2.51	0.419
Widowed	7	29.2%	17	70.8%	0.72	0.26 – 1.98	0.523
Never married/Never lived together	14	23.3%	46	76.7%	1.35	0.47 – 3.92	0.578
Wealth Status							
Lowest	15	15.3%	83	84.7%	1		
Second	24	25.3%	71	74.7%	0.28	0.14 – 0.58	0.001***
Middle	15	31.2%	33	68.8%	0.53	0.27 – 1.01	0.054
Fourth	27	28.1%	69	71.9%	0.71	0.33 – 1.52	0.373
Highest	29	39.2%	45	60.8%	0.61	0.32 – 1.16	0.607

Significant values P<0.2 = *

Results of multivariate Logistic Regression on factors associated with Satisfaction with laboratory services among patients attending regional referral laboratories in Dar es Salaam are shown in Table 5 below. Factors which remained in the last best fitted model were Socio Economic Status (SES), age, education level. Other variables namely marital status, occupation and health facility name were not included in the model because basing on results of the initial univariate analysis their contribution to overall satisfaction was noted to be low ($p > 0.2$).

Factors which showed significant relationship with satisfaction were age, and education level. This entails that when all other factors are equally the same, overall satisfaction was not related to the SES and sex of clients.

Compared to young patients, those who were aged >58 were less likely to be satisfied with laboratory services (p=0.009). There was no significant association between satisfaction and wealth index. However, compared to those with primary education, those with higher education levels post-primary education (P= 0.010) and post-secondary (0.002) were less likely to be satisfied with laboratory services.

(Table 5).

TABLE 5. MULTIVARIATE REGRESSION TO ASSESS PREDICTOR VARIABLES OF SATISFACTION OF LABORATORY SERVICES AMONG PATIENTS ATTENDING THE REGIONAL REFERRAL HOSPITALS

	AOR	95% C.I.		P value
		Lower	Upper	
Wealth status				
Lowest				
Low	0.912	0.416	1.996	0.817
Medium	0.951	0.386	2.342	0.913
Fourth	0.932	0.437	1.985	0.855
Highest	1.530	0.649	3.611	0.331
Age				
18 – 27				
28 – 37	0.951	0.402	2.254	0.910
38 – 47	0.716	0.321	1.599	0.416
48 – 57	0.819	0.324	2.069	0.672
>58	0.272	0.102	0.723	0.009***
Highest education level				
Primary				
Post primary	0.436	0.232	0.820	0.010***
Post-secondary	0.190	0.059	0.614	0.002***
Not attended	1.752	0.681	4.508	0.245
Sex	1.449	0.846	2.481	
Male				
Female	0.981			0.277

Significant values P<0.02 = *

CHAPTER FIVE

DISCUSSION

5.1 Overview

Patient satisfaction is a key determinant in clinical outcome and compliance to medical treatment and health status (1–3). Patients' satisfaction is one of the most important quality indicators in Laboratory medicine. Monitoring patient's satisfaction is a useful tool on quality indicator of clinical laboratory(19,27,34). In this chapter, results from this study are discussed and comparison is made with findings from similar studies found in literature. This study aimed to assess satisfaction among patients aged below 18 years old in laboratory services in referral outpatient regional hospital laboratories in Dar es Salaam Tanzania. It specifically intended to determine overall patients' satisfaction with laboratory services and factors associated with satisfaction with laboratory services among patients aged above 18 years at the regional referral laboratories OPD in Dar es Salaam, Tanzania. Factors affecting satisfaction included socio-demographic factors and socio-economic factors and facility factors.

5.2 Patients' satisfaction with laboratory services among patients above 18 years at the regional referral hospital laboratories OPD in Dar es salaam, Tanzania

This study has revealed that overall patients' satisfaction with laboratory services in regional referral laboratories was 39.2% that showed a vast majority of the respondents were not satisfied with many aspects of the laboratory services they received. This is in line with findings of patient's satisfaction in general health services done in Mwananyamala referral hospital (22). However, this is contrary to a study done in Muhimbili national hospital in Dar es salaam whereby a high proportion of patients were satisfied with general health services provided by the hospital (20). This might be due to Muhimbili being the national referral hospital whereby a patient has to by pass through a channel of lower health facilities before being referred there whereby it is more equipped and systematic in the services they provide.

5.3 Socio-demographic factors associated with patients' satisfaction

The socio-demographic factors associated with patient's satisfaction include age, sex, education level, marital status and occupation. The results from this study revealed that marital status and sex were not strong predictors of patients' satisfaction, this is in line with the results in a study done by Teklemariam *et al* (34) and (38). A number of studies have found substantial associations between patient satisfaction and sociodemographic characteristics such as age, social class, and race (59).

In addition to that, age and education level were found to be significant factors associated with satisfaction. Patients with age category above 58 years were less satisfied than the ones below 58 years. This is in line with results by *Thiedke et al* (60). Reasons to this could be that patients above 58 years were less likely to be satisfied with many aspects example waiting time for laboratory services and attitude of the laboratory personnel. This is because elderly patients are likely to be less healthy and therefore would not like to be kept too long waiting. They also like to be treated in a respectful manner. The results also reveal that patients with post-primary education level were less likely to be satisfied with laboratory services. Reasons to this could be due to the fact that the more educated a person is, the more rights and worth they value themselves and therefore, like to be treated in a rightful way. The results correlate with a study by *Mfinanga et al*(28). In their study, patients with higher education level were reported to be less likely to be satisfied with laboratory services such as privacy and waiting time for laboratory services.

5.4 Strengths

Results obtained from this study significantly contribute to the body of knowledge regarding patients' satisfaction with laboratory services and findings from this study may reflect similar trends in other health facilities. These insights may be used for future studies.

5.5 Limitations and Mitigation

The limitations are: the method chosen to measure quality of information may introduce bias due to interpersonal differences and likelihood of getting socially desirable responses. Observation method would have been the best because it allows the researcher access to the context and meaning surrounding what people say and do. People are not always willing to write their true views on a questionnaire or tell a stranger what they really think at the interview. This was mitigated by informing the patients to be honest as much as possible during answering the questionnaire, reassuring the patients that their responses will be anonymous and the laboratory and hospital administration will not know the individual responses and the findings will in no way interfere with the services they seek at the laboratory.

This being a cross sectional study it has got some inherent weakness. It is difficult to determine temporal relationship between exposure and outcome (lacks time element). Despite the limitations there are several conclusions that can be drawn from this study, the perspectives of laboratory personnel, doctors and nurses were not included in this study. The findings of the study have got limited generalization as the study was based mainly on regional referral hospitals in Dar-es-Salaam.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study reported low satisfaction with laboratory services (39%) among patients attending the regional referral laboratories. Such pattern has a great impact on patients as they can opt not to go for laboratory tests and take medication without proper diagnosis.

This study also reported older patients, those with higher than primary education and professional occupation were not satisfied with laboratory services.

6.2 Recommendations

i. There is a need for laboratory administration to provide services for the elderly people in a separate queue and give them a higher priority compared to the younger patients. This may make them to improve their satisfaction level as other factors like waiting time for laboratory services will be reduced.

ii. The management of laboratory staff should be made to ensure that all laboratory staff work according to health ethics. This might improve satisfaction level for the educated patients as they will get treated better and on time.

iii. Further study with a larger sample size and more factors associated with patients' laboratory satisfaction should be done. These factors could be, patients' information on (TAT) Turn Around Time for their results, health status of a patient and number of visits a patient has made to the laboratory.

iv. Further research on patients' satisfaction on laboratory services should be done in lower level health facilities such as Dispensaries, in order to obtain a holistic picture on factors affecting patients' satisfaction.

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APPENDICES

Appendix 1: Informed consent form- English

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS,

INFORMED CONSENT FORM

ID NO: …….

Greetings,

My name is ……working for school of public health and social sciences at Muhimbili University of health and allied sciences in Dar Es Salaam.

Purpose of the study

Dear respondent, I would like to inform you that this is a research study titled "Satisfaction with laboratory services among patients attending outpatient departments of regional referral hospitals in Dar Es salaam."

This study seeks to assess patients' satisfaction on services provided by OPD laboratory department in Dar Es Salaam regional referral hospitals. Kindly be honest and true for good results that could lead to better intervention and recommendations in future.

Confidentiality

We will protect and treat information you will provide with high confidentiality to the best of our knowledge. We will not write your name on the questionnaire or in any reports/documents that might let someone identify you. Your name will not be linked to research information in any way.

The investigator will take care of information to be collected. However, final results after the analysis will be shared with national stakeholders and I will submit the manuscript for publications in scientific journals.

Right and withdraw alternatives

Your participation is voluntary. You may decline from participation from participation to the study at any time even if you have consented to participate. Your decision to participate or not to participate will be associated with the right to get services in the facility. There is no penalty for refusing to participate in the study. You will not experience loss of your refusal to participate in this study

Benefits

This study will attempt to enable laboratory management to identify opportunities for improvement of services provided in the laboratory. Envisioned opportunities for improvement will lead to preventive and corrective actions.

Research findings will help in understanding clinicians' experiences on information communicated by the laboratory along with identification of major limitations in service delivery so as to inform strategies for improvements.

Obtained results will be shared with Hospital and Laboratory management of the municipal hospitals that will fulfill long-term commitments to the continuous improvement process.

Risks

There is no harm for participating in the study. However, you are free to stop participating as the respondent at any time during the discussion in the event you feel uncomfortable.

Person to contact

If you have any questions about this study you should contact the principal investigator, (Rehema Muhali Mob: 0717048292) of MUHAS, Dar es Salaam.

If you have any questions about your participation rights please contact, Supervisor, Doctor Bruno Sunguya Mob: 0685217272 MUHAS Dar Es Salaam.

DECLARATION

I have read or being read by the researcher and understood the contents in this form. My questions have been answered. Do you agree?

Participant agreed ☐ Participant disagreed ☐

The above document describing benefits, risks and procedures for research titled "Satisfaction with laboratory services among patients attending outpatient departments of regional referral hospitals in Dar es Salaam." I certify that the nature and purpose, the potential benefits and possible risks associated with participating in this study have been explained to me.

Signature or stamp of the respondent……Date……...

Signature of the researcher ……..……Date……...

Appendix 2: English questionnaire

SATISFACTION WITH LABORATORY SERVICES AMONG PATIENTS ATTENDING OUTPATIENT DEPARTMENTS OF REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM

Please take a few moments to complete the patient satisfaction survey. Your responses will help to improve laboratory services at the OPD of the regional referral hospitals in Dar Es Salaam. Please know that this questionnaire is not meant to test you, but to get an indication of performance of the Laboratory from your perspective.

<table>
<tr><td colspan="4">SECTION 1. SOCIO-DEMOGRAPHIC CHARACTERISTICS</td></tr>
<tr><td colspan="2">Health facility name:

_____</td><td>Interviewer name:

_____</td><td>Date of Interview:

_____/_____/2017</td></tr>
<tr><td>01</td><td>Sex</td><td colspan="2">Male..... ☐ 1
Female..... ☐ 2</td></tr>
<tr><td>02</td><td>What is your date of birth?</td><td colspan="2">☐☐ ☐☐ ☐☐☐☐
Day Month Year</td></tr>
<tr><td>03</td><td>Have you ever attended school?</td><td colspan="2">Yes..... ☐ 1
No.....☐ 2</td></tr>
</table>

04	What is the highest level of education attained?	Primary level……. ☐ 1 Post primary training ..... ☐ 2 Secondary 'O' level ..... ☐ 3 Post-secondary 'O level training……☐ 4 Secondary 'A' level……☐ 5 Post-secondary 'A' level training…….. ☐ 6 University .....☐ 7	
05	What is your current occupation?	Professional/technical/Managerial…… ☐ 1 Clerical ..... .☐ 2 Sales and Services ..... ☐ 3 Skilled manual……... ☐ 4 Unskilled manual…….....☐ 5 Domestic services…….. ☐ 6 Agriculture .....☐ 7	
06	What is your current Marital status	Married/living together..... ☐ 1 Divorced/Separated..... ☐ 2 Widowed.....…… ☐ 3 Never married/Never lived together…… ☐ 4	

SECTION 2. SOCIO-ECONOMIC STATUS				
07	What is the main source of drinking water for members of your household?	Piped water …….. ☐ 1 Water from open well.....☐ 2 Covered well.....☐ 3 Bore hole..... ☐ 4 Surface water …….☐ 5 Rain water.....☐ 6 Tanker truck.....☐ 7 Bottled water.....☐ 8		
08	What kind of toilet facility does your household have?	Flush toilet …….. ☐ 1 Pit toilet/latrine..... ☐ 2 No facility.....☐ 3 Bush/field.....☐ 4 Shared with.....☐ 5		
09	Does your household have/own?	Yes No i. Electricity ☐ 1 ☐ 2 ii. Paraffin lamp ☐ 1 ☐ 2 iii. A television ☐ 1 ☐ 2 iv. A radio ☐ 1 ☐ 2 v. Mobile phone ☐ 1 ☐ 2 vi. An iron ☐ 1 ☐ 2 vii. Refrigerator ☐ 1 ☐ 2 viii. Bicycle ☐ 1 ☐ 2 ix. Motor cycle ☐ 1 ☐ 2 x. Car (motor car) ☐ 1 ☐ 2 xi. A farm ☐ 1 ☐ 2		
10	What type of fuel does your household mainly use for cooking?	Electricity ……. ...☐ 1 Gas..... ☐ 2 Kerosene..... ☐ 3		

19	How do you perceive the cleanliness of the laboratory reception area?	Poor ……..…..☐ 1 Fair …….☐ 2 Good…….…..☐ 3 Very Good …….☐ 4 Excellent…….☐ 5	
20	How do you perceive the cleanliness of the laboratory sample collection area?	Poor ……...☐ 1 Fair …….☐ 2 Good……...☐ 3 Very Good …….☐ 4 Excellent…….☐ 5	
21	How do you perceive the cleanliness of the laboratory waiting area?	Poor ……...☐ 1 Fair …….☐ 2 Good……...☐ 3 Very Good …….☐ 4 Excellent…….☐ 5	
22	How do you perceive the cleanliness of the laboratory toilets?	Poor ……..☐ 1 Fair ……...☐ 2 Good……..☐ 3 Very Good ……☐ 4 Excellent……☐ 5	

23	How do you perceive the waiting time at the laboratory reception?	Poor …….....☐ 1 Fair ……...☐ 2 Good……..☐ 3 Very Good ……☐ 4 Excellent……☐ 5	
24	How do you perceive the waiting time of the laboratory sample collection procedure?	Poor ……..☐ 1 Fair ……...☐ 2 Good…….....☐ 3 Very Good ……....☐ 4 Excellent……...☐ 5	
25	How do you perceive the waiting time of the laboratory results?	Poor ……..☐ 1 Fair ……..…….☐ 2 Good……..☐ 3 Very Good …….....☐ 4 Excellent……☐ 5	
26	How do you perceive the mode of instruction by the laboratory personnel at the reception area	Poor …… ☐ 1 Fair ……☐ 2 Good……..……☐ 3 Very Good ……☐ 4 Excellent……☐ 5	

27	How do you perceive the mode of instruction by the laboratory personnel during sample collection?	Poor ……..☐ 1 Fair ……☐ 2 Good……..……....☐ 3 Very Good ……☐ 4 Excellent……....☐ 5	
28	How do you perceive the mode of instruction by the laboratory personnel during deliverance of results?	Poor ……..☐ 1 Fair ……...☐ 2 Good……..……☐ 3 Very Good ……☐ 4 Excellent……☐ 5	
29	How do you perceive the attitude of the laboratory personnel?	Poor …….....☐ 1 Fair ……....☐ 2 Good……...☐ 3 Very Good ……☐ 4 Excellent……☐ 5	
30	How do you perceive the availability of equipment and laboratory reagents for you laboratory test?	Poor ……..... ☐ 1 Fair ……. …...☐ 2 Good……. ….☐ 3 Very Good ……☐ 4 Excellent…….☐ 5	

31	How do you perceive the privacy of patient during receiving laboratory services?	Poor ……...☐ 1 Fair ……☐ 2 Good……☐ 3 Very Good …….……☐ 4 Excellent…….☐ 5	
32	Rate the overall satisfaction of the laboratory services	Poor ……...☐ 1 Fair ……...……☐ 2 Good……...☐ 3 Very Good …….☐ 4 Excellent……..…☐ 5	

Appendix 3: Swahili questionnaire

DODOSO

RIDHIKO KWA WAGONJWA WA NJE JUU YA HUDUMA ZITOLEWAZWO NA MAABARA KATIKA HOSPITALI ZA RUFAA ZA MKOA WA DAR ES SALAAM.

Tafadhali kuchukua dakika chache kukamilisha utafiti wa kuridhika. Majibu yako yatasaidia kuboresha huduma za maabara. Tafadhali jua kwamba dodoso hili si maana ya mtihani, lakini ni kwa ajili ya kupata dalili ya utendaji wa Maabara kutoka na mtazamo wako. Jibu lako litatumika kuongeza huduma bora za maabara.

Jina la Mhojiwa: _____

Jina la hospitali: _____

Sehemu ya 1. **SOCIO-DEMOGRAPHIC CHARACTERISTICS**			
Jina la Zahanati:		Jina la Mtafiti :	Tarehehe ya Mahojiano: _____/_____/2017
01	Jinsia	Me..... ☐ 1 Ke..... ☐ 2	
02	Umezaliwa tarehe ngapi?	☐☐ Siku ☐☐ Mwezi ☐☐☐☐ Mwaka	
03	Umewahi kusoma shule?	Ndio..... ☐ 1 Hapana..... ☐ 2	

04	Una kiwango gani cha elimu?	Msingi…… ☐ 1 Mafunzo/ufundi baada ya shule ya msingi.....☐ 2 Sekondari kidato cha nne .....☐ 3 Mafunzo/ufundi baada ya kidato cha nne……☐4 Kidato cha sita ……☐5 Mafunzo baada ya kidato cha sita……...☐6 Chuo kikuu .....☐ 7	
05	Unafanya kazi gani	Mtaalam/Ufundi/Meneja …….. ☐ 1 Kazi ofisini ..... ☐ 2 Huduma za mauzo ..... ☐ 3 Kazi yenye ujuzi…… ☐4 Kazi isiyo na ujuzi……☐5 Kazi za ndani…….. ☐ 6 Kilimo.....☐ 7	
06	Hali yako ya ndoa ni ipi?	Oa/Olewa/Ishi pamoja..... ☐ 1 Talaka/Achana ..... ☐ 2 Mjane .....…… ☐ 3 Sijawahi kuolewa/Oa/Ishi pamoja …… ☐4	

SECTION 2. SOCIO-ECONOMIC STATUS			
07	Mnatumia chanzo gani cha maji kwa ajili ya matumizi ya nyumbani?	Maji ya bomba ……. ☐ 1 Maji ya kisima cha wazi ..... ☐ 2 Maji ya kisima kilichofunikwa.....☐ 3 Maji ya shimo la kuchimba.....☐ 4 Maji ya juu ya ardhi …….☐ 5 Maji ya mvua ……..... ☐ 6 Maji ya tank la gari…….....☐ 7 Maji ychupa…….....☐ 8	
08	Mnatumia choo cha ina gani nyumbani?	Choo cha ndani …….. ☐ 1 Choo cha shimo …..... ☐ 2 Hakuna choo ….....☐ 3 Porini .....☐ 4 Mnatumia na majirani.....☐ 5	
09	Nyumbani mna vifaa vifatavyo?	Yes No xii. Umeme ☐ 1 ☐ 2 xiii. Taa ya mafuta ☐1 ☐ 2 xiv. Runinga ☐1 ☐2 xv. Redio ☐1 ☐2 xvi. Sim ya mkononi ☐1 ☐2 xvii. Pasi ☐1 ☐2 xviii. Jokofu ☐1 ☐2 xix. Baiskeli ☐1 ☐ 2 xx. Pikipiki ☐1 ☐ 2 xxi. Gari ☐1 ☐ 2 xxii. Shamba ☐ 1 ☐2	
10	Mnatumia njia gani kupika?	Umeme .. …….. ☐ 1 Gesi ..... ☐ 2 Mafuta ya taa .....☐ 3	

19	Unaonaje usafi wa eneo la mapokezi?	Mbaya ……..☐ 1 Kawaida …….☐ 2 Nzuri…….☐ 3 Nzuri sana ……☐ 4 Nzuri mno…….☐ 5	
20	Unanaje usafi wa eneo la kuchukulia vipimo?	Nzuri …….☐ 1 Kawaida …….☐ 2 Nzuri ……☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	
21	Unaonaje usafi wa eneo la kusubiri huduma?	Mbaya ……☐ 1 Kawaida …….☐ 2 Nzuri ……☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	
22	Unaonaje usafi wa vyoo?	Mbaya…….☐ 1 Kawaida …….☐ 2 Nzuri..……☐ 3 Nzuri sana……..☐ 4 Nzuri mno…….☐ 5	

23	Unaonaje mda wa kusubiri huduma ya mapokezi?	Mbaya …….☐ 1 Kawaida …….☐ 2 Nzuri……☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	
24	Unaonaje mda wakusubiri huduma?	Mbaya…….☐ 1 Kawaida ……...☐ 2 Nzuri……..☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	
25	Unaonaje mda wa kusubiri majibu?	Mbaya ……☐ 1 Kawaida.…….☐ 2 Nzuri …….☐ 3 Nzuri sana …….☐ 4 Nzuri mno……..☐ 5	
26	Unaonaje maelekezo yatolewaje na watoaji huduma wa maabara mapokezi?	Mbaya……...☐ 1 Kawaida …….☐ 2 Nzuri……..…☐ 3 Nzuri sana…….☐ 4 Nzuri mno…….☐ 5	

27	Unaonaje maelekezo yatolewayo na watoaji huduma wa maabara sehem ya kutoa kipimo?	Mbaya……...☐ 1 Kawaida …….☐ 2 Nzuri……..…☐ 3 Nzuri sana…….☐ 4 Nzuri mno…….☐5	
28	Unaonaje maelekezo yatolewayo na watoaji huduma wa maabara wakati wa kutoa majibu?	Mbaya……...☐ 1 Kawaida …….☐ 2 Nzuri……..…☐ 3 Nzuri sana…….☐ 4 Nzuri mno…….☐5	
29	Unaonaje tabia ya watoa huduma maabara kwa mgonjwa?	Mbaya ……☐ 1 Kawaida ……..☐ 2 Nzuri ……..…☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	
30	Unaonaje upatikanaji wa wa vipimo/dawa za kupimia na mashine za kupimia kwa ajili ya vipimo?	Mbaya ……☐ 1 Kawaida ……..☐ 2 Nzuri ……..…☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	

31	Unaonaje usiri wakati wa kutumia huduma ya maabara?	Nzuri ……...☐ 1 Kawaida ……..☐ 2 Nzuri……..…☐ 3 Nzuri sana …….☐ 4 Nzuri mno…….☐ 5	
32	Umeridhika kiasi gani huu ya huduma za maabara kiujumla?	Mbaya ……..☐ 1 Kawaida …….☐ 2 Nzuri…….☐ 3 Nzuri sana…….☐ 4 Nzuri mno…….☐ 5	

Appendix 4: Informed consent form- Swahili

FOMU YA RIDHAA

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES

IDARA YA UTAFITI NA MACHAPISHO

FOMU YA RIDHAA

ID NO:……

Salaam,

Jina langu naitwa ……. Nafanya kazi na Shule ya Afya ya Umma na Sayansi ya Jamii katika Chuo Kikuu cha Tiba na Sayansi ya Muhimbili Jijini Dar es Salaam.

Madhumuni ya Utafiti

Ndugu mhojiwa napenda kukujulisha kuwa somo hili la utafiti lenye jina "Tathmini ya kuridhika kwa ‘Wagonjwa 'juu ya Huduma zitolewazwo na Maabara’ katika hospitali za manispaa za Dar es Salaam, Tanzania."

Usiri

Sisi tutalinda na kuziweka taarifa zako kwa usiri wa hali ya juu na kadri ya uwezo wetu. Sisi hatutaandika jina lako katika ripoti yoyote/nyaraka ambazo zinaweza kuruhusu mtu kukutambua wewe. Jina lako halitakuwa na mahusiano na habari za utafiti kwa njia yoyote.Watafiti watatunza takwimu na taarifa zitakazo kusanywa. Hata hivyo matokeo ya utafiti yatawasiliswa kwa ajili ya uchapishaji katika majarida ya kisayansi.

Haki na Kujitoa katika utafiti

Ushiriki wako ni wa hiari. Unaweza ukajiondoa katika ushiriki katika utafiti wakati wowote, wakati wa mahojiano hata kama ulikuwa umekubali kushiriki. Uamuzi wako wa kushiriki

hautahusishwa na haki yako kufanya kazi au kuendelea na matibabu katika kituo. Hakuna adhabu ya kukataa kushiriki katika utafiti. Hutapata hasara yoyote kama ukikataa kushiriki katika utafiti huu.

Faida:

Utafiti huu utawawezesha wasimamizi wa maabara kutambua fursa kwa ajili ya kuboresha huduma zitolewazwo na Maabara. Hizi fursa kwa ajili ya kuboresha zitasababisha hatua za kuzuia na marekebisho.

Hatari:

Hakuna madhara kwa kushiriki katika utafiti. Hata hivyo wewe uko huru katika kuacha kushiriki kwa wakati wowote katika mahojiano haya katika tukio unalojihisi kuwa na wasiwasi.

Endapo utapata madhara:Hutegemei kupata madhara yoyote kutokana na ushiriki wako katika utafiti.

Nani wa kuwasiliana naye: Kama una maswali kuhusiana na utafiti huu tafadhali wasiliana na mtafiti mkuu, Rehema Muhali (+255 717 04 82 92) wa Chuo Kikuu cha Tiba na sayansi Muhimbili,S.L.P 40022,Dar es Salaam.

Kama una swali juu ya haki zako za msingi kama mshiriki, unaweza kuwasiliana na Mganga Bruno Sunguya (+255 685217272) MUHAS Dar Es Salaamambaye ni msimamizi wa utafiti huu.

Je unakubali

Mshiriki anakubali……Mshiriki hakubali……...

Mimi ……nimesoma maelezo ya fomu hii.Nakubali kushiriki katika utafiti huu.

Saini ya mshiriki……

Saini ya Mtafiti……...

Tarehe ya kusaini ……..…