

**ASSESSMENT OF QUALITY LABORATORY SERVICES IN THE
PROSPECT OF LABORATORY PERSONNEL STATUS, FACILITY,
SAFETY AND CLIENT SATISFACTION IN ADDIS ABABA
GOVERNMENT HEALTH CENTERS AND HOSPITALS, ADDIS ABABA,
ETHIOPIA**

BY:

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A THESIS SUBMITTED TO THE DEPARTMENT OF EPIDEMIOLOGY,
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JIMMA, ETHIOPIA

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FEBRUARY 2014

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Declaration

I the under signed declared that this thesis is my original work, has not been presented in this or any other university and that all sources of material used for the thesis have been fully acknowledged.

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Acknowledgement

God deserves to take all the credits and best thanks for the inception and completion of this thesis work.

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DEDICATION

This Thesis is dedicated to my mother, W/ro Simegn, Who Has Died of a Grave Disease in the early of February, 2011. Mam may your soul/spirit rest in Heaven.

Abstract

Background: The laboratory services are essential component of health services in the diagnosis and treatment of patients. But laboratory infrastructure and test quality for all types of clinical laboratories remain back warded in most countries in Africa. In spite of its ancient civilization, Ethiopia today is one of the least developed countries with low development indicators. For example, Ethiopian health care system in terms of infrastructure and personnel is about one third of Kenya's. So the concerned bodies should address the urgent need of strengthen laboratory system and services in order to achieve the delivery of quality health service.

Objective: to assess the quality of laboratory service in the prospect of status of personnel, facility and safety of the laboratory room and client satisfaction level of clients with the service.

Method: The study was conducted in Addis Ababa city starting from September to October 2013G.C. Facility based cross-sectional study design was employed on government health centers and hospitals laboratories by interviewing the laboratory professionals and clients. The study included all laboratory personnel working in 10 randomly selected health centers and 4 selected hospitals and 422 laboratory clients in the selected facilities. The sample was distributed to each facility proportional to the average number of clients of the laboratory serve in a month.

Results: Ninety laboratory personnel involved in the personnel and safety assessment. Half of the participants were female. More than half of them took laboratory quality management training (57.8%), seventy seven (85.6%) said all laboratory work is done by authorized person, 97.8% reassured presence of personnel file. Only 45% of them realized the presence of training plan. A total of 422 laboratory clients participated for satisfaction assessment. Two hundred forty seven (58.5%) of them were female. The overall satisfaction level was 54.0% with maximum and minimum satisfaction of 83.0% and 25.0% respectively. Availability of waiting area was found to be the predictor of satisfaction. Weak attention was given for safety of clients, personnel, community members and provision of safety materials.

Conclusion: Quality of laboratory service concerning personnel and client satisfaction is lower than other studies conducted in different areas, wrong perception of the personnel in taking responsibility to improve the quality of their laboratory and weak attention given for safety. Generally low activities were done on improving quality.

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List of acronyms

ASCP	American Society for clinical Pathology
Authorized person	Individual who have specific knowledge for specific task.
CAP	College of American Pathology
EHRs	Electronic health records
EQA	External quality assessment
EQAC	External Quality Assessment Scheme on the non-analytical (pre-and post-) Factor in Clinical Chemistry
GHI	Global health initiatives
G6PD	Glucose 6 phosphate dehydrogenises
HB virus	Hepatitis B virus
HIV	Human immune deficiency virus
IOM	Institution of medicine
NEQAS	National external quality assessment scheme
OR	Odd ratio
QA	Quality assurance
QI	Quality improvement
SD	Standard deviation
SLIPTA	Stepwise Laboratory (Quality) Improvement Process toward accreditation
SLMTA	Strengthening laboratory management towards accreditation
STDs	Sexually transmitted Diseases
TAT	Turnaround time
TB	Tuberculosis bacilli
WHO	World health organization

CHARTER ONE

1 Introduction

1.1 Background

Laboratory services are essential component in the diagnosis and treatment of patients infected with the human immunodeficiency virus (HIV), malaria, Mycobacterium tuberculosis (TB), sexually transmitted diseases (STDs), and other infectious and non infectious diseases. Presently, the laboratory infrastructure and test quality for all types of clinical laboratories remain in its nascent stages in most countries in Africa. Consequently, there is an urgent need to strengthen laboratory systems and services. The establishment of a process by which laboratories can achieve accreditation at international standards is an invaluable tool for countries to improve the quality of laboratory services. In accordance with WHO's core functions of setting standards and building institutional capacity, WHO-AFRO has established the Stepwise Laboratory (Quality) Improvement Process Towards Accreditation (SLIPTA) to strengthen laboratory systems of its Member States. This quality improvement process towards accreditation further provides a learning opportunity and pathway for continuous improvement, a mechanism for identifying resource and training needs, a measure of progress, and a link to the WHO-AFRO National Health Laboratory Service Networks^[1]. A high-quality organization meets customers' needs. Clinical laboratory managers often assume they know what customers want (accuracy, precision, speed, economy, etc) and set out to directly measure laboratory performance in each specific area. Another approach to measuring quality is to assess customer satisfaction with services without making any assumptions about the relative importance of specific functions^[2]. For reasons of patient safety and quality laboratory testing, the American Society for Clinical Pathology (ASCP) supports personnel standards for laboratory professionals. These standards could take the form of practical requirements, certification requirements, or licensure. These personnel standards must include the following elements: appropriate academic and clinical training for laboratory professionals; passage of a competency examination offered by an approved national certification organization; appropriate continuing competency standards^[3].

A comprehensive approach would address all stages of the laboratory total testing process, with a focus on the areas considered most likely to have important consequences on patient care and health outcomes. Certain laboratory medicine quality indicators like satisfaction, environmental safety and service interruption have been advocated for use as internal quality assessment tools ^[4]. Patient satisfaction is the patient's perception of care received compared with the care expected. Evaluating to what extent patients are satisfied with health services is clinically important, as satisfied patients are more likely to comply with treatment ^[5, 6].

In order to understand whether client needs are being met, the laboratory will need to employ tools for gaining information. The laboratory needs to actively seek information from customers, rather than just waiting for customers to contact the laboratory with a complaint. Important information on customer satisfaction may be obtained using: complaint monitoring, quality indicators, internal audit, management review, satisfaction surveys, interviews and focus groups discussion. The monitoring of customer service/satisfaction is part of the continual improvement performed by the laboratory ^[7].

1.2 Statement of the problem

Like many other countries in sub-Saharan Africa, Ethiopia is a country of diverse cultures, traditions and histories, Ethiopia today is one of the least developed countries with low development indicators like health economic and educational indicator. In comparison, for example, although Ethiopia has more than double the population of neighboring Kenya, its health care system in terms of infrastructure and personnel is about one third of Kenya's^[8]. Additionally Global health initiative (GHI) find a gap that Health service delivery in Ethiopia is characterized by an inadequate number of well trained health providers, limited health infrastructure, inadequate space, shortages of equipment and commodities at health facilities and weak health systems which results in low service utilization. Access and demand for services is affected by geographical, financial and cultural barriers, poor care seeking behaviors, organizational and management issues that impact on effective referrals^[9].

CHAPTER TWO

2.1 Literature review

College of American Pathologists was developed and maintains extensive databases describing error rates in pathology having the aim of defining critical performance measures in laboratory medicine. The databases include the CAP's Q-Probes and Q-Tracks programs, which provide information on error rates from more than 130, inter laboratory studies. They use a mechanism of reviewing the experiences from Q-Probes and Q-Tracks studies supplemented with other studies cited in the literature to develop the databases. The results of the study were described based on different laboratory testing steps. The frequency of errors for pre analytic performance measures, such as incorrectly identifying a hospitalized patient prior to collecting a blood specimen, 6.5%. However, some pre analytic measures, including the duplicate order of a laboratory test such as thyrotropin and rejecting an unacceptable chemistry specimen, had low error rates of 1.5% and 0.3%, respectively. Generally, Post analytic errors include 7.1% of telephoned results incorrectly transmitted, 1.7% of the ordered tests not resulted and 15.1% of patients dissatisfied with their phlebotomy procedure. The summary result from the revised study indicates that the frequency of errors was higher in the pre analytic and post analytic phases than in the analytic phase ^[10].

A study conducted by college of American pathologists to oversee laboratory quality in 138 institutions in different area about their satisfaction on the laboratory services indicated that, all laboratory service categories except for esoteric test turnaround time had median percentage values of excellent/ good ratings between 75.0% and 89.9%. Quality/reliability of laboratory results (analytical quality of results) and courtesy of laboratory staff had the highest median values (89.9%). Accessibility to laboratory staff, manager, and pathologist, and laboratory management responsiveness also had high median percentage values of excellent/ good ratings (range, 82.6%–87.6%). Of the 5 service categories that received the lowest median values for percentage of excellent/good ratings (combined scores of 4 and 5), 4 of these related to turnaround times for inpatient stat, outpatient stat, routine, and esoteric tests [2]. Additional similar Q-Probes studies on customer satisfaction have measured satisfaction of 3 different

groups of clinical laboratory users. The earliest studies evaluated outpatients undergoing phlebotomy, whereas more recent studies surveyed physicians or nursing personnel who use clinical laboratory services. When asked to check if they were satisfied or dissatisfied with the procedure as part of a survey 2 days following the procedure, 15.1% of outpatients expressed dissatisfaction with the phlebotomy procedure ^[11]. Moreover Studies on physicians' and nurses' satisfaction using highly structured questionnaires that were field evaluated before use, and results were expressed as an overall numerical grade on a scale of 1 (poor) to 5 (excellent). The overall physician satisfaction score for the clinical laboratory was 4.2 of 5; hence, when expressed as the inverse or dissatisfaction, the score was rated as 0.8 of 5.0 ^[12].

Another study done in India to test the pre analytical aspect of quality improvement on pathological techniques (tissue processing, sectioning and staining) indicated improvement in the mean scores of all participating laboratories for sections of uterus from 8.73 in Cycle 1 of 2006 to 10.3 in Cycle 4 of 2007 (11 laboratories). The average score for 23 laboratories for skin sections was 11.06 in Cycle 1 of 2007 and 11.2 in Cycle 2 of 2008. The average scores were found to be lower when tissues like thyroid (9.25), bone (10.4) and adipose tissue (10.8) were distributed. There has been a positive trend in performance of individual laboratories provided the "difficult tissues" have been taken into consideration. Additionally they recommended that the analytical aspect of diagnosis has a variation between laboratories. This Inter laboratory QA program has been a beginning and has scope for improvement on many fronts including the introduction of a score based evaluation of concordance/discordance. The numbers are still not large enough to draw definitive statistical information ^[13].

The result of the study conducted in Southeast Asia by distributing a questionnaire on 298 hospital laboratories that participated in the External Quality Assessment Scheme on the non-analytical (pre- and post-) factors in Clinical Chemistry (EQAC) program of Faculty of Medical Technology; Mahidol University indicated that, the respondent rate was 71%. Most of the respondents were female with a bachelor degree in medical technology or equivalent, who were the chiefs of the laboratories. Results showed that patient preparation, patient identification, specimen acquisition, specimen handling, and

documentary system (specimen recording and result reporting) were important consideration factors^[14].

Study which were conducted in 10 regions of Tanzania indicated that, there was a statistical difference in the number of patients in the regions using public and private laboratories ($X^2 = 79.1$, $df = 9$, p value = 0.001). The percentage of dissatisfaction with both public and private laboratory services, ranged from 4.3% to 34.8%, with most of variables being more than 15%. Patients who sought private laboratory services were less dissatisfied with the cleanness (3/72, 4.2%) and the privacy (10/72, 13.9%) than those sought public laboratory service for the same services of cleanness (41/222, 18.5%) and privacy (61/222, 27.5%)^[15].

Medical laboratory work force survey which was conducted in Vermont laboratory personnel for assessing the knowledge of quality systems in their workplace and perceptions about the effect of job function, education and training, professional credentials, and experience on the overall quality of testing and results indicates 96% of laboratory personnel considered themselves familiar with quality assurance measures in their laboratory. Almost half (47%) of the laboratory personnel said they did not have a role in deciding the quality assurance measures, whereas 77% felt they had a significant impact on meeting the quality assurance objectives. The researchers conclude that not all laboratory personnel feel that they play a significant role in assuring quality or influencing quality measures used in the laboratory^[16].

A survey conducted on 954 laboratories in Uganda Kampala for assessing the quality of laboratory service using African Region (WHO/AFRO) Laboratory Strengthening Checklist indicates that only 45(5%) of the laboratories met or surpassed the lowest quality standards defined by the WHO/AFRO-derived laboratory strengthening tool (1-star). These 45 higher-quality laboratories were, on average, larger and had a higher number of laboratory-specific staff (technologists, phlebotomists etc) than the other 909 laboratories. 688 (72%) of the 954 laboratories were not registered with the Ministry of Health (MOH). The absolute and relative number of laboratory-specific staff (laboratory technologists, laboratory technicians, laboratory assistants and phlebotomists) are all positively related to improved laboratory quality (number of stars). In 44 of these 45 higher quality laboratories, there was at least one laboratory-specific (technologists,

phlebotomists etc.) staff member. The average number of laboratory-specific staff members was 4.4-per-lab for these 45 laboratories which scored .1-star, versus 1-per-lab for the 911 laboratories which scored zero-stars. The average number of these laboratory-specific staff members per laboratory was 3, 5, 6, 7, and 19 for the 1-, 2-, 3-, 4- and 5-star laboratories respectively. The relative number of physicians or other healthcare staff did not demonstrate any clear relationship to laboratory quality. Depending on the survey they conclude that the survey findings demonstrated that laboratories in Kampala that had qualified personnel and those that had higher testing volumes, tended to be of higher-quality^[17].

The result of a cross sectional study done in eastern Ethiopia in Government hospital laboratory service user on their service satisfaction indicates that Most of the patients (87.6%) were satisfied with the laboratory services. The lowest (2.48 ± 1.39) and highest (4.27 ± 0.83) rate satisfaction were on cleanness of latrine to collect specimens and availability of laboratory staff on working hours respectively. The extent of the patients' satisfaction was different among the study hospitals (P-value < 0.05)^[18].

When we see the result of the study conducted in Jimma referral hospital indicates that Out of 344 laboratory orders 178(51.74%) got all the ordered procedures and of the respondents reported dissatisfaction with the overall waiting time to get the hospital services, while 23.5% of the clients were dissatisfied with the lack of drugs and supplies in the hospital^[19].

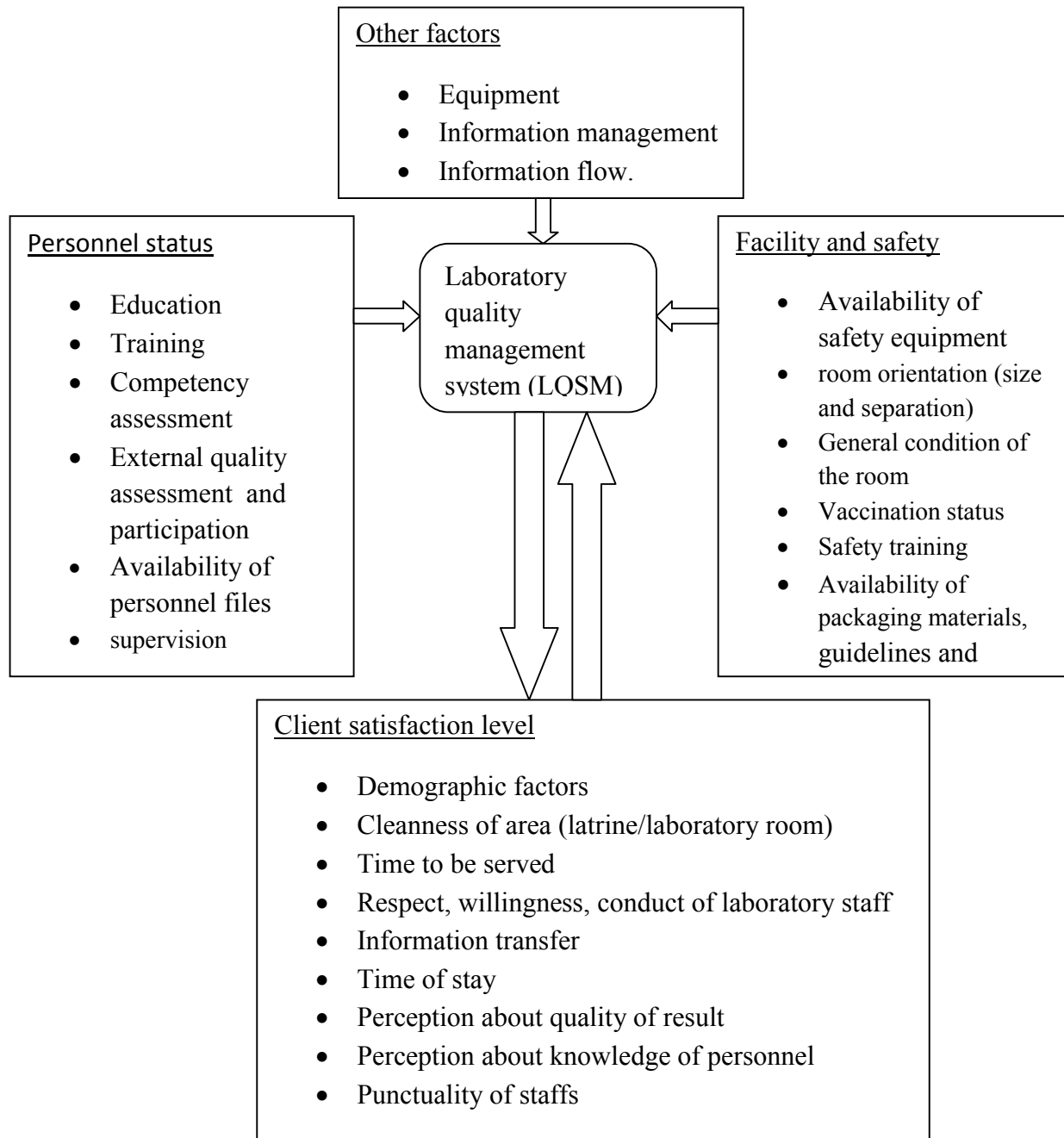
Thus, the result of the assessment of the laboratory quality system of the health institution will have an important contribution to current efforts of the government in improving the health services, experience sharing, taking corrective measures in wrongly implemented programs and it serves as a baseline study for other studies.

2.2 Significance of the study

Laboratory services are essential component in the diagnosis and treatment of person infected with HIV, malaria, mycobacterium tuberculosis, sexually transmitted infections, and other infectious and non infectious diseases. Presently, the laboratory infrastructure and test quality for all types of clinical laboratories remains weak in most countries in Africa. There is therefore an urgent need to strengthen laboratory services and systems for provision of quality laboratory service ^[1]. Even if the Government gives attentions for some specific laboratory services like ART and TB, other activities were not equally treated.

In the present time, the government of our Country tries to do more in improving the quality of health services provided to the clients. The laboratory unit has a great role in improving the quality of health service provided to the clients and it has been considered to be among the major strategies in improving the quality of health service in our country. Therefore the study helps to see the quality of laboratory service provided to the clients in the aspect of personnel resource and the safety condition of the laboratory and patients satisfaction with the laboratory service they get. Additionally the result of the study help the Addis Ababa city health bureau to take action on the improvement of personnel capacity building, facility and safety of health institution and understanding the level of patient satisfaction and taking corrective action. It helps to follow the impact of the program implementation on the quality of the service provided. And also the result of the study used as a supplementary data for many other studies in the future.

2.3 Conceptual framework



Conceptual framework developed after revision of a quality management system model for health care ^[20].

Figure 1: Inter relationship of personnel, facility and safety and client satisfaction with laboratory quality management system.

CHAPTER THREE

3. Objectives of the study

3.1 General objective:

- To assess the quality of clinical laboratory service provided to the clients in the prospect of provider status, facility, safety and client satisfaction among Government health centers and hospitals in Addis Ababa.

3.2 Specific objective:

- Describe the status of laboratory personnel using personnel explanatory variable.
- Describe facility and safety condition of the laboratory.
- Assess level of client satisfaction with laboratory service they offered.

CHAPTER FOUR

4 Method and materials

4.1 Study area and period

Ethiopia is administratively divided into 9 regional states and 2 city administrations. The study was conducted in Addis Ababa City Administration which is one of the two councils and the capital city of the country. The city is surrounded by Oromia regional state. It has Woina dega climate zone predominantly. The total land area is 530.21 square kilometers. The total population from the 2007 census was 3,059,000. The population density is 5936.2 per square kilometer of land. It is administratively sub-divided into 10 sub-cities and 116 Woredas. A total of 608 functional health facilities present in the city. The city has 31 hospitals, 51 health centers, 37 health posts and 382 clinics ^[21]. The majority of the people lead their life as being civil servants, daily laborers, factory employees and by engaging in small scale micro business enterprises. The study area is chosen because most of the clients complained on the quality of the laboratory service in different public, private Medias and service provision area and it helps for checking whether the complain is real problem or not. The study was carried out from September 08/09/2013 to October 08/10/2013 G.C.

4.2 Study design

The study utilized facility based cross-sectional descriptive study design.

4.3 Source population

- For personnel and facility and safety assessment; all individuals working in government health facilities involved in health service provision were included.
- For satisfaction assessment; all clients who got health services in the study area were included.

4.4 Study population

- For personnel and facility and safety assessment; all laboratory professional working in 10 randomly selected government health centers and 4 hospitals under the city administration health office that give laboratory services were included.
- For satisfaction assessment; all laboratory clients who were using the service in the study area and period.

4.5 Sample size determination

Before taking the study participants for assessment of laboratory quality in the aspect of personnel status, facility and safety, the list of all government health centers and hospitals in each sub city was identified and a sampling frame was prepared. After the preparation of the list of the health centers, the health centers opened within the past two years were excluded from the study. Using random sampling method one health center and one hospital from each sub city were selected by assuming the resource and personnel distribution in the sub city is almost equal and all laboratory professionals in the selected health facilities who were available during the study period were included for personnel status assessment into the study. Sample size determination of laboratory service users for satisfaction assessment was calculated using the formula for cross-sectional study for single population proportion, based on proportion of satisfaction=0.5, 5% margin of error and 95% confidence interval and a non response rate of 10% in order to have maximum sample size.

Sample size for laboratory service users

P (proportion of satisfaction) =0.5

D (margin of error) =0.05

$$\begin{aligned}n &= ((Z_{\alpha/2})^2 * P (1-P))/d^2 \\ &= ((1.96)^2 *(0.5) *(1-0.5))/ (0.05)^2 = 384 \\ 10\% \text{ contingency} &= 384*10\% =38 \\ \text{Final sample size} &= (384*10\%) +384=422\end{aligned}$$

4.6 Sampling procedure

First the list of all government health facilities which are run by the city administration either giving or on the process to give the laboratory service to their clients in each sub city was prepared. The list of the old health centers and hospitals laboratories which were opened before two years prior to the study and their distribution in each sub cities was identified. After having the list, one health center and one hospital from each sub cities were selected randomly. The data were collected from all laboratory staffs who were working in the selected 10 Government health centers and 4 hospitals. In addition, the calculated total sample size for laboratory clients was distributed proportionally to each randomly selected hospital and health centers based on the average patient flow per month and consecutive sampling was applied until the proportionate sample size for each health center and hospital addressed.

Table 1: facility list in the studied area, average monthly clients and sample size taken, 2013 G.C

s.no	Name of facility	Average monthly client	Total sample taken
1	Akaki health center	1900	30
2	Kirkos health center	1600	26
3	Woreda 9 health center	1050	17
4	Kotebe health center	1800	29
5	Bole 17 health center	1500	24
6	T/haimanot health center	1100	18
7	Lideta health center	1000	16
8	Addis ketema health center	1250	20
9	Kolfe health center	1100	18
10	Shiromeda health center	900	14
11	Yekatit 12 hospital	3300	53
12	Ras Desta hospital	3200	51
13	Tirunesh Beijing general hospital	3200	51
14	Zewditu memorial hospital	3400	54

4.7 Inclusion and exclusion criteria

4.7.1 Inclusion criteria

- For facility identification: all government health centers and hospitals in the study area which are opened before two years of the study period and which are a member of the randomly selected ones.
- For clients: laboratory clients or care giver above 15 years
- For personnel: laboratory personnel working in the study area

4.7.2 Exclusion criteria

- Facilities opened within the past two years of the study period.
- Laboratory personnel working in the study facilities who are not present during data collection
- Clients below 15 years of age

4.8 Variables

4.8.1 Dependent variables:

Laboratory Professional status

Client satisfaction level

Laboratory facility and safety condition

4.8.2 Independent variables

Personnel related

- Educational level
- Training
- Number personnel
- Availability of personnel files
- Competency assessment
- Duty roster
- Performance evaluation
- Supervision

Client satisfaction related

- Demographic factors (age, sex, marital status, occupation, frequency of visit, type of specimen clients gave)
- Availability of waiting area

Laboratory safety related

- Safety manual
- Waste management guideline
- Size of room
- Safety materials
- Safety training
- Availability of written procedure
- Availability of safety equipment
- Availability of packaging materials and personnel vaccination status

4.9 Data collection instrument and process

- A. **Patients:** Data were collected by face-to-face interview using a structured questionnaire developed from WHO standard laboratory quality assessment check list, assessment tool for laboratory service and tools from published studies with certain modification. [18, 22, 23, 24]. The questionnaire was prepared originally in English and the interview was administered in Amharic after translation of the questionnaire. The data collectors used closed ended Amharic version questionnaire which have similar meaning to the original English version. The questionnaire consist of different parts like socio-demographic characteristics, length of time stayed, availability of laboratory staff, location and cleanness of the laboratory, number, educational and training status of personnel, availability of safety equipment, and training of personnel. The data were collected by minimum of diploma holder and more than three years of experience laboratory personnel under the control of two laboratory quality improvement work exposed immediate supervisor.
- B. **Laboratory service providers:** Interview and physical observation with laboratory professionals were done by the help of three trained laboratory professionals who took laboratory quality management training under the control of two laboratory quality improvement work exposed laboratory professional immediate supervisors using modified WHO standard laboratory quality assessment check list, assessment tool for laboratory service and tools from published studies with certain modification. [18, 22, 23, 24]

4.10 Data management and analysis

4.10.1 Data management

After data collection, each questionnaire was coded separately and data were cleaned and entered in to EPI data version 3.1 computer software; software for making data ready for analysis by the principal investigator. Data cleaning and analysis were done after exporting the data to SPSS version 16 computer software.

4.10.2 Data analysis

Data analysis was made using SPSS version16 software. A 5 point Likert Scale rating of Poor (1-point) ,Fair (2-points), good (3-points), very good (4-points) and excellent (5point) was used for assessment of client. Univariate and multivariate logistic regression was employed to determine the possible socio-demographic characteristics associated with the level of satisfaction. Patients' satisfaction were classified; into two categories satisfied and dissatisfied by using the demarcation threshold from formula: $\{(total\ highest\ score - total\ lowest\ score) / 2\} + Total\ lowest\ score$ ^[25]. This means an individual score five points for the whole fifteen satisfaction explaining variable the total highest score will be 75 point and if individual score the minimum that is one the total lowest will be 15 point. Using these values in the formula the final threshold was set that is 45. Descriptive statistics for variables of personnel resource and safety of the laboratory room was done. Additionally odds ratio with 95% confidence interval was employed for describing the strength of association between the selected variable.

4.11 Data quality assurance

A two days training regarding the objective of the study and rehearsal of the over view of laboratory quality system components, laboratory safety, personnel requirement and how to approach the concerned bodies and gather the required information was conducted by the principal investigator and invited guests from regional laboratory. Before embarking on data collection, a role play presentation of the questionnaire between data collectors on the prepared questionnaires was performed to ensure the validity of the study tool and to take corrective action on the questionnaire and adopt the questionnaire in the local context after the two day training. Questionnaires were checked for completeness on daily basis by two well trained and laboratory quality

improvement work exposed laboratory professional immediate supervisors. Incorrectly filled or missed ones were sent back to the respective data collectors for rechecking. The principal investigator also rechecked the completed questionnaires to maintain the quality of data. In addition the principal investigator supervised more than 20% of the facilities under investigation.

4.12 Ethical Consideration

Ethical clearance was obtained from Jimma University College of Public Health and Medical Sciences Ethical Committee and Addis Ababa city health office. Consent was sought from the concerned bodies of Addis Ababa city administration Health Bureau and from each respective health center and hospital administration and questionnaire respondents. Detailed information on the purpose of the study and benefits was explicitly explained to each enrolled participant and that the participant is free to withdraw from the interview or responding to the questionnaire if he or she wished to do so. It was explained that if they decided to withdraw it will not have any effect on institution, their job and the service they client get. Informed consent was requested from each personnel and patients who would be involved in the study.

4.13 Operational definition

Quality of care: Based on the Institute of Medicine (IOM) definition of quality of care as “the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge ^[26].

The Stepwise Laboratory (Quality) Improvement Process Towards Accreditation (SLIPTA) It is a process that enables laboratories to develop and document their ability to detect, identify, and promptly report all diseases of public health significance that may be present in clinical specimens.

Quality indicator is a tool that enables the user to quantify the quality of a selected aspect of care by comparing it with a criterion.

TAT: It is time of specimen receipt in the laboratory to time of results reporting ^[27].

Client satisfaction: Client satisfaction is the level of satisfaction that clients experience having used a service. It therefore reflects the gap between the expected service and the experience of the service, from the client’s point of view ^[28].

Clinician Satisfaction with Laboratory Services: This indicator is the percentage of clinicians satisfied with various aspects of laboratory services such as TAT, accessibility, and communication ^[29].

Critical values: are defined as those for which reporting delays can result in serious adverse outcomes for patients ^[30].

Performance evaluation: it is a method of assessing the personnel performance achievement according to their plan

Satisfied: clients who score above the satisfaction threshold level (above 45 point)

Not satisfied: clients who score below the satisfaction threshold level (below 45 point)

CHAPTER FIVE

Result and discussion

5.1 Results

A total of 422 laboratory clients participated in the study for assessment of their service satisfaction. Concerning the laboratory clients, there was female predominance for participation 247 (58.5%) and the average age of the participants was 27 ± 10.7 (maximum 73, minimum 16). Only nineteen (4.5%) of the participants were illiterate and 225 (53.3%) were married. Government employee accounted 108 (25.6%) and 297 (70.4%) clients were from urban area, 13.7% semi urban and 15.9% rural area. Around 58% of the clients visited the institution more than one times, 41.8% of the clients visited the institution for the first time. Ninety service providers participated for the assessment of personnel and safety and facility assessment. There is equal distribution of gender for service providers. Fifty six percent of the laboratory professionals have more than 3 years experience. The maximum experience is 30 year and the minimum is below one year. Majority of the service providers are diploma holders 44 (48.9%), BSc 41 (45.6%) and master degree 5 (5.6%). (Table 2 and 4)

Table 2: Socio demographic characteristics of laboratory clients in the public hospitals and health centers, in Addis Ababa, October, 2013 (n = 422)

		Frequency	Percent
sex	Male	175	41.5
	Female	247	58.5
Marital status	Single	183	43.4
	Married	225	53.3
	Divorced	10	2.4
	Widowed	4	.9
	Total	422	100.0
Educational status	Illiterate	19	4.5
	Elementary (1-8)	89	21.1
	High school (9-10)	106	25.1
	Preparatory(11-12)	71	16.8
	TVET (diploma, certificate)	90	21.3
	Degree and above	47	11.1
residence	Urban	297	70.4
	Semi urban	58	13.7

Type of work	Rural	67	15.9
	Government	108	25.6
	Merchant	53	12.6
	Farmer	46	10.9
	NGO	44	10.4
	retired	23	5.5
	Daily laborer	39	9.2
	student	85	20.1
	House wife	24	5.7
Frequency of visit	One times	172	40.8
	Two times	177	41.9
	Three times	56	13.3
	More than three times	17	4.0

Level of satisfaction of client with quality of laboratory service parameters

The result regarding laboratory service users' on satisfaction with different indicators of quality of clinical laboratory service is presented in table 3. Generally higher satisfaction level was achieved on location of laboratory in the facilities (83.0%), perception about quality of laboratory results (75.0%) and language laboratory staff used for information provision during any communication either ordering the clients to bring specimen or sending them back to the clinician using clear text like using local language “segera/iyen midir” rather than saying stool (72.0%). Satisfaction was lower in the parameter of information provision on how to bring specimen (25.0%). The overall satisfaction level of clients on quality of laboratory service dimension is around 54% in the studied 10 health centers and 4 hospitals. (Table 3)

Table 3: Level of satisfaction on quality of laboratory service by laboratory clients in the public hospitals and health centers in Addis Ababa, October, 2013 (n = 422)

variables	Level of satisfaction	
	number	%
Willingness of personnel to conduct laboratory investigation:	135	32
Location of laboratory in the hospital/health center:	355	83
Availability of laboratory staff on working hours:	180	43
Cleanness and attractiveness of the laboratory room:	307	73
Cleanness and comfort of waiting area	187	43
Respect and courtesy of laboratory staff	195	46
Conduct of laboratory staff during specimen collection like blood, sputum,	202	48
Information given during specimen collection how to bring the specimen:	106	25
Location of latrine to collect the specimen:	236	56
Cleanness of latrine to collect specimen:	188	45
Length of time to take result back to the ordering physician:	191	45
Length of time to give specimen:	210	50
Perception about the knowledge of the laboratory personnel:	313	74
Perception about quality of laboratory results:	317	75
Language staff used to communicate:	302	72
Overall satisfaction level	228	54

Based on this formula $(\text{Total highest score} - \text{total lowest score}) / 2 + \text{Total lowest score}$, satisfaction level threshold was set at the score >45 ^[25].

Personnel Status of the assessed laboratories

The result regarding current personnel status corresponding to laboratory quality components is presented in Table 4. Generally, more than half of the personnel took laboratory quality management training (57.8%). Seventy seven (85.6%) of the respondents explained that all laboratory work is done by authorized person, 97.8% of the respondents reassured the presence of personnel file in the laboratory that helps the management for proper assignment, budget allocation and plan development. Forty five percent of the personnel reported the presence of training plan.

Table 4: Personnel status assessment in different aspects of laboratory personnel quality in government hospitals and health centers of Addis Ababa, October, 2013 (n=90)

variables		Frequency	Percent
trained	yes	52	57.8
	no	38	42.2
	total	90	100.00
Work done by authorized personnel	yes	77	85.6
	no	13	14.4
	total	90	100.00
Personnel file available	yes	88	97.8
	no	2	2.2
	total	90	100.00
Presence of appraisal	yes	64	71.1
	no	26	28.9
	total	90	100.00
initial training	yes	75	83.3
	no	15	16.7
	total	90	100.00
Recommendation and training required	yes	64	71.1
	no	26	28.9
	total	90	100.00
Employee orientation	yes	65	72.2
	no	25	27.8
	total	90	100.00
previous experience and work history	yes	82	91.1
	no	7	7.8
	total	89	98.9
Training plan	yes	41	45.6
	no	49	54.4
	total	90	100

General safety condition of the laboratory

A total of 14 laboratory personnel whose responsibility was either laboratory manager or safety officer, that is, one from each facility were interviewed. Ten facilities have adequate water supply and they have waste management guideline which is available in the working area. Ten facilities have separate TB room from the general laboratory; half (7) of the facilities have backup power supply which helps the facilities for providing uninterrupted power supply during

interruption of power from the main source because of many reasons. Majority (13 facilities) of the laboratories conduct and document disinfection procedure regularly based on the procedure explained on the guideline and twelve of the personnel reported that the laboratory staff took HB virus vaccination within the past 12 month. Ten facilities out of fourteen have full and continuous provision of personal protective equipment like gloves, eye goggle, masks and laboratory coat. But four facilities have partial supplement of personal protective equipment. Thirteen facilities have safety packaging materials for keeping safe the sample from spillage and keeping the sample in good condition for analysis. Proper packaging helps the transporter, the community and the personnel who do the analysis from contamination (table 5).

Table 5: general safety condition of the laboratory unit in the public hospitals and health centers in Addis Ababa, October, 2013 (n = 14)

		Frequency
Adequate water supply	yes	10
	no	4
	total	14
Presence of waste management guideline	yes	10
	no	4
	total	14
Separate TB room	yes	10
	no	4
	total	14
Backup power supply	yes	7
	no	7
	total	14
Conduct disinfection procedure	yes	13
	no	1
	total	14
Presence of PPE	yes	10
	partial	4
	Total	14
Personnel offered vaccination (HB virus)	yes	12
	partially	1
	no	1
	Total	14
Presence of packaging materials	yes	13
	no	1

Factors affecting the level of satisfaction

In univariate analysis, overall satisfaction of clients toward quality of laboratory services showed statistically significant association with information provision during contact and availability of client waiting area (p-value < 0.05).

Statistical significant associations were found between the overall satisfaction of the clients with availability and cleanness of waiting area when its adjusted odds ratios calculated (p < 0.05).

Results of multivariate analysis showed that those clients who assured the presence of waiting area were two times more likely to be satisfied than those who complained the absence of waiting area in the facility (AOR = 2.1; CI: 1.26-5.37) (Table 6).

Table 6: Relationship between level of Patients' satisfaction with significant independent variable (n = 422)

variables	Dependent variable		Crude OR (95% CI)	P-value	A OR (95% CI)	p-value
	Sat (n)	Not sat.(n)				
residence						
urban	45	252	1		1	
Semi urban	9	49	2.214(.844, 5.811)	.106	2.903 (.901,9.348)	.087
rural	5	62	2.278(.717,7.234)	.163	1.698(.424,6.801)	.193
Cleanness and availability of waiting area						
yes	43	144	1		1	
no	16	219	3.53(1.650,.7.020)	.000	2.1(1.260,5.370)	.000
Type of specimen blood						
Yes	36	265	1		1	
No	23	98	.579(.327.1.026)	.061	.696(.336,1.431)	.137

5.2 Discussion

The finding of this study has much higher dissatisfaction score in most of the pre analytical components of laboratory quality indicators than the study conducted by American pathologists on laboratory users ^[10]. In this study, the minimum recorded pre analytical dissatisfaction level is around four times of the CAP study. For instance, the percentage of dissatisfaction on language used for information provision for clients is around 24.0%. The minimum percentage of satisfaction was recorded on one of the pre analytical quality indicator, which is proper orientation of how to bring the proper specimen for the ordered tests (25.0%). The summary result from study conducted by American pathologists on laboratory users indicates, most of the pre analytical aspects of quality indicator variables such as proper information provision, correct identification of clients, proper collection of specimen and proper identification of correct order indicates, frequency of errors was higher in the pre analytic and post analytic phases than in the analytic phase. Such as, incorrectly identifying a hospitalized patient prior to collecting a blood specimen is 6.5%. The wide difference between the two may be due to number of client they serve, the awareness of clients' about laboratory services, client back ground, poor infrastructural fulfillment, unbalanced service provider with clients and the amount of profit they get.

When we see this study with respect to the study conducted by college of American pathologists to oversee laboratory quality in different areas about their satisfaction on the laboratory services ^[2], this study had a percentage satisfaction level range between 25.0% and 83.0%. The maximum percentage of satisfaction is achieved on location of the laboratory room in the facility (83.0%) and the minimum is on proper provision of information about how to bring specimen (25.0%). But the CAP study result indicates that all laboratory service categories except for esoteric test turnaround time had median percentage values of excellent/ good ratings between 75.0% and 89.9%. Quality/reliability of laboratory results (analytical quality of results) and courtesy of laboratory staff had the highest median values (89.9%) ^[2]. In the CAP, accessibility to laboratory staff, manager, and pathologist, and laboratory management responsiveness also had high median percentage values of excellent/ good ratings (range, 82.6%–87.6%). Of the 5 service categories that received the lowest median values for percentage of excellent/good ratings (combined scores of 4 and 5), 4 of these were related to turnaround times for inpatient stat, outpatient stat, routine, and esoteric tests ^[2]. This great variation of finding may be due to gap in technological development, capacity of personnel, limitation of resources, unbalanced

professional allocation with the client flow, weak attention given by the city administration health office, the facility administrators and the personnel on continuous assessment of their activities, taking feedback about their work and absence of discussion forum with clients.

Even if this study was engaged on the general quality assessment, the percentage of satisfaction on the pre analytical aspects of laboratory quality decreased from the study conducted in the same area in the previous time. The trend observed in this study is different from the study conducted in India to test the pre analytical aspect of quality improvement on pathological techniques which show improvement in the mean scores of all participating laboratories for sections from 8.73 in Cycle 1 of 2006 to 10.3 in Cycle 4 of 2007 (11 laboratories). The average score for 23 laboratories for skin sections was 11.06 in Cycle 1 of 2007 and 11.2 in Cycle 2 of 2008 ^[13]. The reason for this difference may be because of the presence or absence of intervention within the consecutive study period, concerned bodies quality intention difference and difference in capacity of personnel.

When we see the finding of this study from the angle of some satisfaction level assessment indicators, the level of dissatisfaction on cleanness and attractiveness of laboratory room and cleanness of latrine were 27% and 65% respectively. This finding is higher than the study conducted in 10 regional states of Tanzania on Patient's dissatisfaction with the public and private laboratory services in conducting HIV related testing. The finding indicates a dissatisfaction level of 18.5% on cleanness of laboratory environment which is lower than the present study ^[15]. This difference may be because of difference in economic status, the resource allocated, and variation in giving attention for different sectors or specific services presence or absence of quality improvement activities.

The overall mean rating of satisfaction by patients in this study was 2.6 ± 0.92 (54%), which is lower than a study conducted in eastern Ethiopia, in which mean satisfaction of 3.45 ± 0.85 has been reported ^[18]. This could be due to the presence of need variation in different geographic locations, residential factors and educational status of clients. The percentage satisfaction is also much lower than a similar study conducted in anti retro viral therapy clinic which was done in Addis Ababa ^[23]. This variation might appear due to presence or absence of service charge, donors' attention and their monitoring mechanism, government attention to specific service like ART. Willingness of staff to serve and respect of laboratory staff to clients is different from a study done in Addis on ART clients. This may also be due to the presence or absence of service

charge, frequency of visit, presence or absence of financial motivation for laboratory personnel working in ART clinic and continual contact of clients.

Majority, 91.0% of the interviewed employees reported that they were supervised in the past 12 months and the supervision was comprehensive. The result of the study conducted in Southeast Asia in participation of External Quality Assessment Scheme on the non-analytical (pre- and post-) factors in Clinical Chemistry (EQAC) program of Faculty of Medical Technology; indicates the presence of gap in the participation and taking corrective action based on the feedback the facilities get ^[14]. The results of this study have greater improvement in the aspects of participation in the external quality assessment scheme. This variation may be due to difference in giving attention for improvement of quality of laboratory service between the study areas and the difference in the attention given to different programs.

The result of some of personnel quality indicators has lower value. I.e.-training exposure 57.8%, professional credential 85.6%. Only 17.8% of the participants believe that all the laboratory staffs are responsible for laboratory quality. The result from Medical laboratory work force survey which was conducted in Vermont laboratory personnel for assessing the knowledge of quality systems in their workplace and perceptions about the effect of job function, education and training, professional credentials, and experience on the overall quality of testing and results indicate that 96% of laboratory personnel considered themselves familiar with quality assurance measures in their laboratory ^[16]. But meeting quality objectives and perceptions of factors that impact quality measures in the laboratory were variably influenced by laboratory personnel years of experience, professional credential, organization type, and job title ^[16].

Fifty seven point eight percent of the personnel took quality management training. Only 45.0% of the personnel reported the presence of training plan. The finding indicates that the training plan for laboratory personnel was not targeted on filling the gap in training exposure. So the presence of shortage of trained personnel persists in the future unless they adjust their training plan based on the gap they observed. This finding is similar with the finding of Global health initiative (GHI) which assures the presence of inadequate number of well trained health providers ^[9].

5.3 Limitation

This study did not include the overall aspects of laboratory quality essentials. It did not contain qualitative part of question that helps for triangulation of variables in the quantitative parts. The sample size allocated to each facility is not large enough to assess the significance level of satisfaction on quality of laboratory services. Availability of tests and number of needle stick attempt were not included in the questionnaire since complaint was heard during data collection. This may result in missing important predictor variable for satisfaction of clients. There is resource limitation which helps for assessing the overall component of laboratory quality essentials. Furthermore, this study did not assess the laboratory personnel awareness about customers' need and set up of each Hospital and health center laboratory. Finally there is a limited research material which was done on laboratory quality essentials.

5.4 Conclusion

The quality of laboratory service concerning the personnel status and degree of patient satisfaction on quality of laboratory service is much lower than studies conducted in different areas and specific category of laboratory services like ART laboratory. There is wrong perception of the personnel in taking responsibility to improve the quality of their laboratory. Willingness of the staff to serve their customers and information provision about how to bring proper specimen have lower percentage of accomplishment. Additionally weak attention is given for safety of clients, the personnel, community members and provision of safety materials resulting in poor quality of laboratory services. In spite of a high need of quality service in such big city the observed finding indicates low activities were done on improving the quality of health services.

5.5 Recommendation

- Capacity building and awareness creation should be under take regularly by the city administration health office in collaboration with the facility administrators.
- Laboratory personnel should oversee their activities regularly and they should have problem solving mechanism.
- The ministry of health, Ethiopian health and nutrition institute (EHNRI), laboratory professional, the city health office and the laboratory association should give great attention for laboratory services improvement.
- City health office, facility management, city regional laboratory and NGO'S working on laboratory quality should create regular discussion forum between the service provider and the clients.
- Concerned bodies of the city administration and the facilities administrator need to work strongly on improving the quality of laboratory service in the prospect of personnel, facility, safety and client satisfaction.
- There should be a continuous mechanism on monitoring of quality of laboratory services.

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Annexes

Annex 1: Interviewer's Guide

Facility Identification: Ask to speak to the person in-charge of him/her self and facility or the services.

Record the name of the facility. Using the codes provided for each question, place all other responses in the rectangle on the right.

Information about Interview: Record the date the interview took place and lists the names of the interviewers.

Introduction Use the text here to guide your introduction of the study to facility staff.

Questions 01 to 06: Receive permission to conduct the interview and record information regarding the interviewee.

Questions: Record basic information regarding the Interviewee.

Annex 2 Consent form

Facility Identification

Region: _____ Sub-city: _____

Name of the facility _____ Name of laboratory _____

Interviewer/s: _____ Date of Interview _____

“Good day. My name is _____ I and. My colleagues are representatives of this research team. We are conducting a research on assessment of laboratory quality service delivery to clients at point of care to determine the level of client satisfaction, laboratory personnel status and laboratory facility and safety condition and your facility and were selected by chance to be included. The assessment will provide information enabling the concerned bodies to implement appropriate corrective measures by identifying the main problem and if the result of the finding in the selected site is good it will taken as a role model and try to expand all over the country to improve the quality of laboratory service. All of the information collected is strictly confidential. We will not refer to individual facilities or personnel in the report, but rather will describe the overall picture of all facilities personnel status. Do you have any questions? May I proceed?

Introduction			
01	Can we continue	Yes....1 No.....	If no, then STOP
02	Position of person interviewed for this section		
03	Number of years and months you have worked at this facility?	Years _____ Months _____	
04	Number of years and months you have worked at any facility in this unit?	Years _____ Months _____	
05	Received training in Laboratory quality management?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
06	Who is the principal person responsible for The quality of laboratory services at this facility?	Medical director....1 Laboratory manager...2 Quality officer.....3 Safety officer.....4 Laboratory staff....5 All....6	

Ask the following questions someone in charge of managing/overseeing the quality of laboratory service delivery in the facility. During asking questions in each section observe all the documentation, registrations and the organizational structure of the laboratory.

Annex 3: consent for laboratory clients

Good morning/afternoon

My name is _____ I am conducting study on laboratory service satisfaction of clients in government health facilities in Addis Ababa. Thus the following questionnaire is prepared for this purpose to get appropriate information on client satisfaction level about the service they get.

The information that I will get using this questionnaire will be used for assessment purpose and also I need to assure you that confidentiality is respected. The study will not have any risk to you. The interview may take 15 minute. Therefore I politely request your cooperation to respond to my questionnaire. You do have the right not to respond at all or to withdraw in any time during the interview, but your input has great value for the success of my objective. Do you agree?

Yes, continue

No, good bye!

Questionnaire for professional assessment

101	What is your educational level?	<input type="checkbox"/> Diploma <input type="checkbox"/> BSC <input type="checkbox"/> Master degree
102	Do you attend refreshment training or work shop related to laboratory in the past 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No
103	Does the laboratory management have an organizational plan for	<input type="checkbox"/> Personnel employment <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Training <input type="checkbox"/> Yes <input type="checkbox"/> No
104	Does the laboratory management have adequate staff resources? (health center=06, hospital=)	<input type="checkbox"/> Yes <input type="checkbox"/> no
105	Did you face in shortage of personnel resource in the past 12 month	<input type="checkbox"/> yes <input type="checkbox"/> no
105	Does an authorize personnel do each particular task in your laboratory?	<input type="checkbox"/> Yes <input type="checkbox"/> no
106	Did you have a personnel file in the laboratory?	<input type="checkbox"/> Yes <input type="checkbox"/> No
107	If there , does it contain	<input type="checkbox"/> Your appraisal <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> initial training <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> recommendation and required trainings <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Employee orientation <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> previous experience and work history <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Registration with professional board <input type="checkbox"/> Yes <input type="checkbox"/> No
108	Does your laboratory have a program for	<input type="checkbox"/> ongoing competency assessment written testing criteria <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> did they the competency assessment regularly(at least twice a year) <input type="checkbox"/> Yes <input type="checkbox"/> No
109	Did you pass through competency assessment?	<input type="checkbox"/> Yes <input type="checkbox"/> No
110	If yes for the above question, did you pass?	<input type="checkbox"/> Yes <input type="checkbox"/> No
112	Did you take quality concerned training before assignment of independently in a specific task?	<input type="checkbox"/> Yes <input type="checkbox"/> no
113	Did you participate in regular meeting according to your plan?	<input type="checkbox"/> Yes <input type="checkbox"/> Partially <input type="checkbox"/> no
114	Does your performance checked according to the plan?	<input type="checkbox"/> Yes <input type="checkbox"/> no

115	Have you gotten training on laboratory supervision? Questionnaire for facility and safety assessment	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I don't know
116	When did your laboratory receive the last supervisory visit?	<input type="checkbox"/> Never <input type="checkbox"/> Within the last month <input type="checkbox"/> Within the last 3 months <input type="checkbox"/> Within the last 6 months <input type="checkbox"/> More than 6 months ago
117	Did the supervision focus on one program or multiple integrated programs?	<input type="checkbox"/> One <input type="checkbox"/> Multiple <input type="checkbox"/> Don't know/not sure
118	4. What programs were covered during the supervision?	<input type="checkbox"/> Malaria <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> STI <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> TB <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None <input type="checkbox"/> Other (specify)
119	5. What was done during the supervisory visit?	<input type="checkbox"/> Record keeping for performed tests checked <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> reports checked <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Quality control <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> On-the-job training/coaching <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Feedback to/from staff <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other (specify)

	training?	<input type="checkbox"/> no
210	Does your laboratory have a written procedure for storage and disposal of hazard materials?	<input type="checkbox"/> Yes <input type="checkbox"/> no
211	Does the laboratory separate infectious waste from general trash?	<input type="checkbox"/> Yes <input type="checkbox"/> no
212	Are sharps' handled and disposed of properly in sharps' containers that are appropriately utilized?	<input type="checkbox"/> Yes <input type="checkbox"/> no
213	Is fire safety attended to as part of the laboratory overall safety program?	<input type="checkbox"/> yes <input type="checkbox"/> no
214	Are safety inspection conducted regularly and documented? (observe)	<input type="checkbox"/> Yes <input type="checkbox"/> Partially <input type="checkbox"/> no
215	Is a standard safety equipment available and in use in the laboratory?	<input type="checkbox"/> Covers of centrifuge <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Hand washing station <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Eye washing station <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Spill kit <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> First aid kit <input type="checkbox"/> Yes <input type="checkbox"/> No
216	Does the laboratory have a functioning incinerator or other nationally acceptable waste management method (e.g., a protected pit)	<input type="checkbox"/> Yes <input type="checkbox"/> no
217	Did you have a written procedure for safe disposal of (observe the presence)	<input type="checkbox"/> Blood <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Stool <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Urine <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sputum <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other samples <input type="checkbox"/> Yes <input type="checkbox"/> No
218	Is personal protective equipment available and easily accessible at the work station? (Gloves, laboratory coat, masks, goggle,)	<input type="checkbox"/> Yes <input type="checkbox"/> Partial <input type="checkbox"/> no
219	Are laboratory personnel offered appropriate vaccination? (HBsAg)	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
120	Does the laboratory have adequate packaging materials for the transportation of infectious materials from the laboratory?	<input type="checkbox"/> Yes <input type="checkbox"/> no
221	Does the laboratory have guidelines on the management of spillages available in laboratory? (observe)	<input type="checkbox"/> Yes <input type="checkbox"/> no

Annex 6: Laboratory service client satisfaction assessment questionnaire

300. Social demographic characteristics of patients who use laboratory service

Name of health facility the patient interviewed _____

301. Sex: male female

302. Age in year: _____

303. Marital status: single married widowed divorced

304. Educational status: _____

305. What is your work? Government employee merchant farmer NGO'S retired
 Daily laborer Student house wife

306. Where do you live? Urban Rural semi urban

307. How many times did you visit this laboratory in this year? 1 times 2 times
 3 times more than 3 times

308. Type of specimen you give: stool blood urine sputum other (specify)

Level of satisfaction of clients using laboratory services for different satisfaction variables

Specify your label or rate of satisfaction on different satisfaction measuring items.

309. Willingness of personnel to conduct laboratory investigation:

Poor fair good very good excellent

310. Location of laboratory in the hospital/health center:

Poor fair good very good excellent

311. Availability of laboratory staff on working hours:

Poor fair good very good excellent

312. Cleanness and attractiveness of the laboratory room:

Poor fair good very good excellent

313. Cleanness and comfort of waiting area (yes no)

Poor fair good very good excellent

314. Respect and courtesy of laboratory staff

Poor fair good very good excellent

315. Conduct of laboratory staff during specimen collection like blood, sputum, stool

Poor fair good very good excellent

316. Information given during specimen collection how to bring the specimen: (yes no)

Poor fair good very good excellent

317. Location of latrine to collect the specimen:

Poor fair good very good excellent

318. Cleanness of latrine to collect specimen:

Poor fair good very good excellent

319. Length of time to give specimen:

Poor fair good very good excellent

320.Length of time to take result back to the ordering physician:

Poor fair good very good excellent

321.Perception about the knowledge of the laboratory personnel:

Poor fair good very good excellent

322.Perception about quality of laboratory results:

Poor fair good very good excellent

323.Language of staff used to communicate:

Poor fair good very good excellent

የህሙማን የተሳትፎ ፍቃደኝነት ማረጋገጫ ቅጽ

እኔ ስሜ -----ይባላል። እኔና ባልደረቦቼ በላብራቶሪ አገልግሎት ዙሪያ የህሙማንን የእርካታ ሁኔታ በአዲስ አበባ በሚገኙ የመንግስት ጤና ተቋማት ጥናት እያካሄድን እንገኛለን ።

ለዚህም አስፈላጊውን መረጃ ለማግኘት በደንበኛ እርካታ ዙሪያ መጠይቆችን አዘጋጅተናል። መጠይቁን ተጠቅመን የምናገኘው መረጃ ያለውን ሁኔታ ለማወቅ የሚጠቅም ሲሆን የመረጃው ሚስጥራዊነት የተጠበቀ እንደሚሆን ቃል እንገባለን። ጥናቱ ምንም አይነት ችግር አያመጣም ። ቃለ መጠይቁ 15 ደቂቃ ሊፈጅ ይችላል። ስለዚህ ምላሽ ለመስጠት የእርስዎን ትብብር በአክብሮት እንጠይቃለን። ሙሉ በሙሉ ወይም በከፊል ጥያቄዎችን ያለመመላለስ መብት አለዎት ። ነገር ግን መመለስዎ ለጥናቱ መሳካት ከፍተኛ ጥቅም አለው። በጥናቱ ለመሳተፍዎ ይስማማሉ።

አዎ

አልስማማም

የላብራቶሪ አገልግሎት የደንበኛ እርካታ መለኪያ ጥያቄዎች

300 ደንበኞች አጠቃላይ ሁኔታ

የጤና ተቋሙ ስም -----

301 ያታ ወንድ ሴት

302 እድሜ-----

303 የጋብቻ ሁኔታ:- ያላገባ ያገባ አግብቶ የሞተበት/ባት የተፋታ/ች

304 የትምህርት ደረጃ -----

305 የስራ ሁኔታ:- የመንግስት ነጋዴ አርሶ አደር መንግስታዊ ያልሆነ ድርጅት
ተቀጣሪ ስራ ያቋረጠ የቀን ሰራተኛ ተማሪ የቤት እመቤት

ሌላ ካለ ይግለፁ-----

306 የት ነው የሚኖሩት ; ከተማ ገጠር ከፊል ከተማ

307 በዚህ አመት/በአንድ ዓመት ጊዜ ውስጥ ለምን ያህል ጊዜ እዚህ ላብራቶሪ መጥተዋል;

አንድ ጊዜ ሁለት ጊዜ ሶስት ጊዜ ከሶስት ጊዜ በላይ

308 የሰጡት የናሙና አይነት:- ሰገራ ደም ሽንት አክታ

ሌላ ካለ ይግለፁ-----

የደንበኞችን የእርካታ መጠን በተለያዩ የእርካታ መስፈርቶች የእርካታ ደረጃዎን ይግለፁ :

309 የባለሞያዎች የተለያዩ ምርመራዎችን ለማከናወን ያላቸው ፍላጎት

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

310 በጤና ጣቢያው /ሆስፒታሉ ውስጥ የላብራቶሪ መገኛ ቦታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

311 የባለሞያዎች በስራ ሰዓት ላይ መገኘት ሁኔታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

312 የላብራቶሪው ክፍል ጽዳትና ሰውን የመሳብ ሁኔታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

313 የደንበኞች ማረፊያ ቦታ ጽዳትና ምቹነት(አዎ/አይ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

314 የባለሙያዎች ህሙማን የማክበር ሁኔታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

315 ባለሙያዎች ናሙና በሚሰበስቡበት ሰዓት የሚያሳዩት የፀባይ ሁኔታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

316 የባለሞያዎች ናሙና በሚሰበስቡበት ወቅት ሙሉ መረጃ የመስጠት ሁኔታ(አዎ/አይ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

317 የመፀዳጃ ቤት መገኛ ቦታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

318 የመፀዳጃ ቤት የጽዳት ሁኔታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

319 ናሙና ለመስጠት የሚፈጀው የሰዓት መጠን

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

320 ውጤት ለመውሰድ የሚፈጀው የሰዓት ሁኔታ ያለዎት አመለካከት

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

321 በባለሙያዎች ብቃት ያለዎት አመለካከት

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

322 ስለ ላብራቶሪ ውጤት ጥራት ያለዎት አመለካከት

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው

323 ባለሞያዎች ለመግባባት የሚጠቀሙበት የቋንቋ አጠቃቀም ሁኔታ

አናሳ ነው መካከለኛ ነው ጥሩ ነው በጣም ጥሩ ነው እጅግ በጣም ጥሩ ነው