# ADDIS ABABA UNIVERSITY
# SCHOOL OF ALLIED HEALTH SCIENCE DEPARTMENT OF MEDICAL LABORATORY SCIENCE


ASSESSMENT OF FOCUSED ANTENATAL CARE LABORATORY SERVICES STATUSUSING AVAILABILITY, FUNCTIONAL STATUS AND CLIENTS SATISFACTION AT PUBLIC HEALTH FACILITIES ADDIS ABABA, ETHIOPIA.

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LIST OF ABBREVIATIONS

| | |
|---|---|
| AAU - | Addis Ababa University |
| ANC - | Antenatal Care |
| AOR | Adjusted Odd Ratio |
| BPR | Business processing and reengineering |
| CI - | Confidence Interval |
| COR | Crud Odd Ratio |
| CSA - | Central Statistic Agency |
| EDHS - | Ethiopia Demographic and Health Survey |
| EQA | External Quality Assessment |
| FANC - | Focused Antenatal Care |
| HBV - | Hepatitis B Virus |
| Hgb - | Haemoglobin |
| FMH - | Federal Ministry of Health |
| HIV - | Human Immune Virus |
| IQC | Internal Quality Control |
| MDGs - | Millennium Development Goals |
| MMR - | Maternal Mortality Rate |
| PI - | Principal Investigator |
| RPR | Rapid plasma Reagine |
| TAT | Turn Around Time |
| VDRL | Venereal Disease Research Laboratory |
| WHO - | World Health Organization |

## ABSTRACT

**Back ground:** Laboratory service is a key component of Focused Antenatal Care (FANC) to identify life threatening conditions of maternal and child health. Limited capacity of health facilities to provide adequate laboratory services remains a major problem for the quality of FANC service delivery**.**

**Objective:** To assess the status of focused antenatal care laboratory services using availability, functional status and client satisfaction at public health facilities in Addis Ababa, Ethiopia.

**Methods:** Institution based, descriptive cross-sectional study was conducted from April to May 2015. Both quantitative and qualitative designs were used. Four hundred and twenty two study participants interviewed on satisfaction towards FANC laboratory services by using structured questionnaire. A qualitative data was collected by In-depth interview of providers. To assess availability and functionality of the FANC laboratory, observation check list was used. Data were coded and analysed by using SPSS Version 20 software. Logistic regression model was also used to examine the effect of selected variables on clients' satisfaction with laboratory services. P-Value less than 0.05 were taken as statistically significant**.**

**Result**: Only 5(38.5%) out of 13 visited health facilities reported the availability of all types of basic FANC laboratory investigations. Comparing the availability of individual tests in the study facilities, urine dipstick, urine miscopy and stool examination were available in all institutions. However, only 7 (53.8%) of the facilities reported the availability of Hepatitis B virus screening test. Rapid syphilis/RPR test was found in 10 (76.9%) facilities. All laboratory facilities had at least one or more basic FANC laboratory tests interruption more than a day within the last one year due to shortage of reagent and electric power disruption. Additional analysis of pregnant women's satisfaction toward FANC laboratory service showed, only 56.9 % (240/422) of pregnant mothers were satisfied with FANC laboratory services. Those clients who waited less than one hour to get laboratory results were six times more likely to be satisfied than those who waited more than one hours [AOR = 6.03; CI (2.86-12.67)].

**Conclusion:** Majority of the health facilities reported incomplete FANC laboratory investigations**.** Hepatitis B screening test was the lowest available test in the study facilities. Furthermore a slightly higher maternal dissatisfaction toward FANC laboratory service was observed compared with other institutional based study in similar settings.

# 1. INTRODUCTION

## 1.1. BACKGROUND

Maternal mortality is one of the major challenges to health systems of the world; improving maternal health is one of the global health agenda [1].Achieving safe motherhood requires a number of initiatives that involved in recent years are geared towards achievement of the improving maternal health [2].Focused Antenatal Care (FANC) is a diversion from the traditional antenatal care. It identifies that every pregnancy is at risk for complications and it is necessary to receive the basic health care and follow-up throughout the pregnancy.

Focused Antenatal Careis considered as one of a strategy to reduce maternal mortality. It helps women to maintain normal pregnancies through identification of pre-existing health conditions, early detection of complications arising during pregnancy [3]. As a way of promoting safe motherhood and better outcomes for newborns, focused antenatal laboratory screening services such as hemoglobin estimation for early diagnosis of anemia, HIV, syphilis and malaria tests can be carried out at healthcare laboratory facilities [4].

World Health Organization (WHO) recommends a minimum of four goal oriented FANC visits during a woman's pregnancy. At minimum, haemoglobin (Hgb), testing of urine for albumin and sugar, are recommended in every ANC visit and tests for syphilis, HIV status as well as blood group and Rhesus factor are recommended at least once. ANC visits also includes Examination for signs of chronic conditions and infectious diseases such as HIV, malaria, syphilis and other sexual transmitted infection(STIs), anaemia, heart disease, diabetes, malnutrition, and tuberculosis(TB) is crucial since such conditions may affect the outcome of pregnancy and therefore requires immediate treatment, and intensive monitoring and follow-up throughout the course of pregnancy[5,7].

Laboratory service is a key component of Focused antenatal care (FANC) to identify life threatening conditions of maternal and child health. Provision of quality laboratory services is an essential aspect of a functioning healthcare system. However, as a result of paucity of funds, irregular power supply, limited equipment's, administrative bottlenecks and lack of human resource capacity in clinical laboratories in Africa is the main barrier to test utilization, and

several healthcare facilities are without functioning medical laboratories [4].Laboratory service in Ethiopia is very weak and the quality assurance system practiced in the supervised laboratories was generally either very weak or non-existent. Except for HIV screening tests, no quality assessment scheme was established for other tests [6].

Good quality antenatal care provides opportunity to detect and respond to risky maternal conditions. Some studies have estimated that FANC alone can reduce maternal mortality by 20% [9]. One of the important problems which are continuously faced these days is the lack of good quality antenatal care and gaining client satisfaction, which are important responsibilities of the higher authorities and staffs in the health care system [10].

The concept of clients' satisfaction is widely used to assess quality [11]. Quality is one of the prime factors which affect satisfaction. There is a strong connection between health service quality perceptions and customer satisfaction, even the most technically competent care is meaningless if it does not satisfy the users and it plays an important role in the client's decision about whether or not to return for further visits [12].

In order to decrease maternal morbidity and mortality, strong health systems, accessible, available and satisfactory cares are needed. Particularly laboratory services continue to play a critical role in all disease control and prevention programmes by providing timely and accurate information for use in patient management and disease surveillance [13].

Study on FANC laboratory service is important for the improvement of maternal and child health. Therefore, the aim of this research is to assess the status of FANC laboratory services at public health facilities in Addis Ababa, Ethiopia.

## 1.2. STATEMENTS OF THE PROBLEM

Approximately 800 women die per day due to pregnancy related cause which is preventable. Ninety nine percent of all maternal death occurs in the developing countries [14]. According to the World Health Organization, Ethiopia is one of the African countries with high rates of maternal mortality. The plan to achieve MDGs target in Ethiopia was 267 per 100,000 births by 2015. The country could not able to achieve this goal and now it is on the off-track on goal five [15]. MDGs 2012 Report finds, providing incomplete or poor quality maternal service is the country's major challenge to achieve maternal mortality reduction goal regardless of the increased extensive efforts to improve maternal health [15].

Quality of FANC can be monitored through the content of services received by the women during their visits. Study conducted in Jimma showed that important examinations like, urine, Blood Group and RPR testing were not done due to lack of reagents. Women who did not have FANC laboratory tests in the health facility were more likely reported dissatisfied by the ANC services. From the result of in-depth interview of pregnant mothers about laboratory services in the same study, shows that "we use to encounter problems with retrieving laboratory results, it takes too long and some results are missing even after taking several samples"[16 ].

Ethiopia Mini Demographic and Health Survey 2014 report showed that, among women with antenatal care, nearly 41% of the ANC clients did not have their urine test and 35% did not have their blood test [17].This implied identification of pre-existing health conditions that may affect outcome of pregnancies such as HIV, anemia and other sexually transmitted infections were not provided. Such missed laboratory tests are indicators of poor quality FANC laboratory services [37].

The Federal Ministry of Health report showed that among pregnant women who have received antenatal care, only 75.5% of them were tested for HIV [18]. Mothers without ANC follow up were five times more likely to have an infant with HIV sero positivity than those who had ANC visits, but not all the recommended FANC procedures were carried out for every woman, at every healthcare facility due to lack of some specific laboratory services[19,8]. Similar study done to assess the status of HIV laboratories in Ethiopia showed that, majority of laboratories (62%) do not follow a specific testing algorithm and 29% do not confirm their results at all [20].

Other study showed that due to lack of properly follow test procedure, shortage of reagents/supplies, laboratory equipment, the absence of effective maintenance, lack of water, unreliable electricity and designed laboratory rooms are major clinical laboratory problems in Ethiopia [6, 20].

Study conducted in 2013 on 422 clients to assess clients' satisfaction with quality of clinical laboratory services at public general hospital in Addis Ababa, showed that patients were dissatisfied with cleanliness of latrine, it account 47.6% and cleanliness of blood drawing area 10.4%. In addition, 221 (52.4%) of clients of public hospitals revealed that the current quality of laboratory services were perceived as poor [21].

The limited capacity of health facilities to provide adequate laboratory services remains a major problem for the quality of FANC deliver. The way health workers treat the mothers (mistreatment), the time taken to get FANC service (long waiting time, long time to get laboratory tests and obtain results), and client load to the health facilities were among the barriers that contribute to the low utilization of FANC services in Addis Ababa [22].

Challenges on maternal health are complex, it require researches to identify the bottle necks in each level of maternity health services. Thus this study aims to assess the status of focused antenatal care laboratory services using availability, functional status and client satisfaction at public health facilities in Addis Ababa, Ethiopia.

## 1.3. LITERATURE REVIEW

A cross-sectional descriptive study was carried out in 11 health facilities to assess the quality of ANC in the south-western part of Tanzania from October 2008 to July 2010, From 11 health facility HIV test kits, were available in nearly all (91% – 100%) facilities during the period of this study. Hgb estimation machines were available in less than two thirds (64%) of the health facilities. Glucostik and albustik kits were available only in 18% and 27% of all health facilities respectively. Hgb estimation machines, Glucostik and albustik kits were completely unavailable in these facilities for up to 12 months before the study. On the contrary, 93 (77%) women reported that they were satisfied with the ANC services they received in these facilities [23].

Similarly a cross sectional study was conducted among pregnant women to assess the quality of antenatal care in the Southern Region of Malawi from 2006 and 2008. From 260 of all the women 55% (84) did not give their urine sample and 93% (142) gave their blood sample for testing during their first born pregnancy antenatal visit. Health workers during in-depth interview indicated that the laboratory investigations depended on the availability of supplies and equipment. Urine analysis, RPR and haemoglobin were not done because the laboratory had no reagents [24].

Another descriptive cross-sectional study conducted among mothers to assess factors influencing the quality of antenatal care in public maternal and child health facilities in Nairobi, 2009. From 384 mothers 95.1% of women given out blood samples while 85.1% of them gave out urine samples. However, the coverage for blood sample was mainly on VCT in ascertaining the HIV status for PMTCT since most of the facilities did not have the capacity to carry out ANC profile investigations due to limited laboratory equipment. Study findings showed that over 74.1% of the respondents were referred to other facilities, mostly private, for investigations on ANC profile such as haemoglobin test, STIs investigations, blood group test and hookworm infestation. Only two out of eight (25%) of the facilities selected could offer laboratory investigation for all ANC profile examination. Approximately 89.5% of the respondents reported that they could use the same facility for ANC given another pregnancy and 88.9% could recommend the facility to a relative or a friend for ANC check-ups [25].

A Cross sectional study was conducted in Egypt from March 2010 to September 2010 to assess pregnant women perception of ANC. From the total 600 mothers high degree of satisfaction regarding the waiting time before examination (88.6%) was detected. Also satisfaction about waiting time for laboratory results showed that the majority (98.1%) were satisfied with waiting less than 30 minutes. Majority (88.5%) of females were satisfied with cleanness of latrine. Less percent (10.5%) was reported for laboratory investigations as ABO grouping and RH typing, blood sugar (13%), stool examination (17.8%) and nearly half of the patients performed urine analysis [26].

Cross sectional study was conducted in South- Western Nigeria, 2009 to assess perception and satisfaction with quality of antenatal care services among pregnant women. From the total of 239 study subjects, the commonest investigation done at the clinic was Urine Test 236(98.7%), Packed Cell Volume 237(99.2%), Blood Group 228(95.4%), Haemoglobin 218(91.2%) ,VDRL 200(83.7%), HIV screening was done in 184(77.0%) of respondents. Sitting arrangements were regarded as satisfactory in 97.9% of women. Toilet, bathroom facilities and water supply were regarded as unsatisfactory in 60.7% and 61.9% respectively. About 81.1% of participants were satisfied and rated the services as good, while 18.9% were not satisfied and stated that service was poor. Causes of dissatisfaction forwarded by majority were long waiting time 50(64.9), water supply 91(38.1%), hygiene (toilet & bathroom) 94(39.3%), electricity supply 50 (20.9%) and ventilation 38 (15.9%) [27].

A Cross sectional study was conducted in India, 2012 to assess patients' satisfaction towards tertiary care hospital services on outpatient department. It showed that maximum numbers of patients (88%) among 256 patients were satisfied with laboratory services in particular with friendliness and helpfulness of laboratory staff, but about 15% of patients were unsatisfied with turnaround time (TAT) of laboratory results. This study also showed that about 51% and 56% of patients among 450 respondents were satisfied with adequacy of sitting arrangement and cleanliness of waiting area, respectively [28].

Institution based cross sectional study was conducted in Nekemte Referral Hospital from April-May 2014 to assess patient's satisfaction on clinical laboratory service. The lowest mean rating of satisfaction were given for cleanness of latrine and location of the laboratory in the hospital with mean rating of 2.15 and 2.17 respectively. Higher mean rating of satisfaction was obtained for the language the clinical laboratory workers use (3.82) and the presence of waiting place nearby laboratory building in the Hospital (3.72) [29].

The findings of a study conducted in 2011 at Jimma University Specialized Hospital, showed that the overall clients' satisfaction level with the health services rendered at the hospital was 77%. Nearly two fifth of the respondents (39%) responded they were not satisfied with the information provision about the hospital services and the flow [30].

Similarly a facility based cross-sectional study conducted among pregnant women attending focused antenatal care at health centres in Jimma town, South West Ethiopia, in 2013 to assess satisfaction with focused antenatal care service and associated factors among pregnant women attending focused antenatal care. From a total of 389 pregnant women 235(60.4%) were satisfied and the rest 39.4% were dissatisfied with the focused antenatal care (FANC) services .The perceived cause of dissatisfaction forwarded by majority were long waiting time 127(32.6%), overcrowding in the clinic during morning time 101(26%) and poor laboratory services 98(25.2%)[31].

Several studies conducted in outpatient departments of different hospitals in Ethiopia revealed client satisfaction level ranging from 22.0% in Gondar, Tigray 43.6 and 57.1% in Jimma [32, 33, 34]. A cross sectional survey was conducted in Tigray region to assess the level of client satisfaction in outpatient departments of zonal hospitals in 2006 and the overall satisfaction level in outpatient department was 43.6%. Nearly half of the clients (46.7%) were not satisfied with the information provided about the services and above 44% of the clients were dissatisfied about the waiting time to get the services [33].

Quantitative and qualitative study was conducted in Jimma south western, Ethiopia from August 2008 to August 2009 to assess the content of ANC and to identify the predictors of low ANC satisfaction. The study show that overall satisfaction with the service was high (31% very satisfied and 59% acceptable), but 10% reported being not satisfied.). Women who did not have

other laboratory tests than the HIV test were more likely to report being not satisfied with ANC. Moreover, 25.5%, 4.9%, long wait time and poor cleanliness of the health facility were related to the dissatisfaction respectively [16]. The commonest investigation done at the clinic was HIV test 93.2%, blood analyses 65.3 % and urine analysis 72.2 %. Lack of laboratory facilities and supplies caused frustration because some health facility only had laboratory facilities for HIV-testing and not for analysis of urine, haemoglobin and syphilis and determination of blood group, therefore mothers refers to private laboratory. Women expected ANC service to be free and therefore the costs of laboratory tests caused frustration. For some, tests were too expensive, and they gave up taking tests. A woman, at her first ANC visit, was asked to take laboratory tests at a private clinic with user fees. At the second ANC visit, she was asked to take more tests at the private clinic and was refused TT immunization before she had the laboratory results. She did not have money for more laboratory services and refrained from further ANC check-ups [16].

A cross-sectional survey was conducted on patient's perspective towards the quality of hospital services in eastern Ethiopia of two zonal hospitals under Harari region in 2001. A total of 518 outpatient health service users were interviewed after completing their health care and the result shown that about 46% of the interviewees said that they were not satisfied with the health services provided. Satisfaction with health care was found to have a significant association with waiting time. The least degree of satisfaction was observed for the general cleanliness of the facility followed by provider's behaviour towards the patient and waiting time between registrations and being seen by the provider. The result also shown that the satisfactions level related to laboratory service was relatively higher [35].

A cross sectional study was conducted in 2013 at DilChora, Jugal, Hiwot-Fana and Bisidimo hospitals, eastern Ethiopia, with focus on patients' and clinicians' satisfaction towards laboratory services shown that most of the patients, 87.6% out of 422 respondents were satisfied with the laboratory services. The lowest, in Likert's scale, [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 [36].

A facility based cross-sectional study was conducted among pregnant women who attended ANC clinics in eight public health facilities in Bahir-Dar special zone, North Western Ethiopia from March to April 2010, to measure Quality of antenatal care services at public health facilities.

From 369 Pregnant mothers attending ANC clinics were found to receive only part of recommended care components. RPR test, blood group , Rhesus factor tests ,haemoglobin test, and urine test for glucose and albumin were done only for 73 (19.8%) , 133 (36.0%) ,30.6% and 31.7% of the women, respectively. Moreover Lack of reagents partly explained the problems observed in the provision of recommended care components. Almost half, 175 (47.7%) of the study women were not satisfied and a large proportion of mothers are missing opportunities to receive screening and preventive components of antenatal care .The major reasons given by respondents for non-satisfaction with the over-all perceived quality of care received in the clinic were; absence of clean latrine and inadequate water supply, receiving incomplete information about ANC, inadequate waiting area and seats, absence of privacy, long waiting time and difficulty to understand the provider [37].

Study conducted in 2013 on 422 patients to assess clients' satisfaction with quality of clinical laboratory services at public general hospital in Addis Ababa, Ethiopia, showed that patients were dissatisfied with cleanliness of latrine (47.6%), provider's knowledge and explanation about the procedures (22.7%), cleanliness of blood drawing area (10.4%), professional neatness and appearances (10.2%), privacy and confidentiality (9%) and friendliness and communication of healthcare providers (9%). In addition, 221 (52.4%) of clients of public hospitals revealed that the current quality of laboratory services were perceived as poor [21]. Major client dissatisfaction was with waiting time greater than 30 minutes [38].

## 1.4. RATIONALE OF THE STUDY

Most maternal deaths are preventable, as the health care solutions to prevent or manage the complications are well known. This includes well-functioning health system that provides high quality care in the health facility level. Study shows that quality of FANC alone can reduce maternal mortality by 20%. The assessments of maternal and child health services and more rigorous examinations status of focused antenatal care are needed in order to identify specific problems and develop strategies to reduce pregnancy related health problems of mothers.This study addresses the above issue.

This study will provide over view on the current status of FANC laboratory services in Addis Ababa public health facility and our findings will identify factors which will be useful to improve the FANC laboratory services delivered by the health system of the study area in particular and other similar setting.It also could create an opportunity for the administrators of public health facilities to take corrective action early. Different researchers can use the finding of this paper as reference.

## 2. OBJECTIVES OF THE STUDY

### 2.1. GENERAL OBJECTIVE

To assess the status of focused antenatal care laboratory services usingavailability, functional status and client satisfaction at public health facilities in Addis Ababa, Ethiopia.

### 2.2. SPECIFIC OBJECTIVES

- To describe the availability and functional status of focus antenatal care laboratory services atpublic health facilities in Addis Ababa, Ethiopia.
- To determine the level of pregnant mothers' satisfaction with focus antenatal care laboratory services provided at public health facilities in Addis Ababa, Ethiopia.
- To identify factors that affect pregnant mothers' satisfaction level towards focus antenatal care laboratory services at public health facilities in Addis Ababa, Ethiopia.

# 3. METHODS

## 3.1. STUDY DESIGN, STUDY AREA AND STUDY PERIOD

### 3.1.1. STUDY DESIGN

Institutional based, descriptive cross-sectional study was conducted to assess the status of FANC laboratory services, at public health facilities in Addis Ababa. A quantitative study supplemented with qualitative study was used. Exit interview was done to assess pregnant mothers' satisfaction level towards FANC laboratory services by using structured questionnaire and observational checklist was used to assess the availability and functional status of basic FANC laboratory services. An in-depth interview of laboratory services providers were also conducted for their views on FANC laboratory services status.

### 3.1.2. STUDY AREA AND STUDY PERIOD

The study was conducted in Addis Ababa, which is the capital city of Ethiopia, from April – May, 2015. Addis Ababa has 10 sub-cities and 99 woreda[1]and this city is found at an average altitude of 2400 meters (about 8000 ft.) above sea level with an estimated area of 530.14 square kilometres [39, 40]. According to the 2007 national census, Addis Ababa has a population size of 2.74million with annual growth rate of 2.1, of which 52% were females and 34.4% were women in a reproductive age [39]. In Addis Ababa, there were a total of 45 hospitals and 74 health centres. Of the 45 hospitals, 28 were privates, 10 were publics, 4 are non-governmental organizations and 3 are armed forces (military) hospitals [39, 40].

Regarding FANC services, at the time of this assessment, only 6 hospitals and 74 health centres which providing FANC service at public health facilities in Addis Ababa. This study conducted on 10 health centres and 3 public hospitals which have been providing FANC services for pregnant mothers. The study areas were selected randomly.

[1]The smallest administrative unit in Ethiopia

## 4. POPULATION

### 4.1.1. SOURCE POPULATION

Source of population for the quantitative study were all pregnant women undertaking focused antenatal care service at all public health facility in Addis Ababa. For the qualitative study, the source population were all health laboratory services providers who were working in the public health facilities.

### 4.1.2. STUDY SUBJECTS

All pregnant mothers undertaking antenatal care service in the selected public health facilities and referred to laboratory department for FANC laboratory services during data collection period and purposively selected laboratory services providers at the public health facilities in Addis Ababa were taken as study population.

### 4.1.3. STUDY UNIT

Pregnant mothers who were selected from the study population with sampling procedure (Systematic Random Sampling) and 13 laboratory head or delegated staffs who were working more than a year during the study period were study units for this study.

## 4.2. SAMPLE SIZE AND SAMPLING PROCEDURE

### 4.2.1. SAMPLE SIZE DETERMINATION

The required sample size was determined by using a single population formula, considering the following assumptions:

- Proportion of clients' satisfaction on focused antenatal care laboratory services is equal to 50 % (which gives maximum sample size due to the absence of previous similar study.)
- Level of significance (*a/2*) = 0.05.
- Margin of error (d) = 5%.
- 10% of the calculated sample size was added to compensate non-responses.

The formula for calculating the sample size (n) was:

$n = \frac{(Z\ \alpha / 2)^2\ P\ (1-p)}{d^2}$ and by considering the following assumptions:

Where

- n= The desired sample size
- 95% confidence interval, Where, Z α / 2=1.96
- Z α / 2= Z-score at 95% confidence level =1.96
- P= Proportion of women who satisfied on FANC laboratory services = 50%
- d= 5% of marginal error were taken.
- 1-p=0.50

Therefore n becomes:

$$\mathbf{n} = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = \frac{3.84 \times 0.25}{0.0025} = \frac{0.96}{0.0025} = \mathbf{384}$$

By adding 10% non-response rate the total sample size required for the study was found to be 422 pregnant mothers.

### 4.2.2. SAMPLING PROCEDURES

Health institutions were selected by simple random sampling, three hospitals and ten health centers (one from each sub-city). Sample size was allocated proportionately for each health facility according to the proportion of the client load of FANC clinics in each health facility in the most recent quarterly report (January -March, 2015). The quarter client service report of ANC clinics in health facilities were, 3211 from Gandi Memorial Hospital, 2808 from Tikure-Anbesa specialized referral hospital, 2244 from Zewditu Memorial Hospital and health centres FANC clients quarter report was between the range of 528-990.Sample size was allocated to health facilities were 217 and 205 respondents from hospitals and health centres were taken for interview, respectively [see annex-I on page 49].

Then pregnant mothers who were registered daily for antenatal care during data collection period were taken until the required sample size was fulfilled after proportionally allocating the sample

population to each health facility. Respondents in each health facilities were selected by using systematic Random sampling method. The interval of the respondents for the interview were determined by dividing the average total number of pregnant mothers (2563) per month who received focused antenatal care laboratory services at 13 health facilities during the year 2015, by the required sample size for the study. Therefore, every 6th pregnant mothers were selected for the interview at each health facility from FANC record books, they referred to laboratory and simple random sampling technique was employed to select the first mothers.

For the qualitative component of the study, laboratory head or delegated staffs were purposively selected for interviewing based on the purpose and the need of issue being raised (purposive sampling methods).A total of 13 laboratory services providers (one from each selected health facilities) were interviewed about the quality, availability and adequacy of resources for antenatal care laboratory service provision.

## 4.3. **INCLUSION AND EXCLUSION CRITERIA**

### 4.3.1. INCLUSION CRITERIA

- All pregnant mothers in those selected health facilities who had register for FANC follow up and attending the laboratory services during data collection period.
- Laboratory head/delegated staff that had working for more than a year in the selected health facilities.

### 4.3.2. EXCLUSION CRITERIA

- Pregnant mothers attending FANC unit who were seriously sick, mentally impaired and unable to respond to the questions.
- Pregnant mothers who have been referred from other health facilities for laboratory service only.
- Pregnant mothers whose age is less than 18 years.
- Health facilities didn't give FANC services.
- Health facilities with a establish year less than a year.
- Pregnant mothers and providers who were not voluntary to take part in the study were excluded.

## 4.4. **DATA COLLECTION TOOL AND COLLECTION METHODS**

Data was collected by face-to-face interview using Pre-tested structured questionnaire for pregnant mothers when they finish their laboratory examinations and return to focused antenatal clinics during the study period. The questionnaire were developed in English after reviewing relevant literatures and translated into Amharic (the local language) then back to English to ensure its consistency. The questionnaire contains of satisfaction indicators which are related to socio-demographic characteristics of the mothers and different dimensions of FANC laboratory services such as waiting time, availability of requested laboratory tests, needle stick attempt, information provision about bruise, availability of space in blood drawing room, privacy, respect and courtesy and confidentiality. The questionnaire was pre-tested over 5% of the sample size in two health facility (one hospital and health centre) out of the study site to ensure that it was clear for respondents. After pre-test, some modification of the questioner was made for unclear and difficult question. These pre-test participants were not included in the analysis of our study.

Moreover, the questionnaire also containthe availability and functional status of basic FANC laboratory services in each selected health facility assessed by using observation checklist adapted from WHO antenatal care randomized trial: manual for the implementation of the new model [7], WHO afro check list and FMH focused antenatal care services algorism.

This study was supplemented by qualitative study through in depth interview of laboratory services providers in each selected health facility. Eight open ended interview guiding questions were used to interview health care providers' to assess their views on quality of antenatal care laboratory service. The in-depth interview and facility assessment was conducted by the supervisors. The main issues that were addressed in the in-depth interviews were; availability and functionality of FANC laboratory services, quality FANC laboratory test, health facility comfort and cleanness, benefit of FANC laboratory service quality to pregnant mothers, SOPs, TAT and professional training on FANC laboratory tests.

Data was collected over a period of three weeks (28/04/2015 to 15/05/2015) by trained data collectors (six nurses) from health facility not selected for our study and two supervisors who have BSc degree in laboratory sciences along with the principal investigator were used. Training was given to data collectors and supervisor for one day on the objective, relevance of the study, confidentiality of information, respondent's right, informed consent and techniques of interview.

## 4.5. STUDY VARIABLES

### 4.5.1. DEPENDENT VARIABLE

Availability, functional status of focused antenatal care laboratory services.
Client satisfaction toward basic focused antenatal care laboratory services.

### 4.5.2. INDEPENDENT VARIABLES

Socio demographic characteristics of clients ( age, educational status, marital status, occupational status, monthly income) and laboratory work environment(Cleanliness of waiting area, accessibility and availability of latrine, space availability in blood collection room to put clients personal materials', etc), communication(completeness of information provided), Waiting time (mothers waiting time before getting laboratory services and waiting time to get laboratory result).

## 4.6. DATA MANAGEMENT AND ANALYSIS

The collected data was checked for completeness, consistency and coded by the principal investigator. For qualitative data transcribed, coded and categorized manually by the principal investigator.
The data entry and analysis was made using SPSS for windows version 20 software. A 5 point Likert's scale rating of very dissatisfied (1-point), dissatisfied (2-points), neutral (3-points), satisfied (4-points) and very satisfied (5points) was employed. Twelve satisfaction indicators of the service were selected and pregnant mothers were interviewed for their satisfactions on each indicator using a 5-point Likert's scale.

Internal consistency was checked using cronbach's alpha coefficient and it has found to be 0.89 (cronbach's alpha coefficient >0.7 is acceptable) [41].This result confirms that the items (Twelve items) identified as indicators for pregnant mothers' satisfaction towards FANC laboratory services were cohesive enough to adequately represent a single concept (which is pregnant mothers' satisfaction). Measurement scales that were adapted from the review of literatures [31, 38, 42, 43, 44] clients' satisfaction were classified, into two categories satisfied and dissatisfied by using cut of point calculated using the demarcation threshold formula: {(total highest score-total lowest score)/2} + Total lowest score.

**{(Total highest score-total lowest score)/2} + Total lowest score**

Similarly, level of mothers' satisfaction with each indicator was classified as satisfied and dissatisfied by using the cut of point calculated using the demarcation threshold score of that specific indicator.

Moreover, its association with the overall clients' satisfaction towards FANC laboratory services was statistically analysed. Binary and multiple logistic regressions analysis were subsequently conducted to predict the factors which influence the level of satisfaction with FANC laboratory services using Odds Ratio (OR) with a 95% Confidence Interval (CI). P-Value less than 0.05 were taken as statistically significant.

## 4.7. DATA QUALITY ASSURANCES

The questionnaire was pre-tested by 22 mothers (it accounts 5% of the total sample size) before conducting the actual data collection. Pre-tested results were not included in the study.

Training was given for data collectors and supervisors by the principal investigator to clarify how to collect data. Questionnaire for mothers was translated to local language (Amharic).Data collectors were instructed to check the completeness of each questionnaire at the end of each interview. The completeness of the questionnaire was rechecked by supervisors at the end of the day. This was also double checked by the principal investigator.

## 4.8. DEFINITIONOF TERMS

### 4.8.1 STANDARD DEFINITION

- **Focused antenatal care (FANC)**: It is the care a woman receives throughout her pregnancy and is important in helping to ensure a healthy pregnancy state and safe childbirth
- **Antenatal care (ANC)**: Old approach that the care that women receive during pregnancy in the health facility
- **Turnaround Time**: A time from receipt of specimen in laboratory until result reported.

### 4.8.2. OPERATIONAL DEFINITION

- **Basic FANC laboratory services**: - If health facilities equipped with laboratory tests (Blood group, Rh, Hgb, HIV, urine test for sugar, keteon and albumin, Stool examination for intestinal parasite, rapid syphilis/RPR test, and hepatitis B virus screening tests and blood glucose test) to provide focused antenatal care services.
- **Laboratory services availability:** Availability of basic FANC laboratory services in selected health facility during data collection.
- **Services functionality**: Status of basic FANC laboratory services uninterrupted for more than a day with in the last one year.
- **Focused antenatal care laboratorystatus**: Describe focused antenatal care laboratory services using availability, functional status and client satisfaction. But not compared to others standard.
- **Laboratory services providers:** Health professionals who have an educational back ground on medical laboratory and have been working in the laboratory during study period(these professionals are not allocated only for FANC laboratory service).
- S**tructure:** the physical setting of laboratory facility include: laboratory work environment, and availability of skilled health personnel and laboratory supplies. But not a separate laboratory units specifically designed to serve only focused antenatal care laboratory services.

## 4.9. ETHICAL CONSIDERATION

Before the research work, ethical clearance was obtained from the Departmental Research and Ethics Review committee (DRERC) of school of allied health science department of medical laboratory science, Addis Abba University and from Addis Ababa city administration health bureau.

In addition, permission was obtained from respective health facilities. At the time of data collection, a verbal consent was obtained from study participants prior to the study. Moreover, all the study participants were informed verbally about the purpose and benefit of the study along with their right to refuse. Furthermore the study participants were reassured for confidentiality.

## 5. RESULT

### 5.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS

A total of 422 pregnant mothers were involved in this study with the response rate of 100 %. Of 422 respondents, 217(51.4%) were from three public hospitals, while 205(48.6%) were from ten health centres. The mean (±SD) age of the respondents were 27 ± 4 years ranging from 18 – 40 years. Half of the participants 211 (50.0%) were in the age group of 18 - 27 years. Majority of the respondents (93.1%) were married and more than half (61.6%) of respondents were Orthodox Christians. About 135(32.0%) of the participants belongs to Amhara ethnic-group. During the present survey, 239(56.6%) of the clients had family monthly income between 500-1000 Ethiopian Birr[2]. One hundred and forty two (33.6%) had attended secondary school education. Just above half of them (57.1%) were housewife and nearly all (95%) of the respondents lived in Addis Ababa [Table 1].

[2] 1 USD ~20ETB

**Table 1: Socio demographic characteristics of respondents on pregnant mothers' satisfaction with focused antenatal care laboratory services received at public health facilities in Addis Ababa, Ethiopia. April to May, 2015.**

| Variables | | Frequency | Percentage (%) |
|---|---|---|---|
| **Age group in year** | 18-27 | 211 | 50.0 |
| | 28-37 | 204 | 48.3 |
| | 37 above | 7 | 1.7 |
| | Total | 422 | 100 |
| **Marital Status** | Single | 14 | 3.3 |
| | Married | 393 | 93.1 |
| | Divorced | *2* | 0.5 |
| | Widowed | 1 | 0.2 |
| | Cohabitation | 10 | 2.4 |
| | No response | 2 | 0.5 |
| | Total | 422 | 100 |
| **Religion** | Orthodox | 260 | 61.6 |
| | Muslim | 102 | 24.2 |
| | Protestant | 54 | 12.8 |
| | Catholic | 6 | 1.4 |
| | Total | 422 | 100 |
| **Ethnicity** | Oromo | 122 | 28.9 |
| | Amhara | 135 | 32.0 |
| | Tigray | 44 | 10.4 |
| | Gurage | 83 | 19.7 |
| | Silte | 25 | 5.9 |
| | Others (Welayita, Hadiya) | 13 | 3.1 |
| | Total | 3 | 23.1 |
| **Current living place** | Addis Ababa | 402 | 95.3 |
| | Out of Addis Ababa | 20 | 4.7 |
| | Total | 422 | 100 |
| **Occupation status** | Housewife | 241 | 57.1 |
| | Employed self | 82 | 19.4 |
| | Employed [wedge] | 60 | 14.2 |
| | Jobless | 28 | 6.6 |
| | Student | 11 | 2.9 |
| | Total | 422 | 100 |
| **Income class** | Less than 500 ETB | 20 | 4.7 |
| | 500-1000 ETB | 239 | 56.6 |
| | Over 1000 | 151 | 35.8 |
| **None response** | None response | 12 | 2.8 |
| | Total | 422 | 100 |

## 5.2. FINDING OF LABORATORY SERVICES ASSESSMENT

From the total 13 visited laboratory facilities that were involved in this study, 3(23.1%) were hospitals and the remaining 10(76.9%) were health centers. The response rate for laboratory services assessment was 100%.

### 5.2.1. AVAILABILITY OF BASIC FANC LABORATORY TESTS

Out of 13 visited health facilities only 5(38.5%) were found to provide all types of basic FANC laboratory investigation and the rest 8(61.5%) did not provide one or more basic FANC laboratory tests during the study period.

Comparing the availability of individual tests in the study facilities, urine dipstick, urine miscopy and stool examination were available in all institutions. However, only 7 (53.8%) of the facilities reported the availability of Hepatitis B screening test. HIV, RPR and blood glucose tests were available in 11(84.6%), 10(76.9%) and 11(84.6%) respectively, where as blood group, Rh and Haemoglobin were available in 12(92.3%) visited health facilities [Table 2].

Comparing the availability of tests in the hospitals and health centres, blood group and Rh, RPR , Blood glucose, Haemoglobin and HIV tests were available in all hospitals but the availability of these tests in health centres wereblood group 9(90%), RPR 7(70%), Haemoglobin 9(90%), HIV and Blood glucose 8(80%). Hepatitis B screening test was not available in 2(66.7) hospitals and 4(40%) of health centres.

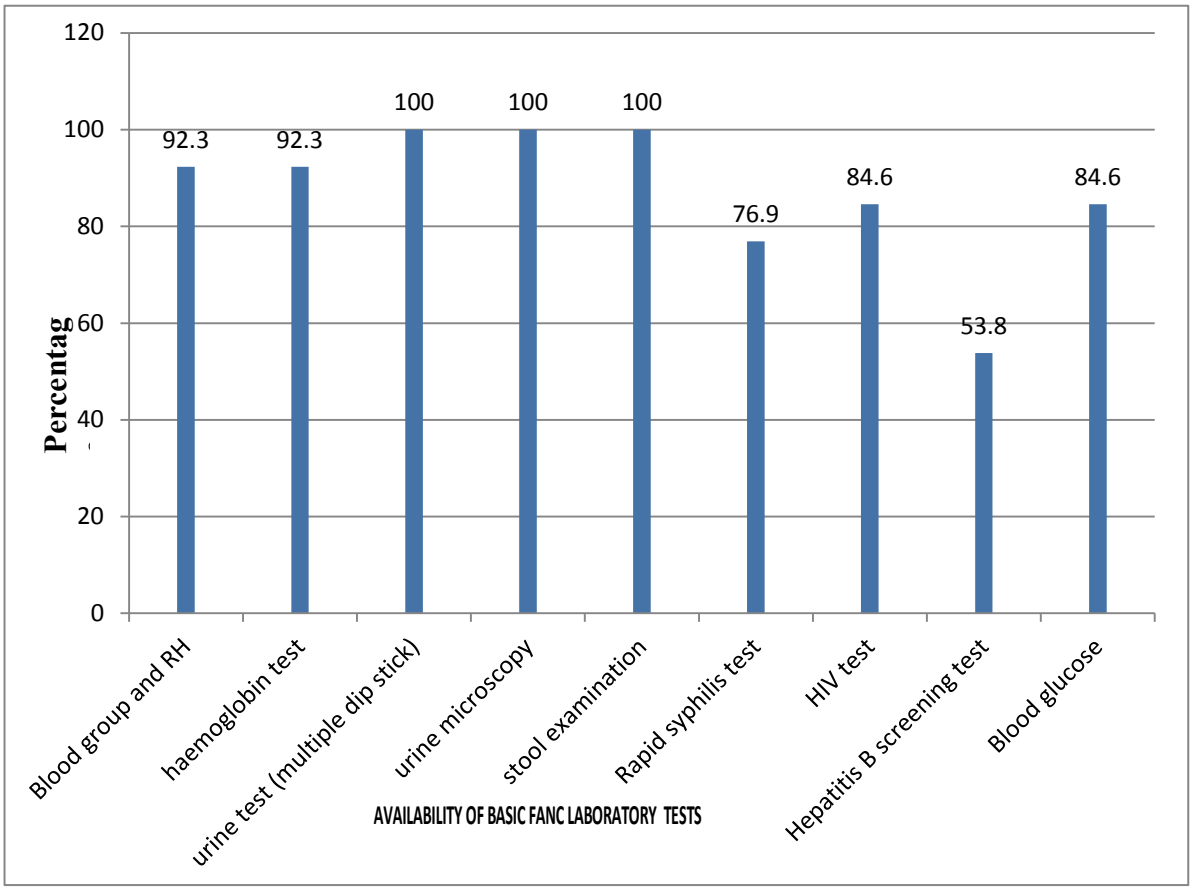


**Figure 1: Availability of basic focused antenatal laboratory tests at public health facilities in Addis Ababa, Ethiopia. April to May, 2015(n=13).**

5.2.2. FUNCTIONAL STATUS OF BASIC FANC LABORATORY SERVICES

Functionality of the available tests as measured by service interruption showed, 4(40%) of health centres reported that haemoglobin and blood glucose tests interpretation for more than a day in the last one year. While 1(33.3%) of hospitals reported that haemoglobin and HIV test interpretation for more than a day in the last one year.

The most commonly interpreted FANC laboratory tests were RPR and Hepatitis B virus screening, 2(66.7%) in the hospitals, and 6(60%) and 5(50%)respectively in the health centres. Blood group, Rh andUrine dipstick (multiple dip stick for Glucose, Albumin and ketone) tests were not interrupted in all hospitals in the last one year. Whereas these tests interrupted in 2(20%) health centres and also Urine microscopy and Stool examinationnot interrupted in all

hospitals. While 5(50%) of health centres reported that Urine microscopy and Stool examinationinterrupted for more than a day in the last one year.

In general, all health facilities had at least one or more of the basic FANC laboratory tests interruption for more than a day within the last one year due to different reasons. Shortage of reagent and electric power disruption were the main causes for the services interruption[Table 2].

**Table 2:Availability and functional status of focused antenatal care laboratory services at public health facilities in Addis Ababa. Ethiopia. April to May, 2015.**

| Variables | | Availability of FANC test in health facility | | Functionality of FANC test in health facility | | Facilities with services interruption(n) | |
|---|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | Due to | |
| | | f (%) | f (%) | f (%) | f (%) | Power Failure | Supply issue |
| **Blood group and Rh test** | Hospital | 3(100) | 0(0) | 3(100) | 0 | 0 | 0 |
| | H. center | 9(90) | 1(10) | 8(80) | 2(20) | 0 | 2 |
| | Total | 12(92.3) | 1(7.7) | 11(84.6) | 2(15.4) | 0 | 2 |
| **Haemoglobin Test** | Hospital | 3(100) | 0 | 2(66.7) | 1(33.3) | 0 | 1 |
| | H. center | 9(90) | 1(10) | 6(60) | 4(40) | 3 | 1 |
| | Total | 12(92.3) | 1(7.7) | 8(61.5) | 5(38.5) | 3 | 2 |
| **Urine dip stick** | Hospital | 3(100) | 0 | 3(100) | 0 | 0 | 0 |
| | H. center | 10(100) | 0 | 8(80) | 2(20) | 0 | 2 |
| | Total | 13(100) | 0 | 11(84.6) | 2(15.4) | 0 | 2 |
| **Urine Microscopy** | Hospital | 3(100) | 0 | 3(100) | 0 | 0 | 0 |
| | H. center | 10(100) | 0 | 5(50) | 5(50) | 5 | 0 |
| | Total | 13(100) | 0 | 8(61.5) | 5(38.5) | 5 | 0 |
| **Stool Examination** | Hospital | 3(100) | 0 | 3(100) | 0 | 0 | 0 |
| | H. center | 10(100) | 0 | 5(50) | 5(50) | 5 | 0 |
| | Total | 13(100) | 0 | 8(61.5) | 5(38.5) | 5 | 0 |
| **Rapid syphilis Test** | Hospital | 3(100) | 0 | 1(33.3) | 2(66.7) | 0 | 2 |
| | H. center | 7(70) | 3(30) | 4(40) | 6(60) | 0 | 6 |
| | Total | 10(76.9) | 3(23.1) | 5(38.5) | 8(61.5) | 0 | 8 |
| **HIV test** | Hospital | 3(100) | 0 | 2(66.7) | 1(33.3) | 0 | 1 |
| | H. center | 8(80) | 2(20) | 6(60) | 4(40) | 0 | 4 |
| | Total | 11(84.6) | 2(15.4) | 8(61.5) | 5(38.5) | 0 | 5 |
| **Hepatitis B screening test** | Hospital | 1(33.3) | 2(66.7) | 1(33.3 | 2(66.7) | 0 | 2 |
| | H. center | 6(60) | 4(40) | 5(50) | 5(50) | 0 | 5 |
| | Total | 7(53.8) | 6(46.2) | 6(46.2) | 7(53.8) | 0 | 7 |
| **Blood glucose test** | Hospital | 3(100) | 0 | 3(100) | 0 | 0 | 0 |
| | H. center | 8(80) | 2(20) | 6(60) | 4(40) | 0 | 4 |
| | Total | 11(84.6) | 2(15.4) | 9(69.2) | 4(30.8) | 0 | 4 |

### 5.2.3. PARTICIPATION OF FACILITIES IN QUALITY ASSURANCE SCHEMES

All of the study health facilities participated on External Quality Assessment (EQA) in HIV test. All hospitals had EQA scheme in all basic FANC tests except for urine analysis, whereas none of the health centres had participated in EQA except for HIV test [Table 3].

**Table 3: Facilities assessment of laboratories participated on EQA at public health facility in Addis Ababa, Ethiopia. April to May, 2015.**

| Variables | Laboratories participation on EQA scheme | | | | |
|---|---|---|---|---|---|
| | Health centre | | Hospital | | Total |
| | Freq* | % | Freq* | % | |
| Blood group and Rh test | | | | | |
| Yes | 0 | 0 | 3 | 100 | 23.1 |
| No | 10 | 100 | 0 | 0 | 76.9 |
| Total | 10 | 100 | 3 | 100 | 100 |
| Haemoglobin test | | | | | |
| Yes | *0* | 0 | 3 | 100 | 23.1 |
| No | 10 | 100 | 0 | 0 | 76.9 |
| Total | 10 | 100 | 3 | 100 | 100 |
| Urine test | | | | | |
| Yes | 0 | 0 | 0 | 0 | 0 |
| No | 10 | 10 | 3 | 100 | 100 |
| Total | 10 | 100 | 3 | 100 | 100 |
| Stool examination | | | | | |
| Yes | 0 | 0 | 3 | 100 | 23.1 |
| No | 10 | 100 | 0 | 0 | 76.9 |
| Total | 10 | 100 | 3 | 100 | 100 |
| Rapid syphilis test | | | | | |
| Yes | 0 | 0 | 3 | 100 | 23.1 |
| No | 10 | 100 | 0 | 0 | 76.9 |
| Total | 10 | 100 | 3 | 100 | 100 |
| HIV test | | | | | |
| Yes | 10 | 100 | 3 | 100 | 100 |
| No | 0 | 0 | 0 | 0 | 0 |
| Total | 10 | 100 | 3 | 100 | 100 |
| Hepatitis B screening test | | | | | |
| Yes | 0 | 0 | 3 | 100 | 23.1 |
| No | 10 | 100 | 0 | 0 | 76.9 |
| Total | 10 | 100 | 3 | 100 | 100 |
| Blood glucose test | | | | | |
| Yes | 0 | 0 | 3 | 100 | 23.1 |
| No | 10 | 10 | 0 | 0 | 76.9 |
| Total | 10 | 100 | 3 | 100 | 100 |

Freq.*= Frequency

All visited laboratories had quality assurance manual (quality laboratory manual), SOPs and other materials that aid laboratory service providers as reference materials in their day to day activities. The laboratories had established TAT for all FANC laboratory tests, accounts 92.3%.

Among visited health facility laboratories 9(69.2%) were performed routine preventive maintenance of laboratory equipment. Laboratories had equipment services agreement; it accounts 7(53.8%).

In this study, health facilities clients' waiting area and laboratory blood drawing rooms were assessed. All the health facilities had clean waiting areas and 9(69.2%) of them had clean and separate phlebotomy rooms. None of the health facility laboratories had a place in blood drawing room to put clients' personal materials' (jacket, bag, etc.) during blood specimen collection.

Among the total visited laboratories, all of them did not retain or store samples for further analysis and12 (92.3%) of visited laboratories had no back up and referral laboratory services on the FANC laboratory tests. More than half of (53.5%) health laboratories faced electric power disruption, even though the availability and functionality of generator services among health facilities were variable. In 4(45%) health facilities the generators were not functional, while in 3(56%) health facilities generator were not totally available. Among all visited health facility laboratories 11(84.6%) had adequate water supply. All laboratories had separate sinks for washing laboratory wares, staining and washing hands.

All laboratories were using incinerators for solid waste disposal and liquid waste coming out of the laboratory were released to the sewerage system without any pretreatment with chemicals or other sterilization techniques. All laboratories had no shortage of personal protective equipment.

All visited health facility laboratories providers claimed that there were work loaddue to inadequate staff, but the number of staffs available in all visited health facility laboratories were according to BPR level. Providers did not take training related to FANC laboratory tests. Among visited laboratories6(46.2%)did not notify laboratory service status to customers, when the laboratory services faced delaying or interruptions in testing due to equipment failure, stock outs, staff levels, electric power disruption, etc.Among the visited laboratories 8(61.5%) did not evaluate client satisfaction and they did not receive feedback to improve their services throughout a year [Table 4].

**Table 4: Laboratory services assesment on focused antental care laboratory services at public health facilities Addid Ababa, Ethiopia. April to May, 2015.**

| Variables | | Frequency | Percentage (%) |
|---|---|---|---|
| Having written TAT for all FANC laboratory tests | Yes | 12 | 92.3 |
| | No | 1 | 7.7 |
| Having written quality policy manual, Sop… etc. | Yes | *13* | 100 |
| | No | 0 | 0 |
| Having Separated phlebotomy room | Yes | 9 | 69.2 |
| | No | 4 | 30.8 |
| Having a place to in phlebotomy room to put clients personal materials | Yes | 0 | 0 |
| | No | 13 | 100 |
| Having Equipment service agreement | Yes | 6 | 46.2 |
| | No | 7 | 53.8 |
| Routine preventive maintenance performed | Yes | 9 | 69.2 |
| | No | 4 | 30.8 |
| Having Back-up laboratory services | Yes | 1 | 7.7 |
| | No | 12 | 92.3 |
| Functioning back-up power supply (generator) | Yes | 10 | 76.9 |
| | No | 3 | 23.1 |
| Adequate water supply | Yes | 11 | 84.6 |
| | No | 2 | 15.4 |
| Laboratory has functioning incinerator | Yes | 13 | 100 |
| | No | 0 | 0 |
| Personal protective equipment (PPE) | Yes | 13 | 100 |
| | No | 0 | 0 |
| Evaluating client satisfaction | Yes | 5 | 38.5 |
| | No | 8 | 61.5 |
| Services status Notification | Yes | 7 | 53.8 |
| | No | 6 | 46.2 |
| Laboratory staff (BPR level) | Yes | 13 | 100 |
| | No | 0 | 0 |
| Training statuson FANC tests | Yes | 0 | 0 |
| | No | 13 | 100 |

### 5.3.1. SATISFACTION LEVEL OF PREGNANT MOTHERS WITH FANC LABORATORY SERVICES.

Of the total participant, 240(56.87%) were satisfied, whereas 182(43.1%) of the participants were dissatisfied with FANC laboratory services. Among the 12 indicators of client satisfaction, most of the respondents were satisfied with availability of laboratory staff on working hours 361(85.5%), cleanliness and comfort of waiting area 345(81.8%), measures taken by health care providers to keep confidentiality 339(80.3%), the providers' courtesy/respect 311(73.7%), cleanliness of blood drawing area 297(70.4%), and measures taken by health care providers to keep privacy during specimen collection 253(60.0%)[Table5].

On the other hand most of the clients had low satisfaction level with latrine cleanness 137(32.5%), accessibility and availability of latrines 191(45.3%), completeness of information when and how to collect specimen outside the laboratory 181(42.9%) and completeness of information when and how client receive laboratory results 187(44.3%).

In overall, 240 (56.9%) of the respondents were satisfied with FANC laboratory services received at the selected public health facility in Addis Ababa.

**Table 5: Level of satisfaction of pregnant mothers' towards focused antenatal care laboratory services received at public health facilities Addis Ababa, Ethiopia. April to May, 2015.**

| Variables | Very Satisfied F (%) | Satisfied F (%) | Neutral F (%) | Dissatisfied F (%) | Very Dissatisfied F (%) | Average Level of satisfaction F (%) |
|---|---|---|---|---|---|---|
| Ability of the Laboratory person to answer questions | 150(35.5) | 233(55.2) | 27(6.4) | 8(1.9) | 4(0.9) | 383(90.8) |
| Cleanness and comfort of waiting area | 105(24.9) | 240(56.9) | 67(15.9) | 9(2.1) | 1(0.2) | 345(81.8) |
| Availability of laboratory staff on working hours | 120(28.4) | 241(57.1) | 37(8.8) | 24(5.7) | 0(0) | 361(85.5) |
| Respect and courtesy | 82(19.4) | 229(54.3) | 93(22) | 18(4.3) | 0(0) | 311(73.7) |
| Privacy during blood drawing | 99(23.5) | 154(36.5) | 115(27.3) | 54(12.8) | 0(0) | 253(60) |
| Information on how and when to collect specimen | 54(12.8) | 127(30.1) | 153(36.3) | 87(20.6) | 1(.2) | 181(42.9) |
| Latrine accessibility and availability | 35(8.3) | 156(37.0) | 104(24.6) | 121(28.7) | 6(1.4) | 194(45.3) |
| Latrine cleanness | 17(4) | 120(28.4) | 121(28.7) | 143(33.9) | 21(5.0) | 137(32.5) |
| Information on how and when to receive laboratory result | 57(13.5) | 130(30.8) | 128(30.3) | 96(22.7) | 11(2.6) | 187(44.3) |
| Confidentiality measure | 140(33.2) | 199(47.2) | 77(18.2) | 6(1.4) | 0(0) | 339(80.3) |
| Cleanliness of blood drawing area | 109(25.8) | 188(44.5) | 98(23.2) | 26(6.2) | 1(.2) | 297(70.4) |
| Over all laboratory service satisfaction | 70(16.6) | 177(41.9) | 114(27.0) | 53(12.6) | 8(1.9) | 247(58.5) |

### 5.3.2. FACTORS AFFECTING THE LEVEL OF CLIENTS' SATISFACTION TOWARDS FOCUSED ANTENATAL CARELABORATORY SERVICES

More than half 244(57.8%) of the mothers waited less than thirty minutes, 138(32.7%) waited half to one hour and 24(5.7%) of mothers waited one to two hours to give specimen for laboratory test. Only 16(3.8%) of them wasted more than two hour to give laboratory specimens. Regarding the number of needle stick attempted, majority 347(82.3%) of the mothers responded that laboratory workers attempted only one needle stick to draw their blood specimen, the rest all more than one needle attempted to draw their blood specimen. Only 13(14.9%) developed bruise due to phlebotomy procedures [Table 6].

Majority 327(77.5%) of the pregnant mothers claimed that there was no place to put their personal materials (like bag, coat, etc.) in blood drawing room. Concerning waiting time to get laboratory results and availability of ordered tests, 275(65.2 %) of mothers waited more than one hours to get their laboratory results and 189 (44.8%) of mothers reported that all ordered laboratory tests were not available in the health facility laboratories. Thirty (7.1%) mothers miss/absent from their appointment for FANC follow up due to shortage of money for FANC laboratory investigation in private laboratory and 11(2.6%) mothersmissed laboratory investigation in previous, due to unavailability of test request order.One hundred and twenty two (28.9%) of mothers reported that they were refer to other laboratory mostly to private laboratory for ANC laboratory investigation.

The chi-square(x2) was conducted to assess whether the level of pregnant mothers' satisfaction had a relationship with explanatory variables. The results from the cross-tabulations analysis showed that there was a statistically significant relationship between waiting time to give laboratory specimen, number of needle stick,bruise development, availability of place in blood drawing room to put personal materials, waiting time to get laboratory results, availability of ordered tests, and refer clients to others laboratory, miss/absent from their appointment for FANC follow due to shortage of money and mothers willing to visit this laboratory service for the next time and to recommend the laboratory facility to a relative or a friend with the level of mothers' satisfaction towards FANC laboratory services with (p-value <0.05) but there were no significant relationship between provision of information on how to lessen the possible bruise,

any missed investigation in previous, and rate the importance of ANC laboratory services (p-value >0.05) [Table 6].

**Table 6: Factors affecting overall satisfaction of clients with focused antenatal care laboratory services received at public health facilities Addis Ababa, Ethiopia. April to May, 2015.**

| Variables | | Satisfied | Dissatisfied | Total f(%) | X2 | Df | P-Value |
|---|---|---|---|---|---|---|---|
| Waiting time to give laboratory specimen | <30 minutes | 180 | 64 | 244(57.8) | 67.9 | 3 | 0.00 |
| | 30 minutes-1 hour | 47 | 91 | 138(32.7) | | | |
| | 1 hours-2 hours | 9 | 15 | 24(5.7) | | | |
| | >2 hours | 4 | 12 | 16(3.8) | | | |
| Number of needle stick | Only one time | 207 | 140 | 347 (82.3) | 14.2 | 3 | 0.03 |
| | Two times | 23 | 16 | 39(9.2) | | | |
| | Three times | 10 | 26 | 36(8.5) | | | |
| Bruise development due to phlebotomy | No | 212 | 147 | 359 (85.1) | 4.6 | 1 | 0.03 |
| | Yes | 28 | 35 | 63(14.9) | | | |
| provision of information on how to lessen bruise | No | 170 | 132 | 302(71.6) | 0.15 | 1 | 0.70 |
| | Yes | 70 | 50 | 120(28.4) | | | |
| Turn Around Time | < 1 hour | 132 | 15 | 147(34.8) | 121 | 2 | 0.00 |
| | 1 hour- 2 hours | 91 | 95 | 186(44.1) | | | |
| | >2 hours | 17 | 72 | 89(21.1) | | | |
| Availability of ordered test | No | 78 | 111 | 189(44.8) | 32.9 | 1 | 0.00 |
| | Yes | 162 | 71 | 233(55.2) | | | |
| Clients referral to private laboratories | No | 209 | 91 | 300(71.1) | 69.3 | 1 | 0.00 |
| | Yes | 31 | 91 | 122(28.9) | | | |
| Miss/withdraw any Appointment | No | 21 | 71 | 92(21.8) | 70.3 | 2 | 0.00 |
| | Yes | 10 | 20 | 30(7.1) | | | |
| Mothers willing to visit&recommended to others mothers | No | 9 | 36 | 45(10.7) | 51.8 | 1 | 0.00 |
| | Yes | 237 | 140 | 377(89.3) | | | |

In binary logistic regression analysis, overall pregnant mothers' satisfaction towards FANC laboratory services showed statistically significant association with educational status, economic class, waiting time to give laboratory specimen, number of needle stick attempted to draw blood, bruise development due to phlebotomy procedure, availability of place in blood drawing room to put personal materials, waiting time to get laboratory results, availability of ordered tests, and refer clients to others laboratory, Pregnant mothers were willing to visit this laboratory service for the next time and to recommend the laboratory facility to a relative or a friend for FANC laboratory and facility type with (p-value < 0.05) [Table 7]. However, this study did not show a statistically significant association between overall satisfaction and age group, marital status, occupation, provision of information on how to lessen the possible bruise, miss/absent from their appointment for FANC follow due to shortage of money , any missed investigation in previous, and rate the importance of FANC laboratory services with (p-value >0.05) [Table 7].
When adjusted odds ratios were calculated among these variables, significant associations were found between the overall satisfaction of the clients with their waiting time to get blood drawing service, availability of place in blood drawing room to put clients personal materials, and waiting time to get laboratory result, mothers willing to visit this laboratory service for the next time and to recommend the laboratory facility to a relative or a friend for FANC laboratory servicesand facility type with p<0.05.

Moreover clients, who waited less than 30 minutes to get blood drawing services, were two times more likely to be satisfied than those who waited more than 30 minutes [AOR = 2.61;CI(1.47-4.65)]. Those clients who waited less than one hour to get laboratory results were six times more likely to be satisfied than those who waited more than one hours [AOR = 6.03; CI (2.86-12.67)].

Those clients who got separate place in blood drawing room to put jacket, bag, etc, were three times more likely to be satisfied than those who did not got [AOR = 3.58,CI (1.75 – 7.33)][Table7].

Pregnant mothers were willing to visit this laboratory service for the next time and to recommend the laboratory facility to a relative or a friend for FANC laboratory services, were two times more satisfied than those who did not recommend [AOR = 2.75; CI (1.72-5.13)].Clients who got FANC laboratory services from hospital were two times more satisfied than those who got FANC laboratory services form health centers [AOR = 2.64, CI (1.45-4.81)].

**Table 7: Determinants on satisfaction of clients towards focused antenatal care laboratory services received at public health facilities in Addis Ababa, Ethiopia. April to May, 2015.**

| Variables | Overall satisfaction | | Crude Odds Ratio(95%CI) | P. value | Adjusted OR(95%CI) | P. value |
|---|---|---|---|---|---|---|
| | Sat(No) | Diss.(No) | | | | |
| **Facility type** | | | | | | |
| Health centre | 81 | 137 | 1 | | | |
| Hospital | 159 | 45 | 5.98(3.89,9.19 | 0.00 | 2.64(1.45,4.81) | 0.00** |
| **Age group in year** | | | | | | |
| 18-27 | *128* | 83 | 1 | | | |
| 28-37 | 110 | 94 | 0.76(0.51,1.12) | 0.16 | | |
| 37 & above | 2 | 5 | 0.26(0.05,1.37) | 0.11 | | |
| **Educational status** | | | | | | |
| Illiterate | 27 | 14 | 1 | | | |
| Read and write | 20 | 9 | 1.15(0.42,3.18) | 0.78 | 0.89(0.24,3.38) | 0.88 |
| Primary school | 56 | 43 | 0.67(0.32,1.44) | 0.31 | 0.67(0.25,1.83) | 0.44 |
| Secondary school | 88 | 54 | 0.84(0.41,1.75) | 0.65 | 0.91(0.35,2.40) | 0.85 |
| College and above | 49 | 62 | 0.41(0.19,0.86) | 0.04 | 0.51(0.18,1.46) | 0.21 |
| **Marital status** | | | | | | |
| Single | 10 | 14 | 1 | | | |
| Married | 222 | 171 | 0.52(0.16,1.68) | 0.27 | | |
| Divorced | 1 | 1 | 0.40(0.02,8.07) | 0.55 | | |
| Widowed | 1 | 0 | | 1.00 | | |
| Cohabitation | 5 | 5 | 0.40(0.73, 2.18) | 0.29 | | |
| Other(non respondent) | 1 | 1 | 0.40(0.02,8.07) | 0.55 | | |
| **Occupational status** | | | | | | |
| Housewife | 152 | 89 | 1 | | | |
| Employed self | 38 | 44 | 0.51(0.31,0.84) | 0.08 | | |
| Employed [wedge] | 26 | 34 | 0.45(0.25,0.79) | 0.06 | | |
| Jobless | 17 | 11 | 0.91(0.41,2.02) | 0.81 | | |
| Student | 7 | 4 | 1.02(0.29,3.59) | 0.97 | | |
| **Economic status** | | | | | | |
| Less than 1000 | 165 | 94 | 1 | | | |
| Over 1000 | 68 | 83 | 0.47(0.31,0.70) | 0.00 | 0.84(0.43,1.65) | 0.62 |
| **Waiting time to give laboratory specimen** | | | | | | |
| >30 minutes | 52 | 116 | 1 | | | |
| <30minutes | 188 | 66 | 6.35(4.13,9.77) | 0.00 | 2.61(1.47,4.65) | 0.00** |
| **Number of needle stick** | | | | | | |
| >one puncture | 23 | 32 | 1 | | | |
| One puncture | 217 | 150 | 2.01(1.13,3.58) | 0.02 | 1.19(0.51,2.79) | 0.69 |
| **Bruise development** | | | | | | |
| Yes | 28 | 35 | 1 | | | |
| No | 212 | 147 | 1.80(1.05,3.09) | 0.03 | 1.6(0.72,3.56) | 0.25 |
| **Provision of information on how to lessen the possible bruise**, | | | | | | |
| No | 170 | 132 | 1 | | | |
| Yes | 70 | 50 | 1.09(0.71,1.67) | 0.72 | | |
| **Availability of place in blood drawing room to put client material** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| No | 168 | 159 | 1 | | | |
| Yes | 72 | 23 | 2.96(1.77,4.97) | 0.00 | 3.58(1.75,7.33) | 0.00** |
| **Turn Around Time** | | | | | | |
| >1hours | 108 | 167 | 1 | | | |
| <1hour | 132 | 15 | 13.61(7.57,24.5) | 0.00 | 6.03(2.86,12.7) | 0.00** |
| **Availability of ordered test** | | | | | | |
| Yes some only | 78 | 111 | 1 | | | |
| Yes all | 162 | 71 | 3.25(2.17,4.85) | 0.00 | 1.06(0.53,2.14) | 0.87 |
| **Refer to other laboratory** | | | | | | |
| Yes | 31 | 91 | 1 | | | |
| No | 209 | 91 | 6.74(4.19,10.85) | 0.00 | 2.75(1.31,5.76) | 0.07 |
| **Miss/absent from any appointment** | | | | | | |
| Yes | 10 | 20 | 1 | | | |
| No | 21 | 71 | 0.59(0.24,1.46) | 0.25 | | |
| **Any missed investigation in previous** | | | | | | |
| Yes | 4 | 7 | 1 | | | |
| No | 236 | 175 | 2.36(0.68,8.19) | 0.18 | | |
| **Rate the importance of ANC laboratory services** | | | | | | |
| Important | 7 | 5 | 1 | | | |
| Highly important | 233 | 177 | 0.94(0.29,3.01) | 0.92 | | |
| **Mothers willing to visit &recommended to others mothers** | | | | | | |
| No | 9 | 36 | 1 | | | |
| Yes | 237 | 140 | 6.77(4.21,11.89) | 0.00 | 2.75(1.72,5.13) | 0.00** |

***Statistically high significant P<0.005.*

## 5.4. FINDINGS OF QUALITATIVE PARTS

To strengthen the findings of the quantitative study, an in- depth interviews with laboratory personnel were conducted. Thirteen full-time laboratory service providers (9 Medical Laboratory Technologist and 4 Medical Laboratory Technicians) were included in the interview about their respective health facilities. Theresponse rate was 100%.They had two up to ten years' experience of work on laboratories. The age of respondents ranged from 22 years up to 35 years.

### 5.4.1. STANDARDS AND GUIDELINES

All providers reported that they follow standard operation procedures developed by their own laboratories to carry out all laboratory tests and all visited health facilities adopted laboratory policy manual and guideline from Addis Ababa health bureau health research and laboratory version process and other sources.

### 5.4.2. FANC LABORATORY EQUIPMENT, REAGENT AND QUALITY CONTROL MATERIALS

Most of the providers explained that basic focused antenatal care laboratory tests do not require high equipment (automated machines) like other tests therefore; we have enough equipment and others laboratory supplies to offers FANC laboratory services. However, the laboratory reagents were not adequate for a year to provide the required laboratory service for clients due to budget shortage; administrational problem with in the health facilities. Services interruption due to reagent shortage was the major problems to deliver FANC laboratory services in visited health facilities.

Some laboratory service providers told, *"suppliers/vendors not respond immediately if regent and other supplies requested from health facilities, especially quality control materials not available throughout the year for some FANC laboratory tests like blood groups and Rh tests, these affect the quality of services."*

Another provider aged 28, female and technologist said*, "Regent and others laboratory supplies quality is major problems to deliver quality services, because we* had experienced erroneous false *positive HBsAgs result released from our laboratory. Which cause of conflicts between providers and clients,* clearly, such occurrences result *clients on loss trusts on the quality of*

*laboratory services" and dissatisfied overall laboratory services.* Similarly another provider from different health facility said that*, "We reject VDRL reagents after they perform quality control (reagents verification) before to use the reagents due to false positive results."*

### 5.4.3. COMFORT AND CLEANNESS OF THE FACILITY

Generally providers claimed that latrine services were unhygienic especially in the hospitals. It has bad odor and the numbers of the toilet were not proportional with clients. One of the providers said, *"The latrine in our hospital is very busy. Unsightly and with bad odor, It is in the state of not inviting to use it. The hospital management is always been informed about the situation, but no root solution."*

Another provider aged 29, male and technologist said*"Laboratory room present in the second floor of the building which is not comfortable for most pregnant mothers. Sometimes acutely sick mother unable to come to the second floor, her blood specimen's will be collect outside the laboratory room (in the first floor of outpatient department of the hospital)."*

### 5.4.4. TURN AROUND TIME

Some providers anonymously agreed that there is written turnaround time for all laboratory tests including basic focused antenatal care laboratory tests, but result not released based on established TAT due to clients load. *One of the provider aged 26, male and technologist said*,*"Sometimes due to electric power disruption discarded the collected specimen and when power maintain ask mothers to repeat specimen for some specific test like urine and stool because we haven't generators or other specimens preservative mechanisms'',* other provider told, *"Even if we have written turnaround time, we collect sample in the morning and the result will deliver to ANC clinic in the afternoon. Due to work load there is no mechanism to prioritized pregnant mothers to treat early.''*

### 5.4.5. FACTORS AFFECTING FANC LABORATORY SERVICE AND CLIENT SATISFACTION

Laboratory service providers noted that clients are satisfied with the services they are getting from laboratories. However, there are some factors affecting the satisfaction of clients. The major problems that contribute for the clients' dissatisfaction are delay in returning laboratory result due to work load. Clients were also dissatisfied by the long waiting time to get laboratory services and services interruption due to shortage of supply and electric power disruption.

Some of the providers reported, *"due to unavailable of some reagents for long time mothers were referred to other facilities, mostly to private laboratories for FANC laboratory investigation, this made mothers highly dissatisfied and mostly they complained due to services interruption."*

### 5.4.6. PROVIDERS SATISFACTION AND MOTIVATION:

Laboratory services providers were claimed to be overloaded by work but poorly motivated. Some providers reported that *"Motivational aspects and an incentives to the providers were not addressed, even recognition scheme like certificate of appreciation to our work not in place."*

### 5.4.7. PROVIDERS' PERCEPTION ON THE BENEFIT OF QUALITY ANTENATAL CARE LABORATORY SERVICE AND THEIR RECOMMENDATION

Laboratory service providers noted that, "FANC *laboratory services is one of the key services to manage pregnancy related health problems and to prevent mothers to child HIV and other disease transmissions, therefore strengthening FANC laboratory has a great importance . One* of the provider aged 27, male and technologist said, *"Health facilities give priority to pregnant mothers by establishing separate laboratory facilities for FANC services."*

## 6. DISCUSSION

This study result shows that only 5(38.5%) out of 13 visited health facilities provided all types of basic FANC laboratory investigation. This study finding was higher when it is compared with the study done in public maternal and child health facilities in Nairobi that had a result of 25% [25].The difference could be due to the different time of study periods, study area and different administration policies, to know the exact reason, further study should be conducted.

From 13 visited laboratory facilities, HIV test kits were available in 11 (84.6%) facilities during the study period. When this finding was compared with the finding of south-western part of Tanzania that had a result of 91-100% [23], it was lower. Haemoglobin test was available in the 92.3% of the health facilities. Urine test (multiple dip stick for Glucose, Albumin and ketone) was available in all (100%) health facilities .This finding was higher than the study which was conducted in public health facilities of Bahir-Dar special zone and south-western part of Tanzania[37, 23].

In this study the availability of RPR test accounts 76.9%. This is equivalent with finding in hospitals and regional laboratories in Ethiopia (76.5%) [6]and lower than the study which was conducted in public health facilities of Bahir-Dar special zone, which had a result of 25% [37]. The availability of Hepatitis B screening test was 53.8%,which is higher when it is compared with the study conduct in hospitals and regional laboratories in Ethiopia that had a result of 20.6% [6].The difference might be due to this study was conducted during the time were there is high attention for maternity services due to MDGs.

Regarding to the functionality of FANC laboratory services, all health facilities had laboratory services interruption for minimum of a day within the last one year, for at least one or more of the basic FANC laboratory tests. This finding was supported by other studies [16, 17, 23,37].Study conducted in Jimma identified that urine, Blood Group and RPR tests were not done to lack of reagents and women who did not have other laboratory tests than the HIV test were more likely to report being not satisfied with ANC[16]. Similarly Ethiopia Mini Demographic and Health Survey 2014 report showed that among women with antenatal care, nearly 41% of the ANC clients haven't their urine tested, 35%haven't their r blood tested [17].

In this study 28.9% of the respondents were referred to other facilities, mostly to private laboratory facilities, for investigations of FANC laboratory tests. This finding was lower than the study conducted in public maternal and child health facilities in Nairobi that had a result of 74.1%[25] and supported by study conducted in Jimma south western, Ethiopiawhich identified that due to lack of laboratory facilities and supplies, mothers refers to private laboratory, but women expected ANC service to be free, and therefore the costs of laboratory tests caused frustration. For some, tests were too expensive, and they gave up taking tests [16]. Among from the total participants 89.3% were willing to visit this laboratory service for the next time and to recommend the laboratory facility to a relative or a friend for FANC laboratory services. This finding was equivalent with the study conducted in public maternal and child health facilities in Nairobi that had a result of 89.5% [25].

Regarding laboratory safety issue, 100% of the visited laboratories had safety manual, personal protective equipment and using incinerators for solid waste disposal. This finding was higher when it is compared with the study conducted to assess the status of HIV screening laboratories in Ethiopia that had a result of 29%, 45.2% and 55% respectively [20].The difference might be due to trainings on the area of safety precaution. The other possible reason could be at this time the ministry of health implement Stepwise laboratory Improvement Process Towards Accreditation (SLIPTA) in most public health facilities.All of visited health facility laboratories liquid waste coming out of the laboratory was released to the sewerage system without any pretreatment with chemicals or other sterilization techniques.This finding is lower when it compared with the study done to assess the status of HIV screening laboratories in Ethiopia, it accounts58.5% [20]. The difference need further study.

Observation was also made on the availability of backup power supply and waters in the laboratories, 10(76.9%) had generators and 84.6% had adequate waters supplies this finding has a consistent with the study which was conductedto assess the status of HIV screening laboratories in Ethiopia, that had a result of 95.5% the availability of back-up power supply and waters [20].

Routine preventive maintenance of laboratory equipment were performed, 7(53.8%) and 6(46.2%) laboratories had equipment services agreement. This finding was support by thefinding

of study done to assess the status of HIV screening laboratories in Ethiopia which identified equipment maintenance as a major problem in supervised laboratories.

Regarding to the overall satisfaction level of pregnant mothers with FANC laboratory services rendered at public health facility in Addis Ababa. It was 56.9 % and this is lower than reports from other studies conducted in Jimma University Specialized Hospital (77%), Public Hospitals Addis Ababa (85.5%), Government Hospitals in Eastern Ethiopia (87.6%) and Tanzania (77%) [30, 38, 36, 23].The possible reason for lower mothers' satisfaction in this study might be the use of different method of calculating the demarcation threshold and use of higher number of satisfaction indicators to generate the summary score of overall satisfaction. Whereas, the laboratory facilities assessment finding shows that 61.5% of facilities were not offer to all components of basic FANC laboratory services and also their detailed reasons for this low satisfaction level were assessed by in- depth interview of providers. It has been said that, *"*The major factor that contribute to the dissatisfaction of mothers were delay in returning laboratory result due to work load. Mothers were also dissatisfied with long waiting time to get laboratory services and services interruption due to shortage of supply and electric power disruption*."*

However, this study finding has close finding with Eastern Ethiopia Hospitals, Jimma Hospital, Jimma health centres and Bahir-Dar public health facilities, satisfaction level of 54.1%, 57.1%,60.4% and 52.3% respectively [35, 34, 31, 37]. On the other hand this finding was higher when it is compared with studies conducted in the hospitals of the Amhara region and Tigray zonal hospitals which showed satisfaction level of 22.0% and 43.6%, respectively [32, 33].
In this study pregnant mothers were satisfied for different satisfaction indicators such as Courtesy/respect of the laboratory workers which accounts (73.7%), ability of the laboratory personnel to answer question that account 90.8% and measures taken by laboratory worker to keep confidentiality accounts 80.3%.Mother's satisfaction to the courtesy/respect of the laboratory workers was comparable with the finding in Nekemet Hospital (66.9%) [29] and the result for ability of the laboratory personnel to answer question and measures taken by laboratory worker to keep confidentiality were consistent with the study finding that was conducted in Public HospitalsAddis Ababa [38].The reason for this finding could be due to the fact that professionals had taken similar trainings on how to approach clients and also could be due to norm of social respect.

In this study, the study participants were satisfied by the cleanliness and comfort of waiting area and availability of laboratory workers on their work place which accounts 81.8% and 85.5%respectively, this finding has consistent result with others studies [36, 38]. The respondents were satisfied by the privacy during blood specimen collection, it accounts 60%,this is slightly lower than with the study finding conducted in Nekemet Hospital [29].One of the finding on the in- depth interview could be taken as a reasons for the differences of the result. It has been said that, *"Laboratory room present in the second floor of the building which is not comfortable for most pregnant mothers. Sometimes acutely sick mother unable to come to the second floor, her blood specimen's will be collect outside the laboratory room (in the first floor of outpatient department of the hospital" and also*could be due to *some health centers have not separate phlebotomy rooms*. This was one of the finding on the facilities assessment of laboratory.

Mothers were not satisfied by the access and cleanness of latrine it accounts 45.3% and 32.5% respectively and they were not satisfied by the incomplete information provided by the providers on how to bring specimens which could be collected outside the laboratory that account (42.9%). This finding were closely related with other finding [30, 34 36,27], while it is higher than with the study result conducted in Nekemet Hospital [29] and slightly lower than other studies which were conducted in Public Hospitals Addis Ababa and Government Hospitals in Eastern Ethiopia[38, 36]. The reasons of this result for being low from other finding may be due to,client load on the laboratory facilities which results lack of attention to provide information on how to collect/bring specimens outside the laboratory room. One of the reasons for low latrine service satisfaction was latrines had bad odor and the numbers of the toilet was not proportional with the number clients. This was one of the finding on the in- depth interview of providers.

This study found that clients waited for more than thirty minutes to give laboratory specimen accounts 39.8% and more than two hours to get their laboratory results3.8%. This finding was contradicted with the study conducted in Addis Ababa which shows clients waited for more than thirty minutes to give laboratory specimen accounts66 % and 74 % of clients spent more than two hours to get laboratory results [38].One of the reasons for these differences may be was found during in- depth interview of providers. It has been said that, FANC laboratory tests are

simple and no need long procedure and large technology. Another reason may be flow of clients different for at the time of the study period.

Clients responded that around 55.2 % of the laboratory test orders were available in the health facilities during the study period, which was relatively lower than others studies [29, 36, 38]. The possible reason for low availability of laboratory test orders may be due to, only 5(38.5%) out of 13 the selected health facilities were found to offered all type of basic FANC laboratory investigation and the rest 8(61.5%) visited health facilities did not provide one or more basic FANC laboratory tests. This was one of the finding on the facility assessment, and also the reasons of these differences may be the answer found during in- depth interview of providers. It has been said that *"Some reagent interrupted for long time then mothers refer to other facility, mostly private laboratory for FANC laboratory investigation."*

In this study 77.5% of participants claimed that, there is no place to put personal materials in blood drawing room. Majority (82.2%) of clients responded that laboratory workers attempt only one needle stick at a time to draw their blood specimen. This finding has similarity with the study conducted in Public Hospitals Addis Ababa [38].

In this study waiting time to give laboratory specimen, waiting time to get laboratory result and availability of place in blood drawing room to put personal materials has significant association with laboratory services satisfaction, while socio-demographic characteristics, such as age group, sex and marital status were not significantly associated with laboratory services satisfaction. This finding was similar with the finding of the study conducted in Jimma University Specialized Hospital, Government Hospitals in Eastern Ethiopiaand Public Hospitals Addis Ababa [30, 36, 38].

## 7. STRENGTHS AND LIMITATIONS OF THE STUDY

### 7.1. STRENGTH

- Both quantitative and qualitative methods were used.
- The study covered all public health facilities in city of Addis Ababa, to make them representative of the findings.

### 7.2. LIMITATION

- Results were dependent on the responses of clients and providers. Clients of FANC follow up might give biased information since interview was conducted in the health facilities.
- This study covered only those clients who came to health facilities during the study period.

# 8. CONCLUSION AND RECOMMENDATIONS

## 8.1.CONCLUSIONS:

- Majority of the health facilities reported incomplete FANC laboratory investigations**.** Hepatitis B screening test was the lowest available test in the study facilities. Furthermore in all health facilities had at least one or more of the basic FANC laboratory tests interruptions more than a day within the last one year due to due to shortage of reagent and electric power disruption.
- Slightly higher maternal dissatisfaction toward FANC laboratory service was observed compared with other institutional based study in similar settings.
- Accessibility and cleanliness of latrine, measure taken to assure privacy during blood collection, waiting time to give laboratory specimen, waiting time to get laboratory results, availability of ordered laboratory tests were factors that affect satisfaction of pregnant mothers towards FANC laboratory services.

## 8.2. RECOMMENDATIONS:

- The administrators of health facilities have to allocate enough budget to sustain the availability of ordered laboratory tests supplies including quality control materials to decrease or avoid basic FANC laboratory services interruption and pregnant mothers referral to private laboratory for FANC laboratory services, because it is a major challenge to women of low economic cadre who may not afford to pay for services in private facilities leading to delays in seeking and obtaining FANC.
- The administrators of health facilities have to allocate budget for generator, its diesel and services maintenances to avoid laboratory services interruption due to electric power disruption.
- The administrators of health facilities have to renovate separate phlebotomy room to keep the privacy of clients and place in blood drawing room to put clients' personal materials.
- waiting time to give laboratory specimen, availability of ordered laboratory tests, waiting time to get laboratory results and availability of place in blood drawing room to put client material were factors that affect satisfaction of pregnant mothers towards FANC laboratory services, therefore, the health facility administrator and other responsible body should work together to improve the satisfaction of mothers' towards FANC laboratory services.
- The findings suggested that providing incomplete FANC laboratory service is the facilities' major challenge to screening all pregnant mothers for pregnancy related health conditions, since such conditions may affect the outcome of pregnancy, therefore, the administrators of health facilities and other responsible body have to improving the availability and functional capacity of laboratory to delivery of basic FANC laboratory services are needed.

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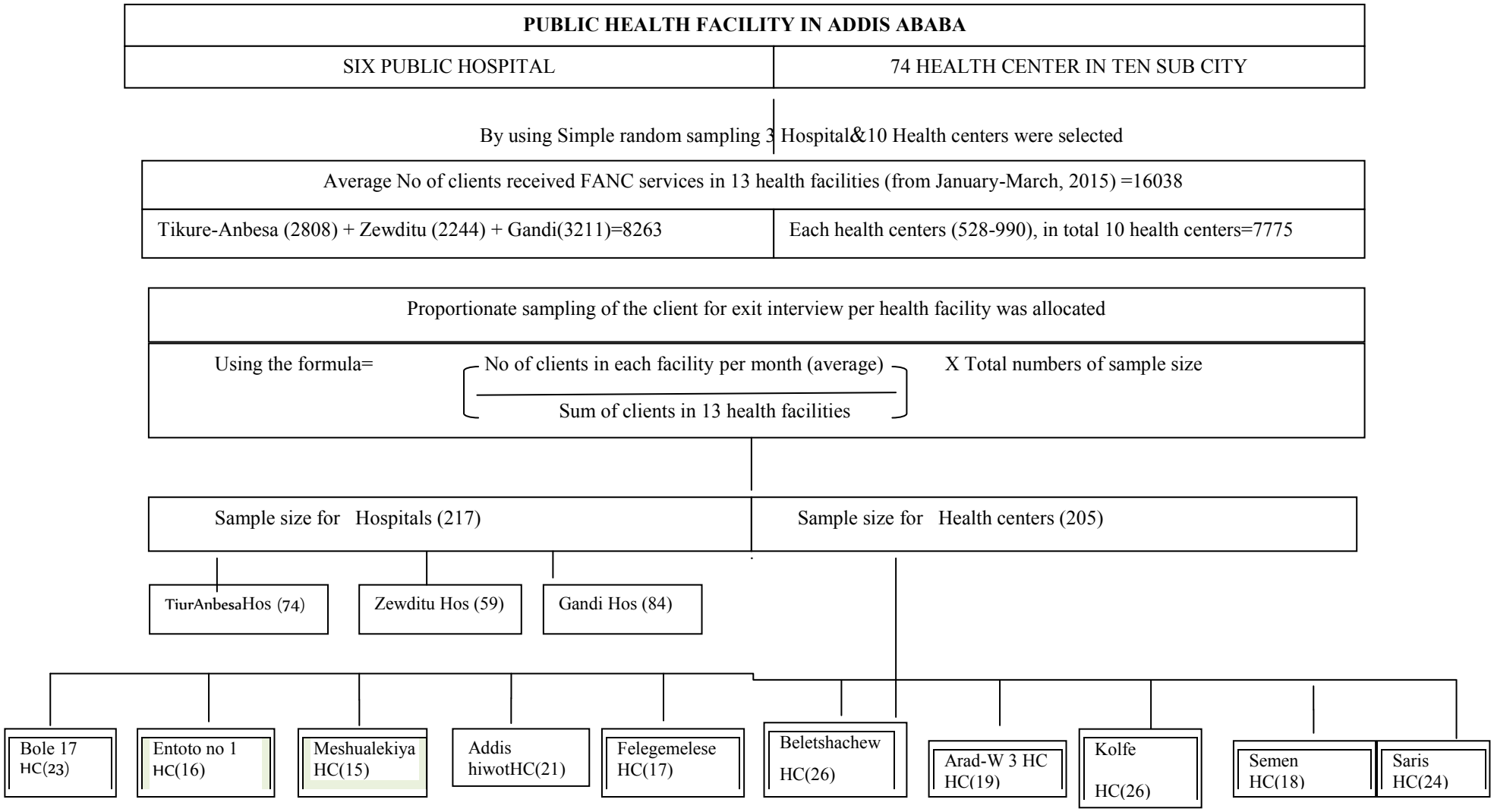
## ANNEXES

**ANNEX I:** SCHEMATIC PRESENTATION OF SAMPLING FRAME AND SAMPLING TECHNIQUE



Annex II: English version questionnaire information sheet

**ADDIS ABABA UNIVERSITY**

**POST GRADUATE STUDIES**

**SCHOOL OF CLINICAL LABORATORY SCIENCES**

Questionnaire for data collection on the assessment focused antenatal care laboratory service status in selected public health facilities, Addis Ababa, Ethiopia, 2015**.**

**Identification:** Name of facility _____ Institution code_____

**Address:** Kifle Ketema _____ Kebele _____ Telephone_____

**General information for the study participants**

Hello, how are you? My name is…… I am health professional and now I would like to interview you the laboratory services you received in this health facility, the purpose of the study is to know status using availability, functional status and clients satisfaction with focused antenatal care laboratory service they get in this facility which will be important to improve focused antenatal care laboratory services delivery of the health facilities. Participation in this study has no any harm to you except you may take about 20 -30 Minutes from your precious time. But your cooperation and willingness for interview will be very helpful in identifying the problems related to the issue. Your name will not be written in the form and I assure you all the information you give will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any questions that you do not want to answer. If you are not comfortable with the interview, please feel free to stop any time you like. Do I have your permission to continue?

If yes, continue to the next page for the interview

If no, continue to the next mother

For any question/problem regarding this study you can contact

- Mr. Biniyam Taye (Advisor)

  E-mail:bineymt@yahoo.com

  **Tel: +251 911 60 42 41**
- **Mr. Daniel Melese (principal investigator)**

  E-mail:danimelese2013@gmail.com

  **Tel: +251 911934843**
- **Departmental Research and Ethics Review Committee (DRERC**):

  E-mail: SMLT@ethinet.et **Tel: (251) 112-75-51-70**

**CONSENT FORM**

I have read the information sheet above and clearly understood the purpose and anticipated benefit of the research. I hereby need to assure with my signature below that I, without any coercion or forceful act by the research team, have decided to voluntarily participate in the study to contribute my part in the effort being made for the betterment of clinical laboratory services.

Unique ID. No. _____

Signature _____

Date_____

Interviewer's name_____

Signature_____

Date of interview _____Time started_____ Time finished_____

Supervisor's Name_____ Signature_____

I thank you for your cooperation

STRUCTURED QUESTIONNAIRES TO ASSESS FOCUSED ANTENATAL CARE LABORATORY SERVICE STATUS IN SELECTED PUBLIC HEALTH FACILITIES, ADDIS ABABA, ETHIOPIA, 2015.

**PART-I: socio-demographic characteristics of the clients**

| No | Questions | Response classification | Code | comment |
|---|---|---|---|---|
| 101 | Age in years | Age in completed years___<br>Do not Know = 99<br>No response = 909 | | |
| 102 | What is your marital status? | Single = 1<br>Married and live together currently = 2<br>Divorced = 3<br>Widowed = 4<br>Cohabitation = 5<br>No response = 909 | | |
| 103 | What is your ethnicity? | Oromo = 1<br>Amhara =2<br>Tigray = 3<br>Gurage =4<br>Silte =5<br>Other specify……. | | |
| 104 | To which religion are you belonging? | Orthodox = 1<br>Muslim = 2<br>Protestant =3<br>Catholic=4<br>Other specify……. | | |
| 105 | Where is your place of residence currently? | Addis Ababa = 1<br>Outside Addis Ababa = 2<br>No response=909 | | |

| | | | | |
|---|---|---|---|---|
| 106 | What is your last level of education? | Illiterate [cannot read and write] = 1<br>Read and write = 2<br>Primary [1-8] = 3<br>Secondary [9-12] = 4<br>College and above = 5<br>No response = 909 | | |
| 107 | What is your current occupation? | House wife =1<br>Employed self=2<br>Employed [wedge] =3<br>Jobless =4<br>Student =5<br>Other, specify----------<br>No response=909 | | |
| 108 | Household [family] income per month | …… ETB/Month<br>Do not Know = 99<br>No response = 909 | | |

**PART-II: PREGNANT MOTHERS ' SATISFACTION TOWARDS CLINICAL LABORATORY SERVICES**

| No | Questions | Response classification | code | comment |
|---|---|---|---|---|
| 201 | How satisfied are you with the ability of the Laboratory person to answer your questions? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 202 | How much satisfied are you with the cleanliness and comfort of waiting area? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 203 | How long do you wait to get the specimen collection services (e.g. Phlebotomy initiation)? | < 30 minutes = 1<br>½-1 hour = 2<br>1-2 hours = 3<br>>2 hours = 4 | | |
| 204 | How much are you satisfied with the availability of laboratory staff on working hours? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 205 | How satisfied are you with the courtesy/respect of the laboratory personnel? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 206 | How satisfied are you with measures taken to assure privacy during specimen collection (e.g. Privacy of room during blood drawing) | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =11 | | |

| | | | | |
|---|---|---|---|---|
| 207 | Are you give blood specimen during your current pregnancy follow up? | Yes=1<br>No =0 | **If no skip to Q.212** | |
| 208 | How much needle stick attempted to draw blood? | One vein puncture = 1<br>Two vein puncture =2<br>Three vein puncture = 3<br>Four or more vein punctures =4 | | |
| 209 | Do you develop bruise after the phlebotomy procedures (Today)? | Yes=1<br>No =0 | | |
| 210 | Do you get information on how to lessen the size of a possible bruise due to blood drawing? | Yes=1<br>No =0 | | |
| 211 | Is there a place in blood drawing room to put your personal things (jacket, bag etc) | Yes = 1<br>No=0 | | |
| 212 | How satisfied are you with clear, understandable and completeness of information when & how you collect specimen out of the laboratory (e.g. stool, urine)? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 213 | How satisfied are you with the accessibility and availability of latrines to collect stool and urine specimens? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 214 | How much are you satisfied with the cleanliness of latrine? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 215 | How satisfied are you with clear, understandable and completeness of | Very satisfied = 5<br>Satisfied = 4 | | |

| | | | | |
|---|---|---|---|---|
| | information when and how you receive laboratory result? | Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 216 | How long do you wait to get lab result? | <1 hour = 1<br>1-2 hours = 2<br>>2 hours = 3 | | |
| 217 | How satisfied are you with laboratory personnel measures taken to assure the confidentiality about your laboratory results | Very satisfied = 5<br>Satisfied = 4<br>Neutral= 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 218 | How much are you satisfied with the cleanliness of the blood drawing area? | Very satisfied = 5<br>Satisfied = 4<br>Neutral = 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |
| 219 | Does any laboratory requests ordered for you that are available in this health facility? | Yes all =1<br>Yes some only =0<br>Others[specify] ---------- | If yes all skip to Q.221 | |
| 220 | Have you referred to private laboratories for FANC follow up laboratory investigation? | Yes=1<br>No =0 | If no skip to Q.222 | |
| 221 | Have you ever miss/absent from any appointment for FANC follow up due to shortage of money for laboratory investigation in private laboratories? | Yes=1<br>No =0 | | |
| 222 | Have you ever any missed laboratory investigation in previous, due to unavailability of request order for you? | Yes=1<br>No =0 | | |
| 223 | How do you rate the importance of ANC laboratory services for you? | Highly important =1<br>It important =2<br>It is not important=3<br>I don't known =4 | | |

| | | | | |
|---|---|---|---|---|
| 224 | Are you willing to visit this laboratory service for the next time and to recommend the laboratory facility to a relative or a friend? | Yes=1<br>No =0 | | |
| 225 | How do you rate the overall satisfaction of the clinical laboratory service given in this facility? | Very satisfied = 5<br>Satisfied = 4<br>Neutral= 3<br>Dissatisfied = 2<br>Very dissatisfied =1 | | |

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Annex II**:** Observation check list

Observation check list for Focused Antenatal Care laboratory services assessment in Addis Ababa, Ethiopia, 2015.

| **No 301** | **Are the following FANC laboratory services available in the health facility during in the study period (AVAILABILITY)** | **Yes=1** | **N0=0** | Other specify (Observation) |
|---|---|---|---|---|
| A | Blood group and Rhesus status (Rh) testing kits | | | |
| B | Haemoglobin level testing or CBC (WBC, RBC, Hg, platelet) | | | |
| C | Urine test (multiple dip stick for Glucose , Albumin and ketone ) kits | | | |
| D | Urine microscopy | | | |
| E | Stool examination for intestinal parasite | | | |
| F | Rapid syphilis test kits | | | |
| G | HIV kits | | | |
| H | HBsAgs kits(Hepatitis B screening test) | | | |
| I | FBS/RBS(blood glucose ) machines and kits | | | |
| If any comments | | | | |
| **FUNCTIONALITY(**services status/ interruption) | | Yes=1 | No =0 | If yes codes for the reason (3,4,5,6,7) |
| **302** | Is there services interruption/ frequent breakdowns or unreliable supply of the following test for the last one year? If yes for this question, codes for the reason: 3=power failure(more than one days ) , 4=lack of supplies, 5= equipment failure(more than one days ) , 6=man power shortage, 7= training issues **multiple responses are possible** | | | |
| A | Blood group and Rh test | | | |

| | | | | |
|---|---|---|---|---|
| B | Haemoglobin level testing or CBC (WBC, RBC, Hgb, platelet) | | | |
| C | Urine test (multiple dip stick for Glucose , Albumin and ketone) | | | |
| D | Urine microscopy | | | |
| E | Stool examination for intestinal parasite | | | |
| F | Rapid syphilis test kits | | | |
| G | HIV test | | | |
| H | HBsAgs (Hepatitis B screening test) | | | |
| I | FBS/RBS(blood glucose )test | | | |
| If any comments | | | | |
| **303** | Does the laboratory participate in EQA/inter laboratory comparison ) program particularly the following FANC laboratory test (**QUALITY ISSUE)** | Yes=1 | No =0 | Other specify (Observation) |
| A | Blood group and Rh test | | | |
| B | Haemoglobin level testing or CBC (WBC, RBC, Hgb ,platelet) | | | |
| C | Stool examination for intestinal parasite | | | |
| D | VDRL/RPR test | | | |
| E | HIV test | | | |
| F | HBV test | | | |
| G | FBS/RBS(or blood glucose) test | | | |
| If no specify the reasons | | | | |
| **304** | Is there room/screen to assure privacy during specimen collection (e.g. separate phlebotomy room during blood drawing) | | | Other specify (Observation) |
| **305** | Is there a place in blood drawing room to put your personal things (jacket, bag etc.) | | | |
| **306** | Do you have written TAT for all FANC laboratory test | | | |

| | | | | |
|---|---|---|---|---|
| **307** | Are there written quality assurance policy and procedure ,standard operational procedure for FANC laboratory test and guidelines for specimen collection and on safety precaution available and accessible in the laboratory | | | |
| **308** | Is there a tool for regularly evaluating client satisfaction and is the feedback received effectively utilized to improve services? | | | |
| **309** | Is relevant equipment service information(agreement) readily available in the laboratory (Service contract information Contact details for service provider) | | | |
| **310** | Is routine preventive maintenance performed on all equipment and recorded according to SOPs/log sheet? | | | |
| **311** | Is timely, documented notification provided to customers when the laboratory experiences delays or interruptions in testing (due to equipment failure, stock outs, staff levels, etc.?) | | | |
| **312** | Are there procedures for handling specimens (retentions)? | | | |
| **313** | Is there back-up lab and referral laboratory services)? | | | |
| **314** | Is there a back-up power supply (generator)? | | | If no skip317 |
| **315** | If yes answer for question No—315,now the generator are functional | | | |
| **316** | Is there adequate water supply available in the laboratory?<br>(water supply not interrupted more than one day) | | | |
| **317** | Does the laboratory has functioning incinerator or other nationally accepted waste management (e.g protected pit,) to correctly dispose all hazardous wastes (needle toxic material) | | | |

| | | | | |
|---|---|---|---|---|
| **318** | Are there safety equipment or personal protective equipment (PPE) easily accessible at the workstation and utilized appropriately and consistently?<br>(PPE such as : glove, coat, eye goggle, etc) | | | |
| **319** | Dose the laboratory have separate sinks for washing laboratory ware, staining and washing hands? | | | |
| **320** | Is there sufficient laboratory staff numbers?<br>(the minimum staff(BPR level) to provide laboratory service) | | | |
| **321** | Is there a training (particularly related to FANC laboratory test? | | | |

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Annex IV: Guideline for in-depth interview

Guideline for in-depth interview of laboratory services providers to assess their views on status of FANC laboratory services in selected health facility.

**(Interviewer-***Introduces yourself, the purpose of the study and ask permission to take part in the study, ask open end question about to clarify documentation seen and observation made)*

***401***. **Standard and guideline**

How the laboratory personnel in this facility work?

Are there SOPs and/or guideline for laboratory supplies management (storage of laboratory supplies), testing procedures, specimen management (collection, labeling, handling, disposal …etc), safety and waste management, record management, test orders, result reporting … etc. equipment use (equipment operator manual), repair maintenances, calibration

**402. FANC laboratory regents/supplies availability and functionality**

- Are reagents and supplies for all FANC laboratory services are always available for the last one year?
- Is there FANC laboratory services interruption for the last one year?
- What are the majors' causes of services interruption?
- What action taking during services interruption? (PROBE: Referrals/appointments , backup lab

✓ **<u>Quality FANC laboratory test</u>**

- How do you monitor quality FANC laboratory tests? (PROBE: participation on EQA, run IQC, competency and training . .etc)

**403. Health facility comfort and cleanness**

- How do you explain the cleanness and comfort of waiting area, toilet and blood drawing area of the health facility?

**404. TAT**

**405. How do you perceive benefit of quality antenatal care laboratory service to decrease maternal disease and mortality related to pregnancy**?

**PROBE**: importance

**406. Problem related to FANC laboratory services what are the major problems that you think contribute to the dissatisfaction of pregnant mothers**?

**407. FANC laboratory services providers' challenges and motivation**?

**408. What do you recommend in general to improve focused antenatal care laboratory services as well as mothers' satisfaction level?**

Annex V: Amharic version questionnaire

አዲስ አበባ ዩኒቨርሲቲ

የድህረ-ምረቃፕሮግራም

የሕክምና ላቦራቶሪ ት/ቤት

**የመረጃ ቅጽ**

ይህ መጠይቅ የቅድመ ወሊድ የላብራቶሪ ምርመራ አገልግሎት እና ቅድመ ወሊድ ህክምና የሚከታተሉ እናቶችን የላብራቶሪ አገልግሎት የእርካታ ደረጃ ለማጥናት የተዘጋጀ ነው።

መለያ መረጃ፤የጤና ተቋሙ አይነት_____የጤና ተቋሙ ስም _____
አድራሻ፤ክፍለከተማ _____ ቀበሌ/ወረዳ_____የጤና ተቋሙ ኮድ _____

የጤና ተቋሙ ስልክ ቁጥር_____

**የቃል ስምምነት፤**

የኔ ስም_____ይባላል።እኔ በአዲስ አበባ ዩኒቨርስቲ ህክምና ላብራቶሪ ት/ቤት በላብራቶሪ አገልግሎት ዙሪያ ለሚደረገው ጥናትመረጃ ሰብሳቢ ስሆን፤አሁን በዚህ አጋጣሚ እርስዎ በጤና ተቋሙ ለእናቶች ቅድመ ወሊድ ስለሚሰጠው የላብራቶሪ ምርመራ ተገልጋይ እደመሆኖ መጠን የላብራቶሪ ምርመራ ከአቅርቦት እና አገልግሎት አሰጣጥ ደረጃጥቂት ጥያቄዎችን ለመጠየቅ እወዳለሁ።የዚህ ጥናት አላማ በዚህ ጤና ተቋም በሚሰጠው የእናቶች ቅድመ ወሊድ የላብራቶሪ አገልግሎት ከአቅርቦት እና አገልግሎት አሰጣጥ ደረጃ እንዲሁም ቅድመ ወሊድ የጤና ክትትል የሚያደጉ እናቶች በላብራቶሪ አገልግሎት አሰጣጥ ላይ የሚሰማቸውን የእርካታ ደረጃ ለይቶ ለማወቅ የሚጠቅም ሲሆን፤ይህም የጤና ተቋሚት ለእናቶች የሚሰጡትን አገልግሎት የበለጠ ለማሻሻል ይጠቅማል።በዚህ ቃለ-መጠይቅ የእርስዎ በፈቃደኝነት መሳተፍ እና ትብብር በላብራቶሪ አገልግሎት ዙሪያ ያሉትን ችግሮች ለማወቅ ከፍተኛ የሆነ ጠቀሜታ አለው።የእርሶ ስም በዚህ መጠይቅ ላይ አይጠቀስም።በተጨማሪም የሚሰጡት መረጃ ከተባለለት ጉዳይ ውጪ እንደማይውል እና ሚስጥራዊነቱ የተጠበቀ እንደሚሆን አረጋግጣለሁ።በዚህ ጥናት ላይ መሳተፍ በእርሶ ፍቃደኝነት ላይ የተመሰረተ እና መመለስ የማይፈልጉትን ማንኛውም ጥያቄ አለመመለስ ይችላሉ።በቃለ-መጠይቁ ምችት ካልተሰማዎት በማንኛውም ጊዜ መጠይቁን ማቋረጥይችላሉ።

ወደ መጠይቁ መቀጠል እንድንችል ፈቃደኛ ነዎት?

አዎ ከሆነ - ወደሚቀጥለው ገጽ ይሂዱ፤አይሆንም ከሆነ ...ወደሚቀጥሉት እናት ይሂዱ

ስተጨማሪ መረጃ

መረጃ ካስፈለግዎ በሚቀጥለው አድራሻ ይጠቀሙ

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ኢሜይል: SMLT@ethinet.et ስልክቁጥር:: (251) 112-75-51-70 ፋክስ: (251) 112-75-46-69

## የስምምነት ቅጽ

ከሳይ የተዛፈውን የመረጃ ቅፅ አንብቤ የጥናቱን አላማና ጥቅም በግልጽ ተረድቻለሁ፡፡በዚህም መሰረት ያለጥናት ቡድኑ አባላት ተፅእኖ በሙሉ ፈቃደኝነት በዚሁ ጥናት በመሳተፍ የቅድመ ወሊድ የእናቶች ክትትል የላብራቶሪ አገልግሎት ለማሻሻል በሚደረገው ጥረት ውስጥ የሚጠበቅብኝን አስተዋፅኦ ለማበርከት መወሰኔን በፊርማዬ አረጋግጣለሁ፡፡

የታካሚው መለ ያቁጥር _____ ፊርማ _____ ቀን_____

የመረጃ ሰብሳቢ ሥም _____ ፊርማ _____

መረጃ የተሰበሰበበት ቀን_____የተጀመረበት ሠዓት _____ያለቀበት ሰዓት _____

የተቆጣጣሪ ሥም _____ ፊርማ_____ ቀን_____

**አዲስ አበባ ዩኒቨርሲቲ የድህረ-ምረቃ ጥናት የሕክምና ላቦራቶሪ ት/ቤት**

ይህ መጠይቅ የቅድመ ወሊድ የላብራቶሪ ምርመራ አገልግሎት ከአቅርቦት እና አገልግሎት አሰጣጥ ደረጃ እንዲሁም ቅድመ ወሊድ የጤና ክትትል የሚያደጉ እናቶች በላብራቶሪ አገልግሎት አሰጣጥ ላይ የሚሰማቸውን የእርካታ ደረጃ ለማጥናት የተዘጋጀ ነው።

**ክፍልአንድ፡- የታካሚውግላዊመረጃ**

| ተ.ቁ | ጥያቄ | ምላሽ | ኮድ | አስተያየት |
|---|---|---|---|---|
| 101 | ዕድሜዎ ስንት ነው ? | ---------- ዓመት<br>አላውቅም=99<br>ምላሽ የለም=909 | | |
| 102 | የጋብቻ ሁኔታ ? | ያላገባች =1<br>ባለትዳር እና አሁን በትዳር ላይ=2<br>የተፋታች=3<br>የትዳር ጓደኛ የሞተባት=4<br>በጋደኝነት ላይ ያለች =5<br>ምላሽ የለም =909 | | |
| 103 | ብሔር ? | ኦሮሞ =1<br>አማራ = 2<br>ትግራይ = 3<br>ጉራጌ =4<br>ስልጤ=5<br>ሌላ ብሔር ይግለጹ ------ | | |
| 104 | የየትኛው ሐይማኖት ተከታይ ነዎት ? | ኦርቶዶክስ=1<br>እስልምና=2<br>ፕሮቴስታንት=3<br>ካቶሊክ=4<br>ምላሽ የለም=909 | | |

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|---|---|---|---|---|
| | | ሌላ ሐይማኖት ይግለጹ - | | |
| 105 | አሁን የመኖሪያ አድራሻዎ የትነው ? | አዲስአበባ = 1<br>ከአዲስ አበባ ውጪ =2 | | |
| 106 | የትምህርት ደረጃዎ ሁኔታ ምን ይመስላል ? | ያልተማረች/ማንበብና መፃፍ የማትችል/ =1<br>ማንበብና መጻፍ እችላለሁ=2<br>አንደኛ ደረጃ[1-8 ክፍል] =3<br>ሁለተኛ ደረጃ [9-12 ክፍል) =4<br>የኮሌጅ ት/ርትና ከዚያበላይ=5<br>መልስ የለም = 909 | | |
| 107 | በአሁኑ ጊዜየሚሠሩት ስራ ምንድ ነው? | የቤት እመቤት =1<br>በግል የምትሰራ=2<br>ደመወዝተኛ [ተቀጣሪ]=3<br>ሥራአጥ=4<br>ተማሪ=5<br>ሌላይገለጽ --------- | | |
| 108 | የወር ገቢዎ ምን ያህል ነው(በቤተሰብደረጃ) ? | ---------- ብር<br>አይታወቅም = 99<br>ምላሽየለም =909 | | |

**ክፍል ሁለት፡- ቅድመ ወሊድ ህክምና የሚከታተሉ እናቶችን የእርካታ መጠን በላቦራቶሪ አገልግሎት**

| ተ.ቁ | ጥያቄ | ምላሽ | ኮድ | ስለተያዮት |
|---|---|---|---|---|
| 201 | የላቦራቶሪ ባለሙያ የእርስዎን ጥያቄ ስመመለስ ባለው ችሎታ ምን ያህል ረክተዋል ? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 202 | በጤና ተቋሙ ላባራቶሪ ተራ መጠበቂያ ንጽህናና ምቾት ምን አይነት ስሜት አለዎት? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንም አልተሰማኝም(መካከለኛ) = 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 203 | የታዘዘሎትን ናሙና ስመስጠት ምን ያህል ጊዜ ቆዩ? | < 30 ደቂቃ =1<br>½ - 1 ሰዓት=2<br>1-2 ሰዓት =3<br>>2 ሰዓት =4 | | |
| 204 | በስራ ሰዓት ባለሙያዉ በላቦራቶሪ ውስጥ መገኘቱ ምን ያህል አርክቶዎታል? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 205 | በዚህ ጤና ተቋም ውስጥ በላቦራቶሪ ባለሙያዉ በተደረገ የጨዋነትና ክብር አቀባበል የተሰማዎት እርካታ ምን ያህል ነው? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |

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| 206 | በዚህ የጤና ተቋም የላቦራቶሪ ናሙና በሚሰጡበት ወቅት ቦታና ጊዜ ለእርስዎ ብቻ ለመስጠት በተደረገው ጥረት ምን ያህል እርካታ ተሰምቶታል (ለብቻ የተዘጋጀ የደም ናሙና መስጫ ክፍል፣መጋረጃ፣መከለያ እስክሪን ወይም ሌላ...) | በጣምእርካታአግኝቻለሁ =5<br>እርካታአግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣምአረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 207 | በዚህ የእርግዝናዎ ክትትል ወቅት የደም ምርመራ ሰጥተዋል? | አዎ =1<br>አልሰጠሁም = 0 | አልሰጠውምከሆነወደቁጥር 212 ይሂድ | |
| 208 | የደም ናሙና ሲወሰድልዎ በመርፌ ስንት ጊዜ ተወጉ ? | አንድ ጊዜ ተወግቻለሁ=1<br>ሁለት ጊዜ ተወግቻለሁ= 2<br>ሦስት ጊዜ ተወግቻለሁ=3<br>አራት ጊዜና ከዚያ በላይ ተወግቻለሁ = 4 | | |
| 209 | ደም ከተቀዱ በኃላ ብልዘት አጋጥሞዎታል? | አዎ =1<br>የለም = 0 | | |
| 210 | ደም በሚቀዳበት ሰዓት በእጅዎ አከባቢ ሊያጋጥም የሚችለው ብልዘት መጠኑ እዳይጨምር መረጃ አግኝተዋል? | አላጋጠመኝም =1<br>አጋጥሞኛ = 0 | | |
| 211 | በደም ናሙና መሰብሰቢያ ክፍል ውስጥ የግል መገልገያ ዕቃዎች ማስቀመጫ ቦታ አለ (ጃኬት፣ቦርሳ፣ወዘተ...)? | አዎ =1<br>የለም = 0 | | |
| 212 | ከላቦራቶሪ ውጪ ናሙና እንዴት መሰብሰብ እንዳለቦዎት በሚገባዎት አንዲሁም ግልጽ በሆነ መልኩ ባለሙያው ለመናገረ ምን | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3 | | |

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| | ያህል ረክተዋል? | አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 213 | የሽንት ቤት አቅርቦትና አገልግሎት በዚህ ጤና ተቃም ውስጥ ምን ያህል እርካታ አስገኝቶሎታል ? | በጣምእርካታአግኝቻለሁ =5<br>እርካታአግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣምአረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 214 | በሽንት ቤቱ ንጽህና ምን ያህል እርካታ ተሰምቶዎታል ? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንም አልተሰማኝም(መካከለኛ)=3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 215 | የሳብራቶሪ ውጤት መቼና እንዴት መቀበል እንደሚገባዎት በተሰጠዎት መረጃ ምን ያህል ረክተዋል ? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 216 | የሳብራቶሪ ውጤት ለማግኘት ምን ያህል ጊዜ ቆዩ? | ከ 1 ሰዓትበታች =1<br>ከ1 -2 ሰዓት = 2<br>ከ2 ሰዓትበላይ = 3 | | |
| 217 | በዚህ ጤና ተቋም ውስጥ በሳብራቶሪ ምርመራ ግዜ ሚስጥርዎን ለመጠበቅ በተደረገው ጥረት ምን ያህል እርካታ ይሰማዎታል ? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 218 | በደም ናሙና መስጫው ስፍራ ንጽህና ምን ያህል እርካታ ተሰምቶታል ? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3 | | |

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| | | አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |
| 219 | ለቅደመ ወሊድ ክትትል የታዘዘልዎት የሳብራቶሪ ምርመራ ሁሉንም በዚህ ጤና ተቋም ውስጥ አገኝተዋል? | አዎ ሁሉንም አግኝቻለው =1<br>የተወሰኑት ብቻ አግኝቻለው = 0<br>ሌላ ካለ ይገለጽ---------- | አዎከሆነ ወደቁጥር 221 ይሂድ | |
| 220 | ለቅድ መመሊድ [ለነፍሰጡር እናቶች] ክትትል የሳብራቶሪ ምርመራ ባለማገኘት ወደ ግል የጤና ድርጅት ለሳብራቶሪ ምርመራ ተልከው ያውቃሉ? | አዎን =1<br>አላውቅም=0<br>ሌላ ካለ ይገለጽ---------- | አላውቅ ምከሆነወ ደቁጥር 222ይሂድ | |
| 221 | ለጥያቄ ቁጥር 221 መልስዎ አዎ ከሆነ በግል የጤና ድርጅት ለሳብራቶሪ ምርመራ ለማድረግ ገንዘብ አጥሮት ከቅደመ ወሊድ ክትትል ቀጠሮ ቀን ቀርተው ወይም ቀን አሳልፈው መጥተው ያውቃሉ? | አዎን =1<br>አላውቅም=0<br>ሌላ ካለ ይገለጽ---------- | | |
| 222 | የቅድመ ወሊድ [ለነፍሰጡር እናቶች] ክትትል የታዘዘልዎት የሳብራቶሪ ምርመራ በጤናተቋሙ ባለማገኘት ምክንያት ያሳገኙት የሳብራቶሪ ምርመራ አለ ? | አዎን =1<br>የለም=0<br>ሌላ ካለ ይገለጽ---------- | | |
| 223 | የቅድመ ወሊድ [ለነፍሰጡር እናቶች] የሚደረግ የሳብራቶሪ ምርመራ ለጤናዎት አስፈላጊነቱንአንዴት ይገነዘቡታል? | በጣም አስፈላጊ ነው =1<br>በመጠኑ አስፈላጊ ነው=2<br>አስፈላጊነቱ አይታየኝም=3<br>አላውቅም=4 | | |
| 224 | የቅድመ ወሊድ [ለነፍሰጡር እናቶች] ክትትል የሚደረግ የሳብራቶሪ ምርመራ በሌላ ግዜ እራሶት ወይም ሌሎች እናቶች በዚሁ ጤና ተቋም ላብራቶሪ እዲጠቀሙ ይመክራሉ? | አዎን =1<br>አልመክርም=0 | | |

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| 225 | በአጠቃላይ በዚህ ጤና ተቋም ስለ ተደረገልዎት የህክምና ላብራቶሪ አገልግሎት የሚሰማዎት እርካታ ደረጃ ምን ያህል ነው? | በጣም እርካታ አግኝቻለሁ =5<br>እርካታ አግኝቻለሁ= 4<br>ምንምአልተሰማኝም(መካከለኛ)= 3<br>አረካሁም = 2<br>በጣም አረካሁም፣ተበሳጭቻለሁ = 1 | | |

እናመሰግናለን

**Annex VI: Declaration**

I undersigned, declare that this is my original work and has not been presented for a degree in this or any other university and all sources of materials used for this thesis have been acknowledged.

Name: Daniel Melese

Signature: _____

Place: Addis Ababa University

Date of submission: June 12, 2015

This thesis has been submitted with my approval as University advisor.

Name: Biniyam Taye

Signature: _____

Place: Addis Ababa University

Date of submission: June 15, 2015

# ADDIS ABABA UNIVERSITY
# SCHOOL OF GRADUATE STUDIES

ASSESSMENTS OF FOCUSED ANTENATAL CARE LABORATORY SERVICES USING AVAILABILITY, FUNCTIONAL STATUS AND CLIENT SATISFACTION AT PUBLIC HEALTH FACILITIES IN ADDIS ABABA, ETHIOPIA.

School of Medical Laboratory Sciences, College of Health Sciences, Addis Ababa University

Approved by the Examining Board

_____ _____
Chairman, Dep. Graduate Committee Signature

Ato Binyam Taye _____
Advisor Signature

Ato Getachew W.yohanis _____
Examiner (External) Signature

Ato Teddela Mendaye _____
Examiner (internal) Signature