

**Overall Time Spent by Clients from Entry to Exit and Associated  
Factors in Out-Patient Department of Jimma University Medical  
Center, South West Ethiopia**

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**A Thesis Submitted to Department of Health Economics,  
Management and Policy, Faculty of Public Health, Institute of  
Health, Jimma University in Partial Fulfillment for the  
Requirements of Masters of Public Health in Health Service  
Management.**

**June 2018**

**Jimma, Ethiopia**

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## Abstract

**Background:** Hospitals in Ethiopia are on reform to increase quality of service they provide. The time client spent in the hospital is one of the fundamental importance as a measure of the quality of care because it gives information on the client satisfaction and provider's success. The overall time refers to the length of time a patient spends in a health facility from the time of arrival at the facility to the time of exiting the facility. Waiting times arise as the result of the demand and supply imbalance. Even though, citizen charter is launched to provide timely services at Jimma University Medical Center in October 2016. The overall time spent by patients from entry to exit is not assessed.

**Objective:** To assess the overall time spent by clients from entry to exit and associated factors in out-patient department of Jimma University Medical Center in South West Ethiopia 2018.

**Methods:** This study was undertaken in Jimma University Medical Center by using Institution based cross-sectional study design from March 15 to April 15, 2018. The required sample size was obtained by using two sample t-test which was 249. The participants were selected from patients present at OPD, by using consecutive sampling technique. Data was collected, by using a time and motion tool coupled with interviewer administered structured questionnaire. Data was entered to epi data version 3.1 and export to SPSS version 20. Data was summarized by using descriptive statistics. Since the outcome variable was continuous so by using a linear regression analysis, factors associated with overall time were identified. Verbal consent was obtained from each study client at entry after providing of adequate information about the study.

**Result:** - out of the total sample size (249), the response rate was 94.8% (236). Overall, patients spent a median time of 342.5 min in OPD of Jimma University Medical Center. Patients spent 12.7% of the total time as service time and 86% of time by waiting for care. The longest overall time was at the laboratory (170min), imaging (95min), other diagnostic units (84min) and examination (83min). The median(SD) overall time for pediatric and adult patients were 177.5 (153.9)min and 396(129.1)minutes respectively. The average overall time was increased by 52.03 (95%CI 21.65, 82.412)min, 4.65(95%CI 3.983, 5.324)min and 96.43(95%CI 52.076, 140.787) minutes as the patient was referred, increase of the number of patients at the queue by one unit and patients who had other diagnostic test performed respectively with  $P < 0.005$  & adjusted  $R^2 = 0.522$ .

**Conclusion:** Majority of the patients spent long overall time. Most time was spent on waiting for services especially at examination, laboratory and imaging units. This seems to be strongly associated with high patient load, absence of some services, being referred patients and poor response of professionals.

**Keywords:** overall time, waiting time, service time, Jimma University Medical Center, out-patient department.

## **Acknowledgement**

I would like to thank institute of public health, department of health economics, management and policy of Jimma University for financial support in my study. My heartfelt thanks to Dr. Elias Ali, Ms. Firehiwot Worku and Mr. Ybeltal Sraneh for their valuable advice and guidance from developing the proposal to conclude this study. I express my deepest thanks to Mega project team.

My deepest acknowledgment goes to my beloved one Mr. Gete Berihun and my families supporting, strengthening and making me active enough during my studies and providing me necessary information and journals for my study.

I would like to acknowledge the staffs of Jimma University Medical Center for providing me preliminary data for the development of the proposal. Finally my deepest acknowledgement goes to Data collectors, supervisor and patients who involved in this study.

Table of contents	
Abstract.....	iii
Acknowledgement.....	iv
Table of contents .....	v
List of tables .....	vii
List of figures .....	viii
Abbreviation.....	ix
CHAPTER ONE.....	1
1. Introduction .....	1
1.1. Background .....	1
1.2. Statement of the problem.....	3
1.3 Significance of the study.....	5
CHAPTER TWO Literature review .....	6
2.1. Introduction .....	6
2.2. Waiting time.....	6
2.3. Service time.....	7
2.4. Overall time.....	8
2.5. Factors affect overall waiting time.....	9
2.6. Conceptual framework.....	12
CHAPTER THREE Objectives .....	13
3.1 General objective .....	13
3.2 Specific objectives.....	13
CHAPTER FOUR Methods and participants .....	14
4.1. Study area & period.....	14
4.2. Study design .....	14
4.3. Population.....	14
4.3.1 Source populations .....	14
4.3.2 Study population.....	14
4.4. Eligibility criteria.....	14
4.4.1 Inclusions criteria .....	14
4.4.2 Exclusion criteria.....	14
4.5. Sample size determination and sampling procedure.....	15
4.5.1. Sample size determination.....	15

4.5.2. Sampling procedure and sample selection .....	15
4.6. Data collection tools and procedures .....	16
4.6.1 Data collection tool .....	16
4.6.2 Data collection techniques .....	16
4.6.3 Data collectors and supervisors .....	16
4.7. Study Variables.....	17
4.7.1 Dependent variable .....	17
4.7.2 Independent variables .....	17
4.8. Operational definition .....	17
4.9. Data processing and analysis .....	18
4.10. Data quality management.....	19
4.11. Ethical considerations .....	20
4.12. Plan for dissemination of finding .....	20
CHAPTER FIVE RESULT .....	21
5.1 Descriptive analysis.....	21
5.1.1 Socio-demographic Characteristics .....	21
5.1.2 Facility related characteristics of the patient .....	22
5.2 Time spent by patients .....	27
5.2.1 Waiting time.....	27
5.2.2 Service time .....	28
5.2.3 Overall time .....	30
5.3 Factors associated with overall time spent .....	33
5.3.5 Multivariable linear regression analysis result .....	39
CHAPTER SIX .....	41
6.0 DISCUSSION.....	41
6.1 Limitation of the study .....	45
CHAPTER SEVEN Conclusion and Recommendation .....	46
7.1 Conclusion .....	46
7.2 Recommendations.....	46
References .....	48
ANNEX I: Patient Consent Form.....	50
ANNEX II: Data Collection Tools .....	52
DECLARATION.....	70

List of tables

Table 1: socio-demographic characteristics of the study participants in OPD of JUMC, 2018 .....	22
Table 2: pre-visit facility characteristics of respondents prior coming to the outpatient department of JUMC, 2018. ....	23
Table 3: post-visit characteristics of the respondent in the outpatient unit of JUMC, 2018 .....	26
Table 4: waiting time (in minute) at each section of OPD in JUMC 2018. ....	28
Table 5: service times (minutes) with in different section of OPD in JUMC 2018. ...	29
Table 6: the mean and median consultation time based on type of OPD at JUMC 2018. ....	29
Table 7: the mean and median consultation time based on type of disease at OPD of JUMC 2018 .....	30
Table 8: overall, total waiting and total service times in minutes for pediatric and adult age group of the respondent in JUMC 2018.....	31
Table 9: the overall time in minute, patients spent at each section of OPD, JUMC 2018. ....	32
Table 10: bivariate linear regression, assessing the association between overall times of patient spent from entry to exit and socio-demographic factors at JUMC, 2018. ....	34
Table 11: bivariate linear regression, assessing the association between overall times patient spent from entry to exit and pre-visit factors at JUMC, 2018 .....	36
Table 12: Bivariate linear regression assessing the associations between overall time patients spent from entry to exit in the assessment center and post visit factors in JUMC, 2018. ....	38
Table 13: the final model fit variables for overall time spent by patients of OPD in JUMC 2018. ....	40

## List of figures

Figure 1: the conceptual framework for overall times from entry to exit of clients developed by reviewing of different literatures in 2018. ....	12
Figure 2 the type of facility visited by patients before coming to OPD of JUMC in 2018. ....	23
Figure 3 the patients reason for not visit other health facility prior to coming to OPD, JUMC in 2018. ....	24
Figure 4: the unit patient experience delay at OPD of JUMC in2018.....	24
Figure 5: the overall time patient spent from entry to exit in OPD of JUMC in 2018. ....	31
Figure 6: Percentage of total median times of the different stages within the assessment center 2018.....	32



## **Abbreviations**

AFI	Acute Febrile Illness
ANC	Antenatal Care
CVD	Cardio Vascular Disease
EAMC	East Avenue Medical Center
ENT	Ear, nose, throat
ETB	Ethiopian Birr
FNA/C	Fine Needle Aspiration /Cytology
GIT	Gastro-Intestinal-Tract
IOM	Institute of Medicine
JU	Jimma University
JUMC	Jimma University Medical Center
LOS	length of stay
MLR	Multiple Linear Regression
NHS	National Health Service
O &G	Obstetrics and Gynecology
OECD	Organization for Economic Co-operation and Development
OPD	Outpatient Department
PNC	Post natal care
PWT	patient wait time
UK	United Kingdom
US	United State
UTI	Urinary Tract Infection
VIF	Variance Inflation Factor

# **CHAPTER ONE**

## **1. Introduction**

### **1.1. Background**

Health service organizations can use waiting and service time survey to measure the performance of individual clinic sessions, design new clinics, improve the clinic pattern, and review personnel needs to increase clinic efficiency. The potential advantages that may follow from conducting waiting and service times are to reduce waiting times, increases patient satisfaction, decreases anxiety expressed by patients, reduces stress on staff, increases efficiency and reduces inequalities in staff allocation (1)

Patients who check into hospitals often experience long wait times in waiting area. The degree to which clients are satisfied with the care received is strongly related to the quality of the waiting experience and service time (2,3).

The overall time refers to the length of time a patient spends in a health facility from the time of arrival at the facility to the time of exiting the facility while waiting time refers to the length of time a patient spends at each service delivery point as they wait to receive the required care from the health service provider (4). Service time refers to the time that patients spend for registration, routine doctor consultation, laboratory/diagnostic test, procedures and time for dispensing of drug during seeking medical care (5). Patient waiting and service times are an important indicator of quality of services offered by hospitals (3).

A huge differential exists between public and private hospitals whereas private hospitals may charge more than ten times the fee of public hospitals and can be one of the push factors for patients to attend public hospitals. Moreover, the demography of the public hospitals whereby it provides largely to the lower income earners and public servants also contributes to the overcrowding public hospitals (6).

Waiting times arise as the result of the demand and supply imbalance. If demand exceeds supply, a queue forms. Additionally the waiting time situation can also be difficult to improve long-term if the variation in supply does not adapt to variation in demand (7–9).

Long waiting time in government specialized hospital is a common complaint by patients seeking specialized care. Although almost all patients are seen on an appointment basis, patients often have to wait long beyond their appointment time before being seen (10).

## **1.2. Statement of the problem**

Efficiency and effectiveness of outpatient services have many dimensions, but an important aspect is excessive waiting time that is a major complaint of patients. Extra waiting time is non-value adding time because during this period, resources are not used to improve patients' medical condition. Excessive waiting time is a lose-lose strategy in that patients lose valuable time; hospitals lose their patients and reputation and staff experience tension and stress. Waiting time as well as consultation time are the main factors that affect patient and customer satisfaction. Increased waiting time adds to the indirect costs encounter from the patient's perspective. It may increase patient frustration and decrease the patient's sense of control (6,11,12).

In ambulatory patients prescription of unnecessary or harmful medication was highly related with shorter of consultation time that reduces preventive care and increases the risk of malpractice claims (13).

While waiting time is a global phenomenon that affects healthcare organizations throughout the world, there is still much to be done in order to reduce patient waiting time in public hospitals. Hospital administrators and policy-makers are becoming more and more concerned to reduce waiting time because it is a measure of organizational efficiency (6,11).

Reducing waiting time for elective procedures is a continuous health policy issue in many OECD countries. Several mechanisms have been introduced including maximum waiting time guarantees in UK, Netherlands, Finland, Sweden, Denmark and Norway, frequently linked to economic incentives. Other countries introduced additional mechanisms of patient choice and increased trust on private providers. Some countries also developed severity scoring systems in New Zealand and Canada or discipline specific guidance in Norway; that allows patients with higher score are treated more quickly (14).

Waiting times for National Health Service (NHS) hospital services have been a major political issue in the UK for several decades. They were a focus of government policy in the 1980s, yet remained long for routine hospital procedures. In 1991, for example, 120,000 people had been waiting at least 12 months and 50,000 people at least 24 months for hospital procedures (15).

Long waiting times are common in many developed and developing countries. This problem may not be easily resolved because of the complexity of causes, limited resources, and unpredictable elevation in demand (16).

While increased waiting time is a problem in Ethiopia the phenomenon is worldwide. A five-country hospital survey found that Canada, Britain and the USA reported average waits of two hours or more. In Hong Kong public hospitals the longest time that patients spent at the clinic was in waiting for consultation where 82% of total visit time is spent in the waiting room (6).

Some factors of overall time were socio-demographic factors (gender, age, educational status, residency and occupation), high patient load, patient arrival time, poor appointment schedule, type of diagnosis and type of investigation (3,4,12,13,17).

Long waiting times are commonly seen in outpatient facilities, and this difficulty contributes to a range of public health issues, including impaired access to care, interruption of hospital work patterns including health service delivery, efficiency, quality, transparency, and accountability, and patient dissatisfaction (18–20). As a result citizen charter that is the new public management approach was introduced and are initiated to encourage service providers to be responsive and to inform citizens about service entitlements, standards and rights (21).

In Ethiopia, there has been noteworthy progress, including the introduction of citizens' charter at different sectors. This standard was implemented in Jimma University Medical Center (JUMC) since 2016. The charter enables the service seekers to avail the services of the government departments with minimum inconvenience and maximum speed (22).

The waiting period stated in individual clinics Clients Charter is not standardized and is subjected to local conditions (10).

The time patient spent in hospital is one indicator of the quality of service provided. Even though, Jimma University launched citizen charter to provide timely services at JUMC in October 2016. The overall time spent by patients from entry to exit in JUMC is not assessed. Therefore, this study was applied to assess the overall time patients spent from entry to exit and associated factors in OPD of JUMC.

### **1.3 Significance of the study**

The finding obtained from this study was provide information on overall time including of waiting times, service times and bottle-neck areas on patient delay that helps hospital administrators and staffs to promote effective implementation of citizen charter on waiting and service times. That will improve the efficiency of operations and quality of service delivery at the JUMC. It would also contribute for researchers by identifying the areas of gap for further researches. Because of all these things, this study was applied to assess overall time patients spent and associated factors experienced by clients from entry to exit in OPD of JUMC.

## **CHAPTER TWO**

### **2. Literature review**

#### **2.1. Introduction**

Healthcare organizations that strive to deliver exceptional services must effectively manage their clinic overall time. Patient clinic overall time is an important indicator of quality of services offered by hospitals. Overall time is a tangible aspect of practice that patients will use to judge health personnel (3).

#### **2.2. Waiting time**

Most Clients Charter in government facilities arbitrarily states the waiting time as between 30- 45 minutes for services, provided patients are punctual.(10) The Malaysian Ministry of Health's patient charter, which stated that the waiting time for patients to be seen by the first provider in hospital outpatients and public health clinics should not exceed 30 minutes upon arrival with a standard of 80% target of achievement (11).

In China, a study among outpatients in a teaching hospital showed that the average wait time for registration was 98 minutes and the mean (SD) actual waiting time was  $150.5 \pm 55.1$  minutes (18).

The outstanding waiting time problem in the Chinese health systems lies in two aspects, one is long waiting time at the registration and admission windows. This is mainly due to that most Chinese hospitals used not to schedule the appointment, patients get registered upon arrival to hospitals at the service window, thus the unplanned patient flow clogged in hospitals. The other aspect of the problem is the long waiting time between the appointment time and the time patients are attended by doctors. Findings from the 2015 China National Patient Survey from 136 public tertiary hospitals showed that outpatient users of ambulatory services were least satisfied with long waiting times for consultations. The key reason behind this is that the increasing of patient demand is faster than that of the health care resources (23).

The Institute of Medicine (IOM) recommends that, at least 90% of patients should be seen within 30 min of their arrival time. This has however not been realized in many African countries, as several studies have shown that patients spend 2-4 h in

the outpatient departments before seeing the doctor. A study in North Western Nigeria showed that the mean (SD) registration time was 78.22 (22) min. (3)

The study done in Malaysia showed that the average waiting time to get treatment from registration time for different type of clinics ranges from 18 minutes to 85 minutes (6).

A study conducted at OPD in Hosanna showed that the average and median waiting time at OPD was found to be 30.9 minute and 28 minute with a standard deviation of 18.4. Similarly for laboratory and pharmacy, average and median waiting time were 26.8 & 19(25) minutes and 10.56minutes and 9(7.5) minutes respectively (24).

A study conducted in JUSH, 88.5% of patients gave their laboratory specimen to the laboratory technologist with an average wait time of  $1.11 \pm 0.32$  hrs. About 85.4% of patients received their laboratory result with a mean waiting time of  $1.87 \pm 0.36$ hrs. Among X-rayed patients, 37.1% of patients took a mean time of  $1.91 \pm 0.79$ hrs to be X –rayed. Most (52.6%) of patients got a physician within an hour after receiving their laboratory result (25).

### **2.3. Service time**

The study done in china outpatient teaching hospital showed that the mean (SD) actual service time was  $17.8 \pm 13.5$  minutes (18). The Malaysia Ministry of Health patient charter which stated that the dispensing of medication from the time the pharmacy received the patient's prescription should not exceed 30 minutes with a standard target of 95% (11).

The study done in Malaysia showed that while waiting time appears to be lengthy, the contact time with health personnel lasts on average was 10 minutes, with the exception of the O & G clinic, where the average contact time is 20 minutes (6).

East Avenue Medical Center patients' charter, which stated that the time for registration was 5-10 minutes (26) while Philippine Heart Center charter stated that the total service time for OPD was 37 minutes from screening of patients to give instructions on medications, laboratory tests and follow up, as well as it stated that the service time for outpatient pharmacy dispensing of drug was 18minutes (27).



Another study done in Malays referral hospital showed that the mean consultation time was 18.21minutes. While mean consultation time for diagnosis categorized of psychiatric, oncology, O&G, and surgical patients was 60min, 50min, 25.5min, and 19.2min respectively; but for medical, ENT, orthopedics, ophthalmology and pediatrics was 18.2min, 18min, 16.8min, 13.3min and 12minutes respectively(11). Other study indicated that with regards the consultation time, 36.1% respondents spent less than 5 min with the doctor, whereas only 19.6% spent more than 10 min with the doctor. The mean (SD) consultation time with the doctor was 7 (4) minutes.(3)

JU citizen charter stated that the time for registration, general OPD, ANC&PNC, pediatrics age OPD, ophthalmic OPD service and dental OPD service are 5min, 45min, 20min, 20min, 25min and 20minutes respectively (22).

#### **2.4. Overall time**

A study done in China outpatient teaching hospital the mean (SD) overall time was  $168.3 \pm 57.9$ minutes.(18) A study done in Swedish showed that 38% of patients spend more than 4 hours at the ED with the oldest age group waiting the most (28).

A national study of Malaysian public hospitals documented that the average patient wait time, from registration to receipt of a prescription slip, was more than 2 hours, whereas the average time spent consulting the medical personnel was just 15 minutes (6).

A study in a US tertiary hospital showed that 61% of the patients waited 90 to 180 minutes in the outpatient department, while 36.1% spent less than 5 minutes with the doctor in the consulting room (18).

A study conducted in Indies showed that patients waited for long periods of time for each interaction; however, the actual interaction times were short. Of the total median length of stay of 302 minutes, 13 minutes (4.3%) was interaction time and the rest was waiting time. Only six minutes (2% of total visit time) was spent with the emergency physician—the core service the patient was seeking. The remaining seven minutes of patient interaction time was spent at registration, clerking, triage, and other such activity. These activities are unlikely to be considered valuable by the patient (29).

One study showed that 61% respondents waited between 90 and 180 min in the hospital from entry to exit, whereas 36.5% waited for more than 180 min with a mean total hospital waiting time (SD) of 168 (35) minutes (3). Other study that done at OPD showed that the average & median time of hospital stay(overall time) was 122.2 & 121 minutes respectively with standard deviation of 57 minute(24).

### **2.5. Factors affect overall waiting time**

Predictor variables included patient demographics, hospital characteristics, and hospital visit data. Patient clinical characteristics included triage score and patient orientation (i.e., able to name self, location, and date). Other variables include provider type (e.g., resident, staff physician) and the procedures performed during the visit, as well as the number and type of medications administered and visit disposition and hospital location in an urban area patients. The longer length of stay could be related to language barriers, with additional time required to explain and discuss diagnoses, procedures, and discharge instructions, or to wait for the arrival of interpreter's (17).

Overall time is highly influenced by a patient's individual psychological processing. Only 25–35% of patients are able to accurately estimate their wait time, with a majority of patients overestimating their wait times. As such, two separate individuals experiencing the same wait time will process this experience differently, resulting in two different perceptions of their wait experience. The attractiveness of the physical environment of healthcare facilities can have an impact on the patients' perception of waiting times. The availability of entertainment such as television, health information and reading materials may improve the expectation of waiting. The presence of helpful and friendly staff is also important to improve the waiting experience (6,11,30).

The overall time varied with the day of week and the time of day. The waiting time was also correlated with the flow rates and the queue sizes. As the queue size increased, the waiting time became to be longer, whereas as the faster the patient flow rate, the shorter the waiting time (16).

In the healthcare setting, a physician must review lab tests, imaging results, vital signs, etc. before a patient can be moved from a hospital unit. Typically, nurses execute the care plan ordered by the patient's physician; however, even if a nurse

suspects a patient may be ready for discharge, this cannot occur without physician approval. Physicians have many demands on their time and are not available during the day. So physician inspections most often occur on a one-time basis—early in the morning when rounds take place, which in teaching hospitals, also provide an educational opportunity for medical residents and students (31).

A study done in Indies indicated that Younger patients were seen more quickly and had a shorter disposition time; that reducing their length of stay. But for older patients the system seems to fail and exposed them to spend an inordinately long period. The main contributors to this longer length of stay include waiting for specialist review, laboratory results and inpatient beds (29).

High number of patients, shortage of staff, aging equipment, poor scheduling of appointments, healthcare provider delay and scant attention to punctuality, delay in decision making and non-availability of vehicles for transportation of patients and poor adherence to appointment time by patients are among the factors contributing to a lengthy waiting time. A long and complicated registration or work process with unnecessary duplication of tests can also prolong overall time in hospitals (2,10,11).

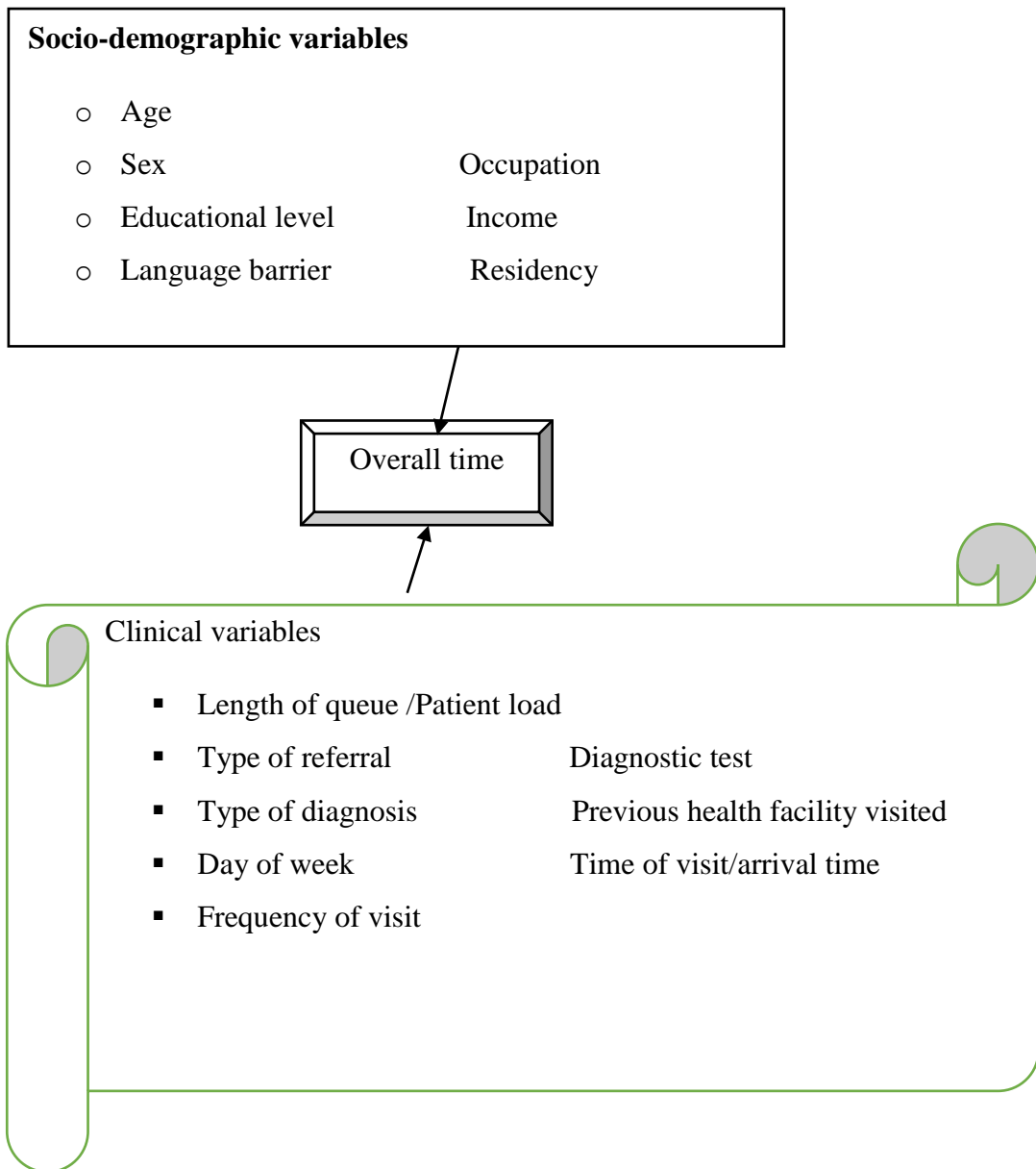
A study conducted in Malawi indicated that patient overall time was higher for children with a mean (SD) time of 134.9(±65.5) minutes than adults with a mean (SD) time of 110.7(±67.9) minutes. Patient mean (SD) overall time was higher on Thursday and Friday which was 138.2(±50.3) minutes and 137.8(±76.6) minutes than on other days of the week. The mean overall time patient spent was higher in the early morning hours ranging from 158(±58.3) minutes between 06:00 and 08:00 h to 54.7(±27.5) minutes between 14:00 and 16:00 h (32).

The study done in north western Nigeria indicated that the most common factors leading to long overall time were high patient load, few doctors, few filing and record clerks and jumping of queue by patients or staff members (3). Long waiting hours during registration, visiting of Doctors after registration, laboratory procedures and re-visiting of the Doctor for evaluation with laboratory results and difficulty to locate different sections were the frequently faced problems affecting utilization (33).

### **Summary of Literature Review**

The literature review shows that delay in getting care in OPD is a global problem faced in countries at all level even if the degree of the problem vary. This problem is a major cause for patient dissatisfaction and poor quality of service. That also affects the utilization of health care services.

## 2.6. Conceptual framework



*Figure 1: the conceptual framework for overall times from entry to exit of clients developed by reviewing of different literatures in 2018.*

## **CHAPTER THREE**

### **3. Objectives**

#### **3.1 General objective**

To assess overall time spent by clients from entry to exit and associated factors to over all time in out-patient department of Jimma university medical center in 2018.

#### **3.2 Specific objectives**

To measure waiting time of patients at each unit in OPD of JUMC.

To measure actual service time experienced by clients at each unit in OPD of JUMC.

To calculate the overall time spent from entry to exit of clients in OPD of JUMC.

To identify factors associated with over all time patients spent from entry to exit in OPD of JUMC.

## **CHAPTER FOUR**

### **4. Methods and participants**

#### **4.1. Study area & period**

This study was undertaken in Jimma University Medical Centre (JUMC). It was established in 1922. Geographically, it is located in Jimma town 352Km south west of the capital Addis Ababa. According to JUMC planning and program officer report; JUMC has a catchment population of about 15 million people. The centre has annual out-patient case load of 160, 000 and 20, 000 in-patients. It provides services to diverse population from three regional states; namely, Oromia, Southern Nations, Nationalities and Peoples, and Gambella. It provides four main services those are: - clinical services, laboratory and diagnosis services, facility services and private wing services. It has 800 beds but only 640 are active and it has 833 health professionals and 766 administrative employees. It provide service for 49,505 OPD patients in the last 1<sup>st</sup> quarter (October-December). It has 24 on working OPD rooms (JUMC planning and program office report, 2017). The study was carried out from March 15 to April 15, 2018.

#### **4.2. Study design**

Institution based cross-sectional study design was used.

#### **4.3. Population**

##### ***4.3.1 Source populations***

All patients who came to OPD of JUMC for health service.

##### ***4.3.2 Study population***

Consecutively selected patients who had received service in OPD of JUMC during data collection period.

#### **4.4. Eligibility criteria**

##### ***4.4.1 Inclusions criteria***

Clients present in outpatient department of JUMC during data collection period.

##### ***4.4.2 Exclusion criteria***

Patients who was critically ill (labeled as emergency case), psychiatric patients who were violent, those who came for repeat medications, investigations or procedures only without seen by the doctor was excluded.

## 4.5. Sample size determination and sampling procedure

### 4.5.1. Sample size determination

Since the outcome variable was continuous and want measure of meantime, the sample size was calculated by using T-test. From one sample T-test using of mean (SD) waiting time at OPD and laboratory the result was very small that was 13&18 respectively. Due to obtained of too small “n” from one sample T-test, two sample T-test was the method to determine the sample size for this study by using children and adult mean(SD) waiting time 133.2(65.4) &108.4(67.6) respectively. (32) Age was one factor that affect the overall time. By using “WINPEPI” software at 5% significance level and 80% power the required sample size was 249 by adding 10% non-response rate.

For one sample T-test:  $n \geq (Z_{\alpha/2} + Z_{\beta})^2 * (\sigma / \mu_1 - \mu_2)^2$

$$= (1.96 + 0.842)^2 * (18.4 / (45 - 30.9))^2 = 13.37 \approx 13 \text{-----waiting time at OPD}$$

$$= (1.96 + 0.842)^2 * (25 / (10 - 26.6))^2 = 17.8 \approx 18 \text{-----waiting time at laboratory}$$

For two sample T-test:  $n_1 = n_2 \geq (\sigma_1^2 + \sigma_2^2) / (\mu_1 - \mu_2)^2 * (Z_{\alpha/2} + Z_{\beta})^2$

$$= ((65.4)^2 + (67.6)^2) / (133.2 - 108.4)^2 * (1.96 + 0.842)^2 = 112.9 \approx 113 \text{-----mean waiting time between children and adult.}$$

$$n_1 = n_2 = 113 \text{ but total sample size } = n_1 + n_2 = 226 \text{ then add 10\% non-response rate } = 22.6 \approx 23 + 226 = 249$$

Two sample T-test was used, by using age was one factor that affects the overall time from entry to exit of clients, because it gave the largest sample size compared with values obtained from one sample T-test.

### 4.5.2. Sampling procedure and sample selection

By using consecutive sampling method the study participants was selected from patients who attend the OPD during data collection period. During data collection period, patients available at waiting area of registration was taken as study participant until the required sample size reached to 249. The data was collected both on pediatric OPD and adult OPD.



## **4.6. Data collection tools and procedures**

### **4.6.1 Data collection tool**

There were two data collection tools that was used in this study. The tools were adapted by reviewing of different literatures (3,4,6,10,12,13,17,19,23,32,). The first tool was the time and motion that measures times by using independent observation for each unit of service delivery. This tool was used to track patient flow from the time they enter, through various units until the time they exit from the medical center. That means it measured the time spent at each unit, in form of waiting and service time by using similarly adjusted phone for time measurement. In addition to this, the tool captured the number of patients at each unit as the patient moved.

The second tool was the interviewer administered structured and translated (Amharic and Afan Oromo) questionnaire. This tool captured demographic variation among patient, their previous encounters with others health services, purpose and frequency of visit.

### **4.6.2 Data collection techniques**

By applied both independent observation and interview the data was collected during the day time from 8am up to 6pm of the five working days for a period of four weeks.

By creating networking system the data was collected i.e. by creating the system that allowed one data collector able to followed more than two patients once at one site. The data collectors were observing the entrance during each random time point and as the patient arrive, they were recording the arrival time of the patient, requested consent, count number of patients present before the selected patient, recorded the socio-demographic data of the participants selected, and then tracked the participants through the service points while recording the actual waiting and service time on the tool using mobile phones. They also reviewed the patients' charts for diagnosis. Finally the exit questioner was administered at the last point of service.

### **4.6.3 Data collectors and supervisors**

Seven BSc data collectors and two supervisors were recruited and trained on basic data collection technique and methods of interview for one day to collect the data. The data collectors and supervisors were health background and were spoke the

local language. The supervisors were supervise the data collection process and check quality and completeness of the questionnaire.

#### **4.7. Study Variables**

##### **4.7.1 *Dependent variable***

Overall time from entry to exit

##### **4.7.2 *Independent variables***

Socio-demographic variables

- Age
- Sex
- Educational level
- Language barrier
- Occupation
- Income
- Residency

##### **Clinical variables**

- Type of referral
- Type of diagnosis
- Previous health facility visited
- Arrival time
- Length of queue
- Diagnostic testing
- Day of week
- Frequency of visit

#### **4.8. Operational definition**

**Out-patient** is the patient that visit the hospital out-patient department and leave the out-patient department within three days.

**Service time** was the time a patient spent in contact with a health worker for registration, consultation, laboratory test, other procedures and dispensing of medicines in OPD of JUMC that measured in minutes.

**Waiting time** was the time a patient had to wait at registration, triage, consultation, laboratory, other diagnostic units and at pharmacy to receive a service in the OPD of JUMC that measured in minutes.

**Overall time** was calculated by subtracting the time of the patients arrival from the time of the patients exit the OPD.

**Queue size** was the number of patients in line at every service point.

**Arrival time** was the time the patient reports to the seeking health care/the time the patient reaches to the registration room.

**Language barrier** was requirement of additional time to explain and discuss diagnosis, procedures, or to wait for the arrival of interpreter's.

#### **4.9. Data processing and analysis**

Auditing, coding and sorting of collected questionnaires done manually every day to check for completeness. The completed questionnaire coded and entered into Epi Data v3.1. After checking and correcting errors, the data was exported to SPSS version 20.

All assumptions of linear regression were checked. Normality of distribution was checked by observing using histogram and P-P plot. Linearity was checked by observing scatter plot. Independency/multicollinearity was checked by examining the variance inflation factors (VIF) and tolerance so the values for each variables less than 2 and greater than 0.85 respectively were taken as no similarity/independency. Finally, constant variance/homoscedasticity was checked by observing all residuals and scatter plot. So, all plots and contained points expected to have the same width.

Descriptive statistical analysis was used to summarize socio-demographic data, and summary of the time spent in contact with a health worker (service time), time spent waiting to see the health worker (waiting time) and overall time was generated and presented by table and graph by using mean, median and standard deviation.

For Laboratory and X-ray units where patients was wait twice i.e. to hand in laboratory request and to receive results these time periods was considered waiting times and add to comprised waiting time in laboratory and X-ray respectively.

Continuous independent variables like age and arrival time were categorized into dummy variables, to ensure that the different categories were analyzed separately. This was avoid missing of important variable. Simple linear regression analysis was conducted and presented into three sections i.e. socio-demographic characteristics, pre-visit characteristics and facility characteristics (post visit). Significant variables at P-value  $<0.25$  selected as candidate variable for multiple linear regressions. But variables there case number less than ten were not entered to MLR model. T-test was used for comparing overall time with in gender, language barrier, presence of diagnosis, history of visit other health facility, pediatric and adult patient and residency. Multiple linear regression analyses was done to identify factors that predict the overall time at significance level of p-value  $<0.05$  with 95% confidence interval. The reduced final model was constructed by using backward method in descending order in a stepwise manner until the model only include variables where the dependent variable showed statistical significance differences with its reference variable ( $P<0.05$ ). The goodness of model fit was tested by using adjusted R2 value which was 0.522 that means the variation on overall time was explained by the difference of number of patients at the queue, type of diagnostic test and type of visit (referred). Finally the result obtained from this study was compared with citizen charter's time which was formulated in 2016

#### **4.10. Data quality management**

Translation of questionnaire from English to Amharic and local language (Afan Oromo), and back translation for its consistency. Pre testing of the questionnaire was done on 5% (13) patients at outpatient department in the same area prior to the study period, completeness and consistency of response was checked and correction was made. The data collectors were trained for one day on the concepts of the study, methodology, how to administer the tools and to ensure that they was familiar with the facility and where each was station before the study began. Training was done by the investigator. Data collectors' time was arranged in the same.

Technical support and supervision was provided by supervisors for one months of data collection for quality control of the data.

All the questionnaires and time tracking tools was checked by the investigator for completeness and for any errors at the mid time and evening during the day for the whole days of data collection.

Variables that were record include; principle diagnosis was collapse to major diagnosis diseases in public hospitals, reasons why patients was delay and reasons not visit other health facilities was collapse to the major reasons that patients state, was collapse and re-code to easy analysis. After data entered cleaning and editing applied in order to checking accuracy of entry, exploring entered data for errors and managing errors.

#### **4.11. Ethical considerations**

Ethical clearance was obtained from Institutional Review Board (IRB), Institute of Health science, Jimma University. Formal letter of cooperation was write to JUMC and permission was secured from Medical Science faculty dean of JUMC.

After a brief explanation of the research, verbal consent was obtained from each study client. For pediatric age group the consent was obtained from their parents or relatives came with them. The name of the patient was not entered into the questioners and all information obtained was kept confidential.

#### **4.12. Plan for dissemination of finding**

The finding is present to the Jimma University scientific community in a defense and the result will submit to the Jimma University Institution of Health. The findings will also be communicate to Jimma University Medical Center to enable them to take and apply research recommendations during their planning process. The report will submitted to Mega research team. In addition the result will communicate to the Jimma zone health facility managers. Publications in peer-reviewed, national, or international journals will be done.

## **CHAPTER FIVE**

### **Result**

#### **5.1 Descriptive analysis**

##### **5.1.1 Socio-demographic Characteristics**

A total of 249 patients were followed with response rate of 94.78% (236) who passed through registration and clinical examination, 132 through triage, 19 went for X-ray, 136 to laboratory and 202 through the pharmacy of the assessment center. A non-response rate of 5.22%, about 13 patients who said that they did not have time to take be interviewed and left without completion of the observation.

Fifty two percent of the patients (123) were females and 46.6% (110) were children between 0-14 years. Fifty one percent (120) came from Jimma town.

Thirty five percent (47) of the patients were unemployed, while 35.5% (22) of the patient had 1500-3000ETB of monthly income and 41.3% (71) had attained primary education and 16.1% (38) patients had language barrier during their visit.

See table 1.

*Table 1: socio-demographic characteristics of the study participants in OPD of JUMC, 2018*

Variables	Frequency	Percentage
<b>Respondent's sex</b>		
Male	113	47.9
Female	123	52.1
<b>Age (in year)</b>	n=236	
≤14	110	46.6
15-29	61	25.8
30-44	29	12.3
45-59	25	10.6
>59	11	4.7
<b>Residency</b>	n=236	
Jimma town	120	50.8
Out of Jimma town	116	49.2
<b>Employment status</b>	n=134	
Student	28	20.9
Unemployed	47	35.1
Self-employed	37	27.6
Formal-employed	20	14.9
Non-formal employed	2	1.5
<b>Monthly income of patient in ETB</b>	n=72	
≤500	6	9.7
501- 1500	13	21
1501 – 3000	22	35.5
>3000	21	33.9
<b>Educational status</b>	n=172	
Unable to read and write	30	17.4
Informal education	7	4.1
Primary school	71	41.3
Secondary school	30	17.4
Tertiary	34	19.8
<b>Language barrier</b>		
Yes	38	16.1
No	198	83.9

## **5.1.2 Facility related characteristics of the patient**

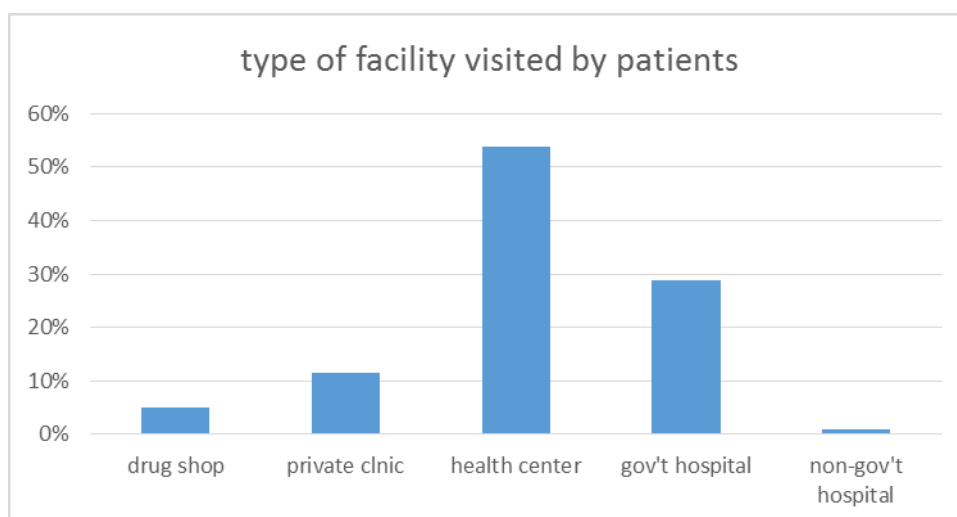
### **5.1.2.1 Pre-visit facility characteristics of the patient**

Before patients came to JUMC, 51.3% (121) patients had visited other health facilities for similar reason, among this, 53.7% (65) had visited health center. Forty four percent (50) come expecting better services as a major reason for not visit other health facility for their illness. Fifty five percent (130) of patients visit

the JUMC more than once and 46.2% (109) were referred patients. (Table 2, figure 1&3)

*Table 2: pre-visit facility characteristics of respondents prior coming to the outpatient department of JUMC, 2018. (n=236)*

Pre-visit characteristics	Frequency	Percentage
<b>Visited other health facility</b>		
Yes	121	51.3
No	115	48.7
<b>Frequency of visit</b>		
New attend	106	44.9
Repeat attend	130	55.1
<b>Purpose/type of visit</b>		
Review/appointment	39	16.5
Referred	109	46.2
Self-refer	88	37.3



*Figure 2 the type of facility visited by patients before coming to OPD of JUMC in 2018. (n=121)*



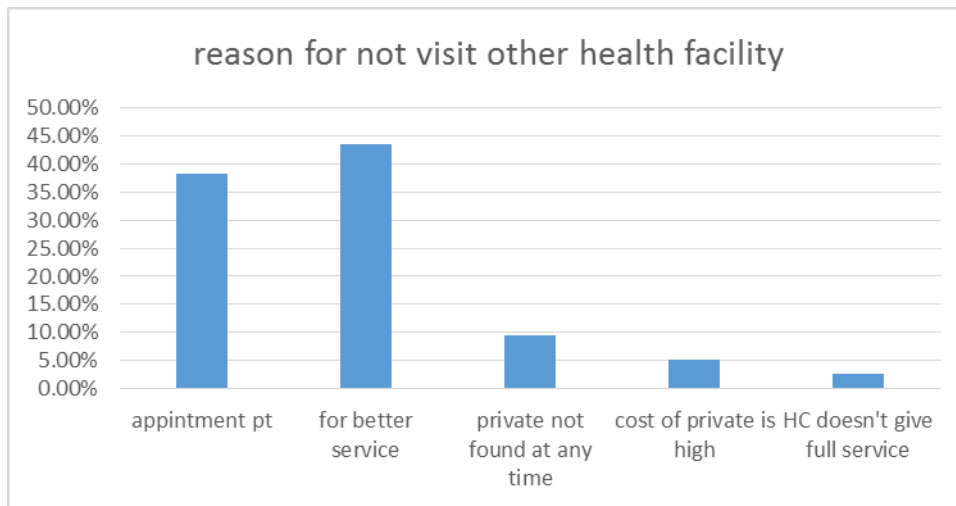


Figure 3: The patients reason for not visit other health facility prior to coming to OPD, JUMC in 2018 (n=115).

### 5.1.2.2 Post-visit facility characteristics of the patient

At the time they entered to JUMC, 50.4% (119) had arrived between 8-9am and 30.9% (73) come on a Thursday.

During their visit at the OPD, 52.9% (125) reported they were spent long time at the hospital, 47.9% (113) and 34.7% (82) of patients reported delay at laboratory and examination unit respectively. Fifty seven (135) and 38% (90) said delays were due to high patient load and staff failed to response timely respectively. (Figure 4)

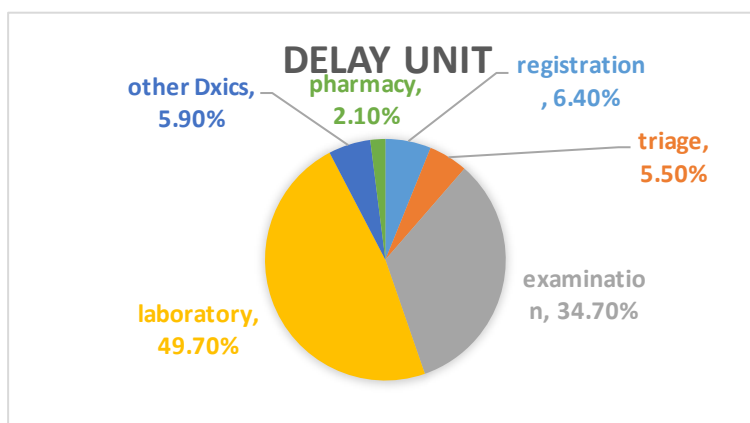


Figure 4: The unit patient experience delay at OPD of JUMC in2018 (n=125)

During their visit, around 69.5% (164) of patients went to medical OPD, around 98.7% (233) patients had disease diagnosed and around 22% (51) of patients had respiratory disorders.

For delay unit and reason of delay the response was multiple choice so the total percentage greater than 100. (Table 3)

Table 3: post-visit characteristics of the respondent in the outpatient unit of JUMC, 2018 (n=236)

Post visit characteristics of the respondent	Frequency	Percent
Arrival time		
Before 8am	5	2.12
8-9am	119	50.4
9-10am	63	26.7
10-11am	11	4.7
11-12am	2	0.85
After 12am	36	15.3
Date of visit		
Monday	40	16.9
Tuesday	41	17.4
Wednesday	40	16.9
Thursday	73	30.9
Friday	42	17.8
Duration in hospital (perceived response)		
Long	125	52.9
Fair	77	32.6
Short	34	14.4
Reason for delay (perceived response)		
Many patients	135	57.2
Staff failed to response timely	90	38.1
Jumping of the queue by staffs	5	1.93
Weak communication	8	3.4
Distance b/n registration & OPD	5	2.12
Some medicine &lab not found here	16	6.8
Unit of patient undergo		
Medical OPD	164	69.5
Surgical OPD	42	17.8
Gyni OPD	15	6.4
Ophta OPD	7	2.96
Dental OPD	4	1.7
Mental OPD	4	1.7
Presence of diagnosis		
Yes	233	98.7
No	3	
Type of diagnosis confirmed		
AFI	20	8.5
UTI	30	12.7
Respiratory disorder	51	21.6
GIT disorder	40	16.9
CVD	18	7.6
Surgical/orthopedics	37	15.7
Skin disease	11	4.7
Cancer	5	2.15
Others ***	21	9.01

\*\*\* presents dental cases, ophthalmic cases, gynecology and mental cases.

## **5.2 Time spent by patients**

### **5.2.1 Waiting time**

Overall, patients spend a maximum and minimum time of 557 minute (9:17hrs) and 5 minutes respectively waiting to be attended to by any health worker. The average and median time of total wait also found to be 213.9min and 222.5 minute respectively with standard deviation of  $\pm 122.3$  minute. Twenty five percent (59) of patients waited more than five hours.

A median and average waiting time at registration were 10 minutes and 19.22 minute with a standard deviation of  $\pm 25.6$ . The maximum and minimum waiting time at registration was 246 minutes and 1 minute and most frequently recorded time was 5 minute with frequency of 23(9.7%).

From a total of 236 study participants 55.9% (132) were pass through triage to OPD for examination. A median and average waiting time at triage was 18minute and 22.2minute respectively with standard deviation of  $\pm 20.65$ minutes. The maximum and minimum wait time was 130minutes and 2minutes and the most frequently observed time was 20 minutes with 12(9.1%) respectively.

Based on this direct observation and recording of result the median and average waiting time at OPD(examination unit) was found to be 58minute and 63.9 minute with a standard deviation of  $\pm 43.7$ minutes. The maximum and minimum waiting time were 300 and 1 minute respectively. Almost half of the patients 46.6% (110) were forced to wait more than 1hr to enter the examination room, while only 17.4% (41) patients were enter to the examination room with in 30minutes of wait.

From a total of 236 patients 57.6% (136) were sent to laboratory. From a record of waiting time at laboratory for 136 patients' median and average waiting time were 163.5 minutes and 171 minutes respectively with a standard deviation of  $\pm 54.37$ , the maximum and minimum waiting time were 329minutes and 53minutes respectively. Thirty nine percent (53) of the patient waits greater than 180minutes. Similarly 8.05% (19) patients were sent to X-ray and median and average waiting time were 86minutes and 90minutes respectively with a standard deviation of  $\pm 48$ minutes. The maximum and minimum wait time was 176minutes and 17minutes respectively. Twenty six percent of the patient spent greater than 120minutes.

Additionally only 11.9% (28) patients were sent to other diagnostics units (ultrasound, sputum examination and FNA/C); median and average wait time were 49.5 minutes and 64 minutes respectively with standard deviation of  $\pm 65.6$ . The maximum and minimum wait time was 333minutes and 2minutes respectively.

Patients who had prescription to the pharmacy department were 202(85.6%); average and median waiting time at the pharmacy department were found to be 6 minute and 5 minute respectively with standard deviation of  $\pm 6.9$ minutes. Around 2.5% patients wait greater than 20minutes.

**Table 4: waiting time (in minute) at each section of OPD in JUMC 2018.(n=236)**

		Mean (SD)	Median	Maximum	Minimum
Registration		19.22( $\pm 25.6$ )	10	246	
Triage		22.2( $\pm 20.7$ )	18	130	2
Examination		63.9( $\pm 43.73$ )	58	300	1
Laboratory	Pre	68.6( $\pm 39.9$ )	56	205	10
	Post	102.4( $\pm 44.7$ )	95	290	27
x-ray	Pre	78.8( $\pm 46.12$ )	68	163	15
	Post	11.3( $\pm 19.8$ )	3	81	1
Other Dics***		64 ( $\pm 65.6$ )	49.5	333	2
Pharmacy		6.22( $\pm 6.9$ )	5	57	

\*\*\* presents ultrasound, sputum examination & FNA/C.

### 5.2.2 Service time

The median and average service time that the patient spent with contact to the health worker was 43.5minutes and 50.3minutes with a standard deviation of  $\pm 28.5$ minutes respectively. This accounts 12.7% of the overall time patient spent from entry to exit.

**Table 5: service times (minutes) with in different section of OPD in JUMC 2018. (n=236)**

Units	Mean (SD)	Median	Maximum	Minimum
Registration	9.4(±6.4)	8	55	2
Examination	25.2(±14.9)	22	105	4
Laboratory	5.35(±2.8)	5	17	2
x-ray	9.2(±1.23)	9	12	7
Other Dxics***	50(±52.4)	30	210	10
Pharmacy	8.6(±5.4)	7	32	2

\*\*\* presents ultrasound, sputum examination & FNA/C.

For patients who went to dental, gynecology, and medical OPD the mean consultation time was 37.75min, 29.33min, and 25.34minutes respectively.

**Table 6: the mean and median consultation time based on type of OPD at JUMC 2018.(n=236)**

Unit patients undergo	Mean (SD)	Median
Medical	25.3(±14.73)	23.0
Surgical	23.5(±10.99)	22.0
Gynecology	29.3(±24.25)	20.0
Ophthalmic	17.3(±6.78)	15.0
Dental	37.8(±14.8)	38.5
Mental	22.3(±20.2)	15.0
Total	25.2(±14.9)	22.0

As showed the table below, The mean and median consultation time for patients who had CVDs, others(ophthalmic case, mental case, dental case and gynecology cases), respiratory disorders and surgical/orthopedics conditions was 30.11min, 28.52min, 26.88min, 26.25min and 25min, 25min, 24min and 24minutes respectively.

**Table 7: the mean and median consultation time based on type of disease at OPD of JUMC 2018 (n=233)**

Disease confirmed	Mean (SD)	Median
AFI	20.1(±6.5)	19.5
UTI	22.0(±8.5)	22.0
Respiratory disorder	26.9(±12.7)	24.0
GIT disorder	23.6(±18.7)	19.0
CVD	30.1(±20.7)	25.0
Surgical/orthopedics	26.3(±12.9)	24.0
Skin disease	21.7(±11.2)	21.0
Cancerous infection	24.2(±7.6)	23.0
Others <sup>***</sup>	28.5(±22.4)	25.0
Total	25.1(±14.9)	22.0

<sup>\*\*\*</sup> presents dental cases, ophthalmic cases, gynecology and mental cases.

### 5.2.3 Overall time

The maximum and minimum overall time spent in OPD of JUMC were 1180 minute (19:40hrs) and 37 minute respectively. The average and median time of hospital stay also found to be 312.3min and 342.5 minute respectively with standard deviation of ±160.2 minute. A total of 30.5% (72) study participants stayed a maximum of three hour and 55.5% (131) of respondents stayed more than 5 hours in the hospital. Almost 86% of the overall time was spent as waiting time while around 12.7% accounts as service time. The following figure summarizes overall time spent in OPD.

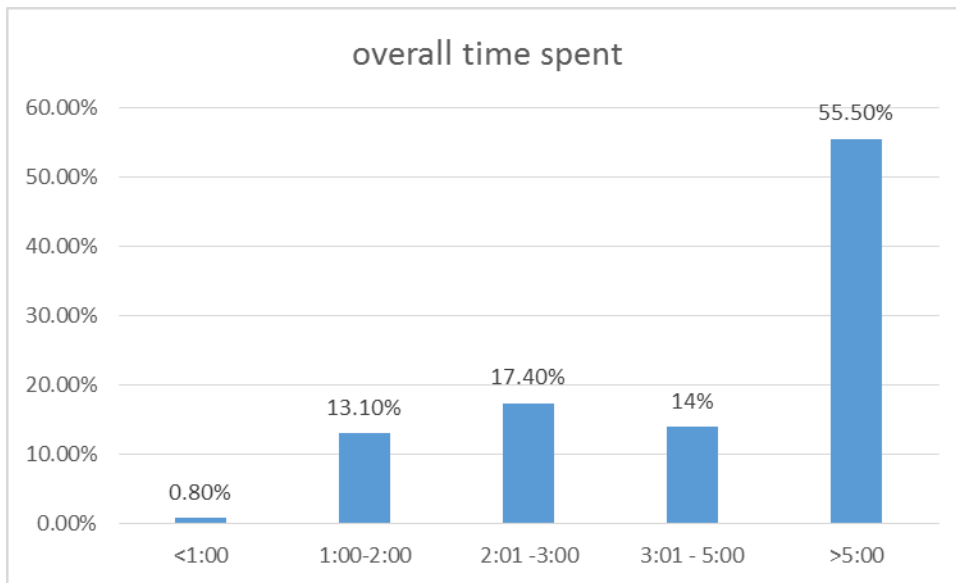


Figure 5: the overall time patient spent from entry to exit in OPD of JUMC in 2018 (n=236).

For pediatric patients the mean and median overall time was 231.02 minutes and 177.5 minutes respectively with standard deviation of  $\pm 153.9$  minutes. While for adult age group the mean and median overall time was 383.3 minutes and 396 minutes respectively with standard deviation of  $\pm 129.15$  minutes.

Table 8: overall, total waiting and total service times in minutes for pediatric and adult age group of the respondent in OPD of JUMC 2018. (n=236)

Age		Overall time	Wait time	Service time
≤14yrs	Mean(SD)	231.0( $\pm 153.9$ )	146.3( $\pm 101.99$ )	48.2( $\pm 20.9$ )
	Median	177.5	106.0	43.0
>14yrs	Mean (SD)	383.3( $\pm 129.2$ )	272.9( $\pm 107.3$ )	52.2( $\pm 33.7$ )
	Median	396.0	267.5	44.0
Total	N	236	236	236
	Mean(SD)	312.3( $\pm 160.2$ )	213.9( $\pm 122.3$ )	50.3( $\pm 28.5$ )
	Median	342.5	222.5	43.5

### 5.2.3.1 Time spent per-unit

According to table 9, patients spent most of their time in the post examination stage this accounts 76.8% of the overall time spent in the assessment center. In

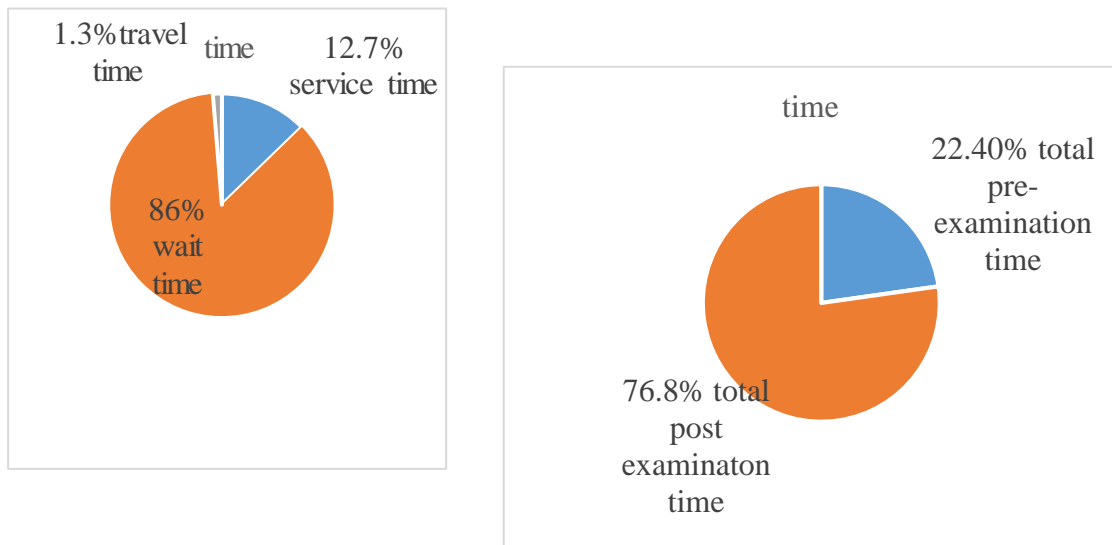


this post examination phase, the longest time was spent in the laboratory section 176.4(±54.3) minutes followed by overall time at other diagnostics units with mean (SD) time of 104.8(±79.5) minutes and then x-ray unit with mean (SD) time of 99.3(±47.95) minutes.

*Table 9: the overall time in minute, patients spent at each section of OPD, JUMC 2018. (n=236)*

	Mean (SD)	Median	% of overall time
Registration	28.6(±26.7)	19.0	4.3%
Triage	22.2(±20.7)	18.0	3.7%
OPD	89.4(±43.1)	83.0	14.2%
Laboratory	176.4(±54.3)	170.0	36.8%
X-ray	99.3(±47.95)	95.0	18.9%
Other Dxic <sup>***</sup>	104.8(±79.5)	84.0	18.8%
Pharmacy	14.8(±9.2)	12.0	2.3%

\*\*\* presents ultrasound, sputum examination.



*Figure 6: Percentage of total median times of the different stages within the assessment center 2018.*

### **5.3 Factors associated with overall time spent**

Simple and multi-variable analysis was done for patient and clinic factors. Results were presented in three sub-sections i.e. factors that were inherent with the patient (socio-demographic), attributes experienced before the patient came to the OPD of JUMC and attributes that the patient experienced when he/she was at the OPD of JUMC.

#### **5.3.1 socio-demographic factors associated with overall time**

For patients who were between 15-29yrs, 30-44yrs, 45-59yrs and >59years mean overall time patients spent from entry to exit was 143.03min, 158.15minutes 182.9minutes and 118.62minutes higher than patients who were 14 years and below. This association was stastical significant with  $R = 0.483$ ,  $R^2 = 0.233$  adjusted  $R^2 = 0.22$  and  $P\text{-value} < 0.005$ .

For patients who came from out of Jimma town the mean overall time was 86.66minutes higher than for patients who came from Jimma town at  $p\text{-value} < 0.001$ ,  $R = 0.271$ ,  $R^2 = 0.073$  and adjusted  $R^2 = 0.07$ .

For patients who were unemployed the mean overall time was 50.32minutes higher than for patients who were student at  $p\text{-value}$  of 0.049,  $R = 0.214$ .  $R^2 = 0.046$  and adjusted  $R^2 = 0.016$

Table 10: bivariate linear regression, assessing the association between overall times of patient spent from entry to exit and socio-demographic factors at JUMC, 2018.

Patient characteristics	Regression coefficient ( $\beta$ )	95% CI	frequency
Age in year	3.53	2.58 4.48***	236
Age in year ≤14( <b>reference</b> )			
15-29	143.03	98.53 187.54***	61
30-44	158.154	99.96 216.35***	29
45-59	182.902	121.13 244.67***	25
>59	118.618	30.55 206.78**	11
Sex Male ( <b>reference</b> )			
Female	5.16	-36.04 46.36****	123
Residency Jimma town( <b>reference</b> )			
Out of jimma	86.655	47.02 126.29***	116
Employment Student ( <b>reference</b> )			
Unemployed	50.315	4.97 95.67*	47
Self-employed	-9.967	-59.22 39.29****	37
Formal employed	-36.225	-130.78 3.81****	20
Non-formal employ	64.189	-97.74 25.29****	2
Income per month ≤500ETB	-96.863	-170.328 53.756****	6
501-1500ETB	18.523	-41.574 129.259****	13
1501-3000ETB	66.784	-1.55 146.13	22
>3000ETB( <b>reference</b> )			
Education Unable to read & write	61.31	-11.42 140.04	30
Informal education	44.026	-73.59 161.65****	7
Primary	-43.604	-90.42 3.21****	71
Secondary	18.487	-42.79 79.77****	30
Tertiary( <b>reference</b> )			
Language barrier Yes	17.138	-38.825 73.102****	
No ( <b>reference</b> )			

\* P < 0.05, \*\* P < 0.005, \*\*\* P < 0.001 (statistical significant at stated P-value) and \*\*\*\* not candidate for MLR at P > 0.25

### **5.3.2 Pre-visit factors associated with overall time**

The mean overall time for patients who visited other health facilities was 86.6minutes higher than for patients who had not visit, with statistical significance of p-value  $<0.001$ ,  $R=0.271$ ,  $R^2=0.073$ . Similarly, for patients who visited government hospital the mean overall time was 71.207minutes higher than for patients who visited drug shop with  $P<0.05$ ,  $R=0.261$ ,  $R^2=0.068$  and adjusted  $R^2=0.036$ .

The mean overall time for patients who referred from other health facility into the assessment center was 99.86minutes higher than patients who came to the assessment center for review with p-value of  $<0.001$ ,  $R=0.313$ .  $R^2=0.098$  and adjusted  $R^2=0.091$ .

For the arrival time, the mean overall times of patients who reported to the assessment center between 10am-11am was 96.31minutes, less than that of patients who reported after 12am, at p-value 0.042,  $R=0.225$ ,  $R^2=0.51$  and adjusted  $R^2=0.03$ .

Table 11: bivariate linear regression, assessing the association between overall times patient spent from entry to exit and pre-visit factors at JUMC, 2018 (n=236)

Pre-visit characteristics	Regression coefficient ( $\beta$ )	95%CI		Frequency
Visited other health facility				
Yes	86.556	46.91	126.2***	121
No (reference)				
Facilities visited				
Drug shop( <b>reference</b> )				
Private clinic	-9.444	-107.54	88.65	14
Health center	-20.502	-82.46	41.45	65
Gov't hospital	71.207	4.2	138.23*	35
Non gov't hospital	-267.015	-602.5	68.46****	1
Frequency of visit				
New	39.723	-1.35	80.79	106
Repeat ( <b>reference</b> )				
Purpose of this visit				
Review ( <b>reference</b> )				
Referred	99.859	60.62	139.1***	109
Self-refer	-16.727	-122.98	-40.49****	88
Arrival time				
Before 8am	-105.68	-235.75	24.39	5
8am-9am	-67.59	-169.41	34.23	119
9am-10am	-39.845	-110.08	31.16	63
10am-11am	-96.307	-189.19	-3.43*	11
11am-12am	-97.672	-314.92	119.58****	2
After 12am( <b>reference</b> )				
Date of visit				
Monday ( <b>reference</b> )				
Tuesday	29.242	-73.00	67.18****	41
Wednesday	-19.207	-113.55	27.5	40
Thursday	-51.633	-113.67	10.41	73
Friday	-18.567	-88.24	51.11****	42

\* P <0.05, \*\*\* P<0.001 (statistical significant at stated P-value) and \*\*\*\* not candidate for MLR at P>0.25

### **5.3.3 Post-visit (Facility related) factors associated with overall time**

For patients who had AFI, UTI, GIT, CVD, surgical/orthopedics problem, cancer and other ( mental case, ophthalmic case, gynecology case and dental cases) type of diseases the mean overall time was 169.49minutes, 191.84minutes, 129.24minutes, 217.98minutes, 181.66minutes, 391.34minutes and 152.52minutes higher than patients who had skin disease, respectively with  $R=0.454$ ,  $R^2=0.206$ , adjusted  $R^2=0.178$  and  $p\text{-value} < 0.005$ .

Length of the queue measured as the number of patients in line at every service point. For additional patient who joins the queue at Registration, Examination and pharmacy queues, the average overall patient time increase by 7.3 minutes, 8.8 minutes, and 10.2 minutes respectively. This association was statistically significant with  $p\text{-values} < 0.05$ ,  $R=0.678$ ,  $R^2=0.46$  and adjusted  $R^2=0.458$ .

For patients who had diagnostic tests of laboratory, x-ray and other diagnostic tests (ultra sound, sputum examination &FNA/C) the mean overall time was 202.2minutes, 148.7minutes and 96.957minutes higher than for patients who had not any diagnostic tests at  $P\text{-value} < 0.001$ ,  $R= 0.758$ ,  $R^2 =0.575$  and adjusted  $R^2 =0.569$ .

Table 12: Bivariate linear regression assessing the associations between overall time patients spent from entry to exit in the assessment center and post visit factors in JUMC, 2018.( n=236)

Post-visit factors	Regression coefficients (β)	95% CI	Frequency
Type of OPD			
Surgical	85.27	-74.05    244.6****	42
Medical	-28.42	-182.51   125.67****	164
Gynecology	-7.42	-178.76   163.93****	15
Ophthalmic	41.68	-149.17   232.53****	7
Dental	-154.25	-369.55    61.05	4
Mental (reference)			
Diagnosis perform			
Yes	134.03	-48.91    316.97	233
No (reference)			
Disease			
Skin problem (reference)			
UTI	191.84	99.21   284.48***	30
AFI	169.49	69.76   269.23**	20
GIT	129.24	40.37   218.12*	40
CVD	217.98	115.99   319.97***	18
Respiratory disorder	54.81	-31.55   141.96	51
Surgical/orthopedics	181.66	91.85   271.46***	37
CA	391.34	242.23   540.45***	5
Others	152.52	53.77   251.28**	21
Number of patients in queue			
Registration	7.27	3.96   10.59***	
Triage	5.92	-0.59   12.42	
Examination	8.79	3.06   14.52**	
Laboratory	2.13	-0.56   4.82	
x-ray	0.33	-9.97   10.63****	
other Dxics	0.65	-11.28   12.58****	
pharmacy	10.16	5.08   15.23***	
Diagnostic tests			
No test (reference)			
Laboratory	202.22	174.357   230.085***	136
x-ray	148.69	98.69   198.694***	19
other diagnostic unit	96.96	56.518   137.396***	28

\* P < 0.05, \*\* P < 0.005, \*\*\* P < 0.001 (statistical significant at stated P-value) and \*\*\*\* not candidate for MLR at P > 0.25

### **5.3.4 Independent t-test analysis result**

For gender, language barrier, frequency of visit and disease diagnosis there was no significant mean difference on overall time. While for residency, the overall time showed significant mean difference between patients who live in Jimma town and out of Jimma town ( $P = <0.001$ , -86.66). Similarly, for age the overall time showed significant mean difference between pediatric age and adult patient at P-value  $<0.001$ (-152.3). For patients who had visit other health facility prior to came to JUMC the overall time showed significant mean difference compared to those not visit other health facility at  $P <0.001$ (86.56).

### **5.3.5 Multivariable linear regression analysis result**

These 15 candidate variables that obtained from simple linear regression were entered into the final model (MLR). Those were under socio-demographic (age, residency, educational status, occupation and income) and under clinical factors (history of visit other health facility, type of facility visited, type of visit, frequency of visit, date of visit, arrival time, presence of diagnosis, type of diagnosis, diagnostic tests and number of patients at the queue). Out of that only five variables were retained in the last backward stepwise model from which three of them were significant independent predictors of the overall time. Those were number of patients in the queue, diagnostic tests (other diagnostic test (ultrasound, sputum examination& FNA/C)) and type of visit (referred) were found to be the only independent variable with a significant impact on overall time patient spent at the assessment center.

For patients who were referred the mean overall time was 52.03 (95%CI 21.65, 82.412) minutes higher than for patients who were appointment. When the patient number at the queue increased by one the overall time also increased on average by 4.65(95%CI 3.983, 5.324) minutes. For patients who had diagnostic test (other Dx test) the mean overall time was 96.43(95%CI 52.076, 140.787) minutes higher than patients who had not any test performed.

#### **5.3.5.1 Goodness of fit**

Adjusted  $R^2$  was 0.522 but the value of  $R^2$  was 0.534 therefore; the variables in the multivariable model explain 53.4% of the variance of the overall time. That means 53.4% variation of the overall time was due to the difference of purpose of visit (referred), presence of diagnostic test and number of patients at the queue.



Since the variables in the model statistically significant to predict the overall time at F statics value of 43.75or P-value <0.001 conclude that this regression model was a good fit of the data with adjusted R<sup>2</sup> value = 0.522.

Overall time = 120.28minutes + 4.65 (# of patients at the queue) minutes + 52.03 (type of visit (referred) minutes + 96.43 (diagnostic test (other diagnostic test) minutes

*Table 13: the final model fit variables for overall time spent by patients of OPD in JUMC 2018. (n=236)*

model	Unstandardized Coefficient (B)	95% confidence interval for B	Collinearity statistics	
			VIF	Tolerance
Constant	120.281	89.9 150.662***		
Number of patients in the queue	4.653	3.983 5.324***	1.054	0.949
Purpose of visit(referred)	52.031	21.65 82.412**	1.137	0.88
Diagnostic test( other diagnostics ****)	96.431	52.076 140.787***	1.112	0.899
Date of visit (Wednesday)	-17.586	-55.797 20.626	1.019	0.982
Disease type( GIT)	2.09	-36.592 40.773	1.044	0.958
Disease type(surgical)	-32.506	-74.584 9.571	1.16	0.862

\*\*= P< 0.005, \*\*\* =P<0.001 (Means statistical significant at stated P-value); R =0.731, R2 = 0.534, adjusted R2 = 0.522

\*\*\*\* presents ultrasound, sputum examination& FNA/C

## CHAPTER SIX

### 6.0 DISCUSSION

This study was undertaken to generate information that will improve the efficiency of operations and quality of service delivery at the Jimma University Medical Center. The study found that majority of patients spend most of their time waiting to receive services. Most delays were seen at the examination laboratory and other diagnostics sections. The study also found that this delay was highly associated with huge number of patients in the queues, staff fail to respond timely and absence of some services.

This study found that mean total waiting time was 214minutes (3.57hrs). This finding was higher compared to the study done in Malaysian and US tertiary hospital with mean time of >2hrs and 1:30-3:00 respectively (6, 18).

The total wait time that was the sum of each section wait time that accounts 86% of the overall time. This was supported by the study done in Indies which was 95.6% (29). As known JUMC is teaching and referral, which lead professionals fail to respond timely because related to morning session, professionals' not arrive timely to the OPD that increase waiting time and patient load. Additional to this being referred patient and absence of some services in the hospital that causes patient go out to get service and came back to the hospital during this time the professional may not also be present. As observed in the study some patients spent 3-4hrs at the afternoon without any service because of some physicians totally absent in the afternoon.

Patient flow analysis showed that the longest waiting time was at pre-examination and post examination phases. For the 1<sup>st</sup> phase, mean waiting time at examination (OPD) was  $63.9 \pm 43.7$ minutes. This finding is higher compared to the study done at OPD in Hosanna which was  $30.9 \pm 18.4$ minutes(24). This variation might be explained by the fact that JUMC is teaching and specialized (referral) hospital due to this professionals not arrive timely and patient load increase.

For the 2<sup>nd</sup> phase mean waiting time at laboratory was 68.64minutes  $\pm$  39.9minutes (before giving sample) and 102.36minutes  $\pm$  44.7 minutes (after giving sample) which was approximately similar with the study done on patient satisfaction at JUMC. Similarly findings showed that the mean time for patients to

be x-rayed was  $1.655\text{hrs} \pm 0.799\text{hrs}$ . This showed slight difference with the study on patient satisfaction at JUMC which was  $1.91 \pm 0.79\text{hrs}$ . This might be due to the new building and introduction of citizen charter in 2016 and this study conducted in the new building these may create conditions easy (25).

Additionally the mean waiting time for registration was 19.22minutes this finding was lower compared to the study done in Nigeria and China tertiary hospital which was 78.22minutes and 98minutes respectively. This might be due to JUMC schedule the appointment patients and had many registered clerk staffs (3,17).

Results from this study showed that the mean service time was 50.3minutes, this finding was higher compared to the study done in Malaysia, China and Indies which were 15minutes, 17.8minutes and 13 minutes respectively. This inconsistency might be due to the fact that this study conducted both on adult and pediatric age group i.e. at pediatric age groups difficult to perform physical examination easily this, expose the patient to spent long time with the provider and JUMC is teaching hospital that encourage students to attend patients (6, 18,28 ).

Long service time was at examination room (OPD) and other diagnostics unit (post-examination phase). The mean examination time was 25.2minutes this is in line with the study done in teaching and referral hospital at Malays which was 18.21minutes. The possible explanation might be due to both study done on pediatric and adult patients and both the facilities are teaching and referral. The mean adult examination (OPD) time was 22.3minutes this finding was lower than the time stated at JUMC citizen charter which was 45minutes and Philippine Heart Center charter which was 37minutes(22,27). This difference may be due to high patient load and staffs (physicians) not arrive timely resulting in increased patient flow rate that means in order to give service for all waited patient the physicians may encourage patients to finish their examination with in short time that decreased adult OPD service time. But this result was higher compared to the study done in OPD of Nigeria tertiary hospital which was 7minutes(3). This variation might be due to as known JUMC is teaching hospital and observed during the study most of the professionals at OPD room were interns that allows patients spent long time with them, most follow up patients are seen by different physicians and presence of week communication.

While the mean examination time for pediatric age was 28.5minutes this finding was higher compared to the time stated at JUMC citizen charter which was 20minutes. This can be due to pediatric age groups unable fully express their feelings , so in order to capture the problem that not explain by patients the physicians perform deep physical examination. In addition, difficult to perform physical examination easily in pediatric age groups especially less than five years.

Additionally median service time at registration, laboratory, x-ray and pharmacy was 8minutes, 5minutes, 9minutes and 7minutes respectively. This finding was approximately similar with EAMC patients' charter (26) and JUMC charter stated time which was 5minutes, 10minutes, 10minutes and 5minutes respectively (22).

Result of this study showed that the mean consultation time for disease categorized of dental case, gynecology, medical, surgical/orthopedics and ophthalmic cases were 37.8min, 29.3min, 25.34min, 23.46min and 17.29minutes respectively. This finding was higher compared to the study done on community hospital of Chicago which were 18min, 25.5min, 18.2min, 19.2min and 13.3minutes respectively. While for mental and oncology cases the mean consultation time were, 22.25min and 24.2minutes respectively. This finding was lower compared to the above study which were 60min and 50minutes respectively. This variation might be since JUMC is a teaching hospital that encourage medical students (interns) to attend OPD patients that allowed patients spent long time with the professionals. But for the second case the cause of variation might be, since JUMC is a referral hospital that means the patient comes from other facility with some investigation findings that minimize the time patient spent with the professionals at OPD(11).

This study found that the overall median and mean time was 342.5 minutes (approximately 5.7 hours) and 312.33minutes respectively. This is in line with study done in Indies that found the median length of stay was 302minutes.(30) But these result was higher compared to the study done in the GOPD of teaching hospital in North western Nigeria and OPD in Nigest Eleni Mohammed Hospital, Hossana, with mean time of 168minutes and 122.2minutes, respectively.(3,24) This might be due to the appointment system for follow up patients were not staggered that means many patients arrive with in similar time in the same day, health care provider delay & scant attention to punctuality, high patient load,

jumping of queue by patients or staff members, waiting of laboratory (other investigation) result and physicians to see the laboratory result and absence of some services. In addition; in developing countries there is high patients to doctors' ratio i.e. unable to meet the recommendation of IOM that stated as at least 90% of the patients should be seen within 30 minutes of their appointment time. In Ethiopia currently 15,000:1 ratio but WHO recommendation was 1000:1 ratio (3,10).

This study found that the mean overall time for pediatric and adult patient were 231.02( $\pm$ 153.9) minutes and 383.31( $\pm$ 129.2) minutes respectively. This finding was higher compared to the study done at Malawi that were 134.9( $\pm$ 65.5) minutes and 110.7( $\pm$ 67.9) minutes respectively. This difference might be since JUMC is a teaching and referral hospital that means most patients were referred patients and professionals were not arrive timely that exposed patients spent long time at the assessment center. But the mean overall time between pediatric and adult age group in this study was different from the above study. This variation might be, as observed during the study most pediatric patients were end up at examination with prescription of medicine(32).

After multivariable analysis, there were only three variables that were found to be significantly associated with overall time patient spent at the assessment center i.e. number of patients in queue (line), type of diagnostic test (other tests) and type of visit (referred).

Results showed that the number of patients at the queue is significantly affect the overall time patient spent at the assessment center i.e. the mean overall time increase by 4.65(95%CI 3.983, 5.324) minutes as the patient number increase by one unit. This result was supported with the study done in Malaysia at Selangor and North West Nigeria(3,10). The possible explanation might be due to large fee differential between public and private health care services. In addition to this; most walk-in cases are coming to JUMC expecting of better services. health professionals were not punctual, patients with minor cases came with walk-in and as known the hospital is referral and provide service for three regional states, this all cause increase patient load.

The other factor was type of visit (referred) that the patient came to the assessment center, as the result showed the mean overall time for patients who were referred

from other facility was 52.03 (95%CI 21.65, 82.412)minutes higher than for patients who were appointment. The possible explanation might be due to patients who were referred needed further investigation than appointment patients. That means depend on the type of the case needs different investigation that prolong overall time, additional to this; absence of some investigations and medicines such as ECHO, Helicobacter pylori test and medicine for acute tonsil pharyngitis that expose the patient to go outside and return to the hospital, those all increase the overall time patient spent on the assessment center.

The third factor was type of diagnostic test (other diagnostic test), for patients who went to other diagnostic test unit (ultrasound, sputum examination and FNA/C) the mean overall time was 96.43(95%CI 52.076, 140.787) minutes higher than patients who had no any test performed. The possible explanation might be due to most patients were referral those need further investigation/diagnostic test depending the type of cases, that coupled with high patient load increase the overall time patient spent.

### **6.1 Limitation of the study**

- ✓ Arrival times of patients who arrived earlier than opening hours was self-reported. This problem was minimized by having one data collectors come earlier to the opening hours.
- ✓ Since this study was observational, that needed following each movement of the patient from entry to exit and patient could have changed their behavior that bring hawthorn effect. To solve this problem, trained data collectors maintained a fairly wide distance to avoid obviously noticed.
- ✓ Loss of follow up that means if service extend for next day the patient was left that cause cancel of this patient i.e. waste time. This problem was minimized by sociably approach the patient and bring their cell phone number.
- ✓ Other factors that affect overall time were not assessed due to resource and time limited.

## **CHAPTER SEVEN**

### **CONCLUSION AND RECOMMENDATION**

#### **7.1 Conclusion**

This study has shown that

- ✦ Majority of the patients experience long overall times during their visit at the outpatient department of Jimma University Medical Center with the greatest time spent waiting to receive services. This overall time was highly associated with the huge number of patients especially on Monday and Friday of whom majority are direct walk-in and referred respectively.
- ✦ Most delays are identified at the examination, laboratory and other diagnostics units. These delays could be attributed to the long queues at OPD, laboratory and other diagnostics service points and staffs fail response timely.
- ✦ Most of the patients have conditions that can be handled at lower health facilities thus increase the burden for the hospital to provide quality care for those who have been referred to the referral hospital.

#### **7.2 Recommendations**

- ✓ Hospital administrations should have strong follow-up on health professionals both on the morning and afternoon, and create solution on the morning session.
- ✓ Laboratory was the most crowded area so the hospital administration should solve this problem.
- ✓ Since most patient are concentrated on during the start and end of the week, hospital administration should applying more effective scheduling system that means scheduling appointments according to expected consultation time especially in management of chronic conditions or in circumstances where there is a link between health center and other hospital especially with facilities located at jimma town.
- ✓ In order to reduce the number of patients in the queues, the hospital should work hand in hand with the ministry of health should enforce a policy that was well understood and embraced by all health workers in the lower health facilities.

- ✓ The hospital administration work to reduce the number of patients in the queues through strengthening the triaging system to enable it screen patients with minor illness. Most patients with minor illness queue with those with more complicated illness.
- ✓ I recommend researchers to investigate further on quality of service



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## **ANNEX I: PATIENT CONSENT FORM**

### Information and consent form

**Introduction:**

Good Morning/afternoon Sir/Madam. My name is \_\_\_\_\_  
am data collector on behalf of research team from Jimma University, faculty of  
Public Health, MPH student included in the mega research team. We are  
conducting a study to measure the duration and factors associated with patient  
waiting time. You have been select as a participant and to give your views about  
your experience about the timeliness of services you will receive

**Benefits and risks**

The information provided by you will be used only for the purpose of this study  
and will also be used by hospital administration to identify the bottlenecks in  
services delivery. Apart from the extra time you will spend with the data  
collectors for the interview, there are no risks expected.

**Confidentiality**

All the information obtained from you during the study will remain confidential  
and only accessed by the principal investigator. Your name will not be recorded  
anywhere during the study or report findings. So please feel free to participate, to  
be followed till you exit or admission and answer the questions.

**Voluntary consent**

Your participation in this study is completely voluntary. Feel free to ask any  
questions before or after the interview. You are also free to withdraw from the  
study at any time or decline to participate in the study and you will not be  
penalized if you decide to do so.

I have read the above or the above has been read to me and I have understood it. I  
hereby do agree to participate in the study.

Respondent’s name and signature: \_\_\_\_\_ Date: \_\_\_ / \_\_\_ /  
\_\_\_\_\_

Interviewers name and Signature: \_\_\_\_\_ Date: \_\_\_ / \_\_\_ /  
\_\_\_\_\_

## ANNEX II: DATA COLLECTION TOOLS

### Patient Exit Questionnaire

The purpose of the study is to understand patient flow by identifying delays in order to shorten waiting time and improve service delivery at the assessment center. All responses were completely anonymous, and your participation is voluntary.

### Social demographic information

Code	Item		Response
	Participant number (ID)	_____	
001	Sex of respondent	Male Female	1 2
002	Age of respondent in years	_____	
003	Current place of residence	Jimma town Out of jimma town	1 2
004	Employment status	Student House wife Merchant Farmer Civil servant NGO Others specify _____	1 2 3 4 5 6 7
005	Income per month	_____ETB	
006	Educational status	Unable to read & write Informal education Primary Secondary Preparatory Higher institution/collage or above	1 2 3 4 5 6
007	Marital status	Single Married/couple Divorced/separated	1 2 3

		Widowed	4
008	Is there any language barrier? Or Need of third person?	Yes	1
		No	2

### Information on aspects of waiting time

This questionnaire is to capture patient's information on his/her experience of the waiting time during his/her visit at the assessment center.

Code	Question	Options	Code	Response	Skip
009	Date of visit	Monday Tuesday Wednesday Thursday Friday	1 2 3 4 5		
010	Frequency of visit	New attend Repeat attend	1 2		
011	What is the type/purpose of this visit?	Review Referred Self-refer	1 2 3		
012	For this illness, had you visited any other health facility before coming here?	Yes No	1 2		If yes, skip to Qn. 014
013	If No, why didn't you visit other health centers				
014	Which health facility have you visited?	Drug shop Private clinic Health center Gov't hospital private hospital Traditional healer	1 2 3 4 5 6		
015	How did you see the time you spent in this hospital?	Long Fair	1 2		If 2&3 skip

		Short	3		Q16& 17
016	Where did u experience delays?	Registration Triage Examination Diagnostics Pharmacy X-ray	1 2 3 4 5 6		
017	Why do you think you were delayed?	There was a long queue Staff failed to response in time Poor communication Others specify _____	1 2 3 4		
018	Look through the medical forms; is there any diagnosis made by the provider as documented in medical form.	Yes No	1 2		
019	What is the principle diagnosis recorded. (for data collector)				
020	After triage, to what unit patient go? (data collector)	medical OPD Surgical OPD mental OPD Gyn OPD ART OPD Ophta OPD Dental OPD	1 2 3 4 5 6 7		

**TIME AND MOTION TOOL (OBSERVATIONAL)**

This tool should be used to record real times at each service point as the patients moves though each sections (departments) of the of the assessment center.

Indicate the patient study number (ID)		
<b>Specific activity</b>		<b>Time</b>
<b>Registration</b>		
Section I	At what time does the patient report to the reception desk (Time of arrival)?	
	At what time does the patient consent to participate as they wait to be registered?	
	How many patients are in the queue when the patient set in the holding room before registry	
	At what time does the patient reach the registration desk to start the registration process?	
	At what time is the registration process completed?	
<b>Triage</b>		
Section II	As soon as the patient moves into the waiting area, how many patients are in the queue waiting to be called	
	At what time is the patient called to receive his/her registration form	
<b>Examination /to see the physician</b>		
Section III	At what time does patient reach the waiting room just outside the clinicians' rooms	
	How many patients are in the queue waiting to get into the examination rooms?	
	At what time does the patient enter the examination room?	
	What time does the patient leave the examination room?	
<b>Diagnostics (Laboratory)</b>		
Has the patient gone to the laboratory	Yes	
	No	
		If No, <b>Skip section IV</b>



Section IV	At what time does the patient reach the laboratory waiting area?		
	How many patients are there as soon as the patient reached the diagnostic service point		
	At what time does the patient hand in his/her laboratory request to the health worker?		
	At what time is the patient given his/her laboratory results?		
Diagnostics (X-ray)			
Has the patient gone to the x-ray	Yes		If no, skip Qn. V
	No		
Section V	At what time does the patient reach the X-ray department?		
	How many patients are there as soon as the patient reached the X-ray department		
	At what time does the patient enter to the imaging room?		
	At what time is the patient given his/her diagnostic results?		
Diagnostic others (Indicate in section VI if the patient visited other diagnostics sections )			
Section VI	Which diagnostic department is it: _____		
	At what time does the patient reach this department		
	No of patients in the queue		
	At what time does the patient hand in his/her request		
	At what time is the patient given his/her diagnostic results		
Pharmacy			

Has the patient gone to the pharmacy	Yes		If No, skip QN.VII
	No		
Section VII	At what time does the patient reach the pharmacy?		
	How many patients are there as soon as the patient reached the pharmacy		
	At what time does the patient hand in his/her prescription to pharmacist?		
	At what time is the patient given his/her drugs?		
Exit time	At what time the patient finished OPD service		

Amharic translation of questioner

ፍቃደኝነት ማሰባሰቢያ መረጃ ቅጽ

መግቢያ

እንደምን አደርክ/ዋልክ/ሽ ጌታ/እመቤት፡፡ ስሜ -----እባላለሁ፡፡እኔ የመጣሁት ከጅም ዩኒቨርሲቲ ከ ህብረተሰብ ጤና አጠባበቅ ኮሌጅ ፡ ከጤና አገልግሎት አስተዳደር ትምህርት ክፍል በሚሰራው የሜጋ ፕሮጀክት ጥናታዊ ፅሁፍ መረጃ ለመሰብሰብ ነዉ፡፡የጥናቱ አላማዉ በ ጅም ዩኒቨርሲቲ ልዩ የህክምና

ማዕከል በሚሰጠው አገልግሎት ላይ የተመላላሽ ተገልጋዮች ላይ አገልግሎቱን እስኪሰጡ ድረስ እና አገልግሎቱን ሲያገኙ የሚወስድባቸውን ጠቅላላ የጊዜ መጠን እንዲሁም ተዛማጅ ጉዳዮችን ለመለየት በሚደረገው ጥናት ላይ እርሰው ተሳታፊ ተደርገው ተመርጠዋል። ለዚህ ጥናት የሚሰጡን መረጃ በርሰው ላይ መንም አይነት የጎንዮሽ ጉዳት የለውም በተጨማሪ የርሰው ተሳትፎ በፈቃደኛ የተመሰረተ ቢሆንም በፈለጉት ጊዜ ማቆረጥ ይችላሉ። ስለዚህ በዚህ ጉዳይ ላይ ያለውንን አይታ/ መረጃ በራሰው ፈቃድ ሊሰጡን መስማመውትን ከዚህ ቅጽ ላይ ይፈርሙ።

የተሳታፊው ስም እና ፊርማ -----ቀን ----/-----/-----

ቃለ መጠይቁን የሚጠይቀው ሰው ስም እና ፊርማ -----ቀን ----/-----/-----

**Annex II**

**መረጃ መሰብሰቢያ ቅጽ**

**ሕመምተኛ ሲወጣ የሚጠየቅ ጥያቄ**

**ማሕበራዊ እና ስነህዝባዊ ሁኔታ**

መለያ ቁጥር	አይነት		ምላሽ
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	የተሳታፊ መለያ ቁጥር		
001	የተሳታፊዉ ጾታ	ወንድ ሴት	1 2
002	የተሳታፊዉ እድሜ በአመት	_____	
003	የአሁን መኖሪያ ቦታ	ጅም ከተማ ከጅም ከተማ ወ.ጭ	1 2
004	የስራ አይነት	ተማሪ የቤት እመቤት ነጋዴ ገበሬ መንግስት ሰራተኛ መንግስታዊ ያልሆነ ድርጅት ሌላ ከሆነ ዘርዝሩ	1 2 3 4 5 6 7
005	ወራዊ ገቢ ቦብር	_____ብር	
006	የትምህርት ደረጃ	ማንበብ እና መጻፍ የማይችል መደበኛ ያልሆነ ትምህርት አንደኛ ደረጃ ሁለተኛ ደረጃ 11ኛ ወይም 12ኛ ክፍል ከፍተኛ ትምህርት ተቋም/ኮሌጅ/ከዚያ በላይ	1 2 3 4 5 6
007	የጋብቻ ሁኔታ	ያላገባ ያገባ/ጥንድ የተፋቱ/የተለያዩ አንዱ የሞተበት	1 2 3 4
008	የቋንቋ ችግር ነበር ?	አወ የለም	1 2

**አገልግሎት ከማግኘት በፊት የሚወሰደዉ የግዜ መጠን መረጃ**

መለያ ቁጥር	ጥያቄ	አማራጭ	መለያ	ምላሽ	ዝለል
009	የዚክ ጉብኝት አይነት	አዲስ ክትትል ተደጋጋሚ ክትትል	1 2		

010	የጉብኝት ቀን	ሰኞ ማክሰኞ ዕርብ ሀምስ አርብ	1 2 3 4 5		
011	የዚህ ጉብኝት አይነቱ ምንድን ነው.	ለመታየት ከሌላ ቦታ ተላልፎ በራሴ ተነሳሽነት ነው የመጣሁት	1 2 3		
0012	ከዚህ ከመምጣተዎት በፊት ሌላ ጤና ተቋም ጎብኝዋል ለዚህ ህመም	አወ የለም	1 2		አወ ካልከ ወደ ጥያቄ 0014 ዝለል
0012	የለም ካሉ ለምን ሌላ ጤና ተቋም አልጎበኙም				
0014	የትኛውን የጤና ተቋም ነው የጎበኙ	የመድሃኒት ሰቆ የግል ክሊኒክ ጤና ጣቢያ የመንግስት ሆስፒታል የግል ሆስፒታል የባህላዊ ህክምና	1 2 3 4 5 6		
0015	በዚህ ሆስፒታል ያሳለፉት ጊዜ እንዴት ነው.	በጣም ረጅም ረጅም አግባብ አጭር በጣም አጭር	1 2 3 4 5		
0016	መዘግየት ያጋጠመዎት የትኛው ክፍል ላይ ነው.	ምዝገባ ክፍል ትሪያጅ ክፍል ምርመራ ክፍል ላብራቶሪ ክፍል መድሃኒት ክፍል ርጅ ክፍል	1 2 3 4 5 6		
0017	የመዘግየትዎት ምክንያት ምንድን	ብዙ ተራ/ ህመምተኛ ስላለ ሰራተኛው በሰአቱ ምላሽ	1 2		

	ነዉ ይላሉ	ስለማይሰጥ የደከመ መግባባት ስላለ ሌላ ካለ ይናገሩ	3 4		
0018	የህክምና ቅጹን በመመልከት ማንኛውም ምርመራ በህክምና ባለሙያዉ ትካሄዷል	አዉ የለም	1 2		
0019	ዋና ምርመራው ምንድን ነው				
0020	ከትሪያጅ በሁዋላ በሽተኛዉ ወደየትኛዉ ክፍል ነው የሄደው	የዉስጥ ደዌ ተመላላሽ ክፍል ቀዶ ትገና ተመላላሽ ክፍል የስነ ዐዕምሮ ተመላላሽ ክፍል የማህጸን ተመላላሽ ክፍል ኤርቲ ተመላላሽ ክፍል የዐይን ተመላላሽ ክፍል የጥርስ ተመላላሽ ክፍል	1 2 3 4 5 6 7		

**የግዜና የእንቅስቃሴ ቅፅ በምልከታ**

ይህ መሳሪያ ግዜን በተጨማሪ ሁኔታ የበሽተኛዉን እንቅስቃሴ በእያንዳንዱ አገልግሎት ክፍል በመከተል እንደፈለጉ ማቆምና ማስነሳተ በሚችል ሰዓት በመተቀም ይለካል

የበሽተኛዉ መሌያ ቁጥር ይጻፍ		
<b>የሰራዊት አይነት</b>		<b>ግዜ</b>
<b>መዝገብ ክፍል</b>		
ክፍል አንድ	በሽተኛዉ ስንት ሰዓት ላይ ወደ ሆስፒታሉ መጣ	
	በሽተኛው ስንት ሰዓት ላይ ነው ለመመዝገብ ተራ የያዘው/ቻው	
	ምን ያክል በሽተኛ ነው ለመመዝገብ ተራ የያዘው	
	ስንት ሰዓት ላይ በሽተኛው ወደ መመዝገቢያ ጠረጴዛ ደረሰ	
	ስንት ሰዓት ላይ በሽተኛው ተመዝግቦ ጨረሰ	
<b>ትሪያጅ</b>		
ክፍል ሁለት	በሽተኛው ወደ መቆያ ቦታው የደረሰበት ሰዓት	

	በሽተኛው ወደ መቆያ ቦታው እንደደረሱ ስንት በሽተኞች ናቸው ተራ ይዘው ያሉ	
	ስንት ሰዓት ላይ ነው በሽተኛው መመዝገቢያ ቅጹ/ ክርጅ ቅጽ የተሰጠው	
<b>መመርመሪያ/ወደ ሃኪም</b>		
ክፍል ሰዓት	ስንት ሰዓት ላይ ነው በሽተኛው ወደምርመራ ክፍል ከመግባቱ በፊት ወደ መቆያ ቦታው የደረሰው	
	ስንት በሽተኞች ተራ ይዘው ይገኛሉ ወደ ምርመራ ክፍል ለመግባት	
	ስንት ሰዓት ላይ ነው በሽተኛው ወደምርመራ ክፍል የገባው	
	ስንት ሰዓት ላይ ነው በሽተኛው ከምርመራ ክፍል የወጣው	
<b>ላብራቶሪ</b>		
በሽተኛው ወደ ላብራቶሪ ሂደታል	አወ	የለም ከሆነ ወደ ክፍል አምስት ይዘለል
	የለም	
ክፍል አራት	ስንት ሰዓት ላይ ነው በሽተኛው ወደላብራቶሪ መቆያ ቦታ የደረሰ?	
	ስንት በሽተኞች ተራ ይዘው ይገኛሉ	
	ስንት ሰዓት ላይ ነው በሽተኛው የላብራቶሪ ሳምፕሎን ለላብራቶሪ ባለሙያ የሰጠው	
	ስንት ሰዓት ላይ ነው በሽተኛው የላብራቶሪ ውጤቱን የተቀበለው	
<b>ራጅ ክፍል</b>		
በሽተኛው ወደ ራጅ ክፍል ሂደታል	አወ	የለም ካሉ ወደ ክፍል ስድስት ይዘለል
	የለም	
ክፍል አምስት	ስንት ሰዓት ላይ ነው በሽተኛው ወደ ራጅ ክፍል ቦታ ደረሰ	
	ስንት በሽተኞች ተራ ይዘው ይገኛሉ ራጅ ክፍል	
	ስንት ሰዓት ላይ ነው በሽተኛው ወደ ራጅ መነሻው ክፍል ገባ	
	ስንት ሰዓት ላይ ነው በሽተኛው የራጅ ውጤቱን የተቀበለው	
<b>ሌላ ምርመራ ካለ</b>		
ክፍል ስድስት	የትኛው ምርመራ ክፍል ነው	
	ስንት ሰዓት ላይ ነው በሽተኛው ከዚህ ክፍል የደረሰው	

	ስንት በሽተኞች ተራ ይዘው ይገኛሉ		
	ስንት ሰአት ላይ ነው በሽተኛው የተጠየቀውን ሳምፕል ለባለሙያ የሰጠው		
	ስንት ሰአት ላይ ነው በሽተኛው ውጤቱን የተቀበለው		
<b>መድሃኒት ቤት</b>			
በሽተኛው ወደ ፋርማሲ ሂደቱ	አወ		የለም ከሆነ ክፍል ሰባት ይዘለል
	የለም		
ክፍል ሰባት	በሽተኛው ወደ መድሃኒት ቤት የደረሰበት ሰአት		
	ስንት በሽተኞች ተራ ይዘው ይገኛሉ መድሃኒት ቤቱ		
	ስንት ሰአት ላይ ነው በሽተኛው የመድሃኒት ማዘዣ ወረቀት ለፋርማሲው የሰጠው		
	ስንት ሰአት ላይ ነው በሽተኛው መድሃኒቱን የተቀበለው		
መጨረሻ	ስንት ሰአት ላይ ነው በሽተኛው አገልግሎቱን ጨርሶ የወጣው		

Oromifa Translation

Foormii odeeffannoo fi waliigaltee

**seensa:**

akkam bulte/oolte; maqaan koo\_\_\_\_\_jedhama odeeffannoo kanan sassabuu ‘Jimma University, faculty of Public Health’, irraa barattuu digirii 2ffaa kanan ta’e walta’insa ‘mega research team’. wajjiinin. qorannoon keenya qisaasa yeroo fi sababa qisaasa yeroo yommuu dhukkubsataan yaala argachuuf gara dhaabbata fayyaa deemuu. Ati hirmaataa qorannoo kanaa ta’uun kan filatamte fi muudannoo kee irraa

yaadakee akka nuuf hirtuuf filatamteerta.

**Bu’aa fii miidhaa**

Kaayyoon Odeeffannoon kanaa qorannoo kanaa qofaa fi bulchiinsi hospitaala kanaa ejjannoo godhatee tajaajila kennuu fooyyessuuf ni oola .yeroo ati nama odeeffannoo sassaabuu kan waliin dabarsite irraan kan hafe rakkinni wal qabatee tajaajila ati argattuu irraatti si qunnamu tokkollee hin jiru

**Icciiiti odeeffannoo**



Odeeffannoon ati kennitee hundisaa iccitiin kan qabamuu fi abbaa qorannoo irraa kan hafe qaama biraa kamiifuu dabarsamee kan hin kennamne ta'uusaa. Akkasumas icciitii eeguuf jecha maqaan kee bakka kamittuu kan hin galmoofne ta'uusaa isin hubaachiisna. Kanaafuu sodaa tokko malee akka hirmaattu abdiin qaba.

**Walii galtee feedhii**

Hirmaannaan kee guutummaan guutuutti feedhii irratti hundaa'a. qorannoon osoo hin eegalinis ta'ee, erga eegaleen boodas gaaffii gaafachuuf mirga guutuu qabda. Yeroo kamittuu qorannicha addaan kutuus ta'ee ,hirmaachuu dhiisuu ni dandeessa adabbiin sitti dhufus hin jiru.

Kan armaan olitti ibsamee kana dubbiseera/naaf dubbifameera ,yaada isaas hubadheera.

Anis qorannoo kanatti hirmachuuf wal galeera.

Maqaa fi Mallattoo hirmaataa: \_\_\_\_\_ guyyaa \_\_\_ / \_\_\_ / \_\_\_

Maqaa fi Mallattoo Gaafataa : \_\_\_\_\_ guyyaa: \_\_\_ / \_\_\_ / \_\_\_

**Bar-Gaaffii**

Gaaffilee kutaa deeddebin yaalaman xummuran booda gaafatamu

Kayyoon qorannoo kanaa waayee baayyina dhukkubsataa sababii dhukkubsataa yerootti tajaajiluu dhiisutin,yroo turtii yaala argachuuf eeggatanii gabaabsuu fi ttajaajila si'ataa kennuu dha.

**Gaaffilee waa'ee hawwasummaa**

koodii	Gaaffiwwan		Deebii
	Lakkofsa hirmaataa(ayydii		
001	Saala	dhiira dhalaa	1 2
002	Umrii kee (waggaan)	_____	
003	Bakkaa jireenyaa	Magaalaa jimmaa Magaalaa jimmaan ala	1 2
004	Gosa hojjii kee	Barataa	1

		Hadha manaa	2
		daldalaa	3
		Qonnaan bulaa	4
		Hojjetaa motummaa	5
		Hojjetaa miti motummaa	6
		Kan biraa	7
005	Galii ji'aa	_____ETB	
006	Sadarkaa barumsaa	Dubbisuu fi barreessuu kan hin dandeenye Barumsa al-idilee Kutaa 1-8 Kutaa 9-10 Kutaa 11-12 Yuunivarsiitii,kollejjii fi isaa ol	1 2 3 4 5 6
007	Gaa'illa	Kan hin fuune/herumne Kan Fuudhe/heerume Kan hiike/hiikte Kan irraa du'e/duute	1 2 3 4
008	Yeroo ogeesa waliin turtanitti rakkoon afaani isin Quunnameeraa?	eeyyeen lakkii	1 2

### Odeeffannoo haala yeroo turtii

Gaaffileen kanaan booda jiran waa'ee odeeffannoo haala turtii yeroo yaalan dura at hospitaala kanatti dabarsite ilaallata

koodii	gaaffilee	filannoo	Respon sye	
009	Guyyaa gara hosppitala kanaa dhufte	wiixata kibxata roobii	1 2 3	

		kamisa	4	
		jimaata	5	
010	Sa'a itti gara hospital dhufte	Ganama	1	
		Sa'a booda	2	
011	Kayyoon at gara hospitaala kan dhufteef	Ilaalamuuf	1	
		'Referii' bufata	2	
		fayyaa		
		biraa irraa	3	
		'Referii' ofiikootin		
012	Sababa dhukkuba kanaaf, buufata fayyaa kan biraa deemtee beektaa?	eeyyeen	1	If yes, skip to Qn. 0014
		lakkii	2	
013	Yoo lakkii jette maliif			
014	Dhabbata fayyaa kam deemte?	Mana Qorichaa	1	
		Kilinka dhuunfaa	2	
		Buufata fayyaa	3	
		Hospitaala kan mootummaa	4	
		Hospitaala kan miti mootummaa	5	
		Yaala kan aadaa	6	
015	Turtiin ati yaala argachuun duratti hospitaala kanatti dabarsite akkamin ilaalta	Baay'ee dheeraa	1	
		dheeraa	2	
		giddu-galeessa	3	
		gabaabaa	4	
		baay'ee gabaabaa	5	
016	Kutaa kamitti yeroo dheeraan dabarsitee	Kutaa galmee	1	
		Kutaa calallii	2	
		Kutaa qorannoo	3	
		Kutaa raajii/altra sa'ondii		

		Mana qorichaatti	4
			5
017	Sababa maaliitiif yeroo dheeraa turtee /gubdee	Lakkoofsi dhukkubsataa na duursan baayyee waan turaniif Hojjataan yeroo kabajee si keessummeessu waan hin jirreef Rakkinni walii hubachuu waan uumameef Kan biraa ibsi	1 2 3 4
018	Galmee ilaaluun deebisi; gosa dhukkuba shakkamee galmee irratti ka'ameerraa?	eeyyeen lakkii	1 2
019	Gosa Dhukkuba ka'ame (for data collector)	-	
020	Kutaa calalliin booda dhukkubsataan eessa deemee? (data collector)	Kutaa yaala deddeebii dhibee qaamaa keessoo Kutaa yaala deddeebii baqaqsanii yaaluu Kutaa yaala deddeebii dhibee sammuu Kutaa yaala deddeebin gadaamessa Kutaa yaala deddeebin 'ART' Kutaa yaala deddeebin Ijaa	1 2 3 4 5 6

### Yeroo fi adeemsa (gaaffilee ilaalchaa)

Gaaffileen kanaan booda jiraan kutaa yaalii isaan itti ergaman hundatti yeroo isaan tajaajila yaala argachuuf dabarsan ilaallata.

Lakkoofsa qorannoo ibsi		
<b>Tajaajila kenname</b>		<b>Yeroo</b>
<b>Galmeef</b>		
Kutaa 1ffaa	Sa'aa itti kutaa simannaa hospitaalaa ga'e ?	
	Sa'aa meeqatti Galmeef dabaree qabate	
	Yeroo galmeef dabaree qabattuu nama meeqatuu si dura jira/si duursa	
	Sa'aa meeqatti dhukkubsataan galmeef ?	
	Sa'aa meeqatti dhukkubsataan galmeef isaa xummure?	
<b>Kutaa calallii</b>		
Kutaa 2ffaa	Galmeef erga xummuree ,nama meeqatuu kutaa calalliitti waamamuuf isa duursaa?	
	Sa'aa meeqatti galmeef isaa fudhatee kutaa calallii bahee	
<b>Kutaa qorannoo</b>		
Kutaa 3ffaa	Sa.aa meeqatti dhukkubsataan bakka turtii itti qorannoof eegatan kan ga'e?	
	Dhukkubsataa meeqatu kutaa qorannoo galuuf isa duursaa?	
	Sa'aa meeqatti dhukkubsataan gara kutaa qorannoo seenee	
	Sa'aa meeqatti dhukkubsataan kutaa qorannoo gadi dhiisee?	
<b>laboraatorii</b>		
Dhukkubsataan laboraatoriitti ergameeraa	eeyyeen	
	lakkii	
		Yoo lakkii, ta'e kutaa 4ffaa irra darbi

Kutaa 4ffaa	Sa'aa meeqatti dhukkubsataan kutaa turtii kan laoratorii ga'ee ?		
	Yommuu achi ga'u Dhukkubsataa meeqatuu isa duursaa		
	Sa'aa meeqatti dhukkubsataan hoojjataa laboraatoritti kennee/qunnamee?		
	Sa'aa weeqatti dhukkubsataan bu'aa laboratorii isaa fudhatee?		
Kutaa raajii			
Dhukkubsataan raajii ka'eeraa	eeyyeen	Yoo lakkii ta'e kutaa 5ffaa irra dabi	
	lakkii		
Kutaa 5ffaa	Sa'aa meeqatti dhukkubsataan kutaa raajii ga'e?		
	Yommuu achi ga'u dhukkubsataa meeqatu isa duursa		
	Sa'aa meeqatti kutaa raajiin itti kaafamu gale		
	Sa'aa meeqatti bu'aa raajii isaa fudhatee?		
Tajaajila kan biraa(kutaa 6ffaa keessatti ibsi )			
Kutaa 6ffaa	Tajaajila isa kami (barreessi)_____		
	Sa'aa meeqatti kutaa tajaajila ibsitee ga'ee		
	Baayyinaa dhukkubsataa dabaree eeggachaa jiruu		
	Sa'aa meeqatti hojjataa kutaa tajaajilichaatti kennee/wal argatee		
	Sa'aa meeqatti bu'aa isaa fudhatee		
Mana qorichaa			
Qorichi ajajameeraafi	eeyyeen		Yoo lakkii,jette gara kutaa 7ffaatt darbi
	lakkii		
Kutaa 7ffaa	Sa'aa meeqatti dhukkubsataan mana qorichaa ga'e?		
	Yommuu achi ga'u dhukkubsataa meeqatu dabaree eeggachaa jira		
	Sa'aa meeqatti waraqaa ajajaja qorichaa hojjetaa mana		

	qorichaatti kenne?	
	Sa'aa meeqattii dhukkubsataan qoricha isaa fudhate?	
Yeroo bahumsaa	Sa'aa meeqatti dhukkubsataan tajaajila kutaa deddeebin yaalamanii xummuree	

## DECLARATION

I, Zebader Walle, do here by declare that all the work presented in this thesis is my own original work unless otherwise acknowledged. It has never been presented either in part or in full for publication or award of degree in any university.

I, therefore, present it for the award of Master of Public Health (HSM) of Jimma University, Jimma.

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This thesis has been submitted for examination with my approval as University advisor

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