



# The determinants of patient waiting time in the general outpatient department of Debre Markos and Felege Hiwot hospitals in Amhara regional state, North West, Ethiopia

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## ABSTRACT

### Background

Patient waiting time is defined as the total time from registration until consultation with a doctor. Experiences of waiting in general are perceived as complex, subjective, and culturally influenced. Registration time, payment process/cash billing, recording classification/triaged time, few human resources and work process are the determinants of patient waiting time in the general outpatient departments. However, the complexity of wait time is poorly understood and has been explored only to a limited extent. The main objective of this study to assess patient waiting time and its determinants in Debre Markos and Felege Hiwot Referral hospitals of Amhara Regional State in North West, Ethiopia.

### Methods

A hospital based comparative cross sectional study design was employed from October 20- November 20, 2014. The study population was patients presenting to general outpatient departments, from which 464 patients was selected using systematic random sampling technique. Quantitative Data was collected using structured questionnaire and A check list adopted from studies. Quantitative data was coded, entered, cleaned and analyzed using SPSS Software for windows version 20.0. Linear regression and bivariate logistic regression was applied to identify the determinants of each explanatory variable on outcome (patient waiting time). Finally data was interpreted by referring to the pertinent findings from the relevant literature reviewed. Ethical approval and clearance was obtained from ethical clearance committee of the Jimma University College of Public Health & Medical Sciences

### Result

The measured waiting time in Felege Hiwot referral hospital mean waiting time was and its standard deviation 149.2±72.1 minutes whereas 94.2±58.3 minutes in debere markos referral hospital. The major causes of the long patient waiting time was large numbers of patient with a few doctors 94(40.5%),67(28.9%) ,long searching of the cards 67(28.9%),73(31.5),and long registration time 59(25.4%),76(32.5) in Feleg hiwot and debere markos referral hospitals respectively. the satisfaction status in waiting time greater than 60 minutes in Felege hiwot referral hospital were statically significance with p value 0.0001(95% CI:1.7786,1.8766) with dissatisfaction whereas p= 0.0001 (95% CI;1.7690,1.8689) in debere markos referral hospital.

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## Conclusion

**There is the need for health care facilities and hospital administrators to address gaps in human resources, infrastructures and other internal procedures and institutional systems aimed at reducing waiting time and thus ensuring an effective health care**

**Keywords:** Patient Waiting Time, Outpatient Department, Debre Markos Hospital, Felge Hiwot Hospital, Ethiopia

## INTRODUCTION

Waiting time defined as the total time from registration until consultation with a doctor. Patients' waiting time the length of time from when the patient entered the hospital to the time the patient contacting the doctor at OPD". A patient's experience in waiting time will radically influence his/her perceptions on quality of the service. Patients are customers, and most businesses try to focus on doing what they can to keep their customers happy.<sup>1</sup>

Waiting time from the moment patients submit a clinic appointment card or referral letters at the counter until getting a call from the counter. During this time registration time, the payment process and record classification are made.<sup>2</sup>

There were two waiting times, the first is time taken to see a doctor and the second is time to obtain medicine. Wait time for health services is commonly conceptualized as a linear construct where it is assumed that patients become more distressed the longer they wait. Waiting can be irritating, frustrating and a source of great uncertainty. Experiences of waiting in general may be perceived as complex, subjective, and culturally.<sup>3</sup>

Whether it's a time used for registration of patient, routine doctor's appointment, emergency room treatment, laboratory/diagnostic test, procedures, receiving the results of various tests, patient happens to just about everyone seeking medical care. It's often one of the most frustrating parts about healthcare delivery system. Waiting times for elective care have been considered a serious problem in many health care systems since it acts as a barrier to efficient patient flows.<sup>4</sup>

OPDs are considered as the window to hospital services and patient's impression of the hospital begins at the OPD. This impression often influences the

patient's sensitivity to the hospital and therefore it is essential to ensure that OPD services provide an excellent experience for customers. It is also well-established that 8-10 per cent of OPD patients need hospitalization.<sup>5</sup>

Waiting time is an indicator of service quality in that it examines several of six dimensions of quality, including the effectiveness and efficiency of the outpatient service to patients. Waiting times have constantly been a problem for outpatient clinics.<sup>6</sup>

Patients spend substantial amount of time in the clinics waiting for services to be delivered by physicians and other allied health professionals. The degree to which health consumers are satisfied with the care received is strongly related to the quality of the waiting experience. Healthcare organizations that strive to deliver exceptional services must effectively manage their clinic wait. Patient clinic waiting time is an important indicator of quality of services offered by hospitals.<sup>7</sup>

Registration time, payment process/cash billing/, recording classification/triaged time/, few human resources and work process are the determinants of patient waiting time in the general outpatient departments. Currently the patient flow in Amhara regional Health bureau according to the Ethiopian hospital reform implementation guideline (EHRIG) reception at the gate of the hospital, central triage, card room, cashier/billing/ and OPD rooms until the first contact of doctors.<sup>8</sup>

Waiting times are a complex phenomenon and are the results of many possible determinants and variables. However, only a subset of these variables can be measured empirically at an international level. The international surveys are that they report evidence also for countries where waiting times are not a policy concern. However, they are often based on small samples of respondents. Waiting time for

health services is commonly conceptualized as a linear construct where it is assumed that patients become more distressed the longer they wait. Waiting can be irritating, frustrating and a source of great uncertainty. Long waiting times have been reported in both developed and developing countries. In the USA, an average waiting time of about 60 min was found in Atlanta.<sup>9</sup>

The duration of waiting time varies from country to country, and even within country it varies from center to center. In most developing countries, as several studies have shown that patients spend 2-4 h in the outpatient departments before Waiting times for medical services such as specialist visit and surgery continue to be an issue in most countries with publicly funded healthcare systems, where timely access to healthcare services is at the top of the health policy agenda waiting for care, however, is only problematic when patients consider their waiting times unacceptable. To address the issue of unacceptable waits for care, it is important to understand the factors contributing to patients' assessment of the acceptability of their waiting times. Much of the evidence to date focuses on the duration of the waiting time as the principal determinant of wait time acceptability, often with little to no regard for other factors that may influence patients' views on waiting times A source of dissatisfaction with health care reported by patients is having to wait a long period of time in the clinic. In Nigeria, an average waiting time of about 173 min was found in Benin<sup>10</sup> reseeing the doctor.<sup>6,11,12</sup>

Time spent waiting is a resource investment by the patient for the desired goal of being seen by the physician and therefore may be moderated by the outcome. Patient waiting time in outpatient clinics is often the major reason for patients' complaints about their experiences of visiting outpatient clinics. Therefore, patient satisfaction with waiting time plays a crucial role in the process of health quality assurance or quality management.<sup>13</sup>

In a competitively managed health care environment, patient waiting time play an increasingly important role in a clinic's ability to attract new business. It is difficult to sell services if individuals are dissatisfied

with waiting time which is the length of time from when the patient entered the waiting room or the consulting room to the time the patient actually left the hospital. Additionally, waiting time becomes a factor in retaining current users of the services.

Patient satisfaction has emerged as an increasingly important parameter in the assessment of quality of health care; hence, healthcare facility performance can be best assessed by measuring the level of patient's satisfaction. A completely satisfied patient believes that the organization has potential in understanding patient needs and demands related to health care. Patient satisfaction is directly correlated with waiting times to see a doctor while another study found that, because of prolonged waiting times, a substantial number of patients left outpatient departments. Patient satisfaction is directly correlated with waiting times to see a doctor while another study found that, because of prolonged waiting times, a substantial number of patients left outpatient departments. A study of this nature is critical to public appreciation of the quality of health care operating environment; hence, this study was aimed at assessing patients' waiting time and factors affecting waiting in the outpatients' departments. Long waiting times indicate that there are insufficient staffs and/or resources to handle the patient load or that those available resources are being used inefficiently.<sup>14</sup>

Typical questions challenging hospital managers include: How should they optimally allocate their limited resources? How much exam rooms do they need? How much physicians and supporting staff do they need? If they increase or decrease the amount of exam rooms and/or staff, how would this effect patient waiting time, the length of a medical treatment and the total time spent in clinic by patient? Data generated from the study could be used by hospital administrators to address gaps in human resources, logistics, infrastructures and other internal procedures towards ensuring an effective health care delivery system. There is no research done as major title on patient waiting time and its determinants but there are studies under the part of the outpatient satisfaction in the study areas. This study aimed at assessing the determinants of

patients' waiting time in the general outpatient department (GOPD) of two referral hospitals of Amhara region, North West Ethiopia. By measuring waiting times a hospital can assess, if there is a need for extra personnel and or other resources in the outpatient department and to review patient flow process to increase the efficiency of services provision. Therefore, aimed at assessing patient waiting time and its determinants in GOPD of Debre Markos referral hospital and Felege Hiwot referral hospital and may generate important directions to be critically considered by health system managers and health care workers in different levels.

## MATERIAL AND METHODS

Hospital based comparative Cross-sectional study design was employed. To assess patient waiting time and its determinants in Debre Markos and Felge Hiwot Referral hospitals of Amhara Regional State in North West, Ethiopia, The study was conducted from October 20, 2014 to November 20, 2014 in the two hospitals which is found in Debre markos and Bahir Dar city. The hospitals is located in Debre markos and Bahir Dar city in Northwest of Amhara National Regional State, at a distance of 300 and 565 Kilometers from Addis Ababa, the capital city of Ethiopia respectively.

### Sampling

All patients (clients) who visit the general outpatient department of Debre Markos referral hospital and Felge Hiwot referral hospital during the study period was the source population. The quantitative samples size was determined, the minimum sample size was determined using the two population proportion formula for estimating required sample size.

$$N = Z_{\alpha} \sqrt{2P^-q} + Z_{\beta} \sqrt{p_1q_1 + p_0q_0} / p_1 - p_0$$

$$P^- = \frac{p_1 + q_0}{2}$$

$$q = 1 - P^-$$

Taking,

$P_1 = 50\%$  for Debre Markos Referral Hospital

$P_2 = 65\%$  for Felge Hiwot Referral Hospital that is difference of 15% the Felge Hiwot assumption.

$Z_{\alpha} = 1.96$   $CI = 95\%$ ,  $\alpha = 0.05$

For the Power = 80% use  $Z_{\beta} = 0.84$

So, from the formula calculation n equals to 211 patients/clients/ for each hospital with contingency 10% was 211 patients/clients/ to compare purpose. The total sample size was 464 patients/clients/ (30).

At the hospitals in the last average one month OPDs visited by the sample size for each category of hospitals.

Where K was the sampling interval,

For Debre Markos referral hospital

$$K = 350/201$$

$$K = 1.7$$

This was, however, approximated to 2.

And for Felge Hiwot Referral Hospital

$$K = 500/201$$

$$K = 2.5$$

This was, however, approximate 3.

Based on the above sampling interval, we were carried out the systematic sampling technique as Simple random sampling was done for the first three patients (clients) to get the starting point.

### Data Collection and Management

An adapted structured questionnaire and structured checklists was prepared in English and translated into local language (Amharic). All patients who was triaged at the triaged areas allocated to different clinical departments, including, , including, Surgery, Medicine, Obstetrics, Gynecology, pediatrics, Ophthalmology, Ear, Nose, Throat (ENT), Orthopedics, Skin, Antiretroviral treatment, TB/Leprosy treatment, voluntary counseling and testing, mental health service, dental health service, physiotherapy service, cervical cancer screening and treatment, reproductive health services will be included, triaged in the triaged areas in both the hospitals. Pretest was done among 24 randomly selected OPD visits attenuate selam hospital, Fenot selam city. Four health professionals who were working in the two hospitals were recruited for data collection and training was given on how to approach the outpatients and collect the data. Data were collected by three major collection methods was used in this study. The first method was observation. Data was collected through direct observation on the subjects involved in the various working processes in

the hospitals. Measurements of time spent from registration until consultation by a doctor was made using a stopwatch. The second method was Patients would be also interviewed to elicited the socio demographic variables and find out the problems of long waiting time by using questionnaires. To determine the patient waiting time by using stop watch that is the check list which gather the time spend on each work flow which is time spend from arrival(reception) to triage, time spend from triaged to card room, time spend from card room to cash(billing) and time spend from cash to first consultation of doctors. Questionnaires On average an interview lasts 15 to 20 minutes to complete. Besides, a close supervision was done by the principal investigators to keep the validity of the data during data collection cross checking of every filled questionnaire were done in every data collection days. The collected data were coded and entered in to the computer, using SPSS version 20 statistical package; cross tabulate. Bivariate correlation and linear regression analysis were done for the association. The result was described using frequency tables in numbers, percentage, and summarized using tabular presentation. Person correlation and confidence intervals were used to assess the presence and degree of factors association and waiting time. P-value of <math>0.05</math> and confidence interval not including 1 were set for the significance of association between dependent and independent variables.

### Ethical Considerations

Ethical approval and clearance was obtained from ethical clearance committee of the Jimma University College of Public Health & Medical Sciences to conduct the research at DebreMarkos Referral Hospital and Felge Hiwot Referral Hospital. Study participants who was took part in interview were patients with age greater than 18 years who are capable to decide about themselves independently and less than 18 years were their responsible families. They were made free choices and decision without any interference to participate in the study. Prior to

the interview Verbal consent was obtained from the study participants. Participants did not have to sign the form and no identifiers were collected from the clients to ensure their confidentiality.

### RESULTS

A total of 464 general outpatients (232 from each hospital) were interviewed yielding a response rate of 100%. The mean age was  $41.6 \pm 13.5$  years and  $38.1 \pm 13.9$  years with the range of 20-70 years for the respondents in Felege hiwot and Debre markos referral hospitals respectively.

Among 232 outpatients 60.8 % (N=141), 39.2 % (N=91) and 52.2% (N=121), 47.8% (N=111) were men and female in Felege Hiwot and Debre Markos referral hospitals respectively. Majority of Felege hiwot referral hospitals are males whereas almost equal in Debre markos referral hospital (table 1).The educational status of the respondents 25.9 % (60) able to read and write from feleghiwot referral hospitals whereas 18.5% (43) are debre markos referral hospital. Unable to read and write respondents of feleg hiwot were 25% (58) and 44.4(103) from debere markos referral hospital 25.4 % (59), 9.8 % (46) elementary school in Felegi hiwot and debre markos referral hospitals. More than half of the respondents' in Felege hiwot 118(50.8%) have no formal education while majority of the respondents' in Debre markos referral hospital have no formal education (146(63%) (Table 1).The occupational status of the respondents showed that famers were 42.2(98) in felege hiwot and 47.4(110) in debre markos referral hospital. students 14.7% (56), 24.1% (56), employed 9.5% (22), 9.1% (21), merchants 13.4% (31), 9.1% (21) and others 20.3 (47), 9.9% (23) in feleg hiwot and Debre markos referral hospitals respectively.

The place of the residence more than half of 56 % (130) were from rural in Feleg hiwot referral hospital whereas majority of respondents 70.3 % (163) were Debre markos referral hospitals (Table 1).

Table 1 Socio-Demographic Variables, Felege Hiwot and Debre Markos Referral Hospitals

Variables	Felege Hiwot Referral Hospital		Debre Markos Referral Hospital	
	Frequency	Percent	Frequency	Percent
<b>Age (Years)</b>				
20-29	119	51.3	76	32.8
30-39	25	10.8	66	28.4
40-49	22	9.5	38	16.4
50-59	39	16.8	28	12.1
60-69	27	11.6	24	10.3
Total	232	100.0	232	100.0
<b>Sex</b>				
Male	141	60.8	121	52.2
Female	91	39.2	111	47.8
Total	232	100.0	232	100.0
<b>Educational Status</b>				
unable to read and write	58	25.0	103	44.4
able to read and write elementary school	60	25.9	43	18.5
high school	59	25.4	46	19.8
tertiary level	31	13.4	22	9.5
Total	232	100.0	232	100.0
<b>Occupational Status</b>				
student	34	14.7	56	24.1
farmer	98	42.2	110	47.4
employed	22	9.5	22	9.5
merchant	31	13.4	21	9.1
other	47	20.3	23	9.9
Total	232	100.0	232	100.0
<b>Residence</b>				
Urban	102	44.0	69	29.7
Rural	130	56.0	163	70.3
Total	232	100.0	232	100.0

Interms of personnel attending to patients in the general outpatient there were 12 doctors in the Felegi hiwot and 8 Debere markos referral hospitals. Distribution of personnel at the GOPD in the Felege hiywot and Debre markos referral hospitals. On average 12 doctors saw 420 patients per day in felege hiwot referral hospital whereas in debere markos referral hospital 8 doctors attended 280 patients per day. The patient flow during the data collection period was 522 in Felege hiywot referral hospital

range of 480-750 patients per day whereas 396 with the range of 345-469 patients per day in debere markos referral hospital that means the time patients are treated by nurses. Majority of the respondents 147(63.3%) were new attendance in Felege hiwot referral hospital whereas 181(78%) were debere markos referral hospital new outpatient attendances. (Table 2).

Table 2 Personnel Distribution of Felege Hiwot and Debre Markos Referral Hospital

	Felege Hiwot Referral Hospital (N)	Debre Markos Referral Hospital (N)
Number of Doctors	12	8
Number of Nurses	20	16
Number of Card Room Workers	12	10
Number of Porters	20	20
Number of Cashier	8	4
Number of Record Clerks	6	4
Type of Patients	New Patients	147
	Repeat Patients	85
	Mean of Patients per Day Load	522
		396

### The Facility Level in the Two Hospitals

The facilities have had (20, 16) outpatient department room and (6, 4) functional computers to register the new and repeat patients in Felege Hiwot

and Debre Markos referral hospitals respectively. Therefore the patient per day load shall have additional OPD rooms, windows and functional computers in the two hospitals (Table 3).

Table 3 Facility Level in Felege Hiwot and Debre Markos Referral Hospital

	Felege Hiwot Referral Hospital (N)	Debre Markos Referral Hospital (N)
Number of OPDs	20	16
Number of card room functional windows	6	4
Number of cashier functional windows	8	4
Number of functional computers in the card room	6	4

### Patient's Perception on Presence of Waiting Areas in the Two Hospital

Among the determinants of patient waiting time the presence of waiting areas saw by the doctors easily to accessible. In Debre markos referral hospital the respondents 45.3%(107) was saying there was no waiting areas in the OPDs waiting areas whereas in

Felege hiwot had OPDs waiting areas. More than half of the respondents' of Debre markos referral hospital 54.7 (105) said there was no waiting areas at the cashier areas while 39.7(85) of the respondents said no waiting areas in Felege hiwot referral hospital (Table 4).

Table 4 Presence of Waiting Areas in Felege Hiwot and Debre Markos Referral Hospitals

	Felege Hiwot Referral Hospital			Debre Markos Referral Hospital		
	Yes (%)	No (%)	Total (%)	Yes (%)	No (%)	Total (%)
Presence of Triage waiting areas	232(100)	0	232(100)	232(100)	0	232(100)
Presence of card room waiting areas	232(100)	0	232(100)	232(100)	0	232(100)
Presence of OPD waiting areas	232(100)	0	232(100)	125(54.7)	107(45.3)	232(100)
Presence of waiting at the cashier room	147(63.3)	85(39.7)	232	127(45.3)	105(54.7)	232(100)
Presence of service area arrows or banner	95(40.9)	137(59.1)	232(100)	150(64.7)	82(35.3)	232(100)
Punctual to staff	127(54.7)	105(45.3)	232(100)	154(66.4)	78(33.6)	232(100)

### Patient's Perception on Causes of Long Waiting Time

The patient perceived that causes of long waiting time (N=232 FHRH, N=232 DMRH). The major causes of the long patient waiting time was large numbers of

patient with a few doctors 94 (40.5%), 67 (28.9%), long searching of the cards 67 (28.9%), 73 (31.5) and long registration time 59 (25.4%), 76 (32.5) in Feleg hiwot and debre markos referral hospitals respectively. (Table 5).

**Table 5 Causes of Patients Waiting Time in Felege Hiwot and Debre Markos Referral Hospitals**

Causes of Long Waiting Time	Feleg Hiwot Referral Hospital Number (%)	Debre Markos Referral Hospital Number (%)
Long registration time	59(25.4)	76(32.8)
Long searching for cards	67(28.9)	73(31.5)
Large numbers of patients with a few doctors	94(40.5)	67(28.9)
Doctors to taking too long a tie to see a patient	4(1.7)	8(3.4)
No response	8(3.4)	8(3.4)
Total	232(100)	232(100)

### Patient's Perception on Long Waiting Areas

The respondents' perception on the waiting areas card room waiting 109 (47%), 56 (24.1%) and OPD

waiting areas 79 (34.1), 98 (42.2) had responded long waiting in this areas was the common in Felge hiwot and Debre markos referral hospitals. (Table 6).

**Table 6 Patients Perception on Long Waiting Areas in Felege Hiwot and Debre Markos Referral Hospitals**

Areas	Feleg Hiwot Referral Hospital Number (%)	Debre Markos Referral Hospital Number (%)
Triage Waiting Areas	17(7.3)	49(21.1)
Casher Waiting Areas	27(11.6)	26(11.2)
Card Room Waiting Areas	109(47)	56(24.1)
OPD Waiting Areas	79(34.1)	98(42.2)
Total	232(100)	232(100)

### Duration of Patient Waiting Time from the Measurement/Recorded

The measured waiting time in Felege hiwot referral hospital mean waiting time was and its standard deviation 149.2±72.1 minutes with the range of 21-449 minutes whereas 94.2±58.3 minutes with the range of 25-363 minutes in debere markos referral hospital. ≤60 minutes 18 (7.4%), 42 (18.1%), 60-120 minutes 101 (43.2%), 101 (43.5), 120-180 minutes 70

(30.2%), 60 (25.9) and 180-240 minutes 17 (7.3%), 18 (7.8) were in Felge hiwot and Debre markos referral hospitals respectively. Almost near to half 44% (101) of the respondents' waiting time record showed that between 60 and 120 minutes in the two hospitals. While majority of the waiting time record showed that between 60 to 180 minutes which was 17 (74%) in Felege hiwot and 161 (69.4%) of debere markos referral hospitals. (Table 7).

**Table 7 Duration of Patient Waiting Time Actual Measurement in Felege Hiwot and Debre Markos Hospitals**

Duration of Time	Feleg Hiwot Referral Hospital Number (%)	Debre Markos Referral Hospital Number (%)
≤60 minute	18(7.8)	42(18.1)
60-120 minute	101(43.5)	101(43.5)
120-180 minute	70(30.2)	60(25.9)

180-240 minute	17(7.3)	18(7.8)
240-300 minute	19(8.2)	8(3.4)
>300 minute	7(3)	3(1.3)
Total	232(100)	232(100)

Patients prefer to do in their waiting areas in the hospitals was watch TV 106(45.7%), Felege hiwot whereas 88 (37.9%) debre markos referral hospitals and listening health talks 62 (26.7%) were from feleg hiwot referral hospital respondents and 81 (34.9) of

respondents preferred to listen health talks and 44 (18.9%) of respondents simply seating in different waiting areas at Debre markos referral hospital responded from Debre markos referral hospital (Table 8).

**Table 8 Patients Preference During Their Waiting in the Waiting Areas in Feleg Hiwot and Debre Markos Referral Hospitals**

What do you do/prefer to do during waiting	Felege Hiwot Referral Hospital		Debre Markos Referral Hospital	
	Frequency	Percent	Frequency	Percent
Watching TV	106	45.7	88	37.9
Listening health talks	62	26.7	81	34.9
Reading	4	1.7	13	5.6
Simply seating	48	20.7	44	18.9
Others	12	5.2	6	2.6
Total	232	100.0	232	100.0

#### Satisfaction Level with Patient Waiting Time

Satisfaction of Felege hiwot referral hospital 18 (7.8%) which was less than that of Debre markos referral hospital 40 (17.2%). Most of the respondents 214 (92.2%) in felege hiwot are dissatisfied by their waiting time whereas in debre markos also majority

of them 192 (82.8%) responded that they are dissatisfied during their waiting time to see by the doctor at the general outpatient department. (Table 9).

**Table 9 Satisfaction Level of Patients with Waiting Time in Feleg Hiwot and Debre Markos Referral Hospitals**

Satisfaction Level	Felege Hiwot Referral Hospital		Debre Markos Referral Hospital	
	Frequency	Percent	Frequency	Percent
Satisfied	18	7.8	40	17.2
Dissatisfied	214	92.2	192	82.8
Total	232	100.0	232	100.0

#### The Correlation of Waiting Time and Other Variables in Feleg Hiwot Referral Hospital

Pearson correlation between waiting time less than or equal to and greater than 180 minutes and satisfaction was -0.230 thus implying a negative correlation between the two variables, ( $P = .007$ ). Longer duration of TCWT was associated with lower satisfaction ( $r = -0.20$ ,  $P = .001$ ). The patient waiting time less than or equal to and greater than 180 minutes and staff punctuality showed a weak

negative correlation ( $r = -0.177$ ), however it was statistically significant ( $P = .007$ ). The less than or equal to and greater than 180 minutes and occupational status of respondents however, showed a positive correlation ( $r = -0.188$ ), which was also statistically significant ( $P = .004$ ), thus the higher the occupational status the low waiting time can reach the doctor and the medical care visit have a showed

positive correlation( $r=0.264$ ) which was statistically significant ( $p=0.001$ ) (Table 10).

**Table 10 The Correlation of Waiting Time and Other Variables in Feleg Hiwot Referral Hospital**

	Waiting time less than or greater than 180 minute	Sex	Education status	Occupational status	Residence	Medical care /visits	Satisfaction Status	Staff punctuality
<b>180 minute waiting time adjusted in minutes</b>								
Pearson Correlation	1	.076	.094	.188**	-.128	-.264**	-.230**	-.177**
Sig. (2-tailed)		.247	.153	.004	.052	.000	.000	.007
N	232	232	232	232	232	232	232	232
<b>Sex</b>								
Pearson Correlation	.076	1	.048	.020	-.018	.085	.035	.139*
Sig. (2-tailed)	.247		.467	.766	.789	.196	.596	.035
N	232	232	232	232	232	232	232	232
<b>Educational Status</b>								
Pearson Correlation	.094	.048	1	.267**	-.002	-.144*	-.092	-.128
Sig. (2-tailed)	.153	.467		.000	.975	.028	.164	.051
N	232	232	232	232	232	232	232	232
<b>Occupational Status</b>								
Pearson Correlation	.188**	.020	.267**	1	-.489**	.195**	-.095	-.115
Sig. (2-tailed)	.004	.766	.000		.000	.003	.149	.080
N	232	232	232	232	232	232	232	232
<b>Residence</b>								
Pearson Correlation	-.128	-.018	-.002	.489**	1	-.096	.035	.090
Sig. (2-tailed)	.052	.789	.975	.000		.145	.593	.171
N	232	232	232	232	232	232	232	232
<b>Medical Care/Visits</b>								
Pearson Correlation	.264**	.085	-.144*	.195**	-.096	1	-.235**	-.190**
Sig. (2-tailed)	.000	.196	.028	.003	.145		.000	.004
N	232	232	232	232	232	232	232	232
<b>Satisfaction Status</b>								
Pearson Correlation	-.230**	.035	-.092	-.095	.035	-.235**	1	.102
Sig. (2-tailed)	.000	.596	.164	.149	.593	.000		.122
N	232	232	232	232	232	232	232	232
<b>Staff Punctuality</b>								
Pearson Correlation	-.177**	.139*	-.128	-.115	.090	-.190**	.102	1
Sig. (2-tailed)	.007	.035	.051	.080	.171	.004	.122	
N	232	232	232	232	232	232	232	232

### The Correlation of Waiting Time and Other Variables in Debre Markos Referral Hospital

Pearson correlation between waiting time less than or equal to and greater than 180 minutes and satisfaction was  $-0.104$  thus implying a negative correlation between the two variables, ( $P = .008$ ). Longer duration of TCWT was associated with lower satisfaction ( $r = -0.10$ ,  $P = .008$ ). The patient waiting time less than or equal to and greater than 180 minutes and staff punctuality showed a weak negative correlation ( $r = -.062$ ), however it was statistically significant ( $P = .003$ ). The less than or

equal to and greater than 180 minutes and occupational status of respondents however, showed a positive correlation ( $r = 0.015$ ), which was not statistically significant ( $P = .0412$ ), and the medical care visit have a showed positive correlation ( $r = 0.371$ ) which was not statistically significant ( $p = 0.001$ ). the same to Felege hiywot referral hospital that were satisfaction status, occupational status medical care/visits/ and staff punctuality are statically significance but the sex and age are not statistically significance (Table 11).

**Table 11 The Correlation of Waiting Time and Other Variables in Debre Markos Referral Hospital**

	Waiting time less than or greater than 180 minute	Sex	Education status	Occupational status	Residence	Medical care /visits	Satisfaction Status	Staff punctuality
<b>180 minute waiting time adjusted in minutes</b>								
Pearson Correlation	1	.003	.024	0.015	.046	-.062**	.104**	.371**
Sig. (2-tailed)		.480	.361	0.412	.241	.003	.008	.000
N	232	232	232	232	232	232	232	232
<b>Sex</b>								
Pearson Correlation	.003	1	.118*	-.091	.019	-.079	-.088	.221**
Sig. (2-tailed)	.480		.036	.083	.386	.116	.090	.000
N	232	232	232	232	232	232	232	232
<b>Educational Status</b>								
Pearson Correlation	.024	.118*	1	.277**	.567**	.099	.000	-.279**
Sig. (2-tailed)	.361	.036		.000	.000	.066	.500	.000
N	232	232	232	232	232	232	232	232
<b>Occupational Status</b>								
Pearson Correlation	.015	-.091	.277**	1	.015	.211**	.059	-.112*
Sig. (2-tailed)	.412	.083	.000		.412	.001	.186	.045
N	232	232	232	232	232	232	232	232
<b>Residence</b>								
Pearson Correlation	.046	.019	.567**	.015	1	-.156**	.003	-.190**
Sig. (2-tailed)	.241	.386	.000	.412		.009	.484	.002
N	232	232	232	232	232	232	232	232
<b>Medical Care/Visits</b>								
Pearson Correlation	.037	.221**	-.279**	-.112	-.190**	-.143*	-.056	1
Sig. (2-tailed)	.286	.000	.000	.045	.002	.014	.200	
N	232	232	232	232	232	232	232	232
<b>Satisfaction Status</b>								

Pearson Correlation	-.104	-.088	.000	.059	.003	.035	1	-.056
Sig. (2-tailed)	.058	.090	.500	.186	.484	.298		.200
N	.232	232	232	232	232	232	232	232
<b>Staff Punctuality</b>								
Pearson Correlation	.062	-.079	.099	.211**	.156**	1	.035	-.143*
Sig. (2-tailed)	.173	.116	.066	.001	.009		.298	.014
N	232	232	232	232	232	232	232	232

### Linear regression relationship of patient waiting time with other variables in Feleg hiwot referral hospital

Outpatients of the Felege hiwot referral hospital, and occupational showed statistically significant association with patient waiting time. For instance, respondents from occupational had 0.006 (95% CI, -0.029, -0.041) higher patient waiting score as compared to respondents of Feleghiwot referral hospital with Debre markos referral hospital which means that who have high level of occupational

status had got his service with the low waiting time. Similarly, for patient waiting time statistically significant association was not found with  $p=0.722$  (95 % CI:-0.029 to 0.041) occupation status. Medical care/visit/ of the patients 95%CI (-0.378,-0.029) which is significance with the patient waiting time ( $p=0.02$ ) and direction arrows and banners have 95%CI (0.027, 0.392) significance ( $p=0.03$ ) to the patient waiting time in Debere markos referral hospital compared to Felege hiwot referral hospital. (Table 12).

**Table 12 Linear Regression Relationship of Patient Waiting Time with Other Variables in Felege Hiwot Referral Hospital, Amhara Region, North West, Ethiopia**

Variables	Unstandardized Coefficients		Standardized Coefficients	p-value	95% Confidence Interval for B	
	B	Std. Error	Beta		Lower Bound	Upper Bound
(Constant)	2.580	.716		.000	1.168	3.992
Age in years	.009	.013	.055	.470	-.016	.035
Sex	-.026	.038	-.048	.484	-.101	.048
Educational status	.061	.036	.289	.094	-.010	.132
Occupational status	.006	.018	.033	.722	-.029	.041
Residence	.001	.043	.002	.982	-.084	.086
Medical care/visits	-.002	.054	-.003	.968	-.109	.105
Information how to go charts with patients	-.074	.108	-.133	.493	-.286	.138
Categorized satisfaction	.107	.120	.107	.372	-.129	.343
During waiting, what do you do	-.021	.024	-.087	.383	-.067	.026
Staff punctual	-.039	.046	-.073	.392	-.129	.051
Presence of direction arrows or banner	-.054	.056	-.100	.334	-.165	.056

### DISCUSSION

In this study showed that, the mean age of the respondents was 41.6 years of Felge hiwot referral hospital and 38 years of debre markos referral

hospital which is high and equals compared to 38 years respectively,<sup>24</sup> which is low compared to the mean age of 45 years obtained in a similar study in Karachi, Pakistan.<sup>31</sup> The lower mean age observed in our study may not be unrelated to the fact that, more

than half of our study subjects were less than forty years of age 144 (62%) and 142 (61.2) Felege hiwot and debre markos referral hospitals respectively. Findings from our study also showed that majority, the long waiting time observed unrelated to the realities in developing countries where health care providers are overwhelmed by large numbers of patients with few doctors. This was supported by In Nigeria; patients will have to wait longer on the queues before seeing their providers, as long as the imbalance in the doctor–patient ratio is not addressed. The commonest reason adduced by our respondents for the long waiting time was, few doctors to attend to the large number of patients on the queue, long searching of cards and long registration time. This is a common finding in most health care centers across Ethiopia .and supported by the Nigerian research that was due to the shortage of medical doctors and other health care providers. And also similar reasons were observed in the study from Jos University Teaching Hospital (JUTH), Nigeria.<sup>7,31,32</sup> A disproportionate number of doctors and patients would increase patient waiting time. Over the years, population has increased several folds without a commensurate increase in the number of health care providers. The World Health Organization (WHO) target for doctor to population ratio is one per 1000. However, the doctor patient ratio is only one per 25,000 in the 25 poorest countries of the world including Ethiopia.<sup>33</sup> With this trend, patient waiting times in our GOPDs will be a recurring decimal. Patients experienced long wait times in our institution possibly because of the dearth of qualified manpower especially in the card room and cashier room workers. Findings from our study revealed that longer duration of total clinic wait time was associated with lower satisfaction. This long wait time observed in our study may be because the GOPD rooms are not enough to service the patients besides the number of doctors.

The Institute of Medicine (IOM) has since recognized the problems of prolonged waiting time resulting in dissatisfaction among patients and had therefore recommended that at least 90% of patients should be attended to within 30 min of their scheduled appointment time.<sup>2</sup> It was therefore not surprising that, a majority, 92.2% of our study subjects were of

the measured in Feleg hiwot and 78.1% were debere markos referral hospitals that, the ideal waiting time should not be longer than 30 min from the time of arrival in the hospital to the time the patient is attended to by the doctor. Our findings showed that, only 7.8 % % of the patients were actually satisfied with the services in the OPDs in Felege hiwot referral hospital where as 17.2%. The mean waiting time observed in this study was 149 minutes in Felege hiwot referral hospital and 94minutes in debre markos referral hospitals which was high compared to that which was done in Nigeria 85 min. This is high when compared to the findings from similar studies in other centers with lower figures for waiting time.<sup>5,9,36,37</sup> However, dos Santos and his colleagues observed that, 62% of their respondents had a mean waiting time of 188 minute (10). Other studies also observed waiting times of 148 and 152 min respectively,<sup>14,32</sup> which were higher than 94 min Debre markos referral hospitals and also 149 min in felege hiwot referral hospital recorded in our study. the major cause of long waiting time was large numbers of patient with a few doctors, long searching of the cards and long registration time in Feleg hiwot and debre markos referral hospitals respectively.and this was supported by in Nigeria which was studied on patient waiting time in tertiary institutions and in on outpatient waiting time in hospital university kebangsan Malaysia.<sup>7,24</sup>

According to the results of this study, female patients (57.5%) were more satisfied with health services provided in the OPDs than male patients (42.5%) and this difference was found to be statistically significant ( $P=0.001$ ) in debere markos referral hospital. This finding was found to be consistent with the results from other studies,<sup>38, 39</sup> where as in Felege hiwot referral hospital was inverse. One important component of measured health care is quality of patient satisfaction.<sup>36</sup> It has been observed that patients are least satisfied while waiting times are longer than expected, relatively satisfied when waiting times are perceived as equal to expectations and highly satisfied when waiting times are shorter than expected.<sup>40</sup> Findings from this study showed that, the patients who waited longer (> 60 min) expressed dissatisfaction with services rendered in the OPDs in the two hospitals ( $P<0.000$ ). The number

of patients who expressed satisfaction (20.8 Debre markos and 8.4% Felege hiwot referral hospitals) with the services in the OPDs is low when compared with 95% obtained in the study by Maitra and his colleagues.<sup>41</sup> The high level of satisfaction recorded in their study could be attributed to differences in settings, as their study was carried out in a more developed country with enormous human and material resources.

The same study by Maitra and his colleague showed a significant correlation between satisfaction and waiting time, to see the doctor as those that waited for shorter periods, to see the doctor expressed satisfaction with services they assessed. Patients with who have high occupational status were found to have spent less time (<60 min) in the waiting room in both hospitals ( $P=0.0001$ ). This could be due to the fact that, they are more likely to be gainfully employed and therefore are in a haste to get back to their places of work early. Researchers have found that, as waiting time increases, patients are more likely to leave emergency departments without being seen by a doctor or are dissatisfied with services.<sup>10,42,43</sup> The time spent before seeing the doctor can always be made useful if patients are engaged in activities to reduce boredom. In this study, in Felege hiwot referral hospital only 26.7% of the patients admitted to being given health education on important health issues and in debre markos referral hospital was 34.9% while majority either watched television or watched happenings in the OPDs (37%,36.2) respectively. Here favorable research's which done in Nigeria patient waiting time in a tertiary health institution.<sup>10</sup> This finding is also in consonance with those of Ajayi in Ibadan, where it was observed that, the three common activities patients engaged in during waiting time were watching happenings in the clinics, reading and chatting.<sup>35</sup> The study showed similar activities by their respondents; however, the respondents in their study showed a preference for health education programmes for specific diseases. Thus, the constructive use of patient waiting time can be made to provide greater patient satisfaction through effective health education activities in the OPDs.<sup>14</sup>

## CONCLUSION

Over all patient waiting time at the general outpatient department showed that has demonstrated that, the record of mean waiting time in Felege hiwot were  $149\pm 72.1$  minutes with the range of 21 to 449 minutes whereas  $94.2\pm 58.3$  minutes with the range of 25 to 363 minutes in debre markos referral hospitals. Nearly half of patients in Felege hiwot referral hospital preferred to watching TV the same is true for Debre markos referral hospital. In the two hospital majority causes of long patient waiting time were large number of patients with a few doctors, long searching of cards and long registration time. The facility has limited number of infrastructures and physician. During their waiting more than half of the respondents' said there were no waiting rooms at the cashier areas the same true for OPDs in Debre marrkos referral hospital. Patient waiting time and other variables like with education, occupation, and medical visit and staff punctuality and satisfaction status are statically significance. Patients waiting a long period of time their satisfaction level becoming decreased. Of the patients were long patient waiting time with services offered and the major cause of dissatisfaction. The major causes of the long patient waiting time was large numbers of patient with a few doctors, long searching of the cards ,and long registration time in Feleg hiwot and debre markos referral hospitals respectively.

There is the need for health care facilities and hospital administrators to address gaps in human resources, logistics and other internal procedures and institution systems aimed at reducing waiting times and thus ensuring an effective health care.

## RECOMMENDATION

### Federal Ministry of Health

- 1) FMOH must the standards of patient waiting time in the general outpatient waiting time for hospital based on their patient load per day.
- 2) FMOH need to change the educational level and service (requirement) of card room and cashier workers in the referral hospitals because high patient flow.

- 3) FMOH must again increase the number of doctors in high patient loaded hospitals for this allocation also will have prepared standards.

#### **Amhara Regional Health Office**

- 1) The Amhara regional health office should plan to build the additional new or renovation of the hospitals in collaboration with FMOH.
- 2) Amhara regional health office together with other partners need to arrange training for health workers and administrative staff on patient waiting time.
- 3) Amhara Regional Health office must improve the educational level and job requirements of card room workers and cashier workers.
- 4) Set standards in the region to manage the waiting time and to increase the satisfaction.
- 5) When allocation of doctors the region should see the patient load in the outpatient and inpatient level.
- 6) Must supervise the hospitals services delivery and other civil service implementation like punctuality, direction arrows or banners etc.

#### **Feleg Hiwot Referral Hospital**

- 1) Feleg hiwot referral hospital should deploy competent and adequate number of workers at MRD to reduce increased waiting time at GOPD.
- 2) Feleg hiwot referral hospitals in collaboration with other partners need to give trainings especially on smart care computer application.
- 3) Feleg hiwot referral hospitals should renovate outpatient department and waiting areas with adequate seating chairs in line with other services like one stop shopping.
- 4) Feleg hiwot referral hospital must control the punctuality of staff and prepared the direction arrows or banners to indicate service areas for the patient.
- 5) Give to health talks (education) about the hospital service and other health issues in the outpatient waiting areas in either mass media or medical professionals.

#### **Debre Markos Referral Hospital**

- 1) Debre markos referral hospital should deploy competent and adequate number of workers at MRD to reduce increased waiting time at GOPD.
- 2) Debre markos referral hospitals in collaboration with other partners need to give trainings especially on smart care computer application.
- 3) Debre markos referral hospitals should renovate outpatient department and waiting areas with adequate seating chairs in line with other services like one stop shopping.
- 4) Debre markos referral hospital must control the punctuality of staff and prepared the direction arrows or banners to indicate service areas for the patient.
- 5) Give to health talks (education) about the hospital service and other health issues in the outpatient waiting areas in either mass media or medical professionals.
- 6) The hospital managers should see the determinants of patient waiting time each services.

#### **Health Service Providers**

- 1) Health workers and other administrative workers are required to work strongly on tracing lost patients when they call by the porters to go in the appointed OPD room.
- 2) Health care's providers should conscious on waiting time of the patient and give appropriate time without complain.
- 3) Health workers must be punctual in their work.

#### **Other Partners**

- 1) Taking their partnership working to reduce patient waiting time and to come up the satisfaction supports the regional health office by seating standards or giving training.
- 2) Partners working on health service system should seriously take consideration of patient waiting time in prepare standards collaboration with FMOH.

### STRENGTHS AND LIMITATIONS OF THE STUDY

Though there were other studies conducted on patient waiting time for the satisfaction one of the determinants this research reviewed all the current practice like resource inventory, observation of structural aspects, assessment of patients and measure waiting time appropriately on the services.

It was difficult to generalize the result of this study for all hospitals in the study area, since the data was collected from two referral hospitals. Due to the fact that this study deals with patient waiting time at general outpatients departments social desirability bias considered.

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