


# Average Time Spent in Referral Process and its Determinants Among Clients of Maternal and Child Health Service in 2 Districts of Jimma Zone, Ethiopia

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## Abstract

**Background:** The time spent between referring and receiving health facilities is an important determinant of the outcome of the referred patients/clients especially among women in low-income countries due to poor access to early and appropriate referrals. Thus, the aim of this study is to assess the average time spent between referring and service utilization at receiving health facility. **Methods:** A cross-sectional study was employed by using time and motion approach. Structured questionnaire and observation checklist were used for collecting data. SPSS 21 version was used for data analysis and binary and multivariable logistic regression analysis was carried out to identify a variable that has a significant association on the basis of OR, 95% confidence interval, and a *P* value of less than .05. **Result:** A total of 266 women participated in the study with the mean age of the study population is 24.65 ( $\pm 5.03$ ) years. The majority, (223 (83.8%)) of the participants came for maternal health services and more than half, (143 (53.8%)) of the respondents were self-referrals. Among the referred cases, the main reason for the referral was for further evaluation and management. Women spent a maximum of 540 min on the way to arrive at receiving health facility. Residence and distance were the predictor variables for average time spent. **Conclusion:** In general, women wait a maximum of one and half hours to contact health care providers for assessment and more than two-fifth of the women wait more than 3 h to get the service at receiving health facility.

## Keywords

Time spent, referral system, maternal and child health service, Jimma, Ethiopia

## Introduction

A referral system is a process in which health workers at one level of the health system, having insufficient resources to manage a clinical condition, seeks the assistance of a better or differently resourced facility (1). Theoretically, health posts refer cases to health centers, as the health care professionals have at their disposal a minimal number of materials and drugs. Then, health workers are advised to refer cases from health centers to district hospitals; the last step of the referral pathway may include regional and possibly national referral hospitals. The referral system is most likely to be effective when there is a clearly articulated process between the referring/sending and receiving facilities, bypassing can result in higher costs and inefficiencies of the health system (2).

The 3 delays—deciding to seek health services, reaching a health facility, and receiving treatment after reaching the referral facility have been recognized as one of the main factors that lead to poor outcomes among women who

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have obstetric emergencies including maternal death (3). Recently, a “fourth delay” that results when patients are not timely referred to the next higher level of care due to delay in making referral decisions by providers is getting attention. This is indicating that time is a significant modifiable factor that negatively affected patient experience and outcome and it is invaluable to saving lives (4). Hence, the time spent between referring and receiving health facilities is an important determinant of the outcome of the referred patients/clients (5).

The longer it takes to reach the receiving health facilities, the poorer the outcome whereas the shorter time spent between referring and receiving health facility the better outcome given that referral is initiated timely and the condition is reversible (6). However, this could be affected by several factors that are related to the referring and receiving health facility, health care providers, the referred patient/client, and referral system (7,8). Thus, a well-functioning referral system: the ability of the health care providers to timely identify cases in need of referral, readiness of the clients/patients or their family being referred to take timely action, availability of conducive infrastructures, distance between the 2 health care facility, and other vital resources like Ambulance (2,9).

Women in low-income countries often face serious health risks during pregnancy and delivery due to poor access to early and appropriate referrals. Despite studies that show clear linkages between timely referrals and improved maternal outcomes, challenges still remain in the referral process, particularly in rural communities (10).

Evidence from Tanzania revealed that from the referred 1538 women 70% were referred for demographic risks, 12% for obstetric historical risks, 12% for prenatal complications, and 5.5% for natal and immediate postnatal complications (11). A descriptive survey on 5060 pregnancies in eastern Zaire, showed that the referral success rate in the region was only 33% (12). A study conducted in Zambia indicates that 32% of the patients were referred (of which 97% referred to hospital); of the referred cases, 73% were referred because they were too sick and 17% need specialized care; 19% of patients had taken some course of action (like self-medication [40%]) before coming to the center. The study found that 60% of all patients were self-referral. There was a lower self-referral pattern for children (only 44% had been referred) compared with adults (70% had been referred) (13).

In another study, only 10% of patients were referred and majority of (74%) patients in the hospital were referred by a health center whereas among those who were referred to the health center, 32% came from a nearby hospital and only 18% referred from health post (14). A study in Nigeria revealed that only 100 (7.1%) of patients were referred to the hospital mostly from private clinics while the rest (92.9%) were self-referral (15).

Distance, cost, perceived quality of obstetric care, health workers' attitude and respect for women's social needs,

perceived etiology of complications and sociocultural preferences, prolonged labor, postpartum hemorrhage, severe eclampsia, and premature rupture of membrane were among the determinants of obstetric care utilization at referral sites (10,16). However, theater busy 25.1%, unavailability of blood 11.3% and lack of equipment and supplies 10.3%, lack of transportation and communication infrastructure, overcrowding at the referral hospital, insufficient pre-service and in-service training, and absence of supportive supervision were key barriers to provision of quality emergency obstetric care (5,16,17).

According to a study in Uganda, patients spent a median time of 346 min in the assessment center. The mean time from the vehicle being called by the PHU to the patient's arrival at hospital was 3.1 h (18,19). The average waiting time was found to be 44.85 min, average consultation time for all OPD was found to be 17.357 min (20). In another study, ~70% of the population is served by facilities within a 2-h transfer time to a hospital and spent 64.1% of their total time in waiting at the immunization clinics (21,22).

Also, women may be faced with a number of barriers related to referral and health workers also have difficulty in complying with guidelines for referral. The relative importance of these barriers is limitedly known to health planners. Consequently, interventions to improve caretaker compliance with referral system are difficult to develop where caretakers may be faced with much communication and transportation barriers (23). Thus, the main purpose of this study is to determine the average time spent between referral and receiving health care among patients/clients referred and received maternal and child health services, and the average time consumed in each service delivery point once the referred clients were reached referral site and the possible factors that determine it because a timely referral is important in making a difference between life and death. Despite studies show clear linkages between timely referrals and improved maternal outcomes, challenges still remain in the referral process. This is why we planned to do this study.

## Methods and Materials

*Study setting:* This cross-sectional study was conducted from February to May 2020 in 2 purposively selected districts [Omo Beyam and Omo Nada] in Jimma zone. Jimma zone is situated in Southwest Ethiopia, 357 km from the capital city, Addis Ababa. Jimma Zone is home for nearly 2.5 million people (CSA, 2007). There are 3 425 206 populations, 21 woredas, 562 Kebeles, 15 527 Gare, 75 232 Shane, 1 tertiary hospital, 3 general hospitals, 3 primary hospitals, 122 Health centers, and 512 health posts in the zone. The 2 districts have a total of 336 055 populations, 46 health posts, 11 health centers, and 1 primary hospital.

## Sampling and Population

All clients receiving Maternal, Newborn and Child Health (MNCH) related services during the specified study period

at all levels of health care delivery point in the 2 districts. First the 2 districts were purposively selected and a list of public health facilities under each district was prepared based on their level/ tier/rank. Then, 5 health centers and one hospital were randomly selected from the 2 districts to be included in the study. Then, all women/clients and their children visiting the selected health facilities and received care during the study period were observed and interviewed.

*Measurement of time:* Time and motion study, which is a direct observational prospective study was employed to determine a “normal” or average time spent between referring and receiving services and for delivering particular services from entry to exit for clients visiting a health facility for MNCH service (Figure 1).

**Data Collection and Analysis Methods**

The data were collected using Interviewer administered questionnaire and observation checklist by trained midwives and nurses. Data collectors and observers were assigned at all randomly selected health facilities. After the referred clients/patients entered to the compound of the referral receiving health facilities, the data were collected using 3 approaches. In the first stage, clients/patients referred and presented at the current health facility during study period were observed starting from their entry to the compound. Once clients enter into the health facility, the time spent at each encounter such as card room/registration, triage, counseling/contact with health care providers, laboratory, and pharmacy to their exit or end output like admission/discharge/or referred to the next higher health facilities were recorded. Nonparticipatory observational approach was used. In the second approach, client exit interviews on the same individual were done through a questionnaire prepared by the researchers focusing on the objective of the study. The collected data were entered and cleaned in excel sheet and exported to SPSS version 21.0 for analysis.

Binary and multivariable logistic analyses were respectively used to identify candidate variables and see the independent predictors of average time spent in the utilization of MNCH service considering *P* value less than .05, 95% confidence interval (CI), and adjusted odds ratio (AOR), and the results were presented using narrative texts, tables, and figures.

*In this particular study:* Referral time is defined as the time elapsed between once the referral was decided, and until the patient reaches the receiving facility or time elapsed between referring the patient from one health facility to another, and section waiting time is the time the client spends at specific service delivery point within the health facility waiting to receive care or services. Total waiting time is the sum of all the section waiting times. Waiting time is the time that patients spend waiting to receive service and it was measured as total waiting time and section waiting time.

**Operational Definition**

*Referral time:* It is the time elapsed between once the referral was decided, and until the patient reaches the referral or time elapsed between referring the patient from one health facility to another.

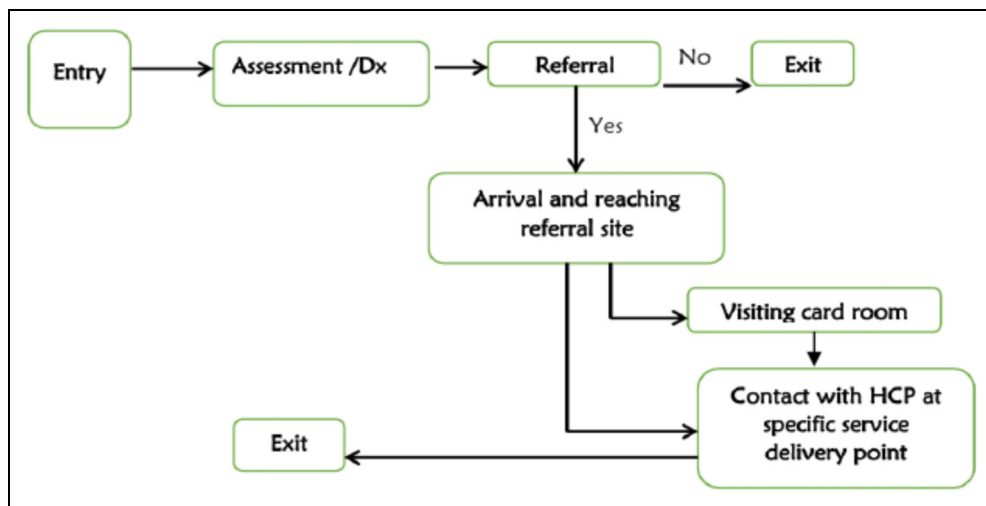
*Section waiting time:* The time the client spends at a specific service delivery point within the health facility waiting to receive care or services.

*Total waiting time:* This is the sum of all the section waiting times.

*Waiting time:* This is the time that patients spend waiting to receive a service. This was measured as total waiting time and section waiting time.

**Results**

A total of 266 women were participated in the study of which the majority 254 (95.5%) were from Omo Nada district. The



**Figure 1.** Client flow procedure across different health facilities and multiple phases of referral system, 2019.

mean age of the study population is 24.65 ( $\pm 5.03$ ) with a minimum of 16 to a maximum age of 41 years. Nearly three-fifth of the respondents were from urban residence; 208 (78.2%) and 235 (88.3%) of respondents were from Muslim religion and Oromo ethnicity, respectively. Almost all (97.0%) of the respondents were married and three-fifth were farmers by occupation. Related to educational status 97 (36.5%) of the respondents and 94 (35.3%) of their husbands can't read and write. More than one-third (34.2%) of the women have at least one-under-five child (Table 1).

### Referral Process Related Factors

The majority 223 (83.8%) of the respondents visit the health facilities for maternal health services where 14.7% for FP service, 24.8% for ANC service, 39.5% for delivery service, and 4.9% for PNC services. More than half 143 (53.8%) were self-referrals. Among the women that had been referred by the health care providers, the main reason for the referral was for further evaluation and management. Nine in 10 (91.1%) of the women referred to the next higher level health facilities have referral papers but only 51.8% of the referral papers were complete. The majority 108 (87.8%) of women were referred from health centers and the receiving facility is primary hospital. Just in three-fifth (60.2%) of the referred cases the distance from home to referring health facility and in 104 (84.6%) cases the distance between referring and receiving health facility is greater than 10 km. The main means of transportation from home to referring health facility is on foot, whereas the majority utilized an ambulance for arriving to receiving health facility (Table 2).

### Time Spent Between Referring and Receiving Health Facility

The women spend a median time of 120 ( $\pm 104$ ) min between referring and receiving health facility. Women spent most of their time in the referring health facility before they were departed to receiving health facility with a median of 60 ( $\pm 103$ ) min. Fifty-four (43.9%) with 95% CI (0.350-0.531) of the respondents spent more than 2 h to arrive at receiving health facility, whereas arrival within 2 h accounted for 69 (56.1%) of the referred women. Among women referred early, the median time spent was 80.0 ( $\pm 29.3$ ) min as compared to 195.0 ( $\pm 117.5$ ) min for women referred late. Eighty-two (66.7%) of women reported that they arrived timely to reach receiving health facility. Those women who perceived they were delayed in arriving to the next health facility from referring facility indicated unavailability of transportation, lack of available facility within a reasonable distance, and lack of road access as some of the contributing barriers for the delay. Once a woman arrived to receiving health facility she waits a minimum of 3 min and a maximum of 90 min to contact health care providers for

**Table 1.** Background Characteristics of Women Participated in the Study From Omo Nada and Omo Beyam Districts, February to May 2020.

Variables		Frequency (N = 266)	Percent
District of the respondents	Omo Beyam	12	4.5
	Omo Nada	254	95.5
Age (in years)	15-19	39	14.7
	20-24	88	33.1
	25-29	86	32.3
	$\geq 30$	53	19.9
Role in the household	Wife	240	90.2
	Head of household	26	9.8
Place of residence	Urban	159	59.8
	Rural	107	40.2
Religion	Muslim	208	78.2
	Orthodox	41	15.4
	Protestant	17	6.4
Ethnicity	Oromo	235	88.3
	Amhara	15	5.6
	Others <sup>a</sup>	16	6.0
Current marital status	Married	258	97.0
	Other <sup>b</sup>	8	3.0
Educational status of the women	Can't read and write	97	36.5
	Primary education	84	31.6
	Secondary education	42	15.8
	Diploma and above	43	16.2
Educational status of the husbands	Can't read and write	94	35.3
	Primary	69	25.9
	Secondary	49	18.4
	Diploma and above	54	20.3
Occupation of the women	Housewife	160	60.2
	Farmer	38	14.3
	Merchant	34	12.8
	Government employees	34	12.8
Occupation of the husbands	Farmer	160	60.2
	Merchant	38	14.3
	Government employees	34	12.8
	Daily labors	24	9.0
	Others <sup>c</sup>	10	3.8
Family size	Small	116	43.6
	Large	150	56.4
Number of under-five children in the family	No under-five child	84	31.6
	One	91	34.2
	Two and above	91	34.2
Household wealth status	Poor	89	33.5
	Average	88	33.1
	Rich	89	33.5

<sup>a</sup>Dewaro, Yem, Guraghe.

<sup>b</sup>Single, widowed, divorced.

<sup>c</sup>Carpenter, jobless, student.

**Table 2.** Referral Process and Time Taken Between Home to Referring and Referring to Receiving Health Facilities Among Women From Omo Nada and Omo Beyam Districts, February to May 2020.

Variables		Frequency	Percent
Purpose of the visit (N = 266)	Maternal health services	223	83.8
	Child health services	43	16.2
Type of referral (N = 266)	Self-referral	143	53.8
	Referred by HCP	123	46.2
Reason for the referral (n = 123)	Complicated case	24	9.0
	For further evaluation & management	99	37.2
	Self-referral	143	53.8
Referring health facility (n = 123)	Health post	15	12.2
	Health center	108	87.8
Receiving health facility (n = 123)	Health center	15	12.2
	Primary hospital	108	87.8
Distance from home to referring HF (in kms) (n = 266)	Less than or equals to 10	106	39.8
	Greater than 10	160	60.2
How long it takes from arrive to receiving health facility (in min) (n = 123)	Less than or equals 46 min	88	71.5
	Greater than 46 min	35	28.5
Means of transportation from home to referring health facility (n = 123)	On foot	91	74.0
	Motor cycle	26	21.1
	Private transport	5	4.1
	Ambulance	1	.8
Distance between referring and receiving health facility (in kms) (n = 123)	Less than 5	8	6.5
	5-10	11	8.9
	More than 10	104	84.6
Type of transport used to arrive at referred site (receiving health facility) (n = 123)	On foot	12	9.8
	Ambulance	90	73.2
	Motor cycle	4	3.3
	Private transport	17	13.8
Payment for the transportation	No	102	82.9
	Yes	21	17.1
Have referral paper	No	11	8.9
	Yes	112	91.1
The referral paper is complete	No	54	48.2
	Yes	58	51.8

Abbreviations: RHF = Referring Health Facility, HF = Health Facility.

assessment. Of the total study participants (266), 44.7% of them waited more than 3 h to get the service at receiving health facility.

### Factors Associated With Overall Time Spent Between Referring and Receiving Health Facility

Binary and multivariable logistic regression was done. Accordingly, variables including place of residence, educational status of women and their husbands, occupation of women, age, number of under-five children, wealth index,

purpose of visit, type of referring and receiving health facility, reason for referral, means of transport, presence of accompanying person, and distance were entered into binary logistic regression and only 4 variables place of residence, reason for referral, husband educational status, and distance had a significant relationship with average time spent.

However, in the multivariable logistic regression, only place of residence and distance show statistically significant association with average time spent to arrive at receiving health facility; where women from the rural residence were 77.1% (AOR: 0.229; 95% CI: 0.066-0.790) times less likely to arrive early (within 2 h) to receiving health facility compared to women from urban residence. The odds of early arrival were 71.6% (AOR: 0.284; 95% CI: 0.093-0.874) less likely for women in case when the distance between referring and receiving health facility was greater than 10 km as compared to less than 10 km distance (Table 3).

### Discussion

The present study shows that from the total 266 women participated in the study, more than half were self-referred. This indicates the majority of referred patients were visited health facilities without respecting the normal linkage of the referral system. In our setting, health posts refer cases to health centers, then, health workers are advised to refer cases from health centers to district hospitals; the last step of the referral pathway may include regional and possibly national referral hospitals. However, the majority of the referred patients were visited the next health facilities without having a normal referral paper or bypass the nearest health facilities which may relate to the poor satisfaction from the services given at referred facilities. This finding is different from the study conducted in Zambia where 60% of all patients were self-referrals (13), and Nigeria indicated that 92.9% of the interviewed clients reported to the hospital directly without referral (15). These discrepancies may arise from differences in the study period and different strategies related to maternal health services.

In this study, among the referred cases majority 108 (87.8%) of women were referred from health center to primary hospital. This finding is higher than a study conducted in Ethiopia which indicated that among the referred cases to the hospital, most (74%) had been referred by health center (14), and also different from the study conducted in Nigeria in which most of the patients referred were from private clinics (15). The difference in the Ethiopian studies may be attributed to the difference in study period and for the Nigeria study, it might be because of the structures of health care delivery systems.

In this study, the main reason for the referral was for further evaluation and management. This finding is different from the study conducted in Tanzania that revealed 5 or more pregnancies and age <20 years were the most common referral indications (11), and study conducted in Dar es Salaam,

**Table 3.** Bivariate and Multivariate Logistic Regression Model Showing Predictors of Time Spent Between Referring and Receiving Health Facility February to May 2020.

Variable and its category		COR [95% CI]	AOR [95% CI]
Place of residence	Urban	1	
	Rural	3.385 (1.468-7.805)	0.229 (0.066-0.790) <sup>a</sup>
Reason for the referral	Complicated case	0.311 (0.122-0.798)	0.374 (0.136-1.026)
	For further evaluation and management	1	
Educational status of the husband	Can't read and write	1	
	Primary	2.030 (0.835-4.935)	0.767 (0.130-4.539)
	Secondary	1.326 (0.421-4.173)	1.555 (0.254-9.529)
	Diploma and Above	2.900 (0.978-8.603)	0.526 (0.088-3.158)
Occupation of the woman	Housewife	1	
	Farmer	1.304 (0.344-4.953)	2.334 (0.497-10.948)
	Merchant	2.391 (0.706-8.102)	3.958 (0.480-32.616)
	Gov't employees	0.870 (0.260-2.911)	2.237 (0.303-16.521)
Distance between referring and receiving facility	Less than & equals to 10 km	0.311 (0.122-0.798)	0.284 (0.093-0.874) <sup>a</sup>
	Greater than 10 km	1	
Distance from home to referring HF	Less than or equals to 10 km	2.52 (0.122-0.798)	3.19 (0.076-29.670)
	Greater than 10 km	1	

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval.

<sup>a</sup>Significant value at .05.

Tanzania (5). This discrepancy might be attributed to differences in infrastructures, and the capacity of the health facilities to manage varieties of cases and also the difference in health care delivery structure in different countries.

In the present study, the overall median time spent between referring and receiving health facility is 120 ( $\pm 104$ ) min ranging from 5 to 660 min. This finding is different from the study conducted in Sierra Leone, which indicates the mean time compilation of referral and patient arrived at the hospital (receiving facility) was 187 min (ranging from 90 to 366 min) (19). This discrepancy may be attributed to the difference in infrastructure and availability of transportation services in the 2 study countries.

In this study, respondent's residence and distance were the predictors of the time spent between referring and receiving health facility. Women who came from a distance of greater than 10 km were less likely to arrive early (within 2 h) as compared to those who come from less than 10 km distance. Similar to this finding a study conducted in Tanzania revealed that distance was the known determinant of the use of obstetric care at referral site (11). This study was not free of limitations and challenges for instance, due to coronavirus outbreak, the number of respondents participated in the study was not as expected. This small sample size may reduce the power of the study and generalization should be with caution and also the data collection techniques have indirect impact on patient satisfaction.

## Conclusion

The finding of this study shows that more than two-fifth of women spent 2 h and above between referral time and receiving MNCH service of which the longest time was spent at referring health facility after referral decision was made.

Women spent a maximum of 540 min on the way to arrive at receiving health facility. Unavailability of transportation and lack of road access are some of the contributing barriers for the delay. Women wait a maximum of one and half hours to contact health care providers for assessment. In general, the finding from this study suggests that healthcare systems are failing to enhance women's rapid access to referral service, and that the rural resident and those in the long distance are affected disproportionately.

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## Authors' Note

Ethical approval was obtained from Jimma University Institute Review Board (IRB). Similarly, administrative clearance was obtained from selected Woreda health offices. Information sheet addressing the objectives of the survey, the benefits and harms were prepared and explained to the study participants. Participation in the study was totally on voluntary basis, and informed consent (right to withdraw, confidentiality, purpose of the study, anonymity) was obtained from each participant. All of the procedures involving human subjects were conducted in accordance with the Jimma University Institute Review Board (IRB) approved guideline. All the authors had almost equal contribution in the study. SB is a principal investigator of this study while AA, AK, and GB were involved in the study initiating/conceptualization, designing, and YB, AK, and SO involved in the interpretation of finding and write up of the final document. SB, YB, AK, and GB did the analysis with AA.

## Declaration of Conflicting Interests


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