

Time spent in referral process and its determinants among clients of maternal and child health service in Jimma zone, Ethiopia, 2020; A cross-sectional study.

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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 which has a significant association on the basis of OR, 95% CI and a P value of less than 0.05.

Result A total of 266 women were participated in the study with the mean age of the study population is 24.65(\pm 5.03) years. 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. Amongst the referred cases the main reason for the referral was for further evaluation and management. Women spent a maximum of 540 minutes on the way to arrive at receiving health facility. Residence and distance were the predictor variables for average time spent. More than two fifth of the women wait more than three hours to get the service at receiving health facility. Residence and distance were the determinant 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 three hours to get the service at receiving health facility. Giving due emphasis to referral system as an integral part of maternal health was essential.

Background

A referral system is a process in which health workers at one level of the health system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in, or take over the management of the client's case (1). Theoretically, health posts [the primary or first level] 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 three delays—deciding to seek health services, reaching a health facility, and receiving treatment after reaching the referral facility has been recognized as one of the main factors that lead to poor outcomes among women who 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 because time is essential in obstetric care as the onset of complications and proper initiation of management makes a difference between life and death, and timely referrals are important in making sure of this a difference in the outcome (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 (e.g. all-weather roads), distance between the two health care facility, vital resources (Ambulance or vehicles, lifesaving material needed to quickly transfer people with need of higher/specialized maternal and newborn health care to higher levels of care (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). Also, women may face with a number of barriers related with referral and health workers who 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 (2,3).

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. Five or more pregnancies and age < 20 years were the most common referral indications (11). A descriptive survey on 5060 pregnancies in eastern Zaire, showed that the referral success rate in the region was only 33%, despite some favorable conditions, such as a strong emphasis on community participation, a complementary health centers and hospital, and the absence of financial barriers within the health services system (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 centre. The study found that 60% of all patients were self-referral. There was a higher 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). Study self-referrals constitute more than 50%, institutional referral around 30% and emergency referral less than 5% of women at referral level. Distance, cost, perceived quality of obstetric care, health workers attitude and respect for women's social needs, perceived etiology of complications and socio-cultural preferences, prolonged labor, retained placenta, postpartum hemorrhage, mal-presentation of baby, severe eclampsia and premature rupture of membrane were among the determinants of obstetric care utilization at referral sites, theatre 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. Late referrals (after two hours) were observed in 60.3% of women the cases (5,10,16,17).

According to study in Uganda, patients spent a median time of 346 minutes in assessment center. The mean time from the vehicle being called by the PHU to the patient's arrival at hospital was 3.1 hours(18) study done in Sierra Leone indicates that transportation cost and communication intervention were important predictors of quality of obstetric care(19). The average waiting time was found to be 44.85 minutes (17.92 minutes to 126.56 minutes in surgery and nephrology department respectively), average consultation time for all OPD was found to be 17.357 minutes (6.00 minutes in medicine department to 76.840 minutes in psychiatry department)(20). In another study ~ 70% of the population is served by facilities within a 2-hour transfer time to a hospital and spent 64.1% of their total time in waiting at the immunization clinics (21, 22). Despite the challenges in accessibility of maternal and child health service for mothers and children in Ethiopia there is paucity of information about the average time spent and its determinants in using the service; hence the current study aims to fill this gap.

Methods

Study setting

This cross-sectional study was conducted from February to May, 2020 in two 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 peoples (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, 512 health posts in the zone. The two districts have a total of 336,055 populations, 46 health posts, 11 health centers and 1 primary hospital.

Sampling and population

All clients receiving MNCH related services during the specified study period at all levels of health care delivery point in the two districts. First the two districts were purposively selected and 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 two 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 health facility for MNCH service. Observers were assigned to the selected health facilities to record exact time at which the particular client reached at a particular facility, and how much time spent at each service delivery point within the health facility, without the knowledge of the staff assigned at that particular facility and the client. Clients were followed while joining the queue at registration counter till the exit gate of the health facility. And finally, the clients were interviewed at the exit of the health facilities after getting the service at that particular health facility.

Data collection and analysis methods

The data were collected using Interviewer administered questionnaire and observation checklist by trained midwives and nurses. The tool was developed by the authors of this study by reviewing different studies which were conducted in different areas/countries and customized to the present study setting and participants. The detailed English version tool is annexed at the end of this paper. Data collectors and observers were assigned at all randomly selected health facilities and they were communicated with each other through phone if/when the clients/patients referred to the next higher health facilities of different levels. After the referred clients/patients entered to the compound of the referral receiving health facilities, the data were collected using three 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 in to the health facility, the time spent at each encounter like card room/registration, triage, counselling/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. Non participatory 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 the objective of the study. The collected data were entered and cleaned in excel sheet and exported to SPSS version 21.0 for analysis. Descriptive analysis was used to see the frequency distribution of the study participants whereas binary and multivariable logistic analysis were respectively used to identify candidate variables and see the independent predictors of average time spent in utilization of MNCH service considering p-value less than 0.05, 95% C.I, and AOR and the results were presented using narrative texts, tables and figures.

Data Quality Assurance

In order to minimize measurement bias, the study hypothesis was maintained secret from both the community and care providers (double blinding). Data collection was done by following standard procedures; training data collectors and observers on the study instrument and approaches to be followed during data collection which was conducted under close supervision. The data collection tool was Pre-tested before the actual data collection period.

In this particular study: It is the summation of, time at which referral decision were made, actual departure from referring health facility and time at which the women reached receiving health facility and section waiting time is the time the client spends at specific service delivery point within the health facility waiting to receive a 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 a service and it was measured as total waiting time and section waiting time.

Results

A total of 266 women were participated in the study of which majority 254(95.5%) were from Omo Nada district. The mean age of the study population is 24.65(\pm 5.03) with a minimum of 16 to maximum age of 41 years. Nearly three fifth of the respondents were from urban residence; 208(78.2%) and 235(88.3%) of respondents from Muslim religion and Oromo ethnicity respectively. Almost all (97.0%) of the respondents were Married and three fifth were farmer 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)

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)	16–19	39	14.7
	20–24	88	33.1
	25–29	86	32.3
	≥ 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*	16	6.0
Current marital status	Married	258	97.0
	Other**	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

*Dewaro, Yem, Guraghe, ** Single, widowed, divorced, ***carpenter, jobless, student

Variables		Frequency(N = 266)	Percent
	Diploma and Above	54	20.3
Occupation of the women	House wife	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***	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

*Dewaro, Yem, Guraghe, ** Single, widowed, divorced, ***carpenter, jobless, student

Referral process related factors

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. Amongst 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 ten (91.1%) of the women referred to next higher-level health facilities have referral paper but only 51.8% of the referral papers were complete. Among the referred women, nine in ten (91.9%) had accompanying person. 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 10Kms. The main means of transportation from home to referring health facility is on foot whereas majority utilized an ambulance for arriving to receiving health facility. (Table 2)

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
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 to 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

RHF = Referring Health Facility, HF = Health Facility, KM = Kilometer

Variables		Frequency	Percent
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

RHF = Referring Health Facility, HF = Health Facility, KM = Kilometer

Time spent between referring and receiving health facility

To obtain the overall median time spent between referring and receiving health facility, time at which referral decision were made, actual departure from referring health facility and time at which the women reached receiving health facility for each respondent was added up. In general, women spend a median time of 120(± 104) minutes 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 (± 103) minutes. Only, small number 10(8.1%) of women departed immediately from referring health facility to receiving health facility. Once women started the journey to receiving health facility, they spent a median time of 30 minutes with a minimum of 5 and a maximum of 540 minutes on the way. Fifty-four (43.9%) with 95% CI (0.350 to 0.531) of the respondents spent more than two hours to arrive at receiving health facility whereas arrival within two hours accounted for 69(56.1%) of the referred women. Among women referred early, the median time spent was 80.0(± 29.3) minutes as compared to 195.0(± 117.5) minutes for women referred late. Eighty-two (66.7%) of women believe that they arrived timely to reach receiving health facility. Those women believed they were delayed in arriving to next health facility from referring facility indicated unavailability of transportation, lack of available facility within 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 minutes and a maximum of 90 minutes to contact health care providers for assessment. Of the total study participants (266), 44.7% of them wait more than 3 hours to get the service at receiving health facility. Only 24(9%) of women spend less than one hour to get the service.

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 in to binary logistic

regression and only four variables place of residence, reason for referral, husband educational status, and distance had 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 rural residence were 4.373 (AOR: 4.373; 95%CI: (1.266 to 15.099) times less likely to arrive early (within two hours) to receiving health facility compared to women from urban residence. The odds of early arrival were 71.6% (AOR: .284; 95%CI: .093 to .874) less likely for women in case when the distance between referring and receiving health facility was greater than 10Kms as compared to less than 10Kms distance. (Table 3)

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)	4.373 (1.266,15.099)
Reason for the referral	Complicated case	.311(.122,.798)	.374(.136,1.026)
	For further evaluation and management	1	
Educational status of the husband	Can't read and write	1	
	Primary	2.030(.835,4.935)	2.028(.7735.321)
	Secondary	1.326(.421,4.173)	.686(.1453.241)
	Diploma and Above	2.900(.978,8.603)	1.304(.2207.718)
Occupation of the woman	House wife	1	
	Farmer	1.304(.344,4.953)	2.334(.497, 10.948)
	Merchant	2.391(.706,8.102)	3.958(.480,32.616)
	Gov 'tal Employees	.870(.260, 2.911)	2.237(.303,16.521)
Distance between referring and receiving facility	Less than & equals to 10 KM	.311(.122,.798)	.284(.093, .874)*
	Greater than 10 km	1	

*Significant value at 0.05

Discussion

The present study shows that from the total 266 women participated in the study, more than half 143(53.8%) were self-referred. That means the majority of referred women were visited health facilities without respecting the normal linkage of referral system which may indicate, 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), study in Sierra Leone in which only 10% of all patients had been referred to their current place of care (19) 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 study period and there are different strategies related to maternal health services such as availability of health extension services and women developmental armies in our context that will guide the steps women follow before arriving to higher health institutions.

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 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 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 difference in study period and for the Nigeria study it might be because of the structures of health care delivery systems. At the lower level health facilities there is unavailability of equipment/supplies that may enforce health care providers to refer clients from health centers to higher health facilities for further management to address the increased need of the community.

In this study the main reason for the referral was for further evaluation and management. This finding is different from study conducted in Tanzania that revealed five or more pregnancies and age < 20 years were the most common referral indications (11), study showed that most (62%) of the reasons for referral were health facility related factors of which unavailability of blood and lack of equipment and supplies contributed 11.3% and 10.3% respectively (5). This discrepancy might be attributed to difference in infrastructures, and the capacity of the health facilities to manage varieties of cases and also 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) minutes ranging from 5 to 660 minutes. Women spent the longest of their time in the referring health facility before they were departed to receiving health facility with a median time of 60 (ranging from 32–152) minutes. This finding is different from the study conducted in Sierra Leone, which indicate the mean time compilation of referral and patient arrived at the hospital (receiving facility) was 187 minutes (ranging from 90 to 366 minutes) (19). This discrepancy may be attributed to the difference in infrastructure and availability of transportation services in the two study countries.

In addition, finding from this study indicated that 69 (56.1%) of women reached receiving health facility within two hours with the median time spent of 80.0 (\pm 29.3) minutes. This finding is different from study in Zambia which showed that most (84%) of the study participants had taken less than one hour to reach the hospital(13) and study in Ethiopia which show that approximately 70% of the population is served by

facilities that are within a 2-hour transfer time to a hospital with obstetric surgery (21). The possible explanation may be seasonal variation where the present study is conducted in the summer season when the roads are inconvenient for transportation.

On the other hand, 54(43.9%) of the respondents spent more than two hours to arrive at receiving health facility. But this finding is better than in study from Dares Salaam in which late referral accounts 60.3% (5). Unavailability of transportation, lack of facility within reasonable distance, and Lack of road access were some of the contributing barriers for this delay.

Also, this study revealed that women wait longer time to contact health care providers at receiving health facility. For instance, women wait a maximum of 90minutes to contact health care providers for assessment and 44.7% of the women wait more than 3 hours to get the service at receiving health facility. Whereas only 24(9%) of woman spent less than one hour to get the service. Our finding is better than study conducted in Uganda which revealed that patients spent a median time of 346 minutes in assessment center of which 5% spent with health worker and 95% spent waiting for care(18). However, it is lower than another study which revealed that the average waiting time for all the outpatient departments was 44.85 minutes ranging from 17.92 to 126.56 minutes (20). This discrepancy might be because of difference in patient flow and the time health care providers efficiently utilized for delivering care for the clients, may be in some of the cases the health care providers may not arrive to their working area timely and once they arrived they expend much of their time on their mobile phone and tea break.

In this study respondents' 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 10Kms were less likely to arrive early (within 2 hours) 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 limitation and challenges for instance, due to corona virus 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.

Conclusion

The finding of this study shows that more than two fifth of women spent two hours and above between referral time and receiving MNCH service of which the longest time was spent at referring health facility after referral decision were made. Women spent a maximum of 540 minutes 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. Giving due emphasis to referral system as an integral part of maternal health was essential.

Abbreviations

GEE: Generalized Estimating Equation; **HF:** Health facilities; **JU:** Jimma University; **JZHO:** Jimma Zone Health Office; **KOFIH:** Korea Foundation for International Healthcare; **MNCH:** Maternal, newborn, and child health; **PHC:** Primary Health Care; **RH:** Reproductive Health; **SPSS:** Statistical Package for Social Science; **TAM:** Time and Motion; **AA** = Abebe Abera; **SB** = Sena Belina; **AK** = Alemi Kebede; **GB** = Gadisa Bekele; **YB** = Yonas Biratu; **AK** = Ayantu Kebede; **SO** = Shimelis Ololo, **Kms** = kilometers, **PHU** = Public health unit

Implications For Practice

As the finding of this study indicated significant time was spent in travelling and waiting for service and also difficulty of transportation access to reach the receiving health facility. Therefore, this finding is an important input for zonal health planners to work on improving accessibility of maternal and child health service for the community within reach.

Declarations

Ethics approval and consent for participation

Ethics 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 was prepared and explained to the study participants and written informed consent was obtained from the mothers both for the participation of themselves as well as giving information about their neonates. In the case of some mothers who were unable to read and write the data collectors read loud the written informed consent, ask for agreement and finally took their fingerprint before proceeding with data collection. In addition, participation in the study was totally on voluntary basis and the informed consent address issues like right to withdraw, confidentiality, purpose of the study, anonymity of information.

Consent for Publication

Not Applicable

Availability of data and materials

The data set of this article is available with the principal investigator and he can provide upon request.

Competing interests

The authors confirmed that there is no financial and non-financial competing interest in this paper.

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The funder, JU-KOFIH collaborative project, has no contribution in the design of the study and collection, analysis, and interpretation of the data, writing the manuscript and publication process.

Authors' contributions

All the authors had almost equal contribution in the study. AA is a principal investigator of this study while SB, 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. All the authors were involved in development of the methods section and manuscript preparation, and have read and approved the manuscript for publication.

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Figures

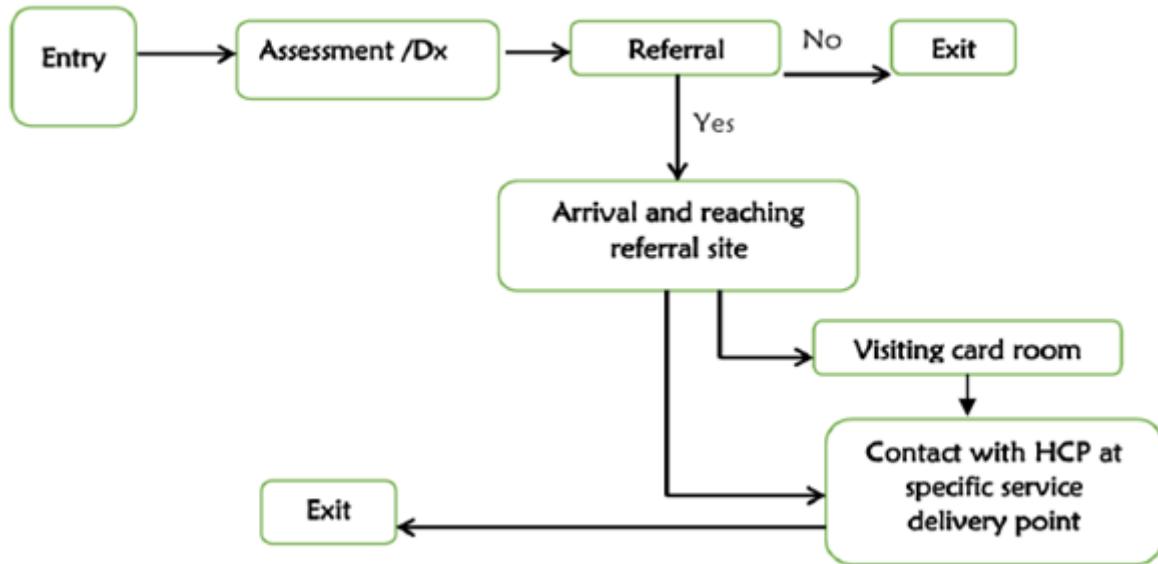


Figure 1

Client flow procedure across different health facilities and multiple phases of referral System, 2019

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