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RESEARCH ARTICLE

CLIENT SATISFACTION AND ASSOCIATED FACTORS WITH SKILLED DELIVERY SERVICES AMONG WOMEN DELIVERED IN THE PUBLIC HEALTH INSTITUTIONS OF OROMIA REGION, ETHIOPIA

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ABSTRACT

Client's satisfaction is a fundamental tool used to assess quality of health services. Little is known about level of satisfaction and associated factors in public health institutions of Oromia Region. Cross-sectional study design was conducted to assess the level of client satisfaction with skilled delivery services and associated factors among women who gave birth in public health institutions of Oromia region, from January-01 to February-28, 2018. A total of 1,483 women were randomly selected from 10 hospitals and 30 health centers. Data was collected using an interview administered questionnaire. The collected data were analyzed using SPSS version 21. The proportion of women satisfied with skilled delivery services was 55.35% [95%CI: 52.9, 57.8]. Rural residence (AOR, 1.35; 95% CI: 1.04, 1.76), higher monthly income (AOR, 2.03; 95% CI: 1.34, 3.08), delivery attended by physician (AOR = 2.29; 95% CI: 1.53, 3.42), and delivery attended by midwives (AOR, 3.09; 95% CI: 2.29, 4.17) were factors associated with client satisfaction with skilled delivery services. It is better to provide delivery services by either physician/midwifery. Moreover, advancing service standard, particularly in facilities of the urban setting and empowering women to improve their economic status are areas to be considered for intervention.

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INTRODUCTION

Maternal mortality remains a major challenge to health systems worldwide (Bongaarts, 2016). Although, Sub-Saharan Africa's (SSA) contribution to the global maternal death burden has reduced from 87% in 2008 to 62% in 2013, it remains as the only developing region with very high Maternal Mortality Ratios (MMRs) showed a slow decrement from 987 per 100,000 Live births in 1990 to 547 per 100,00 Live birth in 2015 (Alderliesten, 2007). Ethiopia is among the top six high burden countries in which half of global maternal deaths occur, though there is a significant decline from 1,250 to 353 per 100,000 Live Birth during 1990 and 2015 (Alderliesten, 2007). However, maternal death is expected to be reduced by two-thirds from levels recorded in 1990 to reach the MDG target of 267 deaths per 100,000 deliveries by the end of 2015 (Rodamoet al, 2015). Pregnancy and childbirth in resource poor settings carry significant risk of death and disability and up to 40% of pregnancies can require some form of special care, and about

15% of all pregnant women develop complications during the intra-partum and immediate post-partum period and need access to emergency obstetric care (Fauveau, 2010). In developing countries, including Ethiopia higher number of women attend antenatal clinic, however, more of them give birth at home without assistance of skilled professional (Ahmed Abdella, 2010). Client dissatisfaction is the major barrier to utilization of institutional delivery services⁶. Client's satisfaction has been a fundamental tool to measure the quality of health care. It helps to obtain a client's view on the service success in meeting values and expectation of clients on the service (Avis, 1995). Different studies from health delivery institutions in Ethiopia show that client care satisfaction levels range from 69% to 83% (Tayeign et al., 2011; Yohannes, 2013). Another study conducted an a Gamo-Gofa zone of Ethiopia, the proportion of mothers who satisfied with delivering care was 79.1%, varying from 58% in hospitals and 94.4% in health centers (Tesfaye, 2016). A study in the health institutions of the Jimma zone in Oromia region showed the overall client satisfaction level with the maternal health services rendered at the hospital level was 77% and satisfaction was reported to be higher (82.7%) with the way

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the doctors examined the clients and dissatisfaction was reported to be (46.9%) with the time spent to see a doctor (Assefa, 2011). The study indicated a greater distance to a health facility as a significant influence to the mother's choice of using a SBA at birth (Van Malderen, 2013). Availability of transportation to the health facility is a factor determining for uptake of SBA for delivery (Ejeta, 2012). Despite women's satisfaction with health care service is influenced by their expectations; a lot of factors, including condition of waiting area, interpersonal manner of care providers, technical quality care, accessibility and comfort to care, birth outcomes, physical environment and availability of medical care resources are factors associated with women's satisfaction during childbirth (Senarath, 2006). The lifesaving commodities defined as medicines, medical devices, and health supplies that effectively address avoidable causes of death during pregnancy and childbirth that, if more widely accessed and properly used, could significantly reduce preventable deaths among women (Child, 2012). In Ethiopia, the availability of lifesaving maternal medicines (Oxytocin, Misoprostol, MgSO₄ and antibiotics), equipment, medical devices, and materials that are essential for Basic Emergency Obstetric and Neonatal Care (BEmONC) are considered to be available at least within primary health care (Raifman et al., ?). However, the study showed failure to obtain prescribed medications from the hospital pharmacies was frequently faced problems affecting the quality of maternal health services (Assefa, 2012).

Studies indicate that one of the reasons women gives for choosing not to use available obstetric care is poor access to health institutions. In Tanzania 84% of women who gave birth at home intend to deliver at a health facility, but couldn't because of distance and lack of transportation (Mrisho, 2007). In Ethiopia, since most women live more than five kilometers from the nearest health institutions, vehicle shortages and poor road conditions affect skilled attendant care (Mekonnen, 2015). A study conducted at Gullele district in Addis Ababa also showed, the reasons given for preferring to deliver in health institution is the high quality of service accounted for 50.1%, following by the 36.8% of health institution affected by nearness, and the approach of good health workers for 9.0 % (Ismail, 2011). In Ethiopia, socio-demographic characteristics such as age, educational status of the respondent, income and area of residence the common predictors for institutional delivery service utilization (Mekonnen et al, 2015). Mothers who are urban residents were about five times more likely to give birth in health facilities than their counterparts. Moreover, younger age of mothers and having a secondary and above education were more likely to give birth in health facilities (Teferra, 2012). Even if there is a global consensus on the role of dissatisfaction as a barrier to utilization of institutional delivery services, there is still a gap in evidence regarding factors contributing to dissatisfaction with institutional delivery services (Bowser, 2010). This study is aimed to assess the proportion of client satisfaction on skilled delivery service and associated factors in the Public Health Facilities of Oromia region from January 01 to February 28, 2018. Therefore, the findings obtained from this study could contribute to better program monitoring and management in Ethiopia in general and Oromia region in particular. The identified factors associated with client satisfaction as an indicator of quality skilled attendance at birth in the health institutions would

enable the concerned bodies and stakeholders to strategically address them.

MATERIALS AND METHODS

Study setting, period and desing: An institution based cross sectional study design was undertaken from January 01 to February 28, 2018 among women who gave birth in selected public health institutions (Hospitals and Health Centers) of Oromia region. Oromia is one of the largest and most populous region in Ethiopia having a population of 36.4 million (Central Statistics Agency, 2013). This region shares common boundary with all regions of the country except Tigray. The two city administrations, Addis Ababa and Dire Dawa, are also surrounded by administrative zones of the region (Teferra, 2012; Bowser, 2010). Administratively, the region is divided into 20 zones, 18 towns and 310 districts. The total fertility rate of the region is 5.4 children per woman and the institutional delivery is 18.8% (Central Statistical Agency, 2016). The region had four specialized referral hospitals, 19 zonal hospitals, 45 district hospitals and 1,383 health centers during the survey which provide skilled delivery services (Federal Ministry of Health, 2017). During the study period there were about 24 gynecologists, 82 Emergency surgeons (IESOs), 1922 midwives, 346 general practitioners and 6500 clinical nurses in the region.

Study Participants: All mothers who gave birth in public health facilities of Oromia region was considered as the source population in the current study. And we considered those mothers who gave birth in selected public health facilities of Oromia region as a study population for this particular study. Then a mother who gave birth in the selected public health facilities of Oromia region was selected as study unit. The sample was determined using single population proportion formula considering the following statistical assumptions;

- The proportion of client satisfaction on skilled delivery (P=0.3125) which was taken from a study done in Tigray region (Fisseha, 2017).
- The corresponding standardized Z-score value of the 95% confidence level by which client's satisfaction to be estimated with $(Z_{\alpha/2}) = 1.96$
- The maximum tolerable level of errors (d) = 4%
- And 10% addition of possible non response rate

Accordingly the total sample required to determine the level of client's satisfaction and identify associated factors was determined as;

$$n = \frac{\left(\frac{Z_{\alpha/2}}{2}\right)^2 * P(1 - P)}{d^2}; \frac{(1.96)^2 * (0.3125)(0.6875)}{(0.035)^2} = 674$$

Considering the design effect for two stage sampling and 10% non-response rate, the sample size was $674 * 2 + 10\% = 1483$; where:

- The N = number of clients to be interviewed,
- P = proportion of institutional delivery
- d = margin of error for the study
- $Z_{\alpha/2}$ = the two tailed standardized Z-score value for 95% confidence level

Sampling Technique: Sample for the study were selected using two stage stratified sampling. The region was stratified into three contextual areas based on the homogeneity of community's life style. Accordingly, we stratified the region into agrarian, pastoralist and agro-pastoralist areas. All districts in each contextual area were listed and the numbers of district to be selected from each area were allocated based on proportion to size. Accordingly 6 districts from agrarian, 2 from pastoralist and 2 from agro-pastoralist were randomly selected. Health facilities were the second sampling unit for the study. Hospitals and health centres were listed in their respective selected districts and then a total of 10 hospitals and 30 health centres were selected randomly from the list. Accordingly 6 hospitals and 18 health centres from agrarian districts, 2 hospitals and 6 health centres from pastoralist districts and 2 hospitals and 6 health centres from agro-pastoralist districts were selected. Sample of mothers who gave birth taken from each selected health facilities were allocated based on the total number of deliveries conducted in previous months. From selected health facilities, all mothers coming for delivery service were consecutively included in the study once they gave consent until the required number is obtained. Women refused to give consent were replaced by the next woman. Women who gave birth in public health institution, but referred to higher level institutions and women who were unable to communicate and did not have any surrogates were excluded from the study.

Study variables

Dependent variable

- Client's satisfaction with skilled delivery services
- **Independent variables**
- **Socio-demographic and socio-economic variables:** Age in years, Residence, Marital Status, Religion, Education, Income
- **Obstetric related Factors:** Pregnancy Intension, Parity, Mode of delivery
- **Service Related:** Gender of health care provider, Hours of stay in the hospital after delivery, Delivery outcome (Maternal), Delivery outcome (Neonate), Types of health institution, Types of profession of delivery attendants

Operational definitions

Skilled birth attendant: an accredited health professional who has reached proficiency in managing normal pregnancies, delivery, and the immediate postnatal period, and is trained to identify and refer cases of complications in women and newborns (Teferra, 2012). In Ethiopia doctors, health officers, midwives and nurses are considered as skill birth attendants.

Institutional delivery: those deliveries managed in health centres and hospitals of all levels by skilled birth attendants (Teferra, 2012).

Client Satisfaction with delivery service: About 32 indicators that have been commonly used to measure client's satisfaction were assessed. A five-point Likert scale (1) very unsatisfied, (2) unsatisfied, (3) neutral, (4) satisfied, and (5) very satisfied) were used to grade the level of satisfaction of women.

The overall satisfaction scores were added, and then mean value was calculated and used for categorizing satisfaction scores. Accordingly, based on mean value women were grouped as unsatisfied given that their satisfaction scores were less than the mean value otherwise they classified as satisfied.

Data collection tools and procedures: Data were collected using semi-structured questionnaire that was adapted from national and WHO guidelines as well as the Donabedian work for evaluating medical care framework (Ethiopian Standards Agency, 2012; Ethiopian Standards Agency, 2012; World Health Organization, 2015; Donabedian, 1966). The questionnaire comprises two main sections. The first is a section that constitutes lists of questions assessing socio demographic and obstetric profile of mothers. The second sections constitute 32 questions used to assess level of client satisfaction with skilled delivery services which were measured using a Likert scale. The questionnaire was administered through the interview at the exit of mother from the service after taking oral consent.

Data quality assurance: To ensure data quality, the questioner was first prepared in English language then translated into Afan Oromo and Amharic language then back translated to English to check its consistency. Before the implementation of actual study, Pre-test of the questionnaire was done in Olenchiti Hospital, Adama and Geda health centers before conducting the actual study. Then the data collection tool was revised based on pretest feedbacks. We requested 10 health care providers who have at list BSc degree in midwifery or nursing or public health officers for data collection. Five health professionals who have at least master's degree was assigned for data collection supervision. They were assigned to the field work to properly coach and mentor data collection process. Before data collection, training was provided for data collectors and supervisors on the overview of the study and data collection procedures.

Data analysis: The collected data were coded and entered in to computer using SPSS version 20. We used this application software for data processing and analysis. Descriptive statistics were used to determine the level of client's satisfaction on skilled delivery services and explore the characteristics of mothers. The associations between level of client's satisfaction and independent variables was modeled using binary logistic regression analysis. Simple logistic regression analysis was used to assess the existence crude relationship between independent variables and level of client's satisfaction. At this level the candidate independent variables for multiple regression analysis were selected at P-value < 0.25 significance level. Multiple logistic regressions was applied to estimate the adjusted effects of independent variables on level of client's satisfaction. The odds of being satisfied on delivery services were estimated using odds ratio with 95% confidence intervals. At this level the significance of associations was declared at p-value of 0.05. The regression model was developed using stepwise approach. The final fitted model was assessed for multicollinearity using Variance Inflation Factor (VIF) and goodness of fit using Hosmer and Lemishow test. The model's ability to correctly classify those subjects who experience the outcome of interest and those who do not are assessed using Receiver Operating Characteristics (ROC) curve.

Ethical Considerations: Ethical Approval and letter of cooperation were obtained from Oromia Regional Health Bureau Review Board and then submitted to the concerned organizations (Zonal health and Woreda health offices, hospitals and health centers as well as line departments in health facilities). Consent form was prepared and participants were informed to make the decision to participate in the study. Accordingly, women were informed about the purpose of the study. Then, they were informed about the benefit of participation as well as absence of risk of participation in the study. The autonomy of participants was exercised in ensuring their right to discontinue or refuse to participate. The participant's data confidentiality was assured of avoiding any of their unique identifier.

RESULTS

Socio-demographic Characteristics: In this study a total of 1477 mothers who gave birth in public health facilities of Oromia region were included giving a response rate of 99.7%. The mean (\pm SD) age of study participants was 25.7(\pm 5.4) years. Among mothers 490(33.5%) of them were in the age group of 25 to 29 years, and 833(56.9%) were urban residents. The result of analysis also showed that about 1250(86.1%) of women were married and 694(47.6%) were Muslims. In this study, about 513(35.1%) of women completed primary education. About, 223(21.2%) and 196(18.6%) of them earned relatively low and lowest monthly income (Table 1).

Reproductive Characteristics: In the current study, about 1,111(77.9%) of participants reported their pregnancies as wanted or planned and 771(54.6%) of them had one to two children before the current delivery. Among the participants, 1196(82.1%) of them delivered by SVD and 845(55.7%) were attended by midwives. Moreover, about 778(53.1%) of deliveries were assisted by male service provider (Table 2).

Client Satisfaction with labour and deliveries: The result of this study showed that about 55.4%[95%CI: 52.9, 57.8] of mothers were satisfied with skilled delivery services provided in public health institutions in Oromia region (Figure 1).

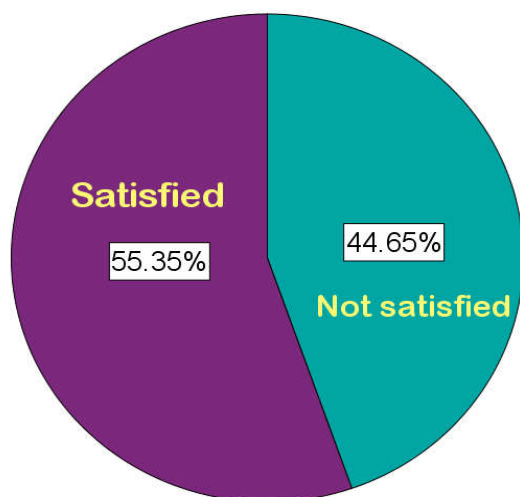


Figure 1. Level of client satisfaction among mothers delivered in public health institutions of Oromia Region, Ethiopia, 2018

Table 1. Socio-demographic characteristics of mothers that gave birth in public health facilities of Oromia region, Ethiopia, 2018

Women's Characteristics	Number	(%)
Age (in years)		
15-19	139	9.5
20-24	484	33.1
25-29	490	33.5
30-34	220	15.0
35-45	131	8.9
Residence		
Urban	833	56.9
Rural	631	43.1
Marital status		
Single	159	11.0
Married	1250	86.1
Others (Widowed, Divorced)	42	2.9
Religion		
Muslim	694	47.6
Orthodox Christian	440	30.2
Protestant Christian	279	19.1
Others	44	3.0
Educational Status		
Does not read and write	431	29.5
Primary	513	35.1
Secondary	338	23.1
Above secondary/college and above/	180	12.3
Income		
Lowest	223	21.2
Low	196	18.6
Middle	267	25.4
High	174	16.5
Highest	193	18.3

Table 2. Reproductive history of mothers that gave birth in public health facilities of Oromia region, Ethiopia, 2018

Women's Characteristics	Number	(%)
Intension of pregnancy		
Wanted	1111	77.9
Unwanted	315	22.1
Mode of Delivery		
SVD	1196	82.1
Instrumental delivery	133	9.1
Elective C/S	48	3.3
Emergency C/S	79	5.4
Delivery attendant		
Physician	227	15.5
Midwives	845	57.7
Other(HO/Clinical Nurse)	393	26.8
Parity		
1-2	771	54.6
3-4	439	31.1
greater or equal to 5	203	14.4
Sex of care provider		
Male	778	53.1
Female	688	46.9

Regarding client's satisfaction on components of delivery service, 853(58.1%) of them were satisfied with the adequacy of equipments for investigating disease related to pregnancy, labor and delivery. About 825(56.3%) of women were satisfied with the availability of adequate number of doctors and midwives in the health facilities. The proportion of clients satisfied with adequate waiting, examination and delivery room was 930(63.5%), on distance from health facilities was 1091(69.5%), on involving mothers on decision making was 999(68.2%), on advising mothers on options of delivery(CS and SVD) was 874(60%) and on the availability of blood transfusion services during blood loss was 674(47.5%) (Table 3).

Table 3. Indicators of satisfaction on which less than 70% of mothers agreed on good quality of services in public health facilities of Oromia region, Ethiopia, 2018

SN	Criteria to measure level of clients Satisfaction towards delivery services	Number (Percent)		
		Satisfied	Neutral	Dissatisfied
1	Equipment is adequate for detecting diseases related to pregnancy, labor and delivery	853(58.1)	319(21.7)	292(19.9)
2	Adequate number of doctors/midwives available in facility	825(56.3)	286(19.5)	354(24.2)
3	Adequate waiting, examination & delivery rooms available	930(63.5)	124(8.5)	411(28.1)
4	Distance from home to this facility is short	1091(69.5)	46(3.1)	401(27.4)
5	Doctors and midwives involved mothers in decision making	999(68.2)	191(13.0)	275(18.8)
6	Doctors and midwives at the facility advice mothers on options of delivery(CS vs Vaginal)	874(60.0)	215(14.8)	368(25.3)
7	Facility had blood transfusion service if blood loss occurred	674(47.5)	318(22.4)	427(30.1)

Table 4. Socio-demographic factors associated with level of satisfaction on skilled delivery among women delivered in public health institutions of Oromia Region, Ethiopia, 2018

Characteristics	Level of Satisfaction		COR[95%CI]	AOR[95%CI]
	High	Low		
Maternal Age(in year)				
15-19	85(10.5%)	54(8.3%)	1.65[1.02, 2.67]*	1.75[0.90, 3.39]
20-24	270(33.3%)	214(32.7%)	1.32[0.90, 1.94]	0.94[0.57, 1.56]
25-29	278(34.3%)	212(32.4%)	1.37[0.90, 1.94]	0.96[0.58, 1.57]
30-34	113(14.0%)	107(16.4%)	1.11[0.72, 1.70]	0.83[0.47, 1.461]
35-45	64(7.9%)	67(10.2%)	Ref.	Ref.
Residence				
Urban	458(56.6%)	375(57.3%)	Ref.	Ref.
Rural	351(43.4%)	280(42.7%)	1.03[0.83, 1.26]	1.35[1.04, 1.76]*
Marital Status				
Single	76(9.5%)	83(12.8%)	Ref.	Ref.
Married	708(88.1%)	542(83.8%)	1.43[1.03, 1.99]*	1.18[0.75, 1.83]
Others	20(2.5%)	22(3.4%)	0.99 [0.50, 1.96]	0.56[0.21, 1.50]
Woman Education				
No formal Education	240(29.7%)	191(29.2%)	Ref.	
Primary	298(36.8%)	214(32.8%)	1.11[0.86, 1.44]	
Second cycle	177(21.9%)	162(24.8%)	0.87[0.65, 1.16]	
Above Secondary	94(11.6%)	86(13.2%)	0.87[0.61, 1.23]	
Provider's Sex				
Male	431(53.1%)	347(53.1%)	Ref.	
Female	381(46.9%)	307(46.9%)	0.99[0.81, 1.23]	
Monthly Income				
Lowest	109(18.3%)	114(24.9%)	Ref.	Ref.
Low	100(16.8%)	96(21.0%)	1.09[0.74, 1.60]	1.13[0.76, 1.68]
Middle	154(25.9%)	113(24.7%)	1.42[0.99, 2.04]	1.36[0.94, 1.98]
High	108(18.2%)	66(14.4%)	1.71[1.14, 2.56]**	1.74[1.14, 2.65]**
Highest	124(20.8%)	69(15.1%)	1.88[1.27, 2.79]**	2.03[1.34, 3.08]***

NB: * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Factors Associated with client satisfaction

Socio-demographic Factors: At bivaraye level, maternal age, marital status, residential place, family monthly income, type profession of delivery attendant, duration of stay after delivery and type of facility where mother delivered were found significantly associated with client satisfaction with skilled delivery services. After adjusting for possible confounders' women's place of residence, the family's monthly income and type of profession of delivery attendants were found to be significantly associated with client satisfaction with skilled delivery services at P -value < 0.05 . Accordingly, women from rural residence was associated with 35% (AOR, 1.35; 95% CI: 1.04, 1.76) higher odds of being satisfied with skilled delivery services compared to women from urban residence. The odds of being satisfied with skilled delivery service among women earned highest monthly income was more than two (AOR, 2.03; 95% CI: 1.34, 3.08) times higher compared to women earned the lowest monthly income. Similarly, the mothers earning high monthly income were 74% (AOR, 1.74; 95% CI: 1.14, 2.65) times more likely to be satisfied with skilled delivery service compared to women earning the lowest monthly income (Table 4).

Obstetric and Health Institutions Related Factors: Moreover, the result of analysis showed that, being women who gave birth with the attendance of physician and midwives were associated with (AOR, 2.29; 95% CI: 1.53, 3.42), and (AOR, 3.09; 95% CI: 2.29, 4.17) higher odds of being satisfied, compared to women attended by other health professionals(Health Officer and Clinical Nurses), respectively (Table 5).

DISCUSSION

This study was aimed to assess the client satisfaction on skilled delivery service and associated factors in the Public Health Facilities of Oromia region from January 01 to February 28, 2018. As per the result of the current investigation only around half (55.35%) of women were satisfied with skilled delivery services provided in public health institutions of Oromia region. This figure is lower compared to study done in Gamo Gofa, but higher compared to study done in northern parts of Ethiopia (Fisseha, 2017, Tesfaye, 2016). Even if the proportion of client satisfaction observed in the current study is within the range of findings from different study settings, the services provided in public health facilities could only satisfy half of the clients.

Table 5 Reproductive related factors associated with level of satisfaction on skilled delivery among women delivered in public health institutions of Oromia Region, Ethiopia, 2018

Characteristics	Level of Satisfaction		COR[95%CI]	AOR[95%CI]
	High	Low		
Pregnancy				
Wanted	619(78.0%)	492(77.8%)	1.01[0.78, 1.29]	
Unwanted	175(22.0%)	140(22.2%)	Ref.	
Parity				
1-2	418(53.3%)	353(56.1%)	1.02[0.75, 1.39]	
3-4	257(32.8%)	182(28.9%)	1.22[0.87, 1.70]	
5 and above	109(13.9%)	94(14.9%)	Ref.	
Mode of deliver				
SVD	645(80.1%)	551(84.6%)	Ref.	
Instrumental	83(10.3%)	50(7.7%)	1.42[0.98, 2.05]	
CS	77(9.6%)	50(7.7%)	1.32[0.90, 1.91]	
Delivery attended by				
Physicians	124(15.3%)	103(15.7%)	2.30[1.65, 3.21]***	2.29[1.53, 3.42]***
Midwives	551(68.0%)	294(44.9%)	2.79[2.78, 4.61]***	3.09[2.29, 4.17]***
Others	135(16.7%)	258(39.4%)	Ref	Ref
Duration of stay after delivery				
Up to 24 hours	651(89.4%)	558(92.8%)	0.65[0.44, 0.96]*	0.79[0.48, 1.29]
Above 24 hours	77(10.6%)	43(7.2%)	Ref	Ref
Type of Health Facility				
Hospital	457(56.3%)	264(40.3%)	1.91[1.55, 2.35]***	1.12[0.85, 1.465]
Health Center	355(43.7%)	391(59.7%)	Ref.	Ref

NB: * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Indeed, client's satisfaction is one of the fundamental tools used to evaluate the quality of health care. Also, it is an indicator of the client's view on the service success in meeting their values and expectations. Beside this, dissatisfaction is the major barrier to utilization of institutional delivery health services. In this regard, any strategic design aiming to improve institutional delivery services should consider the identified determinants of client satisfaction in the process of addressing the problem. In the current study, it was found that women from a rural residence were more likely to be satisfied with skilled delivery services compared to women from urban residents. This association was similarly observed from the study done in Gandhi Memorial maternity referral Hospital in Addis Ababa, Ethiopia (Melese, 2014). This could possibly be due to variation in the level of expectation between women from urban and rural residence. Indeed, urban women are likely to have more access to information and have better knowledge about the services. As a result, they tend to have a higher expectation that may attribute for their dissatisfaction. This study also showed that being women attended by either physician or midwives were associated with higher odds of being satisfied with skilled delivery services compared to other care providers.

This finding is in agreement with the studies done in maternity referral hospital in Addis Ababa Ethiopia (Melese, 2014). This may be due to variation in the level of training on Emergency obstetric care across different health care professionals. The in-school or on the job training on Emergency obstetric care provided for physician and midwives may be more comprehensive than others. Also, it was observed that women who earned relatively higher monthly income was associated with a higher odds to be satisfied with skilled delivery services compared to women earned lowest monthly income. This was similarly observed from the study done in maternity referral hospital in Addis Ababa Ethiopia (Melese, 2014). Women who earned higher monthly income are more likely to have good birth preparedness and complication readiness. They are more likely to have good knowledge and financial plans which are very important during labor and delivery even if the services are provided for free in all health institutions.

This study was conducted at the regional level and tried to incorporate all types of districts and health facilities in the region to ensure representativeness. However the current study has limitation in establishing temporal relations between the study variables. Being a cross sectional study design, it is impossible to determine a cause for the satisfaction from the current study findings.

Conclusion

The proportion of women satisfied with skilled delivery services provided in public health institutions of Oromia region is low. The likelihood to be satisfied with skilled delivery services was significantly associated with being women from a rural residence, being attended by either physician or midwives rather than other providers and having relatively high/higher monthly income. Therefore, facilities should provide skilled delivery services by either physician or midwives to address the client's expectation from the service. The regional health bureau should work to avail midwives in all health centers and physician in hospitals as well. Moreover, since the expectations of women from an urban residence might be higher, it is better to assess and work on their expectations.

Furthermore, educating and empowering women to improve their income are also areas to be considered for intervention.

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Authors' Contribution

The corresponding author was primarily contributed in the conceptualization of the research. Besides involvement on the refinement of the research concept, all co-authors substantially involved in all process of the research conducted by the principal investigator. And all authors approved the final manuscript to be published.

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Annex

Criteria of satisfaction for mothers that gave birth in public health facilities of Oromia region, Ethiopia, 2018

SN	Criteria to measure level of clients Satisfaction towards delivery services	Number (Percent)		
		Satisfied	Neutral	Dissatisfied
1	Cost of transportation from home to facility is affordable	1129(77.0)	32(2.2)	306(20.9)
2	Fees charged at facility affordable	1173(80.0)	74(5.0)	220(15.0)
3	Pregnant women cared at facility recovered well	1363(92.9)	64(4.4)	40(2.7)
4	Doctors and midwives examine mother very well	1380(94.1)	22(1.5)	63(4.3)
5	Doctors and midwives suited to provide delivery care	1364(93.0)	51(3.5)	52(3.5)
6	Currently received good care	1409(96.1)	30(2.0)	27(1.8)
7	Satisfied with waiting time in the facility	1346(91.8)	78(5.3)	43(2.9)
8	Doctors and midwives at facility available	1347(91.8)	48(3.3)	72(4.9)
9	Medicine supplied in the facility is good	1191(81.2)	130(8.9)	146(10.0)
10	Cleanliness of facility is good	1226(83.6)	88(6.0)	152(10.4)
11	Opening hours of the facility is suitable	1382(94.2)	42(2.9)	43(2.9)
12	Doctors and midwives openly discuss with mothers	1088(74.2)	158(10.8)	220(15.0)
13	Doctors and midwives respectful to mothers	1355(92.4)	58(4.0)	53(3.6)
14	Time the doctors and midwives devote is adequate	1144(78.1)	167(11.4)	154(10.5)
15	Equipment is adequate for detecting diseases related to pregnancy, labor and delivery	853(58.1)	319(21.7)	292(19.9)
16	Doctors/midwives compassionate towards pregnant women	1336(91.1)	54(3.7)	76(5.2)
17	Obtain drugs at facility easily	1174(80.1)	95(6.5)	197(13.4)
18	Good expectation toward quality care given at the facility	1288(87.8)	70(4.8)	109(7.4)
19	Transport from home to health facility not difficult	1077(73.4)	53(3.6)	337(23.0)
20	Adequate number of doctors/midwives available in facility	825(56.3)	286(19.5)	354(24.2)
21	Adequate waiting, examination & delivery rooms available	930(63.5)	124(8.5)	411(28.1)
22	Distance from home to this facility is short	1091(69.5)	46(3.1)	401(27.4)
23	Doctors and midwives involved mothers in decision making	999(68.2)	191(13.0)	275(18.8)
24	Doctors and midwives at the facility provide you important medication support during labor and delivery	1301(88.7)	70(4.8)	96(6.5)
25	Doctors and midwives at the facility provide you important professional support during labor and delivery	1379(94.1)	48(3.3)	39(2.7)
26	Doctors and midwives at the facility advice you so that you understand and get mental relief during labor and delivery	1123(76.7)	168(11.5)	173(11.8)
27	Adequate privacy is given during childbirth/examination	1279(87.2)	51(3.5)	137(9.3)
28	Doctors and midwives at the facility advice mothers on options of delivery(CS vs Vaginal)	874(60.0)	215(14.8)	368(25.3)
29	Newborn resuscitation after delivery is good	1269(86.7)	71(4.9)	123(8.4)
30	Facility had blood transfusion service if blood loss occurred	674(47.5)	318(22.4)	427(30.1)
31	People who work in the facility are very honest	1196(81.6)	205(14.0)	65(4.4)
32	Doctors and midwives at facility are fully capable of finding out the problem with a pregnancy, labor and delivery	1265(86.3)	106(7.2)	95(6.5)
