

RESEARCH ARTICLE

Institutional delivery service use and associated factors among women who delivered during the last 2 years in Dallocha town, SNNPR, Ethiopia

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Abstract

Aim: To determine the institutional delivery service use and identify factors associated among women who delivered during the last two years in Dallocha town.

Design: A community-based cross-sectional study.

Methods: The study was conducted from 10 March–10 April 2016. A total of 411 study participants were selected by using systematic sampling method. The source population was all reproductive age group mothers. Bivariate and multiple logistic regression was conducted.

Results: Institutional delivery was 304 (74%). Factors associated with increased likelihood of institutional delivery were owning a radio or television, making more than four antenatal care visits, knowing at least one maternity service advantage. Not knowing about at least one benefit institutional delivery decreased the likelihood of institutional delivery.

Conclusion: Three-quarters of the mothers delivered at the health institution. Accordingly, promotion of antenatal care follow-up, in-service training of health professionals and health education is recommended.

KEYWORDS

Dallocha, institutional delivery service, skilled birth attendants

1 | INTRODUCTION

Pregnancy and childbirth are an important period in women life. However, millions of women living in developing countries die of complication related to childbirth (Olapade & Lawoyin, 2008; Tadele & Lamaro, 2017). This could be tackled through appropriately tailored interventions aimed at improving the use of reproductive health services, which is delivered during antepartum, intrapartum and postpartum periods (Assefa, Alemayehu, & Debie, 2018; Dida, Darega, & Takele, 2015; Kebede, Hassen, & Teklehaymanot, 2016). Since most maternal deaths occur at labour, delivery and within

seven days following birth, emergency obstetric care is essential (Habte & Demissie, 2015).

Provision of skilled care at delivery is a feasible approach in dealing with obstetrics emergency cases among low income and high parity women (Dumont et al., 2000). Institutional delivery ensures safe motherhood and is an indicator of maternity health-related action effectiveness (Assefa et al., 2018; Tadesse, Bayou, & Nebeb, 2017). In developing countries, institutional delivery is low which is 38% in Nigeria (Adedokun & Uthman, 2019), 79% in Kenya (Mochache, Lakhani, El-Busaidy, Temmerman, & Gichangi, 2018), 68% in Ghana (Ganle, Kombet, & Baatiema, 2019), 67.3% in

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Tanzania (Bishanga et al., 2018), 74.6% in Liberia (Yaya, Uthman, Bishwajit, & Ekholuenetale, 2019) and 55% in Nepal (Shah et al., 2015).

Maternal mortality is an indicator of the community health status. Sustainable development goal 3 is focused on the reduction in the global maternal mortality ratio to less than 70 deaths per 100,000 live births by 2030 (UN High Commissioner for Refugees, 2017). Globally, maternal mortality ratio (MMR) is estimated to be 216/100,000 live births of which sub-Saharan countries constitute more than half of the maternal deaths (World Health Organization, 2018). According to the Ethiopian demographic and Health Survey (EDHS) 2016, the pregnancy-related mortality ratio was 412 maternal deaths per 100,000 live births. The lifetime risk of pregnancy-related death is 21 in 1,000 women (CSA & ICF International, 2016). Haemorrhage, abortion, anaemia, infection, unsafe abortion, prolonged labour, obstructed labour and eclampsia contribute to 80% of the maternal death (Darmstadt et al., 2013; Mageda & Mmbaga, 2015).

One approach to decrease the maternal death is promoting institutional delivery. Nurses, midwives, health officers, general practitioners or specialist doctors deliver the care. Delivery at the health institutions enables early detection of obstetrics problems, better maternal and newborn care. It has been associated with favourable maternal and neonatal outcomes (Benti & Ahmed, 2015; Bogale & Markos, 2014). However, most women living in developing countries deliver at home due to limited access to health facilities, distance and knowledge gap (CSA & ICF International, 2016). Family members, traditional birth attendants or health extension workers provide the care. Home delivery might lead to infection, severe bleeding, maternal and foetal death (Bayu, Fisseha, Mulat, Yitayih, & Wolday, 2015; Kent, 2011; Hogan et al., 2010; Sialubanje, Massar, Hamer, & Ruiter, 2015).

The factors influencing institutional delivery service use are related to personal, environmental and institutional aspects (Asres & Davey, 2015; Benti & Ahmed, 2015; Bogale & Markos, 2014; Temesgen & Kejela, 2015). In addition, the quantity and quality of interaction among health professionals and mothers affect the proportion of institutional delivery (Kidanu, Degu, & Tiruye, 2017).

Even though free delivery service is provided in the governmental health facilities of Ethiopia, the proportion of institutional delivery is very low which is between 4%–48% (Benti & Ahmed, 2015; Bogale & Markos, 2014; Fikre & Demissie, 2012; Ministry of Health, 2007; Nigussie, Hailemariam, & Mitikie, 2004; Temesgen & Kejela, 2015; Tsegay et al., 2013). Therefore, to improve the use of institutional delivery, researchers must identify factors influencing the institutional delivery use. In addition, identifying factors that influence the institutional delivery is supportive for the successful accomplishment of a policy aimed at improving maternal and child health. Hence, this study was conducted to assess institutional delivery service use and associated factors in Dallocha town, SNNPR, Ethiopia.

2 | METHODS

2.1 | Study area and period

The study area was Dallocha town. It is found in Dallocha Woreda, located about 182 km from the capital Addis Ababa and 201 km from Hawassa. The total population of Dallocha town is 12,461, and from this 1982 were reproductive age group women. Total households with women who delivered in the last 2 years were 999. There is one public health facility and three private clinics. The study was conducted from 10 March–10 April 2016.

2.2 | Study design

Community-based cross-sectional study designs were employed.

2.3 | Population

The source population was all reproductive age group mothers (15–49 years old) who delivered in the last two years in Dallocha town. The study population was all sampled reproductive age group mothers who delivered during the last 2 years before the study, and the study unit was individual at household levels.

2.4 | Eligibility criteria

Reproductive age group mothers who live above 6 months in the study area and gave birth in the last 2 years preceding the study period were included in the study. Women who were critically ill and mental challenged were excluded from the study.

2.5 | Sample size and sampling technique

The required sample size was determined by using a single population proportion formula with the following assumptions, 47.2% institutional delivery (Temesgen & Kejela, 2015) with 95% confidence interval and 4% margin of error. Adding of 10% non-response rate, the final sample size was 411.

Through systematic sampling, eligible woman was interviewed by going in every two households. For households with more than one eligible woman, interview was done by selecting a woman using lottery method.

2.6 | Data collection procedures

Data were collected through face-to-face interview using a structured questionnaire that was adapted after a review of different literature (Asres & Davey, 2015; Fikre & Demissie, 2012; Nigussie et al., 2004). The questionnaire had 5 parts and 53 items. Different experts checked the internal validity. Four data collectors and one supervisor were used. Training was given for 2 days about the aim of the study, data collection tool and procedures. In addition, the

training also focused on the techniques of interviewing and clarifying questions.

2.7 | Data quality control

Data quality was ensured during data collection, coding, entry and analysis. The data collection tool was pre-tested on 21 women in Wulbareg town. The principal investigator and a supervisor conducted supervision. The supervisor and principal investigator checked each questionnaire for completeness. Furthermore, each questionnaire was given a unique code by the principal investigator.

2.8 | Data processing and analysis

Data were first checked manually for completeness, then coded and entered through EpiData version 3.1. The generated data were transferred to SPSS version 20. The data were cleaned by visualizing, calculating frequencies and sorting. Frequencies and proportions were computed for description of the study population. Comparison by the socio-demographic and obstetrics characteristic was done between the women who delivered at home and institution group. The statistical association was done for categorical variables. Chi-square test was used by considering the guideline which says 80% of the cells in the table should have expected frequencies greater than 5, and all cells should have expected frequencies greater than 1. Significance was determined by using crude and adjusted odds ratios with 95% confidence intervals. To assess the association between the dependent variables and independent variables, bivariate logistic regression was employed. All explanatory variables that have association in bivariate analysis with p -value less than .05 were entered into multiple logistic regression model. Then, multiple logistic regression was employed to identify different predictors by considering p -value less than .05. Hosmer–Lemeshow test was performed to test how well the model fits the data. Finally, the results were presented in the form of tables, figures and sentences.

3 | RESULTS

3.1 | Socio-demographic characteristics

A total of 411 women participated in the study, obtaining a response rate of 100%. The mean age of respondents was 26.6 (SD 4.31 years). In the women who delivered at home group, most (96.3%) were married, more than three-quarters were Silite and housewives. In the women who delivered at health institution group, most (41.8%) attended primary education and more than half (53.6%) had a family size of less than four (Table 1).

3.2 | Place of delivery

A greater proportion of women (74%) delivered at health institution (Figure 1).

3.3 | Obstetric and delivery characteristics of women who delivered at home or health institution

Among the respondents who delivered at home, most (65.4%) and 55.1% had a parity and gravidity of 2–4, respectively. At first marriage, most (69.2%) were aged 15–19, more than half (54.2%) were aged 15–19 at their first pregnancy, more than half (64.5%) were assisted by the traditional birth attendant and most (78.5%) mentioned having close attention from the family as a reason for home delivery. Among the respondents who delivered in health institution, significant proportion of women (93.4%) had received antenatal care, more than three-quarters (93.8%) had birth preparedness and complication readiness, most had live birth (99.3%), and more than one-quarter (30.4%) had adverse pregnancy outcome. Of the respondents, most had knowledge of at least one advantage of maternity services (74.5%) and had knowledge of at least one of the benefits of giving birth at health institution (83.7%). The difference in the place of delivery by antenatal care frequency, knowledge of at least one advantage of maternity services and knowledge of at least one of the benefits of giving birth at health institution was statistically significant (Tables 2–4).

3.4 | Knowledge of danger signs during labour

Of the respondents, 189 (84.8%) mentioned severe vaginal bleeding as a danger sign of labour (Figure 2).

3.5 | Knowledge of the advantage of health institution delivery

About the knowledge on the advantage of health institution delivery, timely treatment of health-related problem was the most mentioned advantage (89.8%) (Figure 3).

3.6 | Factors associated with institutional delivery service use

The final model included all variables that were significant in the bivariate analysis. According to the result of the multivariable analysis, all the four variables showed significant association with the use of institutional delivery.

Women who have a radio or television were 2.547 times more probably to use institutional delivery service than women who did not have (AOR = 2.547, 95% CI = 1.021–6.352). Mothers who had above four antenatal care visit were 3.526 times more likely to use institutional delivery service than women who had 1–4 antenatal care visit (AOR = 3.526, 95% CI = 1.542–8.064). Moreover, mothers who knew at least one advantage of pregnancy and delivery service were 3.177 times more probably to deliver at health facility than those who did not know at least one advantage (AOR = 3.177, 95% CI = 1.138–8.867). Mothers who did not know at least one benefit of giving birth at health institution were 11% less probably to deliver at health facility than those who know at least one benefit of giving birth at health institution (AOR = 0.091, 95% CI = 0.023–0.360) (Tables 5 and 6).

TABLE 1 Socio-demographic characteristics of the women who delivered during the last two years in Dallocha town, SNNPR, Ethiopia, May 2016

Variables	Place of delivery		Total N (%)
	Home N (%)	Health institution N (%)	
Age			
15-19	5 (4.7)	10 (3.3)	15 (3.6)
20-24	23 (21.5)	75 (24.7)	98 (23.8)
25-29	57 (53.3)	144 (47.4)	201 (48.9)
30-34	17 (15.9)	49 (16.1)	66 (16.1)
35-49	5 (4.7)	26 (8.6)	31 (7.5)
Mean ± SD			26.6 ± 4.31
Marital status			
Married	103 (96.3)	297 (97.7)	400 (97.3)
Divorced	1 (0.9)	5 (1.6)	5 (1.2)
Widowed	3 (2.8)	2 (0.7)	6 (1.5)
Ethnicity			
Silite	87 (81.3)	262 (86.2)	349 (84.9)
Gurage	11 (10.3)	9 (3)	20 (4.9)
Amhara	8 (7.5)	22 (7.2)	30 (7.3)
Wolaita	1 (0.9)	11 (3.6)	12 (2.9)
Educational status of mothers			
Unable to read and write	49 (45.8)	77 (25.3)	126 (30.7)
Primary education	44 (41.1)	127 (41.8)	171 (41.6)
Secondary education	11 (10.3)	68 (22.4)	79 (19.2)
College or university graduate	3 (2.8)	32 (10.5)	35 (8.5)
Educational status of husband (N = 400)			
Unable to read and write	14 (14)	40 (13.3)	54 (13.5)
Primary education	58 (54)	81 (27)	139 (34.8)
Secondary education	11 (11)	69 (23)	80 (20)
College or university graduate	17 (17)	110 (36.7)	127 (31.7)
Occupational status of mothers			
Housewife	83 (77.6)	225 (74)	308 (74.9)
Employed	6 (5.6)	41 (13.5)	47 (11.4)
Merchant	8 (7.5)	28 (9.2)	36 (8.8)
Daily labourer	10 (9.3)	10 (3.3)	20 (4.9)

(Continues)

TABLE 1 (Continued)

Variables	Place of delivery		Total N (%)
	Home N (%)	Health institution N (%)	
Occupational status of husband (N = 400)			
Farmer	17 (17)	41 (13.7)	58 (14.5)
Employed	18 (18)	134 (44.7)	152 (38)
Merchant	30 (30)	54 (18)	84 (21)
Daily labourer	35 (35)	71 (23.7)	106 (26.5)
Religion			
Orthodox	11 (10.3)	39 (12.8)	50 (12.2)
Muslim	89 (83.2)	252 (82.9)	341 (83.0)
Protestant	7 (6.5)	13 (4.3)	20 (4.9)
Family size			
1-4	64 (59.8)	163 (53.6)	227 (55.2)
>4	43 (40.2)	141 (46.4)	184 (44.8)
Income per month (Birr)			
100-500	8 (7.5)	50 (16.4)	58 (14.1)
501-999	50 (46.7)	75 (24.7)	125 (30.4)
1,000-1,499	28 (26.2)	66 (21.7)	94 (22.9)
≥1,500	21 (19.6)	113 (37.2)	134 (32.6)

4 | DISCUSSION

The results of the study revealed that the proportion of women who delivered at health institution was 74%. This study finding was higher than the report from EMDHS 2014 (16%), Agarfa town (13%), Wayu town (47.2%), Dodota woreda, Oromiya (18%) and Holota town (61%) (Benti & Ahmed, 2015; Birmeta, Dibaba, & Woldeyohannes, 2013; CSA & ICF International, 2014; Fikre & Demissie, 2012; Temesgen & Kejela, 2015). This might be due to the time gap and improvement in access to the service. Furthermore, there might be an improvement

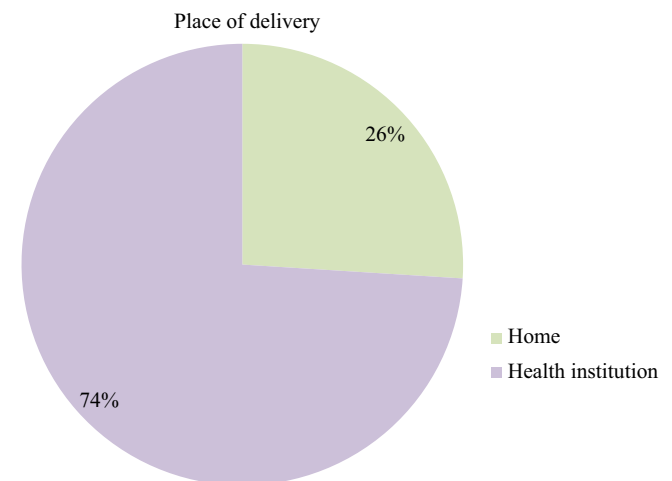


FIGURE 1 Place of delivery among women who delivered during the last 2 years in Dallocha town, SNNPR, Ethiopia, May 2016 (N = 411)

TABLE 2 Obstetrics and delivery characteristics of women who delivered during the last two years in Dallocha town, SNNPR, Ethiopia, May 2016

Variables	Place of delivery		
	Home N (%)	Health institution N (%)	Total N (%)
Parity			
1	28 (26.2)	95 (31.3)	123 (29.9)
2-4	70 (65.4)	179 (58.9)	249 (60.6)
>4	9 (8.4)	30 (9.9)	39 (9.5)
Gravidity			
1	19 (17.8)	80 (26.3)	99 (24.1)
2-4	69 (55.1)	170 (55.9)	239 (58.2)
>4	19 (17.8)	54 (17.8)	73 (17.8)
Age at first marriage			
15-19	74 (69.2)	208 (68.4)	282 (68.6)
20-34	33 (30.8)	96 (31.6)	129 (31.4)
Age at first pregnancy			
15-19	58 (54.2)	148 (48.7)	206 (50.1)
20-34	49 (45.8)	156 (51.3)	205 (49.9)
Last pregnancy time in month			
≤12 months	53 (49.5)	140 (46.1)	193 (47)
>12 months	54 (50.5)	164 (53.9)	218 (53)
Planned pregnancy			
Yes	97 (90.7)	284 (93.4)	381 (92.7)
No	10 (9.3)	20 (6.6)	30 (7.3)
Antenatal care			
Yes	52 (48.6)	299 (93.4)	351 (85.4)
No	55 (51.4)	5 (1.6)	60 (14.6)
Antenatal care frequency (N = 351)			
1-4	31 (59.6)	74 (24.7)	105 (29.9)
>4	21 (40.4)	225 (75.3)	246 (70.1)
Birth preparedness and complication readiness			
Yes	45 (42.1)	285 (93.8)	330 (80.3)
No	62 (57.9)	19 (6.3)	81 (19.7)
Newborn condition			
Live birth	94 (87.9)	302 (99.3)	396 (96.4)
Live birth but died soon after	13 (12.1)	2 (0.7)	15 (3.6)
Duration of labour			
<12 hr	94 (87.9)	210 (69.1)	304 (74.0)
12-24 hr	12 (11.2)	92 (30.3)	104 (25.3)
>24 hr	1 (0.9)	2 (0.7)	3 (0.7)
Adverse pregnancy outcome			
Yes	25 (23.1)	92 (30.4)	117 (28.5)
No	83 (76.9)	211 (69.6)	294 (71.5)
Complication (N = 117)			
Bleeding	16 (64)	65 (70.7)	81 (69.2)
Prolonged labour	8 (32)	22 (23.9)	30 (25.7)

(Continues)

TABLE 2 (Continued)

Variables	Place of delivery		
	Home N (%)	Health institution N (%)	Total N (%)
Retained placenta	1 (4)	5 (5.4)	6 (5.1)
Preferred sex of attendants for delivery service			
Female	94 (87.9)	195 (64.1)	289 (70.3)
Male	13 (12.1)	109 (35.9)	122 (29.7)
Preferred place for future delivery			
Institutional delivery	95 (88.8)	294 (96.7)	389 (94.6)
Home delivery	12 (11.2)	10 (3.3)	22 (5.4)
Knowledge of at least one advantage of maternity services			
Yes	35 (32.7)	271 (89.1)	306 (74.5)
No	72 (67.3)	33 (10.9)	105 (25.5)
Knowledge of at least one of the benefits of giving birth at health institution			
Yes	44 (41.1)	300 (98.7)	344 (83.7)
No	63 (58.9)	4 (1.3)	67 (16.3)

TABLE 3 Delivery characteristics of women who delivered of women who delivered at home or health institution during the last 2 years in Dallocha town, SNNPR, Ethiopia, May 2016

Variables	N (%)
Access to ambulance	
Yes	44 (10.7)
No	367 (89.3)
Mode of delivery	
Spontaneous vaginal delivery	376 (91.5)
Instrumental delivery	17 (4.1)
Caesarean section	17 (4.1)
I did not remember	1 (0.2)
Payment for the service (N = 304)	
Free of charge	302 (99.3)
Paid	2 (0.7)
Waiting time to get delivery service (N = 304)	
1-30 min	299 (98.4)
31-60 min	5 (1.6)
Person who assisted the home delivery (N = 107)	
Family member	9 (8.4)
Her mother	20 (18.7)
Traditional birth attendant	69 (64.5)
Health extension workers	9 (8.4)
Reason for home delivery (N = 107)	
Having closer attention from family	84 (78.5)
Urgent labour	75 (70.1)
Home is comfortable	36 (33.6)
Health professionals unwelcoming approach	30 (28)

TABLE 4 Association of variables with the place of delivery among the women who delivered during the last 2 years in Dallocha town, SNNPR, Ethiopia, May 2016

Variables	Place of delivery	Place of delivery	p-Value
Have a radio or television			
Yes	62 (57.9)	252 (82.9)	<.001
No	45 (42.1)	52 (17.1)	
ANC frequency (N = 351)			
1-4	31 (59.6)	74 (24.7)	<.001
>4	21 (40.4)	225 (75.3)	
Knowledge of at least one advantage of maternity services			
Yes	35 (32.7)	271 (89.1)	<.001
No	72 (67.3)	33 (10.9)	
Knowledge of at least one of the benefits of giving birth at health institution			
Yes	44 (41.1)	300 (98.7)	<.001
No	63 (58.9)	4 (1.3)	

in awareness of institutional delivery due to the availability of media exposure and urban health extension workers. This study included only women living in urban where negative influence of husbands and family members could be lower.

Women who have radio or television were 2.547 times more probably to use institutional delivery service than women who did not have. This is supported by different researches conducted in Ethiopia (Birmeta et al., 2013; Kidanu et al., 2017). A woman who had either television or radio gets more information related to maternal health services advantage. Provision of information might change the attitude and knowledge of women.

Mothers who had above four antenatal care visit were 3.526 times more probably to use institutional delivery service than

women who had 1-4 antenatal care visit. This is supported by study conducted in Indonesia (Thind & Banerjee, 2004), Kenya (Fotso, Ezeh, & Oronje, 2008), and Ethiopia (Dagne, 2010; Kidanu et al., 2017; Nigussie et al., 2004; Temesgen & Kejela, 2015). During antenatal care visits, especially if started early, women are provided with health education and information about the benefits of delivering in the health facility (Habte & Demissie, 2015; Teferra, Alemu, & Woldeyohannes, 2012). Antenatal care service provides an opportunity for health promotion, prevention, screening and monitoring of maternal health problems and helps to arrange for planned delivery (Tadele & Lamaro, 2017). In addition, counselling is delivered about the birth preparedness and complication readiness.

Knowledge about the advantage of pregnancy and delivery service was one of the significant predictors of institutional delivery use. Mothers who knew at least one advantage of pregnancy and delivery service were 3.177 times more probably to deliver at the health facility than those who did not know. This is supported by a study conducted in Tanzania (Mpembeni et al., 2007). Knowledge is one of the enabling factors for using the service. On the other hand, mothers who have knowledge about the advantage might have the initiation to use the service and resist negative pressures.

In this study, 92.7% of the mothers had a planned pregnancy. This study finding was higher than the report from Maichew town (70.3%), West Belessa Woreda (86.3%) and Denmark (77%) (Backhausen et al., 2013; Kassahun et al., 2019; Tsegaye, Mengistu, & Shimeka, 2018). This might be due to difference in the use and accessibility of family planning services.

In this study, 85.4% of the mothers had antenatal care follow-up. This study finding is comparable to a report Pakistan (83.5%) (Noh et al., 2019). On the other hand, it is higher than the report from Afghanistan (56.2%), Nepal (76%) and Liberia (79.8%) (Awasthi et al., 2018; Azimi et al., 2019; Yaya et al., 2019). This difference might be due

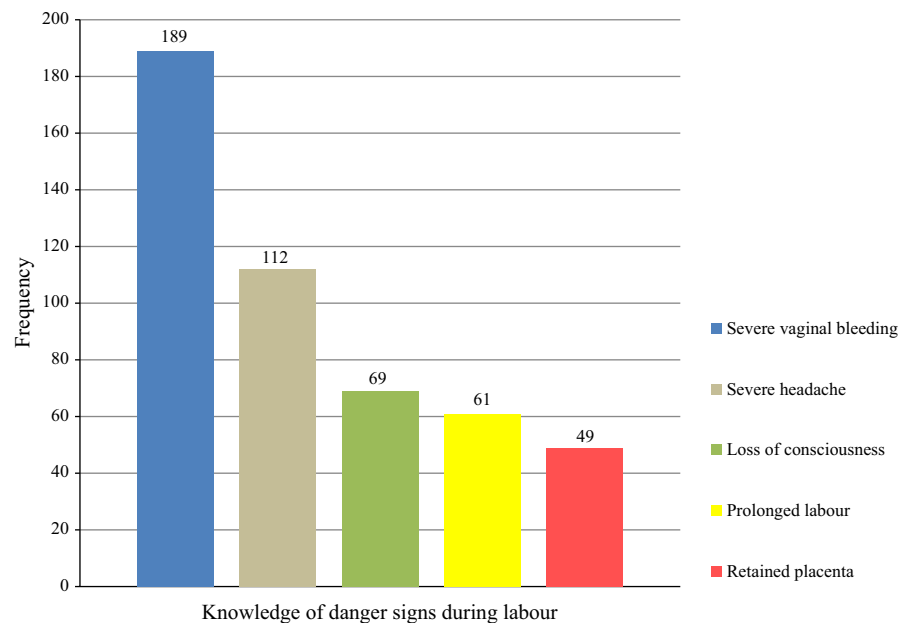


FIGURE 2 Knowledge of danger sign during labour among women who delivered during the last 2 years in Dallocha town, SNNPR, Ethiopia, May 2016 (N = 411)

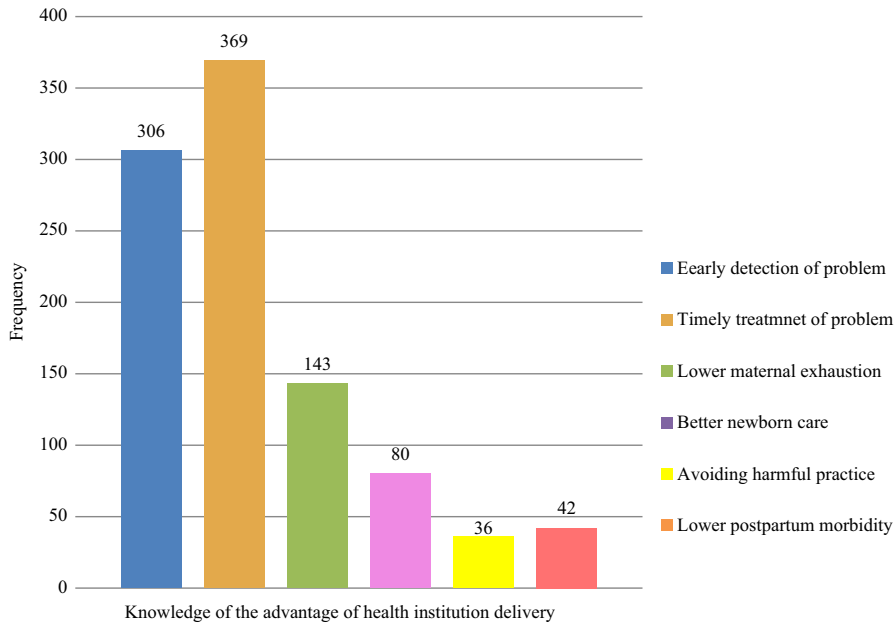


FIGURE 3 Knowledge of the advantage of health institution delivery among women who delivered during the last two years in Dallocha town, SNNPR, Ethiopia, May 2016

Variables	Category	Place of delivery		COR(95% CI)
		Home	Health institution	
Have a radio or television	Yes	62	252	3.517 (2.163,5.720)*
	No	45	52	1
Antenatal care frequency	1-4	31	74	1
	>4	21	225	4.488 (2.431,8.286)*
Knowledge of at least one advantage of maternity services	Yes	35	271	16.894 (9.826,29.040)*
	No	72	33	1
Knowledge of at least one benefit of giving birth at health institution	Yes	44	300	1
	No	63	4	0.009 (0.003,0.027)*

Abbreviation: COR: crude odds ratio.

*Significant at p-value < 0.001.

TABLE 5 Bivariate logistic regression of factors associated with institutional delivery service use among women who delivered during the last two years in Dallocha town, SNNPR, Ethiopia, May 2016

Variables	Category	Place of delivery		AOR(95%CI)
		Home	Health institution	
Have a radio or television	Yes	62	252	2.547 (1.021,6.352)**
	No	45	52	1
Antenatal care frequency	1-4	31	74	1
	>4	21	225	3.526 (1.542,8.064)**
Knowledge of at least one advantage of maternity services	Yes	35	271	3.177 (1.138,8.867)**
	No	72	33	1.00
Knowledge of at least one benefit of giving birth at health institution	Yes	44	300	1.00
	No	63	4	0.091 (0.023,0.360)*

Abbreviation: AOR: adjusted odds ratio

*Significant at p-value < 0.001.

**Significant at p-value < 0.05.

TABLE 6 Multiple logistic regressions of factors associated with institutional delivery service use among women who delivered during the last two years in Dallocha town, SNNPR, Ethiopia, May 2016

to the difference in the literacy level of mothers about the importance of antenatal care and access to service.

The study limitation was that temporal relations could not be assessed. In addition, there could be a recall bias.

5 | CONCLUSION

This study showed that during the period of last two years, three-quarters of the mothers delivered at the health facility. Owning a radio or television, more than four antenatal care visits, having knowledge of at least one maternity service advantage were associated with higher odds of institutional delivery. Therefore, health-care providers should promote universal antenatal care follow-up and provide health education. Health institutions should facilitate in-service training on emergency obstetric care for all healthcare providers. Early booking of antenatal care visit and completion of visits should be promoted at community level.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

AUTHOR CONTRIBUTIONS

MA conceptualized and designed the study. MA, ROF, AT and TB analysed, interpreted the data, drafted the manuscript and critically reviewed the manuscript. All the authors read and approved the manuscript.

ETHICAL APPROVAL

Ethical clearance was obtained from Jimma university institutional review board (IRB) and permission to conduct the study was obtained from Dallocha Woreda health office. Additionally, an informed verbal consent obtained from each respondent after providing sufficient information for the purpose of study and the right to refuse participation or to jump some questions unwilling to answer. To ensure the confidentiality, name of respondents was not written on the questionnaires.

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REFERENCES

- Adedokun, S. T., & Uthman, O. A. (2019). Women who have not utilized health Service for Delivery in Nigeria: Who are they and where do they live? *BMC Pregnancy and Childbirth*, 19, 93. <https://doi.org/10.1186/s12884-019-2242-6>
- Asres, A., & Davey, G. (2015). Factors associated with safe delivery service utilization among women in Sheka Zone, Southwest Ethiopia. *Maternal Child Health Journal*, 19(4), 859–867. <https://doi.org/10.1007/s10995-014-1584-y>
- Assefa, L., Alemayehu, M., & Debie, A. (2018). Magnitude of institutional delivery service utilization and associated factors among women in pastoral community of Awash Fentale district Afar Regional State, Ethiopia. *BMC Research Notes*, 11, 162. <https://doi.org/10.1186/s13104-018-3261-5>
- Awasthi, M. S., Awasthi, K. R., Thapa, H. S., Saud, B., Pradhan, S., & Khatry, R. A. (2018). Utilization of antenatal care services in Dalit communities in Gorkha, Nepal: A cross-sectional study. *Journal of Pregnancy*, 2018, 3467308. <https://doi.org/10.1155/2018/3467308>
- Azimi, M. W., Yamamoto, E., Saw, T. M., Kariya, T., Arab, A. S., Sadaat, S. I., ... Hamajima, N. (2019). Factors associated with antenatal care visits in Afghanistan: Secondary analysis of Afghanistan Demographic and Health Survey 2015. *Nagoya Journal of Medical Science*, 81(1), 121–131. <https://doi.org/10.18999/nagjms.81.1.121>
- Backhausen, M. G., Ekstrand, M., Tydén, T., Magnussen, B. K., Shawe, J., Stern, J., & Hegaard, H. K. (2013). Pregnancy planning and lifestyle prior to conception and during early pregnancy among Danish women. *European Journal of Contraception & Reproductive Health Care*, 19(1), 57–65. <https://doi.org/10.3109/13625187.2013.851183>
- Bayu, H., Fisseha, G., Mulat, A., Yitayih, G., & Wolday, M. (2015). Missed opportunities for institutional delivery and associated factors among urban resident pregnant women in South Tigray Zone, Ethiopia: A community-based follow-up study. *Glob Health Action*, 8, 28082. <https://doi.org/10.3402/gha.v8.28082>
- Benti, T., & Ahmed, K. (2015). Factors determining health institutional delivery among pregnant women Living in Agarfa Town of Bale Zone, Oromia, South East Ethiopia. *American Journal of Health Research*, 3(3), 130–134. <https://doi.org/10.11648/j.ajhr.20150303.13>
- Bernis, L., Dumont, A., Bouillin, D., Gueye, A., Dompnier, J.-P., & Bouvier-Colle, M.-H. (2000). Maternal morbidity and mortality in two different populations of Senegal: A prospective study (MOMA survey). *British Journal of Obstetrics and Gynecology*, 107(1), 68–74. <https://doi.org/10.1111/j.1471-0528.2000.tb11581.x>
- Birmeta, K., Dibaba, Y., & Woldeyohannes, D. (2013). Determinants of maternal health care utilization in Holeta town, central Ethiopia. *BMC Health Services Research*, 13(1), 1–10. <https://doi.org/10.1186/1472-6963-13-256>
- Bishanga, D. R., Drake, M., Kim, Y.-M., Mwanamsangu, A. H., Makuwani, A. M., Zoungrana, J., ... Stekelenburg, J. (2018). Factors associated with institutional delivery: Findings from a cross-sectional study in Mara and Kagera regions in Tanzania. *PLoS ONE*, 13(12), e0209672. <https://doi.org/10.1371/journal.pone.0209672>
- Bogale, D., & Markos, D. (2014). Institutional delivery service utilization and associated factors among child bearing age women in Goba Woreda, Ethiopia. *Journal of Gynecology and Obstetrics*, 2(4), 63–70. <https://doi.org/10.11648/j.jgo.20140204.14>
- CSA and ICF International (2014). *Ethiopian mini demographic and health survey 2014*. Addis Abeba, Ethiopia and Rockville, MD: CSA and ICF International.
- CSA and ICF International (2016). *Ethiopian demographic and health survey 2016*. Addis Abeba, Ethiopia and Rockville, MD: CSA and ICF International.
- Dagne, E. (2010). *Role of socio-demographic factors on utilization of maternal health care services in Ethiopia*. Dissertation, Umea University, Sweden.

- Darmstadt, G. L., Marchant, T., Claeson, M., Brown, W., Morris, S., Donnay, F., ... Schellenberg, J. (2013). A strategy for reducing maternal and newborn deaths by 2015 and beyond. *BMC Pregnancy and Childbirth*, 13, 216. <https://doi.org/10.1186/1471-2393-13-216>
- Dida, N., Darega, B., & Takele, A. (2015). Reproductive health services utilization and its associated factors among Madawalabu University students, Southeast Ethiopia: Cross-sectional study. *BMC Research Notes*, 8, 8. <https://doi.org/10.1186/s13104-015-0975-5>
- Fikre, A. A., & Demissie, M. (2012). Prevalence of institutional delivery and associated factors in Dodota Woreda (district), Oromia regional state, Ethiopia. *Reproductive Health*, 9, 33. <https://doi.org/10.1186/1742-4755-9-33>
- Fotso, J. C., Ezeh, A., & Oronje, R. (2008). Provision and use of maternal health service among urban women in Kenya: What do we know and what can we do? *Journal of Urban Health*, 85(3), 428–442.
- Ganle, J. K., Kombet, M. L., & Baatiema, L. (2019). Factors influencing the use of supervised delivery services in Garu-Tempene District, Ghana. *BMC Pregnancy and Childbirth*, 19, 141. <https://doi.org/10.1186/s12884-019-2295-6>
- Habte, F., & Demissie, M. (2015). Magnitude and factors associated with institutional delivery service utilization among childbearing mothers in Cheha district, Gurage zone, SNNPR, Ethiopia: A community based cross sectional study. *BMC Pregnancy and Childbirth*, 15, 299. <https://doi.org/10.1186/s12884-015-0716-8>
- Hogan, M. C., Foreman, K. J., Naghavi, M., Ahn, S. Y., Wang, M., Makela, S. M., ... Murray, C. J. L. (2010). Maternal mortality for 181 countries, 1980–2008: A systematic analysis of progress towards Millennium Development Goal 5. *Lancet*, 375(9726), 1609–1623. [https://doi.org/10.1016/S0140-6736\(10\)60518-1](https://doi.org/10.1016/S0140-6736(10)60518-1)
- Kassahun, E. A., Zeleke, L. B., Dessie, A. A., Gersa, B. G., Oumer, H. I., Derseh, H. A., ... Azeze, G. G. (2019). Factors associated with unintended pregnancy among women attending antenatal care in Maichew Town, Northern Ethiopia, 2017. *BMC Research Notes*, 12, 381. <https://doi.org/10.1186/s13104-019-4419-5>
- Kebede, A., Hassen, K., & Teklehaymanot, N. A. (2016). Factors associated with institutional delivery service utilization in Ethiopia. *International Journal of Women's Health*, 8, 463–475. <https://doi.org/10.2147/IJWH.S109498>
- Kent, A. (2011). Home deliveries and risk. *Reviews in Obstetrics and Gynecology*, 4(1), 32–33.
- Kidanu, S., Degu, G., & Tiruye, T. Y. (2017). Factors influencing institutional delivery service utilization in Dembecha district, Northwest Ethiopia: A community based cross sectional study. *Reproductive Health*, 14, 98. <https://doi.org/10.1186/s12978-017-0359-5>
- Mageda, K., & Mmbaga, E. J. (2015). Prevalence and predictors of institutional delivery among pregnant mothers in Biharamulo district, Tanzania: A cross-sectional study. *Pan African Medical Journal*, 21, 51. <https://doi.org/10.11604/pamj.2015.21.51.6347>
- Ministry of Health (2007). *Health and health related indicators planning and programming department*. Addis Ababa, Ethiopia: FMOH.
- Mochache, V., Lakhani, A., El-Busaidy, H., Temmerman, M., & Gichangi, P. (2018). Correlates of facility-based delivery among women of reproductive age from the Digo community residing in Kwale, Kenya. *BMC Research Notes*, 11, 715. <https://doi.org/10.1186/s13104-018-3818-3>
- Mpembeni, R. N. M., Killewo, J. Z., Leshabari, M. T., Massawe, S. N., Jahn, A., Mushi, D., & Mwakipa, H. (2007). Use pattern of maternal health services and determinants of skilled care during delivery in Southern Tanzania : Implications for achievement of MDG-5 targets. *BMC Pregnancy and Child Birth*, 7, 29. <https://doi.org/10.1186/1471-2393-7-29>
- Nigussie, M., Hailemariam, D., & Mitikie, G. (2004). Assessment of safe delivery among women of child bearing age in Gondar, North west Ethiopia. *Ethiopian Journal of Health Development*, 18(3), 145–152. <https://doi.org/10.4314/ejhd.v18i3.9952>
- Noh, J.-W., Y-m, K., Lee, L. J., Akram, N., Shahid, F., Kwon, Y. D., & Stekelenburg, J. (2019). Factors associated with the use of antenatal care in Sindh province, Pakistan: A population-based study. *PLoS ONE*, 14(4), e0213987. <https://doi.org/10.1371/journal.pone.0213987>
- Olapade, F., & Lawoyin, T. (2008). Maternal mortality in a Nigerian maternity hospital. *African Journal of Biomedical Research*, 11(3), 267–273. <https://doi.org/10.4314/ajbr.v11i3.50726>
- Shah, R., Rehfuess, E. A., Maskey, M. K., Fischer, R., Bhandari, P. B., & Delius, M. (2015). Factors affecting institutional delivery in rural Chitwan district of Nepal: A community-based cross-sectional study. *BMC Pregnancy and Childbirth*, 15, 27. <https://doi.org/10.1186/s12884-015-0454-y>
- Sialubanje, C., Massar, K., Hamer, D. H., & Ruiter, R. A. C. (2015). Reasons for home delivery and use of traditional birth attendants in rural Zambia: A qualitative study. *BMC Pregnancy and Childbirth*, 15, 216. <https://doi.org/10.1186/s12884-015-0652-7>
- Tadele, N., & Lamaro, T. (2017). Utilization of institutional delivery service and associated factors in Bench Maji zone, Southwest Ethiopia: Community based, cross sectional study. *BMC Health Services Research*, 17, 101. <https://doi.org/10.1186/s12913-017-2057-y>
- Tadesse, B. H., Bayou, N. B., & Nebek, G. T. (2017). Mothers' satisfaction with institutional delivery service in public health facilities of Omo Nada District, Jimma Zone. *Clinical Medicine Research*, 6(1), 23–30.
- Teferra, A. S., Alemu, F. M., & Woldeyohannes, S. M. (2012). Institutional delivery service utilization and associated factors among mothers who gave birth in the last 12 months in Sekela district, North West of Ethiopia: A community – Based cross sectional study. *BMC Pregnancy Childbirth*, 12, 74. <https://doi.org/10.1186/1471-2393-12-74>
- Temesgen, K., & Kejela, G. (2015). Safe delivery service utilization five years preceding the survey in Wayu town, Western Ethiopia. *Science Journal of Public Health*, 3(1), 87–92. <https://doi.org/10.11648/j.sjph.20150301.25>
- Thind, A., & Banerjee, K. (2004). Home delivery in Indonesia: Who provides assistance? *Journal of Community Health*, 29(4), 285–303.
- Tsegay, Y., Gebrehiwot, T., Goicolea, I., Edin, K., Lemma, H., & Sebastian, M. S. (2013). Determinants of antenatal and delivery care utilization in Tigray region, Ethiopia : A cross-sectional study. *International Journal for Equity in Health*, 12, 30. <https://doi.org/10.1186/1475-9276-12-30>
- Tsegaye, A. T., Mengistu, M., & Shimeka, A. (2018). Prevalence of unintended pregnancy and associated factors among married women in west Belessa Woreda, Northwest Ethiopia, 2016. *Reproductive Health*, 15, 201. <https://doi.org/10.1186/s12978-018-0649-6>
- UN High Commissioner for Refugees (2017). *The sustainable development goals and addressing statelessness*. Retrieved from <https://www.refworld.org/docid/58b6e3364.html>
- World Health Organization (2018). *Maternal mortality*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/maternal-mortality?fbclid=IwAR2_c-o534rz4QafDLXoufml1mz1f-Brrpxl3srhA5mj30bFYJzjeanHHEI
- Yaya, S., Uthman, O. A., Bishwajit, G., & Ekholuenetale, M. (2019). Maternal health care service utilization in post-war Liberia: Analysis of nationally representative cross-sectional household surveys. *BMC Public Health*, 19, 28. <https://doi.org/10.1186/s12889-018-6365-x>

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