

# Maternal satisfaction on delivery service and associated factors among mothers delivered at Arba Minch town governmental health facilities, South Ethiopia: A cross-sectional study

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## Abstract

**Objective:** To assess maternal satisfaction with delivery service and associated factors among mothers delivered at Arba Minch town governmental health facilities, South Ethiopia, 2022.

**Methods:** A facility-based cross-sectional design study was conducted from 1 April to 30 June 2022. The total sample size was 320. A systematic random sampling technique was used to select mothers. Data were entered using Epi-data Version 3.1 and exported to SPSS Version 25 for analysis. Multicollinearity was considered using a variance inflation factor. The goodness of fit test was done using the Hosmer–Lemeshow model. Binary logistic regression was done, and variables with a  $p$ -value of  $<0.25$  in the bivariable analysis were taken into the multivariable analysis. Statistically significant was declared at a  $p$ -value of  $<0.05$  with an adjusted odds ratio and 95% confidence interval.

**Result:** The maternal satisfaction with delivery service was 75.0% (95% CI: 70.3%–79.4%). Being urban residence (AOR: 4.15, 95% CI: 1.87–9.19), absence of anemia during pregnancy (AOR: 2.38, 95% CI: 1.07–5.29), absence of antepartum hemorrhage (AOR: 2.96, 95% CI: 1.35–6.50), induction to onset labor (AOR: 0.08, 95% CI: 0.02–0.39), female sex of the newborn (AOR: 0.33, 95% CI: 0.15–0.72), absence of fetal distress during labor (AOR: 5.01, 95% CI: 1.69–14.86), absence of intrauterine meconium release (AOR: 2.77, 95% CI: 1.02–7.63), and presence of privacy measures during examination (AOR: 3.11, 95% CI: 1.37–7.04) were associated with maternal satisfaction.

**Conclusion and recommendation:** About 8 in 10 mothers are satisfied with the delivery service. Residence, anemia during pregnancy, antepartum hemorrhage, the onset of labor, sex of the newborn, fetal distress during labor, intrauterine meconium release, and privacy measures during examination are associated with maternal satisfaction with delivery services. Therefore, preventing anemia during pregnancy and antepartum hemorrhage, minimizing induction of labor, preventing fetal distress and intrauterine meconium release during labor, and taking privacy measures during examination might enhance maternal satisfaction with delivery services.

## Keywords

Maternal satisfaction, delivery service, Arba Minch town, health facilities

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## Introduction

Maternal satisfaction is a multidimensional concept of positive evaluation of a distinct dimension of childbirth.<sup>1,2</sup> Maternal satisfaction with delivery service is used to measure the ability of services provided to meet consumers' expectations. Satisfying women with the care given during labor and delivery helps to develop a positive childbirth experience and a favorable attitude toward motherhood.<sup>2</sup>

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Maternal health is important not only to the individual woman requiring maternity care but also to her newborn and immediate family.<sup>3</sup>

Maternal satisfaction is an important indicator for the assessment of the quality of care provided.<sup>4,5</sup> Assessment of satisfaction with maternity services is crucial and helpful for future utilization of service.<sup>6,7</sup> Childbirth is a crucial experience in a mother's life as it has a substantial psychological, emotional, and physical impact. A positive experience in childbirth is important to the mother, the infant's health and well-being, and the mother–infant relationship. Furthermore, it is useful for the care providers to guarantee the best preparation, health service, and support to childbearing women.<sup>8</sup> The memories and experiences of childbirth remain with the woman throughout her life. The support and care they receive during this period is critical.<sup>8,9</sup>

Ethiopia has remarkable progress in expanding health services through rapid expansion of infrastructure, increased availability of the health workforce, increased budget allocation, and improved financial management. However, the quality of the service provision and utilization is a big challenge until now.<sup>1,10</sup> Providing suboptimal or low-quality maternal health services has a damaging effect on the health outcome and subsequent public health.<sup>10,11</sup> One outcome measuring tool for quality health service is a high patient satisfaction rate.<sup>11</sup> High maternal satisfaction increases willingness to return to health institutions.<sup>12,13</sup>

Studies indicate that maternal satisfaction is influenced by several factors; however, there are many disagreements among researchers. This is because these factors are reported differently from study to study.<sup>14</sup> Evidence indicates that satisfaction with care boosts women's sense of self-esteem heightens their experience of future positive childbirth experiences and promotes breastfeeding and bonding with their children.<sup>14,15</sup>

Despite the implementation of compassionate, respectful, and caring health services by the Ethiopian Federal Ministry of Health, the level of maternal satisfaction with delivery services at public hospitals remains still poorly addressed. In Ethiopia, women do not have confidence in the quality of public hospitals for delivery services. The delivery services in Ethiopia still lack respectful and compassionate caring health services in practical in semi-urban and rural. This is a result of cultural barriers related to the issue of privacy during physical examination of the perineal area, some word expressions used by healthcare providers, and ways of acts from healthcare providers that have no sociocultural acceptance. In addition, almost all previous studies are either qualitative studies or measure satisfaction levels using a simple yes or no questionnaire in which predictors are not well addressed.<sup>7,16–18</sup> Therefore, this study tried to overcome this gap using a five-option Likert scale questionnaire through independent health facility-related and healthcare provider-related predictors. Therefore, this study aimed to assess the level of maternal satisfaction with delivery services provided at hospitals and health centers and factors affecting maternal

satisfaction in Arba Minch town governmental health facilities.

## Methods and materials

### Study area and period

The study was conducted in Arba Minch town, Gamo zone in South Ethiopia Regional state. Administratively, it is located in the Gamo zone of the south Ethiopia region at a distance of 454 km away to the south of Addis Ababa, the capital of Ethiopia. Based on data from the projected population by the town health office, the town population was estimated at 74,879 of which 39,208 were males and 35,671 were females. The town is administratively divided into four sub-cities that consist of 11 kebeles. Regarding the coverage of health facilities, it has one General Hospital, one primary Hospital two health centers, 12 private clinics, and 25 drug stores. There are also five health posts, and health extension workers are working in health posts. A facility-based cross-sectional study design was conducted from 1 April to 30 June 2022.

### Population

All selected mothers who delivered at governmental health facilities of Arba Minch town during data collection time were included. However, mothers aged below 18 years, and severely ill mothers who would not respond to the interview during the data collection period were excluded.

### Sample size determination

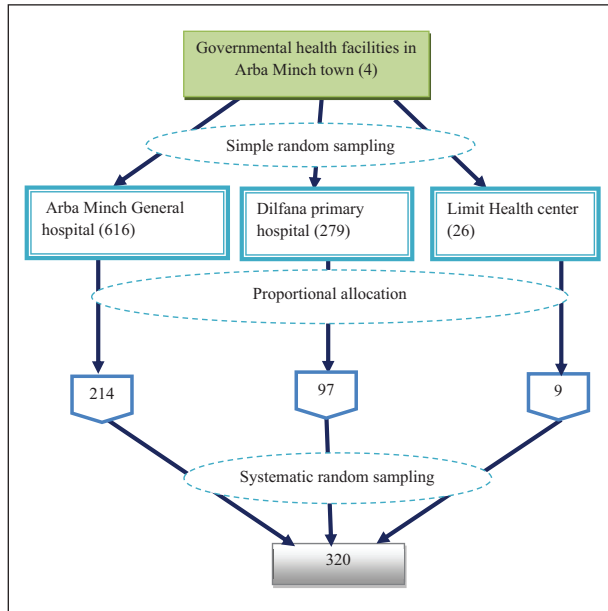
The sample size was determined using the single population proportion formula. The assumptions used to calculate the sample size was a population proportion of 0.746 which was taken from a previous study<sup>19</sup> with a 95% confidence level and a margin of error of 5% as follows.

$$n = \left(\frac{z\alpha}{2}\right)^2 \frac{p(1-p)}{d^2} = (1.96)^2 \frac{(0.746)(0.254)}{(0.05)^2} = 291$$

By considering the 10% non-response rate, the total sample size was 320.

### Sampling technique and procedures

From the four government health facilities in the town, three health facilities were included in the study using a simple random sampling technique. Then, the 3-month (January, February, and March 2022) delivery report of each health facility was determined and used for the sampling procedure. Next, the determined number was proportionally allocated according to the total sample size. Finally, the mothers for the interview in each health facility were selected using a



**Figure 1.** Schematic diagram showing sampling procedure of maternal satisfaction on delivery services and associated factors in Arba Minch town governmental health facilities, South Ethiopia, 2022.

systematic random sampling technique based on the calculated constant value which was  $921/320=3$ . The constant value was 3 and the data collectors interviewed every three intervals daily in each health facility, and the first interview mother was identified by lottery method (Figure 1).

## Study variables

### Dependent variables

Maternal satisfaction.

### Independent variables

*Sociodemographic factors:* Age, marital status, religion, educational status of mothers, residence, and occupational status of mothers.

*Obstetrics-related factors:* Parity, gestational age at delivery, antenatal care visit, anemia during pregnancy, pre-eclampsia during pregnancy, antepartum hemorrhage, gestational diabetes mellitus, oligohydramnios, the onset of labor, infection during pregnancy, mode of delivery, duration of labor, fetal presentation in labor, premature rupture of membrane, labor process, fetal distress, and intrauterine meconium release.

### Healthcare process and healthcare provider-related factors

Transportation, greeted by healthcare workers, measures taken to assure privacy during physical examinations and delivery,

time waited before seeing a healthcare provider, and the sex of the professional that attended delivery.

*Outcome-related factors:* Birth weight, maternal outcome, and fetal outcome.

## Operational definitions

*Maternal satisfaction:* State of mothers' expression with delivery care service. It was measured by computing the responses of 32 satisfaction assessing questions categorized into health facility-related (16 questions) and healthcare provider-related (16 questions). Each question was rated in a 5-point Likert scale response (i.e., 1 very dissatisfied, 2 dissatisfied, 3 neutral, 4 satisfied, and 5 very satisfied). Then, it was dichotomized as *satisfied* (if scored above the mean) and *not satisfied* (if scored below the mean).<sup>2,19,20</sup>

## Data tool and data collection procedures

A structured tool was prepared in English from related works of literature<sup>2,19-23</sup> and questionnaires and data were collected through face-to-face interviews of mothers a few hours before discharge from the ward. The data were collected by three graduated Bachelor's degree midwives and supervised by a public health officer.

## Data quality assurance

The tool was prepared in English; translated to Amharic before data collection, and back to English after data collection to ensure consistency. The translation from English to Amharic was done online, but some medical, obstetric, and gynecological terms were checked. Data collectors and supervisors were trained for 1 day on the objectives of the study, how to select study participants, how to keep the confidentiality of information, the contents of the questionnaire, how to interview and fill on data collection format, and data quality management by the investigator. A pre-test was done on 5% of the total sample size at Geresse Primary Hospital and any modification was performed based on the pre-test paper. The Cronbach's alpha test was done and it was 0.852. The supervisor conducted every other day follow-up during the whole period of data collection. Every day, after data collection, each questionnaire was reviewed and checked for completeness by the investigator. The necessary feedback was given to the data collectors the next day.

## Data processing and analysis

Data were entered into Epi Data version 3.1 and then exported to the SPSS version 25 statistical package for analysis. Data cleaning was performed to check for missed values and then descriptive analysis such as proportions and percentages and tables and graphs were used for presentation. Multicollinearity was checked considering a variance inflation factor greater than 10 and tolerance less than 0.05. Goodness fit test was done

**Table 1.** Sociodemographic characteristics of mothers delivered at Arba Minch town governmental health facilities, South Ethiopia 2022.

Variables ( <i>n</i> = 320)	Category	Frequency	Percent
Age of mothers	19–24 years	73	22.8
	25–29 years	121	37.8
	30–34 years	91	28.4
	35–41 years	35	10.9
Marital status	Married	286	89.4
	Single	20	6.3
	Widowed	12	3.8
	Divorce	2	0.6
Religion	Muslim	41	12.8
	Orthodox	76	23.8
	Protestant	160	50.0
	Catholic	30	9.4
	Others (traditional, Adventist)	13	4.1
Educational status of mothers	No formal education	118	36.9
	Primary education	57	17.8
	Secondary education	73	22.8
	Above secondary	72	22.5
Residence	Urban	190	59.4
	Rural	130	40.6
Occupational status of mothers	Housewife	154	48.1
	Private employee	18	5.6
	Government employee	59	18.4
	Merchant	34	10.6
	Student	55	17.2

using the Hosmer–Lemeshow model goodness fit test. To test the association between the independent and the outcome variable, logistic regression analysis was done. A crude odds ratio (COR) along with a 95% confidence interval (CI) was used to present the results of the bivariable analysis. All variables with association in bivariable analysis at  $p$ -value  $\leq 0.25$  were entered into a multivariable logistic regression model to assess the adjusted association between dependent and independent variables. The adjusted odds ratio (AOR) along with a 95% CI and  $p$ -value  $< 0.05$  was used to determine the strength of the association and to declare statistical significance in the final model.

## Results

### Sociodemographic characteristics

In all, 332 mothers responded which made the overall response rate 100%. Of these mothers, 121 (37.8%) were in the age group of 25–29 years and 286 (89.4%) were married. Half (160; 50.0%) of them were followers of the protestant religion, 118 (36.9%) did not attend formal education, and the occupation of 154 (48.1%) respondents was housewife (Table 1).

### Obstetric history of the respondents

Of the total mothers, 186 (58.1%) were multipara, and the gestational age at delivery for 252 (78.8%) mothers was term. More than half (229; 71.6%) of the mothers visited ANC and

122 (38.1%) had anemia during pregnancy. More than half (254; 79.4%) of the mothers had no pre-eclampsia during pregnancy and similarly, 229 (71.6%) had no antepartum hemorrhage. The onset of labor for 281 (87.8%) mothers was spontaneous and the mode of delivery for 236 (73.8%) mothers was spontaneous vaginal. The duration of labor for more than half (223; 69.7%) of the mothers was greater than or equal to 12 h and 244 (76.3%) had no premature rupture of membrane. The majority of the mothers (266; 83.1%) had normal labor processes, and fetal distress was not faced in 196 (61.3%) of the mothers (Table 2).

### Healthcare process and healthcare provider-related factors of mothers

Out of 320 mothers, 244 (76.3%) used government ambulances to reach the facility, and the majority (263; 82.2%) of them were greeted by healthcare providers. Measures taken to assure privacy during physical examinations and delivery were taken for only 99 (30.9%) mothers, the time waited before being seen by the healthcare provider for about 289 (90.3%) mothers was less than 15 min. More than half (178; 55.6%) of the mothers were attended by female sex healthcare professionals for delivery (Table 3).

### Outcome-related factors of mothers

The sex of 190 (59.4%) neonates was female and the weight of 225 (70.3%) neonates was within 2.5–4.0 kg.

**Table 2.** Obstetric history of mothers delivered at Arba Minch town governmental health facilities, South Ethiopia 2022.

Variables (n = 320)	Category	Frequency	Percent
Parity (number of births)	Primipara	134	41.9
	Multipara	186	58.1
Gestational age at delivery	Preterm	50	15.6
	Term	252	78.8
	Post-term	18	5.6
Antenatal care visit	Yes	229	71.6
	No	91	28.4
Anemia during pregnancy	Yes	122	38.1
	No	198	61.9
Pre-eclampsia during pregnancy	Yes	66	20.6
	No	254	79.4
Antepartum hemorrhage	Yes	91	28.4
	No	229	71.6
Gestational diabetes mellitus	Yes	40	12.5
	No	280	87.5
Oligohydramnios	Yes	32	10.0
	No	288	90.0
Onset of labor	Induction	39	12.2
	Spontaneous	281	87.8
Infection during pregnancy	Yes	38	11.9
	No	282	88.1
Mode of delivery	Spontaneous vaginal	236	73.8
	Cesarean section	75	23.4
	Instrumental	9	2.8
Duration of labor	< 12 h	97	30.3
	≥ 12 h	223	69.7
Fetal presentation in labor	Vertex	305	95.3
	Non-vertex	15	4.7
Premature rupture of membrane	Yes	76	23.8
	No	244	76.3
Labor process	Obstructed	54	16.9
	Normal	266	83.1
Fetal distress	Yes	124	38.8
	No	196	61.3
Intrauterine meconium release	Yes	97	30.3
	No	223	69.7

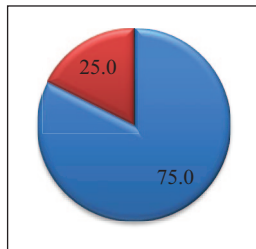
**Table 3.** Healthcare process and healthcare provider-related factors of mothers delivered at Arba Minch town governmental health facilities, South Ethiopia 2022.

Variables (n = 320)	Category	Frequency	Percent
Transportation used to reach the health facility for current delivery	On foot	26	8.1
	Public transport	35	10.9
	Private vehicle	15	4.7
	Ambulance	244	76.3
Greeted by a healthcare worker	Yes	263	82.2
	No	57	17.8
Measures taken to assure privacy during physical examinations and delivery	Yes	99	30.9
	No	221	69.1
Time waited before seeing a healthcare provider	≤ 15 min	289	90.3
	15–30 min	31	9.7
The sex of the professional who attended the delivery	Male	142	44.4
	Female	178	55.6



**Table 4.** Outcome-related factors of mothers delivered at Arba Minch town governmental health facilities, South Ethiopia 2022.

Variables (n = 320)	Category	Frequency	Percent
Sex of the neonate	Male	130	40.6
	Female	190	59.4
Birth weight	<2.49 kg	58	18.1
	2.5–4 kg	225	70.3
	>4 kg	37	11.6
Maternal outcome	Safe	304	95.0
	With complication	16	5.0
Fetal outcome	Live birth	316	98.8
	Stillbirth	2	0.6
	Neonatal death	2	0.6

**Figure 2.** Maternal satisfaction on delivery service of mothers delivered at Arba Minch town governmental health facilities, South Ethiopia 2022.

The maternal outcome of most mothers (304; 95.0%) was normal. The fetal outcome of most fetuses (304; 98.8%) was live birth (Table 4).

### Maternal satisfaction with delivery services

Regarding maternal satisfaction with the delivery service, 240 (75.0%) of mothers were satisfied, whereas 80 (25.0%) of mothers were not satisfied with the delivery service (Figure 2).

### Factors associated with maternal satisfaction with delivery services

In bivariable logistic regression analysis, residence, parity, ANC follow-up, anemia during pregnancy, antepartum hemorrhage, the onset of labor, duration of labor, premature rupture of membrane, sex of the newborn, fetal distress during labor, intrauterine meconium release, and privacy measures during examination were associated with maternal satisfaction on delivery services (Table 5).

Whereas in multivariable logistic regression analysis, residence (AOR: 4.15, 95% CI: 1.87–9.19), anemia during pregnancy (AOR: 2.38, 95% CI: 1.07–5.29), antepartum hemorrhage (AOR: 2.96, 95% CI: 1.35–6.50), the onset of labor (AOR: 0.08, 95% CI: 0.02–0.39), sex of the newborn (AOR: 0.33, 95% CI: 0.15–0.72), fetal distress during labor

(AOR: 5.01, 95% CI: 1.69–14.86), intrauterine meconium release (AOR: 2.77, 95% CI: 1.02–7.63), and privacy measures during examination (AOR: 3.11, 95% CI: 1.37–7.04) were associated with maternal satisfaction on delivery services (Table 5).

### Discussion

In this study, the satisfaction of mothers with delivery service was 75.00% (95% CI: 70.3%–79.4%). It was in line with the studies conducted in Felege Hiwot hospital in Amhara regional state (74.9%)<sup>21</sup> and Somalia region (76.6%).<sup>24</sup> However, it was lower than a study done in public health centers of Addis Ababa 89.7%,<sup>20</sup> a study conducted in the Wolaita zone in selected public health facilities (82.9%)<sup>22</sup> and Hawassa public health hospitals (87.7%).<sup>25</sup> By contrast, this finding was higher than the studies conducted in Nairobi (56%)<sup>26</sup> and St Paulo's hospital in Addis Ababa city (19%).<sup>27</sup> These differences might be due to the recently increased number of better functional structures and decreased workloads of health providers with better care for delivering mothers. In addition, it might be due to some actions taken by the Ministry of Health such as an increased number of midwives at public health facilities and an increase in government concern for maternal health services resulted in a higher percentage of mother's satisfaction in this study.

In this study, the residence of the mothers was significantly associated with maternal satisfaction with delivery service. Mothers whose residences were urban were 4.15 times more satisfied with delivery service than those mothers whose residences were rural. It was similarly stated in other studies and reports that indicated that sociodemographic factors have a potential effect on maternal satisfaction.<sup>18,28–30</sup> This might be because the urban mothers were near to the health information and communication and they were open to discussion with the physicians and were not afraid or ashamed of privacy or procedure-related issues as they waited for their baby regardless of the route of delivery. In contrast, the rural mothers were mostly not educated and they were ashamed of their privacy and procedural-related

**Table 5.** Bivariable and multivariable analyses of maternal satisfaction on delivery service among mothers delivered at Arba Minch town governmental health facilities, South Ethiopia 2022.

Variables (n = 320)	Category	Maternal satisfaction		COR (95% CI)	AOR (95% CI)	p-Value
		Not satisfied	Satisfied			
Residence	Urban	63 (19.7)	127 (39.7)	3.29 (1.82–5.96)	4.15 (1.87–9.19)	0.000*
	Rural	17 (5.3)	113 (35.3)			
Parity	Primipara	45 (14.1)	89 (27.8)	2.18 (1.31–3.65)	1.39 (0.66–2.95)	0.388
	Multipara	35 (10.9)	151 (47.2)			
ANC follow up	Yes	67 (20.9)	162 (50.6)	2.48 (1.29–4.77)	1.52 (0.59–3.92)	0.387
	No	13 (4.1)	78 (24.4)			
Anemia during pregnancy	Yes	45 (14.1)	77 (24.1)			0.034*
	No	35 (10.9)	163 (50.9)	2.72 (1.62–4.57)	2.38 (1.07–5.29)	
Antepartum hemorrhage	Yes	44 (13.8)	47 (14.7)			0.007*
	No	36 (11.3)	193 (60.3)	5.02 (2.91–8.65)	2.96 (1.35–6.50)	
Onset of labor	Induction	2 (0.6)	37 (11.6)	0.14 (0.03–0.59)	0.08 (0.02–0.39)	0.002*
	Spontaneous	78 (24.4)	203 (63.4)			
Duration of labor	< 12h	43 (13.4)	54 (16.9)	4.00 (2.35–6.83)	1.72 (0.69–4.26)	0.240
	≥ 12h	37 (11.6)	186 (58.1)			
Premature rupture of membrane	Yes	43 (13.4)	33 (10.3)			0.305
	No	37 (11.3)	207 (64.7)	7.29 (4.11–12.93)	1.67 (0.63–4.48)	
Sex of the newborn	Male	23 (7.2)	107 (33.4)			0.005*
	Female	57 (17.8)	133 (41.6)	0.50 (0.29–0.87)	0.33 (0.15–0.72)	
Fetal distress during labor	Yes	63 (19.7)	61 (19.1)			0.004*
	No	17 (5.3)	179 (55.9)	10.87 (5.91–20.00)	5.01 (1.69–14.86)	
Intrauterine meconium release	Yes	55 (17.2)	42 (13.1)			0.049*
	No	25 (7.8)	198 (61.9)	10.37 (5.82–18.49)	2.77 (1.02–7.63)	
Privacy measures during the examination	Yes	40 (12.5)	59 (18.4)	3.07 (1.81–5.20)	3.11 (1.37–7.04)	0.006*
	No	40 (12.5)	181 (56.6)			

I = reference group.

\*Statistically significant at a p-value less than 0.05 in multivariable analysis.

issues.<sup>30</sup> However, the residence was not significantly stated in some other studies.<sup>2,5,7,22,31</sup> This might be due to incensement in educational coverage, assessing health facilities and health care for rural populations, and the dissemination of urbanization to rural settings from time to time.

This study showed that anemia during pregnancy was significantly associated with maternal satisfaction with delivery service. Mothers who did not have anemia during pregnancy were 2.38 times more satisfied with delivery service than those mothers who had anemia during pregnancy. This might be due to the perception and realization that the previous conditions occurred during pregnancy time, which may decrease the satisfaction level of mothers with delivery services. This significant association of anemia during pregnancy with maternal satisfaction with delivery service was not revealed as significant in other studies.<sup>7,14,31–33</sup>

Antepartum hemorrhage was found to be a statistically significant factor for maternal satisfaction with delivery service. Mothers who did not have antepartum hemorrhage were 2.96 times more satisfied with delivery service than those mothers who had antepartum hemorrhage. It was stated in another study that complication in pregnancy decreases the satisfaction level of mothers.<sup>30</sup> This might be related to

the perception and realization of the previous conditions that occurred during pregnancy time, which may decrease the satisfaction level of mothers with delivery services.

In this study, the onset of labor was one of the factors associated significantly with maternal satisfaction with delivery service. Mothers whose onset of labor was induced were 92% times less satisfied with delivery service than those mothers whose onset of labor was spontaneous. This was similarly described in other studies.<sup>24,34,35</sup> that indicated the onset of labor affects maternal satisfaction in the overall labor process. This might be due to extra prediction and perception of labor that might add tension for mothers.

In this study, the sex of the newborn revealed a significant association with maternal satisfaction with delivery service. Mothers whose newborns were female were 67% times less satisfied with delivery service than those mothers whose newborns were male. The possible justification for this was that having male newborns gained wide acceptance in the community. So, this association might be due to the socio-cultural perception acceptance of the community that gives a big place for males. This finding is novel to other studies conducted in various parts of the world, as it was not stated as a significant independent factor.<sup>13,14,24,33</sup>

Fetal distress during labor was significantly associated with maternal satisfaction with delivery service. Mothers who did not face fetal distress during labor were 5.01 times more satisfied with delivery service than those mothers who faced fetal distress during labor. This was consistent with other studies.<sup>7,22,23,34,36,37</sup> This might be because of repeated obstetric procedures like vaginal examinations, having information on the fetal status, and expected management options.

In this study, intrauterine meconium release was significantly associated with maternal satisfaction with delivery service. Mothers whose labor was complicated by intrauterine meconium release were 2.77 times more satisfied with delivery service than those mothers whose labor was not complicated by intrauterine meconium release. This was supported by other studies.<sup>6,36–38</sup> This might be due to repeated obstetric procedures like vaginal examinations, having information on the fetal status, and expected management options.<sup>14</sup>

This study indicated that privacy measures during the examination were significantly associated with maternal satisfaction with delivery service. Mothers whose privacy measures during the examination were taken were 3.11 times more satisfied with delivery service than those mothers whose privacy measures during the examination were not taken. This was similar to studies conducted in Harer,<sup>14</sup> Assela,<sup>32</sup> Addis Ababa,<sup>33</sup> and Mekelle.<sup>31</sup> This may be due to having a chance to communicate with the healthcare providers regarding the need for labor pain analgesia and receive better reassurance and counseling.<sup>14,34</sup> In addition, mothers need great privacy and respect in a sociocultural context during any examination.

However, some variables did not show significance in this study that were associated in other studies. For instance, duration of labor, waiting time, health condition of the fetus, mode of delivery,<sup>7,14,39</sup> educational status, occupational status,<sup>33,39</sup> and age<sup>39</sup> were significant in other studies but not in this study. This might be due to variations in the study year, sociocultural differences, sociodemographic differences, variations in the way category of variables, and the countries' strategies in creating awareness for institutional delivery from time to time.

## Limitations of the study

The cross-sectional nature of the study that does not allow for establishing a causal relationship between the different independent variables and the outcome variable could be the potential limitation. In addition, the study might be prone to potential response and social desirability bias as delivery and labor are culturally secret and sensitive issues.

## Conclusion

About eight mothers in ten are satisfied with the delivery service. Residence, anemia during pregnancy, antepartum hemorrhage, the onset of labor, sex of the newborn,

fetal distress during labor, intrauterine meconium release, and privacy measures during examination are associated with maternal satisfaction with delivery services. Therefore, preventing anemia during pregnancy and antepartum hemorrhage, minimizing induction of labor, preventing fetal distress and intrauterine meconium release during labor, and taking privacy measures during examination might enhance maternal satisfaction with delivery services.

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## Authors' contribution

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or all areas; took part in drafting, revising, and critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agreed to be accountable for all aspects of the work.

## Availability of data

The data used for analysis are available on secure and reasonable request.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Ethical consideration

The research ethical review committee of Paramed College approved the proposal of this research (PC/AM/83/14). A support letter was sent from the Arba Minch Town health office to each selected health facility.

## Informed consent

Written informed consent was obtained from each participant before initiation of the study, as the information obtained from them would not have been disclosed to a third person and it was only for investigation purposes. The written consent from the illiterate participants was taken through a fingertip signature method after reading and explaining the necessary information.

## Trial registration

Not applicable.

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## Supplemental material

Supplemental material for this article is available online.

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