



# The Preferences of Modes of Child Delivery and Associated Factors Among Pregnant Women in Southern Ethiopia

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**Background:** The purpose of the study was to identify the choice of mode of delivery and the factors associated with such preferences among pregnant women attending antenatal care services in Southern Ethiopia.

**Methods:** Using an institutional-based cross-sectional survey, quantitative data were collected from randomly selected pregnant women in Southern Ethiopia. A semi-structured questionnaire was distributed to pregnant women who had been attending antenatal healthcare services in purposively selected public and private healthcare facilities in Shashemene town. The completed cases were inserted into SPSS version 26 in which both descriptive and inferential statistical techniques were used to analyze the data.

**Results:** It was found that 75.4% of respondents replied that they prefer vaginal delivery while 24.6% had chosen cesarean section. Personal conviction motivated by the need to experience the labor process, the belief in it being a natural method, the perception that it is better for the wellbeing of both the mother and the child, previous experience of delivery by vaginal method, fear or the need to avoid episiotomy, and economic concerns have been mentioned as reasons for the choice of vaginal delivery. Moreover, respondents' choice of the mode of delivery is significantly associated with religion, age, number of children, pregnancy experience, previous mode of delivery, self-rated social class status, autonomy to decide about mode of delivery, and type of healthcare organization of antenatal care attendance.

**Conclusion:** Although vaginal delivery has remained the most preferred mode of delivery among most pregnant women, about a quarter of pregnant women have reported that they prefer to deliver by cesarean section, a prevalence rate which is higher than the national average, indicating that the choice of cesarean section is still increasing among women.

**Keywords:** cesarean section, mode of delivery, preference, pregnant women, vaginal delivery

## Introduction

Cesarean birth is associated with short- and long-term risks that can extend many years beyond the current delivery and affect the health of the woman, the child, and future pregnancies, in addition to exposing families to incur substantial healthcare costs.<sup>1</sup> It may also cause serious health complications, disability, and even death, especially when it is undertaken in settings where the necessary medical facilities are lacking.<sup>2</sup> In addition, cesarean section is associated with significantly increased odds of maternal intensive care unit admission, maternal near miss, and neonatal intensive care unit admission.<sup>3</sup> According to Berhan and Haileamlak<sup>4</sup> the relative risk of perinatal mortality and morbidity was about 2–5-fold higher in planned vaginal than in planned cesarean delivery. Furthermore, Adane et al<sup>5</sup> found a high prevalence of surgical site infection among women who had undergone cesarean section in Ethiopia. Above all, Regan et al<sup>6</sup> found that patients who undergo repeated cesarean section delivery are less likely to initiate breastfeeding compared to women who delivered by vagina and those that delivered by cesarean section after an unsuccessful trial of labor.

On the other hand, the underuse or inability of using cesarean section may also contribute to maternal and perinatal mortality and morbidity and may lead to postpartum hemorrhaging, reduced fertility and placental complications in

subsequent pregnancies for mothers.<sup>7,8</sup> In addition, failure to use cesarean section when it is necessary would make women to lose the opportunity of reduced risk of urinary incontinence, which is a common postpartum problem.<sup>9</sup> Accordingly, it is suggested that cesarean section must be undertaken only when it is medically necessary and normal delivery is impossible or when a vaginal delivery would put the baby's or mother's life or health in danger, as stipulated by Tenaw et al.<sup>10</sup> Consequently, Sayiner et al<sup>11</sup> recommend encouraging members of the society to give birth by vaginal delivery with the aim of decreasing the cesarean section delivery rate, which is an important intervention due to its implications both on women's health and the economy at large. And no doubt that such interventions should be backed by the findings of empirical research about whether pregnant women in a particular socio-cultural and economic context prefer normal or cesarean modes of delivery, including the factors determining such choices.

Roudsari et al<sup>12</sup> contended that social, religious, and cultural beliefs significantly affect individuals' attitudes towards modes of delivery, their definitions of these modes, and the choices they make. In addition, the study of Shi et al<sup>8</sup> has shown that abnormalities in prenatal examinations, lack of confidence in vaginal birth, fear of pain during vaginal birth, and the desire to select time of birth and health birth systems influence the choice of cesarean section. Above all, old age, urban residential background, being from the richest social class, higher educational status, employment on a better occupational status, higher utilization of antenatal care, delivering babies at private hospitals, having pregnancy complications, being overweight and obese, antenatal care by doctors, twin delivery, having babies of high weight, the lack of companionship, the hospital's private financing for performing delivery, being a first-time pregnant woman, history of abortus in the previous delivery, the number of living children, the fear of normal birth, doctor's demand, and thinking cesarean section as healthier were found to be the factors positively associated with cesarean section.<sup>11,13–17</sup> In contrast, Wang et al<sup>18</sup> concluded that, compared with women in early pregnancy, women at the late stage of pregnancy were less likely to have an intended cesarean section delivery in China. Above all, Konlan et al<sup>19</sup> revealed a significant positive correlation between average monthly income, the number of times of having cesarean section, considering cesarean section as safe for mother and baby, the belief that it is a pain-free method of delivery, friends' advice, and religious advice have been the reasons for choosing cesarean section among women.

Though women, especially the urbanites, the higher class, the educated, and private care attendants, are increasingly choosing cesarean section, the literature suggests that this changing situation portrays only part of the reality as far decisions as about the mode of delivery are concerned. Accordingly, there are studies which reveal that women still prefer a normal mode of delivery due to various reasons. For instance, Liu et al<sup>20</sup> found that most Argentinean women preferred vaginal delivery due to cultural, personal, and social factors. Most importantly, they indicated that women in their study positively viewed pain associated with vaginal delivery, and cesarean section was treated as a medical decision in which some women have deviated from the decisions of medical staff even in the presence of medical conditions. According to the findings of Kasai et al,<sup>21</sup> most women in Brazil expressed a preference for vaginal birth, in the belief that vaginal delivery involves less suffering, better recovery, less risk, is quicker and, hence, allows earlier discharge from healthcare facilities, and is better for the wellbeing of both the mother and her babies. Furthermore, women who believed normal birth to be healthier, it's being spontaneous in hospital, wish to get better soon, and having low economic status preferred normal delivery, according to the findings of Sayiner et al.<sup>11</sup> It is therefore persuasive to argue that there are changes across space, over time, and among groups of societies regarding women's decisions about the mode of delivery. These changes are unlikely, however, to explain the large increases and wide variations in cesarean section rates across countries.<sup>1</sup> This, therefore, would justify the importance of undertaking further studies to uncover cultural and social context related factors associated with women's increasing preference of cesarean section mode of child delivery.

Yaya et al<sup>22</sup> found greater disparities in the prevalence rate of cesarean section among women of different countries in Sub-Saharan Africa. Moreover, findings from the analysis of a series of data collected for Ethiopian demographic and health survey<sup>23</sup> revealed that the national prevalence rate of CS in Ethiopia is 2% and this prevalence rate significantly varies between geographical regions and among women of diverse socio-economic statuses. This calls for the need to undertake further studies to uncover the implication of socio-cultural variations in explaining differences in the rate of cesarean section and women's preferences on the mode of delivery. Above all, studies of the effects of cultural issues on women's decisions about delivery mode can contribute to the formulation of policies to confront problems associated

with cesarean section.<sup>12</sup> The purpose of the present research was therefore, to identify the preference of the mode of delivery among women attending antenatal care in Shashemene town, Southern Ethiopia.

## Methods

### Study Design

Using a quantitative research approach, an institutional-based cross-sectional study was undertaken in which data were collected from a sample of pregnant women attending antenatal care services in Southern Ethiopia. With both descriptive and explanatory study designs, we have assessed pregnant women's preference of the mode of delivery, including the factors associated with their choices.

### Methods and Procedures of Data Collection

Quantitative data were collected using a survey research method through distributing a structured questionnaire to a sample of pregnant women who have been attending antenatal healthcare services during the period of data collection. The questionnaire was developed first in English and later translated to the local language of the community where the data were collected. Then, it was given to two language editors who teach at Dilla University. Following that we have pilot tested the questionnaire taking 10% of the total sample size to ensure the validity of the instrument. Four nurses working in mother and child care departments of selected private and public healthcare facilities in Shashemene town were recruited. In addition, two enumerators trained in sociology were also employed for data collection. Then, training was given to both the nurses and the sociologists regarding the purpose and rationale of undertaking the research, the contents of the questionnaire, and ways of administering it.

A cooperation letter was secured from the concerned body of Senabor College and Dilla University. After determining the sampling procedure and sample size, the data collectors contacted the research participant in the respective healthcare facilities where they attend antenatal care services. In order to maintain the quality of data, selected pregnant women were briefly oriented about the research, their role in the process, the content and themes of the questionnaire, and how they are supposed to answer the questions. Moreover, the investigators of the research were closely attending the data collection activities and responding to the potential needs for clarification and related concerns.

### Instrument Design

Few items of the questionnaire used to collect data for this study were taken and adopted to the context of the present research from the studies of Alabdullah et al<sup>17</sup> and Welay et al,<sup>24</sup> both of which are published in the form of open access articles. Most items of the questionnaire, however, were prepared by the authors of the present study in the way they can address the research question set out at the beginning. The questionnaire mainly consisted of two sections: a section containing variables intended to measure the socio-demographic characteristics of respondents and a section which measures their preferences of mode of deliveries. Accordingly, the first section contained variables such as age, religion, residential background, educational status, marital status, self-rated social class status, number of children, pregnancy experience, previous mode of delivery, and medical diagnosis reports about the health situation of the fetus. The second section of the questionnaire consisted of questions mainly aimed at measuring respondents' choice of the mode of delivery and contained, among others, questions such as: 1) Have you ever been planning about your mode of delivery? 2) If yes, by which mode are you planning to deliver your baby? 3) If you are given the freedom to decide alone, which mode of delivery do you prefer? 4) Have you ever heard about cesarean section? 5) Do you have a close friend or family member who has delivered by CS? 6) Do you have full freedom to decide about your mode of delivery? 7) In your opinion, which method has less complications for the mother? 8) In your opinion, which method has less complications for the baby?

### Sample and Sampling Procedure

A cluster sampling technique was used to draw the sample of pregnant women attending antenatal care services in the study area. First, the healthcare facilities found in Shashemene town were clustered according to their location in the ten

*kebeles* (the smallest administrative unit in Ethiopia) of the town. Then, six healthcare facilities (three public and three private) were purposively selected based on their location in the different parts of the town. Accordingly, three health centers that are adjacent to rural provinces and another two health centers and one general hospital located within the town were considered. In order to determine the sample size, the researchers applied Cochran's (1977) formula for calculating sample size of unknown population as follows:

$$n = \frac{z^2 \times p(1 - p)}{e^2}; = 1.96^2 \times 0.5(1 - 0.5)/0.05^2 = 384 \quad (1)$$

where  $n$  is the sample size,  $z$  is the selected critical value of desired confidence level, and  $p$  is the estimated proportion of an attribute that is present in the population.

Then, the final sample units were chosen on the basis of probability proportionate to size sampling technique. With a 5% contingency and consideration of possible non-response rate, 403 (384+19) copies of the questionnaires were duplicated and distributed. From the distributed questionnaires, 402 were returned, from which 398 were found to be correctly completed.

## Data Analysis and Presentation

From the collected questionnaires, the ones that were fully completed and correctly filled were first sorted and, hence, data clearing was undertaken. Then, the completed questionnaires were inserted into SPSS software version 26 for further processing. Data analysis was conducted using statistical techniques, including percentages, frequency distributions, charts, and binary logistic regression analysis. The first three statistical techniques were mainly used to present data regarding the frequency and percentage distributions of responses. It was, for instance, used to show the distribution of socio-demographic characteristics of respondents, pregnant women's preferences of the mode of delivery, and their reasons for choosing any of the delivery methods, among others. The binary logistic regression test was used to examine the association between socio-demographic characteristics of respondents and their choice of mode of delivery.

## Results

According to the data presented in Table 1, respondents in the age group of 26–33 have constituted the majority (50.3%) of the research participants, while those <18 years of age composed 5% of the total respondents. Moreover, 33.4% of respondents reported to have completed secondary school education, followed by 27.1% with college diploma, and 18.8% having a primary level of education. The marital status of the survey participants revealed that most (86.4%) of them were married during the period of data collection and 1.3% were widowed. Furthermore, 45.7% of respondents were Muslims, followed by followers of orthodox Christianity (22.1%). In addition, most (87.7%) respondents were reported to have an urban residential background and the same percentage (87.7%) of survey participants rated their social class status as medium (neither poor nor rich).

**Table 1** Socio-Demographic Characteristics of Respondents

Variables	Categories	Frequency (%)
Age	<18	20 (5%)
	18–25	122 (30.7%)
	26–33	200 (50.3%)
	34 and above	56 (14.1%)
Educational status	Never attended school	23 (5.8%)
	Primary school (1–8)	75 (18.8%)
	Secondary school (9–12)	133 (33.4%)
	College diploma (10+3)	108 (27.1%)
	BA/BSc degree	54 (13.6%)
	MA/MSc & above	5 (1.3%)

(Continued)

**Table 1** (Continued).

Variables	Categories	Frequency (%)
Marital status	Never married	36 (9%)
	Currently married	344 (86.4%)
	Divorced	13 (3.3%)
	Widowed	5 (1.3%)
Religion	Orthodox Christian	88 (22.1%)
	Muslim	182 (45.7%)
	Protestant	76 (19.1%)
	Catholic	41 (10.3%)
	Adventist	8 (2%)
	Jehovah	1 (0.3%)
	Wakefeta	2 (0.5%)
	Residential background (grown-up area)	Urban
	Rural	49 (12.3%)
Self-rated class status	Poor	23 (5.8%)
	Medium (neither poor nor rich)	349 (87.7%)
	Rich	26 (6.5%)
Number of children	0 (have no child)	62 (15.6%)
	1	87 (21.9%)
	2	151 (37.9%)
	3	65 (16.3%)
	4	22 (5.5%)
	5 and above	11 (2.8%)
Pregnancy experience	First time	62 (15.6%)
	Second time	89 (22.4%)
	Third and more times	247 (62.1%)
Previous mode of delivery	No previous experience of delivery	61 (15.3%)
	Vaginal	291 (73.1%)
	Cesarean section	46 (11.6%)
Medical diagnosis reports about the current health condition of the fetus	Normal/healthy	348 (87.4%)
	Health complication reported	22 (5.5%)
	Have not been diagnosed	28 (7%)
Type of healthcare organization for antenatal care (ANC) attendance	Public	160 (40.2%)
	Private	238 (59.8%)
Total		398 (100%)

It is also shown that the majority (62.1%) of respondents disclosed that they have experienced pregnancy for three and more rounds during the period of data collection, while it was reportedly a first time experience for 15.6% of respondents. Related to this, 37.9% of research participants reported to have two children, followed by those having one child (21.9%), whereas 15.6% of them had no child during the period of the study. Most importantly, findings regarding the previous experience of mode of delivery revealed that most of the respondents (73.1%) had a vaginal mode of delivery while 11.6% reported to have a cesarean section delivery. Above all, 87.4% of respondents disclosed that the medical diagnosis reports about the current health condition of the fetus indicated a healthy or normal status, while 5.5% disclosed health complications were reported.

## The Choice of Mode of Delivery

As shown in Table 2, most (69.1%) of respondents have ever been planning about their mode of delivery and 52% of the survey participants disclosed that they intend to deliver through the vagina, while 16.8% of them answered that they were planning to deliver by cesarean section. Furthermore, respondents were asked their preference regarding the mode of delivery under an ideal circumstance that they are fully free to decide on their own. Accordingly, 75.4% of them replied vaginal delivery while 24.6%

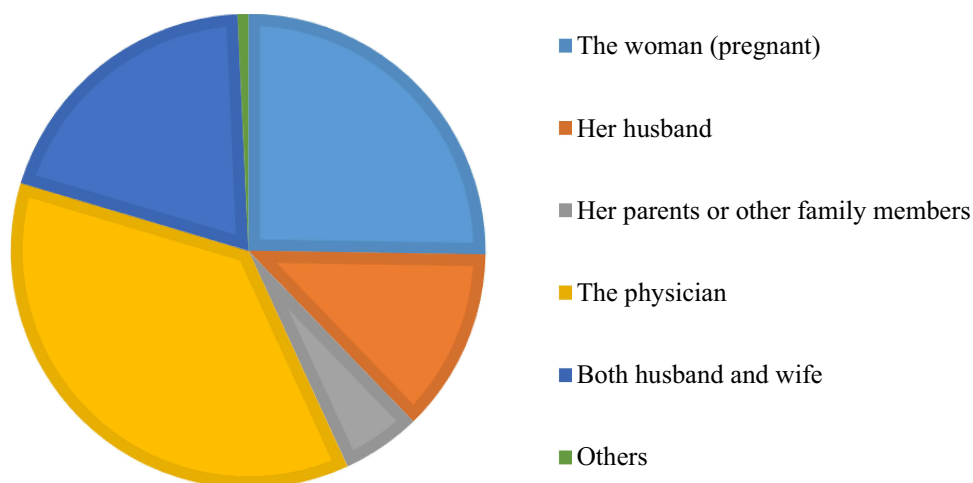
**Table 2** Frequency Distribution of Respondents Regarding Their Choice of the Mode of Delivery

Variables	Categories	Frequency (%)
Ever been planning about mode of delivery	Yes	275 (69.1%)
	No	123 (30.9%)
Intention/plan of the mode of delivery	Vaginal/normal	207 (52%)
	Cesarean section	67 (16.8%)
	Missing	124 (31.2%)
	Normal/vaginal	300 (75.4%)
Preference of mode of delivery under circumstances of having a full freedom to decide alone	Cesarean section	98 (24.6%)
	Yes	360 (90.5%)
Ever heard about cesarean section	No	38 (9.5%)
	Yes	214 (53.8%)
Presence of a close friend or family member who has delivered by cesarean section	No	184 (46.2%)
	Yes	243 (61.1%)
Whether respondents have the freedom to decide about their mode of delivery	No	155 (38.9%)
	Vaginal	294 (73.9%)
Perceptions regarding the mode of delivery having less health complications for the mother	Cesarean section	104 (26.1%)
	Vaginal	195 (49%)
Perceptions regarding the mode of delivery having less health complications for the baby	Cesarean section	203 (51%)
	Total	398 (100%)

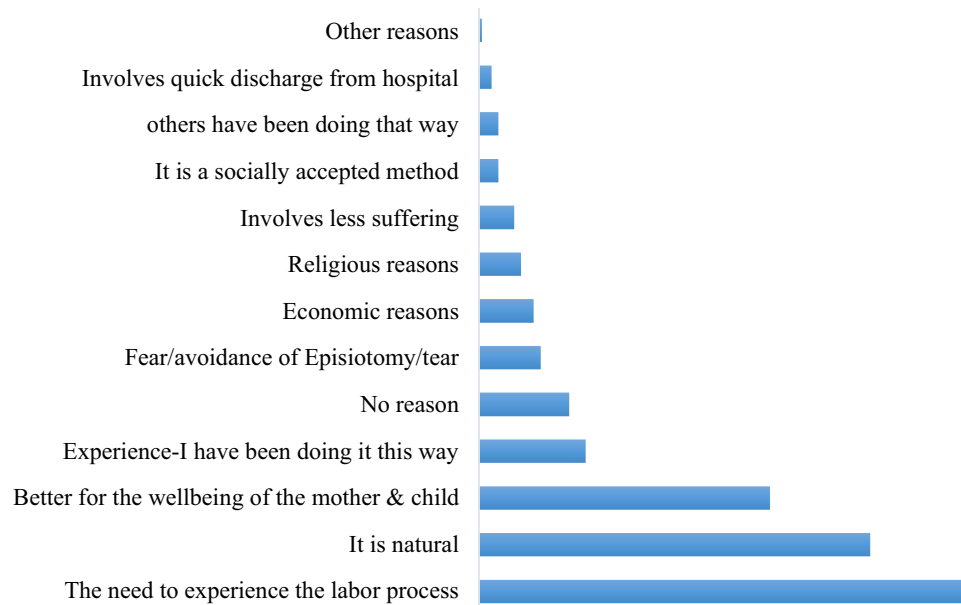
chose cesarean section. Data regarding respondents' previous exposure to the information regarding cesarean section revealed that the majority (90.5%) of the study participants were disclosed to have ever heard about cesarean section.

In addition, 53.8% of respondents reported to have a close friend or a family member who has delivered through cesarean section. Moreover, the finding pertaining to pregnant women's freedom of deciding about the mode of delivery have shown that 61.1% of respondents disclosed that they have a freedom to decide whether they have to deliver through normal or cesarean section. Above all, most (73.9%) survey participants perceived that vaginal mode of delivery has less complication on the health of the mother while 51% of respondents held the opinion that cesarean section has less complications on the health of the baby.

The findings in Figure 1 have shown that the majority (36%) of the respondents reported that physicians have the right to decide about the mode of delivery in the community of the research participants, followed by the pregnant women (25%), and both husband and wife (20%).

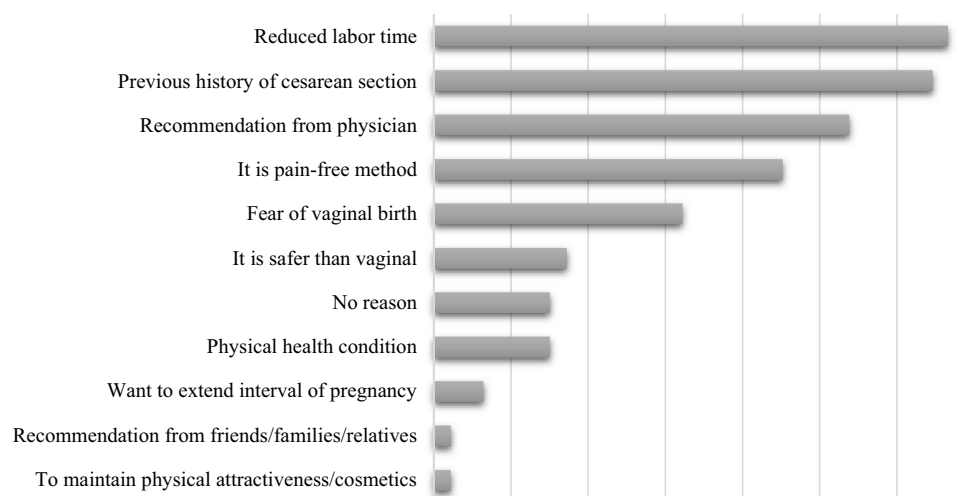
**Figure 1** In your community, who has the right to decide about the mode of delivery?

Data regarding respondents' reasons for preferring vaginal mode of delivery, as presented in Figure 2, reveal that personal conviction motivated by the need to experience the labor process (50.5%), the belief in it being a natural method (39.9%), the perception that it is better for the wellbeing of both the mother and the child (29.7%), previous experience of delivery by vaginal method (10.9%), fear or the need to avoid episiotomy (6.3%), and economic reasons (5.6%) were the most commonly reported reasons.



**Figure 2** Reasons of preferring vaginal/normal delivery.

On the other hand, data pertaining to respondents' reasons for choosing cesarean section delivery reveal that reduced labor time (33.3%), previous history of cesarean section (32.3%), recommendation from a physician (26.9%), the fact that it is a pain free method (22.6%), fear of pain in vaginal birth (16.1%), the belief that it is safer than vaginal mode of delivery (8.6%), and physical health conditions (7.5%) were the common reasons, as shown in Figure 3.



**Figure 3** Reasons for choosing cesarean section delivery.

According to the data presented in Table 3, most (50.3%) respondents disclosed that the first thing that comes to their mind whenever thinking about cesarean section is episiotomy, followed by the financial cost involved in the process (26.1%), its negative implication on subsequent births (24.4%), less pain (19.3%), and it's being unnatural (17.8%). In addition, it was also found that 41% of respondents responded that they would prefer cesarean section only if recommended by a physician, followed by 34.7% who replied that they will never choose cesarean section unless dictated by conditions that are beyond their capacity, only if normal delivery is risky for the life of both myself and the baby (21.5%), only if normal delivery is risky for the life of both myself and the baby (13.2%), and 11.4% of respondents who replied that they will choose cesarean section even without precondition. Furthermore, 71.7% of respondents perceive that cesarean section is more appropriate for any pregnant women having certain health problems, followed by 30.8% of respondents who believe that it is more appropriate for any woman not interested to deliver by vaginal method, a women with better financial status (6.1%), and all women (5.8%).

**Table 3** Perceptions Regarding Cesarean Section Delivery

		Responses		Percent of Cases
		N	Percent	
What comes to your mind whenever you think about cesarean section?	Its financial cost	104	16.9%	26.1%
	It's easiness	26	4.2%	6.5%
	Episiotomy/tear	200	32.6%	50.3%
	It's risky nature for the mother and the baby	18	2.9%	4.5%
	Less pain	77	12.5%	19.3%
	It's being unnatural	71	11.6%	17.8%
	It's implication on subsequent births	97	15.8%	24.4%
	Social disapproval	6	1.0%	1.5%
	Something that a modern woman does	10	1.6%	2.5%
	Others	5	0.8%	1.3%
	Total	614	100.0%	154.3%
If you have the chance to decide, under which of the following conditions do you prefer cesarean section?	I will never choose CS unless dictated	137	25.7%	34.7%
	I will choose CS without precondition	45	8.4%	11.4%
	Only if normal delivery is found to be risky for my child	38	7.1%	9.6%
	Only if normal delivery is found to be risky for myself	52	9.8%	13.2%
	Only if normal delivery is risky for the life of both myself and the baby	85	15.9%	21.5%
	If it can be accessed with little or no financial cost	8	1.5%	2.0%
	Only if recommended by physician	162	30.4%	41.0%
	Only if compelled by family or close relatives	2	0.4%	0.5%
	Other conditions	4	0.8%	1.0%
	Total	533	100.0%	134.9%
	For what kind of woman do you think is cesarean section more appropriate?	For a modern stylish woman	18	3.7%
For the better educated		5	1.0%	1.3%
Any pregnant woman having health problems		284	58.0%	71.7%
Any woman not interested to deliver by vaginal method		122	24.9%	30.8%
A woman with better financial status		24	4.9%	6.1%
All women		23	4.7%	5.8%
No woman should prefer CS		12	2.4%	3.0%
Others		2	0.4%	0.5%
Total		490	100.0%	123.7%

**Abbreviation:** CS, cesarean section.

## Factors Associated with Women's Choice of Mode of Delivery

According to the data presented in Table 4, pregnant women's preference of the mode of delivery is significantly associated with religion ( $P<0.001$ ; OR=0.289; 95% CI=0.160–0.520), age ( $P<0.05$ ; OR=0.672; 95% CI=0.497–0.911), number of children ( $P<0.001$ ; OR=0.518; 95% CI=0.412–0.652), pregnancy experience ( $P<0.001$ ; OR=5.000; 95% CI=2.733–9.149),



**Table 4** Results of Binary Logistic Regression Analysis

Variables	Categories	If You are Given the Freedom to Decide by Yourself, Which Mode of Delivery Do You Prefer?			P-value	OR	95% C.I
		Vaginal	CS	Total			
Age	<18	10	10	20	0.010*	0.672	0.497–0.911
	18–25	91	31	122			
	26–33	151	49	200			
	34 and above	48	8	56			
Religion	Orthodox Christian	54	34	88	0.000***	0.289	0.160–0.520
	Muslim	154	28	182			
	Protestant	55	21	76			
	Catholic	30	11	41			
	Adventist	5	3	8			
	Jehovah	1	0	1			
	Wakefeta	1	1	2			
Residential background	Urban	261	88	349	0.392	1.582	0.554–4.517
	Rural	39	10	49			
Educational status	Never attended school	21	2	23	0.793	0.775	0.115–5.212
	Primary school (1–8)	63	12	75			
	Secondary school (9–12)	102	31	133			
	College diploma (10+3)	78	30	108			
	BA/BSc degree	35	19	54			
	MA/MSc & above	1	4	5			
Marital status	Never married	24	12	36	0.807	0.871	0.288–2.631
	Currently married	263	81	344			
	Divorced	10	3	13			
	Widowed	3	2	5			
Number of children	0 (have no child)	32	30	62	0.000***	0.518	0.412–0.652
	1	58	29	87			
	2	123	28	151			
	3	55	10	65			
	4	21	1	22			
	5 and above	11	0	11			

(Continued)

**Table 4** (Continued).

Variables	Categories	If You are Given the Freedom to Decide by Yourself, Which Mode of Delivery Do You Prefer?			P-value	OR	95% C.I
		Vaginal	CS	Total			
Pregnancy experience	First time	32	30	62	0.000***	5.000	2.733–9.149
	Second time	60	29	89			
	Third and more times	208	39	247			
Previous mode of delivery	No previous experience of delivery	31	30	61	0.000***	0.050	0.020–0.126
	Vaginal	258	33	291			
	Cesarean section	11	35	46			
Health condition of the fetus	Normal/healthy	259	89	348	0.621	1.386	0.380–5.046
	Health complication reported	16	6	22			
	Have not been diagnosed	25	3	28			
Self-rated class status	Poor	21	2	23	0.003**	12.250	2.370–63.316
	Medium (neither poor nor rich)	267	82	349			
	Rich	12	14	26			
Ever been planning about mode of delivery	Yes	205	70	275	0.009**	2.776	1.284–5.997
	No	95	28	123			
Have a close friend or family member who has delivered by CS	Yes	141	73	214	0.057	0.515	0.260–1.021
	No	159	25	184			
Type of healthcare organization of antenatal care attendance	Public	134	26	160	0.002**	2.237	1.334–3.752
	Private	166	72	238			
Perceptions regarding the mode of delivery having less health complications for the mother	Vaginal	233	61	294	0.033*	1.746	1.045–2.918
	Cesarean	67	37	104			
Perceptions regarding the mode of delivery having less health complications for the baby	Vaginal	161	34	195	0.004**	2.764	1.379–5.543
	Cesarean	139	64	203			
Autonomy to decide about your mode of delivery	Yes	181	62	243	0.008**	0.395	0.199–0.784
	No	119	36	155			
Ever heard about cesarean section	Yes	264	96	360	0.011*	0.153	0.036–0.647
	No	36	2	38			

Notes: \*\*\* $P < 0.001$ , \*\* $P < 0.01$ , \* $P < 0.05$ .

Abbreviations: OR, odds ratio; CI, confidence interval; CS, cesarean section.

previous mode of delivery ( $P<0.001$ ; OR=0.050; 95% CI=0.020–0.126), self-rated social class status ( $P<0.01$ ; OR=12.250; 95% CI=2.370–63.316), experiences of planning about mode of delivery ( $P<0.01$ ; OR=2.776; 95% CI=1.284–5.997), autonomy to decide about mode of delivery ( $P<0.01$ ; OR=0.395; 95% C.I: 0.199–0.784), ever heard about cesarean section ( $P<0.05$ ; OR=0.153; 95% CI=0.036–0.647), perceptions regarding the mode of delivery having less health complications for the baby ( $P<0.01$ ; OR=2.764; 95% CI=1.379–5.543), perceptions regarding the mode of delivery having less health complications for the mother ( $P<0.05$ ; OR=1.746; 95% CI=1.045–2.918), and type of healthcare organization of antenatal care attendance ( $P<0.01$ ; OR=2.237; 95% CI=1.334–3.752).

Accordingly, it is shown that the choice of cesarean section increases with increasing age ( $P<0.05$ ). The association between religion and choice of mode of delivery revealed that preference of cesarean section has been most common in followers of Orthodox Christianity while most Muslims preferred vaginal mode of delivery than followers of all other religions. Furthermore, the choice of cesarean section increased with decreasing number of children and vice-versa. It was also found that the likelihood of pregnant women to prefer cesarean section delivery increases with the previous mode of delivery being by cesarean section and vice versa in which the association is significant ( $P<0.001$ ). In addition, the choice of mode of delivery is strongly associated with respondents' self-rated social class status in such a way that the more affluent respondents become, the more likely they are to prefer cesarean section and the choice of vaginal delivery increases with decrease in class status ( $P<0.01$ ). Data have also shown that pregnant women's likelihood of preferring cesarean section mode of delivery increases for those women who attend antenatal care in private healthcare facilities, compared to those attending in the public healthcare facilities ( $P<0.01$ ).

Moreover, the coefficient of regression has also shown that pregnant women's preference of cesarean section delivery increases with increased autonomy to make decisions regarding the mode of delivery ( $P<0.01$ ). The same generalization can also be made about respondents who have ever heard about cesarean section, ie, the more pregnant women have ever heard about cesarean section, the more likely they are to prefer cesarean section ( $P<0.05$ ). Above all, it is also indicated that the preference of cesarean section is strongly associated with respondents' perceptions regarding which mode of delivery is less risky both for the mother as well as for the child. In other words, the more respondents perceived that cesarean section is less risky for the baby, the more likely they become to prefer cesarean section ( $P<0.01$ ).

## Discussion

The mode of delivery influences the perceived control, the characteristics of the emotional experience, and the first moments with the newborn.<sup>25</sup> It also interferes with the early initiation of breastfeeding.<sup>26</sup> Therefore, knowledge about women's views, experiences, preferences, and social values related to mode of delivery and identification of the factors influencing such choices help explain the decision-making processes about mode of childbirth, decrease the cesarean section rate, increase its access to those who need it the most and improve women's health.<sup>12,27</sup> The present study aimed at identifying the preferences of mode of delivery and the factors influencing such choices of pregnant women attending antenatal care in public and private healthcare facilities of southern Ethiopia. Quantitative data were collected from randomly selected pregnant women, inserted into SPSS software version 26, and analyzed using both descriptive and inferential statistical techniques. Accordingly, it was found that under circumstances by which the women get the autonomy to make decisions on their own (without intervention from other persons or medical complications) regarding their mode of delivery, most of the respondents replied that they prefer vaginal or normal delivery.

The findings of the present research differ from the findings of a related study conducted in Eastern Ethiopia by Welay et al,<sup>24</sup> which found that nearly one-third of the mothers preferred cesarean section due to fear of labor pain and repeated vaginal examination by the healthcare providers. Perhaps this inconsistency could be attributed to methodological differences between the two studies. For instance, in their study, Welay et al<sup>24</sup> excluded pregnant women who have previously delivered through cesarean section and those who had previous uterine rupture. The present study differs from this research in the sense that it includes all pregnant women in the study area attending antenatal care in both private and public healthcare facilities. Moreover, the two studies have also been undertaken in areas having different socio-cultural characteristics which would justifiably lead us to expect different findings. Other studies in Ethiopia undertaken on a survey population, ie, women who have been admitted to healthcare facilities and attending postnatal care, have shown a high prevalence rate of cesarean section delivery.<sup>10,28–34</sup>

Related studies conducted outside of Ethiopia, however, have revealed findings that are consistent with the results of the present study. For instance, the findings of a study conducted by Loke et al<sup>35</sup> found that without medical and financial considerations, the significant majority (79%) of women preferred vaginal birth. In addition, Adageba et al<sup>36</sup> found that the majority of antenatal clients in Ghana preferred vaginal delivery. Moreover, the study of Ogunlaja et al<sup>37</sup> revealed that women in South West Nigeria have a good awareness about the issues involved in delivering through cesarean section and that most women agreed that cesarean section is as safe as vaginal delivery, where the majority of these women had a better educational status. Furthermore, a study undertaken in four hard to reach areas of Bangladesh<sup>27</sup> found a low prevalence of cesarean section delivery which was below the national average. Moreover, Liu et al<sup>20</sup> found that most Argentinean women preferred vaginal delivery due to cultural, personal, and social factors. Most importantly, they indicated that women in their study positively viewed pain associated with vaginal delivery and cesarean section was treated as a medical decision in which some women have deviated from the decisions of medical staff even in the presence of medical conditions. Above all, Favilli et al<sup>38</sup> concluded that women's preferences about labor are focused on both pain relief and labor duration.

Whereas most pregnant women participating in the present study preferred normal/vaginal mode of delivery, the most commonly mentioned reasons for the choice of vaginal delivery include personal conviction motivated by the need to experience the labor process, the belief in it being a natural method, the perception that it is better for the wellbeing of both the mother and the child, previous experience of delivery by vaginal method, fear or the need to avoid episiotomy, and economic reasons. On the other hand, data pertaining to respondents' reasons for choosing cesarean section delivery reveal that reduced labor time, previous history of cesarean section, recommendation from a physician, the fact that it is a pain free method, fear of pain in vaginal birth, the belief that it is safer than vaginal mode of delivery, and physical health conditions were the common reasons. Similarly, a study by Kasai et al<sup>21</sup> revealed that most women in Brazil expressed a preference for vaginal birth, in the belief that vaginal delivery involves less suffering, better recovery, lesser risk, is quicker, and, hence, allows earlier discharge from healthcare facilities, and is better for the wellbeing of both the mother and her babies. In addition, Loke et al<sup>35</sup> indicated that the most frequently cited reasons for the choice of normal delivery were concerns for the health of the newborn, concern for maternal health, and being a natural way of delivery, whereas the reasons for cesarean section include avoidance of labor pain, concerns for the health of the newborn, and concerns for maternal health. According to Shi et al,<sup>8</sup> abnormalities in prenatal examinations, lack of confidence in vaginal birth, fear of pain during vaginal birth, and the desire to select time of birth and health birth systems influence the choice of cesarean section. Moreover, considering cesarean section as safe for both mother and baby, the belief that it is a pain-free method of delivery, friends' advice, and religious advice have been the reasons for choosing cesarean section among women, according to Konlan et al.<sup>19</sup>

According to Roudsari et al,<sup>12</sup> social, religious, and cultural beliefs significantly affect individuals' attitudes towards modes of delivery, their definitions of these modes, and the choices they make in addition to determining how a pregnant women perceives, interprets, and deals with pain during labor and how she selects pain management methods during delivery. The findings of the present study have shown that pregnant women's preference of the mode of delivery is significantly associated with religion, age, number of children, pregnancy experience, previous mode of delivery, self-rated social class status, experiences of planning about mode of delivery, autonomy to decide about mode of delivery, ever heard about cesarean section, perceptions regarding the mode of delivery having less health complications for the baby, perceptions regarding the mode of delivery having less health complications for the mother, and type of healthcare organization of antenatal care attendance.

These findings are consistent with other previously undertaken studies on related topics. For instance, Murphy and Fahey<sup>13</sup> found that the rate of cesarean section and vaginal operative delivery increases with admission to private hospitals compared to those that deliver at public healthcare facilities. In addition, other studies<sup>30,31</sup> also revealed that the prevalence of cesarean section was higher in women who gave birth in a private health facility, mothers having risk factors, and mothers having an educational status of diploma and above. Furthermore, the findings of Konlan et al<sup>19</sup> revealed a significant positive correlation between average monthly income and the number of times of having cesarean section, while age has not shown a positive correlation with the number of times of having a cesarean section. Moreover, Amjad et al<sup>14</sup> adds factors such as getting older, living in an urban area, being from the richest social class, higher

educational status, employment at managerial or technical level, having pregnancy complications, higher utilization of antenatal care, and delivering babies at private hospitals to be associated with the likelihood of cesarean section deliveries. Omona<sup>39</sup> also found a high rate of cesarean section delivery in a private-non-for-profit healthcare organization. Above all, Tenaw et al<sup>10</sup> found factors such as monthly income above the poverty line, previous pregnancy complications, and current obstetric problems were significantly associated with increasing prevalence of cesarean section while utilization of a partograph lowers the odds of cesarean section.

In contrast, Karim et al<sup>27</sup> found socio-demographic factors such as women's religion, education, and occupation, husband's education, household's wealth quintile, whether the woman was the owner of mobile or not and obstetric factors such as the number of ANC visits and presence of any complications during pregnancy were not significantly associated with C-section whereas delivering in private facilities and complications during childbirth were positively associated with cesarean section birth. After studying mode of delivery among women with a history of prior cesarean birth in the South Western part of Ethiopia, Margo et al<sup>40</sup> found that most of the women with the history of cesarean section delivery have attempted a trial of labor after cesarean section, where women that were successful were more likely to have been more cervically dilated on their admission exam. Birara and Gebrehiwot<sup>41</sup> found that successful vaginal delivery after one previous cesarean scar was associated with past obstetric performance and mainly to the current labor in which the main determinant factors include history of still birth, history of successful vaginal birth after cesarean section delivery, rupture of membrane, absence of meconium, cervical stage of labor at admission, position of the presenting part, duration of labor, and knowledge of the previous indication for the past cesarean section.

The findings of the present study have also shown that other socio-demographic factors such as educational status, marital status, and residential background were not significantly associated with pregnant women's preference of mode of delivery. Consistent to this, previous related studies conducted both in other parts of Ethiopia and in other countries have found an association between these variables and the independent variable. For instance, Welay et al<sup>24</sup> found level of education, planned pregnancy, age, choice of place of delivery, frequency of antenatal care attendance, and primigravida were the factors associated with pregnant women's preference of cesarean section delivery.

In addition, Sayiner et al<sup>11</sup> found education, age at marriage, history of abortus in the previous delivery, and the number of living children as factors significantly associated with preferences of modes of delivery in which women with a better educational status, having the experience of delayed marriage, those having a previous history of abortus, and women having no living children prefer cesarean section than vaginal delivery. Moreover, the fear of normal birth, doctor's demand, and thinking cesarean section is healthier were found to be the reasons for the choice of cesarean section. On the other hand, women who believed normal birth healthier, it's being spontaneous in hospital, wishing to get better soon, and having low economic status preferred normal delivery, according to the findings of the study. Above all, rural residence, fetal weight greater than 2,500 gm and previous history of stillbirth were independent predictors of cesarean section.<sup>32</sup> Mose and Abebe<sup>34</sup> found that mothers residing in an urban area, having had multiple pregnancies, malpresentation, and a previous history of cesarean section were factors associated with cesarean section deliveries.

## Conclusion

The findings of the present study have highlighted that normal or vaginal method has remained the most preferred mode of delivery among most pregnant women attending antenatal care services in Southern Ethiopia. Personal conviction motivated by the need to experience the labor process, the belief in it being a natural method, the perception that it is better for the wellbeing of both the mother and the child, previous experience of delivery by vaginal method, fear or the need to avoid episiotomy, and economic concerns have been mentioned as reasons for the choice of vaginal delivery. Nevertheless, this generalization should be noted without undermining the fact that the choice of cesarean section is still increasing among women expecting a baby. Even in the context of this study, about a quarter of pregnant women have reported that they prefer to deliver by cesarean section, a prevalence rate which is higher than the national average (2%). The study has also shown that the choice of cesarean section was motivated by reasons such as reduced labor time, previous history of cesarean section, recommendation from a physician, the fact that it is a pain free method, fear of pain in vaginal birth, the belief that it is safer than vaginal mode of delivery, and physical health conditions. In Ethiopia, health education programs pertaining to the pros and cons of alternative modes of child delivery are not common, which might

have contributed to the knowledge gap that makes decision-making very difficult. Therefore, it is suggested that further tasks related to educating pregnant women and creating awareness using various media platforms about advantages and disadvantages of cesarean section mode of delivery should be undertaken by all concerned bodies of the government, especially the federal Ministry of Health.

## Data Sharing Statement

The data used to support the findings of this study are available from the corresponding author upon reasonable request.

## Ethics Approval and Consent to Participate

The study was evaluated and approved by the Ethics Approval Committee of Dilla University (DU-HSC/1529/14). The ethics committee has approved that participants under the age of 18 years can be provided informed consent on their own behalf. Research participants were first informed about the purpose of the research, including what role is expected from their side. Both verbal and written consents were gained from all research participants. In addition, a formal letter was obtained from Senabor College. This study was conducted in accordance with the relevant guidelines and complies with the Declaration of Helsinki.

## Acknowledgments

We would like to offer our heartfelt gratitude to Senabor College, Shashemene campus for providing all the financial and material support needed to undertake the study. In addition, we would also thank Yeshe Abate and other clinical nurses who have been serving in the healthcare facilities during the period of the study for their contribution during data gathering. Furthermore, Betsiat Tilahun who has been helping us during data clerk also deserves appreciation.

## Funding

The finance needed to undertake this study was covered by Senabor College, Shashemene campus.

## Disclosure

The authors declare no conflicts of interest in relation to this work.

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