

Preference and Associated Factors for Cesarean Delivery Among Pregnant Women: A Cross-Sectional Study

Jasmina Begum; MBBS, M.S., Subarna Mitra; MBBS, M.S.

Department of Obstetrics and Gynaecology, All India Institute of Medical Sciences, Bhubaneswar, India

Received October 2023; Revised and accepted March 2024

Abstract

Objective: A cesarean delivery is regarded as a comparatively favourable and secure approach to childbirth when contrasted with vaginal delivery. Over the past decade, its frequency has risen in both industrialized and developing nations. Maternal request for cesarean delivery has been explained for the escalating rate along with other factors like anxiety, fear of childbirth, previous cesarean delivery, previous negative vaginal birth experience, maternal age, maternal education, and socioeconomic factors. Hence, this study was undertaken to assess pregnant women's tendency to have a cesarean birth and to investigate the factors associated with the inclination for cesarean delivery.

Materials and methods: A hospital-based cross-sectional study was carried out in the Department of Obstetrics and Gynaecology of a tertiary care hospital, a systematic sampling procedure was utilized, and 368 antenatal mothers after 36 weeks of gestation, who do not have any specific medical reasons against vaginal delivery were included in the study. Data collection was done by questionnaire. The information regarding socio-demographic factors, preexisting comorbidities, current obstetric risk factors, emotional factors, previous delivery experience, and their information preference toward the mode of delivery were collected. Univariate and multivariate analysis were performed to identify the independent variables associated with preference for cesarean delivery.

Results: The preference for cesarean delivery and non-preference for cesarean delivery was 114 (30.9%) and 201 (54.6%), respectively whereas 53 (14.4%) participants remained neutral. The Chi-square analysis revealed a notable connection between the inclination towards a preference for cesarean delivery and factors such as obstetric score, parity, comorbidities, and among obstetric risk factors such as pregnancy after in-vitro fertilization (IVF), with a history of abortion, and having a prior history of cesarean delivery. Nevertheless, no meaningful association was observed between the preference for cesarean delivery and the remaining variables. On multivariate logistic analysis, independent variables like preexisting anxiety or depression, pregnancy through IVF, and having a history of previous cesarean delivery have increased the odds of preferring cesarean delivery. The independent variables like increasing gestational age, graduates, and unemployed have decreased the odds of preferring a cesarean delivery.

Conclusion: In conclusion, the prevalence of cesarean delivery is influenced by a complex interplay of medical, cultural, socioeconomic, and healthcare system factors. While cesarean delivery is essential in cases of medical necessity, efforts should be made to avoid unnecessary cesarean delivery that does not provide clear benefits over vaginal delivery. Balancing the risks and benefits of cesarean delivery and promoting evidence-based obstetric practices are crucial for ensuring optimal maternal and infant outcomes.

Keywords: Cesarean Section; Cesarean Delivery; Pregnant Women; Patient Preference; Obstetrics

Introduction

A Cesarean delivery (CD) is the preferred method of delivering birth in both advanced and developing

Correspondence:

Dr. Jasmina Begum

Email: obgy_jasmina@aiimsbhubaneswar.edu.in



Copyright © 2024 Tehran University of Medical Sciences. Published by Tehran University of Medical Sciences.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license (<https://creativecommons.org/licenses/by-nc/4.0/>). Noncommercial uses of the work are permitted, provided the original work is properly cited.

countries (1-3). Over the last 10 years, there has been a significant increase in the preference for a cesarean delivery (4). One important reason driving this trend is a lower risk of maternal and newborn mortality associated with delivery (5, 6). Several factors contribute to the rise in the prevalence of CD. Within many developing nations, shifts in demographics along with improvements in social and educational aspects have resulted in more women choosing to delay their pregnancies until later in their fertile years (7). This societal progress, combined with the increased availability of birth control and infertility interventions, has led to a higher proportion of women embarking on their initial pregnancy after the age of 35 (8). A CD, commonly referred to as a C-section, is a surgical technique in which childbirth occurs through incisions made in the abdominal and uterine areas. This method is utilized when a vaginal (or natural) delivery could endanger the lives of both the mother and the infant. While cesarean deliveries are generally viewed as a safe approach, they do involve complexities in contrast to vaginal birth, which is a more natural birthing process (9). Apart from the potential hazards and challenges following delivery, a significant concern associated with C-sections is their financial cost. This rise is attributed to surgical procedures and extended hospital stays, leading to an augmented financial load on families (10).

The commonly encountered complications for both mothers and infants during and following a cesarean delivery have already been explored in many research papers (11-14).

In previous times, the World Health Organization (WHO) (15) had advised that while a cesarean section is a safe approach, surpassing a cesarean rate of 10-15% might not yield improved results. Nevertheless, this prior recommendation faced critique from various angles. The stance of the WHO seems to have evolved, evident in its 2015 announcement stating that the focus should be on offering necessary cesarean sections to women rather than aiming for a particular rate.

Prior research (16-18) has indicated that exceeding the WHO suggested range for cesarean delivery rates could lead to a higher likelihood of encountering other public health issues for both mothers and infants. Some more recent studies have concluded that the 1985 WHO publication analyzed incomplete studies, often drawing from restricted datasets and primarily investigating outcomes in

more affluent nations (15, 19). Moreover, many studies incorporated data from different years without considering the variations across those years.

Moreover, it's important to note that the WHO report solely focused on the relationship with mortality, neglecting to consider fetal and maternal health issues in relation to these statistics (15). It's crucial to emphasize that the significance of fetal health should be given greater weight than maternal health. Neglecting to perform a necessary CD when recommended could lead to severe brain damage in infants, causing immense and enduring negative impacts not just on the child's future, but also on the emotional well-being of the parents and the broader family unit.

Since a cesarean delivery is a surgical intervention performed exclusively at medical facilities, the current research has concentrated on examining the occurrence of cesarean delivery among women who have undergone deliveries in such institutional settings. This study aims to enhance comprehension of women's attitudes toward cesarean delivery by analyzing factors like their residential location, level of education, number of previous births, comorbidities, obstetric risk factors, and selection of mode of delivery. Additionally, the research investigates the influence and significance of socio-economic elements on the preference for cesarean section as a mode of delivery.

Materials and methods

The research took place at the Obstetrics and Gynecology Department of tertiary hospital. This was a hospital-based cross-sectional study. This study was done after the approval of the Institutional Ethics Board and after obtaining informed written consent from the participants. We carried out our research according to the Helsinki Declaration of 1975. Information was gathered from expectant mothers who have consented to take part in the research. All the consecutive participants meeting the specified inclusion and exclusion criteria were included in the study. All participants were assured that their answers would be kept confidential. The questionnaire employed in this study was a modified and expanded version of surveys utilized in prior research endeavors that explored pregnant women's inclinations regarding delivery methods and the underlying reasons for these inclinations.

The criteria for inclusion encompass pregnant patients beyond 36 weeks of gestational age who do

not have any specific medical reasons against vaginal delivery. Additionally, pregnant patients who have provided an answer regarding their delivery method preference are also considered. On the other hand, exclusion criteria pertain to pregnant patients who are unable to understand and respond to the questionnaire in Odia, pregnant women who planned for elective CD for obstetrical indications, as well as those who are currently in the process of labor. Data was collected using a structured and pretested questionnaire by face-to-face interview at the antenatal outpatient ward. It has three parts. A pretest was done in a 5% sample with similar sociodemographic characteristics at the outset of the study hospitals. The necessary amendment was made based on pre-test findings accordingly.

The first part of the questionnaire is about, socioeconomic factors, pre-existing co-morbidities like overt/gestational diabetes, hypertensive disorder, cardiac disease, renal disease, epilepsy, rheumatoid arthritis, anxiety, depression, and obstetric risk factors with which respondents are familiar before stating a preference for delivery like multiple pregnancies, conceived after in vitro fertilization, bleeding before 32 weeks of gestation. The second part of the questionnaire is about emotional factors, this was measured to the following statements “Worries about not having a healthy baby”, “Fear of childbirth” and previous delivery experiences, all were measured on a five-point response scale. In multiparous patients, the previous delivery experience was measured by a five-point scale, with answer categories of “very good, good, alright, bad, very bad”. The third part is about preference for cesarean delivery, which was measured by the response to the following statement: “If I could choose, I would prefer to have a cesarean delivery” measured on a five-point response scale. The responses “strongly agree” and “agree” were classified as “cesarean preference,” responses “undecided” were classified as “neutral preference,” whereas responses “disagree” and “strongly disagree” were classified as “vaginal preference.” These patients were followed up with usual antenatal care as per department protocol till their delivery, data related to their birth outcomes was collected from the hospital records.

Sample Size: On review of our hospital records, the proportion of pregnant women undergone cesarean delivery was 40% and with reference to the review of literature the proportion ranges between 19% to 30% in other countries. Hence, the highest

proportion of 40% is taken to estimate the sample size which comes to 368 with 5% precision.

Statistical analysis: Data were analyzed using SPSS software version 21 and Excel. Categorical variables were given in the form of frequencies and percentages. Continuous variables were given in Mean \pm SD and median. The chi-square test was used to check the dependency between categorical variables. Kruskal Wallis test was used to compare the distributions over groups. The presence of an association between independent and dependent variables was determined using an odds ratio with a 95% confidence interval by applying a logistic regression model. A P-value less than 0.05 indicates statistical significance.

Results

Presented in Table 1, are the characteristics of the study population of 368 antenatal mothers. The ages ranged between 18 and 43 years, and the mean age was 26.5 ± 4.31 years. The mean gestational age was calculated as 37.13 ± 1.48 weeks. Among the total of 368 participants, 222 individuals (60.3%) were categorized as primigravida, while 146 (39.7%) were identified as multigravida. Within the same group, 251 (68.2%) were classified as nulliparous, signifying that they had not previously given birth, while 117 (31.8%) were categorized as multiparous, indicating that they had given birth before.

Most of the study participants 366 (99.4%) were cohabitants and 258 (70.1%) had planned pregnancies. The Study participants (22.8%) had preexisting medical conditions, while 284 (77.2%) did not report any comorbidities. A majority of 355 participants (96.5%) did not have preexisting anxiety or depression, and a substantial proportion of 303 (82.3%) did not experience obstetric risk factors during their pregnancy. Regarding prior experiences, 347 (12.8%) had undergone a previous cesarean delivery, 79 (21.4%) had a history of miscarriage, and 20 (5.43%) had a history of stillbirth in the previous pregnancy.

In this study, the preference for cesarean delivery, measured by the response to the following statement: “If I could choose, I would prefer to have a cesarean delivery”, revealed that 114 (30.9%) participants agreed and strongly agreed for preferring cesarean delivery, 53 (14.4%) participants remained neutral and 201 (54.6%) participants disagreed and strongly disagreed preferring cesarean delivery.

Factors Associated with the Preference for Cesarean Delivery

Table 1: Socio-demographic, economic, and Obstetrics characteristics of mothers

Variables	Sub Category	Frequency (%)
Age (years)	< 20	22 (6)
	21 – 30	281 (76.4)
	31 – 40	63 (17.1)
	>40	1 (0.3)
Obstetric score	Primigravida	222 (60.3)
	Multigravida	146 (39.7)
Parity	Nulliparous	251 (68.2)
	Multiparous	117 (31.8)
Co-habitat	Yes	366 (99.4)
	No	2 (0.54)
Planned Pregnancy	Yes	258 (70.1)
	No	110 (29.8)
Education of Pregnant women	Illiterate	5 (1.35)
	< Diploma	124 (33.6)
	≥ Diploma	239 (64.9)
Education of Husband	Illiterate	3 (0.81)
	< Diploma	111 (30.1)
	≥ Diploma	254 (69.0)
Occupation of Pregnant women	None	303 (82.3)
	Part-time	24 (6.52)
	Full time	41 (11.1)
Occupation of Husband	None	7 (1.90)
	Part-time	115 (31.25)
	Full time	246 (66.8)
Family's Yearly Income	≤ 50,000	16 (4.34)
	51,000 -1,00,000	40 (10.8)
	1,00,001- 5,00,000	208 (56.5)
	5,00,001- 10,00,000	67 (18.2)
	>10,00,000	37 (10.0)
Preexisting medical diseases	Yes	84 (22.8)
	No	284 (77.2)
Preexisting anxiety/ Depression	Yes	13 (3.5)
	No	355 (96.5)
Obstetric Risk Factors in Current Pregnancy	Yes	65 (17.7)
	No	303 (82.3)
Previous history of Stillbirth	Yes	20 (5.43)
	No	348 (94.5)
Previous history of Miscarriage	Yes	79 (21.4)
	No	289 (78.5)
Previous history of Cesarean Delivery	Yes	47 (12.8)
	No	321 (87.2)

Table 2 shows the distribution of study participants on different variables over cesarean preference with $p < 0.05$, the results of the Chi-square test revealed a noteworthy connection between the inclination towards cesarean delivery and factors such as obstetric score, parity, and comorbidities. Conversely, no substantial association was observed between cesarean preference and the remaining variables. Furthermore, the outcomes

of the Kruskal-Wallis test demonstrated a significant disparity in means concerning age and gestational age.

As indicated in Table 3, the results of the Chi-square test revealed a notable connection between the preference for cesarean delivery and obstetric risk factors such as pregnancy after in-vitro fertilization (IVF), a history of abortion, and a prior history of cesarean delivery.

Table 2: Distribution of subjects on different variables over cesarean preference

Variables	Sub Category	Cesarean Preference			p-value
		Agree	Disagree	Undecided	
Age	Mean ± SD	27 ± 4	26 ± 4	25 ± 4	0.002
	Median (Min, Max)	27 (19, 43)	26 (18, 37)	25 (18, 35)	
Gestational Age	Mean ± SD	37 ± 1	37 ± 2	37 ± 1	0.009
	Median (Min, Max)	37 (27, 40)	37 (26, 40)	37 (36, 41)	
Obstetric score	Multigravida	61 (54%)	74 (36.5%)	11 (21.2%)	< 0.001
	Primigravida	52 (46%)	129 (63.5%)	41 (78.8%)	
Co-habitat	No	1 (0.9%)	0	1 (1.9%)	0.294
	Yes	112 (99.1%)	203 (100%)	51 (98.1%)	
Education of Pregnant women	Illiterate	1 (0.9%)	3 (1.5%)	1 (1.9%)	0.194
	Primary school	15 (13.3%)	16 (7.9%)	6 (11.5%)	
	High school	30 (26.5%)	50 (24.6%)	7 (13.5%)	
	Diploma	54 (47.8%)	94 (46.3%)	32 (61.5%)	
	Graduation	13 (11.5%)	40 (19.7%)	6 (11.5%)	
Education of Husband	Illiterate	0	2 (1%)	1 (1.9%)	0.176
	Primary school	12 (10.6%)	17 (8.4%)	7 (13.5%)	
	High school	26 (23%)	42 (20.7%)	7 (13.5%)	
	Diploma	52 (46%)	88 (43.3%)	31 (59.6%)	
	Graduation	23 (20.4%)	54 (26.6%)	6 (11.5%)	
Planned Pregnancy	Yes	79 (69.95)	144 (70.9%)	35 (67.3%)	0.877
	No	34 (30.1%)	59 (29.1%)	17 (32.7%)	
Parity	0	68 (60.2%)	159 (78.3%)	44 (84.6%)	0.002
	1	42 (37.2%)	39 (19.2%)	8 (15.4%)	
	2	3 (2.7%)	5 (2.5%)	0	
Comorbidities	Yes	35 (31%)	42 (20.7%)	7 (13.5%)	0.025
	No	78 (69%)	161 (79.3%)	45 (86.5%)	
Pre-existing anxiety/depression	Yes	7 (6.2%)	5 (2.5%)	1 (1.9%)	0.180
	No	106 (93.8%)	198 (97.5%)	51 (98.1%)	
Health problems during pregnancy	Yes	26 (23%)	31 (15.3%)	8 (15.4%)	0.201
	No	87 (77%)	172 (84.7%)	44 (84.6%)	

Nevertheless, no significant association was observed between cesarean preference and the remaining variables.

We have done multivariate logistic analysis to identify the independent variables associated with preference for cesarean delivery in Table 4. For each unit increase in gestational age, the odds of preferring a cesarean delivery decrease by approximately 0.841 times (or 84.1% of the original odds) assuming other factors remain constant. Compared to individuals with a diploma education (reference category), graduates have odds of preferring a cesarean delivery that is approximately 0.328 times lower (or 32.8% of the odds for those with a diploma). Compared to individuals employed full-time (reference category), those who are unemployed (None) have odds of preferring a cesarean delivery that is approximately 0.337 times lower (or 33.7% of the odds for full-time employed individuals). Having a history of preexisting anxiety or depression increases the odds

of preferring a cesarean delivery by approximately 3.552 times (or 255.2% higher odds). Having a pregnancy through IVF increases the odds of preferring a cesarean delivery by approximately 4.529 times (or 352.9% higher odds). Having a history of previous cesarean delivery increases the odds of preferring a cesarean delivery by approximately 6.3 times (or 536.6% higher odds).

Discussion

The method of childbirth impacts the sense of control, emotional encounter attributes, and initial moments with the newborn (20). Furthermore, it disrupts the initial commencement of breastfeeding (21). As a result, understanding women's perspectives, encounters, inclinations, and societal norms concerning the method of childbirth, along with identifying the determinants affecting these choices, plays a crucial role in elucidating the decision-making procedures concerning childbirth methods.

Factors Associated with the Preference for Cesarean Delivery

Table 3: Distribution of subjects on different variables over cesarean preference

Variables	Sub Category	Cesarean Preference			p-value
		Agree	Disagree	Undecided	
History of Vaginal Bleeding	Yes	11 (9.7%)	13 (6.4%)	5 (9.6%)	0.507
	No	102 (90.3%)	190 (93.6%)	47 (90.4%)	
Multiple Pregnancies	Yes	21 (18.6%)	25 (12.3%)	3 (5.8%)	0.065
	No	92 (81.4%)	178 (87.7%)	49 (94.2%)	
IVF Pregnancy	Yes	7 (6.2%)	3 (1.5%)	0	0.020
	No	106 (93.8%)	200 (98.5%)	52 (100%)	
History of Abortion	Yes	33 (29.2%)	40 (19.7%)	5 (9.6%)	0.012
	No	80 (70.8%)	163 (80.3%)	47 (90.4%)	
History of Loss of Child	Yes	11 (9.7%)	6 (3%)	2 (3.8%)	0.030
	No	102 (90.3%)	197 (97%)	50 (96.2%)	
History of Previous Cesarean	Yes	31 (27.4%)	13 (6.4%)	3 (5.8%)	< 0.001
	No	82 (72.6%)	190 (93.6%)	49 (94.2%)	
Do you have worries about not having a healthy baby?	Severely disagree	41 (36.3%)	88 (43.3%)	21 (40.4%)	0.154
	Disagree	21 (18.6%)	33 (16.3%)	5 (9.6%)	
	Undecided	12 (10.6%)	25 (12.3%)	12 (23.1%)	
	Agree	32 (28.3%)	45 (22.2%)	8 (15.4%)	
	Severely agree	7 (6.2%)	12 (5.9%)	6 (11.5%)	
Do you feel fear of childbirth	Severely disagree	36 (31.9%)	61 (30%)	12 (23.1%)	0.526
	Disagree	10 (8.8%)	14 (6.9%)	3 (5.8%)	
	Undecided	9 (8%)	24 (11.8%)	11 (21.2%)	
	Agree	49 (43.4%)	87 (42.9%)	23 (44.2%)	
	Severely agree	9 (8%)	17 (8.4%)	3 (5.8%)	
Satisfaction with ANC checkups	Severely disagree	2 (1.8%)	4 (2%)	3 (5.8%)	0.429
	Disagree	2 (1.8%)	1 (0.5%)	0	
	Undecided	2 (1.8%)	2 (1%)	2 (3.8%)	
	Agree	85 (75.2%)	155 (76.4%)	34 (65.4%)	
	Severely agree	22 (19.5%)	41 (20.2%)	13 (25%)	
Previous delivery experience	None	61 (54%)	148 (72.9%)	42 (80.8%)	0.502
	Very good	7 (6.2%)	12 (5.9%)	1 (1.9%)	
	Good	26 (23%)	34 (16.7%)	6 (11.5%)	
	Alright	7 (6.2%)	3 (1.5%)	0	
	Bad	9 (8%)	5 (2.5%)	3 (5.8%)	
	Very bad	3 (2.7%)	1 (0.5%)	0	

This, in turn, contributes to reducing the rate of cesarean delivery, enhancing access for those with the greatest necessity, and advancing women's well-being (22, 23).

Table 4: Multivariate Logistic Model results for preferring Cesarean Delivery

Variables		Estimate	Odds Ratio	Std. Error	P value
Gestational Age		-0.17	0.84	0.09	0.040
Patient Education (Reference Category: Diploma)	Graduation	-1.11	0.32	0.44	0.010
	High school	0.37	1.44	0.32	0.250
	Primary school	0.36	1.43	0.43	0.400
Patient Occupation (Reference category: Full time)	None	-1.09	0.33	0.41	0.010
	Part-time	0.03	1.03	0.66	0.960
Pre-existing anxiety Depression	Yes	1.27	3.55	0.65	0.040
IVF Pregnancy	Yes	1.51	4.53	0.75	0.040
History of Cesarean Delivery	Yes	1.85	6.37	0.38	0.00

The primary objective of this study was to uncover the delivery mode preferences of pregnant women receiving prenatal care in both public healthcare institutions within the Department of Obstetrics and Gynecology. Additionally, the study aimed to identify the factors that play a role in shaping these choices.

The data in our current study originates from measurements obtained from a group of 368 participants, whose ages spanned from 18 to 43 years, with an average age of 26.5 ± 4.31 years. Among these 368 participants, a majority of 281 (76.4%) fell within the age range of 21 to 30 years. Within this age group, the average age was 38.9 ± 12.55 years, encompassing individuals as young as 18 and as old as 43. In terms of gestational age, 358 out of the 368 participants (97.3%) were situated within the 36 to 41-week range. The mean gestational age was computed as 37.13 ± 1.48 weeks.

In a study conducted by, Seidu et al., a sum of 2742 expectant mothers took part, and in terms of age distribution, 25% of study participants were between the ages of 25 and 29 and 25% were between the ages of 30 and 34 (24).

In another study done by Welay et al., the response rate from the participants was 100%, totalling 398 individuals. The mothers' ages varied between 15 and 45 years, with an average age of 26 ± 11.34 (25). Khosravi et al., in their study 314 participants (accounting for 94.01% of the total) were examined. The average age of the expectant mothers was 29.3 years, their marital duration averaged 6.63 years, and their mean educational attainment spanned 13.57 years (26).

According to the study done by Ayalew et al., a total of 433 research participants took part, resulting in a 100% response rate. The participants in the research were 27.27 ± 5.18 years old on average. More than two-thirds of the participants, 290 (67.7%), were between the ages of 20 and 30 (27).

In our current investigation, out of the total 368 participants, 222 respondents (constituting 60.3%) fell under the primigravida category, while 146 (representing 39.7%) were characterized as multigravida. Among this cohort, 251 individuals (making up 68.2%) were categorized as nulliparous, indicating no previous childbirth experience, while 117 (constituting 31.8%) were labelled as multiparous, implying they had prior childbirth experiences.

Similarly, Welay et al., study found that 177 (44.5%) of the moms were primigravida, 204 (51.3%) were

multigravida, and 17 (4.3%) were grand multigravida. According to the study done by Ayalew et al., in terms of gravidity and parity, nearly three-fifths of the moms, 248 (57.3%), were multigravida and 199 (46.0%) were multiparous. In terms of gestational age, 351 (81.1%) moms gave birth at term (25, 27).

In our current research, 84 individuals (constituting 22.8%) had coexisting medical conditions, while 284 individuals (amounting to 77.2%) did not disclose any accompanying health issues. The majority of the participants, totalling 355 (equivalent to 96.5%), did not possess preexisting anxiety or depression, and a significant portion of 303 individuals (approximately 82.3%) did not encounter any obstetric complications during their pregnancy. In terms of prior experiences, 347 individuals (making up 12.8%) had previously undergone a cesarean section, while 321 individuals (accounting for 87.2%) had not experienced such a procedure previously.

Similarly, by Seidu et al., 2020 in the five years preceding the poll, 18.5% of the 2742 women who had given birth in health institutions used CD, and 81.5% had vaginal delivery (24).

In another study done by Sultana et al., around 46.8% of the participants had knowledge about sexual dysfunction as a potential complication of vaginal delivery (28). A total of 31.9% of women were familiar with the risks of vaginal and perineal tears, while 10.6% were aware of various other reasons for vaginal delivery. Conversely, 10.7% of respondents expressed uncertainty. In relation to complications linked to cesarean delivery, 56.5% were informed about those connected to the surgical procedure. Among the participants, 29.6% responded affirmatively regarding complications related to scarring, while 7.2% mentioned anaesthesia-related concerns. Infection-related complications were acknowledged by 6.7% of the women surveyed.

According to the study done by Ayalew et al., mothers who had a history of previous cesarean sections were nine times more likely to have a cesarean section than those who had not have a history of previous cesarean section (aOR=9.11, 95% CI: 3.77–22.01). Mothers who had antepartum haemorrhage (APH) were 8.65 times more likely to have a cesarean section than those mothers who did not have APH (aOR=8.65, 95% CI: 3.82–19.56) (27).

In the current investigation, the Chi-square examination unveiled a significant association between the decision to opt for cesarean delivery and variables including IVF pregnancy, previous abortion

experiences, and a history of prior cesarean sections. However, there was no noteworthy association found between the inclination for a cesarean delivery and other factors.

For every unit increase in gestational age, the likelihood of desiring a cesarean section diminishes by roughly 84.1%, assuming all other factors remain constant. In comparison to individuals who hold a diploma education (used as the reference point), those with higher education degrees exhibit odds of favoring a cesarean section that is around 32.8% lower. Similarly, in contrast to individuals who are employed full-time (taken as the reference category), those who are unemployed display odds of preferring a cesarean section that is approximately 33.7% lower.

Seidu et al., 2020 findings also found that 21% of respondents aged 35-39 and 45-49 had their children via CD. Approximately one-quarter (24.7%) of respondents with a higher level of education delivered their children by CD, 28.5% of moms who delivered via CD were in the wealthiest domain, and 25.1% were in the greater Accra region (24).

According to the study done by Malachi Ochieng et al., overall results indicated increased chances of cesarean delivery among mothers belonging to the wealthiest households, with an adjusted odds ratio (aOR) of 1.4 (95% CI 1.2–1.8). Similarly, those with health insurance had higher odds, with an aOR of 1.6 (95% CI 1.3–1.9), as did mothers with a higher level of education, with an aOR of 1.6 (95% CI: 1.2–2.0). Urban residents showed an aOR of 1.3 (95% CI: 1.2-1.5), those in managerial positions had an aOR of 1.7 (95% CI 1.3–2.2), and births in mission health facilities had an aOR of 1.9 (95% CI 1.6–2.2). These odds were in comparison to middle-class individuals, those without insurance, rural residents, unemployed individuals, and births in government facilities, respectively (29).

In our study having a prior history of anxiety or depression raises the odds of preferring a cesarean section by approximately 25.5%. Furthermore, having undergone pregnancy through In Vitro Fertilization (IVF) results in a rise in the odds of preferring a cesarean section by approximately 35.2%. Regarding the history of cesarean delivery, individuals with a previous such experience have odds of preferring a cesarean delivery that is approximately 53.6% higher. In our study, individuals who had experienced multiple pregnancies showed a higher inclination toward favoring cesarean deliveries. Similarly, this preference was evident when comparing

those who had never undergone childbirth with those who had prior childbirth experience; among the latter group, a stronger inclination to prefer cesarean births was observed. Notably, nearly fifty percent of the subjects who had previously undergone a cesarean section expressed a preference for having another cesarean section.

Similarly, in a study done by Taye et al., mothers aged 35 to 39 had a 5.3-fold higher likelihood of experiencing a cesarean delivery compared to those in the age range of 20 to 24 (aOR: 5.3; 95% CI: 1.43-19.62; p-value: 0.013). Among women with a history of previous CD, the probability of undergoing a cesarean delivery was 3.4 times greater than those without prior CD (aOR: 3.4; 95% CI 1.64–7.03; p-value: 0.001). The chances of CD were 3.43 times higher in mothers with a college education or above, as opposed to those with no formal education (aOR: 3.43; 95% CI 1.33–8.81; p-value: 0.01). Additionally, mothers earning a monthly income of 6000 Ethiopian birrs or more were 2.43 times more likely to have a CD compared to those with a monthly income below 3000 Ethiopian birrs (aOR: 2.43; 95% CI 1.20–4.94; p-value: 0.013) (30).

The limitations of our study are the information gathered regarding maternal preferences and related factors is based on self-reported data, which could be influenced by memory bias or the tendency to provide socially desirable responses. This might result in inaccuracies in the reported information. The outcomes might not be broadly generalizable due to differences in cultural norms, healthcare approaches, and regional variations in attitudes toward cesarean delivery. The absence of randomization and control, as well as the lack of blinding, are notable limitations. Furthermore, the study was conducted at a single location and had a relatively small sample size.

Conclusion

In our research, individuals with a prior cesarean section history, history of abortion, IVF pregnancy, preexisting anxiety or depression, exhibited a tendency to opt for the caeserean delivery. Among those who expressed a preference for cesarean birth within our study, the prevailing reason cited was a fear of vaginal delivery. There is a crucial need to enhance pregnant women's understanding of the advantages, disadvantages, and appropriate circumstances for various delivery methods.

Healthcare providers should play an active role in encouraging pregnant women to contemplate vaginal

birth. Regular prenatal care holds significance, and during each visit, healthcare professionals should provide thorough education to expectant mothers, encompassing the diverse options for childbirth.

Conflict of Interests

Authors declare no conflict of interests.

Acknowledgments

The authors would like to thank the study participants for their active participation and for answering the questions; the antenatal officer Mrs Ritanjali Behera and the nursing officer Miss Rajalaxmi who assisted in the data collection in the antenatal rooms.

References

1. Leone T, Padmadas SS, Matthews Z. Community factors affecting rising cesarean section rates in developing countries: an analysis of six countries. *Soc Sci Med*. 2008; 67(8):1236-46.
2. Chavan Niranjana. "Cesarean Delivery." In *Labour Room Emergencies*, pp. 297–303. Springer, Singapore, 2020.
3. Betran AP, Torloni MR, Zhang J, Ye J, Mikolajczyk R, Deneux-Tharaux C, et al. What is the optimal rate of cesarean section at population level? A systematic review of ecologic studies. *Reprod Health*. 2015;12(1):1-0.
4. Hamilton BE, Martin JA, Ventura SJ. Births: Preliminary data for 2012. *National Vital Statistics Reports*; vol 62 no 3. Hyattsville, MD: National Center for Health Statistics. 2013.
http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_03.pdf.
5. Anderson GM. Making sense of rising cesarean section rates. *BMJ*. 2004;329(7468):696-7.
6. Lauer JA, Betrán AP, Merialdi M, Wojdyla D. Determinants of cesarean section rates in developed countries: supply, demand and opportunities for control. *World health report*. 2010; 29:1-22.
7. Cohen W. Does maternal age affect pregnancy outcome? *BJOG*. 2014;121(3):252-4.
8. Kenny LC, Lavender T, McNamee R, O'Neill SM, Mills T, Khashan AS. Advanced maternal age and adverse pregnancy outcome: evidence from a large contemporary cohort. *PLoS one*. 2013;8(2): e56583.
9. Althabe F, Sosa C, Belizán JM, Gibbons L, Jacquerioz F, Bergel E. Cesarean section rates and maternal and neonatal mortality in low-, medium-, and high-income countries: an ecological study. *Birth*. 2006; 33(4): 270-7.
10. Robson M, Hartigan L, Murphy M. Methods of achieving and maintaining an appropriate cesarean section rate. *Best Pract Res Clin Obstet Gynaecol*. 2013; 27(2):297-308.
11. Wagner M. Choosing cesarean section. *Lancet*. 2000 Nov 11;356(9242):1677-80.
12. Thomas J, Callwood A, Brocklehurst P, Walker J. The National Sentinel Cesarean Section Audit. *BJOG*. 2000;107(5):579-80.
13. Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, Velazco A, et al. Cesarean delivery rates and pregnancy outcomes: the 2005 WHO global survey on maternal and perinatal health in Latin America. *Lancet*. 2006; 367(9525):1819-29.
14. Hall MH, Bewley S. Maternal mortality and mode of delivery. *Lancet*. 1999; 354(9180):776.
15. World Health Organization. Appropriate technology for birth. *Lancet*. 1985; 2(8452):436-7.
16. Kolås T, Saugstad OD, Daltveit AK, Nilsen ST, Øian P. Planned cesarean versus planned vaginal delivery at term: comparison of newborn infant outcomes. *Am J Obstet Gynecol*. 2006; 195(6):1538-43.
17. Tita AT, Landon MB, Spong CY, Lai Y, Leveno KJ, Varner MW, et al. Timing of elective repeat cesarean delivery at term and neonatal outcomes. *N Engl J Med*. 2009; 360(2):111-20.
18. Paech MJ, Scott KL, Clavisi O, Chua S, McDonnell N; ANZCA Trials Group. A prospective study of awareness and recall associated with general anaesthesia for cesarean section. *Int J Obstet Anesth*. 2008; 17(4):298-303.
19. Ye J, Betrán AP, Guerrero Vela M, Souza JP, Zhang J. Searching for the optimal rate of medically necessary cesarean delivery. *Birth*. 2014; 41(3):237-44.
20. Guittier MJ, Cedraschi C, Jamei N, Boulvain M, Guillemin F. Impact of mode of delivery on the birth experience in first-time mothers: a qualitative study. *BMC Pregnancy Childbirth*. 2014; 14:254.
21. Taha Z, Ali Hassan A, Wikkeling-Scott L, Papandreou D. Prevalence and Associated Factors of Cesarean Section and its Impact on Early Initiation of Breastfeeding in Abu Dhabi, United Arab Emirates. *Nutrients*. 2019; 11(11):2723.
22. Latifnejad Roudsari R, Zakerihamidi M, Merghati Khoei E. Socio-Cultural Beliefs, Values and Traditions Regarding Women's Preferred Mode of Birth in the North of Iran. *Int J Community Based Nurs Midwifery*. 2015; 3(3):165-76.
23. Karim F, Ali NB, Khan ANS, Hassan A, Hasan MM, Hoque DME, et al. Prevalence and factors associated with cesarean section in four Hard-to-Reach areas of Bangladesh: Findings from a cross-sectional survey. *PLoS One*. 2020; 15(6): e0234249.
24. Seidu AA, Hagan JE Jr, Agbemavi W, Ahinkorah BO,

- Nartey EB, Budu E, et al. Not just numbers: beyond counting cesarean deliveries to understanding their determinants in Ghana using a population based cross-sectional study. *BMC Pregnancy Childbirth*. 2020; 20(1):114.
25. Welay FT, Gebresilassie B, Asefa GG, Mengesha MB. Delivery Mode Preference and Associated Factors among Pregnant Mothers in Harar Regional State, Eastern Ethiopia: A Cross-Sectional Study. *Biomed Res Int*. 2021; 2021:1751578.
26. Khosravi H, Mehrbakhsh Z, Moghasemi S, Samiei G. Preferred mode of delivery association with the body image and genital image in pregnant women - a cross-sectional study. *BMC Pregnancy Childbirth*. 2023; 23(1):490.
27. Ayalew M, Mengistie B, Dheressa M, Demis A. Magnitude of Cesarean Section Delivery and Its Associated Factors Among Mothers Who Gave Birth at Public Hospitals in Northern Ethiopia: Institution-Based Cross-Sectional Study. *J Multidiscip Healthc*. 2020; 13:1563-1571.
28. Sultana S, Yousuff B, Wani IR, Altaf S. Knowledge, Attitude and Preferences of Pregnant Women towards Mode of Delivery in a Tertiary Care Government Hospital. *JMS SKIMS*. 2023; 26(2): 12-22.
29. Ochieng Arunda M, Agardh A, Asamoah BO. Cesarean delivery and associated socioeconomic factors and neonatal survival outcome in Kenya and Tanzania: analysis of national survey data. *Glob Health Action*. 2020; 13(1):1748403.
30. Taye MG, Nega F, Belay MH, Kibret S, Fentie Y, Addis WD, et al. Prevalence and factors associated with cesarean section in a comprehensive specialized hospital of Ethiopia: A cross-sectional study; 2020. *Ann Med Surg (Lond)*. 2021; 67:102520.

Citation: Begum J, Mitra S. **Preference and Associated Factors for Cesarean Delivery Among Pregnant Women: A Cross-Sectional Study.** *J Family Reprod Health* 2024; 18(1): 20-9.