

# Acceptability of Caesarean Section among Pregnant Women Seeking Antenatal Care at Women and Newborn Hospital-University Teaching Hospitals, Lusaka Zambia

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## Abstract

Caesarean section remains one of the most common obstetric and major operations performed on women during pregnancy and has contributed to improving maternal and foetal health. Consequently, significant mortality and morbidity from pregnancy and labour-related causes can be eliminated by a timely caesarean section. The acceptance of the life-saving procedure remains unsatisfactory in most sub-Saharan nations. The study aimed to assess the acceptability of caesarean section and associated factors among pregnant women seeking antenatal care at Women and Newborn Hospital-University Teaching Hospitals in Lusaka Zambia. The study utilised a quantitative cross-sectional analytical study design involving 420 pregnant women selected using systematic random sampling at Women and Newborn Hospital-University Teaching Hospitals Lusaka Zambia. Data was obtained using an Interview schedule and analysed using R software version 4.3.2. Chi-square, Fisher's exact test, Wilcoxon rank sum test and binary logistic regression for statistical analysis at a 5% level of significance. The study found that the acceptability of Caesarean section as a mode of delivery was low (29%) among respondents at Women and Newborn Hospital-University Teaching Hospitals. This was influenced by marital status ( $P = 0.002$ ), socioeconomic status ( $P = 0.050$ ), parity ( $P = 0.004$ ), gestation age ( $P = 0.008$ ), previous history of caesarean section ( $P = 0.003$ ), knowledge ( $P < 0.001$ ), attitude ( $P < 0.001$ ), and sociocultural beliefs ( $P = 0.045$ ). Low acceptability of Caesarean section delivery is common among women at Women and Newborn Hospital-University Teaching Hospitals, despite its potential benefits for maternal and neonatal health. Socio-demographic and maternal characteristics, knowledge, attitude, perception, and socio-cultural beliefs play a major role in determining acceptabil-

ity. Therefore, efforts to enhance acceptability should focus on improving knowledge, enhancing positive perceptions and attitudes, and allaying negative socio-cultural beliefs towards caesarean section.

## Keywords

Caesareans Section, Acceptability, Knowledge, Attitude, Perception

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## 1. Introduction

Caesarean section (CS) is one of the most commonly performed surgical procedures in obstetrics and is certainly one of the oldest surgeries [1]. Undoubtedly the term caesarean was derived from the decree in Roman law, which made it mandatory for the operation to be performed on women dying during childbirth, a term called *lex caesare* [2]. According to Coates *et al.*, [2], this surgery has been reported throughout medical history and has steadily progressed from being fatal resulting in mortality for the mother or the child to being rendered safe for both mother and foetus during the 20<sup>th</sup> century.

CS is a surgical procedure in which incisions are made through a woman's abdomen and uterus to deliver her baby [3]. Caesarean section may be necessary if vaginal delivery poses a risk to the mother or baby when there is prolonged labour, foetal distress, or the baby is presenting in an abnormal position [4]. While CS can be an essential and life-saving surgery, it has some risks such as accidental damage to the woman's bladder or bowel and an increase in the incidence of breathing difficulties in the baby [5]. These should be explained to the woman as part of the preparation for surgery.

Performing a CS with no medical indication offers no health advantages for the mother and infant, and has increased health risks, from both physical and emotional perspectives, compared with vaginal birth [6].

Developing countries often have high rates of maternal mortality, which is partly due to a lack of access to quality healthcare, including safe childbirth services [7]. Nkhata *et al.*, [8] argued that understanding women's views on Caesarean section may be possible to improve access to this life-saving procedure for those who need it. Improving CS Service provision among pregnant women in the light of improved reproductive health is central to achieving Sustainable Development Goals (SDGs) [9]. This is in line with the need to have better outcomes in maternal health, reducing child mortality and eradicating extreme poverty, but this always comes with constraints. Makinde *et al.*, [10] argued that maternal morbidity and mortality, including severe bleeding, infection, and injury to the reproductive tract, are increased in cases of obstructed labour, prolonged labour, or foetal distress. Furthermore, failure to perform CS in high-risk deliveries can lead to foetal death and long-term disabilities in newborns [11].

Caesarean deliveries have been perceived as a "curse" of an unfaithful woman in most African communities [12]. It is, therefore, accepted reluctantly even in

the face of obvious clinical indications. In those circumstances, the underuse of CS contributes to increased maternal and perinatal morbidity and mortality [13]. There was evidence to show that pregnant women who were knowledgeable about their condition could participate in shared decision-making. Maternal knowledge, attitudes and perceptions towards CS are crucial because positive perceptions and attitudes could lead to effective adaptation to the maternal role while negative perceptions and attitudes can contribute to delayed presentation of women for emergency obstetric care.

Despite the benefits of Caesarean section, women still perceived it to have negative outcomes such as not being a 'woman'. In developing countries, women view Caesarean section as not only abnormal but also a significant subtraction of womanhood.

Faremi *et al.*, [14] noted that in Western Nigeria, several women believed Caesarean section was a last resort used to deliver a pregnant woman of her baby and that being told that they were going to deliver their babies through Caesarean section was like giving a death warrant. This attitude towards caesarean section influenced women's acceptance of the procedure and resulted in psychological depression that women and their families usually experienced when told that their baby would be delivered through caesarean section affecting the procedure outcome [14]. In Bangladesh, Begum *et al.*, [15] found out that women in rural communities had a strong preference for a normal vaginal birth. This could have been attributed to a lack of SBCC on the medical indications for Caesarean section. However, they were willing to accept the attending healthcare provider's decision for a caesarean birth [15].

Little is known in Zambia on the acceptability of CS and associated factors among pregnant women seeking antenatal care towards CS. There was still a paucity of published data surrounding the acceptability of CS among pregnant women. It is against this background, therefore, that this study was conducted to assess the acceptability of CS and associated factors among pregnant women seeking antenatal care at the Women and Newborn Hospital-UTHs in Lusaka, Zambia.

## 2. Methods and Materials

### 2.1. Study Design

A quantitative cross-sectional analytical study design conducted to determine the acceptance of CS and its associated factors among pregnant women in Lusaka, Zambia seeking antenatal care at WNH-UTHs.

### 2.2. Study Site

The study took place at the WNH-UTHs in Lusaka Zambia. It's a national referral centre with a 562-bed capacity and also serves as the main medical training institution for healthcare professionals. The hospital provides secondary and tertiary care services.

### 2.3. Target Population

The study population consisted of pregnant women.

### 2.4. Study Population

The study recruited only consented and assented pregnant women irrespective of trimester seeking ANC services at the WNH-UTHs.

### 2.5. Sampling Techniques

A systematic random sampling technique was used to select all eligible pregnant women seeking antenatal care at WNH-UTHs. The sampling frame of the study population was all pregnant women seeking antenatal services at WNH-UTHs.

### 2.6. Inclusion Criteria

The study included

- Pregnant women aged 15 years to 49 years seeking ANC services at WNH-UTHs with or without a history of previous CS.

### 2.7. Exclusion Criteria

- Pregnant women brought in as an emergency.

### 2.8. Sample Size

The sample size was determined using Cochran's formula (single proportion) for sampling size calculation of the unknown population as shown below:

$$n = \frac{z^2 p(1-p)}{e^2}$$

### 2.9. Data Collection Plan and Tools

The primary data source was used in this study. An interview schedule was adapted from other studies [16] [17], that have researched factors associated with caesarean section acceptability and were used to collect information by the researcher. Before data collection, the questionnaire was pre-tested to ensure its validity and reliability.

### 2.10. Procedure for Data Collection

The respondents were given full information about the purpose and significance of the study. Informed consent was obtained before the interviews were conducted. The respondents were made anonymous as no identification detail was requested or recorded. The researcher ensured all interview questions were answered and questionnaires were stored in a secure place.

### 2.11. Reliability and Validity

According to Creswell [18] reliability and validity focuses on examining the stability or consistency of responses or generalizability (the external validity of ap-

plying results to new settings, people, or samples). The face and content validity of the questionnaire was established through examination and scrutiny by independent researchers' experts in obstetrics and gynaecology. Supervisor and co-supervisor for inspection and Likert scale to ensure validity was used. The instrument underwent pilot testing for its reliability and was subsequently revised for clarity. The data collection tool was pre-tested. A comprehensive literature review was conducted, and privacy during data collection was maintained. Last but not least consistency was maintained in the manner questions were asked to ensure reliability.

### **2.12. Pilot Study**

Before the actual study, the researcher conducted a pilot study at Levy Mwanawasa Teaching Hospitals, WNH in which the validity and reliability of the data collection tools were ascertained. The pilot study comprised 10% (35 respondents) of the total study sample size. The pilot study enabled the researcher to check for respondent's ability to understand and answer questions, it also helped to clarify grey areas in the tool.

### **2.13. Data Processing and Analysis**

The data collected were examined for consistency and completeness, cleaned, coded, and analysed using R software version 4.3.2 [19]. Frequency distributions and summary statistics were used to describe categorical and numerical variables. The median and interquartile range were used to describe numeric variables, as they were skewed. Normality tests were done with the Shapiro-Wilk test and graphically using a histogram with a superimposed normal curve. Associations between each categorical variable and the outcome variable were tested using a chi-square test. However, for variables with expected frequencies less than 5, Fisher's exact test was used. For associations between the dependent variable and numeric independent variables, a Wilcoxon rank sum test was used. To identify the adjusted effects of independent variables, an investigator-led backward stepwise multivariable binary logistic regression analysis was done. The modelling process was guided by the Akaike Information Criterion (AIC) and the likelihood ratio test. All statistical analyses were conducted at a 5 per cent level of significance, thus, p-values not greater than 0.05 were considered significant.

## **3. Results**

### **3.1. Sociodemographic and Maternal Characteristics**

**Table 1** shows that respondents had a median age of 31 years (IQR, 26 - 36), the majority 351 (84%) were married, and Christianity accounted for the largest religion 408 (97%). Around half, 225 (54%) attained high-level education (secondary or tertiary), and 240 (57%) lived in medium-density areas. Being in formal 184 (44%) and informal 148 (35%) employment was common among respondents,

**Table 1.** Sociodemographic and maternal characteristics of respondents (n = 420).

Characteristic	Category	Frequency (n)	Percent (%)
Age in years	Median (IQR)	31.0 (26.0, 36.0)	
Marital status	Married	351	84
	Unmarried	69	16
Religious affiliation	Christianity	408	97
	Others	10	3
Education attained	Low	195	46
	High	225	54
Area of residence	Low density	27	6
	Medium density	240	57
	High density	153	36
Employment status	Formal	184	44
	Informal	148	35
	Unemployed	88	21
Economic status	High	183	44
	Low	237	56
Parity	No children	114	27
	1 - 3 Children	252	60
	≥4 Children	54	13
Gravid	2 - 4 pregnancies	237	56
	Multigravida	83	20
	Primigravid	100	24
Gestation age	1 <sup>st</sup> trimester	27	6
	2 <sup>nd</sup> trimester	106	25
	3 <sup>rd</sup> trimester	287	68
Previous caesarean delivery	No	307	73
	Yes	113	27
Type of caesarean	Emergency	81	72
	Planned	32	28
Time to recover	Median (IQR)	7.0 (4.0, 8.0)	

with most respondents 237 (56%) coming from a low economic status. Around two-thirds, 281 (67%) had 1 - 4 children, and most 287 (68%) respondents were in their third trimester of pregnancy at the time of the study. About a quarter, 113 (27%) had a previous CS delivery, with the majority of these deliveries being emergencies 81 (72%). The median time to recover was 7 weeks (IQR, 4 - 8) for

respondents who had a previous CS delivery.

### 3.2. Acceptability of Caesarean Section

Acceptability was assessed using a five-item Likert scale, which focused on respondents' willingness to undergo CS delivery if indicated. Acceptability was then dichotomized into agreeable and not agreeable based on the overall scores from the Likert scale.

As shown in **Table 2**, over a third of the respondents, (36%,  $n = 150$ ) would not accept CS if it were indicated and two-thirds (66%,  $n = 277$ ) would not request to delivery by CS. Over a third of the respondents, (39%,  $n = 163$ ) would not willingly consent to an emergency or elective CS delivery, (30%,  $n = 126$ ) indicated that CS was an abnormal means of birth, and (30%,  $n = 127$ ) suggested that CS was dangerous to both the mother and baby. Overall, CS delivery was not agreeable among most of the respondents, (71%,  $n = 299$ ), whereas (29%,  $n = 121$ ) expressed acceptability of CS delivery.

### 3.3. Knowledge on Caesarean Section

Results in this section focused on respondents' knowledge of CS delivery by assessing awareness of aspects such as indications, possible effects, and benefits of CS. The overall knowledge score was then used to categorize knowledge levels into low, medium, and high.

As shown in **Table 3**, (57%,  $n = 238$ ) of the respondents indicated that prolonged labour was an indication for CS, and (75%,  $n = 313$ ) indicated abnormal lie, abnormal placenta position, and carrying a big baby as the indications. About two-thirds, (65%,  $n = 275$ ) suggested that vaginal delivery was still possible after CS, (34%,  $n = 142$ ) agreed that CS delivery may require blood transfusion and that it may prolong hospital stay (77%,  $n = 323$ ). A third of the respondents, (33%,  $n = 139$ ) indicated that drugs given during CS were harmful to a

**Table 2.** Respondents' acceptability of caesarean section ( $n = 420$ ).

Characteristic	Agree n (%)	Strongly agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
I can accept CS delivery if indicated	124 (30)	82 (20)	44 (10)	20 (5)	150 (36)
I can request for CS to be done on me	54 (13)	45 (11)	25 (6)	19 (5)	277 (66)
I would willingly consent to an emergency or elective CS	132 (31)	40 (10)	37 (9)	163 (39)	48 (11)
CS is not an abnormal means of birth	109 (26)	38 (9)	54 (13)	93 (22)	126 (30)
CS is not dangerous to the mother and baby	110 (26)	32 (8)	92 (22)	59 (14)	127 (30)

**Table 3.** Knowledge of respondents about caesarean section (n = 420).

Characteristic	Yes n (%)	No n (%)	I don't know n (%)
CS is done in prolonged labour	238 (57)	102 (24)	80 (19)
CS is indicated in an abnormal lie, abnormal placenta position, and big baby	313 (75)	54 (13)	53 (13)
SVD is not possible after a CS	63 (15)	275 (65)	82 (20)
CS may require a blood transfusion	142 (34)	112 (27)	166 (40)
CS requires a longer maternal hospital stay	323 (77)	20 (5)	77 (18)
Drugs used during CS are harmful	139 (33)	185 (44)	96 (23)
CS does not require a woman's consent	50 (12)	311 (74)	59 (14)
Ever received IEC on CS during ANC	56 (13)	364 (87)	—
Recovery is faster after vaginal delivery than CS	405 (96)	15 (4)	—
CS saves the life of the mother	288 (69)	55 (13)	77 (18)
CS saves the life of the baby	350 (83)	11 (3)	59 (14)

woman's health, and most, (74%, n = 311) were aware that CS required a woman's consent. The majority, (87%, n = 364) denied ever receiving IEC on CS at ANC, and (96%, n = 405) indicated that recovery was faster after vaginal than CS delivery. Many respondents indicated that CS could save the mother's (69%, n = 288) and baby's (83%, n = 350) lives.

Overall, over half of the respondents, 232 (55%) expressed high knowledge about CS, 111 (26%) had medium knowledge, whereas 77 (18%) expressed low knowledge.

### 3.4. Attitude towards Caesarean Section

This section presents findings on the attitude of respondents towards CS delivery. Attitude was assessed using a seven-item Likert scale, which focused on women's feelings and thoughts on CS. Based on the overall scores, it was then dichotomized into positive or negative attitudes.

As shown in **Table 4**, (53%, n = 224) agreed that it was right to undergo CS for medical reasons, (47%, n = 199) agreed and (30%, n = 124) strongly agreed that a woman could give birth vaginally after CS. Around a third of the respondents, (34%, n = 141) disagreed that it is weak women who undergo CS, (29%, n = 121) disagreed that it is lazy women who undergo CS, whereas (25%, n = 104) agreed that CS was an abnormal means of delivery. More than a third, (38%, n = 161) strongly agreed that CS was more painful than vaginal delivery, and 174 (41%) disagreed that healthcare workers deliberately opted for CS. About half, (47%, n = 199) agreed to the possibility of a vaginal delivery after CS.

Overall, about half of the respondents, (48%, n = 203) expressed a negative attitude towards CS, whereas (52%, n = 217) expressed a positive attitude.



**Table 4.** Respondent's attitude towards caesarean delivery (n = 420).

Characteristic	Agree n (%)	Strongly agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
Undergoing CS is right for medical reasons	224 (53)	71 (17)	103 (25)	10 (2)	12 (3)
Weak women undergo CS	50 (12)	38 (9)	95 (23)	141 (34)	96 (23)
Lazy women undergo CS	60 (14)	70 (17)	78 (19)	121 (29)	91 (22)
CS is not an abnormal means of birth.	104 (25)	32 (8)	48 (11)	111 (26)	125 (30)
CS is more Painful than vaginal delivery	65 (15)	161 (38)	132 (31)	47 (11)	15 (4)
Health workers deliberately opt for CS	14 (3)	29 (7)	92 (22)	174 (41)	111 (26)
Woman can give birth vaginally after CS	199 (47)	124 (30)	63 (15)	20 (5)	14 (3)

### 3.5. Perception toward Caesarean Section

Results in this section focus on respondents' perception towards CS delivery, assessed using a Likert scale, which focused on respondents' opinions on the safety and effects of CS, and how they perceived women who deliver through CS. The overall perception was dichotomized into positive and negative based on the overall scores from the Lickert scale.

**Table 5** shows that (41%, n = 173) of the respondents strongly disagreed that CS was a safe method of delivery, around half, 214 (51%) disagreed that women with previous CS cannot deliver again, (47%, n = 96) and (44%, n = 183) indicated that babies born by CS were normal. Less than half [(42%, n = 176), and (42%, n = 175)] were worried about the competence of health professionals in CS. Similarly, most respondents agreed that CS delivery was not a taboo (46%, n = 193) and that women who delivered by CS were not sub-humans (49%, n = 206). Less than a quarter, (23%, n = 96) perceived CS to be expensive, most disagreed that CS was done only on cursed women [(36%, n = 152) and (42%, n = 175)], and under half of the respondents, (44%, n = 183) agreed that CS is sometimes done for medical reasons.

Overall, about a quarter of the respondents, (23%, n = 98) had a negative perception towards CS, while most, (77%, n = 322) expressed a positive perception.

### 3.6. Socio-Cultural Beliefs on Caesarean Section

This section presents results on socio-cultural beliefs on CS delivery among study respondents. This focused on respondents' religious and traditional convictions and fears about CS delivery.

**Table 6** shows that only (16%, n = 69) of the respondents had some sort of beliefs that affected their preferred choice mode of delivery, (22%, n = 93) believed

**Table 5.** Respondents' perception towards caesarean section (n = 420).

Characteristic	Agree n (%)	Strongly agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
CS is a safe method of delivery	73 (17)	41 (10)	75 (18)	58 (14)	173 (41)
Women with previous CS cannot deliver again	33 (8)	—	65 (15)	214 (51)	108 (26)
Babies delivered by CS are normal babies	183 (44)	196 (47)	28 (7)	13 (3)	—
Worry about Health professionals' competence in CS	176 (42)	175 (42)	—	69 (8%)	(8%)
Women who deliver by CS are not sub-human	206 (49)	93 (22)	38 (9)	59 (14)	24 (6)
It is not a taboo to deliver by CS	193 (46)	99 (24)	55 (13)	58 (14)	15 (4)
CS is expensive	96 (23)	95 (23)	128 (30)	81 (19)	20 (5)
CS is done on cursed women	19 (5)	12 (3)	62 (15)	152 (36)	175 (42)
CS is sometimes done due to medical reasons	130 (31)	183 (44)	83 (20)	6 (1)	18 (4)

**Table 6.** Socio-cultural beliefs among study respondents (n = 420).

Characteristic	Yes n (%)	No n (%)
Presence of any socio-cultural beliefs that affect the choice of one's delivery mode	69 (16)	351 (84)
Only rich women undergo CS	93 (22)	327 (78)
Having CS adversely affects the child	34 (8)	386 (92)
My religion allows undergoing CS	392 (93)	28 (7)
CS is safe for both mother and baby	212 (50)	208 (50)
CS is a punishment and not God's will	89 (21)	331 (79)
Need a partner to decide on undertaking CS	269 (64)	151 (36)
If a partner or significant other supported CS, I would take it	336 (80)	84 (20)
Fear of husband's rejection is the reason women do not want CS	163 (39)	257 (61)
Women unfaithful to their husbands undergo CS	55 (13)	365 (87)
Any fears about CS procedure	388 (92)	32 (8)
<b>Specific fears about CS</b>	<b>Freq. (n)</b>	<b>Perc. (%)</b>
Bleeding, death, wound gapping, infections and scarring	205	53
Forgetting instruments and materials in the uterus/abdomen	96	25
Others	87	22

that only wealthy women undergo CS, and (21%,  $n = 89$ ) thought CS was a punishment and not God's will. Most respondents, (64%,  $n = 269$ ) needed their partners to decide on undergoing CS, and the majority, (80%,  $n = 336$ ) would undergo CS if a partner or significant other supported it. About (39%,  $n = 163$ ) believed that women did not want to undergo CS because of fear of being rejected by their husbands. Many respondents, (92%,  $n = 388$ ) had fears about CS, with common fears being bleeding, death, wound gapping, infections, and scarring 205 (53%), and that practitioners could forget instruments and materials in the uterus/abdomen (25%,  $n = 96$ ).

### 3.7. Association between Variables

This section presents cross-tabulations and tests for associations between the acceptability of CS and various independent variables using the chi-squared and Fisher's exact tests.

**Table 7** shows that acceptability of CS was common among respondents who were married (94%,  $n = 114$ ), those who attained a high education level (69%,  $n = 83$ ), and those who lived in medium-density areas, (63%,  $n = 76$ ). The results showed that marital status ( $P < 0.001$ ), education attainment ( $P < 0.001$ ), and area of residence ( $P = 0.018$ ) were significantly associated with the acceptability of CS. Furthermore, most respondents who were in formal employment (45%,  $n = 55$ ), those with 1 - 4 children (69%,  $n = 83$ ), and most respondents with no history of CS (66%,  $n = 80$ ) expressed acceptability of CS. Similarly, CS was commonly accepted among those with high knowledge, (76%,  $n = 92$ ), positive attitude (77%,  $n = 93$ ), positive perception (93%,  $n = 112$ ), and those with no negative socio-cultural beliefs about CS (89%,  $n = 108$ ). Employment status ( $P < 0.001$ ), parity ( $P = 0.003$ ), history of previous CS delivery ( $P = 0.040$ ), knowledge of CS ( $P < 0.001$ ), attitude towards CS ( $P < 0.001$ ), perception of CS ( $P < 0.001$ ), and socio-cultural beliefs on CS ( $P = 0.045$ ) were all significantly associated with acceptability of CS in the study.

### 3.8. Binary Logistic Regression Analysis

Results in this section focus on regression analysis estimates using both univariable and multivariable regression analysis. The findings presented below were arrived at using an investigator-led backward step-wise model selection approach.

**Table 8** shows that unmarried respondents had significantly lower odds of CS acceptability compared to those in marriage at both univariable (cOR = 0.23, CI = 0.10, 0.50,  $P < 0.001$ ) and multivariable (aOR = 0.22, CI = 0.08, 0.53,  $P = 0.002$ ) analysis. High relative to low education attainment was significantly associated with increased odds of accepting CS (cOR = 2.41, CI = 1.56, 3.80,  $P < 0.001$ ) at univariable but not at multivariable analysis. Similarly, at multivariable analysis, respondents with a high socio-economic status had significantly lower odds of accepting CS compared to those with a low status (aOR = 0.58, CI = 0.33, 1.00,  $P$

**Table 7.** Association between acceptability of CS and independent (n = 420).

Variables	Category	Acceptability of CS		P-value
		Acceptable, N = 121 n (%)	Unacceptable, N = 299 n (%)	
Age in years	Median (IQR)	31 (28, 35)	30 (26.0, 36)	0.216 <sup>w</sup>
Time to recover	Median (IQR)	4 (4.0, 8.0)	8 (4, 10)	0.155 <sup>w</sup>
Marital status	Married	114 (94)	237 (79)	< 0.001 <sup>c</sup>
	Unmarried	7 (5.8)	62 (21)	
Religious affiliation	Christianity	119 (98)	289 (97)	0.864 <sup>f</sup>
	Others	2 (2)	10 (3)	
Highest education attained	Low	38 (31)	157 (53)	< 0.001 <sup>c</sup>
	High	83 (69)	142 (47)	
Area of residence	Low density	12 (9.9)	15 (5.0)	0.018 <sup>c</sup>
	Medium density	76 (63)	164 (55)	
	High density	33 (27)	120 (40)	
Employment status	Formal	55 (45)	129 (43)	< 0.001 <sup>c</sup>
	Informal	28 (23)	120 (40)	
	Unemployed	38 (31)	50 (17)	
Economic status	High	52 (43)	131 (44)	0.875 <sup>c</sup>
	Low	69 (57)	168 (56)	
Parity	No children	38 (31)	76 (25)	0.008 <sup>f</sup>
	1 - 3 Children	77 (64)	175 (59)	
	4 or more children	6 (5.0)	48 (16)	
Gravid	Primigravid	32 (26)	68 (23)	0.166 <sup>c</sup>
	2 - 4 pregnancies	72 (60)	165 (55)	
	Over 4 pregnancies	17 (14)	66 (22)	
Gestation age	1 <sup>st</sup> trimester	6 (5.0)	21 (7.0)	0.713 <sup>f</sup>
	2 <sup>nd</sup> trimester	30 (25)	76 (25)	
	3 <sup>rd</sup> trimester	85 (70)	202 (68)	
Previous caesarean delivery	No	80 (66)	227 (76)	0.040 <sup>c</sup>
	Yes	41 (34)	72 (24)	
Type of caesarean	Emergency	33 (80)	48 (67)	0.117 <sup>c</sup>
	Planned	8 (20)	24 (33)	
Knowledge on CS	High	92 (76)	140 (47)	< 0.001 <sup>c</sup>
	Low	5 (4.1)	72 (24)	
	Medium	24 (20)	87 (29)	
Attitude towards CS	Negative	28 (23)	175 (59)	< 0.001 <sup>c</sup>
	Positive	93 (77)	124 (41)	

**Table 8.** Association between acceptability of CS and independent (n = 420).

Variables	Category	Acceptability of CS		P-value
		Acceptable, N = 121 n (%)	Unacceptable, N = 299 n (%)	
Perception of CS	Negative	9 (7.4)	89 (30)	<0.001 <sup>c</sup>
	Positive	112 (93)	210 (70)	
Socio-cultural beliefs	No	108 (89)	243 (81)	0.045 <sup>c</sup>
	Yes	13 (11)	56 (19)	

<sup>a</sup>Wilcoxon rank sum test; <sup>b</sup>Pearson's Chi-squared test; <sup>c</sup>Fisher's exact test.

= 0.050). Compared to respondents with no children, those with 1 - 3 children (aOR = 0.44, CI = 0.23, 0.82, P = 0.011) and four or more children (aOR = 0.19, CI = 0.06, 0.55, P = 0.004) had 66% and 81% lower odds of accepting CS respectively, and this was significant taking account of other variables.

The odds of accepting CS were significantly higher for respondents in their third trimester of pregnancy compared to those in the first trimester (aOR = 3.94, CI = 1.49, 11.8, P = 0.008), controlling for all other variables. History of a previous CS was significantly associated with increased odds of accepting CS independently (cOR = 1.62, CI = 1.02, 2.55, P = 0.041) and taking into account other characteristics (aOR = 2.50, CI = 1.38, 4.59, P = 0.003). Having high knowledge about CS significantly increased the odds of CS acceptability 5.67 times (aOR = 5.67, CI = 2.14, 18.1, P = 0.001) compared to low knowledge. Similarly, respondents with a positive attitude towards CS had higher odds of CS acceptability at both univariable (cOR = 4.69, CI = 2.93, 7.69, P < 0.001) and multivariable (aOR = 3.87, CI = 2.24, 6.85, P < 0.001) analysis compared to those with a negative attitude.

## 4. Discussion of Results

### 4.1. Sociodemographic and Maternal Characteristics of Study Respondents

In this study, the respondents had a median age of 31 years. This aligns with the expected demographic, as the subjects primarily consisted of women of reproductive age. These findings are consistent with previous research, where antenatal clinics commonly saw women in the age range of 26 to 30 years [20]. More than three-quarters of the respondents, 351 (84%), were married this could be attributed to cultural norms and expectations as marriage is considered a significant life event in one's life, the other reason could be the result of Christianity being the dominant religion in Zambia which often supports marriage as sacred. The high levels of marriage in the study are consistent with the ZDHS [21] report which shows that marriage among women in Zambia starts early, as early as 19 years and over half of women in the country are married. Additionally, so-

cietal norms demand that pregnancy occur in marriage and because we are targeting pregnant women this was a likely finding.

The majority of respondents (97%) were identified as Christians this is so because of the strong reflection of Christian historical, cultural and social factors identified in Zambia.

About 57% of the respondents reside in medium-density areas while 56% were from a low economic status. In this study, approximately two-thirds (67%) of respondents were a combination of primipara and multipara. Additionally, more than half (68%) of the respondents were in the third trimester of pregnancy. Notably, the current study found a significant association between gestational age and the acceptability of caesarean section (CS). Specifically, those in the third trimester were more likely to agree to undergo CS ( $P \leq 0.008$ ). The finding of this study is in line with those found by Himalowa *et al.* [22], who conducted a study at WNH-UTHs Lusaka Zambia although the study population was different from the current found that gestational age and maternal age were significantly associated factors associated with Cesarean Section. The current study found that both gestational age and parity play a crucial role. Parity and the frequency of antenatal visits significantly influence pregnant women's decisions and reshape existing views regarding delivery.

Furthermore, the history of previous CS was found to be significant in the current study which is contrary to the study by Omotayo *et al.*, [23], where there was no significant relationship between previous obstetric experiences and acceptability of caesarean section. The discrepancy in the findings could be attributed to the study setting, study design, and population recruited only multiparous women, as well as the sample size which was smaller than the current study. Economic status has been found to influence the acceptability of CS in this study with a  $P \leq 0.050$ . This implies that women with high economic status and women from medium-density areas are more likely to accept CS and this finding is similar to a study conducted by [24], in Vietnam where they found that women with high socio-economic status are likely to accept CS among pregnant women. In the present study educational status has also been found to significantly influence CS acceptance among respondents ( $P \leq 0.001$ ) similar to a study by Oshodi *et al.*, [25], which found that educational status positively influenced acceptance of CS ( $P \leq 0.001$ ). These findings suggest that there is a need to address the socio-economic and demographic factors that affect the acceptance and preference of pregnant women towards CS and to ensure that women have access to respectful and evidence-based care that meets their needs and preferences.

#### **4.2. Acceptability of CS among Pregnant Women at Women and Newborn Hospital**

The study findings revealed lower acceptability of CS and about half of the respondents would not be willing to consent to an emergency or elective CS delivery. On the other hand, more than half of respondents indicated CS was an ab-

normal means of birth while (44%, n = 186) respondents stated that CS was dangerous to both mother and baby. Despite the study indicating high knowledge and positive perception of CS, these did not influence the acceptability of CS among women. This could be attributed to the lack of IEC during ANC (**Table 3**).

The findings of this study are consistent with a study conducted in Ghana in Cape Coast Metropolis by Ansah, [16], who also indicated a lower acceptance level of 34%. The current study is also in agreement with the study conducted by Begum *et al.*, [15] in a rural community in Bangladesh where women had a low preference for CS which was attributed to a lack of IEC on the medical indications for caesarean section. However, these findings are contrary to the findings of a study conducted in Nigeria that indicated about 68% of pregnant women received knowledge on CS during ANC care from health personnel. The current study is in line with the study conducted by Schantz, [24], in France, where 2.5% of respondents had a preference for CS which was perceived as more painful, riskier, and less natural compared to vaginal delivery.

The findings of the current study are contrary to those of Omobolanle *et al.* [26], who found a high acceptance of CS (80.3%) in Nigeria. This could be explained by the differences in context and region as well as the study being a multi-facility study. The Nigerian study utilized a descriptive cross-sectional survey and a purposive sample based on specific criteria related to the research. It also involved high-risk pregnant women, who had medical or obstetric conditions that increased the likelihood of complications during pregnancy or delivery.

### **4.3. Factors Associated with the Acceptability of CS among Pregnant Women**

#### **4.3.1. Knowledge on CS**

The findings of the study indicated that knowledge on CS was high among respondents at WNH-UTHs. A high level of knowledge was found to be significant among respondents in both univariable and multivariable analyses (**Table 9**). This study has noted that pregnant women with high knowledge were more likely to accept CS compared to those with low knowledge, this is in line with a study by Ansah [19] who found similar findings where high knowledge had a strong association with CS acceptability among pregnant women in Coast Metropolis in Ghana this similarity in the findings on knowledge on CS could be qualified to similar study settings in Ghana, had also similar results where the majority (82.2%) of pregnant women in the Obstetrics Unit at the Korle-Bu Teaching Hospital had considerable knowledge on conditions that predispose a woman to caesarean section as well as the risk of complications. In addition, results from a study by Omotayo *et al.* [27], in Nigeria at Mother and Child Hospital, Akure where 65% of respondents had good knowledge although, this study was conducted on multiparous pregnant women attending antenatal clinic. Even though, the current study has indicated a high knowledge level among respondents this did not translate to acceptability of CS as indicated in other studies by Betran *et al.*; Jeremiah *et al.*, [31], who found high knowledge and

**Table 9.** Univariable and multivariable logistic regression analysis

Variables	Univariable estimates			Multivariable estimates		
	cOR	95% CI	<i>p</i> -value	aOR	95% CI	<i>p</i> -value
Marital status						
Married	—	—	—	—	—	—
Unmarried	0.23	0.10, 0.50	0.001	0.22	0.08, 0.53	0.002
Level of education						
Low	—	—	—	—	—	—
High	2.41	1.56, 3.80	0.001	1.59	0.91, 2.83	0.107
Socio-economic status						
Low	—	—	—	—	—	—
High	0.97	0.63, 1.48	0.875	0.58	0.33, 1.00	0.050
Parity						
No child	—	—	—	—	—	—
1 - 3 children	0.88	0.55, 1.42	0.596	0.44	0.23, 0.82	0.011
4 or more	0.25	0.09, 0.60	0.004	0.19	0.06, 0.55	0.004
Gestation age						
1 <sup>st</sup> trimester	—	—	—	—	—	—
2 <sup>nd</sup> trimester	1.38	0.53, 4.06	0.527	2.82	1.00, 8.88	0.060
3 <sup>rd</sup> trimester	1.47	0.61, 4.13	0.421	3.94	1.49, 11.8	0.008
Previous CS delivery						
No	—	—	—	—	—	—
Yes	1.62	1.02, 2.55	0.041	2.50	1.38, 4.59	0.003
Knowledge on CS						
Low	—	—	—	—	—	—
Medium	3.97	1.55, 12.3	0.008	2.93	0.99, 10.1	0.065
High	9.46	4.04, 27.7	0.001	5.67	2.14, 18.1	0.001
Attitude toward CS						
Negative	—	—	—	—	—	—
Positive	4.69	2.93, 7.69	0.001	3.87	2.24, 6.85	0.001

cOR = Crude Odds Ratio, aOR = Adjusted Odds Ratio, CI = Confidence Interval.

acceptance of CS among women in other countries. The disparity in the findings could be due to the lack of IEC in the current study, which revealed 87% of respondents denied having ever received IEC during ANC care on the indications, risks, and benefits of CS. The difference could be attributed to the absence of IEC on indications on CS at antenatal clinic WNH-UTHs in Zambia, which



could affect the knowledge, attitude, perception and readiness of women to undergo CS. This creates myths and misconceptions on CS. It is important to note that nurses and midwives can improve the situation by providing IEC at antenatal clinics and engaging women in shared decision-making regarding their delivery outcomes. This is also according to Adewuyi *et al.*, [28], who stated IEC as a potential way to address the gaps in knowledge, attitude, perception, and willingness to undergo caesarean section among women with endometriosis and depression. They suggested that nurses and midwives could provide IEC at antenatal clinics and engage women in shared decision-making regarding their delivery outcomes.

#### **4.3.2. The Attitude of Pregnant Women towards Caesarean Delivery**

The study revealed that women had varied attitudes towards CS, with some positive and some negative views (**Table 5**). The majority of respondents indicated that women could deliver vaginally after CS. A similar study in Ogun State Nigeria on knowledge, attitude and perception of caesarean section among pregnant women attending antenatal clinic at Babcock University Teaching Hospital, Ilishan-Remo, conducted by Maitanmi *et al.*, [29], revealed that almost all the respondents had a positive attitude toward CS. Nevertheless, in this study at WNH-UTHs Lusaka Zambia, a positive attitude towards CS did not, however, indicate CS acceptability and a negative attitude did not indicate non-acceptability of CS. There was a distinction between the findings of the current study and the findings by Jeremiah *et al.*, [27], who stated that there is a direct correlation between attitude and willingness to accept CS and that a positive attitude made pregnant women accept CS as a mode of delivery. Factors contributing to positive attitudes were understanding of CS benefits, trust in healthcare providers, and understanding of the procedure. The current study showed low acceptance of CS despite having slightly above half of positive attitude. The differences in findings may reflect the diversity and complexity of women, the study designs, and the various contexts and populations involved in the studies. The current study indicated that attitude was significantly associated with CS acceptability by pregnant women at WNH-UTHs at both univariable and multivariable analysis with  $P \leq 0.001$  (**Table 8**).

#### **4.3.3. Perception of Pregnant Women towards Caesarean Section Delivery**

The current study revealed that most respondents had a favourable view of CS (**Table 6**), while over half of the respondents did not consider CS safe. Most respondents indicated that delivery by CS was not taboo and that babies born by CS are normal babies. However, most respondents stated concern about health professionals' competence during CS. Therefore, perception in this study indicated an association with CS acceptability among pregnant women at WNH-UTHs with numerous factors influencing CS acceptability. The findings of the current study are in congruence with the findings of two previous studies by Omotayo *et al.* and Maitanmi *et al.* [23] [28] where a majority of the respondents had a positive

perception towards CS. The congruence in the findings of both studies could be attributed to the study settings as both facilities had similar study settings. Despite positive perception among respondents at WNH-UTHs, positive perception did not indicate the acceptability of CS.

#### **4.3.4. Socio-Cultural Beliefs towards CS**

The results of the study stated that respondents' beliefs significantly influenced their preferred mode of delivery (**Table 7**). The study also revealed that pregnant women who held positive beliefs on CS were more likely to undertake CS. In this study, it was found that the majority of respondents required the consent and support of their partners for them to undergo CS while 39% of respondents did not favour CS as a mode of delivery for fear of rejection by their partners. These findings indicate the lack of autonomy and empowerment that some women experience when it comes to their reproductive health and rights. It is essential to ensure that women have access to accurate and impartial information on the benefits and risks of different modes of delivery, as well as the right to make informed and voluntary decisions about their bodies and lives. The study also found that half of the respondents believed CS was not safe for both mother and baby. On the other hand, the study identified that most of the respondents had fears of CS (**Table 7**), with common fears being bleeding, death, wound gapping, and infections.

Lawani *et al.*, [28] shared similar fears about CS delivery as in the current study where respondents reported fear of death from an unsafe procedure of CS. CS was a riskier procedure according to Schantz *et al.*, [30]. Fears shared among pregnant women have significantly affected the acceptability of CS. Therefore, these findings highlight the importance of addressing the safety and quality of CS, as well as the communication and trust between the respondents and the health professionals who perform CS. It is crucial also to ensure that women receive respectful and compassionate care that meets their needs and preferences and that they are involved in the decision-making process about their health and well-being.

Similar studies have found comparable findings regarding the attitudes and beliefs of pregnant women towards CS. A study in Iran by Colomar *et al.*, [31], found that women's beliefs towards CS were influenced by cultural norms, social expectations, and previous experiences and that they had various concerns and fears about the safety and quality of CS. The study has also revealed that more than half of the respondents (**Table 7**) need their partners to decide on whether women can undertake CS while 80% of respondents would agree to undertake CS if their partner or significant other supported the decision on CS as a mode of delivery. Other studies in Ghana and Iran revealed that shared decision-making process on CS and found that husbands and religious leaders were key stakeholders in the decision, and that education and decision-making tools could facilitate the process of shared decision-making, shared decision making can be effective in reducing decisional conflict, delay and regret [32] [33]. Lawa-

ni *et al.*, [20], also revealed the vast majority of respondents in their study had a morbid aversion towards CS because of numerous, non-evidence-based socio-cultural reasons. These studies suggest that there is a need for context-specific and participatory approaches that consider the diversity and complexity of women's attitudes and beliefs towards CS, and that involve the active engagement and support of partners, families, and communities. To address the challenges and barriers that pregnant women face in making informed and voluntary decisions about caesarean delivery (CS), there is a need for comprehensive and context-specific interventions that promote health education, female empowerment, and access to free or affordable antenatal care services. Moreover, it is crucial to eliminate harmful, religious, and cultural beliefs and myths regarding CS that may perpetuate stigma, discrimination, and inequality. By addressing these factors, we can promote respectful and evidence-based care that meets the needs and preferences of women, and that contributes to the achievement of the sustainable development goals related to maternal health. In this study, socio-cultural beliefs were significant in CS with  $P < 0.045$ .

As highlighted in the conceptual framework this study has revealed that Sociodemographic and Obstetrics Characteristics can be associated with sociodemographic factors in the conceptual framework as well as the socio-cultural factors in the conceptual related to the socio-cultural beliefs in this study. While, knowledge, attitude, and perception of CS from the conceptual framework relate to the knowledge, attitude and perception of CS in this study. Last but not least, the findings of this study indicate that the majority of pregnant women were not agreeable to undergoing CS while less than half were agreeable to CS as a mode of delivery this confirms that women will either agree on or not agree to under CS as mode delivery as demonstrated in the conceptual framework.

## 5. Conclusion

The study at Women and Newborn Hospital—University Teaching Hospitals Lusaka, Zambia reveals that pregnant women know caesarean section (CS) with positive attitudes and perceptions towards CS. This implies that pregnant women at Women and Newborn Hospital—University Teaching Hospitals Lusaka, Zambia have information on CS that may influence their decisions on CS. However, despite women being knowledgeable and having positive attitudes and perceptions this did not translate to acceptance of CS as acceptability of CS among pregnant women at Women and Newborn—University Teaching Hospitals Lusaka, Zambia was low. This may be based on the assertion that sub-Saharan African women are unwilling to accept CS as a means of delivery. Despite the aversion towards CS, pregnant women at Women and Newborn Hospital—University Teaching Hospitals Lusaka-Zambia may only accept CS if indicated, to save their lives and that of their babies. Again, they are not likely to request CS on their own. Knowledge of CS was associated with CS ac-

ceptability. This means that pregnant women at Women and Newborn Hospital—University Teaching Hospitals Lusaka Zambia are likely to accept medically indicated CS if they know it. However, women at Women and Newborn Hospital—University Teaching Hospitals Lusaka, Zambia had not received any information, education, and communication on CS as one of the methods of delivery during antenatal care clinic. The lack of information, education, and communication is likely to lead to women not being agreeable to CS even when medically indicated, fears, myths, safety, and quality of CS as a method of delivery, as indicated by pregnant women at Women and Newborn—University Teaching Hospitals Lusaka, Zambia may also lead to non-acceptability of CS.

The low acceptability of caesarean section (CS) among pregnant at WNH-UTHs, may affect maternal and neonatal health and contribute to maternal and neonatal morbidity and mortality. On the other hand, pregnant women at WNH-UTHs Lusaka, Zambia are likely to accept CS if they have support from their partners and significant other, as they need their husbands or partners to decide if they should undergo CS. However, this may imply that pregnant women whose partners do not support or understand CS as a method of delivery may refuse to undergo medically indicated CS, and women may not consent to CS on their own. This contributes to maternal and child morbidity. Pregnant women with higher socio-economic status may also not agree to undergo CS if indicated, which may impact negatively on maternal and child health. Additionally, women with more than four children, those in their third trimester, and those with a history of previous CS may accept CS either because they have done it before and think it's safe for them.

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### **Ethical Considerations**

The study protocol was approved by the University of Zambia Biomedical Research Ethics Committee (UNZABREC) and the Zambia National Research Authority (NHRA). The study was approved by UNZABREC under (Reference number: 4402-2023) and NHRA (Reference number: NHRA00003/07/11/2023).

### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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