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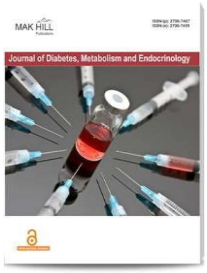

Research Article

Rising Cesarean Section Rate: Attitude And Preferences Of Pregnant Women Towards This Mode Of Delivery.

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Abstract: ***Background:*** Cesarean section (CS) is one of the most important surgical procedures in modern obstetric practice and remains a crucial intervention for reducing maternal and neonatal morbidity and mortality when appropriately indicated. Although cesarean delivery provides a life-saving option in situations such as obstructed labour, fetal compromise, placenta previa, and other obstetric emergencies, the worldwide increase in cesarean rates has raised concerns regarding the balance between necessary surgical intervention and avoidance of unnecessary procedures. The decision regarding mode of delivery is influenced not only by medical indications but also by maternal knowledge, attitudes, previous childbirth experiences, fear of labour pain, family influence, social expectations, cultural beliefs, and availability of healthcare information. In developing countries, including Pakistan, increasing cesarean rates have become an important maternal health concern, while limited information is available regarding women's perceptions and preferences toward cesarean delivery in many areas of Khyber Pakhtunkhwa. Therefore, this study was conducted to evaluate knowledge, attitudes, and delivery preferences among pregnant women attending antenatal care at Timergara Teaching Hospital, Lower Dir. The primary objective was to assess maternal knowledge regarding cesarean section, evaluate attitudes toward cesarean delivery, determine preferred mode of delivery, and identify demographic and obstetric factors associated with these preferences. A descriptive cross-sectional study was conducted among 343 pregnant women attending the antenatal outpatient department of Timergara Teaching Hospital. Women at or beyond 28 weeks of gestation were included, while those with obstetric conditions requiring cesarean delivery were excluded to assess general preferences rather than decisions based on medical necessity. Data were collected using a structured questionnaire consisting of four sections: socio-demographic and obstetric characteristics, knowledge assessment regarding cesarean section, attitude assessment using Likert-scale questions, and preferred mode of delivery. Knowledge was assessed through true/false questions related to hospitalization requirements, complications, and vaginal birth after cesarean (VBAC), while attitudes were measured using seven Likert-scale items. Data were analyzed using SPSS version 25, and associations between variables were assessed using Chi-square tests with statistical significance defined as $p<0.05$. Among the 343 participants, the majority belonged to the age group of 25–34 years (57.1%), nearly half were illiterate (45.8%), and most were housewives (97.4%). Knowledge regarding cesarean section showed mixed results; although 68.2% of women knew that CS usually requires longer hospital admission and 95.3% recognized that cesarean delivery can save the life of a newborn in appropriate circumstances, awareness regarding complications and VBAC was limited. Only 46.4% were aware that CS may involve blood transfusion or complications, and only 34.4% knew that vaginal delivery may be possible after previous cesarean section. Most participants demonstrated a balanced attitude toward cesarean delivery, with the majority accepting CS when medically required, while only a small proportion preferred elective cesarean delivery without medical indication. Regarding delivery preference, 84.8% of women reported willingness to undergo cesarean section if medically indicated, 8.5% preferred elective cesarean delivery regardless of indication, and 6.7% strongly preferred vaginal delivery. Statistical analysis showed that maternal age was significantly associated with preference toward cesarean delivery, whereas education level, parity, and previous delivery mode were not significantly associated with preference. This study demonstrates that pregnant women generally prefer vaginal birth but accept cesarean delivery when medically necessary. Although awareness regarding the purpose and benefits of CS was satisfactory, important knowledge gaps remained regarding surgical risks, complications, and VBAC. Strengthening antenatal counselling programs through evidence-based education regarding delivery options may support informed maternal decision-making, improve communication between women and healthcare providers, and reduce misconceptions regarding cesarean delivery.

Keywords: Cesarean section; Maternal preference; Delivery mode; Vaginal birth after cesarean; Antenatal counselling; Maternal knowledge; Obstetric care; Pakistan.

INTRODUCTION

Childbirth is a major physiological event involving complex biological, psychological, social, and cultural dimensions. The mode of delivery is an important component of obstetric care because it influences maternal recovery, neonatal outcomes, future reproductive health, and healthcare resource utilization.[3],[5] Although vaginal birth is traditionally considered the natural

process of childbirth, cesarean section (CS) has become an essential surgical procedure that can prevent maternal and neonatal complications when appropriately indicated.[3] Cesarean section involves delivery of the fetus through surgical incisions in the abdominal wall and uterus and is performed for various maternal, fetal, and obstetric indications, including obstructed labour, abnormal fetal presentation, fetal distress, placenta previa, previous uterine surgery, hypertensive disorders of pregnancy, and other conditions where continuation of labour may increase risks to the mother or newborn.[3,5] When clinically justified, CS remains a life-saving intervention that contributes significantly to reducing preventable maternal and perinatal morbidity and mortality.[3,5]

Over recent decades, the global pattern of childbirth has changed considerably, with cesarean delivery becoming increasingly common in many countries.[3] Improvements in surgical techniques, anesthesia, infection prevention, and postoperative care have made cesarean delivery safer and have strengthened its role as an essential component of emergency and planned obstetric care.[3] However, the increasing rate of CS has created an important discussion regarding the balance between providing necessary surgical intervention and avoiding unnecessary procedures.[3] The rise in cesarean rates is influenced by multiple factors, including increasing maternal age, delayed childbearing, assisted reproductive techniques, improved fetal monitoring, changes in obstetric practice, maternal preferences, fear of childbirth, institutional factors, and social expectations.[4,7,9,11] Therefore, decisions regarding mode of delivery should be understood within a broader framework that includes healthcare availability, provider practices, maternal expectations, socioeconomic conditions, and effective communication between women and healthcare professionals.[11,13]

Maternal preference plays an increasingly important role in decisions regarding childbirth.[7,10,13] Women's choices regarding delivery method are influenced by their knowledge, beliefs, previous childbirth experiences, expectations, personal circumstances, and perceptions of safety.[4,7,11] Some women prefer vaginal delivery because they consider it natural, less invasive, and associated with faster recovery, whereas others may prefer cesarean delivery because they believe it provides greater predictability, reduces labour pain, or offers increased safety for the baby.[4,10] Fear of childbirth, anxiety regarding complications, stories from family members or friends, and misunderstanding regarding the benefits and risks of CS may influence maternal preferences.[4,10] Adequate knowledge regarding indications, benefits, complications, recovery, future pregnancy considerations, and vaginal birth after cesarean (VBAC) is essential for women to participate effectively in shared decision-making with healthcare providers.[1,6,8,12]

Pakistan has experienced increasing cesarean delivery rates over recent decades due to changing healthcare access, urbanization, maternal expectations, and evolving healthcare practices.[2,9] Despite this increase, limited research is available regarding maternal perceptions and preferences toward cesarean delivery in rural and semi-urban areas of Khyber Pakhtunkhwa.[2,9] Cultural traditions, limited health literacy, family influence, and differences in healthcare access may affect women's understanding and attitudes toward delivery options.[10,11] Antenatal care provides an important opportunity to educate women about labour, delivery planning, indications for cesarean section, advantages and disadvantages of different delivery methods, pain management options, and VBAC.[6,8,12] Therefore, this study was conducted to evaluate knowledge, attitudes, and delivery preferences regarding cesarean section among pregnant women attending antenatal care at Timergara Teaching Hospital, with the aim of identifying factors associated with maternal perceptions and improving evidence-based counselling strategies.[2,9].

METHODOLOGY

This descriptive cross-sectional observational study was conducted in the Antenatal Outpatient Department of Timergara Teaching Hospital, Timergara, Lower Dir, Khyber Pakhtunkhwa, Pakistan, to evaluate pregnant women's knowledge, attitudes, and delivery preferences regarding cesarean section (CS); ethical approval was obtained from the Ethical Review Board of Saidu Medical College, Swat, on 23 September 2024 (Ref. No. 171-ERB/10/24), and, after observing the mandatory three-month interval following ERC approval, data collection commenced on 1 January 2025 and continued until 31 March 2025, with the manuscript subsequently submitted on 20 September 2025. A total of 343 pregnant women at or beyond 28 weeks of gestation who were willing to participate and able to respond to the questionnaire were included, while women with obstetric conditions already requiring cesarean delivery, such as placenta previa, fetal distress, cephalopelvic disproportion, or previous classical cesarean section, were excluded so that preferences reflected personal perceptions rather than clinically unavoidable decisions.

Data were collected using a structured, previously adapted questionnaire comprising four sections covering socio-demographic and obstetric characteristics, knowledge regarding CS through true/false items, attitudes toward cesarean delivery through seven five-point Likert-scale statements, and preferred mode of delivery; trained researchers administered the questionnaire during routine antenatal visits, provided verbal explanations in the local language for women with limited literacy, and reviewed all forms for completeness before data entry. The dependent variables were maternal attitude toward CS and preferred mode of delivery, while independent variables included age, educational status, occupation, parity, and

previous delivery history; data were analyzed using SPSS version 25 with descriptive statistics and Chi-square tests, and a p-value of less than 0.05 was considered statistically significant. Written informed consent was obtained from all participants, confidentiality was maintained throughout the study, and quality control measures included questionnaire review, participant clarification, completeness checks, and secure data handling to ensure the accuracy and reliability of the findings.

RESULTS

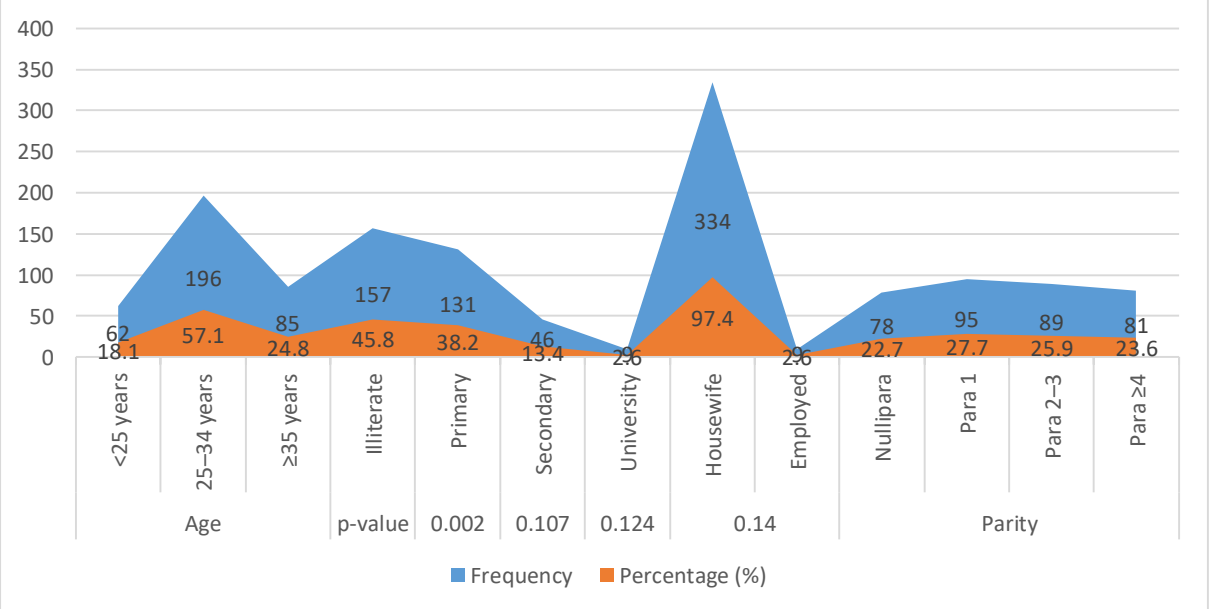
Participant Characteristics and Baseline Findings

A total of 343 pregnant women who fulfilled the eligibility criteria were included in the final analysis. All participants completed the structured questionnaire assessing socio-demographic characteristics, knowledge regarding cesarean section, attitude toward cesarean delivery, and preferred mode of delivery. The study population represented women from different reproductive age groups, educational backgrounds, parity categories, and previous obstetric experiences, allowing evaluation of factors that may influence perceptions and decision-making regarding childbirth options.

The majority of participants belonged to the 25–34 years age group (57.1%), while nearly half of the women were illiterate (45.8%) and most were housewives (97.4%). Variation was observed in parity distribution, including nulliparous women and those with previous childbirth experience. These characteristics were considered important because maternal age, education, and previous pregnancy experiences may influence understanding, expectations, and preferences regarding mode of delivery.

Table 1. Socio-demographic and Obstetric Characteristics of Participants (n=343)

Variable	Category	Frequency	Percentage (%)
Age	<25 years	62	18.1
	25–34 years	196	57.1
	≥35 years	85	24.8
Education	Illiterate	157	45.8
	Primary	131	38.2
	Secondary	46	13.4
	University	9	2.6
Occupation	Housewife	334	97.4
	Employed	9	2.6
Parity	Nullipara	78	22.7
	Para 1	95	27.7
	Para 2–3	89	25.9
	Para ≥4	81	23.6



Knowledge Regarding Cesarean Section

Assessment of maternal knowledge demonstrated that participants had awareness of some important aspects of cesarean delivery; however, considerable gaps remained regarding surgical risks, complications, and future reproductive options. Most

women recognized the importance of cesarean delivery as a life-saving intervention. Approximately 95.3% of participants understood that CS can save a newborn's life when medically required, indicating strong awareness of its potential benefits. In addition, 68.2% knew that cesarean delivery generally requires longer hospitalization compared with uncomplicated vaginal delivery. However, knowledge regarding complications and alternatives was limited. Only 46.4% of participants were aware that CS may involve complications or require blood transfusion, and only 34.4% knew that vaginal birth after cesarean section (VBAC) may be possible. These findings suggest that while women understand the beneficial role of CS, further antenatal education is needed regarding risks, recovery, and available delivery options.

Table 2. Knowledge Assessment Regarding Cesarean Section

Knowledge Item	Correct Response (%)
CS requires longer hospital stay	68.2
CS can save newborn life when required	95.3
CS may require blood transfusion/has complications	46.4
VBAC is possible after previous CS	34.4

Maternal Attitude Toward Cesarean Section

Maternal attitudes toward cesarean delivery were assessed using seven Likert-scale statements. Most participants demonstrated a balanced attitude, indicating acceptance of cesarean delivery when medically necessary rather than unconditional preference or rejection of the procedure. The majority considered CS acceptable when recommended for maternal or fetal safety. Based on attitude scoring, 86.6% of participants showed a neutral/balanced attitude, while only 11.7% demonstrated a positive attitude and 1.7% showed a negative attitude. These findings indicate that most women viewed cesarean section as an appropriate medical option when required.

Table 3. Distribution of Attitude Toward Cesarean Section (n=343)

Attitude Category	Frequency	Percentage (%)
Negative attitude	6	1.7
Neutral/Balanced attitude	297	86.6
Positive attitude	40	11.7
Total	343	100

Preferred Mode of Delivery

The majority of women preferred a flexible approach toward childbirth rather than insisting on a single delivery method. A total of 84.8% reported willingness to undergo cesarean delivery if medically indicated. Only 8.5% preferred elective cesarean delivery regardless of indication, while 6.7% strongly preferred vaginal delivery under all circumstances. These findings indicate that most participants recognized cesarean section as an important medical intervention while still considering vaginal birth desirable when safe and appropriate.

Table 4. Delivery Preference Among Pregnant Women (n=343)

Delivery Preference	Frequency	Percentage (%)
Strong preference for vaginal delivery	23	6.7
Accept CS if medically needed	291	84.8
Strong preference for elective CS	29	8.5
Total	343	100

Association Between Maternal Factors and Attitude Toward CS

Analysis of factors associated with attitude toward cesarean delivery showed that age and educational level were not significantly associated with attitude categories. However, parity demonstrated a statistically significant association with attitude toward CS (p=0.018), suggesting that previous childbirth experience may influence maternal perceptions and acceptance of cesarean delivery.

Table 5. Association Between Maternal Characteristics and Attitude Toward CS

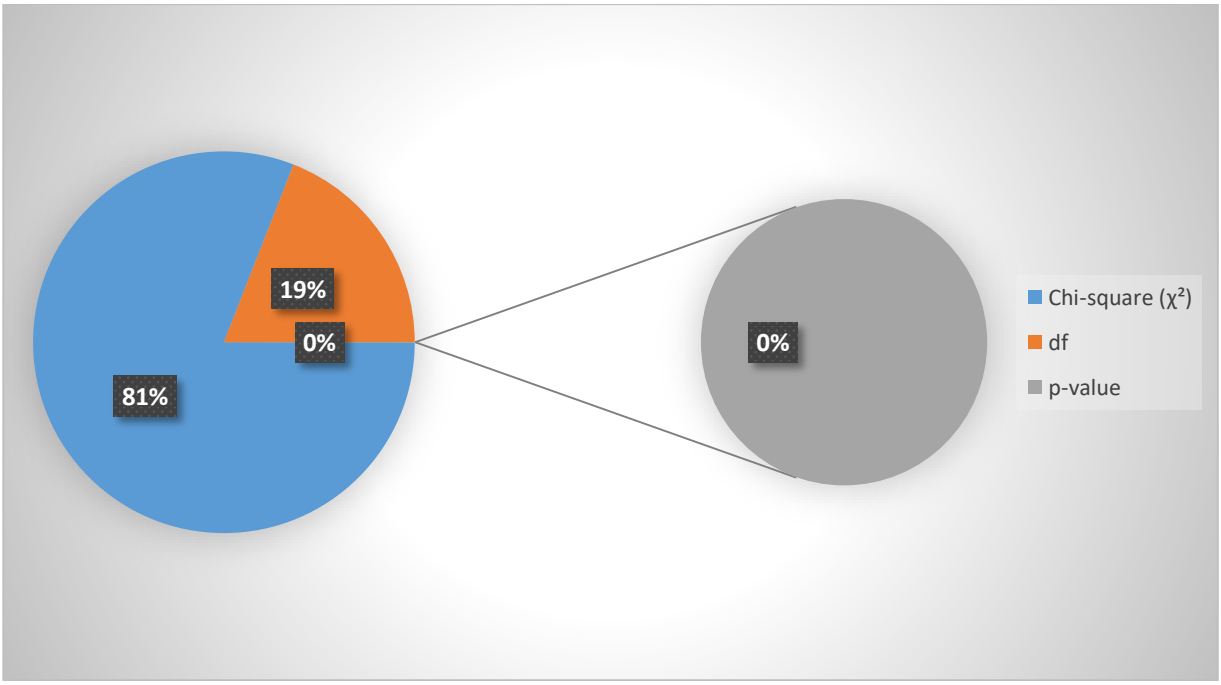
Variable	Chi-square (χ^2)	df	p-value	Significance
Age group	4.247	4	0.374	Not significant
Education level	5.523	6	0.479	Not significant
Parity	15.318	6	0.018	Significant

Association Between Maternal Factors and Delivery Preference

Further analysis demonstrated that maternal age was significantly associated with preference toward cesarean delivery (p=0.002). However, education level, parity, and previous delivery mode were not significantly associated with delivery preference. These findings suggest that maternal age may influence expectations regarding childbirth, whereas other demographic and obstetric characteristics did not independently determine preference in this population.

Table 6. Association Between Factors and Cesarean Delivery Preference

Variable	Chi-square (χ^2)	df	p-value
Age group	16.998	4	0.002
Education level	10.462	6	0.107
Parity	10.012	6	0.124
Previous delivery mode	12.257	8	0.140



DISCUSSION

Cesarean section remains one of the most important interventions in modern obstetric care and has significantly improved maternal and neonatal outcomes when performed for appropriate clinical indications.[19] However, the continuous increase in cesarean delivery rates worldwide has generated considerable interest in understanding the factors that influence women's decisions regarding mode of delivery.[3],[14]

The present study evaluated knowledge, attitudes, and delivery preferences among pregnant women attending antenatal care at Timergara Teaching Hospital, Khyber Pakhtunkhwa, Pakistan. The findings demonstrate that most women did not show an unconditional preference for cesarean delivery; rather, the majority accepted cesarean section when medically required. This indicates that women generally recognize the importance of CS as a life-saving procedure while continuing to prefer vaginal birth whenever it is considered safe and appropriate.[13],[14]

The study also demonstrated that maternal knowledge regarding cesarean section was variable. Although most participants understood the important role of CS in preventing maternal and neonatal complications, significant gaps remained regarding surgical risks, postoperative recovery, and vaginal birth after cesarean section (VBAC). These findings highlight the importance of structured antenatal counselling programs that provide balanced and evidence-based information regarding both vaginal and cesarean delivery options.[6],[8],[12] In the present study, 84.8% of women reported willingness to undergo cesarean delivery if medically necessary, whereas only 8.5% expressed preference for elective cesarean delivery regardless of indication, and 6.7% strongly preferred vaginal delivery.

This pattern suggests that most women did not consider cesarean section their first choice but accepted it as an appropriate medical intervention when required for maternal or fetal safety.[13,14] Similar findings have been reported from other populations, where many women preferred vaginal delivery because they considered it a natural process associated with faster recovery, while fear of surgery, labour pain, or possible complications influenced preferences toward cesarean delivery.[4,7,10,18] These findings indicate that increasing cesarean rates cannot be explained only by maternal demand. Women's decisions are complex and are influenced by healthcare provider recommendations, family opinions, cultural beliefs, previous childbirth experiences, and availability of accurate information.[2,9,11,15] The assessment of maternal knowledge revealed important areas requiring improvement.

Although 95.3% of participants recognized that cesarean delivery can save a newborn's life, fewer women were aware of possible surgical complications. Only 46.4% knew that CS may involve blood transfusion or complications, and only 34.4% were aware that vaginal delivery may be possible after a previous cesarean section. This finding suggests that maternal awareness is primarily focused on the benefits of CS, whereas understanding of risks, alternatives, and future reproductive options remains incomplete.[6,8,16] Improved antenatal education regarding indications, complications, recovery, and VBAC may help women participate more effectively in shared decision-making.[12,16]

Maternal age was found to have a significant association with preference toward cesarean delivery.[14,18] Differences in childbirth preferences across age groups may occur because women at different reproductive stages may have different experiences, expectations, and concerns regarding childbirth. Younger women may experience greater anxiety related to labour pain and childbirth uncertainty, whereas older women may have increased awareness of pregnancy-related risks and may perceive cesarean delivery as a safer option.[4,18] However, maternal preference should always be interpreted within individual clinical circumstances rather than age alone.[13]

Educational status was not significantly associated with attitude toward cesarean section or delivery preference in this study. This finding suggests that formal education alone may not determine maternal understanding of childbirth options. Healthcare communication, quality of antenatal counselling, family influence, cultural beliefs, and previous experiences may have a stronger impact on decision-making.[11,15,17] Therefore, counselling programs should not focus only on women with limited formal education; instead, all pregnant women should receive clear, culturally appropriate, and understandable information regarding delivery choices.[12,16]

Previous childbirth experience also influenced maternal attitudes toward cesarean delivery.[4,7] Women who have experienced prolonged labour, difficult delivery, emergency interventions, or previous complications may develop different perceptions regarding CS. Women with positive previous vaginal birth experiences may feel more confident about normal delivery, whereas those with difficult experiences may perceive cesarean delivery as a more predictable option.[4,10] Healthcare providers should therefore consider previous childbirth experiences during antenatal counselling to provide individualized support.[7,13] Fear of labour pain remains an important factor influencing maternal preferences regarding cesarean delivery.[4,10,18]

Some women perceive CS as a method to avoid labour pain and uncertainty; however, cesarean delivery itself is a major surgical procedure associated with postoperative pain, longer recovery, and potential complications.[19] Antenatal education should therefore provide realistic information regarding labour pain management, normal labour progression, benefits of vaginal birth when appropriate, and recovery following CS.[6,8,12] Balanced counselling may reduce unnecessary fear while respecting women's informed choices.[11,13] The findings emphasize the central role of antenatal counselling in improving maternal understanding and decision-making.

Antenatal visits provide opportunities to discuss labour expectations, indications for cesarean delivery, benefits and risks of different delivery methods, birth preparedness, VBAC options, and pain management strategies.[6,8,12] Effective communication between healthcare providers and pregnant women can address misconceptions and support informed choices regarding childbirth.[11,13] In culturally sensitive settings, counselling may also involve family members who influence childbirth decisions.[10,1].

CONCLUSION

This study demonstrates that pregnant women attending antenatal care at Timergara Teaching Hospital generally prefer vaginal birth but accept cesarean delivery when medically necessary, indicating that most women recognize CS as an important life-saving intervention rather than a preferred mode of delivery. Although awareness regarding the purpose and benefits of cesarean section was satisfactory, important knowledge gaps remained regarding surgical risks, complications, and vaginal birth after cesarean, highlighting the need for structured and evidence-based antenatal education.

Maternal age was significantly associated with preference toward cesarean delivery, whereas education level, parity, and previous delivery mode were not significantly associated with delivery preference, suggesting that factors beyond formal education and obstetric history influence women's decisions. These findings emphasize the central role of antenatal counselling in improving maternal understanding and supporting informed decision-making regarding childbirth options.

Strengthening antenatal counselling programs through clear, culturally appropriate, and evidence-based information about delivery methods, pain management, recovery, and VBAC may help address misconceptions, improve communication between women and healthcare providers, and ultimately support safer and more informed maternal choices. Further research involving larger and more diverse populations is recommended to explore the complex interplay of cultural, social, and healthcare-related factors that influence maternal preferences regarding mode of delivery in Pakistan.

Author Contribution, Humaira Bibi (HB) and Nazia Wahid (NW) both substantially contributed to the conception, design, data collection, analysis, interpretation, drafting, and critical revision of this study; both authors approved the final manuscript and agree to be accountable for all aspects of the work. The authors attest that the study was original, received ethical approval from the Ethical Review Board of Saidu Medical College, Swat (Ref. No. 171-ERB/10/24), was conducted with written informed consent and confidentiality, and declare no conflicts of interest

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