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ORIGINAL

Cesarean Section: Medical, Social and Moral and Ethical Factors

Cesárea: Factores médicos, sociales y ético-morales

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ABSTRACT

Introduction: a cesarean section (C-section) is a surgical procedure used to deliver a baby through incisions in the abdomen and uterus. It is a common procedure, but it carries various medical, social, moral, and ethical considerations.
Objective: to evaluate medical, social, moral, and ethical factors related to cesarean sections.
Method: conducted a descriptive cross-sectional study on 100 pregnant women undergoing cesarean sections using nonrandom purposive sampling. Data (quantitative and qualitative) collected through a pretested questionnaire, analyzed with SPSS 26 and Atlas.ti.
Results: significant associations were found in age (p=0,033), education (p=0,043), socioeconomic status (p=0,046), and BMI (p=0,048). Obstetric factors, including parity (p=0,033), delivery place (p=0,035), child weight at birth (p=0,000), and major indications for CS (p=0,048), demonstrated substantial impact. Ethical considerations showed significant associations with maternal autonomy (P=0,040), medical necessity (P=0,038), resource allocation (P=0,038), bonding impact (P=0,037), unnecessary interventions (P=0,033), reproductive autonomy (P=0,046), cultural sensitivity (P=0,028), and provider accountability (P=0,042).
Conclusions: study emphasizes tailored maternal care, reveals sociodemographic, obstetric influences, intricate ethical dimensions.

Keywords: Cesarean Section; Medical Factors; Social Determinants; Moral Dimensions; Ethical Considerations; Obstetric Ethics.

RESUMEN

Introducción: una cesárea es un procedimiento quirúrgico utilizado para dar a luz a un bebé a través de incisiones en el abdomen y el útero. Es un procedimiento común, pero conlleva diversas consideraciones médicas, sociales, morales y éticas.
Objetivo: evaluar los factores médicos, sociales, morales y éticos relacionados con las cesáreas.
Método: realización de un estudio descriptivo transversal en 100 mujeres embarazadas sometidas a cesárea mediante muestreo intencional no aleatorio. Los datos (cuantitativos y cualitativos) se recogieron mediante un cuestionario previamente probado y se analizaron con SPSS 26 y Atlas.ti.
Resultados: se encontraron asociaciones significativas en edad (p=0,033), educación (p=0,043), nivel socioeconómico (p=0,046) e IMC (p=0,048). Los factores obstétricos, incluida la paridad (p=0,033), el lugar del parto (p=0,035), el peso del niño al nacer (p=0,000) y las principales indicaciones de la cesárea (p=0,048), mostraron un impacto sustancial. Las consideraciones éticas mostraron asociaciones significativas con la autonomía materna (p=0,040), la necesidad médica (p=0,038), la asignación de recursos (p=0,038),

el impacto en los vínculos afectivos (p=0,037), las intervenciones innecesarias (p=0,033), la autonomía reproductiva (p=0,046), la sensibilidad cultural (p=0,028) y la responsabilidad del proveedor (p=0,042). **Conclusiones:** el estudio hace hincapié en la atención materna adaptada, revela influencias sociodemográficas, obstétricas y dimensiones éticas intrincadas.

Palabras clave: Cesárea; Factores Médicos; Determinantes Sociales; Dimensiones Morales; Consideraciones Éticas; Ética Obstétrica.

INTRODUCTION

A cesarean section is a surgical intervention in which a baby is delivered by making an incision in the mother's abdominal wall and uterus. While this intervention can be a life-saving measure in certain medical situations, its increasing prevalence has sparked discussions surrounding the complex interplay of medical, social, and moral and ethical factors associated with Cesarean sections. This procedure, initially designed to address maternal and fetal health concerns, now finds itself at the intersection of medical advancements, societal expectations, and ethical considerations.[1,2]

The number of Caesarean sections performed in the world has experienced a 100 % increase to 21 %, with an annual growth rate of 4 %. In Sub-Saharan Africa, it is at a low of 4 %; while some Latin American nations see the figure rise up to 60 %. Every year there are six million cases that could have been avoided.[3] There is a growing trend of C-sections worldwide and this can be attributed to different reasons such as doctor's opinions, pregnancy attributes, hospital regulations, labor induction, legal implications as well as mother's choice for cesarean delivery not medically indicated. There are several factors that contribute to this pattern.[4]

Caesarean section might sometimes be considered to be safe, but it is not always the case because of difficulty in exposing lower uterine segment, fetal extraction complications, laceration dangers and abnormal placentation conditions that need extensive pre-operative planning.[5]

A systematic review documented a high rate of Caesarean section caused by cephalopelvic disproportion, low Apgar scores and febrile morbidity. This trend endangers both mothers and babies, necessitating specific educational interventions.[6]

Postpartum hemorrhage, a significant concern following Cesarean Section, poses challenges for obstetricians. Timely preoperative assessment, thorough investigations, and intraoperative precautions play crucial roles in mitigating the risk of postoperative bleeding, safeguarding both maternal and neonatal well-being.[7] The integration of artificial intelligence algorithms, machine learning, and image recognition in healthcare can enhance the precision and efficiency of Cesarean Section procedures, ensuring optimal medical outcomes. Utilizing radiomics and advanced technology, the analysis of relevant imaging data can aid in personalized decision-making, addressing both medical and ethical considerations surrounding Cesarean Section.[8] Precision and minimally invasive benefits are the advantages of robotic cesarean section, but the shortcomings should be carefully considered. The ethical employment necessitates in-depth inquiry, specialized instruction, and strict policies that can reconcile the medical, social as well as moral aspects.[9]

Cesarean sections are increasingly prevalent, raising concerns on necessity, risks, and long-term impacts on mothers and infants as far as elective C-sections are concerned.[10] Moreover, the impact of Cesarean sections on maternal and neonatal outcomes, including potential complications and the increased likelihood of future C-sections, is a subject of ongoing research and debate within the medical community.[11] The condition of acute renal failure in newborns necessitating dialysis after a cesarean section is a perilous one. It is essential to highlight the causes and risk factors of AKI in this setting to get a comprehensive knowledge of newborn health outcomes.[12] Patients with folate cycle deficiency and low natural killer cell activity may need Propes and Inflamafertin immunotherapy. When there is pregnancy, all relevant factors for effectiveness of the treatment, safety of the mother as well as the chances of carrying out a Cesarean Section should be taken into account.[13]

Caesarean sections for women who choose to have a child led by these methods can help improve pregnancy outcomes. Consent must be sought within given time limits. Family involvement in prenatal care supports decision-making processes, which are more important among younger women attempting to avoid problems and allay fears.[14] Outside of the medical domain, Cesarean sections are impacted by a multitude of societal issues, such as cultural conventions, economic constraints, and changing expectations related to delivery.[15]

Furthermore, cesarean sections have ethical considerations that cover patient autonomy, informed consent and weighing of benefits versus risks particularly in elective procedures.[16] In addition to medical, social, and moral-ethical issues, behavioral and psychological elements also significantly contribute to the development of Cesarean Section.[17] The ethical complexity of judgments about Cesarean sections are highlighted by the possible contradiction between a woman's autonomy in making decisions about her own body and the healthcare providers' need to prioritize patient well-being.[18]

In this exploration of Cesarean sections, we will discuss medical advances that have influenced its frequency, cultural factors that determine whether a C-section is chosen or not and ethical/moral aspects for healthcare providers and mothers in waiting as the aim is to get a comprehensive view of the present healthcare.

Objectives

To investigate the medical, social, Moral and Ethical dimensions of the decision for a cesarean section, including maternal and fetal health conditions.

METHOD

Study Design

A Cross-sectional study design was selected.

Population

The study focuses on pregnant women within the chosen population who have undergone cesarean sections.

Sample Size and Sampling Technique

A deliberate sample size of 100 pregnant women who have undergone a cesarean section was chosen through nonrandom purposive sampling technique.

Data Collection

The interview with mother who experienced a caesarean section was conducted using a pre-tested questionnaire, and this was followed by a comprehensive review of the medical records for the purpose of obtaining full information.

Data Analysis

The data was examined through SPSS 26 and Atlas.ti 23, and it included both qualitative and quantitative methods, employing such descriptive statistics as Chi-square tests for correlations.

Ethical Considerations

Examining caesarean sections involves weighing medical risks and benefits versus vaginal delivery, addressing societal impacts on healthcare disparities, and upholding ethical principles such as informed choice and minimizing unnecessary interventions in childbirth.

RESULTS

Table 1 shows significant sociodemographic factors impacting Cesarean Section choices: Age <20 (p=0,033), lack of education (p=0,043), lower socioeconomic status (p=0,046), and BMI extremes (p=0,048) favor elective CS.

Table 1. Sociodemographic factors related to Cesarean Section

Variables		Obstetrics Characteristics		P-Value
		Elective CS	Emergency CS	
Age	<20	5	3	,033
	20-24	21	4	
	25-29	15	1	
	30-34	23	7	
	>34	11	10	
Residence	Rural	30	2	0,11
	Urban	39	19	
	Semi Urban	6	4	
Education	No Education	18	6	,043
	Primary	32	4	
	Middle school	20	10	
	Secondary and above	5	5	
Occupation	Unemployed	26	4	0,40
	Farmer	6	1	
	Artisan	5	6	

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	Trader	22	4	
	Civil Servant	7	5	
	Student	9	5	
Socioeconomic	Lower	7	3	,046
	Upper Lower	11	5	
	Lower Middle	22	12	
	Upper middle	27	1	
	Upper	8	4	
BMI	<18,5	11	3	,048
	18,5-24,9	23	10	
	25-29,9	19	5	
	30-34,9	17	1	
	>35	5	6	

Table 2 multivariate logistic regression shows significant associations: Age <20 (Score: 10,521, p=,033), rural residence (Score: 9,062, p=,011), no schooling (Score: 8,148, p=,043), unemployed (Score: 11,645, p=,040), lower socioeconomic status (Score: 9,690, p=,046), BMI <18,5 (Score: 9,563, p=,048).

Table 2. Multivariate Logistic Regression Analysis

Groups		Subgroups	Score	df	Sig.
Age		<20	10,521	4	,033
	20-24	,725	1	,395	
	25-29	1,440	1	,230	
	30-34	3,571	1	,059	
	>34	,063	1	,801	
Residence		Rural	9,062	2	,011
	Urban	8,824	1	,003	
	Semi Urban	4,433	1	,035	
Education		No Education	8,148	3	,043
	Primary	,000	1	1,000	
	Middle School	5,787	1	,016	
	Secondary and above	1,587	1	,208	
Occupation		Unemployed	11,645	5	,040
	Farmer	3,111	1	,078	
	Artisan	,461	1	,497	
	Trader	5,754	1	,016	
	Civil Servant	1,733	1	,188	
	Student	2,020	1	,155	
Socioeconomic	Lower		9,690	4	,046
	Upper Lower		,148	1	,700
	Lower Middle		,397	1	,529
	Upper Middle		2,911	1	,088
	Upper		9,524	1	,002
BMI	<18,5		9,563	4	,048
	18,5-24,9		,111	1	,739
	25-29,9		,739	1	,390
	30-34,9		,292	1	,589
	>35		4,426	1	,035

Table 3 shows a chi-square test revealed significant correlations between obstetric/medical parameters

and cesarean method: parity (p=,033), birth location (p=,035), birth weight (p=,000), and main CS indications (p=,048).

Table 3. Obstetrics / Medical factors related to Cesarean Section

Variables		Obstetrics Characteristics		P-Value
		Elective CS	Emergency CS	
Parity	Parit-1	17	5	,033
	Parity-2	30	3	
	Parity-3	20	11	
	Parity more than 3	8	6	
Delivery Place	Health Facility	65	17	,035
	Outside Health Facility	10	8	
Child Weight at Birth	Low Birth Weight	24	0	,000
	Normal Birth Weight	35	25	
	Not Weight Measured	16	0	
Major Indication of Cesarean section	Previous Cesarean Section	24	11	,048
	Maternal Request	4	3	
	Fetal Distress	15	2	
	Malpresentation	14	0	
	Failed Induction	1	2	
	Bad Obstetric History	5	2	
	Macrosomia	6	0	
	Abnormal Umbilical Cord	3	3	
	Multiple Pregnancy	3	2	

Table 4 multivariate logistic regression shows significant associations: Parity-1 (8,713, p=0,033), Parity-3 (6,649, p=0,010), low birth weight (22,222, p=0,000), previous Cesarean (15,642, p=0,048), and failed induction (5,426, p=0,020).

Table 4. Multivariate Logistic Regression Analysis of Obstetrics / Medical factors

Groups	Subgroups	Score	df	Sig.
Parity	Parity - 1	8,713	3	,033
	Parity - 2	,078	1	,780
	Parity - 3	6,649	1	,010
	Parity - 3 +	2,634	1	,105
Child Weight at Birth	Low Birth Weight	22,222	2	,000
	Normal Birth Weight	10,526	1	,001
	Not Weight Measured	22,222	1	,000
Major Indication of Cesarean section	Previous Cesarean Section	15,642	8	,048
	Maternal Request	1,187	1	,276
	Fetal Distress	1,280	1	,258
	Malpresentation	1,914	1	,167
	Failed Induction	5,426	1	,020
	Bad Obstetric History	2,864	1	,091
	Macrosomia	,051	1	,821
	Abnormal Umbilical Cord	2,128	1	,145
	Multiple Pregnancy	2,128	1	,145

Table 5 analyzes moral and ethical factors in Cesarean Sections, showing significant correlations: mother autonomy (P=0,040), medical need (P=0,038), resource allocation (P=0,038), bonding (P=0,037), interventions (P=0,033), reproductive autonomy (P=0,046), cultural sensitivity (P=0,028), and provider responsibility (P=0,042).

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Table 5. Moral and ethical factors related to Cesarean Section

Variables		Obstetrics Characteristics		P-Value
		Elective CS	Emergency CS	
Maternal Autonomy	Yes	54	23	,040
	No	21	2	
Medical Necessity	Yes	33	17	,038
	No	42	8	
Resource Allocation	Yes	33	17	,038
	No	42	8	
Bonding Impact	Yes	45	9	,037
	No	30	16	
Unnecessary Interventions	Yes	63	16	,033
	No	12	9	
Reproductive Autonomy	Yes	60	15	,046
	No	15	10	
Cultural Sensitivity	Yes	54	12	,028
	No	21	13	
Provider Accountability	Yes	43	20	,042
	No	32	5	

The study used Atlas.ti version 23 to analyze qualitative data from cesarean section patients. Their experiences revealed themes and subthemes about the birthing process, as detailed in table 6.

Table 6. Theme and Sub-Themes

Theme	Sub-Themes
Maternal Autonomy	Informed Decision-Making
	Empowerment in Birthing Choices
	Women's Voices in Childbirth
Medical Necessity	Timely and Appropriate Interventions
	Health-Centric Decision-Making
	Safety in Cesarean Section Procedures
Resource Allocation	Efficient Healthcare Resource Utilization
	Responsible Non-Emergency Practices
	Optimal Use of Medical Facilities
Bonding Impact	Emotional Connection in Childbirth
	Mother-Baby Relationship
	Positive Influences on Postpartum Well-Being
Unnecessary Interventions	Minimizing Medicalization of Childbirth
	Judicious Use of Medical Procedures
	Avoiding Non-Essential Medical Interventions
Reproductive Autonomy	Freedom in Family Planning Decisions
	Informed Choices in Childbearing
	Personalized Approaches to Reproductive Health
Cultural Sensitivity	Inclusive Birthing Environments
	Respect for Diverse Cultural Practices
	Tailoring Healthcare to Cultural Backgrounds
Provider Accountability	Transparent Healthcare Practices
	Responsibility in Decision-Making
	Trustworthy and Accountable Healthcare Providers

DISCUSSION

Current study discussed a comprehensive analysis of sociodemographic, obstetric, medical, and moral/ethical factors related to Cesarean Section in a study population. The study consisted of a diverse sample with various age groups, predominantly urban residency, mixed educational backgrounds, and a majority being employed. The distribution across socioeconomic classes and Body Mass Index categories is also diverse. Similarly, another research examining the frequency of C-section births in India found that the location of delivery is a crucial determinant of C-section rates, outweighing the impact of pregnancy problems, mother obesity, and

age highlights the significance of taking into account non-medical variables when analyzing the prevalence of C-sections.[19] Additionally, research on the occurrence and factors that contribute to puerperal sepsis in women after childbirth emphasized that undergoing a C-section delivery was linked to a greater likelihood of developing puerperal sepsis. This underscores the need of enhancing prenatal care and implementing infection control measures.[20] These studies significantly enhance our comprehension of the complex variables that influence C-section rates and their consequences for the health of mothers and newborns. They emphasize the significance of taking into account not only medical reasons, but also socio-demographic, ethical, and obstetric aspects when it comes to C-section births.

The study's obstetric characteristics revealed participants' parity distribution (Parity-2: 33,0 %, Parity-3: 31,0 %, Parity-1: 22,0 %, >3: 14,0 %). Most delivered in health facilities (82,0 %), with 60,0 % having normal birth weight. Cesarean sections were predominantly elective (75,0 %). Similarly another study shows that the proportion of Caesarean section to total deliveries is regarded as a significant measure of emergency obstetric care.[21] Furthermore, research has shown that the features of particular obstetricians specifically, some traits have been shown to be linked to a higher likelihood of CS as the method of birth.[22] Moreover, studies have investigated the correlation between hospital attributes and cesarean section rates, revealing that factors such as hospital capacity, the quantity of obstetricians, and the presence of specialist resources might influence the frequency of CS births.[23] It is worth mentioning that the World Health Organization recommends that cesarean section rates above 10 % to 15 % are typically not linked to better outcomes for both the mother and the newborn.[24] Understanding factors influencing CS deliveries is crucial due to rising rates globally. Research highlights complex obstetric and healthcare system interplay, necessitating continued evidence-based interventions for safe maternal and newborn care.

The results of current study identify significant sociodemographic factors influencing Cesarean Section choices. Multivariate logistic regression reveals correlations for age below 20 years (p=,033), rural residence (p=,011), no education (p=,043), unemployment (p=,040), lower socioeconomic status (p=,046), and BMI below 18,5 (p=,048), informing tailored maternal healthcare strategies. Similarly, another study highlights the economic aspects of family planning, suggesting that effective contraception can contribute to reducing the need for medical interventions like cesarean sections, thereby addressing both medical and economic considerations in reproductive healthcare.[25] In addition, a study revealed noteworthy correlations between caesarean section and factors such as mother age, maternal education, and wealth index and also found that the occurrence of documented problems during the most recent delivery is a major factor that affects the decision to have a cesarean section.[26] Furthermore, another community-based survey found that maternal age, occupation, and socioeconomic status were associated with caesarean section delivery.[27] These studies, provide valuable insights for tailoring maternal healthcare strategies to different demographic groups, as well as for policymakers to identify the influencing factors of caesarean section in specific populations.

Based on results of current study, firstborn mothers, delivery in health facilities and low birth weight all relate to elective Caesarean Sections. The logistic regression shows that parity (parity 1: p=0,033, parity 3: p=0,010), underweight infants (p=0,000), previous caesarian operation (p=0,048) and induction failure (p=0,020) are significant predictors of maternal complications. Similarly, another research revealed that the birth weight of infants delivered by elective cesarean section was lower compared to those delivered through vaginal delivery.[28] Further research done in Sweden discovered that the occurrence of obesity among those delivered by non-elective cesarean section was much greater in comparison to those born through vaginal birth. However, there is little evidence to support the idea that elective cesarean section is connected with obesity, whereas there is no evidence to support this association for nonelective CS.[29] Research done in Korea revealed that the overall cesarean section rate was 78 %, and was strongly correlated with the length of pregnancy. Findings indicate that CS does not provide any benefit in terms of reducing mortality or morbidity in these infants.[30]

Current study also emphasized that social norms drive Cesarean Section (C-section) decisions, with higher rates seen in lower socioeconomic groups due to limited prenatal care. Cultural beliefs and healthcare provider influence also shape these childbirth choices. Similarly another study in U.S., providing evidence that social ideas and norms about women and their bodies are related to overmedicalization of birth. Health policymakers, providers and scholars should pay attention to structural drivers, including structural sexism, as a factor that affects overmedicalization of birth and subsequent health outcomes for pregnant people and their infants.[31] To address this, promoting unbiased information, cultural sensitivity, and open dialogue becomes paramount, fostering an environment where individuals can make informed decisions aligned with both their health needs and the diverse social contexts they navigate.

This study also delves into moral and ethical considerations in CS decisions, distinguishing between elective and emergency procedures. Maternal autonomy, medical necessity, resource allocation, bonding impact, unnecessary interventions, reproductive autonomy, cultural sensitivity, and provider accountability show significant associations. These results underscore the intricate ethical dimensions influencing CS decisions, emphasizing the need for comprehensive understanding and consideration of these factors in obstetric practices.

Other studies also emphasized the crucial importance of comprehending the intricate ethical dimensions that shape decisions related to cesarean sections in obstetric practices. The fundamental themes of this work focus on the concept of maternal autonomy, which emphasizes the right of women to make choices about their bodies and pregnancies. These themes also recognize the importance of ethical concepts such as autonomy, beneficence, non-maleficence, and justice, which apply universally but must be considered within the unique context of different cultures.[4,32]

Healthcare providers focus on informed CS decisions, prioritizing safety, resource efficiency, emotional bonding, minimizing interventions, and respecting reproductive autonomy for positive patient experiences. The overuse of CS, especially in middle-income countries, has raised concerns due to its potential economic burden and the increasing practice of non-medically indicated CS deliveries.[33] Additionally, there is evidence that healthcare providers may influence women's preferences for CS, and multiple factors contribute to the perception of CS as preferable, including fear of pain and uncertainty with vaginal birth.[34] Educational interventions targeting pregnant women have been implemented to optimize the use of CS, focusing on improving women's knowledge around birth and decreasing stress related to labor through childbirth education and decision aids.[35]

Overall, providers aim to balance medical necessity with individual preferences, ensuring a comprehensive, safe, and personalized CS experience that respects autonomy, cultural diversity, and the emotional well-being of both mothers and babies.

Research Gaps and Implication

Cesarean section (CS) rates are high and hence, unnecessary surgeries have increased due to lack of transparency, accountability and awareness among healthcare professionals and patients. However, the incidence of medical audits is low; there are limited strategies for reducing Cesarean Section (CS) rates, and patients have inadequate information on associated risks. The current obstetric care landscape has significant challenges such as; no standard national guidelines for Cesarean sections, poor multidisciplinary quality assurance and inadequate informed consent policies. Responsible childbirth practices should be promoted by addressing these gaps which can improve maternal/neonatal outcomes and enhance the quality of obstetric interventions.

Recommendations

To reduce unnecessary cesarean sections (CS), establish national guidelines, enforce quality assurance, mandate second opinions, enhance informed consent, conduct medical audits, address high CS rate factors, prioritize medical necessity, consider VBAC options, ensure consent for inductions, foster institutional collaborations, promote patient education, and support research and specialized training.

CONCLUSIONS

This study brings out the intricate interplay between sociodemographic, obstetric, medical and ethical factors in Cesarean Section (CS) decisions. Non-medical elements such as place of deliveries play a significant role in determining CS rates. Social-demographic factors such as age, education and socioeconomic status are central determinants. The study calls for customized maternal health care systems and illustrates the need for an all-encompassing, culturally inclusive approach to CS choices.

REFERENCES

1. Mascarenhas Silva CH, Soares Laranjeira CL, Barros de Melo CS, Brandão LV, Oliveira GC, Brandão AHF, et al. Perinatal complications of the maternal–Fetal dyad in primiparous women subjected to vaginal delivery versus elective cesarean section: A retrospective study of clinical results associated with bioethical precepts. PLoS One 2023;18. https://doi.org/10.1371/journal.pone.0292846.

2. ACOG Committee Opinion No. 761: Cesarean Delivery on Maternal Request. Obstetrics and Gynecology 2019;133:E73–7. https://doi.org/10.1097/AOG.0000000000003006.

3. Nagy S, Papp Z. Global approach of the cesarean section rates. J Perinat Med 2020;49:1–4. https://doi.org/10.1515/JPM-2020-0463/MACHINEREADABLECITATION/RIS.

4. Sorrentino F, Greco F, Palieri T, Vasciaveo L, Stabile G, Carlucci S, et al. Caesarean Section on Maternal Request-Ethical and Juridic Issues: A Narrative Review. Medicina (B Aires) 2022;58. https://doi.org/10.3390/MEDICINA58091255.

5. Visconti F, Quaresima P, Rania E, Palumbo AR, Micieli M, Zullo F, et al. Difficult caesarean section: A literature

review. Eur J Obstet Gynecol Reprod Biol 2020;246:72–8. https://doi.org/10.1016/J.EJOGRB.2019.12.026.

6. Gedefaw G, Demis A, Alemnew B, Wondmieneh A, Getie A, Waltengus F. Prevalence, indications, and outcomes of caesarean section deliveries in Ethiopia: A systematic review and meta-analysis. Patient Saf Surg 2020;14:1–10. https://doi.org/10.1186/S13037-020-00236-8/TABLES/4.

7. Suieubekov B, Yeshmanova A. New research and changing paradigms of coagulopathy in children after cardiac surgery: A narrative review. Futurity Medicine 2022;1:27–34. https://doi.org/10.57125/FEM.2022.03.25.03.

8. Rakhimov T, Mukhamediev M. Implementation of digital technologies in the medicine of the future. Futurity Medicine 2022;1:12–23. https://doi.org/10.57125/FEM.2022.06.30.02.

9. Kamel IS. The role of robotics and automation in surgery: critical review of current and emerging technologies. Futurity Medicine 2023;2:23–35. https://doi.org/10.57125/FEM.2023.03.30.03.

10. Shirzad M, Shakibazadeh E, Hajimiri K, Betran AP, Jahanfar S, Bohren MA, et al. Prevalence of and reasons for women's, family members', and health professionals' preferences for cesarean section in Iran: a mixed-methods systematic review. Reprod Health 2021;18:1–30. https://doi.org/10.1186/S12978-020-01047-X/TABLES/3.

11. Caesarean section on maternal request. Caesarean Section on Maternal Request: A Systematic Review and Assessment of Medical, Health Economic, Ethical and Social Aspects 2021.

12. Alimukhamedov U. Acute renal failure in newborns in the practice of a pediatrician of the future. Futurity Medicine 2022;1:19–29. https://doi.org/10.57125/FEM.2022.12.30.02.

13. Maltsev D, Stefanyshyn V. The efficacy of combined immunotherapy with Propes and Inflamafertin in adult patients with genetic deficiency of the folate cycle and selective deficiency of NK and NKT cells. Immunology 2022;167:443–50. https://doi.org/10.1111/IMM.13548.

14. Bam V, Lomotey AY, Kusi-Amponsah Diji A, Budu HI, Bamfo-Ennin D, Mireku G. Factors influencing decision-making to accept elective caesarean section: A descriptive cross-sectional study. Heliyon 2021;7:e07755. https://doi.org/10.1016/J.HELIYON.2021.E07755.

15. Coates D, Thirukumar P, Spear V, Brown G, Henry A. What are women's mode of birth preferences and why? A systematic scoping review. Women and Birth 2020;33:323–33. https://doi.org/10.1016/J.WOMBI.2019.09.005.

16. Temmerman M, Mohiddin A. Cesarean section: More than a maternal health issue. PLoS Med 2021;18:e1003792. https://doi.org/10.1371/JOURNAL.PMED.1003792.

17. Lazorko O, Overchuk V, Zhylin M, Bereziak K, Savelchuk I. Modern Types of Psychological Correction and their Practical Application. Systematic Reviews in Pharmacy 2020;11:1316–22. https://doi.org/10.31838/SRP.2020.11.186.

18. O'Brien C, Newport M. Prioritizing women's choices, consent, and bodily autonomy: From a continuum of violence to women-centric reproductive care. Soc Sci Med 2023;333:116110. https://doi.org/10.1016/J.SOCSCIMED.2023.116110.

19. Neethi Mohan V, Shirisha P, Vaidyanathan G, Muraleedharan VR. Variations in the prevalence of caesarean section deliveries in India between 2016 and 2021 – an analysis of Tamil Nadu and Chhattisgarh. BMC Pregnancy Childbirth 2023;23:1–22. https://doi.org/10.1186/S12884-023-05928-4/TABLES/4.

20. Bishaw KA, Sharew Y, Beka E, Aynalem BY, Zeleke LB, Desta M, et al. Incidence and predictors of puerperal sepsis among postpartum women at Debre Markos comprehensive specialized hospital, northwest Ethiopia: A prospective cohort study. Front Glob Womens Health 2023;4:966942. https://doi.org/10.3389/FGWH.2023.966942/FULL.

21. Gebreegziabher Hailu A, Kebede Fanta T, Tekulu Welay F, Etsay Assefa N, Aregawi Hadera S, Aregawi Gebremeskel G, et al. Determinants of Cesarean Section Deliveries in Public Hospitals of Addis Ababa, Ethiopia, 2018/19: A Case-Control Study. Obstet Gynecol Int 2020;2020. https://doi.org/10.1155/2020/9018747.

22. Elnakib S, Abdel-Tawab N, Orbay D, Hassanein N. Medical and non-medical reasons for cesarean section delivery in Egypt: a hospital-based retrospective study. BMC Pregnancy Childbirth 2019;19:1–11. https://doi.org/10.1186/S12884-019-2558-2/TABLES/3.

23. Joaquim I, Pereira LN, Nunes C, Mateus C. C-sections and hospital characteristics: a long term analysis on low-risk deliveries. Research in Health Services & Regions 2022 1:1 2022;1:1–9. https://doi.org/10.1007/S43999-022-00014-2.

24. Sakai-Bizmark R, Ross MG, Estevez D, Bedel LEM, Marr EH, Tsugawa Y. Evaluation of Hospital Cesarean Delivery–Related Profits and Rates in the United States. JAMA Netw Open 2021;4:e212235–e212235. https://doi.org/10.1001/JAMANETWORKOPEN.2021.2235.

25. Mahanova TV, Tkachenko NA, Popovych VP. A study to evaluate willingness to pay using Van Westendorp's method on the example of contraceptives. J Appl Pharm Sci 2022;12,:178–86. https://doi.org/10.7324/JAPS.2022.120516.

26. Karim F, Ali NB, Khan ANS, Hassan A, Hasan MM, Hoque DME, et al. Prevalence and factors associated with caesarean section in four Hard-to-Reach areas of Bangladesh: Findings from a cross-sectional survey. PLoS One 2020;15. https://doi.org/10.1371/JOURNAL.PONE.0234249.

27. Takegata M, Ronsmans C, Nguyen HAT, Kitamura N, Iwasaki C, Toizumi M, et al. Socio-demographic factors of cesarean births in Nha Trang city, Vietnam: A community-based survey. Trop Med Health 2020;48:1–8. https://doi.org/10.1186/S41182-020-00239-2/FIGURES/1.

28. Zhang S, Qin X, Li P, Huang K. Effect of Elective Cesarean Section on Children's Obesity From Birth to Adolescence: A Systematic Review and Meta-Analysis. Front Pediatr 2022;9. https://doi.org/10.3389/FPED.2021.793400/FULL.

29. Ahlqvist VH, Persson M, Magnusson C, Berglind D. Elective and nonelective cesarean section and obesity among young adult male offspring: A Swedish population–based cohort study. PLoS Med 2019;16. https://doi.org/10.1371/JOURNAL.PMED.1002996.

30. Kim JK, Chang YS, Hwang JH, Lee MH, Park WS. Cesarean section was not associated with mortality or morbidities advantage in very low birth weight infants: a nationwide cohort study. Scientific Reports 2021 11:1 2021;11:1–6. https://doi.org/10.1038/s41598-021-99563-8.

31. Nagle A, Samari G. State-level structural sexism and cesarean sections in the United States. Soc Sci Med 2021;289:114406. https://doi.org/10.1016/J.SOCSCIMED.2021.114406.

32. Antoine C, Young BK. Cesarean section one hundred years 1920-2020: The Good, the Bad and the Ugly. J Perinat Med 2020;49:5–16. https://doi.org/10.1515/JPM-2020-0305.

33. de Loenzien M, Mac QNH, Dumont A. Women's empowerment and elective cesarean section for a single pregnancy: a population-based and multivariate study in Vietnam. BMC Pregnancy Childbirth 2021;21:1–12. https://doi.org/10.1186/S12884-020-03482-X/TABLES/4.

34. Colomar M, Opiyo N, Kingdon C, Long Q, Nion S, Bohren MA, et al. Do women prefer caesarean sections? A qualitative evidence synthesis of their views and experiences. PLoS One 2021;16. https://doi.org/10.1371/JOURNAL.PONE.0251072.

35. Zahroh RI, Sutcliffe K, Kneale D, Vazquez Corona M, Betrán AP, Opiyo N, et al. Educational interventions targeting pregnant women to optimise the use of caesarean section: What are the essential elements? A qualitative comparative analysis. BMC Public Health 2023;23:1–24. https://doi.org/10.1186/S12889-023-16718-0/FIGURES/6.

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