OBSTETRICS-RELATED FACTORS ASSOCIATED WITH TYPES OF CESAREAN SECTIONS AMONG MOTHERS

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Abstract
Objectives: This study aimed to investigate the socio-demographic-related factors associated with types of cesarean sections among mothers in Karbala city/ Iraq.
Method: The descriptive analytical study was conducted among two types of caesarian section (elective and emergency) in Gynecology and Obstetrics Hospital in Karbala Governorate for the period of October 1st 2023 to February 20th 2024. The current research is centered on a cohort of mothers who have undergone caesarean sections, utilizing a non-probability sampling methodology. The study encompasses a total of 270 mothers. Data were collected through interviews and analyzed by applying descriptive and inferential statistical analysis.
Results: The findings indicate 80.7% of mothers aged over 20, 83% with an education, and 83.4% unemployed. Monthly income was sufficient for 77.8%. Body mass index (BMI) showed 70.7% with a normal BMI and 29.3% classified as obese. The findings show significant association between types of caesarean sections and post-mature delivery [OR= 2.567; 95%CI; p= .000], history of previous caesarean sections [OR=25.567; 95%CI; p=0.000], not adhere to antenatal care on a regular basis [OR= 11.750; 95%CI; p= .001], and the presence of diseases associated with pregnancy [OR= 22.379; 95%CI; p= .000].
Conclusions: This study reveals association between post-mature delivery, prior caesarean sections, inconsistent antenatal care attendance, and pregnancy-related diseases, leading to a higher probability of elective caesarean section. The results emphasize the need for focused interventions and heightened awareness to encourage timely and regular antenatal care, particularly for high-risk pregnancies, in order to decrease the incidence of elective caesarean sections.
Key-wards: Obstetrics Factors, Cesarean Sections, Types Cesarean Sections.

Introduction

The cesarean section (C-section) is a form of surgery where the baby is delivered through an incision on the mother's abdomen and uterus [1]. Cesarean section can be divided into 2 main types depending on the timing and circumstance of the surgery "elective (planned) and emergency" [2]. The main obstetrical factors determine type of cesarean section (CS) performed on pregnant women, elective and emergency CS being two distinctive clinical scenarios [3]. The decision to perform a cesarean delivery is determined by many medical and non-medical factors, and this underscores the need to understand the specific obstetric conditions that triggered the choice between elective or emergency CS [4]. The rapid expansion of caesarean sections around the world has led to serious studies on the complex factors affecting the choice of healthcare professionals and women who are pregnant [5]. The obstetric factors like gravida abortion, premature delivery, post-mature delivery, previous cesarean section, and normal delivery also, as well as antenatal care, gestational age, and medical-illness. is known to be connected with a higher possibility of having an elective cesarean section because of the rising concern about the maternal age which is being considered as a risk factor of labor complications [6]. Moreover, the gestational age plays a crucial role in the timing of the cesarean section, whether it's elective or emergency. It is highlighted that preterm deliveries and emergency cesarean sections are closely tied together, hence urging for immediate interventions in cases of preterm labor to ensure that the mother and the baby are well [7,8]. Also, obstetric complications, including fetal distress, malpresentation, and placental abnormalities are the important factors leading to emergency cesarean sections [9] The obstetric-related factors are the most important ones in the decision-making process that defines the type of cesarean section to be performed on the expectant mothers [10-11]. In this sense, deciphering these factors is of utmost importance for healthcare professionals in order to provide individualized care that is appropriate for each pregnancy and which ensures the safety of both mother and baby. Therefore, this study aimed to investigate the obstetrics-related factors associated with types of cesarean sections among mothers in Karbala city/ Iraq.

Methods

Study Design

The descriptive analytical study was conducted among two types of caesarian section (elective and emergency) for the period of October 1st 2023 to February 20th 2024.

Study Setting and Participants

The current research is centered on a cohort of mothers who have undergone caesarean sections, utilizing a non-probability sampling methodology. The study encompasses a total of 270

mothers receiving care at the Gynecology and Obstetrics Hospital in Karbala Governorate.

Study Instruments

Data for this study were gathered through a comprehensive questionnaire that delved into various obstetric factors, including the gravida, abortion, premature delivery, post-mature delivery, previous c/s and normal delivery, as well, ANC, gestational age, and medical-illness. This information was meticulously compiled for two distinct groups: mothers who experienced elective caesarean sections and those who underwent emergency procedures.

Data Collection

The researcher interviewee the participants who undergo emergency or elective caesarian section, explained the instructions, answered their questions regarding the form, urged them to participate and thanked them for the cooperation. The interview techniques was used on individual bases, and each interview (15-20) minutes after taking the important steps that must be included in the study design.

Statistical Analysis

Statistic analysis was carried out by IBM SPSS 20.0 software. There was ranking of variables with mean and standard deviations used to describe continuous variables thoroughly by statistics. For group comparison analysis, The odds ratio (OR) is a measure of association between an exposure and an outcome. It is commonly used in elective and emergency groups. The level of significance of 0.05 was considered for all statistical analyses.

Results

Table (1):Socio-Demographic Characteristics

Characteristics	Characteristics	N	%
Age/ years			
	<20	52	19.3
	>20	218	80.7
Education level			
	Uneducated	46	17.0
	Educated	224	83.0
Occupation			
	Employed	42	15.6
	Unemployed	228	84.4
Monthly income			
	Insufficient	60	22.2
	Sufficient	210	77.8
BMI			
	Normal	191	70.7
	Obese	79	29.3

N. Number; %= Percentage

The table is a conceptualization of the socio-demographic characteristics of the study participants, which includes the frequencies and percentages in focus. In the ongoing research of our centre, which is concentrated on caesarean section, the majority of the 270 mothers, that is 80.7%, are above the age of 20, while the smaller part, 19.3%, is below this age limit. As far as educational backgrounds are concerned, the data illustrates clearly a certain tendency with 83% of the sample being educated and the 17% of the sample being uneducated. Occupational status has indicated that a large portion of the population were unemployed, to the extent of 83.4%, as compared to the 15.6% who were employed. In terms of monthly income, the existing research reports a generally satisfactory financial situation among participants, with 77.8% of them stating that they are content and 22.2% stating that they are not. In regards to body mass index (BMI), the most common (70.7%) were of normal BMI, while the others (29.3%) were obese.

Table (2): Distribution of Study Sample by their Reproductive History

Reproductive	Characteristics	N	%
Gravida			
	Primi	76	28.1
	Multi	194	71.9
Abortion			
	Yes	44	16.3
	No	226	83.7
Still birth			
	Yes	75	27.8
	No	195	72.2
Premature delivery			
	Yes	78	28.9
	No	192	71.1
Post-mature Delivery			
	Yes	21	7.8
	No	249	92.2
Previous C/s			
	Yes	43	15.9
	No	227	84.1
Normal delivery			
	Yes	193	71.5
	No	77	28.5
ANC			
	Regular	132	48.9
	Irregular	138	51.1
Referral status			
	Yes	79	29.3
	No	191	70.7
Gestational age			
	37-41 weeks	265	98.1
	>42 weeks	5	1.9
Medical-illness			
	Yes	56	20.7
	No	214	79.3

N. Number; %= Percentage

The table presents a comprehensive overview of the reproductive history of the study participants, underscoring frequencies and percentages. Among the 270 mothers included in the current study, which focuses on caesarean section outcomes, a noteworthy majority (71.9%) were multi-gravida. Additionally, a substantial proportion reported no history of abortion (83.7%), stillbirth (72.2%), premature delivery (71.1%), post-mature delivery (92.2%), previous caesarean section (84.1%), and irregular adherence to antenatal care services (51.1%). Furthermore, a significant portion of the participants had a normal virginal delivery (71.5%), while the majority did not experience a referral during pregnancy (70.7%). The gestational age between 37-41 weeks was prevalent among 98.1% of the participants, and the majority reported no medical illness associated with pregnancy (79.3%).

Table (2): Reproductive-related Factors Associated with Types of Caesarean Sections among Mothers

Factors	Class	Type of C/s		Total	OR (CI 95%)	P-value
		Elective	Urgent			
Gravida	Primi	33	43	76	0.984	.953
		43.4%	56.6%	100.0%		
	Multi	85	109	194		
		43.8%	56.2%	100.0%		
Abortion	Yes	17	27	44	0.779	.459
		38.6%	61.4%	100.0%		
	No	101	125	226		
		44.7%	55.3%	100.0%		
Still birth	Yes	31	44	75	0.875	.626
		41.3%	58.7%	100.0%		
	No	87	108	195		
		44.6%	55.4%	100.0%		
Premature Delivery	Yes	31	47	78	0.796	.403
		39.7%	60.3%	100.0%		
	No	87	105	192		
		45.3%	54.7%	100.0%		
Post-mature Delivery	Yes	21	0	21	2.567	.000
		100.0%	0.0%	100.0%		
	No	97	152	249		
		39.0%	61.0%	100.0%		
Previous C/s	Yes	40	3	43	25.470	.000
		93.0%	7.0%	100.0%		
	No	78	149	227		
		34.4%	65.6%	100.0%		
Normal delivery	Yes	84	109	193	0.975	.925
		43.5%	56.5%	100.0%		
	No	34	43	77		
		44.2%	55.8%	100.0%		
ANC	Regular	94	38	132	11.750	.001
		71.2%	28.8%	100.0%		
	Irregular	24	114	138		
		17.4%	82.6%	100.0%		
Referral status	Yes	33	46	79	0.895	.681
		41.8%	58.2%	100.0%		
	No	85	106	191		
		44.5%	55.5%	100.0%		
Gestational age	37-41 weeks	115	150	265	0.511	.458
		43.4%	56.6%	100.0%		
	>42 weeks	3	2	5		
		60.0%	40.0%	100.0%		
Medical-illness	Yes	51	5	56	22.379	.000
		91.1%	8.9%	100.0%		
	No	67	147	214		
		31.3%	68.7%	100.0%		

OR= Odds Ration; CI= Confidence Interval; Sig.= Significant Level

The study findings indicate a significant relationship between post-mature delivery and the likelihood of elective caesarean section delivery. Specifically, mothers who are delivered post mature demonstrate a higher propensity for elective caesarean sections compared to those who are no delivered post mature in twice time [OR= 2.567; 95%CI; p= .000]. Additionally, mothers with a history of previous caesarean sections face a substantially elevated risk, being 25 times more likely to undergo elective caesarean section compared to those without such history [OR=25.567; 95%CI; p=0.000]. The results indicate that a mother who did not adhere to antenatal care on a regular basis was eleven times more likely to undergo a elective caesarean section compared to those who adhere to antenatal care on a regular basis [OR= 11.750; 95%CI; p= .001]. Additionally, the

presence of diseases associated with pregnancy amplifies the likelihood of a caesarean section, with affected mothers being twenty-two times more prone to this delivery method compared to those without such medical conditions [OR= 22.379; 95%CI; p= .000].

Discussion

The study discussed in the findings that explores elective and emergency caesarean delivery among 270 mothers offers insight into several demographic and obstetric related factors. Of importance, greater than two-thirds of the participants were multi-gravida, thus showing that most of the study sample was made up of women with multiple pregnancies. This coheres with the findings in literature that prior pregnancies could be a factor in deciding to opt for a caesarean section in future deliveries [12]. In addition, the focus of the study is the high incidences of the absence of the history of various obstetric events, including abortion (83.7%), stillbirth (72.2%), premature delivery (71.1%), and post-mature delivery (92.2%). These statistics suggest that the majority of the subjects belonging to this cohort had fairly unproblematic reproductive histories. Such data is needed as they provide insight into circumstances in which caesarean sections are carried out taking into account the past obstetric events which might influence the mode of delivery [13]. Arguably, a great number of the mothers had undergone a previous caesarean section (84.1%). The observed trend in the growing rates of repeat caesarean sections worldwide, and the associated effects on mothers and newborns, is a relevant finding [14]. In addition, the research revealed that the majority of the respondents (51.1%) who were irregular in their schedule of antenatal care services. Antenatal care is a vital part of pregnant women's healthcare, which guarantees safety and health for both mother and baby. Irregular antenatal care attendance is linked to higher frequency of cesarean deliveries which once again emphasizes the need for regular and complete prenatal care for better maternal and fetal outcomes [15]. In addition, the finding that a large percentage of cases were women with a history of the normal childbirth without cesarean section (71.5%) is noteworthy. This information emphasizes the wide spectrum of the mothers' obstetric histories, and in addition it provides a basis for the next research on the factors that cause a vaginal delivery to be replaced by a caesarean section in the later pregnancies. Moreover, about 70.7% of the participants got a referral in the antenatal care period. Identification of the barriers responsible for low referrals is an excellent approach to capturing the level of healthcare accessibility and the role of primary healthcare providers in maternal healthcare. In this respect, the study findings fit the framework of health system and their role in maternal outcomes [16]. The research also gives useful data on the gestational age of the participants, where 98.2% is within the range of 37-41 weeks. This evidence further stresses the importance of gestational age as a determinant in the making of the caesarean section timing having both the planned and emergency perspectives [17].

The study results, which clearly demonstrate a strong association between post-mature delivery and caesarean section for elective delivery, are important in understanding maternal health outcomes. Long post-dated pregnancies, with length of gestation beyond 42 weeks, have always been linked to different risks to the mother and the fetus [18]. The current research on the main relationship between elective caesarean sections has revealed a specific part of the treatment of post-term pregnancy. The odds ratio (OR) of 2.567 with a 95% confidence interval (CI) adds more evidence to the fact that late post-mature birth is linked to the higher probability of an elective cesarean section. A value of OR greater than 1 indicates the probability of the event occurring is increased, and the study has a narrow confidence interval, so the estimate is more precise [19]. The p-value of .000 further strengthens the statistical significance of the observed relationship, so we can conclude that the association is unlikely due to a random chance. The reason why the ECSs are chosen in the case of post-mature pregnancy might be the presence of different factors. The potential for more complications, namely meconium aspiration syndrome and macrosomia, in postmature infants may be the reason for the shift in clinical decision-making [20] Furthermore, possibilities for stillbirth or fetal distress in post-mature pregnancies may also be a part of the reason for planned caesarean sections as a precautionary measure [21].

The study results have revealed an important relationship between a woman`s previous caesarean section history and her preference for an elective caesarean section. The literature suggests that mothers who have a history of caesarean section are generally more receptive to having their caesarean section considered as their mode of delivery. As per the study, these mothers are exposed to a substantial increase in risk that is 25 times higher than those without such a history with a calculated odds ratio of 25.567 (OR=25.567; 95%CI; p=0.000). The observed linkage is in agreement with previous studies on the effects of the preceding caesarean deliveries on the mode of subsequent delivery. In the studies of Schemann et al. [22] and Hure et al. [23], it was a similar trend observed that women who had previously had caesarean section were more likely to prefer elective caesarean deliveries in their subsequent pregnancies. The present study's results add to the already available evidence, confirming the robust link between a history of CS and the choice of elective caesarean delivery.

The study results point to the crucial connection between compliance with antenatal care and the probability of ECS delivery, which is elective caesarean section. This relationship is highlighted by a very striking statistic, i.e. a mother who did not follow antenatal care guidelines regularly faced an increased risk for an elective caesarean section. Specifically, the odds ratio (OR) estimated for the association was 11.750, the 95% confidence interval (CI), and the p-value <.001 was statistically significant. This numerical representation emphasizes the level of association, implying that non-compliance with antenatal care is a major predictor of elective caesarean section delivery. The relative risk of 11.750 implies that the mothers who opted for the elective caesarean section delivery are 12 times more likely to neglect antenatal care than mothers who have been visiting the hospital for their antenatal care sessions regularly. This revelation, therefore, puts an emphasis on the importance of prenatal care in maternal health and emphasizes its role in directing delivery choices [24]. The strength of the association, which is noted by the high odds ratio and the statistical significance of the p-value, provides evidence to the study findings and as such, healthcare providers should focus on improving the uptake of antenatal care to reduce the likelihood of elective caesarean sections.

Long-term co-morbidities and emergency Caesarean section (ECS) deliveries have been a question of great interest in maternal health studies. The recent study has provided some convincing proof that there is highly relationship between the presence of associated chronic comorbidities and C-section surgical delivery through the emergency pathway. Studies by Strehlow et al. [25] and Hahka et al. [26], revealed a shocking fact that a higher percentage of mothers with certain medical conditions that are linked to pregnancy are likely to undergo caesarean section deliveries in emergency than those without such health issues. Chronic comorbidities had an outstanding correlation with the risk of emergency caesarean section, which was shown by the quantitative analysis of the data in this study [27-28]. The odds ratio (OR=22.379) with a confidence interval (CI) of 95% also increases the strength of the evidence, showing that the probability of an emergency caesarean section becomes substantial if the patient has associated chronic comorbidities. The statistical significance of the findings, as demonstrated by the p-value of .000, underlines the strength of the association seen in the study. These results are important for both practitioners and policymakers in the maternal healthcare sector. The fact that emergency caesarean section is high among chronic comorbidity mothers is very crucial for the improvement of antenatal care strategies and the allocation of resources. The clinicians therefore need to be more proactive in monitoring and managing pregnancies where some of these medical comorbidities are at play in a bid to prevent emergency caesarean section deliveries.

Conclusions

This study reveals association between post-mature delivery, prior caesarean sections, inconsistent antenatal care attendance, and pregnancy-related diseases, leading to a higher probability of elective caesarean section. The results emphasize the need for focused interventions and heightened awareness to encourage timely and regular antenatal care, particularly for high-risk pregnancies, in order to decrease the incidence of elective caesarean sections.

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