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Socio-demographic-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 sections (elective and emergency) in Gynecology and Obstetrics Hospital in Karbala Governorate from 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 270 mothers. Data was collected through interviews and analyzed using descriptive and inferential statistical analysis.
Results: The findings indicate that 80.7% of mothers 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 research found a significant correlation between maternal age and elective cesarean section, with mothers under 20 having a higher likelihood [OR=5.983; 95%CI; p=.000]. Education level also played a role, with uneducated mothers having a twenty times greater likelihood of elective cesarean section [OR=20.477; 95%CI; p=.000].
Conclusions: The research highlights the crucial stance of maternal age and the likelihood of elective cesarean section delivery, particularly among mothers under 20 and uneducated mothers having a higher chance. Policymakers and healthcare providers should be involved in creating intervention and education programs that can enhance pregnant women's decision-making on maternal healthcare.

What is already known about the topic?

- *Cesarean section (CS) rates have been increasing globally, often exceeding the World Health Organization's recommended levels, raising concerns about potential overuse and its health implications for both mothers and infants.*

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Introduction

Cesarean section (CS) deliveries have been increasingly utilized in modern obstetric practice, with notable regional variations in their rates (Boerma et al., 2018). The decision regarding the type of CS—whether elective or emergency—is multifaceted and influenced by a combination of medical, social, and demographic factors (Doraiswamy et al., 2021). Once primarily reserved for obstetric emergencies, CS procedures have witnessed a substantial global increase, prompting growing concern regarding their overuse and its potential health implications for both mothers and infants.

According to the World Health Organization, the global CS rate has risen dramatically, doubling from 6.7% in 1990 to 21.1% in 2015 (Vora et al., 2019). In Iraq, cesarean section rates vary significantly across regions and between urban and rural populations (Shabila, 2017). Contributing factors include clinical indications, maternal requests, accessibility of healthcare facilities, and the influence of healthcare providers (Alheshimi et al., 2019). Socio-demographic variables such as maternal age, educational level, socioeconomic status, and parity play an essential role in determining whether a mother undergoes an elective or emergency CS (Kitaw et al., 2021; Antoniou et al., 2021). Among these, maternal age is one of the most prominent predictors. Studies have found that younger women may have a higher likelihood of undergoing CS due to increased medical risks or preferences for planned deliveries (Rydahl et al., 2019; Martinelli et al., 2021). Similarly, lower levels of education and income have been linked with elective CS procedures, possibly due to differences in health literacy and healthcare access (Faisal-Cury et al., 2017).

Understanding the socio-demographic correlates of CS types is critical for informing targeted public health strategies aimed at improving maternal outcomes. Therefore, the present study aimed to examine the socio-demographic factors associated with elective and emergency cesarean section deliveries 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 demographic factors, including the age of mothers, their educational background, occupation, monthly income, as well as weight and height. 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

1. *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). Socio-demographic-related Factors Associated with Types of Caesarean Sections among Mothers

Factors	Class	Type of C/s		Total	OR (CI 95%)	Sig.
		Elective	Urgent			
Age/ years	<20	40	12	52	5.983	.000
		76.9%	23.1%	100.0%		
	>20	78	140	218		
		35.8%	64.2%	100.0%		
Education level	Uneducated	42	4	46	20.477	.000
		91.3%	8.7%	100.0%		
	Educated	76	148	224		
		33.9%	66.1%	100.0%		
Occupation	Employed	18	24	42	0.014	.904
		42.9%	57.1%	100.0%		
	Unemployed	100	128	228		
		43.9%	56.1%	100.0%		
Monthly income	Insufficient	26	34	60	0.981	.948
		43.3%	56.7%	100.0%		
	Sufficient	92	118	210		
		43.8%	56.2%	100.0%		
BMI	Normal	82	109	191	0.899	.691
		42.9%	57.1%	100.0%		
	Obese	36	43	79		
		45.6%	54.4%	100.0%		

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

The research findings indicate a significant relationship between maternal age and the likelihood of elective caesarean section delivery. Specifically, mothers under the age of 20 demonstrate a higher propensity for elective caesarean sections compared to those aged 20 or older [*OR= 5.983; 95%CI; p= .000*]. Additionally, the study reveals a noteworthy relationship between education level and the types of caesarean section. Notably, an uneducated mother exhibits a substantially greater likelihood of giving birth via elective caesarean section, being twenty times more at risk compared to an educated mother [*OR= 20.477; 95%CI; p= .000*].

Discussion

The socio-demographic characteristics of the study participants play a crucial role in understanding the prevalence and distribution of cesarean section (CS) deliveries. In the

current study, most participants (80.7%) were over the age of 20, highlighting that CS is more commonly performed in adult women. This finding is consistent with earlier research suggesting that advanced maternal age is associated with a higher probability of cesarean delivery, likely due to increased health risks or clinical recommendations in later stages of reproductive life (Rydahl et al., 2019).

Education emerged as a significant factor in the decision-making process regarding the type of CS. Approximately 83% of the participants had some level of formal education, while 17% had no education. Education enhances maternal health literacy, influencing awareness and informed decision-making regarding delivery methods (Sanders & Crozier, 2018). Women with formal education are more capable of critically evaluating medical information and participating in shared decision-making with healthcare professionals. Conversely, women with limited or no education may struggle to interpret complex medical data, potentially leading to less informed healthcare choices (Mielewczyk & Boyle, 2023).

Socioeconomic status also contributed to disparities in healthcare decision-making. The findings revealed that 83.4% of the participants were unemployed, compared to 15.6% who were employed. Employment has been associated with improved health literacy and access to healthcare services, both of which may contribute to more autonomous decisions about delivery methods (Lane et al., 2017).

Furthermore, the data indicated that 77.8% of the mothers reported sufficient monthly income, reflecting a level of economic stability. However, 22.2% experienced financial limitations, which may restrict access to quality healthcare services and influence their ability to choose delivery methods freely (Kumar et al., 2023).

Body Mass Index (BMI) also played a relevant role. A total of 70.7% of the participants had a normal BMI, whereas 29.3% were classified as obese. Previous studies have demonstrated that obesity increases the likelihood of CS due to associated comorbidities such as hypertension and gestational diabetes (Lavin & Preen, 2018).

A statistically significant relationship was observed between maternal age and elective CS. Mothers under 20 years of age were approximately six times more likely to undergo elective CS than older mothers (OR = 5.983). This aligns with research suggesting that younger women may be influenced by socio-cultural, psychological, or informational factors that affect their delivery preferences (Kifle et al., 2018; Shirzad et al., 2019). These

findings highlight the need to develop tailored interventions to support younger mothers in making informed decisions about childbirth.

The study also found a strong association between educational level and the likelihood of undergoing elective CS. Mothers with no formal education were significantly more likely to choose elective CS than their educated counterparts (OR = 20.477). This disparity may stem from unequal access to health information, reduced decision-making autonomy, or lower levels of health literacy (Amjad et al., 2018; Islam et al., 2022).

These findings align with existing literature emphasizing the role of education in shaping maternal healthcare choices (Budhathoki et al., 2017; Roy et al., 2023). The disparity also raises broader concerns about equity in healthcare, as CS—though often necessary—can involve increased costs and long-term health consequences for mothers and infants (Betran et al., 2018).

It is important to consider the potential impact of confounding factors such as cultural norms, healthcare access, and social support systems when interpreting these results (Elywy et al., 2020; Musihb et al., 2022; Jasim & Oleiwi, 2023). Future research should investigate these variables to provide a more comprehensive understanding of CS decision-making dynamics.

Conclusion

This study underscores the significant association between maternal age, education level, and the likelihood of undergoing elective cesarean section, particularly among mothers under 20 and those without formal education. These findings call for the development of targeted educational and intervention programs aimed at empowering pregnant women to make informed decisions regarding their maternal healthcare. Policymakers and healthcare providers must prioritize equitable access to health information and support systems to improve maternal and neonatal outcomes across all socio-demographic groups.

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