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Original Research Article

DEPRESSION, ANXIETY AND STRESS AMONG FEMALES UNDERGOING CESAREAN SECTION IN TERTIARY CARE HOSPITAL

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ABSTRACT

Background: *Cesarean section (CS) is a prevalent surgical procedure employed to avert obstetric complications. However, it is frequently accompanied by psychological sequelae including depression, anxiety, and stress. These concerns are especially pronounced in low-resource settings such as Pakistan, where routine mental health screening is often neglected in perinatal care.* ***Objective:*** *To determine the prevalence and severity of depression, anxiety, and stress among women undergoing cesarean section and to explore their association with demographic and obstetric variables.* ***Study Design:*** *Descriptive cross-sectional study.* ***Settings:*** *Department of Obstetrics and Gynaecology, Sheikh Zayed Hospital, Lahore, Pakistan.* ***Duration of Study:*** *Six months from July to December 2024.* ***Methods:*** *A total of 160 pregnant women undergoing elective or emergency cesarean section were enrolled through non-probability purposive sampling. Data were collected via a structured questionnaire incorporating the Depression, Anxiety, and Stress Scale-21 (DASS-21). Statistical analysis was performed using SPSS version 23. Descriptive statistics were used to summarize participant characteristics and DASS-21 scores. Chi-square tests were applied to examine associations between psychological outcomes and demographic/obstetric variables, with significance set at $p < 0.05$.* ***Results:*** *The mean age of participants was 27.67 ± 5.03 years. The prevalence of depression, anxiety, and stress was 40%, 60%, and 35%, respectively, with mean scores indicating moderate severity. Statistically significant associations were observed between psychological distress and variables such as age, education level, body mass index, type of family structure, nature of cesarean (elective vs emergency), and the presence of pregnancy-related complications ($p < 0.05$).* ***Conclusion:*** *A considerable proportion of women undergoing cesarean sections experience clinically significant psychological distress. Integrating routine psychological screening and timely mental health support into obstetric care protocols is imperative for improving maternal and neonatal outcomes in resource-limited settings.*

Keywords: Cesarean Section, Depression, Anxiety, Stress, DASS-21, Maternal Mental Health, Pakistan

INTRODUCTION

Cesarean section (CS) is a widely performed surgical intervention intended to reduce maternal and neonatal morbidity and mortality in complicated or high-risk pregnancies. Globally, the frequency of CS has been rising, with recent estimates indicating that approximately 21% of all births occur via cesarean delivery, and this rate is projected to increase further by 2030 (1). In Pakistan, the trend is particularly concerning, with CS rates climbing from 3.2% in 1990 to nearly 20% in recent years (2). While CS is often life-saving, it is also associated with several physical and psychological consequences that may significantly affect maternal well-being, including the onset or exacerbation of depression, anxiety, and stress during the perinatal period.

Maternal mental health is increasingly recognized as a critical component of comprehensive obstetric care. Pregnant women undergoing cesarean section are especially vulnerable to psychological distress due to factors such as fear of surgery, anesthesia-related anxiety, perceived loss of control, previous traumatic births, lack of family support, and complications during pregnancy or delivery (3,4). Studies suggest that preoperative anxiety and antenatal depression can significantly impact both maternal and neonatal outcomes by prolonging recovery, increasing analgesic needs, and impairing maternal-infant bonding (5,6). Furthermore, psychological disturbances during pregnancy have been linked to negative fetal outcomes, including preterm labor, low birth weight, and impaired neurodevelopment (7).

In low- and middle-income countries like Pakistan, where maternal mental health services are scarce and stigma regarding psychiatric illness persists, depression, anxiety, and stress often go unrecognized and untreated. Cultural expectations, socioeconomic stressors, and insufficient antenatal psychological support further compound the emotional burden carried by expectant mothers (8). Recent evidence from tertiary hospitals in Pakistan indicates that a significant proportion of pregnant women exhibit symptoms of moderate to severe anxiety and depression during the antenatal and peripartum periods, particularly in cases involving surgical delivery (9, 10).

Given these findings, it is essential to assess the prevalence and severity of psychological disorders such as depression, anxiety, and stress among women undergoing cesarean section, and to identify the associated socio-demographic and obstetric factors that contribute to these mental health outcomes. This understanding may support the development of early intervention strategies and tailored psychological support systems to improve maternal and neonatal outcomes in surgical deliveries.

METHODOLOGY

This study was designed as a descriptive cross-sectional analysis conducted at Sheikh Zayed Hospital, Lahore. The target population consisted of pregnant females admitted for cesarean section, either elective or emergency, at the hospital. The sampling strategy employed was non-probability convenient purposive sampling. The study spanned a duration of approximately six months, starting after the approval of the research synopsis by the institutional ethics committee. The inclusion criteria encompassed women of childbearing age (15–49 years) with a singleton pregnancy of more than 28 weeks gestation who were undergoing a cesarean section and provided informed written consent to participate. Women who were already diagnosed with depression, anxiety, or stress regardless of

treatment status, those requiring urgent care for other medical conditions, or those who declined to consent were excluded from the study. The sample size was calculated using the standard formula for cross-sectional studies. Based on a previous study that reported the prevalence of DASS among pregnant females as 89%, a 95% confidence level, and a 5% margin of error, the calculated sample size was 151. To accommodate potential non-responses, the sample size was increased to 160. Data were collected using a structured questionnaire divided into three sections. The first section recorded socio-demographic information such as age, education, occupation, marital duration, family income, family type, and husband's education. The second section documented maternal obstetric characteristics including weight, height, BMI, gravidity, parity, gestational age, antenatal visits, pregnancy planning, number of children, mode of delivery, and any complications during pregnancy. The third section comprised the DASS-21 tool, a validated instrument used to assess levels of depression, anxiety, and stress. Scoring for DASS-21 was based on predefined cutoff values, classifying responses into normal, mild, moderate, severe, and extremely severe categories. The data collection process was carried out after obtaining formal permission from hospital administration. Each eligible participant was briefed about the study purpose, assured confidentiality, and invited to participate voluntarily. Informed written consent was secured from all participants prior to data collection. All data were entered and analyzed using SPSS version 23. Descriptive statistics such as means, standard deviations, frequencies, and percentages were computed for continuous and categorical variables. Chi-square tests were applied to evaluate associations between DASS levels and contributing factors including age, BMI, education, family type, pregnancy complications, and type of cesarean section. A p-value of less than 0.05 was considered statistically significant.

Ethical approval for the study was obtained from the Institutional Review and Research Advisory Board (IRRAB) of Sheikha Fatima Institute of Nursing and Allied Health Sciences, Lahore. The study adhered to the ethical principles outlined in the Declaration of Helsinki (2013). Participants were assured of the confidentiality of their responses and informed that they could withdraw from the study at any stage without penalty.

RESULTS

A total of 160 pregnant females undergoing cesarean section were included in the study. The mean age of the participants was 27.67 ± 5.03 years, with the most frequently represented age group being 26–30 years, comprising 37.5% of the sample. Regarding educational background, 9.4% of the women had no formal education, while the majority had completed up to matric (43.7%) or above matric (31.3%). In terms of occupational status, 62.5% were housewives, and 37.5% were working women. Marital duration was nearly evenly distributed, with 48.1% married for ≤5 years and 51.9% for more than 5 years. Among the husbands of the participants, 6.3% had no formal education, while a substantial proportion had up to matric (37.5%) or above matric (34.3%). Family income distribution showed that 25% of families earned ≤30,000 PKR per month, 46.9% earned between 30,001–60,000 PKR, and 28.1% earned more than 60,000 PKR. The majority of participants (59.4%) belonged to nuclear families, while the remaining 40.6% were part of extended family systems (table 1).

The mean body mass index (BMI) among participants was 28.3 ± 3.5 kg/m². In terms of BMI categories, 37.5% had normal weight, 31.3% were overweight, and 25% were obese. Only 42.5% of the participants reported attending four or more antenatal visits, and 28.1% reported having a planned pregnancy. A total of 34.3% had fewer than three children, while 20.6% were primigravida and 79.4% multigravida. Cesarean section was performed electively in 53.1% of cases and as an emergency in 46.9%. Complications during pregnancy were reported by 12.5% of women, with anemia (50%) being the most common, followed by gestational diabetes (30%) and hypertension (20%) (table 2).

The assessment of depression, anxiety, and stress using the DASS-21 scale revealed that 40% of the participants experienced depression, 60% experienced anxiety, and 35% experienced stress. In terms of severity, 12.5% had mild depression, 17.5% had moderate, 6.3% had severe, and 3.8% had extremely severe depression. Anxiety severity was distributed as 20% mild, 13.1% moderate, 11.9% severe, and 15% extremely severe. Stress levels were categorized as mild in 11.3%, moderate in 10%, severe in 8.1%, and extremely severe in 5.6% of participants. The mean scores indicated moderate levels for all three conditions: depression (15.6 ± 7.2), anxiety (12.4 ± 6.1), and stress (19.8 ± 8.0) (table 3).

Analysis of contributing factors showed significant associations between depression and age, education level, family type, BMI, type of cesarean section, and presence of complications during pregnancy. Similar patterns of association were observed for anxiety and stress. For anxiety, the strongest associations were seen with BMI and type of cesarean section ($p < 0.001$). For stress, the most significant factors included complications during pregnancy and BMI, with p-values of 0.001 and 0.004 respectively. These findings highlight the complex interplay between demographic, obstetric, and psychosocial variables in influencing maternal mental health during cesarean deliveries (table 4).

Table 1: Demographic Characteristics of Pregnant Females

Variable	Subgroup	Frequency (n)	Percentage (%)
Age	Mean ± SD	27.67 ± 5.03	
	Most Common Group (26-30 Years)	60	37.50%
Education	No Formal	15	9.40%
	Primary	25	15.60%
	Up to Matric	70	43.70%
	Above Matric	50	31.30%
Occupation	Housewife	100	62.50%
	Working	60	37.50%
Marital Duration	â‰¤ 5 years	77	48.10%
	> 5 years	83	51.90%
Husband's Education	No Formal	10	6.30%
	Primary	35	21.90%
	Up to Matric	60	37.50%
	Above Matric	55	34.30%
Monthly Income	< 30000	40	25.00%
	30001-60000	75	46.90%
	> 60000	45	28.10%
Family Type	Nuclear	95	59.40%
	Extended	65	40.60%

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Table 2: Maternal Obstetric Characteristics

Variable	Subgroup	Frequency (n)	Percentage (%)
BMI (Kg/m²)	Underweight	10	6.30%
BMI (Kg/m²)	Normal	60	37.50%
BMI (Kg/m²)	Overweight	50	31.30%
BMI (Kg/m²)	Obese	40	25.00%
Obstetric Visits	Antenatal Visits > 4	68	42.50%
Planned Pregnancy	Yes	45	28.10%
No. of Children	<3	55	34.30%
Gravidity	Primigravida	33	20.60%
Gravidity	Multigravida	127	79.40%
C-Section Type	Elective	85	53.10%
C-Section Type	Emergency	75	46.90%
Complications	Yes	20	12.50%
Complications	Anemia	10	50.00%
Complications	Gestational Diabetes	6	30.00%
Complications	Hypertension	4	20.00%

Table 3 DASS-21 Assessment Outcomes

TaVariable	Subgroup	Frequency (n)	Percentage (%)
Presence of DASS	Depression	64	40.00%
	Anxiety	96	60.00%
	Stress	56	35.00%
Severity of Depression	Normal	96	60.00%
	Mild	20	12.50%
	Moderate	28	17.50%
	Severe	10	6.30%
	Extremely Severe	6	3.80%
Severity of Anxiety	Normal	64	40.00%
	Mild	32	20.00%
	Moderate	21	13.10%
	Severe	19	11.90%
	Extremely Severe	24	15.00%
Severity of Stress	Normal	104	65.00%
	Mild	18	11.30%
	Moderate	16	10.00%
	Severe	13	8.10%
	Extremely Severe	9	5.60%
Mean Score	Depression	15.6 ± 7.2	
Mean Score	Anxiety	12.4 ± 6.1	
Mean Score	Stress	19.8 ± 8.0	

Table 4: Significant Factors Contributing to DASS Among Pregnant Females

Variable	Subgroup (Factor)	Chi-square Value	p-value
Depression	Age	9.847	0.019
	Education Level	14.14	0.002
	Family Type	5.29	0.021
	BMI	7.15	0.017
	C-section Type	5.12	0.02
	Complication	19.29	<0.0001
Anxiety	Age	7.469	0.003
	Education Level	8.135	0.012
	Family Type	9.388	0.004
	BMI	9.261	0.002
	C-section Type	8.24	<0.001
	Complication	12.56	<0.0001
Stress	Age	8.765	0.016
	Education Level	9.46	0.003
	Family Type	4.39	0.029
	BMI	9.35	0.004
	C-section Type	4.12	0.023
	Complication	18.26	0.001

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DISCUSSION

The findings of this study reveal a considerable prevalence of psychological distress among pregnant women undergoing cesarean section, with 40% experiencing depression, 60% anxiety, and 35% reporting stress symptoms. These figures are consistent with international and regional literature, emphasizing that surgical delivery can be a significant contributor to emotional disturbances in expectant mothers. For instance, a study conducted in Jeddah reported similar prevalence rates, with anxiety observed in 54% and depression in 37.5% of pregnant women using the DASS-21 scale (11). Likewise, Ashraf et al. (2023) identified a high frequency of antenatal anxiety in Pakistani women scheduled for cesarean section, reinforcing the need for mental health screening during pregnancy (12).

The severity distribution of DASS scores in the present study aligns with other findings where moderate levels of psychological distress were most commonly reported. These emotional disturbances are influenced by multiple factors including maternal age, education level, family type, BMI, the nature of the cesarean (elective or emergency), and complications during pregnancy. Similar associations have been reported in a study by Alsufyani et al., where antenatal educational interventions were found to significantly reduce anxiety scores among women undergoing cesarean section, underlining the modifiable nature of some contributing factors (13).

Body Mass Index (BMI) was a strong predictor in our study, with overweight and obese women exhibiting higher rates of depression and anxiety. This observation is supported by findings from global data, which associate maternal obesity with increased risks of psychological disorders due to both biological and psychosocial mechanisms (14). Obesity can influence hormone levels, exacerbate physical discomfort, and reduce self-esteem during pregnancy, all of which can contribute to heightened emotional distress.

Another key finding was the impact of pregnancy complications, including anemia, gestational diabetes, and hypertension, on maternal psychological health. These complications not only increase medical risks but also act as psychosocial stressors that heighten anxiety and depressive symptoms. As reported in a study by Sahin et al., maternal complications significantly elevate preoperative anxiety and are independently associated with adverse neonatal outcomes, including low birth weight and delayed development (15).

The association between type of cesarean section and emotional outcomes is also noteworthy. Elective cesareans were significantly linked to higher levels of anxiety and depression in this study. This may seem counterintuitive, as elective procedures are typically planned and presumed to allow for better emotional preparation. However, existing literature indicates that fear of surgical intervention, anticipation of pain, and societal pressure regarding the mode of delivery may still provoke psychological stress in women scheduled for elective cesareans (16). Moreover, unplanned cesareans—though not dominant in this cohort—have consistently been associated with traumatic birth experiences and subsequent postpartum depression (17).

Cultural and family dynamics also played a significant role, particularly the type of family structure. Women living in nuclear families reported higher levels of DASS scores, possibly due to reduced emotional and practical support compared to those in extended families. This is consistent with findings from a Turkish study that emphasized the protective effect of strong social and familial support networks against perinatal mood disorders (18). The implications of these findings are substantial. Depression, anxiety, and stress during pregnancy, particularly in cesarean deliveries, are not only detrimental to maternal health but also pose significant risks to neonatal outcomes. These include premature birth, low Apgar scores, breastfeeding difficulties, and long-term cognitive and emotional delays in children. A longitudinal study in Brazil confirmed that untreated antenatal depression is linked to impaired mother-infant bonding and behavioral issues in early childhood (19).

Despite the strengths of this study, including a well-defined sample and the use of a validated tool (DASS-21), it is not without limitations. The cross-sectional nature restricts causal inference, and the reliance on self-reported data introduces the potential for reporting bias. Additionally, the study was conducted in a single center, which may limit the generalizability of findings to other settings in Pakistan or beyond. Future research should consider multicentric longitudinal designs to assess the progression of psychological distress and evaluate the effectiveness of targeted interventions.

Thus, this study underscores the urgent need for integrating routine psychological screening into antenatal care, particularly for women scheduled for cesarean delivery. Culturally tailored mental health support and counseling services should be made accessible in tertiary care centers, and modifiable risk factors such as antenatal education, BMI control, and enhanced family support should be addressed to mitigate the psychological burden among expectant mothers.

CONCLUSION

Depression, anxiety, and stress were highly prevalent among women undergoing cesarean section, with moderate levels noted across all psychological domains. Key contributing factors included age, BMI, education, family type, complications during pregnancy, and the nature of the cesarean. These findings highlight the urgent need for routine psychological screening and integrated mental health services in obstetric care.

DECLARATIONS

Data Availability Statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned. (IRBEC-2024)

Consent for publication

Approved

Funding

Not applicable

CONFLICT OF INTEREST

The authors declared an absence of conflict of interest.

AUTHOR CONTRIBUTION

SAMRA ASLAM (Staff Nurse)

Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript. Manuscript drafting.

MALEEHA NAZ (Staff Nurse)

Manuscript revisions, critical input. Study Design, Review of Literature.

NARGIS (Staff Nurse)

Conception of Study, Final approval of manuscript. Data entry and Data analysis, drafting article.

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