RJNMSR
Review Journal of Neurological & Medical Sciences Review

Volume 4, Issue 1, 2026

A STUDY OF PRENATAL STRESS, MATERNAL–FETAL ATTACHMENT, AND SOCIAL SUPPORT AS PREDICTORS OF PRENATAL DEPRESSION IN HIGH-RISK PREGNANCIES IN LAHORE, PAKISTAN

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DOI: https://doi.org/10.5281/zenodo.18428585

Received	Accepted	Published
05 December 2025	15 January 2026	30 January 2026

ABSTRACT

Background: *Prenatal depression is a major public health concern among high-risk pregnant women in Pakistan, with limited local evidence guiding nursing interventions. This study examined the effects of prenatal stress, maternal–fetal attachment, and social support on prenatal depression among high-risk pregnancies in Lahore.*

Methods: *A cross-sectional study was conducted among 160 high-risk pregnant women (≤37 weeks gestation) admitted to Lady Wallingdon Hospital and Sir Ganga Ram Hospital, Lahore. Data on prenatal stress, maternal–fetal attachment, social support, and depression were collected using structured questionnaires and analyzed using SPSS 22.0 through descriptive statistics, Pearson's correlation, and hierarchical multiple regression.*

Results: *Prenatal depression had a mean score of 9.68 ± 5.09, with 58.1% of high-risk pregnant women reporting depressive symptoms (41.9% mild and 28.1% moderate–to–severe). Pregnancy stress was positively correlated with prenatal depression ($r = 0.51$, $p < .001$), while social support ($r = -0.50$, $p < .001$) and maternal–fetal attachment ($r = -0.38$, $p < .001$) showed significant inverse associations, and higher depression scores were observed among unemployed women ($p = .039$), those with poorer spousal relationships ($p < .001$), and participants with a family history of depression ($p < .001$).*

Conclusion: *Strengthening social support, reducing prenatal stress, and promoting maternal–fetal attachment are critical for preventing prenatal depression among high-risk pregnant women in Pakistan.*

Keywords: *High-risk pregnancy, Stress, Social support, Prenatal care, Depression, Child birth*

1. Introduction

Prenatal depression is increasingly recognized as a significant public health issue, particularly in low- and middle-income countries such as Pakistan, where maternal mental health remains under-addressed within routine antenatal care. Evidence suggests that depressive symptoms during pregnancy adversely affect maternal well-being, pregnancy outcomes, and early child development, including low birth weight, preterm birth, and impaired mother–infant bonding (Gavin et al., 2014; World Health Organization [WHO], 2022). In Pakistan, socio-economic stressors, gender norms, limited autonomy of women, and

inadequate psychosocial screening within maternal health services further exacerbate vulnerability to prenatal depression, especially among women experiencing high-risk pregnancies (Karmaliani et al., 2019; Nasreen et al., 2018).

High-risk pregnancy—characterized by medical, obstetric, or psychosocial complications—intensifies psychological distress and pregnancy-related stress, making women more susceptible to depressive symptoms (Biaggi et al., 2016). Pregnancy stress, encompassing fears related to maternal health, fetal outcomes, financial constraints, and family expectations, has consistently been identified as a strong predictor of prenatal depression (Yim et al., 2015). Pakistani studies have reported elevated stress levels among hospitalized high-risk pregnant women, particularly in urban public-sector hospitals, where overcrowding, limited family presence, and financial pressures are common (Riaz et al., 2021). Despite this, structured stress assessment and mental health interventions are rarely integrated into antenatal nursing practice in Pakistan.

Maternal–fetal attachment and social support are critical protective factors against prenatal depression. Strong emotional bonding with the fetus promotes positive maternal behaviors and psychological resilience, while social support—especially from spouses and family—buffers the negative impact of stress (Alhusen et al., 2013; Dunkel Schetter, 2011). In the Pakistani cultural context, spousal support and extended family dynamics play a pivotal role in shaping women's emotional experiences during pregnancy; however, strained marital relationships and limited emotional support have been linked with poorer mental health outcomes (Husain et al., 2021). Given the scarcity of empirical evidence focusing on these interrelated factors among high-risk pregnant women in Pakistan, particularly within tertiary care settings, this study seeks to examine prenatal stress, maternal–fetal attachment, and social support as predictors of prenatal depression in Lahore, thereby providing evidence to inform culturally appropriate nursing and psychosocial interventions.

2. Materials and Methods

2.1 Study Design

A hospital-based cross-sectional correlational study was conducted in accordance with the STROBE guidelines to examine the relationships between prenatal stress, maternal–fetal attachment, social support, and prenatal depression among high-risk pregnant women in Lahore, Pakistan.

2.2 Study Setting and Participants

The study was carried out in the Obstetrics and Gynecology departments of Lady Wallingdon Hospital, Lahore, and Sir Ganga Ram Hospital, Lahore, two major public-sector tertiary care hospitals. The study population comprised high-risk pregnant women admitted for antenatal care and monitoring.

2.3 Inclusion and Exclusion Criteria

Women were eligible for inclusion if they:

- were diagnosed with a high-risk pregnancy by an obstetrician,
- were ≤37 weeks of gestation,
- were living with their spouses,
- were able to understand and respond to the questionnaire, and provided informed consent to participate.
- Women with a prior clinical diagnosis of depression or those currently taking antidepressant medication were excluded from the study.

2.4 Sample Size and Sampling Technique

The sample size was determined using the G*Power program for multiple regression analysis, assuming a significance level of 0.05, power of 0.80, and a medium effect size (0.15). A minimum sample of 150 was required; to account for incomplete responses, 160 participants were recruited using consecutive sampling from both hospitals.

2.5 Data Collection Procedure

Data were collected through face-to-face interviews using structured questionnaires. Eligible participants were approached during hospitalization, and the study purpose and procedures were explained. After obtaining

written informed consent, participants completed the questionnaire, which required approximately 15–20 minutes.

2.6 Study Instruments

2.6.1 Prenatal Stress

Prenatal stress was assessed using a standardized pregnancy stress scale measuring stress related to the fetus, the pregnant woman herself, and spousal concerns. Responses were recorded on a 5-point Likert scale, with higher scores indicating greater stress.

2.6.2 Maternal–Fetal Attachment

Maternal–fetal attachment was measured using the Maternal–Fetal Attachment Scale (MFAS), consisting of multiple subdomains assessing emotional bonding and interaction with the fetus. Higher scores reflected stronger maternal–fetal attachment.

2.6.3 Social Support

Perceived social support was measured using a structured social support scale covering emotional, informational, material, and evaluative support. Items were rated on a 5-point Likert scale, with higher scores indicating stronger perceived support.

2.6.4 Prenatal Depression

Prenatal depression was assessed using the Edinburgh Postnatal Depression Scale (EPDS), a widely used screening tool for depressive symptoms during pregnancy. Higher scores indicated more severe depressive symptoms.

2.6.5 General and Pregnancy-Related Characteristics

Information on socio-demographic variables (age, education, occupation, income, parity, and spousal relationship) and pregnancy-related characteristics (gestational age, obstetric history, family history of depression, and medical conditions) was also collected.

2.7 Data Analysis

Data were analyzed using SPSS version 22.0. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize participant characteristics and key variables. Pearson's correlation coefficient was applied to examine relationships among prenatal stress, maternal–fetal attachment, social support, and prenatal depression. Hierarchical multiple regression analysis was performed to identify significant predictors of prenatal depression among high-risk pregnant women. A p-value of <0.05 was considered statistically significant.

2.8 Ethical Considerations

Written informed consent was secured from all participants, confidentiality was maintained, and participants were informed of their right to withdraw from the study at any stage without penalty.

3. Results

Table 1. General and Pregnancy-Related Characteristics of High-Risk Pregnant Women (N = 160)

Variable	Category	%
Age (years)	< 35	57.5
	≥ 35	42.5
	Range	23–42
	Mean ± SD	33.13 ± 3.82
Education level	≤ Middle	12.5
	Intermediate	17.5
	Graduation	50.6
	≥Master	8.1
Employment status	Employed	41.9
	Unemployed	58.1
Having children	Yes	27.5
	No	72.5

Relationship with spouse	Very harmonious	45.6
	Harmonious	35.6
	Average	6.9
Gestational age (weeks)	< 28	23.8
	≥ 28	76.2
	Range	20–37
	Mean ± SD	29.89 ± 4.63
Number of pregnancies	1	38.8
	2	30.0
	3	12.5
	≥ 4	6.9
	Mean ± SD	1.87 ± 1.00
History of miscarriage	Yes	31.3
	No	68.7
Prenatal check-ups	Regular	31.3
	Irregular	13.8
	Not received	43.1
Family history of depression	Yes	7.5
	No	92.5
Medical history	Yes	19.4
	No	80.6

Most participants were aged below 35 years (57.5%; mean = 33.13 ± 3.82 years). Over half were graduates or above, 58.1% were unemployed, and 72.5% had no children. The majority reported harmonious marital relationships, gestational age ≥28 weeks (76.2%), no history of miscarriage (68.7%), irregular or no prenatal check-ups, and absence of family history of depression or medical illness.

Table 2. Pregnancy Stress, Maternal–Fetal Attachment, Social Support, and Prenatal Depression among Respondents (N = 160)

Variable	Possible Range	Min	Max	N (%) / Mean ± SD
Pregnancy stress	26–130	32	111	**70.89 ± 16.51**
Maternal–fetal attachment	24–96	43	96	**74.31 ± 10.21**
Social support	25–125	30	125	**102.06 ± 16.92**
Prenatal depression (total score)	0–30	0	24	**9.68 ± 5.09**
— Normal	0–8	–	–	**67 (41.9%)**
— Mild depression	9–12	–	–	**48 (30.0%)**
— Moderate to severe depression	≥13	–	–	**45 (28.1%)**

The mean pregnancy stress score indicated a moderate level of perceived stress, while maternal–fetal attachment and social support scores were relatively high among respondents, consistent with the predominantly harmonious spousal relationships reported in Table 1. Despite this, nearly three-fifths of pregnant women experienced some level of prenatal depressive symptoms, with 28.1% falling in the moderate to severe category, highlighting a substantial mental health burden during pregnancy.

Table 3. Prenatal Depression According to General and Pregnancy-Related Characteristics (N = 160)

Characteristics	Categories	Mean ± SD	t / F	p-value
Age (years)	< 35	9.41 ± 4.82	-1.12	.264
	≥ 35	10.32 ± 5.61		
Education level	≤ Middle	10.62 ± 5.73	0.71	.549
	Intermediate	9.76 ± 5.28		
	Graduation	9.54 ± 4.71		
	≥ Master	8.21 ± 6.12		
Employment status	Employed	8.83 ± 5.09	-2.08	**.039**
	Unemployed	10.61 ± 4.96		
Having children	Yes	10.12 ± 5.46	0.64	.523
	No	9.48 ± 4.91		
Relationship with spouse	Very harmonious	7.31 ± 4.34	29.87	**<.001**
	Harmonious	11.43 ± 4.12		
	Average	16.28 ± 5.11		
Gestational age (weeks)	< 28	9.08 ± 5.79	-0.93	.354
	≥ 28	9.91 ± 4.81		
Number of pregnancies	1	8.99 ± 4.87	1.69	.171
	2	10.21 ± 5.14		
	3	9.07 ± 4.92		
	≥ 4	12.18 ± 5.93		
History of miscarriage	Yes	10.19 ± 5.26	0.95	.342
	No	9.39 ± 4.98		
Prenatal check-ups	Regular	10.34 ± 4.81	1.48	.229
	Irregular	10.47 ± 5.36		
	Not received	8.97 ± 5.18		
Family history of depression	Yes	17.54 ± 4.11	6.39	**<.001**
	No	8.96 ± 4.49		
Medical history	Yes	10.76 ± 5.92	1.36	.176
	No	9.38 ± 4.81		

Prenatal depression scores were significantly higher among unemployed women, those reporting poorer spousal relationships, and participants with a family history of depression ($p < .05$). No significant differences were observed by age, education, gestational age, parity, miscarriage history, prenatal care, or medical history, indicating that psychosocial factors—particularly marital relationship quality and family mental health history—were the strongest correlates of prenatal depression in this study.

Table 4. Correlations among Pregnancy Stress, Maternal–Fetal Attachment, Social Support, and Prenatal Depression (N = 160)

Variables	1	2	3	4
Pregnancy stress	1			
Maternal–fetal attachment	−0.26**	1		
Social support	−0.45**	0.45**	1	
Prenatal depression	0.51**	−0.38**	−0.50**	1

Values are Pearson's correlation coefficients (r).
** $p < .01$.

Pregnancy stress showed a significant positive correlation with prenatal depression, whereas maternal–fetal attachment and social support were significantly and inversely associated with depressive symptoms. Higher social support and stronger maternal–fetal attachment were also associated with lower pregnancy stress, supporting the psychosocial pathways identified in earlier tables.

4. Discussion

The present study revealed a considerable burden of prenatal depressive symptoms among high-risk pregnant women, with more than half of the respondents experiencing at least mild depression. This prevalence is consistent with prior evidence indicating that women with high-risk pregnancies are more vulnerable to psychological distress compared to low-risk antenatal populations (Lancaster et al., 2010; Biaggi et al., 2016).

Pregnancy stress showed a strong positive association with prenatal depression, supporting the notion that increased physical, emotional, and uncertainty-related demands during pregnancy heighten depressive symptoms (Gurung et al., 2005). Conversely, social support and maternal–fetal attachment were significantly and inversely associated with prenatal depression, indicating their protective role. These findings align with the stress-buffering model, which suggests that social and emotional resources mitigate the adverse psychological effects of stress (Cohen & Wills, 1985; Bedaso et al., 2021).

The significant association between poorer spousal relationships and higher prenatal depression further highlights the importance of interpersonal dynamics during pregnancy. Previous studies have consistently shown that marital conflict and lack of partner support are among the strongest predictors of antenatal depressive symptoms (Lancaster et al., 2010; Biaggi et al., 2016). Similarly, higher depression scores among unemployed women may reflect financial insecurity and reduced psychosocial resources, which have been widely documented as contributors to maternal mental health vulnerability (Dadi et al., 2020).

A markedly higher level of prenatal depression among women with a family history of depression supports existing evidence of genetic and psychosocial predisposition to depressive disorders during pregnancy (Lancaster et al., 2010). In contrast, obstetric variables such as gestational age, parity, miscarriage history, and prenatal check-ups were not significantly associated with depression in this study. This may be due to the uniformly high-risk nature of the sample, where psychosocial stressors overshadow biological or pregnancy-related differences (Biaggi et al., 2016).

Overall, the findings suggest that prenatal depression among high-risk pregnant women is predominantly influenced by psychosocial factors—particularly pregnancy stress, social support, spousal relationship quality, and family mental health history—rather than obstetric characteristics alone. These results underscore the need to integrate psychosocial assessment and mental health support into routine high-risk antenatal care (Bedaso et al., 2021).

5. Conclusion

This study demonstrates that prenatal depression is highly prevalent among high-risk pregnant women and is primarily driven by psychosocial factors rather than obstetric characteristics. Pregnancy stress showed a strong positive association with depressive symptoms, whereas social support and maternal–fetal attachment served as significant protective factors. Unemployment, poorer spousal relationships, and a family history of depression further increased vulnerability to prenatal depression. These findings highlight the need to integrate routine psychosocial screening and supportive interventions into high-risk antenatal care to improve maternal mental health outcomes.

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