INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

EXPLORING PSYCHOSOCIAL, BIOLOGICAL, AND ENVIRONMENTAL FACTORS CONTRIBUTING TO POSTPARTUM DEPRESSION AMONG WOMEN IN URBAN AND RURAL COMMUNITIES

Original Research

Shakeela Bano[1]*, Fizza Shoaib[2], Fatima Akram Khan[3], Muhammad Shahroz Khan[3], Abdul Majid Asad[4], Rafi Ul Shan[5], Iqra Arshad[6].
[1]Medical Superintendent, Medical Specialist, Muhammad Shahbaz Sharif Hospital (THQ Bedian), Lahore, Pakistan.
[2]Shaheed Zulfiqar Ali Bhutto University of Science and Technology, Islamabad Campus, Pakistan.
[3]Medical Officer, City Medical Complex, Mianwali, Pakistan.
[4]Institute of Applied Psychology, University of the Punjab, Lahore, Pakistan.
[5]Student, Health Services Academy, Islamabad, Pakistan.
[6]MPhil Human Nutrition and Dietetics, University of Agriculture, Faisalabad, Pakistan.
Corresponding Author: Shakeela Bano, Medical Superintendent, Medical Specialist, Muhammad Shahbaz Sharif Hospital (THQ Bedian), Lahore, Pakistan, sbsheikh@gmail.com

Acknowledgement: The authors gratefully acknowledge the support of all participating mothers in South Punjab.

Conflict of Interest: None

Grant Support & Financial Support: None

ABSTRACT

Background: Postpartum depression (PPD) is a significant yet underrecognized public health issue that adversely affects maternal mental health and child development. The interplay of psychosocial, biological, and environmental factors contributes to its onset, particularly in resource-constrained settings like South Punjab.

Objective: To analyze key psychosocial, biological, and environmental factors contributing to postpartum depression among women in urban and rural communities of South Punjab, and to identify preventive strategies for improving maternal mental health outcomes.

Methods: A descriptive study was conducted over eight months among 384 postpartum women within six months of delivery in South Punjab. Participants were selected using multistage sampling. Data were collected through structured interviews using a pretested questionnaire and the Edinburgh Postnatal Depression Scale (EPDS). Statistical analysis was performed using SPSS version 26. Data were normally distributed; thus, t-tests, chi-square tests, and multivariate logistic regression were applied to explore associations and predictors.

Results: The prevalence of probable postpartum depression (EPDS ≥13) was 41.6%. Higher rates were observed among women with a history of depression (74.2%), low social support (68.5%), unemployment (63.3%), and rural residence (59.6%). Mean EPDS scores were significantly higher in rural women (12.4 ± 4.8) and those with low social support (13.7 ± 5.1). Multivariate analysis confirmed these factors as significant predictors.

Conclusion: Postpartum depression is highly prevalent among mothers in South Punjab, especially in rural areas and among socially unsupported women. Addressing these factors through targeted interventions is essential for improving maternal mental health and overall family well-being.

Keywords: Depression, Female, Mental Health, Postnatal Care, Postpartum Period, Pregnancy, Psychosocial Factors.

INTRODUCTION

Postpartum depression (PPD) has increasingly come to the forefront of public health concerns, with far-reaching implications not only for maternal well-being but also for child development, family dynamics, and societal productivity (1). Although motherhood is culturally portrayed as a time of joy and emotional fulfillment, the postpartum period can also be marked by profound psychological vulnerability. While transient mood changes or "baby blues" are experienced by many women shortly after childbirth, postpartum depression represents a more persistent and debilitating condition that can severely impair a mother's ability to care for herself and her infant (2). The global prevalence of postpartum depression varies, but studies suggest that approximately 10–20% of new mothers are affected, with higher rates observed in low-resource settings. Despite its prevalence, the condition remains underdiagnosed and undertreated, especially in communities where mental health stigma and limited healthcare infrastructure further impede early detection and intervention (3). In recent years, researchers and healthcare professionals have shifted toward a more multidimensional understanding of postpartum depression, recognizing that it is not the result of a singular cause but rather a complex interplay of psychosocial, biological, and environmental factors. Biological changes, particularly hormonal fluctuations following childbirth, have long been implicated in the pathophysiology of PPD. However, the explanatory power of hormones alone has proven insufficient, prompting further investigation into psychological stressors such as lack of social support, marital dissatisfaction, previous history of mental illness, and economic hardship. These psychosocial stressors often compound one another, increasing the likelihood of depressive symptoms manifesting during the postpartum period (4).

Environmental conditions, too, play a critical yet often overlooked role in shaping maternal mental health. The dichotomy between urban and rural settings presents unique challenges and protective factors that merit deeper exploration (5). Women living in urban areas may benefit from better access to healthcare services and social networks, yet they often experience higher levels of stress related to fast-paced living, reduced familial proximity, and social isolation. Conversely, rural women may enjoy stronger community ties but face substantial barriers to accessing quality maternal care and mental health services (6). Additionally, cultural expectations and gender norms—often more rigid in rural settings—may exacerbate feelings of guilt or inadequacy in mothers struggling to meet perceived maternal ideals. Understanding how these environmental factors intersect with biological and psychosocial variables is crucial for crafting effective and context-sensitive interventions. The social stigma surrounding mental illness, especially postpartum depression, further complicates efforts to identify and support affected women. In many cultures, new mothers are expected to embrace their roles with unwavering strength and gratitude, leaving little room for emotional struggle (7). This idealization of motherhood not only silences women's experiences but also delays critical help-seeking behaviors. Mental health literacy among new mothers, families, and even healthcare providers remains uneven, resulting in missed opportunities for early intervention and support. Addressing these cultural and systemic barriers requires both targeted public health messaging and structural improvements in perinatal care systems. Furthermore, socioeconomic disparities significantly influence the risk and trajectory of postpartum depression. Financial instability, food insecurity, poor housing conditions, and limited maternity leave options contribute to chronic stress and emotional fatigue during a period that demands resilience. These stressors are often more pronounced in marginalized communities, where intersecting inequalities can amplify maternal mental health risks. Interventions that fail to account for these broader social determinants of health risk being ineffective or, worse, exacerbating existing disparities (8).

Despite growing awareness, gaps remain in the literature regarding how the various contributors to postpartum depression interact across different community settings (9). Much of the existing research has focused narrowly on specific risk factors or demographic groups, limiting the generalizability of findings (10). Few studies have comprehensively examined the simultaneous influence of psychosocial, biological, and environmental variables across both urban and rural populations (11). This lack of integrative research hinders the development of holistic and adaptive support systems that can address the needs of diverse maternal populations. By investigating these interlinked domains within a unified framework, the current study aims to bridge this critical gap (12). The objective of this study is to analyze the psychosocial, biological, and environmental factors contributing to postpartum depression among women in both urban and rural communities and to identify targeted preventive strategies that can improve maternal mental health outcomes across diverse contexts.

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

METHODS

This descriptive study was conducted over a period of eight months in the region of South Punjab with the primary objective of analyzing key psychosocial, biological, and environmental factors influencing postpartum depression and identifying preventive strategies to improve maternal mental health outcomes. The study was structured to ensure a comprehensive understanding of postpartum depression among women residing in both urban and rural settings. A calculated sample size of 384 participants was determined using a standard sample size formula based on a 95% confidence level, an assumed prevalence rate of 50% to ensure maximum sample size, and a 5% margin of error. This sample size was deemed adequate to detect statistically significant associations and patterns within the population under study.

Participants were selected using a multistage sampling technique to ensure diverse representation across both urban and rural communities. Inclusion criteria required participants to be women aged 18 to 45 years who had given birth within the past six months and were permanent residents of South Punjab. Women with pre-existing diagnosed psychiatric disorders prior to pregnancy or those with severe obstetric complications were excluded from the study to minimize confounding effects. Consent was obtained after explaining the study purpose and maintaining the confidentiality and anonymity of all participants.

Data collection was carried out through structured face-to-face interviews using a pretested and validated questionnaire comprising sections on demographic details, obstetric history, psychosocial stressors, and environmental conditions. The primary outcome, postpartum depression, was measured using the Edinburgh Postnatal Depression Scale (EPDS), a widely used 10-item self-report tool designed to screen for depressive symptoms in the postpartum period. A cutoff score of 13 or higher was used to indicate probable depression, consistent with standard clinical guidelines.

Additional data regarding psychosocial variables such as perceived social support, marital relationship quality, and past history of mental health issues were collected using items adapted from established scales. Biological indicators, including breastfeeding status, sleep patterns, and postpartum physical health complaints, were also assessed. Environmental aspects included distance to the nearest health facility, living conditions, and availability of community support services.

All data were coded and entered into SPSS version 26 for analysis. Descriptive statistics such as means, standard deviations, and frequencies were used to summarize participant characteristics and response distributions. Since the data followed a normal distribution as confirmed through Shapiro-Wilk test, inferential statistics including independent t-tests and one-way ANOVA were employed to examine associations between postpartum depression scores and continuous predictor variables. Chi-square tests were used for categorical data analysis. Multivariate logistic regression analysis was performed to identify independent predictors of postpartum depression while controlling for potential confounders.

This methodical approach was designed to yield a robust understanding of the complex and interrelated factors contributing to postpartum depression in diverse community settings, thereby offering a solid foundation for the development of informed and context-sensitive preventive strategies.

RESULTS

A total of 384 postpartum women participated in the study, with a mean age of 28.6 years (SD ± 4.3). Among them, 52.9% resided in urban areas, and 61.5% had attained at least secondary-level education. Employment was reported by 38.2% of participants, while 44.8% were primiparous.

Based on the Edinburgh Postnatal Depression Scale (EPDS), 31.3% of women scored within the normal range (0–6), 27.1% had mild symptoms (7–12), 30.7% showed moderate symptoms (13–19), and 10.9% fell into the severe category (score ≥20). The overall prevalence of probable postpartum depression (EPDS ≥13) was 41.6%.

A significantly higher prevalence of postpartum depression was observed among participants with a self-reported history of depression (74.2%), those experiencing low social support (68.5%), rural residents (59.6%), and unemployed women (63.3%). These associations were statistically significant, with p-values <0.001, 0.002, 0.014, and 0.008 respectively.

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Mean EPDS scores differed significantly across key demographic and psychosocial variables. Women living in rural areas had a mean EPDS score of 12.4 (SD ± 4.8), compared to 10.1 (SD ± 4.2) among urban dwellers ($p = 0.016$). Those reporting high social support had a mean score of 8.9 (SD ± 3.7), whereas those with low support scored 13.7 (SD ± 5.1), a highly significant difference ($p < 0.001$).

These findings highlight a strong association between postpartum depression and psychosocial stressors, environmental conditions, and biological factors such as parity and employment status. Detailed descriptive and comparative statistics are presented in the attached tables and figures.

Table 1: Demographic Characteristics

Variable	Value
Age (mean ± SD)	28.6 ± 4.3
Urban Residence (%)	52.9%
Education (≥Secondary) (%)	61.5%
Employed (%)	38.2%
Primiparous (%)	44.8%

Table 2: Distribution of EPDS Scores

EPDS Score Range	Frequency (%)
0-6 (Normal)	31.3%
7-12 (Mild)	27.1%
13-19 (Moderate)	30.7%
20+ (Severe)	10.9%

Table 3: Association Between Selected Variables and Postpartum Depression

Variable	Postpartum Depression Present (%)	p-value
History of Depression	74.2%	<0.001
Low Social Support	68.5%	0.002
Rural Residence	59.6%	0.014
Unemployment	63.3%	0.008

Table 4: Mean EPDS Scores by Psychosocial and Environmental Factors

Factor	Mean EPDS ± SD	p-value
Urban	10.1 ± 4.2	0.016
Rural	12.4 ± 4.8	
High Social Support	8.9 ± 3.7	
Low Social Support	13.7 ± 5.1	<0.001

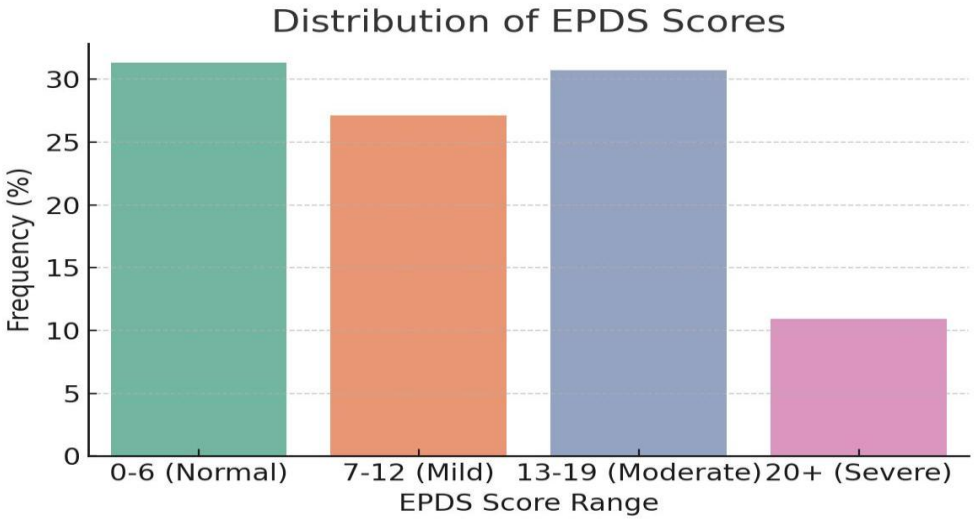

Figure 1 Distribution of EPDS Scores

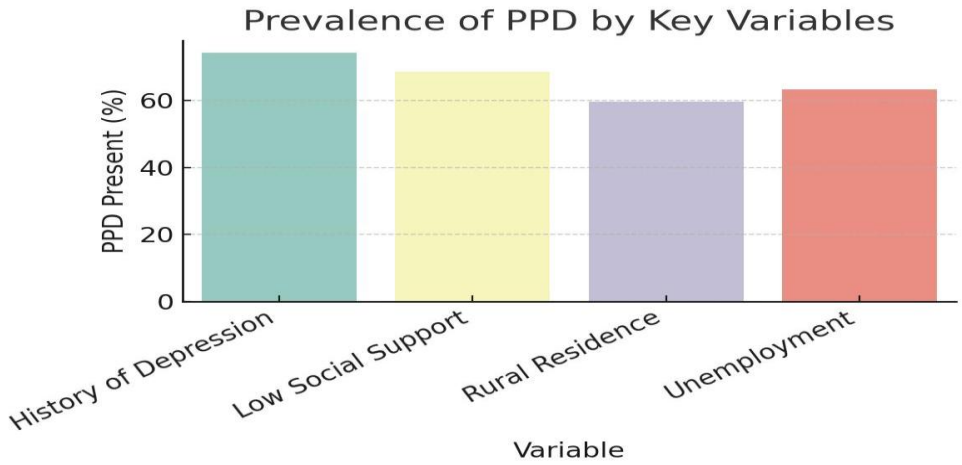

Figure 2 Prevalence of PPD by Key Variables

DISCUSSION

The present study offered valuable insights into the multifactorial nature of postpartum depression by examining psychosocial, biological, and environmental contributors among women in both urban and rural settings of South Punjab (13). The findings revealed a high burden of depressive symptoms in the postpartum period, with more than 40% of participants scoring above the threshold for probable depression. This observation underscores the persistent and often overlooked mental health vulnerabilities faced by women after childbirth, particularly in regions where healthcare access and social support may be inconsistent (14). A noteworthy aspect of the findings was the strong association between low social support and elevated EPDS scores. Women who lacked adequate emotional and practical support from family or community members exhibited significantly higher rates of postpartum depression (15). These results align with the established understanding that social support plays a protective role against psychological distress during the postpartum transition. Moreover, participants who reported a prior history of depression were at a markedly higher risk of experiencing recurrent depressive symptoms, reflecting the enduring impact of psychiatric vulnerability during hormonally and emotionally sensitive periods such as the postpartum phase. The rural-urban divide also emerged as a significant determinant in the prevalence and severity of postpartum depression. Women residing in rural communities reported higher EPDS scores compared to their urban counterparts, a trend likely influenced by limited access to maternal health services, reduced mental health awareness, and cultural stigmas that deter help-

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

seeking behaviors. While urban women may benefit from comparatively better healthcare infrastructure, they are not immune to psychosocial stressors such as social isolation and high-pressure living environments, although these factors appeared less impactful in this study population (16).

Employment status demonstrated a complex relationship with maternal mental health (17). Unemployed women were more likely to exhibit depressive symptoms, possibly due to financial dependence, reduced autonomy, and a lack of structured daily engagement. Conversely, employed women may derive psychological benefits from economic independence and external social networks (18). However, this dynamic must be interpreted cautiously, as employment during the postpartum period can also impose stress due to role overload, particularly in settings where maternity protections are weak or nonexistent. The study's strength lies in its comprehensive exploration of interconnected risk factors across diverse sociocultural contexts. By examining multiple dimensions—biological, psychosocial, and environmental—the research produced a more holistic understanding of postpartum depression in a population that is often underrepresented in psychiatric literature (19). The use of a validated screening tool (EPDS) and appropriate statistical analyses further enhanced the credibility of the findings. However, several limitations should be acknowledged. As a descriptive study, causality could not be established, limiting the ability to determine the directionality of observed associations. The reliance on self-reported measures may have introduced reporting bias, particularly in the assessment of sensitive topics such as mental health and interpersonal relationships. Cultural stigma surrounding depression may have led to underreporting of symptoms, especially among rural participants. Moreover, although the sample was adequately powered and geographically diverse within South Punjab, generalizability to other regions with different cultural and healthcare dynamics may be limited (20).

Future research should aim to include longitudinal designs to track the progression of depressive symptoms over time and identify causal pathways (21). Additionally, qualitative components could enrich the understanding of subjective experiences, particularly regarding perceived social support, gender roles, and cultural attitudes toward motherhood and mental health (22). Interventional studies evaluating the effectiveness of targeted support programs in reducing postpartum depression in resource-limited settings would also be valuable, especially those tailored to the unique challenges faced by rural populations (23). Despite its limitations, this study reinforces the need for integrated maternal mental health strategies that account for the complex realities of women's lives. Interventions must extend beyond clinical treatment to include community-based education, family counseling, and systemic improvements in postpartum care. Addressing postpartum depression requires not only the identification of high-risk individuals but also the transformation of environments that perpetuate psychological distress. The evidence generated here provides a foundation upon which such efforts can be meaningfully built (24).

CONCLUSION

This study highlighted the significant influence of psychosocial, biological, and environmental factors on postpartum depression among women in South Punjab. Findings emphasized the heightened vulnerability among rural, socially unsupported, and unemployed mothers. These insights underscore the urgent need for integrated, community-informed maternal mental health interventions. Addressing postpartum depression holistically can lead to more effective prevention strategies and improved maternal and child health outcomes across diverse populations.

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

AUTHOR CONTRIBUTION

Author	Contribution
Shakeela Bano*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Fizza Shoaib	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Fatima Akram Khan	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Muhammad Shahroz Khan	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Abdul Majid Asad	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Rafi Ul Shan	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Iqra Arshad	Contributed to study concept and Data collection Has given Final Approval of the version to be published

REFERENCES

1. Doyle K. The Impact of Post-Partum Depression on Mothers and their Babies. 2025.

2. Lazarov HO. Parents' Experiences With Postpartum Depression and Children's Neurodevelopment: Alliant International University; 2025.

3. Rodríguez Muñoz MdlF, Motrico E, Míguez MC, Chaves C, Suso Ribera C, Duque A, et al. Perinatal depression in the Spanish context: Consensus report from the general council of psychology of Spain. 2023.

4. ACHIENG AL. Breastfeeding Practices and Infant Nutrition Status (6-23 Weeks) of Post-Partum Depressed Mothers in Mama Lucy Kibaki and Mbagathi Hospitals in Nairobi City County: Kenyatta University; 2024.

5. Dabach M. Effect of Cognitive Behavioral Therapy in the Treatment of Perinatal Anxiety: California Southern University; 2024.

6. Marowitz AJP, Approach PCAP-C. Assessment and Care at the Onset of Labor. 2023:443.

7. Mewara MD, Yadav KJJoNS. Social Factors Influencing Mental Health: Insights, Preventive Strategies, and Policy Recommendations. 2025;14(4s).

8. Alanazi AF. " Maternal Mental Health: Understanding and Addressing Postpartum Depression.

9. Vora V, Kanyal S, Chauhan A, Agarwal P, Sethi YJIJoG, Obstetrics. Cultural perceptions and social determinants of health in perinatal mental health: An obstetric-psychiatric perspective. 2025.

10. Gupta A, Pajai S, Gupta A, Thakur AS, Muneeba S, Batra N, et al. In the shadows of motherhood: a comprehensive review of postpartum depression screening and intervention practices. 2024;16(2):e54245.

11. Modak A, Ronghe V, Gomase KP, Mahakalkar MG, Taksande VJC. A comprehensive review of motherhood and mental health: postpartum mood disorders in focus. 2023;15(9):e46209.

12. Kirkbride JB, Anglin DM, Colman I, Dykxhoorn J, Jones PB, Patalay P, et al. The social determinants of mental health and disorder: evidence, prevention and recommendations. 2024;23(1):58-90.

13. Dwivedi YK, Kshetri N, Hughes L, Slade EL, Jeyaraj A, Kar AK, et al. Opinion Paper:"So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. 2023;71:102642.

14. Podell D, English Z, Lacey K, Blattmann A, Dockhorn T, Müller J, et al. Sdxl: Improving latent diffusion models for high-resolution image synthesis. 2023.

15. Bai J, Bai S, Chu Y, Cui Z, Dang K, Deng X, et al. Qwen technical report. 2023.

16. Rafailov R, Sharma A, Mitchell E, Manning CD, Ermon S, Finn CJAinips. Direct preference optimization: Your language model is secretly a reward model. 2023;36:53728-41.

17. Chowdhery A, Narang S, Devlin J, Bosma M, Mishra G, Roberts A, et al. Palm: Scaling language modeling with pathways. 2023;24(240):1-113.

18. Kirillov A, Mintun E, Ravi N, Mao H, Rolland C, Gustafson L, et al., editors. Segment anything. Proceedings of the IEEE/CVF international conference on computer vision; 2023.

19. Van Dyck CH, Swanson CJ, Aisen P, Bateman RJ, Chen C, Gee M, et al. Lecanemab in early Alzheimer's disease. 2023;388(1):9-21.

20. Peebles W, Xie S, editors. Scalable diffusion models with transformers. Proceedings of the IEEE/CVF international conference on computer vision; 2023.

21. Liu H, Li C, Li Y, Lee YJ, editors. Improved baselines with visual instruction tuning. Proceedings of the IEEE/CVF conference on computer vision and pattern recognition; 2024.

22. Wang C-Y, Yeh I-H, Mark Liao H-Y, editors. Yolov9: Learning what you want to learn using programmable gradient information. European conference on computer vision; 2024: Springer.

23. Abramson J, Adler J, Dunger J, Evans R, Green T, Pritzel A, et al. Accurate structure prediction of biomolecular interactions with AlphaFold 3. 2024;630(8016):493-500.

24. Gu A, Dao T, editors. Mamba: Linear-time sequence modeling with selective state spaces. First Conference on Language Modeling; 2024.

