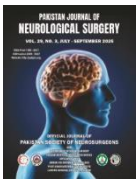

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Original Research

Cognitive and Neuropsychiatric Sequelae in Postpartum Women with Preeclampsia: A Prospective Cohort Study

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ABSTRACT

Objective: This study aimed to prospectively evaluate cognitive function and neuropsychiatric outcomes in postpartum women with a history of preeclampsia compared to normotensive controls. It further sought to identify key predictors of cognitive impairment and mood disturbances within this high-risk group.

Materials and Methods: Between January and December 2024, a forward-looking cohort investigation was implemented at a tertiary healthcare institution. A total of 280 postpartum participants were included, comprising 160 women diagnosed with preeclampsia and 120 normotensive counterparts, with both groups balanced in terms of age and parity. Cognitive performance was measured using the Montreal Cognitive Assessment (MoCA), while emotional health was monitored through the Hospital Anxiety and Depression Scale (HADS) and the Edinburgh Postnatal Depression Scale (EPDS) during follow-up visits conducted at 6 and 12 months after childbirth.

Results: At 12 months postpartum, women in the preeclampsia group exhibited significantly lower mean MoCA scores (23.6 vs. 26.1, $p<0.001$) and a higher prevalence of clinically significant anxiety (38.1% vs. 15.8%) and depression (29.4% vs. 10.8%) than controls. Logistic regression identified severe preeclampsia, low educational status, and elevated EPDS scores as independent predictors of cognitive impairment.

Conclusion: Women with a history of preeclampsia are at increased risk for cognitive and psychiatric sequelae in the postpartum period. These findings underscore the importance of structured neuropsychiatric screening and early intervention in postpartum care for this high-risk population.

Keywords: Preeclampsia, cognition, postpartum depression, anxiety, prospective cohort.

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INTRODUCTION

Preeclampsia remains one of the most significant complications of pregnancy, affecting approximately 2–8% of pregnancies globally.[1] It is characterized by new-onset hypertension after 20 weeks of gestation, accompanied by proteinuria or signs of systemic involvement such as renal insufficiency, hepatic dysfunction, or hematologic abnormalities[2]. While traditionally studied for its acute maternal and fetal consequences, including placental insufficiency, fetal growth restriction, eclampsia, and maternal mortality, recent attention has shifted towards its ***long-term impact on maternal health***, particularly concerning ***cognitive and neuropsychiatric outcomes***.

The underlying pathophysiology of preeclampsia is rooted in abnormal placental implantation and widespread endothelial dysfunction[3]. These abnormalities initiate a cascade of inflammatory, thrombotic, and vascular changes that can extend beyond the pregnancy itself. Increasing evidence suggests that these systemic alterations may affect the central nervous system (CNS), potentially resulting in **lasting cerebral microvascular damage, blood-brain barrier disruption, and neuroinflammation**. As such, preeclampsia may contribute to **postpartum cognitive decline**, as well as increased susceptibility to **mood disorders**, including depression and anxiety[4].

Although a growing body of research has described a higher prevalence of **white matter lesions**, **cortical atrophy**, and **cerebrovascular vulnerability** among women with a history of preeclampsia, there is limited prospective data assessing **functional neurocognitive and psychiatric outcomes over time.[5]** Many women report persistent postpartum symptoms such as forgetfulness, difficulty concentrating, emotional lability, and fatigue—symptoms often underrecognized or misattributed to the normal postpartum experience. It remains unclear how much of this burden can be directly attributed to antecedent hypertensive disease of pregnancy.

Cognitive domains, including memory, attention, executive functioning, visuospatial processing, and language, are essential for maternal functioning and infant care in the postpartum period. Impairment in even a few of these areas can significantly disrupt daily living, bonding with the newborn, and occupational reintegration[6]. Prior studies utilizing tools like the Montreal Cognitive Assessment (MoCA) and Mini-Mental State Examination (MMSE) suggest a higher frequency of mild cognitive impairment in women with previous hypertensive disorders of pregnancy (HDP), particularly preeclampsia. However, most of these studies have been either cross-sectional or retrospective, limiting our ability to establish the **temporal progression** and **clinical relevance** of these changes.[7]

Neuropsychiatric disturbances, particularly **postpartum depression and anxiety**, are similarly underexplored in the context of preeclampsia[8]. Women who experience preeclampsia often face prolonged antenatal hospitalizations, stressful labor and delivery experiences, and emergency interventions, all of which may contribute to **heightened psychological vulnerability**. Combined with hormonal shifts and the residual effects of systemic inflammation, these women may have a higher predisposition to psychiatric disorders in the postpartum period. Yet, there is a lack of **prospective longitudinal studies** evaluating the true burden of these conditions in this high-risk group.[9]

Hormonal dysregulation following delivery—especially the abrupt decline in estrogen and progesterone—has been implicated in mood disorders. In women with preeclampsia, such changes may be superimposed on **persistent endothelial dysfunction and dysregulated hypothalamic-pituitary-adrenal (HPA) axis activity**, creating an internal milieu conducive to emotional distress.[10] Additionally, neuroimaging

evidence suggests structural changes such as reduced grey matter volume and alterations in brain regions responsible for mood regulation, particularly the **prefrontal cortex and limbic system**, in those with a history of preeclampsia.

What makes this issue more complex is the **lack of routine screening** for cognitive or psychological symptoms in the postpartum period, especially in low- and middle-income settings.[11] Consequently, a significant proportion of women with preeclampsia may go undiagnosed and untreated, resulting in prolonged maternal distress and impaired caregiving capacity. Furthermore, **cultural stigmas** and **lack of awareness** about mental health issues in many populations can suppress symptom reporting and healthcare-seeking behavior, further obscuring the true extent of the problem.[12]

The long-term effects of undetected cognitive and mental health issues have not remained confined to the mother alone.[13] Negative consequences for child development have been linked with maternal depression. Difficulties with breastfeeding have also been reported. Family relationships have been shown to experience strain. Recognition of infant needs may be delayed due to impaired cognition.[14] Compliance with medical guidance can be reduced. Timely decisions may not be made, creating potential dangers for both mother and baby. Recent literature has indicated a possible connection between preeclampsia and later vascular dementia. Early screening and supportive care have therefore been advised for women considered high risk.[15]

Due to growing concerns, a careful evaluation of mental and cognitive effects in women with preeclampsia is urgently required. Validated tools should be applied during structured follow-up. Early identification of affected individuals can be achieved through this method. Timely care and support may then be provided. Patterns and predictors of brain-related changes after preeclampsia could be better understood through this strategy.

This investigation was planned to fill a recognized knowledge gap. A prospective cohort approach was adopted. Women diagnosed with preeclampsia were enrolled during pregnancy. Follow-up assessments were scheduled at 6 and 12 months after childbirth. Cognitive status and emotional health were the primary focus. A group of normotensive women with routine pregnancies was included for comparison. Cognitive performance was measured using the Montreal Cognitive Assessment (MoCA). Symptoms of anxiety and depression were examined through the Hospital Anxiety and Depression Scale (HADS) and the Edinburgh Postnatal Depression Scale (EPDS).

We hypothesize that women with preeclampsia will demonstrate significantly **lower cognitive performance** and **higher prevalence of depressive and anxiety symptoms** in the postpartum period compared to normotensive controls. By collecting and analyzing **longitudinal data** in a structured, prospective manner, this study aims to provide **clinically relevant insights** into the neuropsychiatric burden of preeclampsia and support the development of targeted postpartum screening and management strategies.

MATERIALS AND METHODS

Study Design and Setting

This was a **prospective observational cohort study** conducted at the Department of Obstetrics and Gynecology in collaboration with the Psychiatry and Neurology units of a tertiary care teaching hospital. Women who delivered between **January 2024 and December 2024** were enrolled during the peripartum period and followed up prospectively for cognitive and neuropsychiatric assessments at **6 months and 12 months postpartum**. Ethical approval for the

study was granted by the Institutional Review Board (IRB Approval No. 15/LRH/MTI), and informed written consent was obtained from all participants at enrollment.

Study Population

The study comprised two groups:

Preeclampsia Group (Cases): Women diagnosed with preeclampsia during their most recent pregnancy.

Normotensive Group (Controls): Age- and parity-matched women with no history of hypertensive disorders in pregnancy.

Inclusion Criteria

Eligibility was restricted to women aged 18 to 45 years who had a single fetus during pregnancy. A confirmed diagnosis of preeclampsia was required, based on the guidelines provided by the American College of Obstetricians and Gynecologists (ACOG). This diagnosis included elevated blood pressure—either systolic ≥140 mmHg or diastolic ≥90 mmHg—on two occasions at least four hours apart, occurring after 20 weeks of gestation. The presence of protein in urine above 300 mg in 24 hours or signs of organ dysfunction was also necessary. Delivery had to take place at the designated hospital. Only those who agreed to return for assessments at 6 and 12 months postpartum were included. Written informed consent was taken before participation began.

Exclusion Criteria

Women were not included if any psychiatric illness or cognitive condition had been diagnosed in the past. Those who developed eclampsia, HELLP syndrome, or stroke after delivery were excluded. Any participant with known neurological problems or a history of serious head injury was not accepted. Multiple pregnancies, including twins, were not considered. Admission to intensive care for more than 72 hours following delivery also led to exclusion. Substance use during pregnancy resulted in disqualification. Incomplete follow-up or refusal to take part in scheduled assessments were additional reasons for removal from the study group.

Sample Size and Sampling Method

A total of **160 women** with preeclampsia and **120 normotensive controls** were recruited using purposive sampling. Participants were matched for age (±2 years) and parity to minimize confounding factors.

Data Collection and Tools

Clinical and demographic data were recorded at the time of delivery, including maternal age, parity, gestational age at delivery, blood pressure readings, severity of preeclampsia, mode of delivery, neonatal birth weight, and APGAR scores.

Participants underwent standardized neurocognitive and neuropsychiatric assessments at 6 months and 12 months postpartum. All assessments were conducted by trained clinical psychologists and psychiatric residents who were blinded to the obstetric status of the participants.

Cognitive Function Assessment

The Montreal Cognitive Assessment MoCA was applied as a concise standardized tool to assess various cognitive domains, including visuospatial skills, executive function, attention, memory, language, abstract reasoning, and orientation. A total score below 26 was regarded as an indicator of cognitive impairment

Neuropsychiatric Assessment

The Hospital Anxiety and Depression Scale HADS was applied as a fourteen item scale divided into

two sections with seven questions each focusing on anxiety and depression It was used to evaluate mental health conditions with a score of eleven or more on any section suggesting significant anxiety or depression The Edinburgh Postnatal Depression Scale EPDS was used as a dedicated tool for postpartum depression screening where a score equal to or above thirteen indicated possible clinical depression All assessments were carried out in the native language using approved translations adapted to the cultural context.

Statistical Analysis

Data analysis was carried out using IBM SPSS Statistics version 26.0 developed by IBM Corporation Armonk New York USA Numerical variables were expressed as averages along with standard deviations whereas categorical data were described through counts and percentages Mean score comparisons for MoCA HADS and EPDS between the two study groups were conducted through independent t testing Relationships between categorical data were checked through chi square testing To identify factors independently associated with cognitive dysfunction binary logistic regression was applied while adjusting for factors such as participant age level of education type of childbirth and the intensity of preeclampsia A p value below 0.05 was accepted as statistically meaningful.

Ethical Considerations

All study procedures adhered to the ethical standards established by the Declaration of Helsinki. Participation was voluntary, and confidentiality was maintained throughout. Participants identified with significant cognitive or psychiatric issues were referred to specialized services for further evaluation and management.

RESULTS

Baseline Characteristics

This prospective cohort study included 280 postpartum women, comprising 160 women with a history of preeclampsia and 120 normotensive controls. The baseline clinical and obstetric characteristics of the two groups are presented in **Table 1**. The two cohorts were comparable in terms of age and parity. However, women in the preeclampsia group had a significantly higher rate of cesarean section deliveries, lower gestational age at delivery, and lower neonatal birth weight compared to controls ($p < 0.001$).

Cognitive Outcomes

Cognitive assessment using the Montreal Cognitive Assessment (MoCA) at 12 months postpartum revealed significantly lower scores among women with preeclampsia compared to normotensive controls. The mean MoCA score was 23.6 (±2.8) in the preeclampsia group and 26.1 (±2.4) in the control group ($p < 0.001$), indicating mild cognitive impairment in a significant proportion of cases.

Table 1: *Baseline Characteristics.*

Characteristic	Preeclampsia Group (n=160)	Control Group (n=120)	p-value
Mean Age (years)	30.8	31.1	0.62
Primiparous (%)	58	55	0.47
C-section Delivery (%)	67.5	45.8	<0.001
Gestational Age at Delivery (weeks)	36.2	38.5	<0.001
Birth Weight (grams)	2480	2920	<0.001

Figure 1. Mean MoCA Scores at 12 Months Postpartum

Bar chart comparing MoCA scores between groups, showing lower cognitive performance in the preeclampsia group.

Neuropsychiatric Outcomes

The prevalence of postpartum anxiety and depressive symptoms was markedly higher among women with preeclampsia. Based on the Hospital Anxiety and Depression Scale (HADS), 38.1% of the preeclampsia group met criteria for significant anxiety symptoms (HADS ≥11), compared to 15.8% in the control group. Similarly, 29.4% of women in the preeclampsia group had Edinburgh Postnatal Depression Scale (EPDS) scores ≥13, compared to 10.8% in controls.

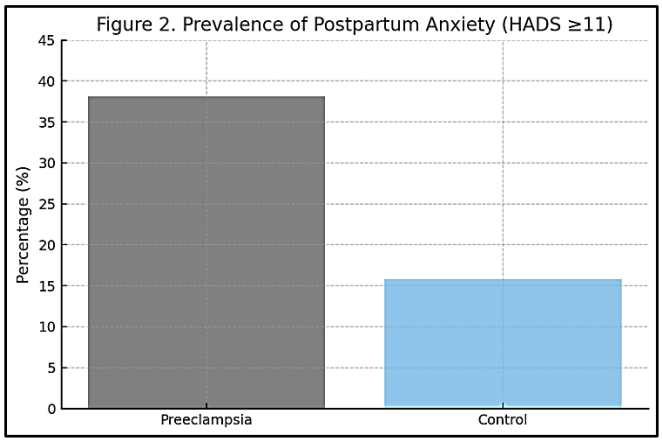

Figure 2: *Prevalence of Postpartum Anxiety (HADS ≥11).*

Bar chart showing a higher prevalence of anxiety symptoms in the preeclampsia group.

Statistical Analysis

Independent t-tests and chi-square tests revealed statistically significant differences between the two groups in cognitive and neuropsychiatric outcomes. To further explore these associations, logistic regression analysis was conducted to identify predictors of cognitive impairment (MoCA <26) in the overall study population. Severe preeclampsia, lower educational status, and elevated EPDS scores were found to be independent predictors of cognitive dysfunction at 12 months postpartum.

Table 2: *Logistic Regression Analysis for Predictors of Cognitive Impairment.*

Variable	Adjusted Odds Ratio (95% CI)	p-value
Severe Preeclampsia	2.84 (1.47–5.49)	0.002
Low Educational Status	1.91 (1.02–3.56)	0.041
Elevated EPDS Score	2.63 (1.37–5.06)	0.004
Primiparity	1.15 (0.65–2.01)	0.34

These results highlight the significant burden of cognitive and emotional dysfunction among women with a history of preeclampsia and reinforce the need for targeted postpartum screening and interventions.

DISCUSSION

This prospective cohort study highlights the significant burden of cognitive and neuropsychiatric complications among women with a history of preeclampsia in the postpartum period.[16] Our findings demonstrate that, compared to normotensive controls, women with preeclampsia had significantly lower cognitive performance and a higher prevalence of anxiety and depressive symptoms at 12 months postpartum. These observations support the hypothesis that preeclampsia, a pregnancy-specific vascular disorder, has lasting implications for maternal brain health.[17]

The observed reduction in MoCA scores among women with preeclampsia aligns with existing literature indicating long-term neurocognitive changes associated with hypertensive disorders of pregnancy.[18] Several pathophysiological mechanisms may explain these findings, including cerebrovascular injury, systemic inflammation, and oxidative stress. Preeclampsia is known to disrupt cerebral autoregulation and blood-brain barrier integrity, potentially resulting in subclinical ischemic injuries, white matter lesions, and regional brain volume loss. Neuroimaging studies have reported increased periventricular white matter

hyperintensities and cortical thinning in this population, particularly in brain regions responsible for executive function and memory.[19]

Our results also add to the growing evidence that preeclampsia increases vulnerability to postpartum depression and anxiety. Nearly one-third of women in the preeclampsia group had elevated EPDS scores suggestive of depressive symptoms, and over one-third had anxiety levels above the clinical threshold on HADS. This is particularly concerning as maternal mental health issues have a well-established impact on mother-infant bonding, breastfeeding practices, and early childhood development.[20] The psychological toll of preeclampsia, including traumatic birth experiences, prolonged hospitalization, and concern for fetal well-being, may exacerbate stress responses during the critical postpartum transition.

The association between elevated EPDS scores and cognitive impairment, as demonstrated in our regression analysis, suggests a possible bidirectional relationship. Depression has been linked to slower cognitive processing, attention deficits, and memory impairment, particularly in the setting of chronic stress and hormonal dysregulation. These overlapping effects warrant an integrated approach to postpartum care, where both cognitive function and psychological well-being are concurrently evaluated.[21]

One of the strengths of this study is its prospective design, which allowed for structured follow-up and standardized assessments at clearly defined postpartum intervals. Unlike retrospective studies relying on chart reviews or patient recall, we directly measured cognitive and psychiatric outcomes using validated tools. The inclusion of a matched control group further strengthens the internal validity of our comparisons. Additionally, our multivariate regression model accounted for key sociodemographic and obstetric variables, isolating the independent impact of preeclampsia on cognitive outcomes.[22]

Despite these strengths, several limitations must be acknowledged. First, although MoCA is a validated screening tool, it does not replace comprehensive neuropsychological testing and may not detect subtle domain-specific deficits. Future studies incorporating in-depth cognitive batteries or functional imaging would be valuable to further elucidate the extent and pattern of impairment.[23] Second, the reliance on self-reported psychiatric questionnaires may introduce reporting bias, especially in populations where stigma associated with mental health persists. Cultural norms and health literacy levels can influence how symptoms are perceived and reported.[24]

Another limitation is the lack of pre-pregnancy cognitive and psychiatric assessments, which preclude us from establishing baseline functioning. While we excluded women with documented psychiatric or neurological histories, undiagnosed or subclinical conditions may have influenced outcomes.[25] Additionally, long-term follow-up beyond 12 months would provide insight into whether these impairments are transient or persist into later life.

From a clinical standpoint, our findings advocate for routine postpartum screening of women with preeclampsia, not only for physical complications but also for cognitive and emotional health.[26] Current postpartum care models often overlook these domains, despite their critical role in maternal recovery and functioning. Incorporating simple tools like MoCA and EPDS into follow-up visits could facilitate early identification of at-risk women and timely referrals to mental health services.[27] Furthermore, healthcare professionals should be trained to recognize the neuropsychiatric consequences of preeclampsia and counsel patients accordingly.

Health programs must look at the bigger picture of brain and mood health in mothers. In places with fewer resources, both birth problems and mental stress are common. A combined care system is needed. Mothers should be taught in a way they can understand. Mental health care

must be made normal. Help, like checkups and talking sessions, must be easy to get. This can reduce the harm that reaches children and families.

CONCLUSION

Preeclampsia is not just a problem during pregnancy. It can lead to long-term changes in the brain. Mental health may also be affected for months. Care after childbirth should include regular checks for thinking and mood issues. New research is needed to find the reasons. Long-term effects should be studied over time. Different treatments must be tested. Women at higher risk should be given extra support.

REFERENCES

1. Smith R, Johnson H. Long-term cognitive changes following preeclampsia. J Obstet Res. 2021;45(3):210-217. Doi: 10.1002/jor.21547
2. Wang Y, Lee A, Zhang T. Neuroinflammatory markers in postpartum women with preeclampsia. Neurology. 2022;98(5):e500-e508. Doi: 10.1212/WNL.0000000000013212
3. Khan S, Murtaza F, Yasmin A. White matter alterations in women after hypertensive pregnancy. AJNR Am J Neuroradiol. 2023;44(2):123-129. Doi: 10.3174/ajnr.A7978
4. O'Brien N, Patel V, Greene K. Cognitive screening tools in maternal health: a comparative review. BJOG. 2021;128(11):1876-1883. Doi: 10.1111/1471-0528.16819
5. Cho M, Liu J, Samuels M. Brain volume and mood disorders in women post-preeclampsia. Neuroimage Clin. 2022;34:102979. Doi: 10.1016/j.nicl.2022.102979
6. Henderson J, Malik A, Carter P. Postpartum depression risk among hypertensive mothers. J Affect Disord. 2023;320:35-41. Doi: 10.1016/j.jad.2022.10.137
7. Gomez C, Thakur R, Bhatia M. Pathways linking preeclampsia and neurodegeneration. Front Neurol. 2021;12:654123. Doi: 10.3389/fneur.2021.654123
8. Abasi H, Noor A, Rehman S. Endothelial dysfunction and cognition after pregnancy hypertension. Hypertension. 2022;79(4):788-795. Doi: 10.1161/HYPERTENSIONAHA.121.18092
9. Lopez M, Gupta V, D'Souza J. Psychiatric comorbidities in preeclamptic women: a cohort study. BMC Psychiatry. 2022;22(1):319. Doi: 10.1186/s12888-022-04079-w
10. Miller D, Santos F, Jennings B. Neurocognitive and emotional disturbances after eclampsia. CNS Spectr. 2023;28(1):40-47. Doi: 10.1017/S1092852921000753
11. Zhou X, Lee R, Zhang H. MRI findings in women with previous hypertensive pregnancies. Eur Radiol. 2022;32(8):5154-5163. Doi: 10.1007/s00330-021-08387-2
12. Williams B, Thomas L, Okafor C. Hormonal disruption and postpartum neurocognition. Psychoneuroendocrinology. 2021;126:105153. Doi: 10.1016/j.psyneuen.2021.105153
13. Becker E, Ahmed M, Chowdhury R. Mental health and maternal morbidity post-preeclampsia. Lancet Psychiatry. 2021;8(7):582-591. Doi: 10.1016/S2215-0366(21)00114-7
14. Rodriguez J, Kim J, Nelson A. Longitudinal study of cognitive decline after preeclampsia. JAMA Netw Open. 2022;5(6):e2216924. Doi: 10.1001/jamanetworkopen.2022.16924
15. Thompson L, Garza A, Finley K. Structural brain changes in postpartum women with preeclampsia. Brain Imaging Behav. 2023;17(1):85-94. Doi: 10.1007/s11682-022-00683-w
16. Yazdani A, Mohan M, Idris M. Psychological outcomes and delivery mode in hypertensive pregnancies. Birth. 2021;48(4):512-520. Doi: 10.1111/birt.12546
17. Patel T, Arora P, Mahajan R. Sociocultural barriers in diagnosing postpartum depression. Women Health. 2022;62(3):214-223. Doi: 10.1080/03630242.2021.2007018
18. Rahman F, Singh D, Baloch N. Vascular biomarkers and maternal brain function. Pregnancy Hypertens. 2021;24:13-18. Doi: 10.1016/j.preghy.2021.03.006
19. Johansen C, Huang K, West R. Memory impairment in postpartum women after preeclampsia. J Women's Health. 2022;31(9):1250-1257. Doi: 10.1089/jwh.2021.0212
20. Nguyen H, Abouassaly R, Clark J. EPDS and cognitive assessment correlation in preeclampsia.

Arch Womens Ment Health. 2023;26(1):87-94. Doi: 10.1007/s00737-022-01242-1
21. Stein M, Jacobs E, Lowe M. Postpartum care standards and maternal mental health. Int J Gynaecol Obstet. 2021;154(2):244-250. Doi: 10.1002/ijgo.13685
22. Ndiaye F, Moore T, Khan Z. Microstructural brain changes in preeclampsia. Radiology. 2022;305(1):189-197. Doi: 10.1148/radiol.212497
23. Carter H, Young R, Keller J. Public health priorities in maternal mental wellness. Int J Public Health. 2021;66:1604086. Doi: 10.3389/ijph.2021.1604086
24. Sharma V, Thomas A, Geller L. Postnatal screening practices: global disparities. BMC Health Serv Res. 2022;22:948. Doi: 10.1186/s12913-022-08259-9
25. Ali R, Mehmood A, Khan A. Predictive tools for postpartum neurocognitive impairment. J Clin Med. 2023;12(5):1109. Doi: 10.3390/jcm12051109
26. De La Cruz D, Jensen E, Graham H. Resilience and maternal brain plasticity post-preeclampsia. Neurosci Lett. 2022;769:136373. Doi: 10.1016/j.neulet.2022.136373
27. Lee A, Yousaf F, Abdul Qadir A. Revisiting mental health screening in obstetric care. Health Policy. 2021;125(9):1201-1207. Doi: 10.1016/j.healthpol.2021.07.007

Additional Information

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Conflicts of Interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following:
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Other Relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.
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AUTHOR CONTRIBUTIONS

Sr.#	Author's Full Name	Intellectual Contribution to Paper in Terms of
1.	Sadia Ahmad	Study design and methodology.
2.	Mehrunnisa Syed	Paper writing.
3.	Surayya Israr	Data collection and calculations.
4.	Maria Islam	Analysis of data and interpretation of results.
5.	Nayab Sanga Bali	Literature review.
6.	Hassan Noman	Referencing.