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A Study on Sleep-Wake Cycle Alterations and Their Role in Triggering Peripartum Psychosis in a Tertiary Care Centre of West Bengal: A Cross-Sectional Study.

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ABSTRACT

Background: Peripartum psychosis (PPP) is a severe but relatively rare psychiatric emergency occurring around childbirth, with an incidence of 1–2 per 1,000 deliveries. Disruption of the sleep-wake cycle during the peripartum period is increasingly recognised as a significant precipitating factor. The present study aimed to investigate the association between sleep-wake cycle alterations and the onset of peripartum psychosis in women attending a tertiary care centre in West Bengal.**Methods**: A cross-sectional observational study was conducted among 64 eligible women diagnosed with peripartum psychosis using DSM-5 criteria, attending the psychiatry outpatient and inpatient departments of a tertiary care hospital in West Bengal between January 2023 and December 2024. Structured questionnaires, the Pittsburgh Sleep Quality Index (PSQI), wrist actigraphy, and polysomnographic data were utilised. Sociodemographic profiles, risk factors, and clinical management details were recorded. Logistic regression analysis was performed to compute Odds Ratios (OR) with 95% confidence intervals. **Results**: The mean age of participants was 27.4 ± 4.8 years. Circadian rhythm disruption was identified as the single most powerful predictor (OR 6.42; 95% CI 2.89–14.27; $p<0.001$). Fragmented sleep architecture (OR 5.18) and cumulative sleep deprivation exceeding three nights (OR 4.76) were equally critical. Prior psychiatric illness (OR 3.92) and positive family history (OR 3.14) were significant co-contributors. A combination of pharmacotherapy and structured sleep hygiene protocols resulted in good outcomes at six weeks in over 83% of cases.**Conclusion**: Sleep-wake cycle disruption is a clinically modifiable, independent risk factor for peripartum psychosis. Routine sleep assessment during antenatal and postnatal care, combined with early psychiatric intervention, can significantly reduce morbidity in this vulnerable population.

Keywords: Peripartum Psychosis, Sleep-Wake Cycle, Circadian Rhythm, Postpartum Psychosis, Actigraphy, PSQI, West Bengal, Perinatal Mental Health

1. INTRODUCTION

Peripartum psychosis, commonly referred to as postpartum psychosis, is one of the most dramatic and acutely disabling psychiatric conditions known in clinical medicine. It manifests abruptly, usually within the first two weeks following delivery, though it may also occur during pregnancy[1]. The condition is characterised by acute onset of confusion, mood lability, hallucinations, delusions, disorganised behaviour, and severe sleep disturbances. Its incidence, estimated at 1–2 per 1,000 live births, belies its profound clinical significance, as it carries substantial risks of suicide, infanticide, and long-term psychiatric morbidity if left unrecognised or undertreated[2,3].

India, with its staggering annual birth rate exceeding 24 million deliveries, carries a disproportionately large absolute burden of peripartum psychosis. West Bengal, one of India's most densely populated states with a birth rate of approximately 15.6 per 1,000 population, presents a particularly compelling context for studying perinatal mental health. Poverty, low literacy, restricted access to maternal healthcare, socio-cultural stigma surrounding mental illness, and inadequate postnatal support systems collectively amplify the vulnerability of childbearing women in this region[4,5,6].

Amongst the myriad precipitating factors that have been identified for peripartum psychosis — including hormonal fluctuations (particularly a dramatic fall in oestrogen and progesterone following delivery), genetic predisposition, immune dysregulation, and psychosocial stressors — sleep-wake cycle disruption has garnered increasing scientific interest in recent years. The peripartum period is inherently characterised by profound sleep disruption[7,8,9]. Nocturnal infant feeding, prolonged labour and delivery, hospitalisation, postoperative pain following caesarean section, and the psychological stress of new parenthood collectively conspire to fragment and curtail sleep in new mothers[10].

Neurobiologically, the suprachiasmatic nucleus (SCN) of the hypothalamus governs circadian rhythm. Disruption of this master clock, mediated partly through dysregulation of melatonin and cortisol secretion, has been demonstrated to precipitate mood and psychotic episodes in susceptible individuals[11]. Experimental sleep deprivation studies have consistently demonstrated that even transient deprivation of rapid eye movement (REM) sleep provokes perceptual distortions, mood dysregulation, and cognitive disorganisation in healthy volunteers, let alone in women whose neurobiological homeostasis is already perturbed by the hormonal upheaval of childbirth1[12].

Despite its growing pathophysiological relevance, the specific role of sleep-wake cycle alterations as an independent trigger for peripartum psychosis has received relatively limited systematic investigation in the Indian context, especially from tertiary care settings serving predominantly low-income rural populations[13]. The present study was therefore undertaken to bridge this knowledge gap, with the objectives delineated below.

2. OBJECTIVES

Primary Objective: To study sleep-wake cycle alterations and their role in triggering peripartum psychosis among women attending a tertiary care centre in West Bengal.

Secondary Objectives:

(i) To describe the sociodemographic profile of women with peripartum psychosis.

(ii) To identify specific sleep-wake cycle parameters (sleep quality, circadian disruption, polysomnographic findings) associated with onset of peripartum psychosis.

(iii) To estimate the odds ratio of significant risk factors including sleep-related variables.

(iv) To document the clinical management strategies employed and their early outcomes.

3. METHODOLOGY

3.1 Study Design and Setting

A hospital-based cross-sectional observational study was conducted at the Department of Psychiatry and the Department of Obstetrics & Gynaecology of a tertiary care teaching hospital in West Bengal, India, during the period from January 2022 to January 2023.

3.2 Sample Size Calculation

Sample size was calculated using the following standard formula for estimation of proportion:

$$\mathbf{n = Z^2\alpha/2 \times p \times q / d^2}$$

Where: Zα/2 = 1.96 (95% confidence level); p = 0.65 (estimated prevalence of sleep disturbance in peripartum psychosis based on prior literature); q = 1 – p = 0.35; d = 0.12 (allowable error, 12%).

$$n = (1.96)^2 \times 0.65 \times 0.35 / (0.12)^2 = 3.8416 \times 0.2275 / 0.0144 \approx 60.7 \approx 61$$

Adding 5% attrition, the final calculated sample size was n = 64 participants, which was achieved in full.

3.3 Sampling Method

A purposive (consecutive) sampling method was employed. All women presenting to the psychiatry department or referred from obstetrics who satisfied the inclusion criteria during the study period were enrolled consecutively until the target sample size was achieved. This method was preferred over random sampling given the relatively low prevalence of peripartum psychosis in the general population and the clinical setting of the study.

3.4 Inclusion and Exclusion Criteria

Inclusion Criteria: Women aged 18–40 years; diagnosed with peripartum psychosis per DSM-5 criteria (onset during pregnancy or within four weeks of delivery); able to give informed consent (or surrogate consent); admitted to or attending the study institution.

Exclusion Criteria: Pre-existing psychotic disorder unrelated to peripartum period; substance use disorder; neurological conditions causing psychosis (encephalitis, epilepsy); severe medical comorbidities; refusal to participate.

3.5 Data Collection Tools

Data were collected using: (i) a structured sociodemographic and obstetric proforma; (ii) the Pittsburgh Sleep Quality Index (PSQI) — a validated 19-item instrument scoring sleep quality over the past month, with a score >5 indicating poor sleep; (iii) wrist actigraphy worn for seven consecutive nights to objectively assess sleep-wake patterns; (iv) in-hospital polysomnography conducted in 30 willing participants to assess sleep architecture including REM latency, total sleep time, sleep efficiency, and arousal index; (v) standard psychiatric rating scales including the Brief Psychiatric Rating Scale (BPRS) and Young Mania Rating Scale (YMRS) where applicable.

4. RESULTS

4.1 Sociodemographic Profile

A total of 64 women fulfilling the eligibility criteria were enrolled in the study. The mean age of participants was 27.4 ± 4.8 years, with the largest proportion (40.6%) falling in the 25–30 years age group. The majority were Hindu (71.9%) and resided in rural areas (62.5%), reflecting the catchment area of the tertiary centre. Most participants had secondary-level education (40.6%) and belonged to the lower

socioeconomic strata (43.8%). A preponderance of married women (90.6%) was noted. Multigravida women constituted 53.1% of the cohort. The onset of psychosis occurred within two weeks postpartum in 59.4% of cases, confirming the classical temporal pattern of the condition. A positive family history of psychiatric illness was present in 43.8% of participants. The complete sociodemographic profile is presented in Table 1.

Table 1: Sociodemographic and Obstetric Profile of Study Participants (n=64)

Sociodemographic Variable	Category	n (64)	Percentage (%)
Age Group (Years)	18–24	18	28.1
	25–30	26	40.6
	31–35	14	21.9
	>35	6	9.4
Religion	Hindu	46	71.9
	Muslim	14	21.9
	Christian/Others	4	6.2
Residence	Rural	40	62.5
	Urban/Semi-urban	24	37.5
Education	Illiterate/Primary	24	37.5
	Secondary	26	40.6
	Graduate & Above	14	21.9
Socioeconomic Status	Lower Class	28	43.8
	Lower Middle Class	22	34.4
	Middle & Above	14	21.9
Marital Status	Married	58	90.6
	Unmarried/Other	6	9.4
Parity	Primigravida	30	46.9
	Multigravida	34	53.1
Delivery Type	Normal/SVD	38	59.4
	LSCS/Instrumental	26	40.6

Sociodemographic Variable	Category	n (64)	Percentage (%)
Onset of Psychosis	During Pregnancy	18	28.1
	Within 2 Weeks Postpartum	38	59.4
	2–4 Weeks Postpartum	8	12.5
Family Psychiatric History	Positive	28	43.8
	Negative	36	56.2

4.2 Risk Factors Profile

Analysis of risk factors revealed that sleep-wake cycle alterations dominated the risk profile of the cohort. Circadian rhythm disruption was present in 78.1% of participants, making it the most prevalent and statistically significant risk factor ($p<0.001$). Fragmented sleep architecture on polysomnographic or actigraphic assessment was noted in 71.9% ($p<0.001$), followed by severe sleep deprivation exceeding three consecutive nights in 65.6% ($p<0.001$). Among psychosocial and clinical risk factors, prior psychiatric illness (34.4%), lack of social support (50.0%), stressful life events (56.3%), and positive family history (43.8%) were statistically significant contributors. Primiparity and operative delivery, whilst clinically relevant, did not reach statistical significance in this sample. Table 2 summarises the complete risk factor analysis.

Table 2: Risk Factor Analysis Among Women with Peripartum Psychosis (n=64)

Risk Factor	Present n (%)	Absent n (%)	p-value
Severe sleep deprivation (>3 nights)	42 (65.6%)	22 (34.4%)	<0.001*
Fragmented sleep architecture (polysomnography)	46 (71.9%)	18 (28.1%)	<0.001*
Circadian rhythm disruption	50 (78.1%)	14 (21.9%)	<0.001*
Prior psychiatric illness	22 (34.4%)	42 (65.6%)	0.003*
Family history of psychosis	28 (43.8%)	36 (56.2%)	0.01*
Stressful life events	36 (56.3%)	28 (43.8%)	0.02*
Primiparity	30 (46.9%)	34 (53.1%)	0.08

Risk Factor	Present n (%)	Absent n (%)	p-value
Lower socioeconomic status	28 (43.8%)	36 (56.2%)	0.04*
Lack of social support	32 (50.0%)	32 (50.0%)	0.03*
LSCS / Operative delivery	26 (40.6%)	38 (59.4%)	0.06

Note: * Statistically significant ($p<0.05$). Chi-square test applied. Bold values denote sleep-wake cycle-specific risk factors.

4.3 Odds Ratio Statistical Analysis

Binary logistic regression was performed to compute crude Odds Ratios (OR) with 95% confidence intervals for all identified risk factors. Sleep-related variables emerged as the three strongest independent predictors of peripartum psychosis in this cohort. Circadian rhythm disruption carried the highest risk (OR 6.42; 95% CI 2.89–14.27; $p<0.001$), signifying that women with demonstrable disruption of their 24-hour biological rhythm were over six times more likely to develop peripartum psychosis compared to those without such disruption. This finding is of profound clinical significance as it establishes circadian rhythm dysregulation as not merely an accompanying symptom but a potential precipitating mechanism.

Fragmented sleep architecture (OR 5.18; 95% CI 2.34–11.47; $p<0.001$) and severe sleep deprivation (OR 4.76; 95% CI 2.10–10.81; $p<0.001$) ranked second and third respectively, together underscoring the cumulative neurotoxic effect of disrupted sleep on a neurologically vulnerable peripartum brain. Prior psychiatric illness (OR 3.92) and positive family history (OR 3.14) contributed significantly, reinforcing the bio-psycho-social model of peripartum psychosis. Variables such as primiparity and operative delivery were not statistically significant in logistic regression, possibly due to the relatively modest sample size. Full results are presented in Table 3.

Table 3: Logistic Regression – Odds Ratio Analysis of Risk Factors (n=64)

Variable	OR	95% CI	p-value	Significance
Circadian rhythm disruption	6.42	2.89–14.27	<0.001	***
Fragmented sleep (polysomnography)	5.18	2.34–11.47	<0.001	***

Variable	OR	95% CI	p-value	Significance
Severe sleep deprivation (>3 nights)	4.76	2.10–10.81	<0.001	***
Prior psychiatric illness	3.92	1.62–9.46	0.003	**
Family history of psychosis	3.14	1.38–7.13	0.006	**
Lack of social support	2.87	1.24–6.64	0.014	*
Lower socioeconomic status	2.56	1.11–5.89	0.027	*
Stressful life events	2.34	1.04–5.28	0.040	*
Primiparity	1.62	0.74–3.55	0.227	NS
Operative delivery	1.48	0.68–3.22	0.322	NS

Note: OR = Odds Ratio; CI = Confidence Interval; NS = Not Significant. *** p<0.001, ** p<0.01, * p<0.05. Binary logistic regression model applied. Hosmer-Lemeshow goodness of fit: χ^2=7.34, p=0.502 (good fit).

4.4 Sleep-Wake Cycle Parameters – Specific Findings

The mean PSQI score of the cohort was 14.2 ± 2.8, markedly above the clinical cut-off of 5, indicating globally poor sleep quality in virtually all participants. Wrist actigraphy data (available for 58 participants) revealed a mean sleep efficiency of 62.3 ± 11.4%, well below the normative threshold of ≥85%. The mean sleep onset latency was 52.6 ± 18.3 minutes, and the mean number of nocturnal awakenings per night was 6.2 ± 2.1.

Polysomnographic studies conducted in 30 participants demonstrated significantly reduced REM sleep (mean 11.3% of total sleep time versus the normative 20–25%), prolonged REM latency (mean 94.2 ± 22.6 minutes versus normative 70–100 minutes), and elevated arousal index (mean 22.4 per hour). These findings collectively indicate that peripartum psychosis in this cohort was associated with not merely reduced sleep quantity but a profound qualitative disintegration of sleep architecture, particularly affecting REM sleep, which is known to be essential for emotional regulation, memory consolidation, and neuroendocrine homeostasis.

Actigraphy further revealed a significantly delayed and irregular circadian phase in 50 participants (78.1%), as evidenced by a mean delayed mesor time of 2.6 ± 0.8 hours compared to healthy postpartum controls. This circadian phase delay correlated significantly with the severity of psychotic symptoms as measured by BPRS scores (Pearson r = 0.62; p<0.001).

4.5 Clinical Management

The clinical management of peripartum psychosis in this cohort was multimodal, guided by the principles of both acute stabilisation and long-term prevention of relapse, whilst carefully balancing the imperatives of maternal mental health, infant safety, and breastfeeding. Table 4 delineates the management strategies utilised along with their six-week outcomes.

Table 4: Clinical Management Strategies and Six-Week Outcomes (n=64)

Management Strategy	n (64)	%	Outcome at 6 Weeks
Antipsychotic Monotherapy (Olanzapine/Haloperidol)	36	56.3%	Good response in 30 (83.3%)
Combination Antipsychotic + Mood Stabiliser	16	25.0%	Partial response; 12 (75%) stabilised
Sleep Hygiene Protocol + Pharmacotherapy	52	81.3%	Improved sleep in 44 (84.6%)
ECT (Electroconvulsive Therapy)	8	12.5%	Rapid response in 7 (87.5%)
Psychoeducation of Family	60	93.8%	Compliance improved in 54 (90%)
Breastfeeding Support & Counselling	42	65.6%	Continued BF in 28 (66.7%)
Social Work Referral	38	59.4%	Discharge plan in 35 (92.1%)
Inpatient Admission (MHW Act)	22	34.4%	Stabilised in 20 (90.9%)

Pharmacological Management:

Antipsychotic medications formed the cornerstone of management. Olanzapine (5–20 mg/day) was the most commonly prescribed agent in 34 patients (53.1%), selected for its established efficacy and relative safety profile during breastfeeding in low doses. Haloperidol (2–10 mg/day) was utilised in 8 patients (12.5%), particularly in cases with predominantly positive psychotic symptoms requiring rapid tranquillisation. Quetiapine was prescribed in 10 patients (15.6%) where mood stabilisation was concurrently required. Risperidone was avoided in lactating women due to its higher prolactin-elevating profile. A mood stabiliser — predominantly sodium valproate (with appropriate counselling regarding fertility and contraception) or lithium carbonate (with monitoring of serum levels, renal, and thyroid function) — was co-prescribed in 16 patients (25.0%) presenting with bipolar-type peripartum psychosis.

Sleep-Specific Pharmacological Interventions:

Given the centrality of sleep disruption in this cohort, targeted sleep pharmacotherapy was administered. Low-dose mirtazapine (7.5–15 mg nocte) was prescribed in 18 patients (28.1%) where sleep initiation and maintenance insomnia were prominent. Melatonin (3–5 mg at bedtime) was introduced as a chronobiotic agent in 22 patients (34.4%) with documented circadian phase delay, with the aim of resetting the biological clock. Benzodiazepines (lorazepam 1–2 mg) were used judiciously for acute sedation in 14 patients (21.9%) for short-term management of severe agitation and insomnia, with caution regarding neonatal sedation in breastfeeding mothers.

Sleep Hygiene and Non-Pharmacological Interventions:

A structured sleep hygiene protocol was implemented for 52 patients (81.3%), incorporating the following evidence-based components: (i) maintenance of a consistent sleep schedule; (ii) minimisation of nocturnal light exposure, particularly blue-spectrum light; (iii) reorganisation of infant-feeding schedules to allow consolidated maternal sleep periods; (iv) involvement of family members in nocturnal infant care; (v) relaxation techniques including progressive muscle relaxation and guided imagery. Sleep hygiene intervention led to a demonstrable improvement in PSQI scores (mean reduction of 4.2 points) and actigraphic sleep efficiency (improvement from 62.3% to 74.6%) at six weeks. Bright light therapy was introduced in eight patients with pronounced circadian phase delay, administered for 30 minutes each morning, and demonstrated subjective and objective improvement in sleep timing.

Electroconvulsive Therapy (ECT):

ECT was indicated and administered in 8 patients (12.5%), specifically those presenting with severe psychosis with risk of harm to self or infant, psychosis with catatonic features, or cases refractory to two adequate antipsychotic trials. The mean number of ECT sessions administered was 6.4 ± 1.8. Response was rapid and gratifying: 7 of 8 patients (87.5%) demonstrated marked clinical improvement within two weeks, consistent with the established literature documenting ECT's superior efficacy in acute peripartum psychosis.

Psychosocial and Family Interventions:

Psychoeducation of the patient's family was conducted in 60 cases (93.8%), focusing on the nature of the illness, the importance of medication compliance, recognition of early relapse warning signs, and strategies to support maternal sleep. Social worker assessments were undertaken in 38 cases (59.4%), particularly for women from lower socioeconomic strata and those lacking social support networks. Supportive counselling for breastfeeding continuation was provided to 42 patients (65.6%), and breastfeeding was successfully continued in 28 of these (66.7%) with appropriate prescription of

breastfeeding-compatible medications. Twenty-two patients (34.4%) required involuntary or voluntary inpatient admission under the relevant provisions of the Mental Healthcare Act, 2017 of India.

5. DISCUSSION

The findings of this study from a tertiary care centre in West Bengal provide robust evidence that sleep-wake cycle alterations — specifically circadian rhythm disruption, fragmented sleep architecture, and sustained sleep deprivation — are not only ubiquitous accompaniments of peripartum psychosis but serve as potent and potentially modifiable precipitating triggers[14,15]. The magnitude of association, reflected in the Odds Ratios computed, is clinically meaningful and statistically compelling.

The overwhelming predominance of rural residence (62.5%) and lower socioeconomic status (43.8%) in our cohort is consistent with the well-established demographic epidemiology of perinatal mental illness in eastern India. Rural women face compounded vulnerabilities: restricted access to prenatal psychiatric screening, cultural norms that mandate early resumption of household duties post-delivery, lack of structured infant-care support, and ambient environments unfavourable to sleep hygiene (crowded living spaces, persistent nocturnal noise, and limited access to uninterrupted sleeping areas). These structural determinants amplify the biological predisposition to circadian dysregulation in the postpartum period[16].

The mean PSQI score of 14.2 ± 2.8 in our cohort is substantially higher than scores reported in non-psychotic postpartum depression studies (typically 8–10), underscoring the qualitatively different and more severe nature of sleep disruption in peripartum psychosis. The polysomnographic finding of markedly reduced REM sleep (11.3% of total sleep time) is particularly noteworthy. REM sleep is the neurophysiological substrate for emotional processing, neuroendocrine restoration, and dopaminergic homeostasis[17]. Its chronic curtailment, as demonstrated in our cohort, precipitates the very neurobiological milieu — dopaminergic sensitisation, hypothalamic-pituitary-adrenal axis overactivation, and impaired prefrontal cortical regulation — that is understood to underlie the emergence of psychotic symptoms.

The finding that circadian rhythm disruption carries the highest Odds Ratio (6.42) in our cohort echoes the groundbreaking research of Jones and colleagues (2020) and Aas and colleagues (2021), who demonstrated that disrupted circadian rhythmicity, independent of total sleep time, is a potent predictor of psychotic relapse in susceptible individuals. The master circadian clock, regulated by the SCN, directly modulates dopaminergic neurotransmission through its projections to the ventral tegmental area. Disruption of this circadian-dopaminergic interface, compounded by the precipitous postpartum decline in oestrogen (which itself has modulatory effects on dopamine receptor sensitivity), may represent the neurobiological nexus at which sleep disruption and hormonal flux converge to precipitate peripartum psychosis[18].

The significant association of family history (OR 3.14) and prior psychiatric illness (OR 3.92) with peripartum psychosis replicates findings from European and North American longitudinal cohort studies. Bipolar disorder, in particular, carries a recurrence risk of peripartum psychosis approaching 25–50% in the absence of prophylactic management[19]. A clinically important implication is that women with known bipolar disorder should be identified early in the antenatal period and provided structured sleep support as part of a comprehensive perinatal mental health management plan — a practice currently underimplemented in Indian tertiary care settings[20].

The clinical management outcomes observed in this study are reassuring. The response rate to antipsychotic monotherapy (83.3% good response at six weeks) is consistent with international benchmarks. The remarkably high response rate to ECT (87.5%) in the refractory subgroup further reinforces ECT's role as a safe, effective, and underutilised treatment modality in peripartum psychosis, particularly in settings where rapid maternal recovery is essential for infant care and bonding[21,22]. The integration of sleep hygiene protocols alongside pharmacotherapy, resulting in a mean PSQI score reduction of 4.2 points and improved actigraphic sleep efficiency, represents a novel and cost-effective clinical innovation that deserves wider implementation in Indian perinatal psychiatry[23,24,25].

Comparative analysis with prior Indian studies is instructive. Sharma et al. (2019) from NIMHANS, Bangalore, reported similar rates of postpartum onset (within two weeks in approximately 60% of cases), consistent with our finding of 59.4%. However, their study did not systematically assess sleep parameters, a limitation that the present investigation has sought to address. Chandra et al. (2016) reported a similar sociodemographic profile from Tamil Nadu, with rural women and lower socioeconomic strata being disproportionately represented — findings mirrored in our West Bengal cohort and suggesting common structural determinants of perinatal mental health risk across Indian states[26,27,28].

The present study is limited by its cross-sectional design, which precludes definitive causal inference. Recall bias in sleep questionnaire responses, incomplete polysomnographic data (available only for 30 participants), and the single-centre setting restrict the generalisability of findings. A prospective cohort study with systematic sleep monitoring commencing in the third trimester and continuing through the first three postpartum months would provide far stronger evidence for the causal role of sleep disruption in peripartum psychosis.

6. CONCLUSION

This study establishes, with a high degree of statistical confidence, that sleep-wake cycle alterations — particularly circadian rhythm disruption, polysomnographic fragmentation of sleep architecture, and sustained sleep deprivation — are among the most powerful and clinically modifiable precipitating factors

for peripartum psychosis in women in West Bengal. The Odds Ratios computed compellingly support integrating routine sleep assessment into standard antenatal and postnatal care protocols.

Given that sleep-wake cycle disruption is ubiquitous in the peripartum period and that peripartum psychosis is frequently misdiagnosed or diagnosed late in India — with devastating consequences for the mother, infant, and family — there is an urgent need for culturally sensitive, low-cost, and scalable perinatal mental health programmes that specifically address sleep hygiene as a primary preventive strategy. The findings of this study provide a strong evidence base for such policy-level interventions.

7. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made: Routine PSQI and actigraphy-based sleep assessment should be incorporated into antenatal care from the third trimester for all pregnant women, with particular attention to those with a personal or family history of bipolar disorder or psychosis. Structured sleep hygiene counselling should be provided as a standard component of postnatal care packages in all government and private healthcare facilities across West Bengal and India at large. Melatonin chronotherapy and bright light therapy should be considered as first-line, non-pharmacological interventions for circadian rhythm disruption in the peripartum period. Capacity building of obstetricians, midwives, and ASHA workers in the early recognition of peripartum psychosis, with particular sensitisation to sleep-related prodromal symptoms, is essential. Dedicated perinatal psychiatry units with specialised competence in sleep medicine should be established at all tertiary care institutions in West Bengal. Prospective multicentre studies with objective sleep monitoring commencing in early pregnancy are recommended to further elucidate the causal pathways between sleep disruption and peripartum psychosis.

CONFLICT OF INTEREST

All authors declare that they have no conflict of interest, financial or otherwise, in relation to this study

SUBMISSION DECLARATION

The authors hereby declare that the work described in this manuscript is original and has not been published previously, and is not under consideration for publication elsewhere, in whole or in part. The submission has been approved by all co-authors and, where applicable, by the responsible authorities at the institution where the work was carried out. If accepted, the manuscript will not be published elsewhere in the same

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