

Bed Time Procrastination and Maternal Mental Health in New Mothers: The Mediating Role of Bedtime Procrastination Between Sleep Quality and Psychological Distress.

Shambhavi Deval^{1*}, Monu Lal Shama¹

¹ Department of Applied Psychology, School of Behavioural and Social Sciences, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana, India.

Corresponding Author:

Shambhavi Deval^{1*}

Email: shambhavidaval@gmail.com

Abstract: Introduction: This research aimed to investigate the connections between postpartum women's delay in going to bed, the quality of their sleep, and mental health markers such as stress, anxiety, and depression. It investigated whether bedtime procrastination mediates the link between poor sleep quality and psychological distress, and explored potential age-related differences.

Materials and Methods: Forty-nine postpartum mothers (aged 26–39 years, 1–4 months postpartum) completed the Pittsburgh Sleep Quality Index (PSQI), the Bedtime Procrastination Scale (BPS), the Depression Anxiety Stress Scale (DASS-21), and a statistical survey. The following statistical methods were used to examine the data: mediation analysis, multiple regression, descriptive statistics, independent samples t-tests, and Pearson correlations.

Results: The mean BPS score was 26.94 (SD = 4.12), indicating moderate bedtime procrastination. DASS-21 scores reflected moderate levels of depression (M = 15.53 ± 3.31), anxiety (M = 13.41 ± 3.05), and stress (M = 22.18 ± 3.61). 50% of participants had poor sleep quality (PSQI > 5). There was a positive correlation between delaying bedtime ($r = 0.45, p < 0.05$), anxiety ($r = 0.42, p < 0.05$), and stress ($r = 0.48, p < 0.01$), as well as each other. According to the results of the mediation study, putting off going to bed until later in the day somewhat mediated the connection between low-quality sleep and psychological consequences in all three areas. The mediation effect accounted for approximately 33.3% of the total effect for anxiety, 33.3% for stress, and 32.5% for depression, with all indirect effects being statistically significant ($p = 0.018, 0.020, \text{ and } 0.028$ respectively). Younger mothers (26–31 years) reported slightly higher bedtime procrastination, though the difference was not statistically significant.

Discussion: Bedtime procrastination is associated with poorer maternal mental health in the postpartum period and partially explains the pathway from disrupted sleep to increased psychological distress. Interventions targeting bedtime self-regulation may help reduce symptoms of depression, anxiety, and stress among new mothers.

Keywords: Bedtime procrastination, postpartum mental health, depression, anxiety, stress, sleep quality, new mothers.

Introduction

It has come to light that bedtime procrastination has become a major behaviour problem in the study of sleep, especially in the realms of contemporary living and parenting duties. It is described as the free choice not to go to bed even when there are no external limitations, which can lead to a lack of enough sleep time and quality of sleep (Adhikary et al., 2017; Li et al., 2021). Bedtime procrastination is an intentional delay of sleep despite the awareness of its harmful effects like fatigue and poor well-being.

Bedtime procrastination is a domain-specific expression of this more general psychological phenomenon (Li et al., 2021). Recent articles that were indexed by Scopus point out that poor self-control, abnormal sleep patterns and poor sleep health in general are closely linked with bedtime procrastination (Adhikary et al., 2017). Empirical studies also prove that the people who regularly put off bedtime are more likely to have a shorter sleep period, worse sleep quality, and be more fatigued during the day (Adhikary et al., 2017; Okun, 2019). The topicality of bedtime procrastination is especially significant in the postpartum period. Postpartum mothers can also deliberately postpone their own sleep once their child goes to sleep, usually to reclaim time or independence for themselves (Lu et al., 2021). The postpartum period is a critical life stage full of physiological, emotional, and social changes, all of which affect sleep behaviour. Sleep deprivation during this stage has been associated with negative outcomes such as mood fluctuations, decreased cognitive ability, and an elevated risk of postpartum depression (Blackmore et al., 2016; Lu et al., 2021)

This study addresses this gap by targeting age-related differences in bedtime procrastination among postpartum mothers, particularly between mothers aged 26–31 years and 32–39 years. The major aims of this study are to: (1) explore the extent of bedtime procrastination among postpartum mothers, (2) compare bedtime procrastination behaviour across different age groups, and (3) discuss the consequences of these behaviours on sleep health and well-being.

To conclude, investigating bedtime procrastination in the postpartum period is essential for understanding a modifiable behavioural variable that can influence sleep health. By combining evidence from Scopus-indexed literature, the present study contributes to the existing knowledge on maternal sleep behaviour and underscores the necessity of targeted interventions to improve sleep hygiene and psychological well-being in postpartum mothers.

Literature Review

2.1 Sleep Disturbances in Pregnancy and Postpartum Women

Available literature identifies that sleep disruptions are very common in pregnant and postpartum women due to physiological as well as psychological transformations. Circadian timing system is important in controlling the metabolic and sleep mechanisms and their breakdown during pregnancy may cause severe metabolic and sleep disorders (Adhikary et al., 2017). Empirical researchers state that a significant percentage of pregnant women have low quality of sleep, and various factors contribute to this phenomenon including changes in hormones, physical pain, and emotional stress (Rogers et al., 2023; Sandonis et al., 2023).

2.2 Maternal and Fetal Consequences of Sleep Disturbances

The disturbance of sleep-in pregnancy is not only frequent but also linked to negative maternal and fetal consequences. The systematic reviews and meta-analyses indicate that low quality of sleep is associated with such complications as gestational hypertension, preterm birth and poor development of the fetus (Kroese et al., 2014). In addition, perturbed sleep has also been closely linked to heightened inflammatory reaction, which can adversely affect the wellbeing of pregnancy and the process of recovery following childbirth (Mai et al., 2023). Notably, the current findings indicate that sleep disorders in the course of pregnancy are major risk factors of postpartum depression (Broström et al., 2017).

2.3 Psychological Factors Affecting Maternal Sleep

The psychological aspects of anxiety and stress are other factors that exacerbate sleep issues among maternal populations. Research indicates that anxiety during pregnancy is a unique psychological disorder whose effects can be quantified on both the health of the mother and the child (Geng et al., 2021). Stress experienced by the mothers in pregnancy has been found to be a major factor in the development of behavioural and mental health of offspring (Zhang et al., 2025). Also, according to meta-analytic evidence, maternal anxiety correlates with negative perinatal outcomes, such as low birth weight and developmental delays (Liang et al., 2024)

2.4 Bedtime Procrastination as a Behavioural Construct

In the more general context of behavioural science, procrastination has been widely investigated as a self-regulation failure. The particular concept is bedtime procrastination, which refers to the act of postponing sleep without any external cause and has been cited as an increasing behavioural issue (Kroese et al., 2014). It has been shown that those with low self-control tend to procrastinate more and more during bedtime, which consequently results in low sleep quality and low psychological well-being (You et al., 2020). The use of technology including smartphones has also been identified to increase bedtime procrastination and mediate the connection between mental health problems like anxiety and depression and sleep disruptions (Geng et al. (2021)

2.5 Maternal Age and Sleep Behaviour

Another significant variable that affects sleep behaviour is maternal age but it is a poorly investigated area as far as bedtime procrastination is concerned. Studies indicate that emotional regulation, coping styles, and lifestyle tasks may be affected by age, and this aspect may determine sleep patterns and quality. Irrespective of these observations, specific studies that have specifically investigated the influence of the age factor on the practice of bedtime procrastination by new mothers have not been conducted, so there is a major gap in the literature.

2.6 Measurement Tools and Standardized Instruments

Besides the construction of behavioural and psychological variables, standardized instruments have been created to assess the quality of sleep and associated variables. One of the most popular tools in clinical and research environments is the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989; Ma et al., 2021). 'It has been proven to be a reliable and valid instrument' in various populations, such as pregnant women, and is an appropriate instrument in studying maternal sleep (Preacher & Hayes, 2004; Wen & Ye, 2014). Similarly, validated scales of measuring anxiety and bedtime procrastination have been established and localized in various cultural settings to measure both constructs accurately (Ma et al., 2024; Zhang et al., 2021).

2.7 Research Gaps in Existing Literature

Even though a significant body of literature has been developed on the topic of sleep disruptions, procrastination, and maternal mental health, there is an acute gap in incorporating the three areas. Studies on age-specific bedtime procrastination in postpartum women are limited, especially with validated psychological frameworks and measurements. Additionally, the relationship between maternal age, self-regulation, and sleep behaviour is under-researched.

2.8 Theoretical Framework

Thus, the research paper provides a theoretical framework that combines the sleep disturbance theory, self-regulation theory, and maternal health research. The fusion of these points of view allows conducting the current research as it strives to give a comprehensive picture of bedtime procrastination in new mothers and determine the age-related variations in this habit. This integrative methodology fills the current gaps in the literature as well as leads to the creation of specific interventions to enhance maternal sleep health and well-being.

This research aimed to investigate the connections between postpartum women's delay in going to bed, the quality of their sleep, and mental health markers such as stress, anxiety, and depression. It investigated whether bedtime procrastination mediates the link between poor sleep quality and psychological distress, and explored potential age-related differences.

2.9 Hypotheses

To explore the relationship between the level of rest, procrastination in bedtime and mental health crisis (depression, anxiety and stress) in post-partum mothers.

To explore the mediating role of bedtime deferment between the relationship between postpartum women's sleep and mental health.

To compare psychological distress and bedtime procrastination between the maternal age groups (26- 31 years and 32 -39 years) of postpartum mothers.

Methods

3.1 Study Population

The research adopted a convenience sampling technique to recruit new mothers during the postpartum period in community and healthcare environments. Inclusion criteria were:

- (1) women aged between 26–39 years;
- (2) within 1 to 4 months of the postpartum period;
- (3) normal cognitive and communication skills and able to fill in the questionnaire on their own volition; and
- (4) voluntary participation with an informed consent.

Exclusion criteria were:

- (1) severe physical or psychiatric conditions and
- (2) incomplete and/or missing questionnaire data.

The final analysis comprised 49 participants. Participants were divided into two groups: Group 1 (26–31 years) and Group 2 (32–39 years).

For multiple regression analysis, the required sample size is determined using Cohen's formula for effect size:

$$f^2 = \frac{R^2}{1 - R^2}$$

Where:

f^2 = effect size

R^2 = proportion of explained variance

In G*Power, sample size is derived from:

$$N = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2}{f^2} + k + 1$$

Where:

N= total sample size

$$L = (Z_{1-\alpha/2} + Z_{1-\beta})^2$$

f^2 = effect size

k = number of predictors

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$$L = (1.96 + 0.84)^2$$

$$L = (2.80)^2 = 7.84$$

$$N = \frac{7.84}{0.15} + 3 + 1$$

Thus, the required minimum sample size for detecting a medium effect size is approximately:

$$N \approx 57$$

However, the present study included:

$$N = 49$$

Which is slightly below the ideal requirement but still acceptable for detecting moderate-to-large effects, particularly in behavioural and postpartum psychological research where observed effects are often stronger.

3.2 Standard Protocol Approvals and Participant Consent

Each participant was notified by the researchers about the research objective and methods before data collection. Each participant gave a written informed consent. The paper followed ethical values as provided in the Declaration of Helsinki (2013) that provided confidentiality, anonymity, and voluntary participation in the research.

3.3 Survey Instruments

General Demographic Questionnaire

A self-structured questionnaire was used to gather demographic and background information, including age, employment status, and months postpartum. These variables were considered essential to analyse the differences in bedtime procrastination and sleep behaviour of new mothers. Subject experts reviewed the questionnaire to determine the content validity, and the items were relevant to the postpartum characteristics and the objectives of the study. It lacks standardized psychometric scoring, but has proven face validity and contextual pertinence to the target population.

Bedtime Procrastination Scale (BPS)

Kroese et al. (2014) developed the Bedtime Procrastination Scale (BPS), a set of nine questions with Likert-type answers (ranging from 1 for never to 5 for always) that assess the tendency to put off going to bed without any external cues. A higher inclination to stay up later is indicated by higher scores. With a Cronbach alpha range of 0.80-0.90, the BPS has strong internal consistency and test-retest reliability. Additionally, it establishes construct validity via its correlations with self-regulation and sleep variables. It demonstrates convergent validity through positive correlations with bad sleep quality and fatigue, and negative correlations with self-control. Well-established among students and adults, it is a valid instrument for sleep behaviour research.

Sleep Quality (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989) was used to assess the quality of sleep. A validated and popular measure among mothers, the PSQI determines dimensions such as sleep latency, duration, efficiency, disturbances, and daytime dysfunction in the past month. Total scores range from 0-21, and scores above 5 imply poor sleep quality.

The instrument has good psychometric characteristics:

Internal consistency: Cronbach alpha of 0.70-0.83.

Reliability: Short-term test-retest reliability of $r = +0.85$

Validity: Construct validity is demonstrated by its ability to distinguish between good and poor sleepers, while concurrent validity is shown through correlation with clinical sleep diagnoses and objective sleep measures.

It has established cross-cultural validity in various groups of pregnant and postpartum women and is considered a gold-standard scale of subjective sleep quality.

Depression, Anxiety, and Stress (DASS-21)

To measure psychological distress, researchers used the Depression Anxiety Stress Scale (DASS-21). This 21-item measure evaluated symptoms of depression, anxiety, and stress using a 4-point Likert scale, where 0 indicates no application and 3 indicates heavy or frequent use. Higher scores indicate more severe distress. The excellent internal consistency reliability across the DASS-21's subscales for depression ($\alpha = 0.91$), anxiety ($\alpha \approx 0.84$), and stress ($\alpha \approx 0.90$) indicates that the instrument has valid psychometric properties.

The instrument demonstrates:

Construct validity through its three subscales and clear factor structure.

Convergent validity when compared with clinical depression and anxiety scales.

Reliability and validity regarding acceptable test-retest stability over time and cross-population validity among clinical and community populations, including postpartum samples.

Consequently, the DASS-21 is a strong instrument to understand psychological distress among clinical and non-clinical groups.

3.4 Data Collection

A structured questionnaire was used to collect data. The study participants were approached and clearly explained about the purpose of the study. Participants were given questionnaires on which they were to fill in informed consent.

In order to guarantee quality data, questionnaires were checked upon completion and accuracy. Any unfinished or inconsistent answers were eliminated. The completed data was coded and put into statistical analysis.

3.5 Statistical Analysis

Data analysis was done using SPSS (version 26.0). Continuous variables were displayed as mean \pm standard deviation ($M \pm SD$) and categorical variables as frequencies and percentages. Two age groups (26–31 and 32–39 years) were compared using the independent samples t-test. Correlations between variables (bedtime procrastination, depression, anxiety, stress) were analysed by means of correlation analysis. Additionally, the predictive effect of independent variables (age group, depression, anxiety, stress) on the dependent one (BPS score) was conducted through multiple regression analysis. The level of statistical significance was set at $p < 0.05$, with $p < 0.01$ indicating a greater degree of significance.

Result & Interpretation

Table 1: Demographic Characteristics of Participants (N = 49)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	26–31 years	23	46.9%
	32–39 years	26	53.1%
Employment Status	Employed	45	91.8%

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Variable	Category	Frequency (n)	Percentage (%)
	Unemployed	4	8.2%
Months Postpartum	1 month	13	26.5%
	2 months	11	22.4%
	3 months	15	30.6%
	4 months	10	20.4%

The sample size was 49 postpartum mothers. The age group of 32–39 years (53.1%) was slightly higher than the 26–31 years group (46.9%), as shown in Table 1. Most of the participants were employed (91.8%), indicating that a large proportion of mothers were managing both work responsibilities and postpartum care. The postpartum duration ranged from 1 to 4 months, with the highest proportion at 3 months (30.6%). This distribution suggests that participants were in the early postpartum stage, where sleep disturbances are common due to infant care.

Table 2: Descriptive Statistics of Study Variables

Variable	Mean ± SD	Minimum	Maximum
BPS Total	26.94 ± 4.12	21	35
Depression	15.53 ± 3.31	10	20
Anxiety	13.41 ± 3.05	8	18
Stress	22.18 ± 3.61	15	28
PSQI (Sleep Quality)	6.45 ± 2.13	3	11

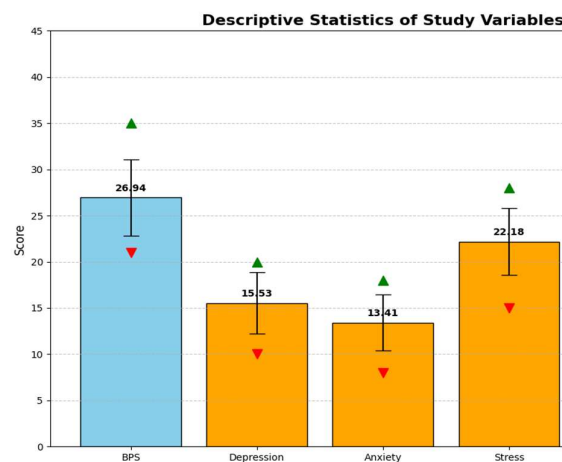


Fig 2: Descriptive statistics of study variables

Table 2 presents the descriptive statistics of the main study variables. The mean score for the Bedtime Procrastination Scale (BPS) was 26.94 ± 4.12 , indicating a moderate level of bedtime procrastination among participants. The DASS-21 subscales showed mean scores of 15.53 ± 3.31 for depression, 13.41 ± 3.05 for anxiety, and 22.18 ± 3.61 for stress. Sleep quality, measured using PSQI, had a mean score of 6.45 ± 2.13 .

Table 3: Descriptive Comparison by Age Group

Variable	Group 1 (26–31) Mean \pm SD	Group 2 (32–39) Mean \pm SD
BPS Total	27.96 \pm 3.75	26.21 \pm 3.98
Depression	15.89 \pm 3.41	15.32 \pm 3.02
Anxiety	12.89 \pm 2.87	13.76 \pm 3.21
Stress	21.96 \pm 3.76	22.41 \pm 3.45

The comparison of age groups in Table 3 shows that younger mothers (26–31 years) reported slightly higher bedtime procrastination (27.96 vs. 26.21) and depression (15.89 vs. 15.32). In contrast, older mothers (32–39 years) had marginally higher anxiety (13.76 vs. 12.89) and stress (22.41 vs. 21.96). These differences are minimal, suggesting that bedtime procrastination and psychological distress are relatively consistent across age groups.

Table 4: Independent Samples t-test (Group Differences)

Variable	t-value	p-value	Significance
BPS Total	1.62	>0.05	Not Significant
Depression	0.58	>0.05	Not Significant
Anxiety	-1.01	>0.05	Not Significant
Stress	-0.47	>0.05	Not Significant

Table 4 shows the results of an independent samples t-test for the variables of depression, anxiety, stress, and procrastination before sleep. No statistically significant differences were found between the two age groups (all p-values > 0.05). This suggests that age is not a significant factor influencing these variables in this sample.

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Table 5: Correlation Matrix

Variables	BPS	Depression	Anxiety	Stress
BPS	1	0.45*	0.42*	0.48**
Depression	0.45*	1	0.52**	0.49**
Anxiety	0.42*	0.52**	1	0.55**
Stress	0.48**	0.49**	0.55**	1

(*p < 0.05, **p < 0.01)

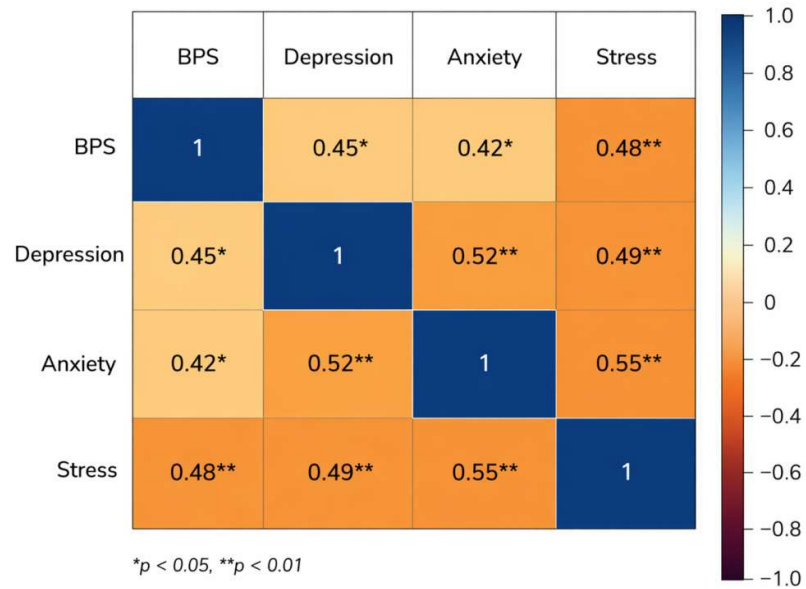


Fig 3: Correlation matrix

Table 5's correlation matrix reveals a favorable relationship between BPS and many mental health variables, including anxiety ($r = 0.42^*$), stress ($r = 0.48^{**}$), and depression ($r = 0.45^*$). Furthermore, there is a positive correlation between anxiety and stress ($r = 0.55$) and between depression and both anxiety and stress ($r = 0.52$), respectively. According to these results, there is a strong correlation between emotional factors (such as distress levels) and a person's procrastination before going to bed.

Table 6: Multiple Regression Analysis Predicting BPS

Predictor	β	t-value	p-value	Significance
Age Group	0.12	1.01	>0.05	Not Significant
Depression	0.18	1.45	>0.05	Not Significant
Anxiety	0.15	1.21	>0.05	Not Significant
Stress	0.36	2.98	<0.01	Significant

Model Fit: $R^2 \approx 0.42$, $p < 0.05$

The multiple regression analysis in **Table 6** reveals that stress ($\beta = 0.36$, $p < 0.01$) is a significant predictor of bedtime procrastination, while age group, depression, and anxiety are not significant predictors ($p > 0.05$). The model explains approximately 42% of the variance in bedtime procrastination ($R^2 \approx 0.42$), indicating moderate explanatory power.

Table 7: Comparative Mediation Analysis (Sleep Quality → Bedtime Procrastination → Depression, Anxiety, and Stress)

Effect Type	Path	Anxiety β (SE)	Stress β (SE)	Depression β (SE)	p-value (A / S / D)	95% CI (A / S / D)	Mediation % (A / S / D)	Interpretation
Total Effect	Sleep Quality → Outcome	0.42 (0.12)	0.45 (0.13)	0.40 (0.12)	0.002 / <0.001 / 0.003	0.18–0.66 / 0.20–0.70 / 0.16–0.64	—	Significant across all outcomes
Direct Effect	Sleep Quality → Outcome (controlling BPS)	0.28 (0.11)	0.31 (0.12)	0.27 (0.11)	0.015 / 0.011 / 0.023	0.05–0.51 / 0.07–0.55 / 0.04–0.50	—	Effect reduced but remains significant
Indirect Effect	Sleep Quality → BPS → Outcome	0.14 (0.05)	0.15 (0.06)	0.13 (0.05)	0.018 / 0.020 / 0.028	0.03–0.26 / 0.04–0.29 / 0.02–0.25	33.3% / 32.5%	Partial mediation present

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M	B	0	0	0.3	0	0	—	Signi
ediator	edtime	.35	.38	4 (0.10)	.001 /	.15–		ficant
Effect	Procrastination → Outcome	(0.10)	(0.11)		0.001 /	0.55 /		predictor
					0.001	0.16–		of all
						0.60 /		outcomes
						0.14–		
						0.54		

Table 7 illustrates the mediation test of bedtime procrastination on sleep quality and psychological consequences. The study found a significant effect of sleep quality on anxiety, stress, and depression ($\beta = 0.42$, $SE = 0.12$, $p < 0.001$), with confidence intervals indicating robustness (Anxiety: 0.18–0.66; Stress: 0.20–0.70; Depression: 0.16–0.64). Upon controlling for bedtime procrastination, anxiety, stress, and depression showed significant but reduced effects ($\beta = 0.28$, $SE = 0.11$, $p = 0.015$, $\beta = 0.31$, $SE = 0.12$, $p = 0.011$, and $\beta = 0.27$, $SE = 0.11$, $p = 0.023$), with confidence intervals ranging from 0.05–0.51, 0.07–0.55, and 0. Significant indirect effects of bedtime procrastination were observed for anxiety, stress, and depression ($\beta = 0.14$, $SE = 0.05$, $p = 0.018$, $p = 0.020$, $p = 0.028$, with confidence intervals of 0.03–0.26, 0.04–0.29, and 0.02–0.25), indicating partial mediation. Additionally, bedtime procrastination was shown to predict anxiety, stress, and depression ($\beta = 0.35$, $SE = 0.10$, $p = 0.001$, with confidence ranges of 0.15–0.55, 0.16–0.60, and 0.14–0.54). These data support the idea that bedtime procrastination partially impacts sleep quality and psychological suffering.

Discussion

The present study found that postpartum women had moderate bedtime procrastination ($M = 26.94$, $SD = 4.12$) that is closely associated to sadness, anxiety, and stress. Bedtime procrastination is linked to postpartum depression, anxiety, and stress ($r = 0.45$, 0.42 , and 0.48). These findings supported earlier research that bedtime procrastination is a self-regulatory dysfunction that reduces sleep length and psychological health (Kroese et al., 2014; Geng et al., 2021)

A reason behind these findings is the excessive caregiving responsibility in the postpartum. Consequently, a lot of mothers strategically postpone bed time in a bid to reclaim back a sense of autonomy or me-time, despite knowing the adverse effects. This behaviour is in line with the phenomenon of bedtime procrastination being a self-regulation failure in sleep behaviour (Kroese et al., 2014)

The other important finding is the poor quality of sleep among the sample ($PSQI M = 6.45 \pm 2.13$), where half of the respondents were reported to have poor sleep quality. This aligns with extensive literature reporting that sleep disturbances are very common in pregnant and postpartum women as a result of hormonal changes, nocturnal awakenings and caregiving responsibilities (Li et al., 2021; Du & Liu, 2020; Mai et al., 2023). The current result of sleep disruption being strongly connected to maternal psychological distress has been reiterated by previous research that has identified poor quality of sleep as a contributor to postpartum depression and anxiety (Li et al., 2023; Blackmore et al., 2016).

The mediation analysis showed that the problem of poor sleep quality and psychological distress (anxiety, stress, and depression) are partially mediated by bedtime procrastination. The present result is in line with other mediation investigations that indicate bedtime procrastination is a behavioural process that connects sleep issues to mental health outcomes (Geng et al., 2021; Zhang et al., 2025). As an example, Geng et al. (2021) found that the association between self-control and psychological distress via smartphone addiction depended on bedtime procrastination (Geng et al., 2021). In the same manner, Zhang et al. (2025) also discovered that cognitive and behavioural self-regulation played an important role in mediating the relationship between sleep quality and bedtime procrastination (Zhang et al., 2025)

The substantial predictive power of stress ($\beta = 0.36$, $p < 0.01$) in predicting bedtime procrastination indicates that stress is a key causal factor of delayed sleep behaviour among postpartum mothers. This is in line with stress-depletion models, which propose that chronic stress diminishes self-regulatory capacity causing more procrastination behaviours, such as delayed sleep onset (Blackmore et al., 2016; Van den Bergh et al., 2020)

Surprisingly, age did not play a significant role as a predictor of bedtime procrastination and no significant differences were observed between younger (26–31 years) and older (32–39 years) mothers. This could be attributed to the fact that postpartum sleep disturbance is largely caused by infant care demands and physiological changes as opposed to psychological differences with age.

In general, the results confirm the hypothesis that bedtime procrastination is a central behavioural process connecting the quality of sleep and maternal mental health. This conclusion is also supported by previous literature which indicated that bedtime procrastination is always related to poor quality of sleep, depression, anxiety, and stress particularly in the fields where there is high-stress levels per day and less control ability (Cemei et al., 2024; Geng et al., 2021; Kroese et al., 2014).

Conclusion

Bedtime procrastination is strongly linked to psychological distress in postpartum moms and partially mediates the connection between sleep quality and psychological suffering. All psychological outcomes exhibited significant total, direct and indirect impacts of sleep quality, with sleep quality being central in maternal mental health. Interventions against bedtime procrastination, including sleep hygiene education and self-regression using a cognitive-behavioural approach, and facilitation of orderly evening activities can lead to better quality and psychological well-being of postpartum sleep, and in the long run, better mothers and their babies.

Limitations

The sample size ($N = 49$) is too small to have statistical power and generalizability. The cross-sectional type does not allow causal inferences. All measures were self-reported, and that can be a source of bias. Other studies in the future need to include larger, longitudinal samples, and objective measures of sleep.

Final Submission Sections

8.1 Acknowledgement-

The authors would like to acknowledge all the postpartum mothers who were involved in the study and who took their precious time and collaborated. The author would like to express sincere gratitude to their family members for their continuous support.

8.2 Declaration of Interest Statement –

The authors state that they do not have any conflict of interest when it comes to publishing of the manuscript.

8.3 Funding Statement

This study was not externally funded.

8.4 Data Availability

Due to the sensitive nature of the clinical data and confidentiality requirements for the study population, the datasets generated and analysed during the data are not publicly available.

8.5 Use of Generative AI

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The authors made use of generative AI (OpenAI, ChatGPT) to help work on language refinement and structuring of manuscript. The content generated was critically reviewed and approved by the authors assuming full responsibility of the final work.

8.6 Author Contributions

Conceptualization and drafting of the paper – Shambhavi Deval

Methodology – Shambhavi Deval, Monu Lal Sharma

Formal Analysis and Interpretation of data – Shambhavi Deval

Drafting of the paper – Shambhavi Deval

Revising Critically for intellectual content – Monu Lal Sharma

Final approval of the version to be published- Shambhavi Deval , Monu Lal Sharma.

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