

A Study of Insomnia and Its Relationship with Psychological and Lifestyle Factors

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Abstract: *Insomnia is a common sleep-related difficulty characterized by problems with sleep initiation, sleep maintenance, early awakening, or non-restorative sleep and may have consequences extending into daytime psychological and functional domains. The present study examined insomnia-related sleep difficulties and their relationship with psychological, lifestyle, behavioural, and functional factors among adults. A quantitative, cross-sectional, descriptive-correlational design was employed. Data were obtained from 104 adults using a researcher-developed 20-item questionnaire administered online. Items were coded from 0 to 3, with higher scores representing greater sleep-related difficulty, adverse lifestyle/behaviour, psychological burden, or functional impact. Composite scores were calculated for sleep symptoms, lifestyle/behaviour, psychological bedtime factors, and daytime/functional impact. Descriptive statistics, frequency and percentage distributions, Pearson product-moment correlations, Spearman rank-order correlations, and Cronbach's alpha were used. The overall researcher-developed index had a mean of 29.28 (SD = 17.88), with scores ranging from 0 to 60. The sleep-symptom domain had a mean of 8.71 (SD = 5.92). Strong positive associations were found between sleep symptoms and lifestyle/behaviour ($\rho = .902, p < .001$), psychological bedtime factors ($\rho = .897, p < .001$), and daytime/functional impact ($\rho = .902, p < .001$). The questionnaire demonstrated very high internal consistency ($\alpha = .981$). Frequently reported patterns included irregular sleep schedules, prolonged screen exposure before sleep, nighttime caffeine consumption, daytime sleepiness, and perceived effects on quality of life. The findings support a multidimensional understanding of sleep difficulties involving psychological arousal, behavioural patterns, and daytime functioning. However, because the instrument was researcher-developed and lacked a validated clinical cut-off, findings should be interpreted as correlational evidence of self-reported sleep-related symptom burden rather than clinical prevalence or diagnosis.*

Keywords: insomnia, sleep disturbance, psychological factors, lifestyle, screen exposure, caffeine, stress, sleep routine, daytime functioning

1. Introduction

Sleep is a fundamental biological process that contributes to physical restoration, cognitive performance, emotional regulation, memory consolidation, and effective everyday functioning. Consequently, persistent disturbances in sleep can extend beyond the nighttime period and influence concentration, mood, productivity, interpersonal functioning, and quality of life. Insomnia represents an important sleep-related concern because difficulties with initiating or maintaining sleep may be accompanied by significant daytime consequences.

Contemporary conceptualizations view insomnia as a multidimensional phenomenon involving interactions between biological, psychological, behavioural, and environmental factors. Rather than being restricted to inadequate sleep duration, insomnia-related difficulties may involve difficulty falling asleep, repeated awakenings, early morning awakening, dissatisfaction with sleep, and impaired daytime functioning.

The hyperarousal model provides an important theoretical basis for understanding insomnia. Riemann et al. (2010) proposed that cognitive, emotional, and physiological arousal may contribute to the development and maintenance of insomnia. Bedtime worry and excessive cognitive activity may prevent adequate relaxation and interfere with sleep initiation.

The relationship between insomnia and anxiety has also received considerable attention. Anxiety may involve worry, apprehension, rumination, and increased

physiological activation. Palagini et al. (2024) described the relationship between insomnia and anxiety-related disorders as complex, involving interactions among cognition, emotion, and sleep regulation. Insomnia and depression may likewise have a multifaceted and potentially bidirectional relationship (Manber & Chambers, 2009).

Lifestyle and behavioural patterns are also relevant. Bedtime screen exposure has been associated with poorer sleep outcomes, while inconsistent sleep schedules may interfere with sleep timing and regularity (Carter et al., 2016; Chaput et al., 2020). Caffeine is another relevant factor, with evidence indicating that its dose and timing can influence subsequent sleep (Zhang et al., 2023).

Importantly, the consequences of insomnia are not confined to nighttime experiences. Research emphasizes assessment of daytime symptoms such as fatigue, sleepiness, mood disturbance, performance, and quality of life (Buysse et al., 2006, 2007). The present study therefore examined sleep symptoms together with lifestyle/behaviour, psychological bedtime factors, and daytime/functional impact.

2. Research Gap and Rationale

Insomnia is multidimensional, yet research and community assessment may sometimes focus narrowly on sleep duration or an individual symptom. A multidomain approach that considers sleep symptoms alongside behavioural patterns, psychological bedtime experiences, and daytime consequences can provide a broader picture. The present study contributes primary data from 104 respondents using a researcher-developed multidomain

questionnaire.

3. Aim and Objectives

The aim was to examine insomnia-related sleep difficulties and their relationship with psychological, lifestyle, behavioural, and functional factors among adults.

- Assess self-reported sleep-related/insomnia symptoms.
- Examine the relationship between sleep symptoms and lifestyle/behaviour.
- Examine the relationship between sleep symptoms and psychological bedtime factors.
- Examine the relationship between sleep symptoms and daytime/functional impact.
- Examine screen exposure, caffeine consumption, naps, and sleep routine.
- Examine reported effects on concentration, mood, work/studies, and quality of life.
- Suggest preventive and psychological management strategies.

Hypotheses

H01: There is no significant relationship between stress/anxiety and insomnia-related sleep difficulty. H02: There is no significant relationship between depression and insomnia-related sleep difficulty.

H03: There is no significant relationship between screen/TV use before sleep and insomnia-related sleep difficulty.

H04: There is no significant relationship between nighttime caffeine use and insomnia-related sleep difficulty. H05: There is no significant relationship between irregular/busy routine and insomnia-related sleep difficulty.

H06: There is no significant relationship between sleep-related daytime functioning and insomnia-related sleep difficulty.

4. Review of Literature

Riemann et al. (2010) reviewed the hyperarousal model and identified cognitive, physiological, and behavioural arousal as central mechanisms in insomnia. This perspective supports attention to bedtime worry and stress-related arousal.

Kyle et al. (2010a, 2010b) emphasized the broad effects of insomnia on health-related quality of life and everyday functioning. Their work supports assessing daytime impairment rather than treating sleep as an isolated nighttime phenomenon.

Brownlow et al. (2020) highlighted associations between insomnia and cognitive performance, particularly attention and cognitive functioning. Carter et al. (2016) found that bedtime access to or use of portable screen devices was associated with inadequate sleep and poorer sleep outcomes.

Chaput et al. (2020) synthesized evidence linking sleep timing and consistency with health outcomes, while Zhang et al. (2023) reviewed evidence regarding caffeine and subsequent sleep. These findings support the present study's focus on sleep routines, screen exposure, and nighttime

caffeine.

From a clinical perspective, psychological and behavioural interventions have an important role in insomnia management (Morin et al., 2006). The American College of Physicians (2016) recommends CBT-I as an initial treatment approach for adults with chronic insomnia. Digital CBT-I has also demonstrated improvements in sleep and psychological well-being (Espie et al., 2019).

5. Method

Research Design

A quantitative, cross-sectional, descriptive-correlational design was used. The original proposal described a convergent mixed-method design; however, the statistical analysis presented here is based on the 104 completed questionnaire responses and did not include a separate qualitative interview dataset.

Participants and Sampling

The final dataset consisted of 104 complete responses from adults, including students and working adults. Participants were recruited according to availability and willingness to participate, consistent with a convenience/availability sampling approach.

Instrument and Scoring

A researcher-developed 20-item questionnaire was administered online. Items assessed daily routine, sleep pattern, onset of sleep problems, sleep latency, sleep duration, morning feelings, bedtime thoughts, nighttime stress/anxiety, mood effects, pre-bed activities, screen exposure, caffeine use, naps, daytime functioning, concentration, work/study impact, irritability, and quality of life. Each item was coded from 0 to 3, with higher scores indicating greater sleep-related difficulty, adverse behaviour, psychological burden, or functional impact.

Domain	Items	Possible range
Sleep symptoms	Q2–Q7	0–18
Lifestyle/behaviour	Q1, Q11–Q14	0–15
Psychological bedtime	Q8–Q10	0–9
Daily/functional impact	Q15–Q20	0–18
Overall index	Q1–Q20	0–60

Because the questionnaire was researcher-developed, the total score and project-specific bands are not equivalent to a validated clinical insomnia scale and should not be used to diagnose insomnia.

Procedure and Ethics

The questionnaire was administered online after the research problem and objectives were finalized. Participation was voluntary, participants were informed about the academic purpose of the study, and confidentiality and anonymity were maintained as far as possible. Responses were screened for completeness, coded, and analyzed in aggregate.

Statistical Analysis

Frequencies and percentages were used for categorical responses. Means and standard deviations summarized

composite scores. Pearson product-moment correlations were calculated for linear associations, while Spearman rank-order correlations were used as a robustness check because individual questionnaire responses were ordinal. Cronbach's alpha was used to estimate internal consistency. Statistical significance was interpreted at the .05 level.

6. Results

Data Screening and Descriptive Statistics

All 104 responses were complete across the 20 scored items, with no missing responses identified in the scored dataset. The overall index had a mean of 29.28 (SD = 17.88), while the sleep-symptom domain had a mean of 8.71 (SD = 5.92).

Domain	N	M	SD	Min	Max
Sleep symptoms	104	8.71	5.92	0	18
Lifestyle/behaviour	104	7.35	4.25	0	15
Psychological bedtime	104	4.57	2.83	0	9
Daily/functional impact	104	8.65	5.55	0	18
Overall index	104	29.28	17.88	0	60

Note. M = mean; SD = standard deviation.

Overall Score Distribution

Using the project-specific descriptive bands, 43 participants (41.35%) were in the low band, 31 (29.81%) in the moderate band, and 30 (28.85%) in the high band. Thus, 61 participants (58.65%) fell within the moderate or high descriptive bands. These categories are descriptive only and are not validated clinical severity categories.

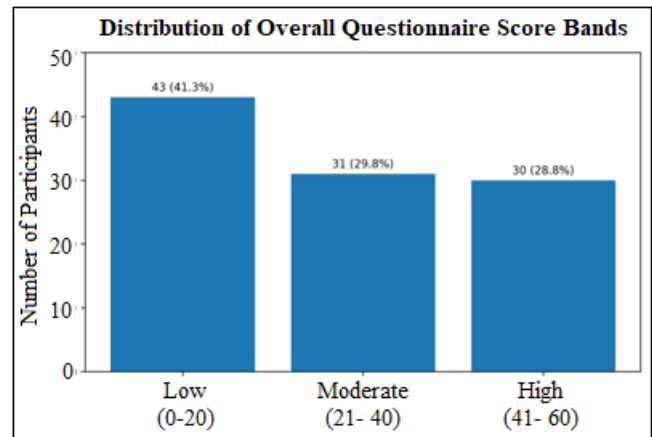


Figure 1: Distribution of overall researcher-developed questionnaire score bands.

Major Response Patterns

Indicator	Most frequent response	n	%
Daily routine	Busy and tiring	40	38.5
Sleep pattern	Irregular	32	30.8
Sleep latency	More than 1 hour	33	31.7
Average sleep duration	6-7 hours	31	29.8
Nighttime stress/anxiety	Slightly	29	27.9
Pre-bed activity	Mobile/watch TV	49	47.1
Screen/TV before sleep	More than 1 hour	33	31.7
Nighttime caffeine	Sometimes	44	42.3
Daytime sleepiness	Sometimes	41	39.4
Quality-of-life impact	Moderately	33	31.7

Domain Means

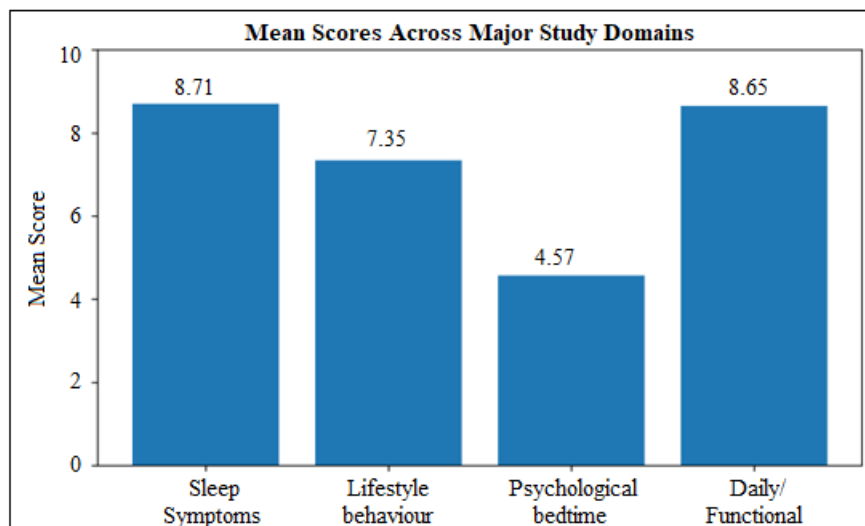


Figure 2: Mean scores across the four principal domains.

Correlation Analysis

Associated domain	Spearman ρ	p	Pearson r	p
Lifestyle/behaviour	0.902	< .001	0.902	< .001
Psychological bedtime factors	0.897	< .001	0.903	< .001
Daily/functional impact	0.902	< .001	0.914	< .001

Strong positive associations were observed between sleep symptoms and lifestyle/behaviour ($\rho = .902$, $p < .001$), psychological bedtime factors ($\rho = .897$, $p < .001$), and daytime/functional impact ($\rho = .902$, $p < .001$). Pearson correlations were highly similar, supporting the robustness of the observed pattern across correlation approaches. These findings indicate association rather than causation.

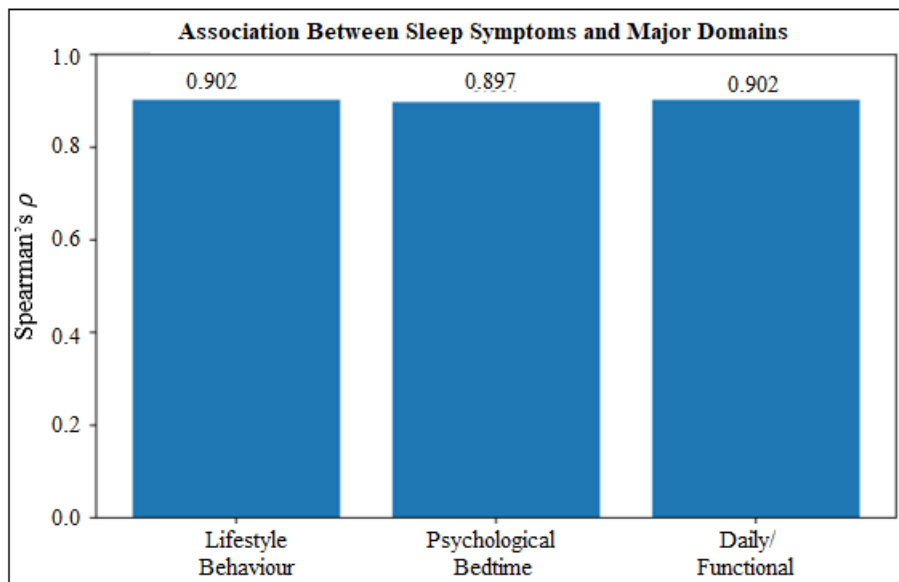


Figure 3: Spearman correlations between sleep symptoms and major domains

Item-Level Associations

Question	Spearman ρ	p
Q1 – Daily routine	0.817	< .001
Q8 – Bedtime thoughts	0.899	< .001
Q9 – Nighttime stress/anxiety	0.832	< .001
Q10 – Mood effects	0.708	< .001
Q11 – Pre-bed activity	0.708	< .001
Q12 – Screen exposure	0.81	< .001
Q13 – Nighttime caffeine	0.657	< .001
Q14 – Naps	0.786	< .001
Q15 – Daily-life impact	0.817	< .001
Q16 – Daytime sleepiness	0.8	< .001
Q17 – Concentration	0.886	< .001
Q18 – Work/study impact	0.845	< .001
Q19 – Irritability	0.799	< .001
Q20 – Quality-of-life impact	0.853	< .001

Reliability

The 20-item questionnaire demonstrated very high internal consistency, Cronbach's $\alpha = .981$. This result indicates strong inter-item consistency in the present sample; however, internal consistency alone does not establish construct validity, diagnostic accuracy, or clinical suitability.

Hypothesis-Wise Findings

Hypothesis	Decision	Evidence
H01: Stress/anxiety and insomnia	Rejected	$\rho = .832, p < .001$
H02: Depression and insomnia	Not testable	No separate depression measure was included
H03: Screen/TV use and insomnia	Rejected	$\rho = .810, p < .001$
H04: Nighttime caffeine and insomnia	Rejected	$\rho = .657, p < .001$
H05: Routine burden/irregularity and insomnia	Rejected	$\rho = .817, p < .001$
H06: Daytime functioning and insomnia	Rejected	Concentration, work/study and quality-of-life indicators were significant; $p < .001$

7. Discussion

The present findings support a multidimensional understanding of sleep difficulties in which nighttime symptoms are closely associated with psychological, behavioural, and functional experiences. The strong association between sleep symptoms and lifestyle/behaviour suggests that participants reporting greater sleep difficulty also tended to report more adverse behavioural patterns.

Screen exposure was particularly prominent. Mobile-phone use or television viewing was the most frequently reported pre-bed activity (47.1%), while 31.7% reported more than one hour of screen exposure before sleeping. The positive relationship between screen exposure and sleep symptoms is consistent with previous evidence linking bedtime media use with poorer sleep outcomes (Carter et al., 2016). However, the cross-sectional design does not establish whether screen exposure causes sleep difficulty.

Nighttime caffeine use was also positively associated with sleep symptoms ($\rho = .657, p < .001$), consistent with evidence that caffeine can affect subsequent sleep (Zhang et al., 2023). This finding supports consideration of caffeine timing in sleep-health education.

Psychological bedtime factors demonstrated a particularly strong association with sleep symptoms ($\rho = .897, p < .001$). Nighttime stress/anxiety was positively related to sleep symptoms ($\rho = .832, p < .001$). This is consistent with the hyperarousal model, according to which cognitive and physiological activation can interfere with sleep initiation and maintenance (Riemann et al., 2010).

The relationship between sleep symptoms and daytime/functional impact was similarly strong ($\rho = .902, p < .001$). Concentration, work/study effects, daytime sleepiness, irritability, and quality of life were represented in this domain. These findings support the view that insomnia-related difficulties should be considered across the full day rather than as a purely nighttime complaint (Kyle et al., 2010a, 2010b).

The very high internal consistency of the questionnaire ($\alpha = .981$) suggests that the items were highly interrelated in this sample. Nevertheless, because the instrument combines sleep symptoms, lifestyle behaviours, psychological experiences, and functional consequences, a high alpha should not be interpreted as proof of construct validity or clinical diagnostic accuracy.

Overall, the findings are consistent with theoretical models in which sleep, cognition, emotion, behaviour, and daytime functioning interact. The results support prevention and psychoeducation focused on regular sleep routines, reduction of stimulating bedtime activities, appropriate screen habits, caffeine timing, relaxation, and stress management. Evidence-based approaches such as CBT-I may be considered when persistent insomnia is identified through appropriate professional assessment (American College of Physicians, 2016; Morin et al., 2006).

8. Clinical and Psychological Implications

- Sleep assessment may be incorporated into psychological assessment when individuals present with stress, anxiety, fatigue, concentration difficulties, mood changes, or impaired daily functioning.
- Sleep-health psychoeducation can emphasize consistent sleep-wake schedules, reduced stimulating activities at bedtime, appropriate screen habits, and attention to caffeine timing.
- CBT-I may be considered for persistent or chronic insomnia following appropriate professional assessment.
- Colleges and workplaces can incorporate sleep-health awareness and stress-management programmes.
- Persistent, severe, or functionally impairing sleep difficulties warrant assessment by qualified health professionals to consider medical, psychiatric, circadian, or other sleep disorders.

9. Limitations

- The sample was obtained through an availability/convenience approach, limiting generalizability.
- The cross-sectional design prevents conclusions regarding causal direction.
- The questionnaire was researcher-developed and lacked a validated clinical cut-off.
- All measures were self-reported and may be affected by recall or response bias.
- No separate validated depression measure was included, so the depression hypothesis could not be directly tested.
- Medical conditions, medication effects, shift work, and other sleep disorders were not comprehensively assessed.
- The sample may not represent the wider adult population.

10. Recommendations and Future Research

- Use a validated insomnia measure such as the Insomnia Severity Index alongside researcher-developed measures.
- Include validated measures of stress, anxiety,

depression, and psychological well-being.

- Recruit larger and more diverse samples and compare students, working adults, and other occupational groups.
- Examine age and gender differences when sampling permits.
- Use longitudinal designs to clarify temporal relationships among stress, lifestyle behaviours, and insomnia.
- Evaluate outcomes following CBT-I, sleep-hygiene education, stress-management, or digital sleep interventions.
- Where feasible, complement self-report measures with objective sleep assessment.

11. Conclusion

The present study examined insomnia-related sleep difficulties and their relationships with psychological, lifestyle, behavioural, and functional factors among 104 adults. The overall researcher-developed index demonstrated substantial variability, while sleep symptoms were strongly associated with lifestyle/behaviour, psychological bedtime factors, and daytime/functional impact.

The strongest domain-level associations were observed with lifestyle/behaviour ($p = .902$), psychological bedtime factors ($p = .897$), and daytime/functional impact ($p = .902$), all $p < .001$. The questionnaire demonstrated very high internal consistency ($\alpha = .981$). Screen exposure, nighttime caffeine use, routine-related burden, bedtime psychological experiences, concentration, and quality of life emerged as important areas for consideration.

The study supports a multidimensional understanding of insomnia-related difficulties and highlights the potential value of psychological and behavioural prevention strategies. However, because the questionnaire was researcher-developed and lacked a validated clinical cut-off, the findings should be interpreted as correlational evidence of self-reported sleep-related symptom burden rather than clinical prevalence or diagnosis.

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