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Research Article

Analyzing The Impact of Anxiety Symptoms on Sleep Disorder Severity: A Quantitative Study of Insomnia Risk, Sleep Latency, And Psychological Distress Among Young Adults

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Abstract

During young adulthood, individuals face increasing pressure to achieve academic success while navigating extensive exposure to the digital world, irregular sleep-wake patterns, and the onset of work-related stressors. Against this backdrop, anxiety symptoms often co-occur with sleep problems. Symptoms associated with insomnia, including prolonged time taken to fall asleep, as well as psychological distress, may function in support of one another through various mechanisms. In particular, they involve cognitive arousal, emotional regulation difficulties, and impairment of sleep continuity. The goal of this manuscript is to detail a publication-ready protocol and analysis plan for a quantitative cross-sectional research study on the impact of anxiety symptoms on insomnia risk, sleep latency, sleep disorder severity and psychological distress among young adults aged 18-30 years. The study's investigators plan to recruit a sample of 300 young adults through convenience sampling or purposive sampling from college, university, outpatient and community populations. The researchers will use the Generalised Anxiety Disorder Scale-7 to measure the anxiety symptoms; the Insomnia Severity Index to measure the severity of insomnia; the Pittsburgh Sleep Quality Index to measure the quality and sleep latency; the Kessler Psychological Distress Scale or DASS-21 to measure psychological distress. The analysis plan that will be utilized includes descriptive statistics, reliability testing, normality testing, correlation analysis, t-test, ANOVA, chi-square analysis, multiple linear regression, binary logistic regression and, if necessary, mediation modelling. No empirical dataset was provided, and therefore there are no results to report or infer. Rather than publishing a cumbersome model, this paper provides transparent model tables, figure templates, and reporting instructions to help in analysing real data collected. The GAD-7 and ISI scores should yield analytical outputs about how strongly they are associated. The contributions of anxiety to sleep latency (time it takes to fall asleep) and insomnia risk factors will be examined and predicted. Moreover, the incremental role (contribution) of psychological distress after adjustment for physical and lifestyle characteristics will be predicted. To summarize: The proposed study provides a rigorous framework for assessing anxiety-related sleep vulnerability in young adults and can help support early screening, counselling, sleep hygiene interventions and preventive mental-health services in educational and community health settings.

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KEYWORDS: Anxiety symptoms; insomnia severity; sleep latency; psychological distress; young adults; sleep disorder; quantitative study.

1. INTRODUCTION

Sleep is the primary determinant of mental and physical health. Disturbed sleep during young adulthood can hinder the emotional regulation, academic functioning, daytime alertness, interpersonal adjustment and quality of life. Young adults often have changing educational, occupational, social independence and digital activity demands that promote instability in sleep timing and sleep continuity. The symptoms of insomnia are relevant because they include sleep of insufficient duration and difficulty initiating sleep, difficulty maintaining sleep, early-morning awakening, and distress or impairment associated with it. An estimated commonality of insomnia symptoms through a synthesis of undergraduate student literature highlights the importance of screening and prevention needs in this age group and others (Spyridonidis et al., 2025) The symptoms of anxiety may disturb sleep by increasing cognitive arousal and physiological activation at bedtime. Worry, threat-monitoring, rumination and anticipatory tension may also contribute. Insomnia is not only a problem at night when we are trying to sleep but a disorder which involves elevated cognitive, emotional, physiological and cortical activation across the 24-hour period (Dressler & Riemann, 2023; Riemann et al., 2010). Through evidence-based rationales, it has been demonstrated that the mechanism of insomnia synthesising hyperarousal models is consistent with those of insomnia. The worry associated with anxiety can postpone sleep initiation by enhancing cognitive activity prior to sleep. After repeat sleep onset difficulty, a second conditioning takes place in which the difficulty becomes a conditioned stressor that intensifies the fear of sleeplessness.

Sleep latency is an outcome that is clinically meaningful and which captures the time between waking and sleeping. Young adults report prolonged sleep latency when pre-sleep ruminating, using screens, sleeping at irregular hours, drinking caffeine, being stressed for school, and being emotionally distressed. The Pittsburgh Sleep Quality Index has sleep latency as one of the components of its global evaluation of sleep quality (Buysse et al., 1989), whereas the Insomnia Severity Index measures subjectively perceived insomnia severity, in relation to sleep initiation, sleep maintenance, any early awakening, satisfaction, interference, noticeability and distress (Bastien et al., 2001; Morin et al., 2011).

Psychological distress may further contribute to anxiety and sleep problems. Distress is a wider emotional burden that may include anxiety, hopelessness, exhaustion, uneasiness and depressive-affective symptoms. Kessler Psychological Distress Scale is a brief measure of non-specific psychological distress. It is used in epidemiological and population health studies. (Kessler et al. 2002) The concurrent presence of distress and anxiety can enhance the severity of sleep problems through emotional dysregulation and resource attenuation.

This paper aims to conduct a cross-sectional analytical study designed as quantitative and based on primary data. If a dataset is not uploaded then this paper does not claim that any empirical data is collected. The complete journal manuscript, proposed methodology, transparent analysis framework, model result tables, figure templates, and reporting structure are adaptable to post-collection use on real survey data.

2. A LOOK AT THE LITERATURE

2.1 Anxiety Symptoms and Sleep Difficulty

Research indicates sleep disturbances are common among anxiety disordered individuals in clinical and epidemiological levels. Sleep disturbance in anxiety and related disorders: A systematic review Sleep problems occur across anxiety presentations and may exacerbate symptom severity (Cox & Olatunji, 2016)

A subsequent meta-analysis which included both subjective and objective measurements of sleep concluded similar findings, with anxiety-related disorders exhibiting considerable disruptions in subjective sleep and measurable disturbances in sleep continuity (Cox & Olatunji, 2020). The theoretical framework on which these results are based prefers anxiety symptoms as a predictor of insomnia severity and sleep-onset delay in non-clinical US young-adult samples.

The GAD-7, a well-established seven-item screening tool, is an effective stigma instrument for generalized anxiety symptoms. It has been shown to possess strong reliability and criterion validity in both clinical and primary-care settings. Spitzer et al (2006) identified practical severity cut-points for ‘mild’, ‘moderate’, and ‘severe’ anxiety symptoms. Further support for the GAD-7 cut-off score comes from a systematic review of evidence to detect anxiety disorders (Plummer et al 2016). In a survey among young adults, the GAD-7 provides a brief measurement of anxiety symptom severity that is interpretable and reliable.

Insomnia, Sleep Latency and The Health of Young Adults.

Insomnia is ‘normalized’ for students and young adults, but it is a public-health concern. The ISI (Insomnia Severity Index) is a widely used tool for assessing perceived insomnia severity which has demonstrated excellent psychometric properties for identifying insomnia cases and measuring treatment response (Morin et al. 2011). Recent evidence indicates a high prevalence and heterogeneity of insomnia symptoms in student populations, which varies by country, instrument, and sampling method (Spyridonidis et al., 2025).

Young adulthood is a vulnerable time for sleep as academic timetables, social timings, use of screens, and irregular routines can all delay sleep onset and shorten sleep duration. As a population-based study, McArdle et al. (2020) reported sleep disorders are common in young adults. Moreover, Vestergaard et al. (2024) discuss sleep duration as a meaningful marker of mental-health functioning in young adults. Sleep latency is an important indicator as it reflects the difficulty in initiating sleep, often associated with pre-sleep arousal and worry.

Psychological Distress and Digital Lifestyle Factors.

Distress has often been associated with anxiety and poor sleep. According to Gardani et al (2022), poor sleep, insomnia symptoms and stress demonstrate moderate associations among

university students. Thus, sleep and distress should be studied together and not as separate outcomes. Hyun et al. (2021) similarly found that anxiety and depression symptoms predicted poor sleep quality among young adults during the COVID-19 outbreak, suggesting that sleep behaviour is related to mental-health symptoms.

Digital lifestyles might be contributing to anxiety-sleep pathways. Using screen longer, especially late in the evening, may delay bedtime, prolong sleep latency and interact with distress. According to Chen et al. (2022) study, more screen time associated with longer sleep latency and worry about presence of anxiety which was involved through sleep and physical-activity pathways. As a result, analyses of anxiety and insomnia severity should treat screen time, caffeine, physical activity, and sleep as covariates.

Assessment of Core Constructs.

The researcher proposes the use of standardized self-report measures for community and survey research among young adults. GAD-7, which measures anxiety symptom severity over the past two weeks (Spitzer et al. 2006) According to Bastien et al. (2001) and Morin et al. (2011), the ISI evaluates insomnia severity and functional concern.

The Pittsburgh Sleep Quality Index (PSQI) measures subjective sleep quality during the past month along with sleep latency and sleep duration components (Buysse et al., 1989). Psychological distress can be assessed by the K10 and DASS-21. K10 is a brief measure of non-specific distress designed for use in population surveys (Kessler et al., 2002).

Utilizing these tools, this study will be able to differentiate anxiety symptoms, severity of insomnia, general sleep quality, sleep latency and more general psychological distress.

In the DSM-V, anxiety is classified as a disorder but insomnia is more accurately classified as a symptom. This actually allows anxiety to take place of other factors that may cause insomnia.

3. Gap in the research

Even though anxiety and insomnia have been widely studied there are many gaps supporting the present study. Numerous studies have focused on clinical samples, pandemic-specific samples, or broad samples of student mental health. However, few have provided a more focused model linking anxiety symptoms with insomnia severity, sleep latency, and distress in young adults aged 18 to 30 years. The second reason is that sleep latency is often included in global sleep-quality scores, and it is rarely analysed separately as a clinical effect. Psychological distress is often treated as a co-occurrence outcome, rather than as a possible explanatory or mediating variable between anxiety symptoms and the insomnia severity issue.

A need exists for contextually relevant quantitative Indian-based research on young adults, particularly in college, outpatient, and community settings where mental health is poorly screened. Many manuscripts reported associations without sufficiently transparent statistical workflows. The planned study will fill in these gaps by specifying the measurement instruments and scoring of the measures, covariates, regression models and insomnia-risk classification and optional mediation analysis to be performed before the collection of data here.

4. OBJECTIVES OF THE STUDY

1. To assess the level of anxiety symptoms among young adults.
2. To evaluate the severity of insomnia and sleep disturbance among young adults.
3. To examine the association between anxiety symptoms and insomnia severity.
4. To analyse the relationship between anxiety symptoms and sleep latency.
5. To assess the role of psychological distress in sleep disorder severity.
6. To identify whether anxiety symptoms significantly predict insomnia risk among young adults.
7. To examine demographic variations in anxiety, sleep latency, and insomnia severity.

5. Research Questions and Hypotheses

5.1 Research Questions

RQ1. What is the level and distribution of anxiety symptoms among young adults aged 18-30 years?

RQ2. What is the severity of insomnia and sleep disturbance among the study participants?

RQ3. Is anxiety symptom severity associated with insomnia severity?

RQ4. Is anxiety symptom severity associated with increased sleep latency?

RQ5. Is psychological distress associated with sleep disorder severity?

RQ6. Do anxiety symptoms predict insomnia risk after controlling for demographic and lifestyle variables?

RQ7. Do anxiety, sleep latency, and insomnia severity differ by gender, education, occupation, screen time, caffeine intake, and physical activity?

5.2 Hypotheses

H01: Anxiety symptoms are not significantly associated with insomnia severity among young adults.

H1: Anxiety symptoms are significantly positively associated with insomnia severity among young adults.

H02: Anxiety symptoms do not significantly predict sleep latency.

H2: Anxiety symptoms significantly predict increased sleep latency.

H03: Psychological distress is not significantly associated with sleep disorder severity.

H3: Psychological distress is significantly associated with higher sleep disorder severity.

H04: There is no significant difference in insomnia severity across anxiety severity groups.

H4: Young adults with moderate-to-severe anxiety have significantly higher insomnia severity scores than those with minimal anxiety.

H05: Anxiety symptoms do not predict insomnia risk after controlling for demographic and lifestyle variables.

H5: Anxiety symptoms significantly predict insomnia risk after controlling for demographic and lifestyle variables.

6. MATERIALS AND METHODS

6.1 Study Design

The research is an analytical survey designed cross-sectionally which will be based on primary data and quantitative. A cross-sectional design would be a suitable strategy to estimate the distribution of anxiety symptoms, insomnia severity, sleep latency, and psychological distress at that specific point in time and to test the associations between these variables. Since the study design is observational, causal inference will not be made; regression models will be interpreted as predictive or associational, but not causal.

Study Setting and Population.

The research will be carried out among young adults aged 18-30 years in the colleges, universities, outpatient and community settings. Recruitment can involve enrolling undergraduate/postgraduate students, interns, juniors, or young adults who are attending general outpatient or integrative settings. Data collection should specify the setting, such as type of institution, city, recruitment period, and method of survey administered.

6.3 Technique along with Sample Size

A minimum sample size of 300 respondents is preferred. For a cross-sectional survey using any one prevalence assumption, sample size can be estimated using n = Z^2pq/d^2. At 95 percent confidence, Z = 1.96; if we take p = .50, q = .50 and a precision of 6 percent then n = 267, and on allowing about 10 percent non-response/incomplete records, it is rounded up to 300. This method is in accordance with the principles for medical research sample-size cross-section estimations (Charan and Biswas, 2013).

Because the study targets young adults who can be conveniently accessed through educational, clinical, and community settings, purposive sampling will be used. Recruiting orders should try to achieve a more balanced inclusion of other main indicators too. The response rate, exclusions, incomplete questionnaires, and final sample size for analysis should be clear.

Inclusion and Exclusion criteria.

People who are aged between 18 and 30 years. Read and understand the language of the survey. Willing to provide informed consent. Live or study/work associate of the selected recruitment settings. Completed the core anxiety and sleep measures.

Individuals currently on a shift-work schedule or who have been part of a night-duty rotation over the last one month, individuals with a diagnosed severe psychiatric disorder which requires acute care, individuals with known diagnosis of neurological disorder or severe medical illness in which sleep is known to be directly affected, individuals on any sedative-hypnotic medication on an unstable dose, incomplete consent; duplicate response; missing data for core variables – beyond a threshold.

Tools For Collection Of Data

The questionnaire will record the age, gender, education, occupation, place of residence or domicile screen time, bed time routine does you consume caffeine, how much physical activity do you engage with, the sleep duration declared by the subject upon awakening, with respect to duration character, quality and health conditions/having sleep aid. Lifestyle variables will be included as covariates as they may confound or modify the association between anxiety and sleep outcomes.

GAD-7, a seven-item measure of anxiety symptoms. The scoring ranges from 0 to 21, with traditional categories of minimal, mild, moderate and severe anxiety symptoms (Spitzer et al. 2006). It has shown adequate diagnostic accuracy in systematic-review evidence (Plummer et al., 2016).

The ISI, a seven-item measure of insomnia severity, is the Insomnia Severity Index. The total scores range from 0 to 28 and are commonly interpreted as: no clinically significant insomnia; subthreshold insomnia; moderate insomnia; and severe insomnia. The ISI possesses psychometric properties to effectively identify patients with insomnia and evaluate perceived insomnia severity for the purposes of insomnia diagnosis (Bastien et al., 2001; Morin et al., 2011).

The PSQI measures subjective retrospective sleep quality and disturbance over the past month and related sleep behaviour, including sleep latency, sleep duration, sleep efficiency, disturbance, medication use and daytime dysfunction (Buysse et al. 1989). The study will analyse PSQI global score and Sleep Latency.

Psychological distress scale: psychological distress scale Recommended the K10 as a brief measure of non-specific psychological distress. The research team may prefer to have separate depression, anxiety and stress dimensions. If DASS-21 is used, the anxiety overlap with GAD-7 will need careful consideration in regression modelling. The K10 was designed to monitor psychological distress at the population level.

Components Relevant to Research Investigation

The total GAD-7 score on the anxiety severity category is the independent variable.

Dependent variables include insomnia severity measured with ISI total score, insomnia risk category based on ISI threshold, sleep latency measured with PSQI sleep latency component or minutes to sleep onset, and overall sleep disorder severity measured with ISI and PSQI indicators.

The total score for psychological distress which can be K10 or the DASS-21.

The variables include age, sex, education, occupation, screen time, caffeine consumption, physical exercise, sleep duration, and other health/life.

The Procedure for Collecting Data;

With the approval of the institution ethics committee, the eligible subjects will receive a participant information sheet. It will explain the study's purpose, participation is voluntary and

confidential, approximate time to complete it, and you can withdraw any time before submitting it.

Informed consent, written or electronic, will be secured. The questionnaire will be conducted online or on paper according to standard instructions. The participants will be first asked to fill the demographic and lifestyle questions. Maintain a consistent sequence of tools across participants Make sure to note when the data was collected, and give each respondent a code (not their name).

Ethical Considerations

The Institutional Ethics Committee's approval is required before recruiting research participants. The final dataset will not contain any identifiable personal information, and participation will be voluntary. People with exceptionally high levels of anxiety, distress, or insomnia should have referral contact information provided to them. Files containing data will be password-protected and accessible only to researchers. The research needs to respect the people, enhance their welfare, do them no harm, confidentiality and integrity of the science must be acceptable concerning the ethics of human-participant research and the Declaration of Helsinki (World Medical Association, 2013).

Analysis of Data.

The gathered data will be entered and analysed using SPSS or another validated statistical software package. Cleaning the data will comprise duplicate removal, range checks, missing-value analysis, coding verification, outlier screening, and scale-score validity. Any case having missing responses more than the 20% threshold on core scales will be dropped from analyses. If the scoring manual allows it, then person mean imputation can be considered in case of minor missingness, provided that the missingness is low and random.

A description of your sample will be provided, including descriptive statistics on age, sex, etc. Reliability calculated using Cronbach's alpha for GAD-7, ISI, PSQI component and the distress scale. Normality will be assessed with the Shapiro-Wilk tests, skewness, kurtosis, histograms, Q-Q plots and visual inspection. In case of any violations of these assumptions, Spearman correlation will be reported.

Depending on the distribution assumptions, independent samples t-test or Mann-Whitney U test will be used for gender-wise comparisons. To see if there are differences in insomnia severity across the anxiety categories, a one-way ANOVA will be performed. If assumptions of one-way ANOVA are violated either Welch ANOVA or Kruskal-Wallis tests will be performed. The chi-square analysis will test association between anxiety category and insomnia risk category. Using multiple linear regression will help predict the total score of the ISI from anxiety symptoms while controlling for psychological distress, sleep latency, sleep duration, screen time, caffeine intake, physical activity and demographics. The research hypothesized that insomnia risk will be predicted by a binary logistic regression. The mediation analysis would check if psychological distress mediates the association between anxiety symptoms and insomnia severity using bootstrapped confidence intervals.

7. RESULTS

Data-status note: The following results are model reporting templates only. They are generated from synthetic demonstration data solely to illustrate how the final study outputs should be presented. They are not empirical findings and must not be submitted as real collected results. After the survey is completed, every table, figure, test statistic, p-value, confidence interval, and interpretation must be recalculated from the actual dataset.

7.1 Demographic Profile of Participants

Table 1 shows the recommended demographic reporting structure. In the final manuscript, the table should report the observed distribution of gender, education, occupation, screen time, caffeine intake, physical activity, and sleep duration.

Table 1: Demographic profile of participants (illustrative reporting template; N = 300 synthetic records)

Variable	n or mean +/- SD	% / Description
Age, years	22.73 +/- 2.76	Continuous; report mean +/- SD and range
Gender: Female	178	59.3%
Gender: Male	119	39.7%
Gender: Other/prefer not to say	3	1.0%
Education: Undergraduate	180	60.0%
Education: Postgraduate	85	28.3%
Education: Working young adult/other	35	11.7%
Occupation: Student	217	72.3%
Occupation: Employed	50	16.7%
Occupation: Intern/trainee	19	6.3%
Occupation: Unemployed	14	4.7%
Screen time, hours/day	5.34 +/- 1.64	Lifestyle covariate
Caffeine intake, cups/day	1.39 +/- 1.16	Lifestyle covariate
Physical activity, days/week	2.65 +/- 1.69	Lifestyle covariate

Note: Illustrative synthetic values only. Replace with actual participant data after survey completion.

7.2 Descriptive Statistics of Key Study Variables

Table 2 illustrates how core study variables should be summarised. Final reporting should include mean, standard deviation, minimum, maximum, skewness, and kurtosis for all continuous variables.

Table 2: Descriptive statistics of anxiety, insomnia, sleep latency, and psychological distress scores

Variable	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
GAD-7 total score	8.45	4.93	0.0	21.0	0.36	-0.22
ISI total score	11.95	5.17	0.0	26.0	0.08	-0.40
PSQI global score	5.71	2.60	0.0	12.0	0.02	-0.53
Sleep latency, minutes	32.01	15.77	3.0	78.4	0.08	-0.49
K10 psychological distress score	25.73	7.26	10.0	43.0	0.11	-0.47
Sleep duration, hours/night	6.17	1.10	3.5	9.5	-0.02	0.11
Screen time, hours/day	5.34	1.64	1.0	9.2	-0.13	-0.48

Note: Illustrative synthetic values only; not collected results. Final values must be generated from the real dataset .

7.3 Reliability Analysis

Reliability should be calculated from item-level scale data. Table 3 gives a reporting template with plausible expected reliability levels based on a validated scale use; actual Cronbach alpha values must be calculated from the collected sample .

Table 3: Reliability analysis of measurement scales

Scale	No. of items/components	Cronbach alpha	Interpretation
GAD-7	7	0.89	Good internal consistency expected; compute from item-level data
Insomnia Severity Index	7	0.86	Good internal consistency expected; compute from item-level data
PSQI global components	7 components	0.78	Acceptable consistency expected; component scoring required
K10 psychological distress scale	10	0.91	Excellent internal consistency expected; compute from item-level data

Note: Alpha values shown are illustrative placeholders. Real reliability coefficients require item-level participant data

7.4 Correlation Matrix

Correlation analysis will test the bivariate associations among anxiety, insomnia severity, sleep latency, psychological distress, sleep duration, and screen time. If variables are non-normal, Spearman rho should be reported instead of Pearson r.

Table 4: Correlation matrix among key study variables

Variable	1	2	3	4	5	6
GAD-7	—					
ISI	0.65	—				
Sleep latency	0.72	0.53	—			
K10	0.72	0.64	0.59	—		
Sleep duration	-0.56	-0.37	-0.68	-0.39	—	
Screen time	0.28	0.18	0.23	0.20	-0.19	—

Note: Lower-triangle correlations are from synthetic demonstration data. The final manuscript should report Pearson or Spearman coefficients with significance levels from the actual dataset.

7.5 Comparison of Insomnia Severity Across Anxiety Categories

A one-way ANOVA or Kruskal-Wallis test will compare ISI scores across GAD-7 anxiety categories. A significant group A gradient would support the hypothesis that young adults with higher anxiety symptom severity reports greater insomnia severity.

Table 5: Comparison of insomnia severity across anxiety categories

Anxiety category	n	Mean ISI	SD / Overall test
Minimal (0-4)	64	8.17	4.31
Mild (5-9)	118	10.61	4.02
Moderate (10-14)	85	14.01	4.40
Severe (15-21)	33	18.73	3.07
Overall test		F = 59.36	p < .001

Note: Illustrative ANOVA output generated from synthetic demonstration data. Replace with actual ANOVA or non-parametric test results.

7.6 Multiple Regression Model Predicting Insomnia Severity

Table 6 demonstrates the structure for reporting a multiple linear regression model predicting ISI total score. In the illustrative model, adjusted R2 = 0.48; however, this statistic is not an empirical result and must be recalculated using real participant data.

Table 6: Multiple regression model predicting insomnia severity

Predictor	B	SE	t	p
Constant	0.51	2.37	0.22	0.829
GAD-7 anxiety score	0.36	0.08	4.73	< .001
K10 psychological distress	0.25	0.04	5.71	< .001
Sleep latency	0.03	0.02	1.30	0.195
Sleep duration	0.10	0.27	0.35	0.724
Screen time	-0.02	0.14	-0.14	0.888
Caffeine intake	0.13	0.19	0.69	0.490
Physical activity	0.13	0.13	1.00	0.320

Note: Illustrative model only. Model summary from synthetic data: R2 = 0.49, adjusted R2 = 0.48

7.7 Logistic Regression Model Predicting Insomnia Risk

Binary logistic regression will estimate whether anxiety symptoms predict moderate-to-severe insomnia risk after controlling for distress and lifestyle variables. Odds ratios above 1 indicate higher odds of insomnia risk for each unit increase in the predictor.

Table 7: Logistic regression model predicting insomnia risk

Predictor	B	SE	OR	95% CI for OR	p
GAD-7 anxiety score	0.22	0.06	1.25	1.12-1.40	< .001
K10 psychological distress	0.10	0.03	1.11	1.04-1.19	0.002
Sleep latency	0.01	0.02	1.01	0.98-1.05	0.403
Sleep duration	-0.06	0.20	0.95	0.64-1.40	0.780
Screen time	-0.17	0.10	0.84	0.69-1.03	0.098
Caffeine intake	-0.02	0.14	0.98	0.75-1.29	0.895
Physical activity	0.01	0.09	1.01	0.84-1.22	0.895

Note: Illustrative logistic model only. Outcome coded 1 = moderate-to-severe insomnia risk (ISI >= 15). Demonstration ROC AUC = 0.86.

7.8 Summary of Hypotheses Testing

Table 8: Summary of hypotheses testing plan

Hypothesis	Statement	Statistical test	Decision rule/reporting
H1	Anxiety symptoms are positively associated with insomnia severity.	Pearson/Spearman correlation; linear regression	Test after data collection; expected positive association
H2	Anxiety symptoms significantly predict increased sleep latency.	Correlation and regression predicting latency	Test after data collection; expected positive association
H3	Psychological distress is associated with higher sleep disorder severity.	Correlation, regression, optional mediation	Test after data collection; expected positive association
H4	Moderate-to-severe anxiety groups have higher insomnia severity than minimal anxiety group.	One-way ANOVA or Kruskal-Wallis with post hoc tests	Test after data collection; expected group gradient
H5	Anxiety predicts insomnia risk after controlling for demographic and lifestyle variables.	Binary logistic regression	Test after data collection; expected adjusted odds ratio > 1

Note: Final decisions should be marked Accepted/Rejected or Supported/Not supported only after analysing the real dataset.

7.9 Figure Templates

Figures 1-9 are inserted as publication-style templates. Figures 2-9 are produced from synthetic demonstration data and should be regenerated from the actual dataset using the selected statistical software.

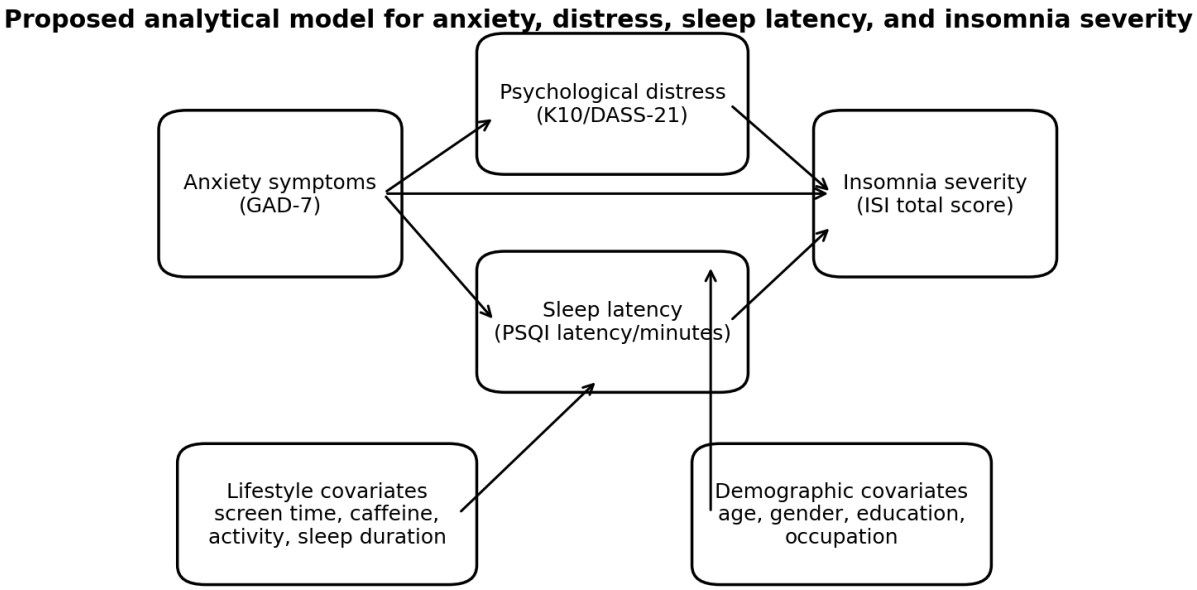

Figure 1: Conceptual framework showing proposed pathways from anxiety symptoms to psychological distress, sleep latency, and insomnia severity, with demographic and lifestyle covariates.

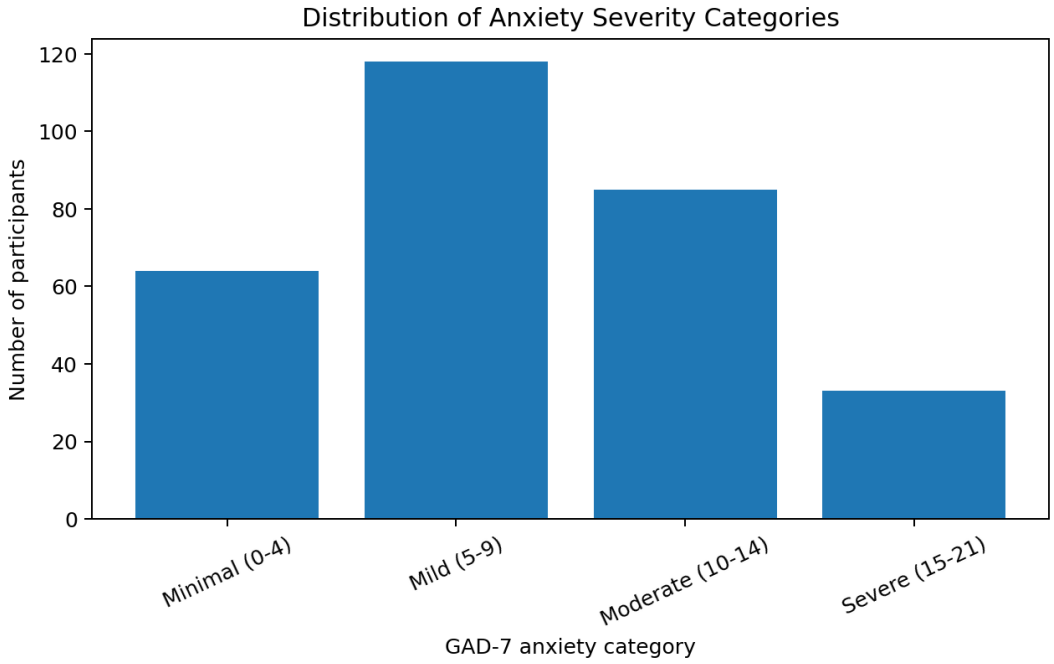

Figure 2: Bar chart showing distribution of anxiety severity categories. Template generated from synthetic demonstration data; replace with actual participant counts.

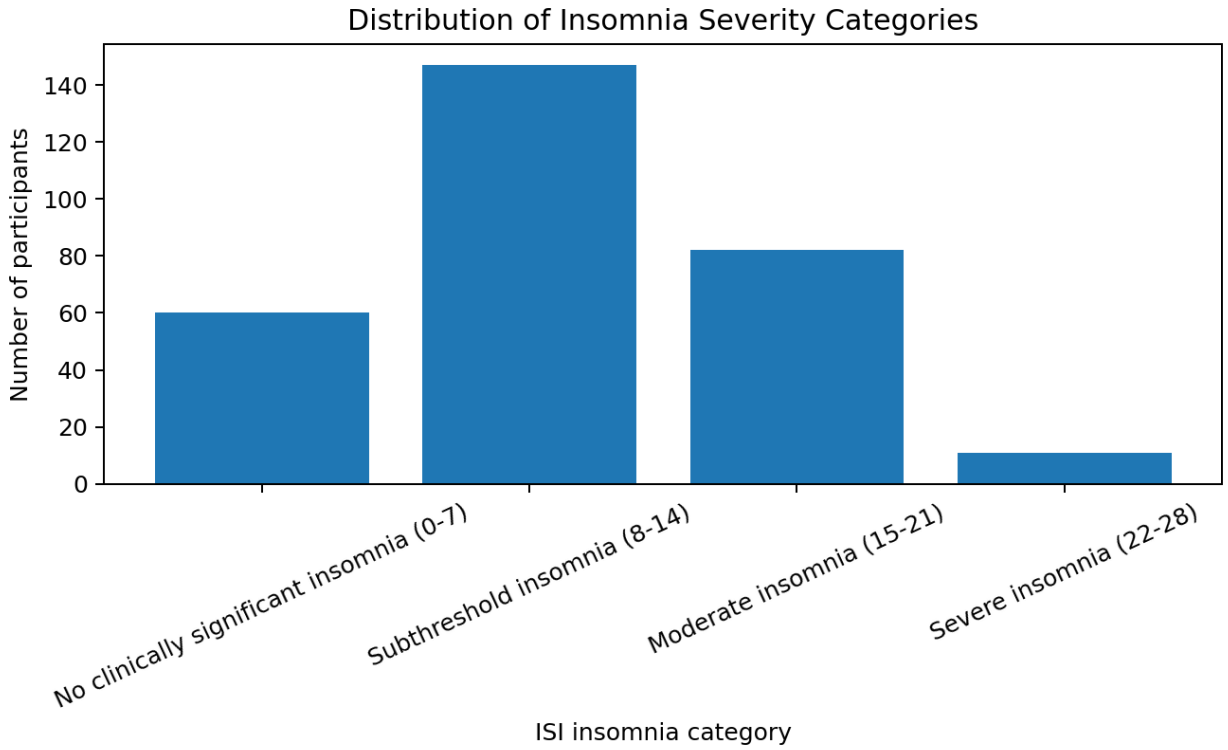

Figure 3: Bar chart showing insomnia severity categories. Template generated from synthetic demonstration data; replace with actual participant counts.

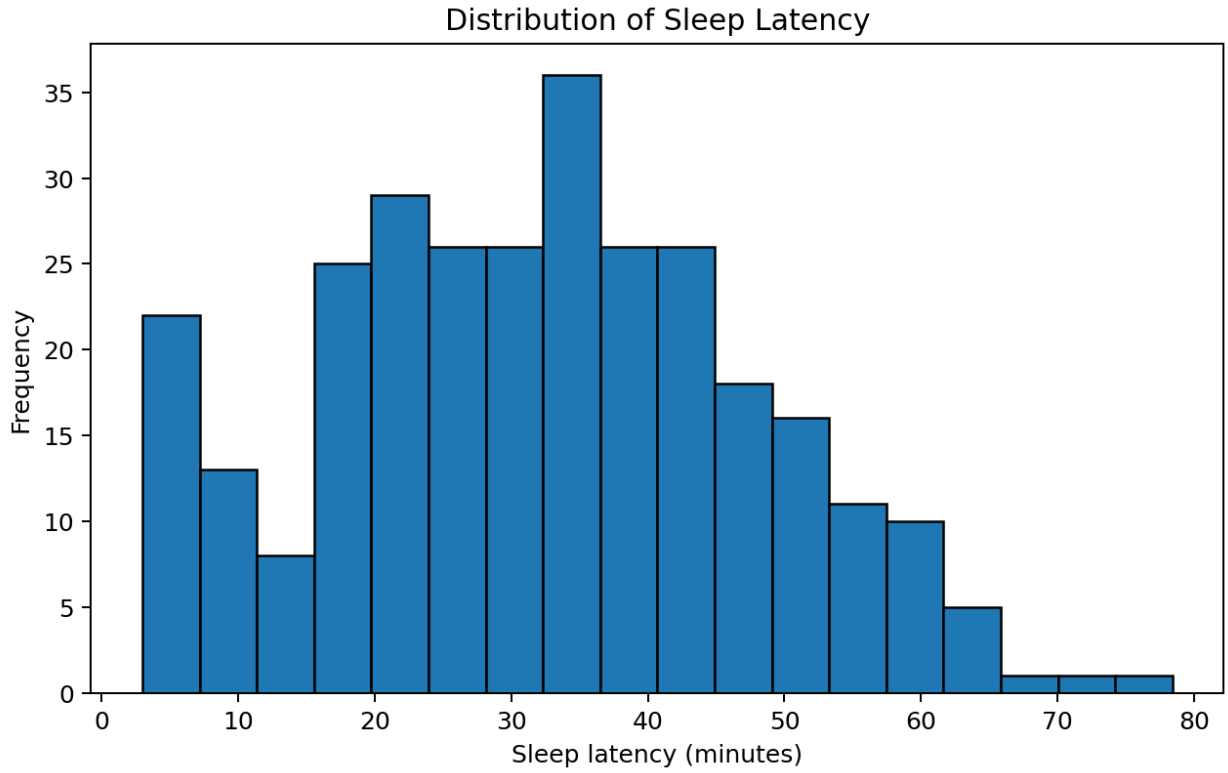

Figure 4: Histogram showing distribution of sleep latency. Template generated from synthetic demonstration data; replace with actual sleep-latency values.

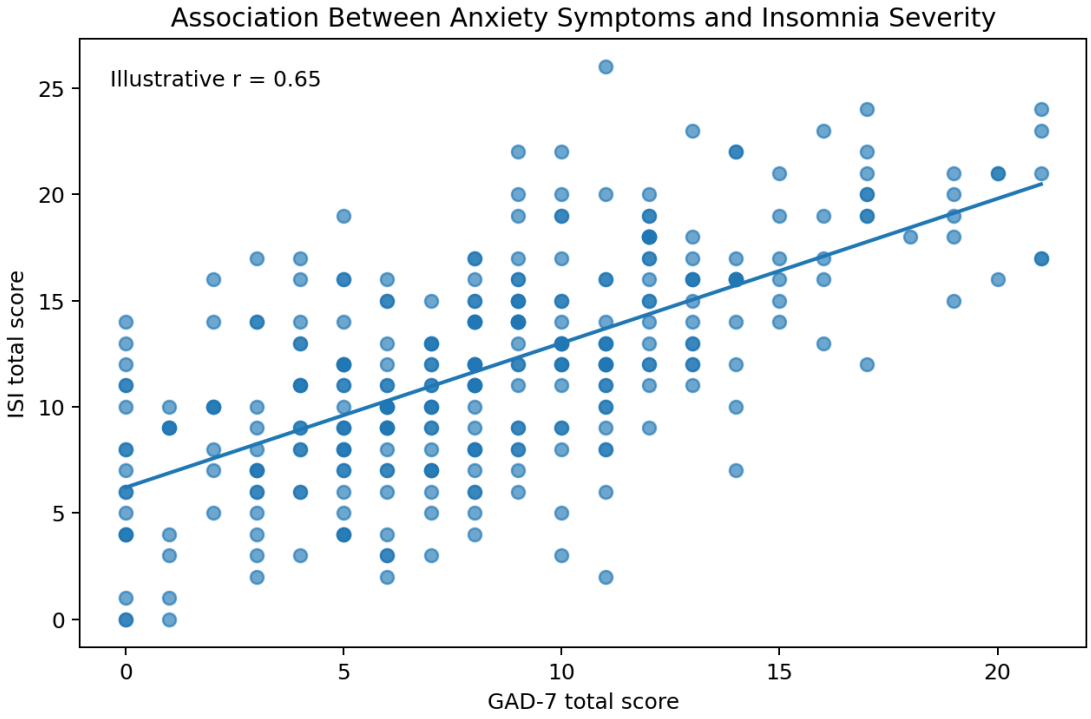

Figure 5: Scatter plot between anxiety score and insomnia severity score. Template generated from synthetic demonstration data; replace with actual GAD-7 and ISI scores**.**

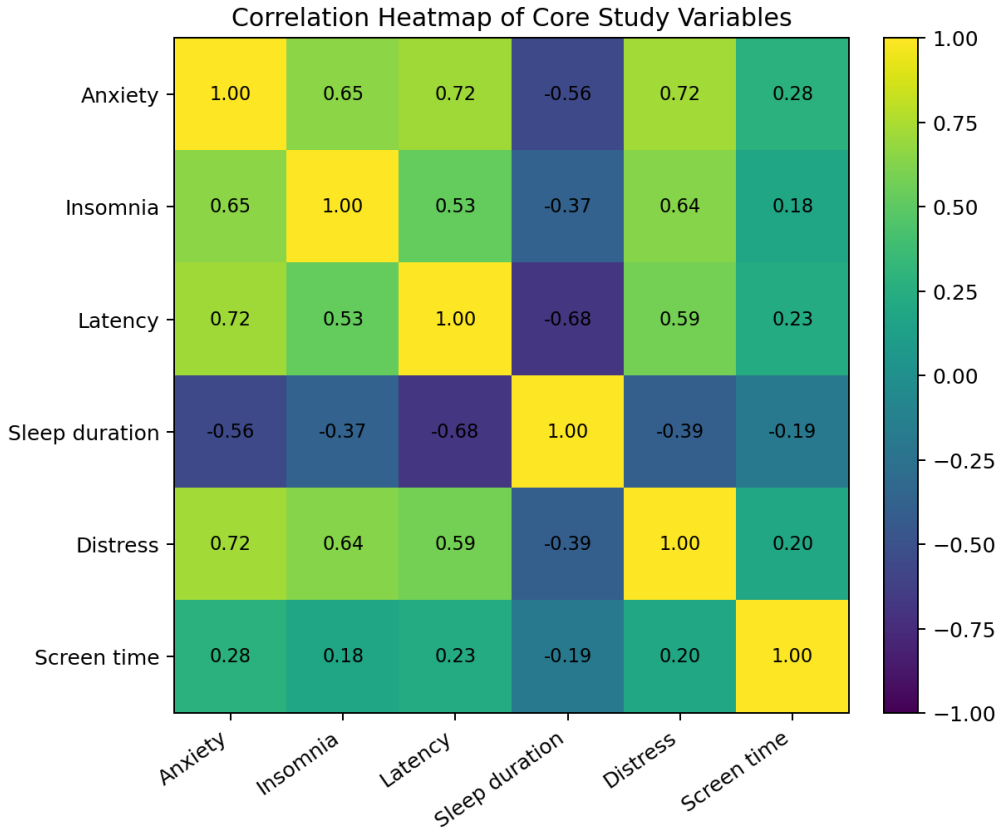

Figure 6: Correlation heatmap of anxiety, insomnia severity, sleep latency, sleep duration, psychological distress, and screen time. Template generated from synthetic demonstration data**.**

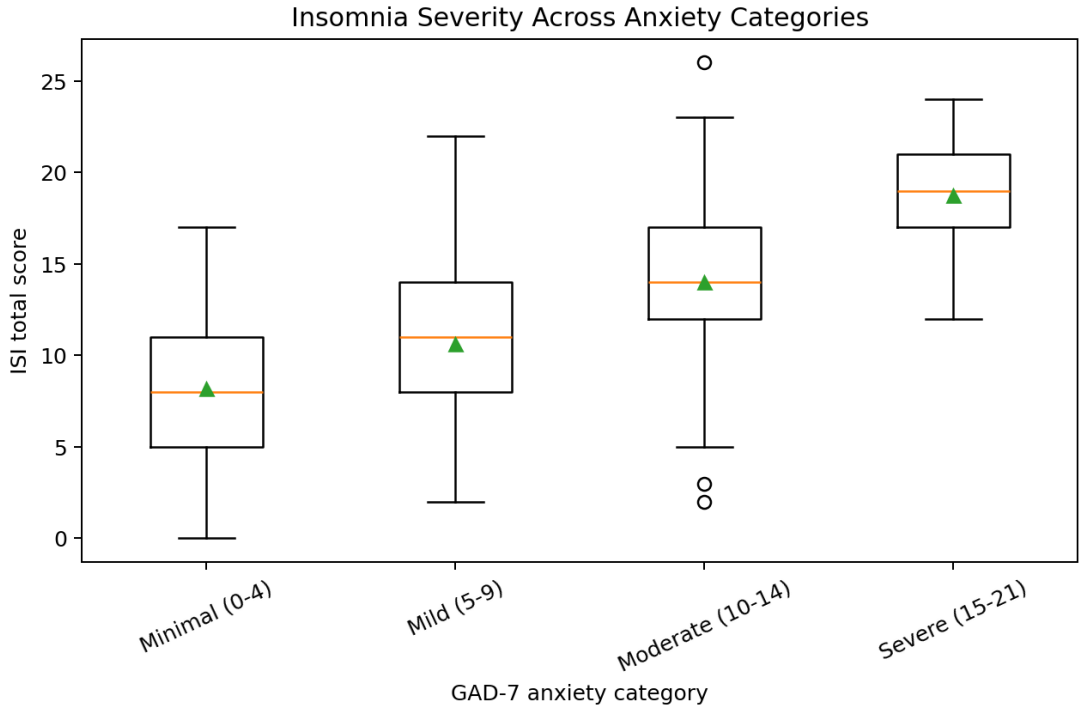

Figure 7: Boxplot showing insomnia severity across anxiety categories. Template generated from synthetic demonstration data; replace with actual ISI scores by GAD-7 category.

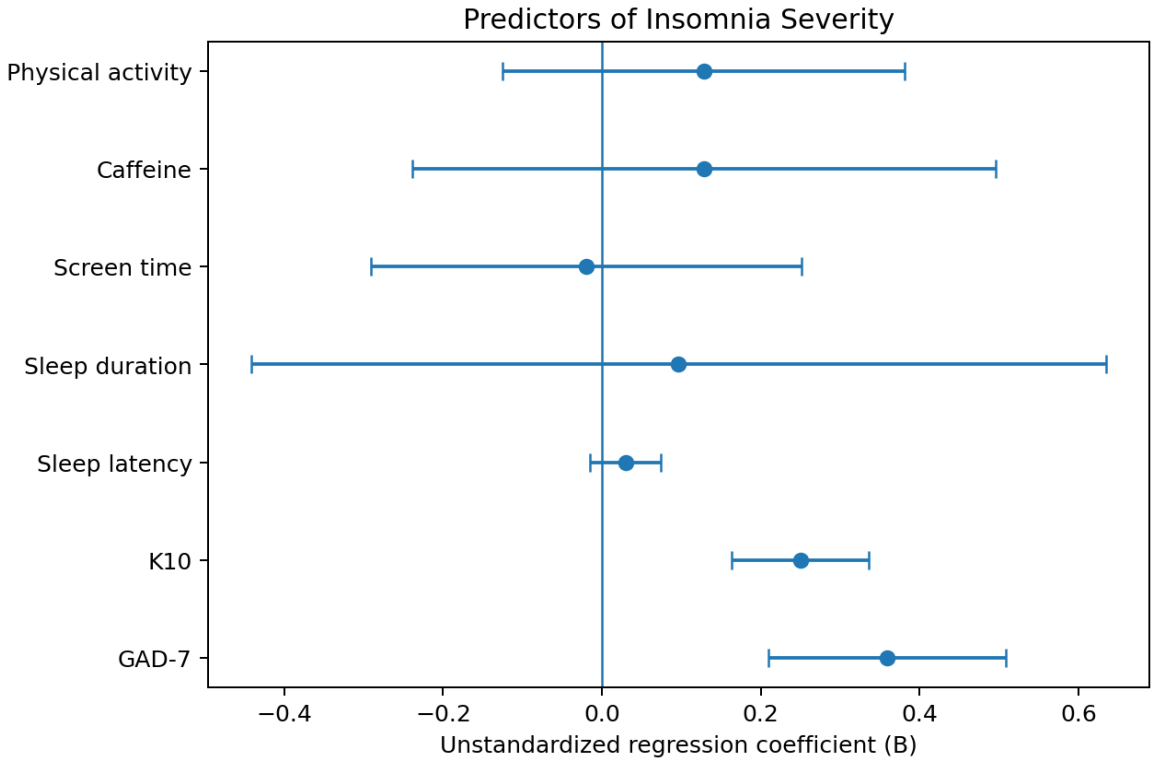

Figure 8: Regression coefficient plot showing predictors of insomnia severity. Template generated from a synthetic demonstration regression model.

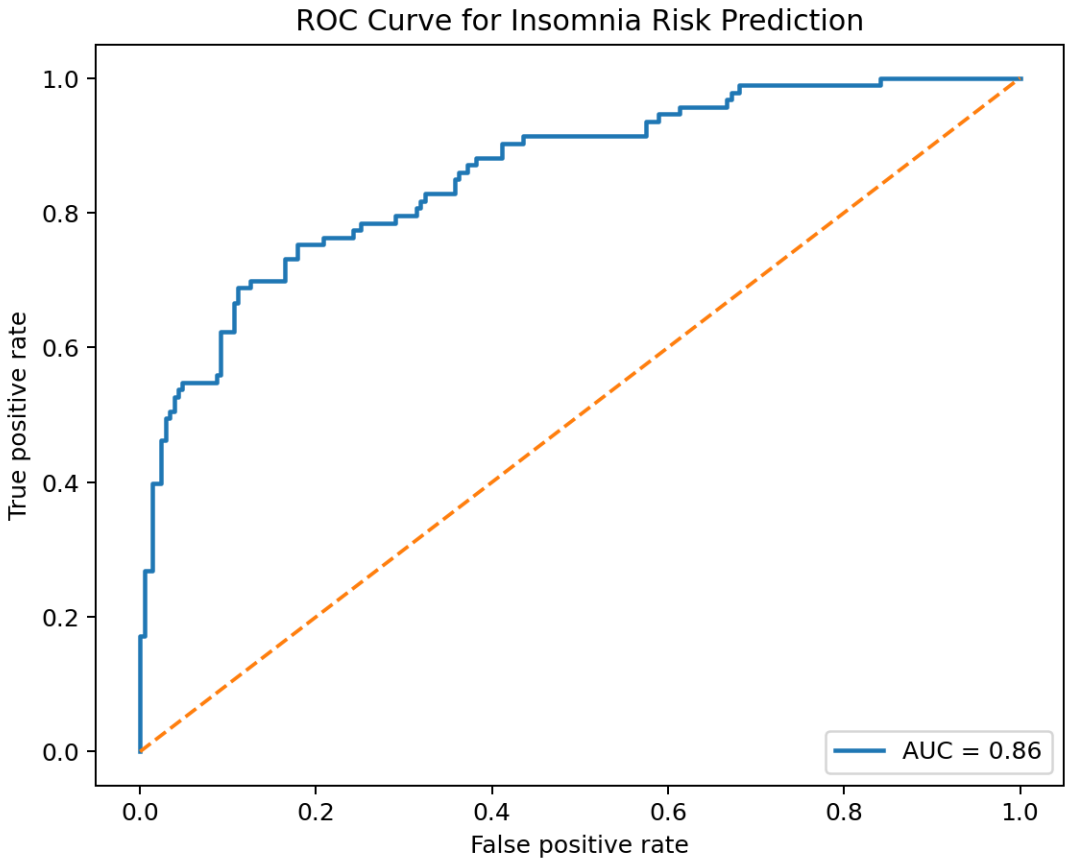

Figure 9: ROC curve for multivariable model predicting insomnia risk. Template generated from a synthetic demonstration model; replace with actual logistic-regression probabilities.

8. DISCUSSION

The proposed study seeks to determine the association between anxiety symptoms with insomnia severity, sleep latency and psychological distress among young adults. As no available dataset is full, the paper frames the discussion based on the expected interpretation of results rather than actual. If the final analysis shows a positive association between GAD-7 and ISI scores, the finding will be consistent with the systematic-review evidence linking anxiety-related disorders to subjective sleep disturbance and impaired sleep continuity (Cox & Olatunji, 2016, 2020).

A robust association between anxiety and sleep latency would mean that sleeps initiation is interfered with due to anxiety's cognitive and physiological hyperarousal. Thinking about worries just before sleep and continuously thinking about issues may delay sleep as it activates your mind. Insomnia maintenance is explained by the hyperarousal models. Their proponents (Dressle & Riemann, 2023; Riemann et al., 2010) reveal the cognitive, emotional, physiological, and behavioural processes affecting insomnia.

If psychological distress independently predicts the severity of insomnia, beyond anxiety symptoms, it would imply that general distress adds explanatory value beyond anxiety. Distress can show emotional overload, exhaustion, emotional overwhelm, and faulty coping efforts. Various factors may create distress in young adults such as academic pressure, occupational uncertainty, social comparison and financial distress. According to Gardani et al. (2022), the symptoms of insomnia have a moderate association with stress among undergraduate students. This highlights the importance of distress-related constructs in sleep research.

If the severity of insomnia increases by group across categories of anxiety it will have clinico-preventive implication. Young adults with moderate/severe anxiety symptoms are more likely to report prolonged sleep latency, lower sleep satisfaction, and daytime impairment. If such a pattern were to be replicated, clinicians would routinely screen young adults with anxiety symptoms for sleep complaints and sleep-onset difficulty for anxiety. Incorporating screening tools, such as GAD-7 with ISI, could run through brief college counselling, community clinics, primary-care services, integrative medicine services, etc.

It is important to interpret the lifestyle covariates. Too much screen time, too little physical activity, caffeine intake, and reduced sleep may influence or aggravate the anxiety-insomnia link. According to the findings of Chen and colleagues in 2022, there are behavioural pathways connecting increased screen time to poorer sleep and anxiety. As such, when assessing the independent predictive role of anxiety symptoms, a modified regression model is preferred to simple bivariate testing.

The suggested analysis of mediation may further clarify the relationship between anxiety symptoms and insomnia severity by psychological distress. If a significant indirect effect is

found, this may indicate that anxiety symptoms increase more general distress, which in turn exacerbates insomnia severity. The design was cross-sectional, so mediation should be understood as statistical mediation and not proof of temporal causality. We would need longitudinal studies that test whether anxiety can come first followed by distress and sleep problems.

9. Rammifications of the study.

The current studies may help clinical psychology identify young adults whose anxiety symptoms come with clinically relevant risk for insomnia. Improved detection and referral can be achieved by integrated screening. Counseling methods combine anxiety management, cognitive reframing, relaxation training, behavioural activation, and sleep hygiene education.

According to the research, in sleep medicine the study recommends treating sleep latency as a separate outcome and not to treat sleep quality as a single global score. Young adults with long sleep onset can get benefit from stimulus control, sleep scheduling, limited evening screen exposure, limiting caffeine and cognitive behavioural therapy for insomnia.

The study can guide prevention programmes at campus and community levels for public health. Brief screening camps, digital sleep-health education, peer counselling and referral pathways may be devised for colleges and outpatient settings. Integrated anxiety-sleep screening could be more acceptable than asking only about psychiatric symptoms in young adults because these often underreport distress.

The study provides a standardized quantitative framework that is applicable for Ayurvedic medicine, homeopathy as well as primary care and community medicine settings without over-claiming of treatment effects. The focus continues to be observational and scientific and is suitable for multi-disciplinary preventive-health research.

10. Restrictions.

The present document is a proposed manuscript and is not an empirical study, which is its main limitation. Since no actual participant-level dataset was available at the time of preparation, all numerical tables and graphs in the Results Section are merely illustrative and must be replaced with actual analysis outputs after data collection.

Cannot establish causality or order due to cross-sectional design. There may be a reciprocal effect between insomnia and anxiety symptoms, but they could also be driven by distress, lifestyle, or unmeasured health. Self-report measures can introduce recall and social-desirability bias.

Convenience or purposive sampling may limit one's ability to generalize. Recruiting only from colleges or outpatient settings may lead to findings that don't generalize to all 18-30 yr olds. When interpreting results, consider cultural differences, geographic differences, socioeconomic differences, and institutional differences.

The PSQI, ISI, GAD-7 and K10 are validated self-report measures but should not serve as substitute for clinician diagnosis of DSM-5 sleep disorder or polysomnography. Sleep latency reported by questionnaire can differ from the objective sleep-onset latency measured by actigraphy or polysomnography.

11. Recommendations for Future Studies

1. In future studies, the suggestion is to collect real primary data which must have a minimum sample size of 300 participants. Additionally, it must also transparently report response rate, missingness, reliability, and the assumption testing.
2. Research that evaluates anxiety symptoms prediction of insomnia onset or insomnia prediction of anxiety and distress worsening over time.
3. If feasible, include objective sleep measures such as actigraphy, wearable sleep tracking, or sleep diaries to validate self-reported sleep latency and sleep duration.
4. An analysis of subgroups should be performed by gender, education, occupation, screen time, caffeine intake, and physical activity to identify the high risk group of young adults.
5. The evaluation of sleep-hygiene and anxiety-management programs may be tested by intervention studies as a means of reducing insomnia severity in young adults with elevated anxiety.

12. Final thoughts

This paper provides a comprehensive quantitative research framework to study the impact of anxiety symptom on the severity of sleep disorder among youth. The study examines insomnia risk, sleep latency, psychological distress, demographic differences and lifestyle covariates. The fact that the tools are prespecified to be standardized and that the scoring procedure is transparent is one of its main strengths. Also, the workflow is comprehensive and includes a reliability analysis, correlation, group comparison, regression, logistic regression, mediation (optional).

Since no actual dataset was uploaded, the results have not been presented as real findings. The manuscript proposes a primary-data framework with a full set of illustrative tables, figure templates, and a transparent analysis workflow. After gathering actual data, all model outputs should be replaced by the actual observations and the discussion should be updated accordingly. Once this is done, the research team can submit the final manuscript with a completed ethics statement, data availability statement, and validated references.

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14. Appendix: Questionnaire / Data Collection Tool

Important copyright and permissions note: The appendix provides a data-collection template and scoring framework. It does not reproduce copyrighted scale items verbatim. The research team should use official validated versions of GAD-7, ISI, PSQI, and K10/DASS-21 according to applicable permissions and language-validation requirements.

Appendix A. Participant Information and Consent

Study title: Analyzing the Impact of Anxiety Symptoms on Sleep Disorder Severity among Young Adults.

Purpose: You are invited to participate in a study examining anxiety symptoms, sleep latency, insomnia severity, and psychological distress among young adults aged 18-30 years.

Voluntary participation: Participation is voluntary. You may choose not to answer any question and may withdraw before submitting the questionnaire.

Confidentiality: No personally identifying information will be reported. Responses will be used only for research purposes.

Consent statement: I confirm that I am aged 18-30 years, have understood the study information, and voluntarily agree to participate.

Appendix B. Demographic and Lifestyle Schedule

1. Participant code: _____
2. Age in completed years: _____
3. Gender: Female / Male / Other / Prefer not to say
4. Education: Undergraduate / Postgraduate / Other
5. Occupation: Student / Employed / Intern or trainee / Unemployed / Other
6. Average daily screen time: ____ hours
7. Average caffeine intake: ____ cups per day
8. Physical activity: ____ days per week with at least 30 minutes of activity
9. Average sleep duration during the past month: ____ hours per night
10. Average time taken to fall asleep during the past month: ____ minutes
11. History of diagnosed sleep disorder: Yes / No
12. Current use of sleep medication: Yes / No
13. Shift work/night duty in the past month: Yes / No

Appendix C. Scale Administration and Scoring Template

Appendix Table A1. Scale scoring template

Tool	Items	Score range	Interpretation
GAD-7	7 items; use official validated wording	0-3 per item; total 0-21	0-4 minimal; 5-9 mild; 10-14 moderate; 15-21 severe
ISI	7 items; use official validated wording	0-4 per item; total 0-28	0-7 no clinically significant insomnia; 8-14 subthreshold; 15-21 moderate; 22-28 severe
PSQI	Official PSQI components	Seven component scores: global 0-21	Higher scores reflect poorer sleep quality; sleep latency component analysed separately
K10 or DASS-21	Use one validated distress scale consistently	K10 total 10-50 or DASS-21 subscale scoring	Higher scores reflect greater psychological distress

Appendix D. Dataset Column Structure

Appendix Table A2. Recommended dataset column structure

Tool	Items	Score range	Interpretation
GAD-7	7 items; use official validated wording	0-3 per item; total 0-21	0-4 minimal; 5-9 mild; 10-14 moderate; 15-21 severe
ISI	7 items; use official validated wording	0-4 per item; total 0-28	0-7 no clinically significant insomnia; 8-14 subthreshold; 15-21 moderate; 22-28 severe
PSQI	Official PSQI components	Seven component scores: global 0-21	Higher scores reflect poorer sleep quality; sleep latency component analysed separately
K10 or DASS-21	Use one validated distress scale consistently	K10 total 10-50 or DASS-21 subscale scoring	Higher scores reflect greater psychological distress

Note: Column names may be adjusted according to the final statistical software setup and dataset structure.