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The Relationship Between Academic Stress Levels and Insomnia among University Students

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Abstract:
Academic stress is a significant issue university students face, often arising from academic pressures such as deadlines, exams, and high expectations. These pressures disrupt mental and physical balance, leading to issues like insomnia, which can negatively impact students' health and academic performance. This study examines the relationship between academic stress levels and insomnia among university students, seeking to provide insights and practical recommendations for managing stress and improving sleep quality. A comprehensive review of 15 studies was conducted to analyze the connection between academic stress and insomnia. The research focused on various contributing factors, including academic workloads, social support, and environmental influences such as the COVID-19 pandemic. The findings indicate a significant relationship between academic stress and insomnia. Heavy academic workloads, tight exam schedules, and high faculty and parent expectations contributed significantly. Additionally, factors such as depression, anxiety, poor sleep hygiene, excessive digital device use, and unsupportive family dynamics were found to exacerbate sleep disturbances. The COVID-19 pandemic further intensified academic stress, leading to worsened sleep quality. While some studies found no direct correlation, they suggested that coping mechanisms, social support, and sleep habits might mitigate the impact of stress on sleep. Academic stress contributes significantly to insomnia among university students, affecting their quality of life and academic performance. Key triggers include heavy workloads, exams, and high expectations, worsened by poor sleep habits and technology dependence. The COVID-19 pandemic has further intensified these issues. Interventions in stress management, sleep habits, and mental health support are essential, with further research needed to explore the role of social support in reducing insomnia.

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INTRODUCTION

Stress is a condition that arises due to environmental changes perceived as a threat or disruption to an individual's mental balance (Cragoe et al., 202; Kurniyawan et al., 2023;). Additionally, stress is a physical and emotional reaction (mentally/psychologically) reaction when changes in the environment require an individual to adjust (Barthel et al., 2025; Novelia et al., 2024). Among university students, stress often stems from academic pressures, such as assignment deadlines, challenging exams, and high expectations for achievement. These pressures can disrupt the mental and physical balance, leading to issues like insomnia, further exacerbating stress (Ramos-Vera et al., 2024; Cheah, 2024). This problem is a significant concern as it can negatively impact students' health and academic performance.

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Academic pressure has become a global issue affecting students across the world. Academic stress is a condition of psychological or emotional pressure experienced by students, which can negatively impact their sleep quality. One of the triggers is academic stress, which affects students' emotional, mental, and physical well-being and academic performance (Steare et al., 2023; Labrague et al., 2024). Psychologically, stress often leads to disturbances in a person's emotional stability. In a physical context, stress can manifest through symptoms such as muscle tension, chronic fatigue, and sleep disturbances. These physical symptoms are often closely linked to the psychological effects of stress and can worsen the situation if not properly managed (Rondhianto et al., 2024; O'Riordan et al., 2024).

Chronologically, academic stress often peaks at certain times, such as before final exams or when significant assignments must be completed within a short period. Most students are less motivated when experiencing academic stress (Bouraqqadi et al., 2025; Qi et al., 2024; Moreno et al., 2023). When students fail to manage this stress, sleep disturbances such as insomnia often occur. Insomnia lowers students' quality of life and negatively impacts their cognitive abilities, concentration, and academic productivity. The condition of insomnia can lead to stress, which may increase prolonged feelings of anxiety (Osorno et al., 2025; Zagaria & Ballesio, 2024). Therefore, understanding the relationship between academic stress and insomnia is crucial for finding practical solutions.

Therefore, the author has written an article titled "The Relationship Between Academic Stress Levels and Insomnia Among University Students ." This article examines the relationship between academic stress levels and insomnia among students. This research provides new insights and practical recommendations for managing stress and improving students' sleep quality.

METHOD

This research uses the literature review method. Literature sources were collected through database searches such as Pubmed, SpringerLink, ScienceDirect, and Google Scholar for publications between 2019 and 2024. The search keywords were in English to find relevant literature. The literature search used the keywords 'Academic stress," insomnia,' AND 'University Student.' The journal search process begins by identifying specific keywords. At the database search stage, 215,839 journals matched the keywords found. The next stage is to filter with the provisions of articles according to the topic, conference proceedings, articles using English and Indonesian, and articles have a range of years 2019-2024; 25 articles have met the specified criteria and are considered suitable for further research. After that, the eligibility test was carried out with the provisions that the respondents were students, the relationship between insomnia and stress was discussed, and 15 eligible journal articles were obtained. The results of the screening search are shown in the PRISMA section below.

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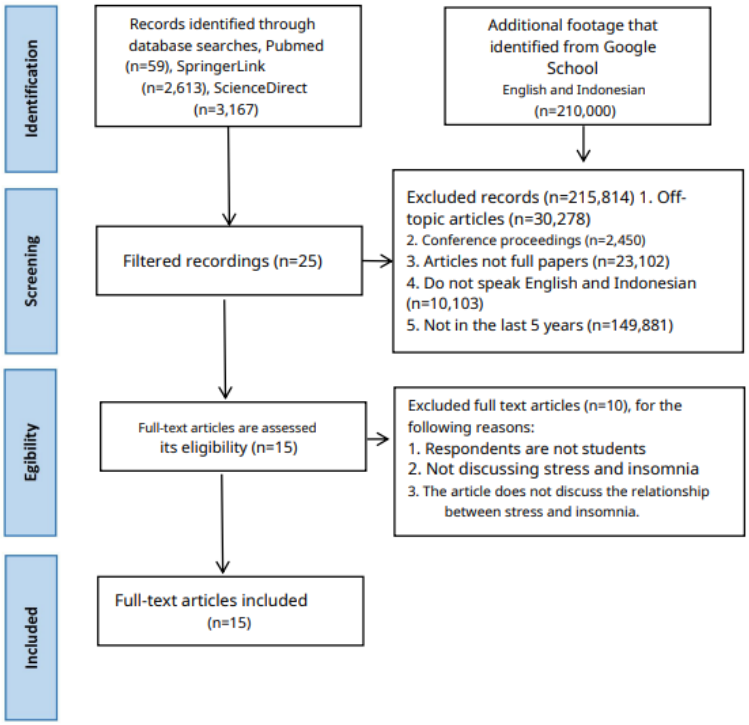

Figure 1. PRISMA Workflow

RESULT

After analyzing various studies and articles, it was found that most studies, including those by Maqbali et al. (2023) and Carrión-Pantoja et al. (2022), demonstrated a significant relationship between academic stress and insomnia among university students. Specifically, nine studies confirmed this connection, highlighting that increased academic pressure correlates with higher levels of insomnia. On the other hand, six studies, such as those by Alotaibi et al. (2020) and Bodys-Cupak et al. (2022), either found no significant relationship or suggested that other factors moderated the link between stress and sleep disturbances. For more detailed insights, including individual study objectives, methods, and results, please refer to Table 1, which outlines the findings from the analyzed literature.

Table 1. Characteristic Founding

No	Title	Author	Year	Nations	Design
1.	Fear, stress, anxiety, depression, and insomnia related to COVID-19 among undergraduate nursing students: An international survey	Maqbali et al.,	2023	Saudi Arabia, Oman, the United Kingdom, and the United Arab Emirates.	Cross-sectional, multicenter electronic survey
2.	Insomnia and Alexithymia in Chinese Adolescents with Major Depressive Disorder: A Cross-Sectional Study of Sex Differences and Associations	Yang et al.	2024	China	Cross-sectional study
3	Insomnia as a Mediator in the Relationship Between Stress and Anxiety Among University Students	Manzar., et al	2021	Ethiopia	Cross-sectional study

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No	Title	Author	Year	Nations	Design
4.	Insomnia symptoms, sleep hygiene, mental health, and academic performance in Spanish university Students: A cross-sectional study	Carrión-Pantoja., et al	2022	Spain	Cross-sectional study
5.	Intra-individual impact of the COVID-19 pandemic on mental health and sleep in young adults	Kelly et al.	2022	New York	A retrospective study using a “natural intervention” approach, comparing pre and mid-pandemic metrics.
6.	Sleep quality, stress level, and COVID-19 in university students; the forgotten dimension.	Eptehal Dongol, et al.	2022	Egypt	Cross-sectional study
7.	Sleepless in Solitude—Insomnia Symptoms Severity and Psychopathological Symptoms among University Students during the COVID-19 Pandemic in Poland	Karolina Fila-Witecka, et al	2022	Poland	Cross-sectional observational study
8.	Stress and Sleep Disorders in Polish Nursing Students During the SARS-CoV-2 Pandemic	Iwona Bodys-Cupak, et al	2022	Poland	Cross-sectional study
9.	The Effect of Perceived Stress on Insomnia Symptoms Among College Students: A Moderated Mediation Model	Zengyan Lu et al.	2024	China	Cross-sectional study
10.	The relationship between sleep quality, stress, and academic performance among medical students	Abdullah D. Alotaibi, et al	2020	Arab Saudi	Cross-sectional study
11.	The Relationship between Stress Levels and Insomnia Levels	Nurfachanti Fattah, et al	2023	Indonesia	Descriptive analytics with a cross-sectional design
12.	Hubungan Tingkat Stress Dengan Insomnia Pada Mahasiswa	Ruswati et al.	2023	Indonesia	Literature review (cross-sectional)
13.	Hubungan Stres Akademik Terhadap Insomnia Dimasa Pandemi Covid -19 Pada Mahasiswa	Nur Fitri, Nida Amalia	2021	Indonesia	Quantitative (Cross - sectional)
14.	Hubungan Tingkat Stres Dengan Kejadian Insomnia Pada Mahasiswa Prodi Keperawatan	Nofrida Saswati, Maulani	(2020).	Indonesia	Quantitative, Cross-Sectional
15.	Hubungan Tingkat Stres Dengan Kejadian Insomnia Pada Mahasiswa Keperawatan Tingkat Awal	Pratiwi Gasril, et al	2024	Indonesia	Correlative Descriptive, Cross Sectional

Table 2. Results Founding

No	Title	Author	Objective	Measurement	Subject	Result
1.	Fear, stress, anxiety, depression, and insomnia related to COVID-19 among undergraduate nursing students: An international survey	Maqbali et al., (2023)	To assess levels of fear, stress, anxiety, depression, and insomnia among nursing students two years after the onset of the COVID-19 pandemic	Electronic surveys using validated scales.	918 undergraduate nursing students from Saudi Arabia, Oman, UK, and UAE	High prevalence of stress (91.6%), anxiety (69.1%), depression (59.8%), and insomnia (73.2%)
2.	Insomnia and Alexithymia in Chinese Adolescents with Major Depressive Disorder: A Cross-Sectional Study of Sex Differences and Associations	Yang et al. (2024)	To explore the association between insomnia and alexithymia in adolescents with Major Depressive Disorder (MDD) and examine sex differences	Self-reported scales (TAS-20, insomnia) found significant links between alexithymia and insomnia in females.	329 adolescent patients with MDD from seven hospitals in Anhui Province, China	High prevalence of insomnia (78.1%). Alexithymia was associated with insomnia in female patients but not male patients
3	Insomnia as a Mediator in the Relationship Between Stress and Anxiety Among University Students	Manzar., et al (2021)	To examine the role of insomnia as a mediator between stress and anxiety among university students	Scales (LSEQ-M, PSS-10, GAD-7)	475 students, average age 21.1 years	Insomnia mediated the relationship between stress and anxiety; prevalence of insomnia was 43.6%, anxiety 21.9%
4.	Insomnia symptoms, sleep hygiene, mental health, and academic performance in Spanish University Students: A cross-sectional study	Carrión-Pantoja., et al (2022)	This study explored the prevalence of insomnia symptoms and their relationship with sleep hygiene, mental health, and academic performance among university students in Spain.	Surveys linked poor sleep hygiene, depression, stress, and anxiety	The sample consisted of 582 students from the University of Granada, Spain	About 39.7% of students reported insomnia symptoms. Regression analysis revealed that depression, stress, anxiety, and poor sleep hygiene were significant predictors of insomnia symptoms. Additionally, insomnia symptoms, poor sleep efficiency, and depression were strongly associated with lower academic performance.

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No	Title	Author	Objective	Measurement	Subject	Result
5.	Intra-individual impact of the COVID-19 pandemic on mental health and sleep in young adults	Kelly et al. (2022)	The study aimed to evaluate the intra-individual impact of the COVID-19 pandemic on mental health and sleep among university students, comparing pre-pandemic and mind pandemic date.	Surveys and Fitbit tracked mental health and sleep	The participants were 23 university students from Colgate University, aged 18-21, who were previously part of a sleep and mood study conducted in the Fall of 2019 and agreed to participate in a follow-up during the Fall of 2020.	The study found significant mental health and sleep changes in university students during the COVID-19 pandemic. About 78% reported increased stress and anxiety, with depression and anxiety scores rising notably. Sleep patterns also worsened, with 68% sleeping less and 59% reporting poorer sleep quality. Sleep disturbances were strongly linked to higher anxiety and depression, with reduced REM and deep sleep further exacerbating mental health issues.
6.	Sleep quality, stress level, and COVID-19 in university students; the forgotten dimension.	Eptehal Dongol, et al., (2022)	Examined the impact of COVID-19 on stress, sleep quality, and insomnia among students of South Valley University in Egypt during the quarantine period.	Perceived Stress Scale (PSS-10), Athens Insomnia Scale (AIS), MiniCOPE questionnaire	2,474 South Valley University students, 60% female, 40% male. 75% from non-science faculties.	24.5% had high stress, 31.3% had clinical insomnia, and 79.3% had poor sleep quality. Gender, chronic diseases, and caffeine habits influenced the results.
7.	Sleepless in Solitude—Insomnia Symptoms Severity and Psychopathological Symptoms among University Students during the COVID-19 Pandemic in Poland	Karolina Fila-Witecka, et al., (2022)	Examining the severity of insomnia and its association with psychopathology symptoms, PTSD, and behavioral factors during the COVID-19 pandemic in Poland.	Athens Insomnia Scale (AIS), PTSD CheckList (PCL-5), psychometric tests	1111 university students in Poland. 75.79% female, average age 22.2 years.	More than 50% of university students experience sleep disturbances. Moderate to severe insomnia symptoms were found in 21.6%. There is a positive association between insomnia and PTSD, as well as behaviors such as increased substance use and decreased physical activity.

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No	Title	Author	Objective	Measurement	Subject	Result
8.	Stress and Sleep Disorders in Polish Nursing Students During the SARS-CoV-2 Pandemic	Iwona Bodys-Cupak, et al., (2022)	Assessing stress levels, sleep disturbances, and ways of coping with stress in nursing students during the SARS-CoV-2 pandemic	Perceived Stress Scale (PSS-10), Athens Insomnia Scale (AIS), MiniCOPE questionnaire	397 mahasiswa keperawatan dari dua universitas di Polandia	66% experienced high stress, and 56.7% had the possibility of insomnia. Sleep disorders are more common among students who work in COVID-19 hospitals or have families of medical personnel.
9.	The Effect of Perceived Stress on Insomnia Symptoms Among College Students: A Moderated Mediation Model	Zengyan Lu, et al., (2024)	Investigating the relationship between perceived stress and insomnia symptoms in university students.	Pittsburgh Sleep Quality Index (PSQI), Kessler Psychological Distress Scale (K10), Grade Point Average (GPA)	748 college students (M = 20.59, SD = 2.65)	Perceived stress positively predicts insomnia symptoms; FoMO and cell phone dependence act as mediators; Environmental sensitivity moderates the relationship.
10.	The relationship between sleep quality, stress, and academic performance among medical students	Abdullah D. Alotaibi, et al., (2020)	Assessing sleep quality and psychological stress among medical students and the relationship between sleep quality, stress, and academic performance.	Pittsburgh Sleep Quality Index (PSQI), Kessler Psychological Distress Scale (K10), Grade Point Average (GPA)	282 medical students	77% of participants reported poor sleep quality; 63.5% experienced psychological stress; there was no significant relationship between sleep quality or stress and academic performance.
11.	The Relationship between Stress Levels and Insomnia Levels	Nurfachanti Fattah, et al., (2023)	To determine the relationship between stress levels and insomnia in medical students at the Indonesian Muslim University	DASS questionnaire and KSPBJ-IRS questionnaire	Medical students of UMI, classes of 2018, 2019, and 2020 (n=527)	A significant relationship was found between stress levels and insomnia ($p<0.000$, $r=0.706$). The higher the stress level, the greater the likelihood of insomnia.
12.	Hubungan Tingkat Stress Dengan Insomnia Pada Mahasiswa	Ruswati, et al., (2023	To examine the relationship between stress levels and insomnia in students	Literature review of 5 journals using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method	5 relevant journals (students from various universities)	A significant relationship was found between stress levels and insomnia with $p < 0.05$. Higher stress levels are associated with a higher risk of insomnia.

No	Title	Author	Objective	Measurement	Subject	Result
13.	Hubungan Stres Akademik Terhadap Insomnia Dimasa Pandemi Covid -19 Pada Mahasiswa	Nur Fitri, Nida Amalia., (2023)	To explain the relationship between academic stress and insomnia during the Covid-19 pandemic among students	Questionnaire on the Relationship between Academic Stress and Insomnia	187 8th-semester students from UMKT, UNMUL, and UWGM in Samarinda	A significant relationship was found between academic stress and insomnia with p < 0.05. Higher academic stress levels were associated with a higher risk of insomnia.
14.	Hubungan Tingkat Stres Dengan Kejadian Insomnia Pada Mahasiswa Prodi Keperawatan	Nofrida Saswati, Maulani., (2020)	To determine the relationship between stress levels and insomnia incidence among nursing students.	Kessler Psychological Distress Scale and KSPBJ Rating Scale questionnaires	33 nursing students	A significant relationship exists between stress levels and insomnia (p-value 0.000 < 0.05, correlation coefficient 0.850).
15.	Hubungan Tingkat Stres Dengan Kejadian Insomnia Pada Mahasiswa Keperawatan Tingkat Awal	Pratiwi Gasril, et al., (2024)	To determine the relationship between stress levels and the incidence of insomnia in early nursing students.	Kessler Psychological Distress Scale and Insomnia Rating Scale questionnaires	50 nursing students	10% of students were not stressed, 40% had mild, 32% moderate, and 18% severe. 4% had no insomnia, 54% mild, 20% moderate, and 22% severe. A significant relationship was found (p-value 0.001)

DISCUSSION

This study reveals a significant relationship between academic stress and insomnia among university students, supported by findings from 15 analyzed studies. Stress is a condition that arises due to environmental changes perceived as threatening or disrupting an individual's mental balance. An imbalance between the pressures experienced by an individual leads to stress, where the individual is unable to cope and requires additional energy to neutralize its effects. Stress can impact hormonal balance in the body. Individuals experiencing stress from life pressures will exhibit various psychological responses, potentially causing cognitive, emotional, and social behavioral disturbances (Kurniyawan et al., 2023). Maqbali et al. (2023) reported that 73.2% of nursing students experienced insomnia, with academic stress being a major contributing factor. Heavy academic workloads, tight exam schedules, and high expectations from faculty and parents disrupt students' mental balance and impair sleep quality. This demonstrates the profound impact of academic stress on students' mental health and its role as a primary cause of sleep disturbances. Additionally, Carrión-Pantoja et al. (2022) identified depression, anxiety, and poor sleep hygiene as significant contributors to sleep disorders. Carrión-Pantoja's findings revealed that chronic stress worsens sleep quality, ultimately affecting concentration and academic productivity. Students with irregular sleep schedules are particularly vulnerable to insomnia, especially when coupled with high academic

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pressure. This underscores the need for interventions that promote awareness of the importance of sleep hygiene among students.

Lu et al. (2024) highlighted that perceived stress strongly predicts insomnia but noted that factors such as fear of missing out (FoMO) and cell phone dependency exacerbate sleep disturbances. Students who excessively rely on digital devices or fear missing out on information tend to have poorer sleep patterns. This emphasizes the importance of addressing unhealthy digital lifestyles as a mediator between academic stress and insomnia and educating students about healthy technology use. Yang et al. (2024) added new dimensions by highlighting the roles of gender and family dynamics in the relationship between stress and insomnia. Female students were found to be more vulnerable to stress-induced insomnia compared to males. Furthermore, unsupportive family dynamics, such as pressure from parents to excel, exacerbate academic stress. These findings suggest that demographic and environmental factors significantly influence the risk of sleep disorders.

During the COVID-19 pandemic, academic pressures increased dramatically due to the shift to online learning. Nur and Amalia (2021) and Saswati & Maulani (2023) found that students faced new challenges, such as technological limitations, social isolation, and a lack of face-to-face interactions. These factors intensified academic stress and worsened their sleep quality. This highlights how environmental pressures can amplify the impact of stress on sleep disturbances. Kelly et al. (2022) explored the exacerbation of students' sleep patterns during the pandemic. Pandemic-related stressors, such as social isolation, financial uncertainty, and disrupted daily routines, significantly increased insomnia prevalence. Similarly, Dongol et al. (2022) noted that students experienced worse sleep disturbances during quarantine than pre-pandemic times. These findings emphasize the importance of considering external factors, such as the pandemic, when evaluating the relationship between academic stress and insomnia.

Fila-Witecka et al. (2022) demonstrated that behavioral changes, such as increased substance use and decreased physical activity during the pandemic, contributed to heightened insomnia levels. Students who lost regular physical routines were likelier to experience severe sleep disturbances. These findings indicate that the pandemic not only increased stress but also introduced unhealthy behaviors that worsened sleep disorders. While many studies found a significant relationship between academic stress and insomnia, some reported differing results. Alotaibi et al. (2020) and Bodys-Cupak et al. (2022) did not find a direct correlation between academic stress and insomnia. However, they suggested that factors such as coping mechanisms, social support, and sleep habits might mitigate the impact of stress on sleep quality. This indicates that not all students respond to stress similarly, and protective factors like psychological resilience play a crucial role. Gasril et al. (2024) noted that while many students experienced mild to moderate stress, only a small portion reported severe insomnia. These findings suggest that the severity of academic stress does not always correspond to insomnia levels but rather depends on individual coping abilities. Students with effective coping strategies can better maintain sleep quality despite high-stress levels.

In summary, the analysis of 15 studies indicates that academic stress is a primary predictor of insomnia among university students. This relationship is compounded by additional factors such as the COVID-19 pandemic, sedentary lifestyles, and lack of social support, which significantly contribute to the rise in insomnia cases. These elements interact with one another, potentially exacerbating the effects of academic stress on sleep health. Consequently, there is a pressing need for holistic interventions that encompass stress management, sleep hygiene improvement, and the provision of mental health support within educational institutions. Moreover, it is essential to consider cultural and social dynamics when designing these interventions, as they can influence how students cope with stress and insomnia. Future research should adopt a longitudinal approach to understand

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better the complex mechanisms linking academic stress to insomnia. This should include examining environmental, biological, and behavioral factors, as well as variations between different populations. Additionally, understanding how support from family, friends, and university policies can mitigate the risk of insomnia in students is crucial for developing effective strategies.

CONCLUSION

Academic stress significantly impacts insomnia among university students, with factors such as heavy workloads, exams, and high expectations being key triggers. These sleep disturbances negatively affect students' quality of life, concentration, and academic performance. In addition to stress, psychological factors, poor sleep habits, and technology dependence exacerbate sleep problems. The COVID-19 pandemic has further worsened the situation, increasing stress and reducing sleep quality. Although some studies show varying results, factors such as coping mechanisms and social support can help mitigate the effects of stress. Therefore, interventions focusing on stress management, improving sleep habits, and providing mental health support within educational institutions are essential. Further research is needed to understand better the relationship between academic stress and insomnia, as well as the role of social support in reducing insomnia risk among students.

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CONFLICT OF INTEREST

There is no conflict of interest in this article.

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