Humanitas: Indonesian Psychological Journal
Vol. 23 (1), February 2026, 72-80
ISSN: 2598-6368(online); 1693-7236(print)

Sleep Quality Among Pre-Service Teachers: The Role of Academic Stress and Time Management

Siti Muthia Dinni*, Ardelia Arista Putri

Faculty of Psychology, Universitas Ahmad Dahlan, Yogyakarta, Indonesia
*Corresponding author: siti.dinni@psy.uad.ac.id

ARTICLE INFO

Article history
Received: 11 December 2026
Revised: 7 March 2026
Accepted: 21 March 2026

Keywords
Academic Stress
Sleep Quality
Time Management
University students

ABSTRACT

Sleep quality is essential for university students, as it affects cognitive functioning, concentration, and academic performance. Poor sleep may increase vulnerability to psychological distress, particularly among students enrolled in academically demanding programs. This study examined the roles of academic stress and time management in predicting sleep quality among pre-service teacher professional education (PPG) students. A total of 142 students from a private university in Yogyakarta, Indonesia, participated in this study. Data were collected through Sleep Quality, Time management and Academic stress Scales and were analysed using multiple linear regression. The results indicated that academic stress and time management jointly predicted sleep quality ($F= 13.80$, $p< .001$), accounting for 16.54% of the variance. Higher academic stress was associated with poorer sleep quality, whereas better time management was associated with better sleep quality. Academic stress emerged as the stronger predictor. These results highlight the importance of stress management and time regulation skills in supporting sleep health among pre-service teachers. Interventions targeting academic stress reduction and effective time management may contribute to improved well-being and academic functioning.

Introduction

Sleep plays an essential role in maintaining cognitive functioning, emotional stability, and academic performance among university students. When sleep quality declines, students may experience reduced concentration, impaired memory, and heightened emotional reactivity (Kamila & Dainy, 2023). In academically demanding professional programs, insufficient sleep can gradually undermine both learning effectiveness and psychological well-being. Previous research has consistently shown that perceived stress is closely associated with sleep disturbances in university populations (Almojali et al., 2017; Lund et al., 2010).

One particular demanding academic context is the Pre-Service Teacher Professional Education (PPG, Prajabatan) program in Indonesia. This program prepares graduates to obtain professional teacher certification through intensive coursework, teaching practicum (PPL), leadership project, and mentoring activities conducted over two semesters. PPG students are required to simultaneously fulfil academic responsibilities and professional field obligations within tightly structured schedules, demanding (Kurniadi, 2025; Nurismawan et

al., 2024). These cumulative demand may create sustained psychological stress that interferes with healthy sleep patterns (Huang et al., 2024).

Sleep quality refers to an individual's subjective evaluation of sleep satisfaction, encompassing aspects such as sleep duration, latency, disturbances, and daytime functioning. Among university students, poor sleep quality has frequently been linked to elevated stress levels and maladaptive daily routines (Gadzella, 1994). This link becomes even more significant in the context of demanding professional training, where academic expectations are especially high. Academic stress, defined as a psychological response to academic demands perceived as exceeding one's coping resources, becomes particularly salient in rigorous professional training programs. Consistent with the transactional model of stress (Lazarus & Folkman, 1984), stress arises not merely from workload itself, but from how individuals appraise and manage those demands. When academic tasks are perceived as overwhelming, increased cognitive arousal and emotional strain may disrupt physiological processes necessary for restorative sleep.

Beyond stress, students' behavioral regulation plays a pivotal role. Time management is defined as an individual's capacity to use time effectively, along with the value they assign to it (Mahasneh et al., 2016). Individuals with strong time management skills demonstrate the ability to plan, coordinate, and regulate their use of time, enabling them to organize both academic and personal responsibilities efficiently (Fu et al., 2025). From a self-regulation perspective (Zimmerman, 2000), effective time management enables students to distribute academic tasks more evenly, thereby potentially mitigating last-minute pressure and sleep disturbances. Britton and Tesser (1991) emphasized the significance of short-term planning and structured time utilization in academic settings, while more recent perspectives suggest that effective time management may mitigate the adverse effects of stress on well-being (Aeon & Aguinis, 2017). Conversely, ineffective time management may contribute to procrastination, extended nighttime study hours, and irregular sleep patterns.

A growing body of research has documented significant associations between academic stress and sleep quality (Maisa et al., 2021; Pangajow & Pitoy, 2025; Rahmi et al., 2025; Rajbahak et al., 2025), as well as between time management and sleep-related outcomes (Rahmi et al., 2025). International findings similarly indicate that higher stress levels predict poorer sleep quality among university students (Almojali et al., 2017; Lund et al., 2010). However, existing studies have largely examined academic stress and time management as independent predictors, focused on general student populations, or have not explored their combined predictive roles using multivariate approaches. Moreover, empirical evidence specifically addressing PPG Prajabatan students remains limited, despite the distinctive structure and professional demands of the program.

Given these constraints, it is important to investigate the simultaneous effect of academic stress and time management on sleep quality within this specific education context. A more integrated analysis may provide a deeper understanding of the psychological and behavioral mechanisms underlying students' well-being in professional teacher education programs.

Accordingly, this study aims to investigate whether academic stress and time management jointly predict sleep quality among PPG Prajabatan students. Specifically, this study examines (1) whether academic stress and time management simultaneously predict sleep quality, (2) whether academic stress is positively associated with poorer sleep quality, and (3) whether time management is negatively associated with poorer sleep quality. Thus, it is hypothesized that academic stress and time management will jointly predict sleep quality among pre-service teacher professional education (PPG) students. Furthermore, academic

ISSN 2598-6368 (online) / ISSN 1693-7236 (print)

stress is expected to be positively associated with poorer sleep quality, whereas time management is expected to be negatively associated with poorer sleep quality.

This study seeks to contribute to the literature by examining the predictive roles of academic stress and time management within a specific professional education context. The findings are expected to extend theoretical understanding by integrating stress appraisal and self-regulation perspectives in explaining sleep quality. Practically, the findings may inform the development of targeted institutional interventions aimed at improving stress management and time management skills to enhance students' sleep quality.

Method

Study Design

This study employed a quantitative, cross-sectional correlational design to examine whether academic stress and time management predict sleep quality among PPG Prajabatan students.

Participants

A total of 142 students from a private university in Yogyakarta, Indonesia, enrolled in the pre-service teacher professional education (PPG) program (Cohort 2), participated in this study. This sample represents approximately 64% of the total population (N = 221). The demographic characteristics of the participants are presented in Table 1. The sample was predominantly female (72%), and most participants were aged between 21 and 25 years (89%). Participants were drawn from several study programs, with the largest proportion enrolled in primary teacher education (PGSD) (58%).

Table 1
Research Demographic Data

Criteria	Frequency	Percentage (%)
Gender		
Male	102	72
Female	40	28
Age		
21-25	126	89
26-30	16	11
>30	0	0
Study Major		
PGSD (primary teacher education)	82	58
BK (guidance and counselling study program)	25	18
Bahasa Indonesia (Indonesian language study program)	22	15
PPKN (Pancasila and civic education)	13	9

Instruments

Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI) developed by (Buysse et al., 1989). The PSQI assesses sleep quality across seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. An example item is: "How long do you sleep at night?" The PSQI uses a standardized scoring system in which higher scores indicate poorer sleep quality (Lohitashwa et al., 2015). The PSQI has been adapted for use in the Indonesian context by (Ratnasari, 2016). The original instrument demonstrated good internal consistency ($\alpha = 0.83$) (Buysse et al., 1989), while the adapted version showed acceptable

reliability (α = 0.74) (Ratnasari, 2016). According to Taber, 2018), a Cronbach's alpha value of 0.70 or higher is generally considered acceptable in educational and psychological research.

Academic stress. Academic stress was measured using the Student-Life Stress Inventory (SSI) developed by (Gadzella & Masten, 2005) consisting of 51 items that assess stressors and reactions to stress. The stressor dimension includes five components: frustration, conflict, pressure, changes, and self-imposed stress. The reaction to stressors dimension consists of physiological, emotional, behavioral, and cognitive appraisal responses. Responses were rated on a 5-point Likert scale ranging from 1 (never) to 5 (most of the time). Two positively worded items (items 50 and 51) were reverse-coded prior to analysis. The SSI has been adapted into the Indonesian context by (Sari et al., 2024). An example item is: "As a student, I experience frustration when my exam scores are low." (Gadzella & Masten, 2005) reported that the original instrument demonstrated good reliability (α = 0.84), while the adapted version showed acceptable reliability for the stressor (α = 0.85) and reaction to stressor (α = 0.72) dimensions (Sari et al., 2024).

Time management. Time management was measured using the 18-items of Time Management Questionnaire (TMQ) developed by (Britton & Tesser, 1991) that assess individual's short-term planning, attitudes toward time, and long-term planning. The TMQ scale has been modified by (Pehlivan, 2013). An example item is "Do you plan your day before you start it?". Responses were measured using a 5-point Likert scale ranging from 1 (never) to 5 (always). Scoring was assigned such that higher scores reflected more effective time management practices, with higher values indicating better time management behavior. Britton and Tesser (1991) reported that the original scale demonstrated good internal consistency, with a reliability coefficient of 0.88. In the present study, the adapted version of the scale yielded a Cronbach's alpha of 0.80, indicating acceptable reliability.

Procedures

The initial phase of the study began with obtaining research permission, documented under letter number F.4/2078/D.66/XI/2024. Data collection was conducted by distributing a Google Form link (https://forms.gle/voKEv2vRnaquzUtH7). The researchers shared the link through the administrative office of the Faculty of Teacher Training and Education at Ahmad Dahlan University, after which it was disseminated to WhatsApp groups consisting of Pre-Service Teacher Professional Education (PPG) students of Ahmad Dahlan University, Cohort II, Class of 2024. The Google Form contained the three measurement instruments used in this study.

Data Analysis

In this study, data analysis was conducted using IBM SPSS version 25.0 for Windows. Initially, the data underwent assumption tests, including normality and linearity tests. Subsequently, heteroscedasticity and multicollinearity tests were employed. Finally, multiple regression analysis was utilized to ascertain the correlation between academic stress, time management, and sleep quality among pre-service PPG students.

Results

Assumption tests were conducted prior to hypothesis testing. The data were normally distributed (KS-Z = 0.033, p = 0.20). The relationships between academic stress and sleep quality (p < 0.01); deviation from linearity p = 0.07), and between time management and

ISSN 2598-6368 (online) / ISSN 1693-7236 (print)

sleep quality (p <0.01; deviation from linearity p = 0.12) were linear. No multicollinearity was detected between the independent variables (tolerance = 0.97; VIF = 1.03).

A multiple regression analysis was conducted to examine the simultaneous effects of academic stress and time management on sleep quality. The results indicated that the overall model was significant, F = 13.80, p < 0.001, with a correlation coefficient of R = 0.41 and a coefficient of determination of R^2 = 0.16. This indicates that academic stress and time management together explained 16.6% of the variance in sleep quality. Therefore, the main hypothesis was supported, indicating that academic stress and time management jointly predict sleep quality among pre-service teacher education students.

Table 2
Multiple Regression Analysis of Academic Stress and Time Management on Sleep Quality

Variable	β	*T*	*p*
Academic stress and sleep quality	0,30	3.86	0.000
Time management and sleep quality	-0,22	-2.88	0.000

The regression analysis results for the minor hypotheses showed that academic stress significantly predicted sleep quality in a positive direction (β = 0,303, t = 3.86, p < 0.001), indicating that higher academic stress was associated with poorer sleep quality. In contrast, time management significantly predicted sleep quality in a negative direction (β = -0,226, t = -2.88, p < 0.001), indicating that better time management was associated with better sleep quality. In terms of effective contribution, academic stress accounted for 10.30% of the variance in sleep quality, while time management contributed 6.24%. Together, both variables explained a total of 16.54% of the variance in sleep quality.

Discussion

This study examined the relationship between academic stress, time management, and sleep quality among pre-service teacher education students. The results of the multiple regression analysis indicated that academic stress and time management simultaneously predicted sleep quality, explaining 16.6% of the variance in the model. This suggests that the combined contribution of psychological (academic stress) and behavioral (time management) factors provides a modest but meaningful explanation of variations in students' sleep quality. Within the context of professional teacher education programs, which require both academic and professional competencies, sleep quality plays an essential role in supporting cognitive functioning, attention, and effective learning engagement.

Consistent with our hypothesis, the findings showed that academic stress was significantly negatively associated with students' sleep quality. Participants who reported higher stress tended to experience poorer sleep quality, whereas those with lower stress levels displayed relatively better sleep outcomes. Conceptually, this result indicates that academic stress may elevate physiological arousal and psychological rumination (Petak & Maričić, 2025), thereby interfering with the initiation and maintenance of restorative sleep. When students face intense academic demands, such as heavy workloads, frequent assessments, and performance expectations, their stress responses may disrupt normal sleep regulation mechanisms, resulting in shorter sleep duration, frequent nocturnal awakening, and non-restorative rest. The negative association between academic stress and sleep quality is corroborated by recent large-scale studies. For instance, Huang et al. (2024) found that higher perceived stress among college students directly predicted poorer sleep quality, with mediating roles of psychological constructs such as meaning in life and depression,

underscoring the complex pathways linking stress and sleep health. Additionally, the present finding aligns with cross-sectional research showing that academic stress significantly correlates with disrupted sleep patterns in various student populations, including secondary and tertiary education contexts (Rizka et al., 2025). These consistent empirical patterns support theoretical frameworks such as the stress-arousal model, whereby chronic stress increases cognitive and physiological activation that is incompatible with the sleep process.

In contrast, effective time management was positively associated with better sleep quality. Students with stronger time management skills, defined by the ability to set goals, organize tasks, and manage study schedules, reported higher sleep quality compared to peers with poorer time management (Knowlden & Naher, 2023; Novita et al., 2024; Sun et al., 2024). This suggests that time management functions as a behavioral self-regulation mechanism that reduces last-minute academic pressure, supports structured routines, and increases perceived control over daily responsibilities. When time is managed effectively, students are less likely to postpone tasks to late-night hours, thereby reducing sleep onset difficulties and promoting consistent sleep habits. Supporting this mechanism, experimental evidence indicates that time management training can improve sleep quality while also reducing psychological distress such as anxiety and depression, suggesting that strengthening time management skills may contribute to better sleep-related outcomes (Wang & Wang, 2018). Prior research demonstrates that time management behaviors are associated with perceived control of time, which is in turn linked to improved sleep quality among university students (Knowlden & Naher, 2023).

Taken together, the findings reinforce a dual-pathway perspective in which academic stress and time management have divergent yet interacting effects on sleep quality among pre-service teachers. Academic stress emerged as a risk factor that undermines sleep health, whereas time management skills appeared to operate as a protective behavioral resource, helping students mitigate stress and achieve more regular sleep patterns. This integrative pattern underscores the importance of promoting both psychological and behavioral competencies within teacher education curricula to optimize student well-being.

Our findings are generally consistent with recent studies from diverse educational contexts that have reported significant associations between academic stress, time management, and sleep outcomes. For instance, Cheng et al. (2025) demonstrated that academic stress negatively impacts sleep quality and subjective well-being in adolescents, suggesting that stress-sleep links are robust across developmental stages. Similarly, the study from Saputra et al. (2023) also showed that working students' time management and sleep quality jointly predicted students' well-being, with time management playing a significant role in their daily routines and sleep quality. This body of evidence emphasizes that interventions aimed at stress reduction and time management enhancement may be effective strategies for improving sleep health among students.

Theoretically, this study contributes to the literature by clarifying how individual differences in stress and self-regulatory behaviors relate to sleep in a professional education context, a setting marked by unique pedagogical and performance challenges. Practically, the findings highlight the potential utility of integrating stress management training and time management skill development into pre-service teacher education programs; such interventions could help students better balance academic demands, reduce maladaptive stress responses, and maintain healthier sleep routines, ultimately supporting both well-being and academic performance.

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inference; future longitudinal and experimental designs are needed to establish directionality among the studied variables. Second, this study did not control for

ISSN 2598-6368 (online) / ISSN 1693-7236 (print)

other sleep-related factors such as electronic device use before bedtime, caffeine intake, physical activity, or underlying psychological conditions (e.g., anxiety or depression), which may also influence sleep quality. Future research should incorporate these variables to develop a more comprehensive model of sleep determinants. Additionally, the sample was drawn from a single institution, which limits the generalizability of the findings; multi-institutional research with larger and more diverse student samples would strengthen external validity.

Conclusion

These findings highlight the interaction between academic demands and time management capacity in shaping sleep quality among pre-service teacher education students. The results underscore the importance of addressing both psychological and behavioral dimensions in explaining sleep-related outcomes within intensive academic contexts. This study contributes to the literature by integrating stress and self-regulation perspectives in a single explanatory model of sleep quality. Accordingly, teacher education institutions are encouraged to incorporate structured stress management and time regulation strategies to support students' sleep health.

Acknowledgment

The author would like to thank Ahmad Dahlan University for granting permission for the research location and the students of Ahmad Dahlan University pre-service teacher professional education (PPG) students, cohort II Class of 2024 who were willing to participate in this research.

Declarations

Author contribution. First author contributed to the writing of the article, validation of the measurement instrument, and data analysis; second author contributed to the permit process and data collection.
Funding statement. This research was conducted with independent funding.
Conflict of interest. The authors declare no conflict of interest.
Additional information. No additional information is available for this paper.

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