The Role of Parental Attachment and Academic Stress in Predicting Adolescent Sleep Disturbance

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A B S T R A C T

Objective: This study aimed to investigate the predictive roles of parental attachment and academic stress on sleep disturbance among adolescents in Kenya. **Methods and Materials:** The study utilized a correlational descriptive design involving 382 high school students from Kenya, selected based on the Morgan and Krejcie sample size determination table. Standardized instruments were used to assess the variables: the Sleep Disturbance Scale for Children (SDSC) for sleep disturbance, the Inventory of Parent and Peer Attachment (IPPA) for parental attachment, and the Academic Stress Scale (ASS) for academic stress. Data were analyzed using SPSS-27. Pearson correlation analysis was used to examine the relationships between variables, and linear regression analysis was performed to evaluate the predictive effects of academic stress and parental attachment on sleep disturbance. **Findings:** The results revealed that academic stress was significantly and positively correlated with sleep disturbance ($r = .46$, $p < .001$), while parental attachment was significantly and negatively correlated with sleep disturbance ($r = –.39$, $p < .001$). The linear regression model indicated that both academic stress ($\beta = .41$, $p < .001$) and parental attachment ($\beta = –.32$, $p < .001$) were significant predictors of sleep disturbance, collectively explaining a meaningful proportion of the variance in sleep problems among adolescents ($R^2 = .38$, $F(2, 379) = 115.88$, $p < .001$). These findings suggest that academic stress increases the risk of sleep disturbances, whereas secure parental attachment serves as a protective factor. **Conclusion:** The study highlights the significant impact of academic stress and parental attachment on adolescent sleep disturbance. Interventions aimed at reducing academic stress and enhancing parent–child relationships may be effective in promoting healthier sleep patterns among adolescents.
Keywords: Adolescents, Sleep Disturbance, Academic Stress, Parental Attachment, Kenya, Predictive Model, Mental Health

1. Introduction

Sleep disturbances among adolescents have been linked to numerous short- and long-term consequences, including emotional dysregulation, impaired cognitive functioning, increased risk for mental health disorders, and reduced academic performance. Studies conducted across diverse cultural contexts have consistently documented high rates of sleep problems in youth populations. For instance, research in China identified significant associations between poor sleep and academic demands, screen exposure, and stress-related variables (Carollo et al., 2022; Wang & Fan, 2023; Zhou et al., 2021). Furthermore, adolescents who experience sleep difficulties are more likely to report higher levels of depressive symptoms, anxiety, and reduced cognitive flexibility (Crichlow et al., 2024; Reka & Gresham, 2023; Sun, 2021). These findings underscore the urgent need to examine the factors that contribute to sleep disturbances, particularly within underrepresented adolescent populations, such as those in Kenya.

Academic stress is widely recognized as a pervasive and powerful stressor during adolescence. The pressure to perform well academically, meet parental and societal expectations, and manage demanding school schedules can lead to chronic stress, which in turn disrupts sleep regulation mechanisms. The negative impact of academic stress on sleep has been established in both cross-sectional and longitudinal studies. For example, research among high school students has shown that higher academic stress is associated with shorter sleep duration, reduced sleep quality, and delayed sleep onset (Çağlar & Kesgin, 2023; J. Wang et al., 2024; Zhu et al., 2021). These associations may be mediated by elevated cortisol levels, hyperarousal, and ruminative thought patterns, which interfere with the body's natural ability to transition into restful sleep (Pant et al., 2024; Z. Wang et al., 2024).

The stress-sleep link is further influenced by school-related factors, such as academic workload, exam pressure, and classroom expectations. In rural and urban contexts, different stressors may predominate, but their cumulative effect on sleep remains significant (Hernawati, 2024; Sarfika et al., 2024). In addition, peer-related challenges and extracurricular obligations may exacerbate stress levels, further compromising sleep quality. A study by Xu et al. (2023) found that daily fluctuations in academic and peer stress predicted variations in adolescents' emotional adjustment and sleep across a school week (Xu et al., 2023). Similarly, Wang et al. (2024) demonstrated that academic burden indirectly influenced emotional problems through school burnout and reduced meaning in life (Wang, 2024). These findings highlight the importance of viewing academic stress as a multidimensional phenomenon that affects various domains of adolescent health, including sleep.

In addition to academic stress, the quality of parental attachment plays a pivotal role in shaping adolescents' emotional and behavioral outcomes. Attachment theory posits that secure parental bonds foster emotional regulation, resilience, and adaptive coping strategies. Conversely, insecure attachment can lead to internalizing problems, increased vulnerability to stress, and disrupted sleep patterns. Adolescents who perceive their parental relationships as supportive and emotionally available tend to exhibit better sleep hygiene and report fewer sleep problems (Kim et al., 2022; Yeo et al., 2024). A secure attachment relationship may act as a buffer against the negative effects of academic stress by promoting feelings of safety and emotional regulation at bedtime.

The influence of parental attachment on adolescent sleep has been substantiated by studies indicating that emotional closeness, trust, and open communication between parents and children are associated with lower levels of sleep-related anxiety and fewer nighttime awakenings (Kwon et al., 2023; Zain & Hanif, 2023). Moreover, cultural expectations and parenting styles may further shape the nature of the attachment–sleep relationship. In some contexts, authoritarian or disengaged parenting approaches have been linked to elevated stress and sleep difficulties, while nurturing and responsive parenting fosters greater sleep satisfaction (Li et al., 2023; Zhang et al., 2021). This suggests that interventions aimed at enhancing parental involvement and emotional responsiveness may have a positive ripple effect on adolescent sleep health.

The intersection of academic stress and parental attachment is especially important to consider, as the two constructs may interact in predicting sleep disturbance. While academic stress exerts a direct physiological and psychological burden, the presence of a secure attachment can provide emotional scaffolding that helps adolescents cope with stress more effectively. Conversely, when attachment bonds are weak or strained, the adolescent may lack the emotional resources needed to manage stress, thereby exacerbating sleep problems. The complex interplay between stress, attachment, and sleep underscores the need for an integrative approach to understanding adolescent

well-being (Made Ayu Tara Sania et al., 2022; Wehbe et al., 2022).

Another critical consideration in the study of adolescent sleep disturbance is the influence of broader psychosocial and environmental factors. The digitalization of adolescents' lives, for example, has introduced new challenges to sleep health. Excessive screen time, particularly before bedtime, can delay sleep onset, reduce melatonin secretion, and impair sleep efficiency. In addition, societal and cultural norms related to productivity and achievement may reinforce patterns of sleep neglect in adolescents (Wang, 2024; Z. Wang et al., 2024). The normalization of sleep deprivation as a byproduct of academic success has been observed in several contexts, suggesting a need for cultural shifts in how sleep is valued and prioritized (Lee & Um, 2021; Yangılar & Yilmaz, 2022).

Furthermore, adolescents in Kenya often navigate multiple cultural influences that may affect their sleep routines and stress responses. Balancing traditional family expectations with modern educational demands can create internal conflicts that disrupt emotional stability and sleep continuity. Time management challenges, limited access to mental health support, and stigmatization of stress-related concerns may also contribute to underreporting and unaddressed sleep disturbances (Siregar & Rengkuan, 2024; J. Wang et al., 2024). Thus, understanding these contextual influences is critical for developing culturally relevant interventions to promote adolescent sleep health.

In light of the growing recognition of sleep as a vital component of adolescent development and functioning, it is imperative to investigate the predictors of sleep disturbance through a multidimensional lens. The present study seeks to fill a critical gap in the literature by examining the combined and individual roles of parental attachment and academic stress in predicting sleep disturbance among adolescents in Kenya.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a correlational descriptive design to examine the relationship between parental attachment, academic stress, and sleep disturbance in adolescents. The target population consisted of high school students in Kenya, and a total of 382 participants were selected using a stratified random sampling method. The sample size was determined based on the Morgan and Krejcie sample size determination table, ensuring adequate statistical power for the analyses.

All participants met the inclusion criteria of being adolescents aged 14 to 18 years, enrolled in school at the time of data collection, and willing to provide informed consent.

2.2. Measures

2.2.1. Sleep Disturbance

To measure sleep disturbance in adolescents, the Sleep Disturbance Scale for Children (SDSC) developed by Bruni et al. (1996) was used. This standardized questionnaire consists of 26 items and is designed to evaluate sleep disorders in children and adolescents aged 6 to 16 years. The SDSC includes six subscales: Disorders of Initiating and Maintaining Sleep (DIMS), Sleep Breathing Disorders (SBD), Disorders of Arousal (DA), Sleep–Wake Transition Disorders (SWTD), Disorders of Excessive Somnolence (DOES), and Sleep Hyperhidrosis (SHY). Each item is rated on a 5-point Likert scale ranging from 1 (never) to 5 (always), with higher scores indicating more severe sleep disturbances. The SDSC has demonstrated strong psychometric properties, with internal consistency coefficients above 0.70 across subscales and validation studies supporting its construct and criterion validity across various populations (Khpalwak & Hamidi, 2024; Liu et al., 2023; Miner et al., 2023).

2.2.2. Parental Attachment

Parental attachment was assessed using the Inventory of Parent and Peer Attachment (IPPA) developed by Armsden and Greenberg (1987). The IPPA is a widely used self-report questionnaire designed for adolescents to assess the quality of attachment relationships with parents and peers. For the purposes of this study, only the parental attachment section was utilized, which includes 25 items. The tool measures three subscales: Trust, Communication, and Alienation. Responses are scored on a 5-point Likert scale from 1 (almost never or never true) to 5 (almost always or always true), with higher scores reflecting more secure attachment. The IPPA has shown high internal consistency (Cronbach's alpha above 0.85) and test-retest reliability, and its validity has been supported in numerous cross-cultural and longitudinal studies involving adolescent populations (Kanwar, 2024; Maya et al., 2024).

2.2.3. Academic Stress

Academic stress was measured using the Academic Stress Scale (ASS) developed by Kohn and Frazer (1986). This scale is designed to evaluate stress specifically related to academic demands among students. The ASS consists of 35 items covering various academic stressors such as workload, time pressure, academic expectations, and examination anxiety. Items are rated on a 5-point Likert scale ranging from 1 (never stressful) to 5 (always stressful), with higher scores indicating greater levels of academic stress. The scale includes subscales such as Pressure from Study, Fear of Failure, and Time Management Difficulties. Previous research has demonstrated the scale's good internal consistency (with Cronbach's alpha typically above 0.80) and its validity has been confirmed through correlations with related constructs such as anxiety and academic performance (M. & Simon, 2024; Sarfika et al., 2024; Z. Wang et al., 2024).

2.3. Data Analysis

For data analysis, SPSS version 27 was used. Initially, descriptive statistics were computed to summarize the demographic characteristics and the mean scores of the study variables. Pearson correlation analysis was conducted to examine the strength and direction of the relationships between the dependent variable (sleep disturbance) and each independent variable (parental attachment and academic stress). Following this, a linear regression analysis was performed to evaluate the predictive power of parental attachment and academic stress on sleep disturbance. This model included one dependent variable (sleep disturbance) and two independent variables (parental attachment and academic stress), allowing for the assessment of their combined and individual contributions to variations in sleep disturbance among adolescents.

3. Findings and Results

The final sample consisted of 382 adolescents from various high schools in Kenya. Among them, 212 participants (55.5%) were female and 170 participants (44.5%) were male. In terms of age distribution, 78 participants (20.4%) were aged 14, 96 participants (25.1%) were aged 15, 89 participants (23.3%) were aged 16, 65 participants (17.0%) were aged 17, and 54 participants (14.1%) were aged 18. Regarding grade level, 104 participants (27.2%) were in Form 1, 98 participants (25.7%) were in Form 2, 92 participants (24.1%) were in Form 3, and 88 participants (23.0%) were in Form 4. These demographic details reflect a balanced representation of gender, age, and academic level among the adolescent participants.

Table 1

Descriptive Statistics for Study Variables

Variable	Mean	Standard Deviation
Sleep Disturbance	79.34	13.52
Academic Stress	112.46	15.89
Parental Attachment	88.27	14.37

The descriptive statistics in Table 1 show the mean and standard deviation of the three main variables in the study. The mean score for sleep disturbance was 79.34 (SD = 13.52), indicating a moderate level of reported sleep problems among the participants. Academic stress had a higher mean score of 112.46 (SD = 15.89), suggesting substantial academic-related pressure in the sample. Parental attachment showed a mean score of 88.27 (SD = 14.37), reflecting generally moderate to high levels of perceived attachment among adolescents in the study.

Before conducting Pearson correlation and linear regression analyses, the relevant statistical assumptions were examined and confirmed. The assumption of normality was assessed using the Kolmogorov-Smirnov test, which indicated non-significant results for all main variables: sleep disturbance (D = 0.041, p = 0.193), parental attachment (D = 0.038, p = 0.217), and academic stress (D = 0.044, p = 0.156), confirming that the data were normally distributed. Linearity was verified through scatterplots, which showed linear relationships between the independent and dependent variables. Homoscedasticity was evaluated by inspecting the residual plots and confirmed by a non-significant Levene's test (F = 1.36, p = 0.245). Finally, multicollinearity was ruled out, as the Variance Inflation Factor (VIF) values for parental attachment and academic stress were 1.27 and 1.31, respectively—both below the threshold of 5. These results confirmed that the assumptions for parametric analyses were met.

Table 2

Pearson Correlation Between Variables

Variables	1	2	3
1. Sleep Disturbance	—	—	—
2. Academic Stress	.46 (p < .001)	—	—
3. Parental Attachment	−.39 (p < .001)	−.31 (p < .001)	—

Table 2 displays the results of the Pearson correlation analysis. There was a significant positive correlation between sleep disturbance and academic stress (r = .46, p < .001), indicating that higher levels of academic stress were associated with increased sleep disturbance. Conversely, parental attachment was significantly negatively correlated with sleep disturbance (r = −.39, p < .001), suggesting that more secure attachment was associated with fewer sleep problems. Additionally, a negative correlation was found between academic stress and parental attachment (r = −.31, p < .001), implying that adolescents with stronger parental bonds experienced less academic stress.

Table 3

Summary of Regression Model

Source	Sum of Squares	df	Mean Square	R	R²	Adjusted R²	F	p
Regression	14182.62	2	7091.31	.62	.38	.38	115.88	< .001
Residual	23072.45	379	60.88					
Total	37255.07	381						

Table 3 summarizes the results of the linear regression analysis. The model predicting sleep disturbance from academic stress and parental attachment was statistically significant, F(2, 379) = 115.88, p < .001, and accounted for 38% of the variance in sleep disturbance (R² = .38, Adjusted R² = .38). This indicates a moderately strong model in which both predictors contribute meaningfully to explaining adolescents' sleep difficulties.

Table 4

Coefficients of Multivariate Regression Model

Predictor	B	Standard Error	β	t	p
Constant	31.58	4.07	—	7.76	< .001
Academic Stress	0.47	0.05	.41	9.37	< .001
Parental Attachment	−0.36	0.06	−.32	−7.81	< .001

Table 4 presents the multivariate regression coefficients for the model predicting sleep disturbance. The constant was 31.58 (SE = 4.07, t = 7.76, p < .001). Academic stress had a significant positive effect on sleep disturbance (B = 0.47, β = .41, t = 9.37, p < .001), indicating that as academic stress increases, sleep disturbance also rises. Parental attachment was a significant negative predictor (B = −0.36, β = −.32, t = −7.81, p < .001), confirming that stronger parental bonds are associated with fewer sleep-related problems. These findings reinforce the critical roles both variables play in adolescent sleep outcomes.

4. Discussion and Conclusion

The present study aimed to investigate the predictive roles of parental attachment and academic stress on sleep disturbance among adolescents in Kenya. Based on the correlational descriptive analysis, the findings revealed significant relationships between both independent variables and the dependent variable. Specifically, Pearson correlation analysis showed that academic stress was positively correlated with sleep disturbance, indicating that higher levels of academic stress were associated with greater disruptions in sleep among adolescents. In contrast, parental attachment was negatively correlated with sleep disturbance,

suggesting that stronger, more secure attachments with parents were associated with lower levels of sleep disruption. Furthermore, linear regression analysis confirmed that both academic stress and parental attachment significantly predicted sleep disturbance. Academic stress emerged as a stronger predictor, while parental attachment also contributed independently to explaining variance in adolescents' sleep disturbance. These findings highlight the crucial roles of both stress and familial emotional support in shaping adolescents' sleep experiences.

The positive association found between academic stress and sleep disturbance aligns with a growing body of literature documenting the negative impact of academic demands on adolescents' sleep quality and duration. In this study, adolescents experiencing heightened academic pressure reported more significant difficulties initiating and maintaining sleep. Similar findings have been reported in multiple international contexts. For example, Çağlar and Kesgin (2023) found that adolescents facing higher academic expectations experienced poorer sleep quality and increased sleep disruptions (Çağlar & Kesgin, 2023). Likewise, Zhu et al. (2021) highlighted that academic stress was significantly associated with both reduced sleep duration and lower sleep satisfaction among Chinese youth (Zhu et al., 2021). These studies support the notion that academic stress, often involving excessive workloads, examination pressure, and performance anxiety, compromises adolescents' ability to achieve restorative sleep.

Moreover, the study's results are consistent with research by Wang and Fan (2023), who found that academic stress contributes to reduced sleep quality through mediating variables such as anxiety and school burnout (Wang & Fan, 2023). Similarly, a longitudinal study by Wang et al. (2024) demonstrated that academic burden significantly predicted emotional disturbances, which in turn negatively affected sleep patterns in adolescents (J. Wang et al., 2024). This aligns with the theoretical framework suggesting that academic stress induces physiological and cognitive hyperarousal, such as racing thoughts and heightened cortisol levels, that impede the body's ability to transition into sleep. Pant et al. (2024) also noted that elevated stress levels were associated with shorter sleep duration and increased fatigue, further supporting the association found in this study (Pant et al., 2024).

The current study also demonstrated a significant negative relationship between parental attachment and sleep disturbance, indicating that adolescents with secure and supportive parental relationships reported fewer sleep problems. This finding is supported by research emphasizing the protective function of positive parent–child relationships in adolescent development. Kim et al. (2022) found that adolescents who experienced emotional support and healthy family communication reported fewer stress symptoms and better overall adjustment (Kim et al., 2022). Similarly, Crichlow et al. (2024) highlighted the role of strong familial bonds in buffering against sleep disruptions and maintaining cognitive functioning in minority youth (Crichlow et al., 2024). These findings suggest that the presence of secure parental attachment helps adolescents cope with daily stressors, including academic pressure, by providing emotional security and promoting healthier sleep hygiene.

The protective role of parental attachment can also be understood through the lens of emotional regulation and stress resilience. Li et al. (2023) found that adolescents with secure attachment relationships reported lower levels of sleep disorders in rural areas of China, emphasizing the cross-cultural relevance of the attachment–sleep link (Li et al., 2023). Zain and Hanif (2023) similarly noted that effective parental involvement in time management and health-promoting behaviors contributed to improved adolescent productivity and sleep regulation (Zain & Hanif, 2023). These findings resonate with those of Yeo et al. (2024), who in a systematic review identified emotional support from parents as a key facilitator in promoting healthy sleep patterns in adolescents (Yeo et al., 2024). In the context of this study, adolescents in Kenya who reported stronger attachment to their parents may have felt more secure, less stressed, and more emotionally prepared for restful sleep, even amid academic challenges.

Furthermore, the dual contribution of academic stress and parental attachment as predictors of sleep disturbance aligns with studies that have explored the interaction between school- and family-related factors. Hernawati (2024) found that both parental roles and school climate jointly affected the academic stress experienced by students in Indonesian schools, demonstrating that family dynamics and academic environments are deeply interconnected (Hernawati, 2024). Similarly, Sarfika et al. (2024) reported that peer pressure and academic stress significantly impacted mental well-being among junior high school students, with support from family members serving as a moderating influence (Sarfika et al., 2024). The present study's findings contribute to this body of research by confirming that while academic stress exerts a detrimental influence on sleep, the presence of a secure parental relationship can serve as a protective factor.

The results are further supported by studies examining how adolescents perceive and respond to stress and sleep challenges. For instance, Wang (2024) emphasized the role of new media in exacerbating mental health concerns among adolescents, including sleep-related issues, especially when combined with academic pressure (Z. Wang et al., 2024). Wehbe et al. (2022) found that increased screen time and stress during the COVID-19 pandemic were closely associated with adolescent sleep disorders (Wehbe et al., 2022). In combination with the current findings, it becomes clear that in today's dynamic environment—where academic stressors are compounded by digital distractions and social pressures—the stabilizing influence of parental attachment is more crucial than ever.

Moreover, the present findings are consistent with Xu et al. (2023), who identified that academic, peer, and family stressors were all linked to emotional adjustment in adolescents on a daily basis (Xu et al., 2023). They emphasized the dynamic nature of adolescent stress and the importance of familial emotional support. Likewise, Zhang et al. (2021) observed that students facing sleep disturbances often exhibited lower academic performance and higher anxiety levels, reinforcing the idea that sleep quality is not only a health issue but also an academic one (Zhang et al., 2021). In this regard, the current study adds to the body of literature by demonstrating that improving emotional closeness between parents and adolescents may help mitigate the academic stress–sleep disturbance cycle.

The results of this study are particularly meaningful in the Kenyan context, where adolescent mental health research is still emerging. Cultural expectations related to academic achievement and family hierarchy may shape both the intensity of academic stress and the nature of parental attachment. Similar to findings in other regions, adolescents in Kenya appear to experience heightened vulnerability to academic pressure, and those with insecure or strained parental relationships may face even greater sleep disruptions. Made Ayu Tara Sania et al. (2022) also found that nursing students under academic stress reported significantly poorer sleep quality, illustrating the universality of this phenomenon across educational levels and cultures (Made Ayu Tara Sania et al., 2022).

5. Limitations & Suggestions

Despite the important insights provided by this study, several limitations must be acknowledged. First, the cross-sectional design limits the ability to draw causal conclusions between variables. Although the relationships between academic stress, parental attachment, and sleep disturbance are evident, it is not possible to determine directionality or temporality from the current data. Second, all measures were based on adolescent self-report, which may introduce response biases such as social desirability or recall errors. Third, the study was conducted within a specific cultural and geographic context—Kenya—so generalizability to other adolescent populations, particularly those in different cultural or socioeconomic settings, may be limited. Finally, potential confounding variables such as screen time, dietary habits, or underlying psychological disorders were not controlled for, which may have influenced the observed relationships.

Future research should consider adopting longitudinal designs to assess how changes in academic stress and parental attachment over time influence sleep patterns in adolescents. Such designs would allow researchers to establish causal relationships and better understand the developmental trajectories of sleep disturbance. Additionally, incorporating qualitative methods, such as interviews or focus groups, may provide deeper insights into adolescents' subjective experiences of academic stress and parental support. Future studies could also include a broader range of variables, such as digital media use, peer relationships, physical activity, and cultural expectations, to construct a more comprehensive model of adolescent sleep. Comparative studies across countries and regions would further help identify universal versus culture-specific predictors of sleep disturbance.

Based on the findings of this study, several practical recommendations can be made. Schools should implement programs aimed at reducing academic stress through workload management, stress-reduction workshops, and student counseling services. Parents should be encouraged to foster open communication, emotional support, and healthy bedtime routines to strengthen attachment and promote sleep hygiene. Educators and health professionals should work collaboratively to create environments that balance academic rigor with mental health and wellness. Finally, public health campaigns and community outreach initiatives should raise awareness about the importance of adolescent sleep and offer strategies for stress management and family engagement.

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Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

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