AMERICAN JOURNAL OF
ARTS AND HUMAN SCIENCE (AJAHS)
ISSN: 2832-451X (ONLINE)
VOLUME 3 ISSUE 2 (2024)

PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

American Journal of
Arts and Human Science (AJAHS)

Volume 3 Issue 2, Year 2024
ISSN: 2832-451X (Online)
DOI: https://doi.org/10.54536/ajahs.v3i2.2786
https://journals.e-palli.com/home/index.php/ajahs

Sleep Hygiene Practices and Mood States: A Quantitative Analysis

Cristine Alegado[1*], Roselle Daireen Guinto[1], Francine Ryza Beldeniza[1], Claire Lynn Culajara[1]

Article Information

Received: April 27, 2024
Accepted: May 29, 2024
Published: June 01, 2024

Keywords
Correlation, Mood States, Sleep Hygiene, University Students

ABSTRACT

To maintain overall health and well-being, one must practice good sleep hygiene. However, the literature has not sufficiently addressed the relationship between Sleep Hygiene and Mood States. This study evaluated the association between Sleep Hygiene Practices and Mood States, including the influencing factors. This study utilized a descriptive-predictive research design on 350 college students in the chosen University in Davao Region through simple random sampling. The researchers used the Shapiro-Wilk Test, which indicates normally distributed data with a $p < 0.05$. The study analyzed the relationship between Sleep Hygiene and Mood States using Pearson's Correlation Coefficient, revealing a significant positive correlation coefficient of $r = .439$ and a p of $< .001$, suggesting that if the Sleep Hygiene practices of students are high, the Mood States is also high. Furthermore, linear regression revealed that bedroom factors and behaviors that affect sleep are the predictors that contribute to the students' mood states. The study recommends implementing policies to promote a healthy campus environment, prioritizing healthy sleep habits for students and teachers, and for future researchers to advocate for broader, longitudinal studies to enhance understanding and validity.

INTRODUCTION

The World Health Organization (2023) emphasizes the importance of sleep for promoting both physical and mental health, facilitating healing, unwinding, and regeneration in combating the negative effects of stress. Given the prevalence of sleep disturbances in college, understanding the factors influencing sleep becomes paramount (Li *et al.*, 2020). College students often grapple with insufficient, high-quality sleep due to academic responsibilities, social activities, and various other factors (Gaarde *et al.*, 2020). A study further underscores the significance of sleep as it contributes to the recovery from both physical and psychological exhaustion, encompassing a substantial portion of the human lifespan. It is noteworthy that poor sleep quality can detrimentally affect health and performance the following day (Xu *et al.*, 2021). This, in turn, can lead to a spectrum of adverse outcomes such as mood swings, anger, depression, anxiety, and sadness (Short *et al.*, 2020). According to (Kendra,2023) mood refers to a relatively consistent emotional state that is commonly characterized as either positive or negative and is often defined as an individual's subjective feeling that influences their outward expression. Research findings concluded that academic emotions are recognized as a crucial element influencing learning outcomes in educational environments, with numerous studies demonstrating the capacity of positive academic moods in learners to enhance the learning process (Tan *et al.*, 2021).

Internationally, an increasing body of research underscores the crucial role of sleep quality in mental well-being, especially in college students' context. An investigation conducted by Zhang *et al.* (2023) concentrated on exploring the connection between sleep quality and depressive symptoms among Chinese college students amid the COVID-19 pandemic. The results demonstrated that individuals with eveningness chronotypes exhibited heightened levels of depressive symptoms, wherein sleep quality served as a mediating element. Another investigation by Ramamoorthy *et al.* (2019) scrutinizes the repercussions of stress on sleep hygiene in adolescents attending schools in Chennai. This research indicates that adolescents contend with moderate levels of anxiety, and stress detrimentally affects their practices related to sleep hygiene. In the Philippines, a research study by Bermundo *et al.* (2019) suggests that sleep deprivation not only leads to moodiness but also poses challenges to mental well-being, contributing to a depressed mood (Santos *et al.*, 2021). The investigation by Encabo *et al.* (2023) sheds light on the struggles students faces in achieving quality sleep, revealing that 68.81% of the 202 randomly selected respondents experienced poor sleep quality. Undoubtedly, sleep holds immense significance in an individual's life, and for students with compromised sleep quality, its repercussions can significantly impact their performance (Ramos *et al.*, 2021).

Various factors can impact sleep, underscoring the importance of recognizing elements that contribute to sleep quality in daily life (Xu *et al.*, 2021). The study conducted by Mastin *et al.* (2006) introduced the SHI, a 13-item self-report index assessing sleep hygiene behaviors, adapted from ICSD criteria, focusing on the sleep-wake cycle, bedroom-related factors, and sleep quality impacting behaviors. One crucial aspect involves sleep-wake cycle behaviors, where the body operates on multiple internal clocks, commonly referred to as

[1] Department of Arts and Sciences Psychology Program, University of Mindanao Digos College, Digos City, Philippines
[*] Corresponding author's email: roselledaireeng@gmail.com

circadian clocks, situated in the brain. These clocks dictate optimal times for sleeping, waking, napping patterns, and exposure to light (National Institutes of Health). Relating to this, the study by (Liguori *et al.*,2020) discovered that patients with idiopathic rapid eye movement sleep behavior disorder have a lower circadian sleep-wake cycle, more subjective complaints, and higher Beck Depression Inventory scores, all of which are correlated with depressive symptoms. Higher level of depressive symptoms when accompanied by sleep deprivation may also lead to suicide attempts (Culajara, 2023). According to research, people sleep better when their bedrooms are constructed to optimize light and noise levels, temperature, and an overall comfortable environment that improves mood while awake (Pacheco & Pacheco, 2023). Elements such as bedroom decor, external surroundings, ventilation, and a closed room contribute significantly to a person's sleep quality (Xu *et al.*, 2021). Relating to this study, examining behaviors that impact sleep involves exploring various factors that influence sleep quality, such as stimulants, stress, anxiety, electronic devices, nutrition, physical activity, and sleep hygiene (Mirończuk-Chodakowska, 2022). Suni (2023) defines sleep hygiene as the practice of creating a comfortable bedroom environment, maintaining daily routines, and adopting healthy habits to ensure consistent and uninterrupted sleep. The enhancement of sleep hygiene has been linked to improved sleep quality, and this, in turn, is associated with overall good health and improved mental well-being (Alijanzadeh *et al.*, 2023).

The study by Grove *et al.* (1992) developed a POMS short form comprising 40 items that covers seven indicators: tension, depression, anger, confusion, fatigue, vigor, and esteemed related affect, a widely used measure for assessing an individual's mood. A study by Kim & Shin (2021) reported that tension is frequently felt by middle-aged women as a result of menopause, aging, and overwhelming social responsibilities, resulting in sleep disturbances. As for depression, a study by Bean & Ciesla (2020) states that if an individual is sleep deprived, there is a higher level of depressed mood the next day, and individuals who have cognitive and biological vulnerabilities to experiencing depressed mood can be aggravated by sleep deprivation. Furthermore, anger was discovered to be closely related to sleep quality among university students in the study, with poor quality indicating a higher risk of anger expression (Arbinaga *et al.*, 2019). In addition, the study by Golden (2019) indicates that losing moderate sleep can increase anger arousal in individuals, regardless of their anger trait, and subjectively felt tiredness is strongly associated with a higher vulnerability to anger. In the study of Aryasree *et al.* (2023), 59% of their respondents had mild-to-high sleep deprivation, and confusion is one of the factors that sleep deprivation effects, which can potentially impact their overall well-being. Relating to this, the study by Gumasing *et al.* (2022) found that fatigue levels among college students in the Philippines have risen due to the closure of institutions and the pandemic, as indicated by the study, resulting in decreased stamina and sleep quality. This also relates to the study by Kinnunen *et al.* (2022), which found that vigor can be enhanced through good sleep, which replenishes energy resources, while poor sleep can decrease vigor and increase stress levels. Lastly, a study by Panda *et al.* (2022) confirms that sleep deprivation has significant adverse affects on mood states. The study reports significant changes in esteem-related affect and other factors of mood state.

Research has identified a direct relationship between sleep hygiene and mood states (Bevilacqua *et al.*, 2019). As outlined by Han and Wang (2022), mood states are transient emotional conditions that individuals undergo, categorizable broadly as positive, negative, or neutral. Furthermore, Searight and Montone (2020) note that individuals experiencing poor sleep quality tend to exhibit elevated levels of depression, tension, anger, confusion, and fatigue within their mood state compared to those with good sleep quality. However, this is opposed by (Triantafillou *et al.*, 2021) stating that the causal day-to-day interaction between sleep and mood has not been widely investigated, mainly due to the lack of daily evaluation data. Moreover, the crucial connection between poor sleep hygiene and sleep deprivation is highlighted in the work of Philip *et al.* (2019). Therefore, emphasizing the importance of maintaining good sleep hygiene becomes imperative to avoid the adverse effects of sleep deprivation. Prior research has often overlooked the tailored sleep practices required for university students' unique circumstances. By concentrating on this demographic, the study seeks to overcome the limitations of past studies and provide insights directly applicable to the community's well-being. The research's contribution lies in localizing its findings and highlighting the interconnectedness between sleep practices and mood within a specific cultural and academic setting. This approach offers a deeper understanding of the factors influencing students' mental health, aiding in the development of precise interventions. It also advocates for customized interventions and support programs tailored to the community's needs, fostering a healthier academic environment.

Research Objectives

This study aimed to determine the following:

1. What is the profile of the students in terms of:
   1.1 Gender
   1.2 Year Level
   1.3 Department
2. What is the level of the Sleep Hygiene Index of students in terms of:
   2.1 Sleep-wake cycle behaviors
   2.2 Bedroom factors
   2.3 Behaviors that affect sleep
3. What is the level of the Mood States of students in terms of:
   3.1 Tension

3.2 Depression
3.3 Anger
3.4 Confusion
3.5 Fatigue
3.6 Vigor
3.7 Esteemed Related Affect

4. Is there a significant relationship between Sleep Hygiene and Mood States?

5. What particular domains under Sleep Hygiene influence Mood States?

MATERIALS AND METHODS

This chapter details the study's methods. It discusses the location, respondents, research instrument, gathering data procedure, statistical tools, and ethical considerations.

Research Respondents

The respondents in the study consisted of students from colleges in Davao Region throughout all year levels and departments during the school year 2023-2024. The researcher employed a Slovin Test to calculate the population of the students of this university in the Davao Region. The calculation resulted in 350 students, who were then selected from a total population of 3,868 students using a simple random selection method. Simple random sampling is a popular sampling method in quantitative research (Noor *et al.*, 2022).

Research Instruments

The methodology used in this study required the use of particular instruments to collect relevant data. The primary data gathering instrument was a survey conducted using questionnaires based on the Sleep Hygiene Index (SHI). Mastin *et al.* (2006) developed the SHI, a 13-item self-report index, to assess the prevalence of Sleep Hygiene behaviors. Notably, the SHI items are based on the ICSD's diagnostic criteria for insufficient sleep hygiene. The SHI includes three distinct indicators, namely sleep-wake cycle behaviors, bedroom factors, and behaviors that affect sleep. Respondents rated each item on a scale from (1 Never, 2 Rarely, 3 Sometimes, 4 Frequently, 5 Always). Moreover, before using the questionnaire, the researcher requested permission from the author via email to confirm proper usage and ethical standards. The survey questionnaire was assessed for reliability, obtaining a Cronbach's α of 0.77 for the prior study. Aside from sleep-related assessments, the study examined mood states using the "Profile of Mood States" (POMS), a widely used questionnaire in a variety of fields, including clinical, psychological, somatic, pharmacological, occupational, and sports medicine studies (McNair *et al.*, 1992). The POMS short form, comprising 40 items, covers seven indicators: tension, depression, anger, confusion, fatigue, vigor, and esteemed-related affect. Respondents rated each item on a scale from (1 Not at all, 2 A little, 3 Moderately, 4 Quite a lot, and 5 Extremely). Researchers also reached out to the author via email to request permission for the use of the POMS questionnaire. This step was crucial to maintaining research integrity and adherence to ethical guidelines. The Mood State questionnaire's reliability was evaluated using the Pearson-r Correlation Coefficient, which obtained an overall Cronbach's α score of 0.955, indicating strong internal consistency. Below are the interpretations utilized to assess the mean scores of Sleep Hygiene Practices and Mood States among college students in the Davao Region.

Table 1: Sleep Hygiene Practices Mean Interpretation

Mean Interval	Description	Interpretation
4.21 - 5.00	Always	Very Poor Sleep Hygiene
3.41 - 4.20	Frequently	Poor Sleep Hygiene
2.61 - 3.40	Sometimes	Average Sleep Hygiene
1.81 - 2.60	Rarely	Good Sleep Hygiene
1.00 - 1.80	Never	Excellent Sleep Hygiene

Table 2: Mood States Mean Interpretation

Mean Interval	Description	Interpretation
4.21 - 5.00	Extremely	Often evident
3.41 - 4.20	Quite a lot	Regularly evident
2.61 - 3.40	Moderately	Occasionally evident
1.81 - 2.60	A little	Rarely evident
1.00 - 1.80	Not at all	Not at all evident

Design and Procedure

This quantitative study employed a descriptive predictive research design, on with a randomly selected sample of 350 undergraduate students. The researchers utilized two questionnaires for each variable and asked permission via email. The respondents received a structured questionnaire, divided into three sections. The initial part gathered demographic information, including gender, year level, and department. The second part included the Sleep Hygiene Index (SHI) questionnaire, validated by Mastin *et al.* (2006), while the third part consisted of the short version of the Profile of Mood States (POMS), validated by McNair *et al.* (1992). The distribution of questionnaires was conducted using both traditional printed forms and online formats. Before administering the survey, respondents were briefed on the study's purpose, methods, potential advantages and disadvantages, confidentiality guidelines, and the voluntary nature of their participation. To ensure ethical considerations, the researcher obtained letters of permission signed by the adviser and approved by the Dean. Finally, the collected questionnaires were tallied and analyzed using Jamovi Software Version 2.4.14, with data interpretation aligning with the study's primary objective.

Statistical Treatment

The researchers used statistical methods to test normality and identify correlations between variables. Normality,

characterized by the symmetric distribution of data points around a central point in a bell-shaped curve, is essential for the application of powerful parametric statistical tests commonly employed by psychologists (Mcleod, 2023). The Shapiro-Wilk test indicated that the data was regularly distributed $p > 0.05$, which enabled parametric tests. They then utilized descriptive statistics (mean and standard deviation) to summarize the data; this allows researchers to understand the central tendency and variability within the data and Pearson's correlation coefficient to assess linear correlations among variables. A measure of the linear association between two continuous variables, likely employed in the study, is the correlation coefficient, which ranges from -1 (indicating a perfect negative correlation) to +1 (reflecting a perfect positive correlation), with 0 denoting no linear relationship (Stewart, 2024). Lastly, the researchers utilized linear regression analysis to model the relationship between the variables, as this statistical technique enables the formulation of a predictive model where a dependent variable is modeled based on one or more independent variables; the derived model can then be employed to make predictions about the dependent variable using the values of the independent variables (Palmer *et al.* 2009).

Ethical Considerations

This research follows the ethical guidelines required from this study. Respondents are asked about their willingness to engage in the research study, with the assurance that they retain the option to exit or withdraw from the study at any point and that researchers will not subject them to questioning regarding their decision. The researchers protect respondents' personal information, emphasizing their commitment to maintaining anonymity as promised. They also ensure that the gathered data is only used for the activity's explicitly stated purpose while adopting necessary security measures to protect the information's confidentiality and integrity. Each respondent received an informed consent form detailing the research's objectives, potential risks, and benefits, clarifying their role in the study. This process was implemented to guarantee that participants had a comprehensive understanding of the nature of the research.

RESULTS AND DISCUSSION

This chapter presents data, findings, and a discussion of mood states and the sleep hygiene practices of the students. Tables are organized by subheadings: Demographic Profile of the Respondents, Level of Sleep Hygiene Practices, Level of Mood States, Pearson-R Correlation between Sleep Hygiene Practices and Mood States, and Regression Analysis for Variables Predicting Student Mood States (n = 350).

Demographic Profile of the Respondents

The first objective of this research study is to provide a detailed description of the demographic profile of the respondents. This study utilized 350 respondents.

Table 3: Characteristics of Respondents (n=350)

	Profile	**f**	**%**
Gender			
	Female	212	61
	Male	130	38
	LGBTQ+	5	2
Year Level			
First Year		185	53
Second Year		116	33
Third Year		31	9
Fourth Year		18	5
Department			
DAS		99	28
DCJE		99	28
DBA		39	11
DTE		41	12
DAE		44	13
DTP		28	8
Total		**350**	**100.0**

Table 3 presents a detailed analysis of the respondents' demographic profile, highlighting variances by gender, year level, and department. In terms of gender, female students make up the majority (n = 212, 61%), followed by male students (n = 130, 38%), and students from the LGBTQ+ community (n = 5, 2%). In terms of year level, respondents from the first year comprise the largest group, with 185 students (53%), followed by

second-year students with 116 students (33%), third-year students with 31 students (9%), and fourth-year students with 18 students (5%), who have the fewest number of responses. In terms of departments, Art and Sciences (DAS) and Criminal Justice Education (DCJE) had the most responses (n = 99, 28%), followed by Accounting Education (DAE) (n = 44, 23%), Teachers Education (DTE) (n = 41, 12%), Business Administration (DBA) (n = 39, 11%), and Technical Programs (DTP) (n = 28, 8%). Analyzing this data reveals that the greatest number of respondents are female students, with 212 (61%) respondents, and the lowest are students who are part of the LGBTQ+ community, with 5 (2%) respondents. The majority of the respondents are from the first-year level with 185 (53%) respondents, and the year level with the fewest number of responses is the fourth year with 18 (5%) respondents. In terms of Department DTP has the lowest respondents with 28 (28%).

The Level of Sleep Hygiene Practices of College Students

Table 4 summarizes the statistical analysis findings used to assess the levels of Sleep Hygiene Practices of the students in a University in Davao Region in 3 factors: Sleep-wake cycle Behaviors, Behaviors that affect sleep, and Bedroom Factors.

Table 4: Level of Sleep Hygiene Practices of College Students

Indicator	$\bar{x}$	SD	Interpretation
Sleep-wake cycle behaviors	3.13	0.754	Average Sleep Hygiene
Behaviors that affect sleep	2.77	0.662	Average Sleep Hygiene
Bedroom Factors	3.44	0.850	Poor Sleep Hygiene
Total	**3.11**	**0.567**	**Average Sleep Hygiene**

Table 4 illustrates the extent of sleep hygiene practices among students in a certain University. The table reveals that the highest mean corresponds to, "Bedroom Factors," with $\bar{x}$= 3.44, SD= 0.850 which interprets poor Sleep Hygiene. This section likely assesses behaviors related to feeling stressed. High stress levels, as noted by Dusang (2019), can harm sleep by making it longer but less restful, activating the body's stress system, raising cortisol levels, and further disrupting sleep. It's advisable to avoid going to bed angry, upset, or nervous, as these emotions can lead to long-term memory problems. Instead, try activities like walking, reading, or deep breathing (Carter, 2023). Additionally, a study (Gavin,2020) suggests that if one can't fall asleep within 20 minutes, it's better to leave the bed and return when feeling sleepy. It's important to only use the bed for sleep or intimacy, avoiding activities like reading, eating, watching TV, or working. In contrast, the study of Bryan and Cotliar (2024) indicates that individuals who read before bedtime tend to experience improved sleep quality, fewer awakenings during the night, and longer sleep durations compared to those who do not read before going to bed. Moreover, having a comfortable mattress can reduce stress by allowing the body enough time to recover and repair during deep sleep (Forth, 2023). Furthermore, using the correct pillow can ensure proper spinal alignment, enhancing sleep quality and duration (Radwan *et al.*, 2021). Peters (2024) emphasizes that creating a suitable sleep environment by considering various factors can improve sleep quality, leading to a more productive day. Despite efforts to eliminate negative factors that disturb sleep, bedroom conditions can significantly affect sleep quality, as highlighted by Yan *et al.* (2022).

The Level of Mood States of College Students

Table 5 summarizes the statistical analysis findings used to assess the levels of mood states of students in a certain university based on 7 factors: tension, depression, anger, confusion, fatigue, vigor, and esteemed-related affect.

Table 5: Level of Mood States of College Students

Indicator	$\bar{x}$	SD	Interpretation
Tension	2.83	0.706	Occasionally evident
Anger	2.76	0.696	Occasionally evident
Fatigue	2.41	0.949	Rarely evident
Depression	2.75	0.807	Occasionally evident
Vigor	3.34	0.786	Occasionally evident
Confusion	3.27	0.682	Occasionally evident
Esteemed Related Affect	3.14	0.419	Occasionally evident
Total	**2.99**	**0.371**	**Rarely evident**

Table 5 shows the mood states of the students at a certain university. The table shows that the factor with the highest mean is, "vigor" with $\bar{x}$= 3.34, SD= 0.786 which means that moods like liveliness and activeness are occasionally evident among the respondents. The Ding *et al.* (2023) study, which investigates the relationship between sleep quality and vigor via thalamic clustering, finds that when the coefficient in left thalamic clustering is low, the relationship between vigor and sleep is significant; however, when the coefficient in left thalamic clustering is high, the relationship between vigor and sleep becomes insignificant. The item with the lowest mean is fatigue, with $\bar{x}$ = 2.41, SD= 0.949 which indicates that moods like exhaustion and fatigue are rarely evident in the respondents. According to (Harris *et al.*,2020) mixed evidence supports an association between poor sleep quality and daily fatigue, with some claiming that fatigue is caused by a lack of sleep and others finding no significant relationship between sleep quality and fatigue. Furthermore, fatigue characterized by tiredness and reduced energy levels, can stem from insufficient sleep duration or quality, as well as heightened work demands or extended work periods (O'Conell, 2023). Meanwhile, the overall mood state is $\bar{x}$ = 2.99, SD= 0.37 which means

that the mood states are regularly evident. The study (Triantafillou et. al., 2019) discovered a substantial effect between sleep quality on mood, with the effect on next-day mood being larger within individuals than previous-day mood, not influenced by past mood.

Correlation Analysis between Sleep Hygiene and Mood States

Table 6: Pearson r correlation analysis between the variables

Independent variable		**Overall Satisfaction Mood States**	
Sleep Hygiene Practices	**r**	**p-value**	**Remarks**
	.439	<.001	Significant

Table 6 shows the association between Sleep Hygiene and Mood States. The results are significant with a p<.001indicating that the finding of this study is statistically significant, and the finding reveals a moderately positive correlation r=439, which means that sleep hygiene and mood states have a positive relationship. This shows that certain university students' mood states are likely influenced by their sleep hygiene. Similarly, a study (Short et. al.,2020) found that short sleep significantly predicts mood deficits across geographical regions, including heightened feelings of depression, anxiety, anger, alongside an increase in a negative emotion and a decrease in positive ones. Additionally, the study (Epstein, 2021) stated that sleep and mood are closely related; poor or inadequate sleep can promote anger and stress, while good sleep can boost well-being.

Regression Analysis for Variables Predicting Student Mood States

Table 7 shows the regression analysis for variables predicting the Sleep Hygiene of the students in a certain University. The table shows that one significant predictor contributed to the students' varied levels of Sleep Hygiene.

Table 7: Linear Regression of the Indicators Predicting Mood States

Predictor	**B**	**SE**	**β**	**p**
Intercept	2.14947	0.0893	24.063	<.001
Sleep-Wake Cycle	-0.00465	0.0225	-0.207	0.836
Behaviors that affect sleep	0.20447	0.285	7.186	<.001
Bedroom Factors	0.07141	0.0215	3.317	0.001
R^2	0.252			
F	38.8			

This research is conducted to determine if sleep-wake cycle, behaviors that affect sleep, and bedroom factors predict mood states among university college students. Results show that 25% of the variance is explained by the three predictors, F=38.8 (df1=3, u=346) = F, p<.001. Specifically, behaviors that affect sleep (B=0.20447, t=7.186<.001) and bedroom factors (B=0.07141, t=3.317 p=0.001) are positively associated with mood states. On the other hand, the sleep-wake cycle is not significantly related to the outcome variable (B=-0.00465, t=-0.207, p=0.836). This study highlights the significant psychological implications of sleep-related behaviors and bedroom conditions on the mood states of university students. Activities such as exercise, smoking, caffeine and alcohol consumption, pre-sleep video game engagement, discomfort due to room temperature, pre-sleep worrying, and pre-sleep work involvement have been identified as influential factors in shaping mood states. Notably, recent research by Glavin *et al.* (2021) suggests that heightened exercise levels among female cohorts may lead to earlier bedtimes and diminished sleep quality. Conversely, findings from Elgayar *et al.* (2024) indicate that consistent exercise routines correlate with enhanced sleep quality and reduced depression symptoms among female subjects. The persistent adherence to certain behaviors, such as pre-sleep electronic device usage, poses a challenge for many students attempting to modify their sleep patterns. Moreover, a tendency to underestimate the disruptive effects of alcohol and caffeine on sleep quality is apparent among certain cohorts (Duthie *et al.*, 2024). Within the realm of bedroom factors, the experience of pre-sleep stress, anger, distress, or anxiety, coupled with habits such as pre-sleep eating, reading, studying, and inadequate bedding utilization, significantly influences mood states. Research by Hisler and Krizan (2017) reveals a direct association between anger and sleep quality, suggesting a bidirectional relationship between affective states and sleep quality. Furthermore, a predisposition towards anger may precipitate compromised sleep quality. Studying in bed presents a multifaceted challenge, disrupting sleep continuity, exacerbating stress and anxiety, and inducing physical discomfort (Asma, 2023). An R-squared coefficient of 25% underscores the substantial contribution of identified predictors towards the variability in mood states. However, this leaves a significant portion (75%) of unexplained variability, indicating the presence of latent variables necessitating further exploration.

CONCLUSION

This study evaluated the relationship between Sleep Hygiene Practices and Mood States among college students at a particular university. It found that most respondents were first-year students, while fourth-year students were the least represented. Female students were the majority, with LGBTQ+ individuals being the minority. Participants mainly belonged to the Departments of Arts and Sciences and Criminal Justice Education, while the Department of Technical Program had the fewest respondents. Moreover, the students' Level of Sleep Hygiene Practices and Mood States were evaluated

using the mean and standard deviation. Regarding Sleep Hygiene Practices, the highest mean score was observed in Bedroom Factors, indicating poor sleep hygiene. This suggests that improving the bedroom environment could enhance sleep quality for students. Recommendations included avoiding activities like using electronic devices in bed and investing in quality bedding. The second-highest mean was for sleep-wake cycle behaviors, suggesting average sleep hygiene. Consistent bedtime routines and avoiding daytime naps were advised. The lowest mean was for Behaviors that Affect Sleep, indicating occasional engagement in sleep-disruptive activities. In terms of Mood States, students demonstrated a high level of Vigor, indicating moderate levels of liveliness and energy. Vigor showed the strongest correlation with Sleep Hygiene Practices among the predictors, suggesting that students may compensate for poor sleep hygiene with bursts of energy. Fatigue had the lowest mean, suggesting it was rarely evident despite students' energy levels. The study highlighted the significance of Bedroom Factors and Behaviors that affect sleep as key predictors of students' mood states as evident in the linear regression analysis. It emphasized the importance of prioritizing sleep hygiene and mood management, as neglecting either can have adverse effects on well-being. Taking a holistic approach to health, including addressing sleep hygiene practices.

RECOMMENDATIONS

Based on the findings and conclusions presented, the researchers offer the following recommendations and suggestions. Educational institutions, including schools and universities, should prioritize fostering a healthy campus environment by implementing policies that support students' well-being. These policies might involve adjustments to class schedules, workload management strategies, and organizing campus activities that can influence students' sleep patterns and mood states. Moreover, allocating resources towards mental health services and support systems is crucial to promote students' overall well-being. This includes providing access to counseling services, wellness programs, seminars, and workshops focused on improving sleep hygiene. Both students and educators should prioritize adopting and maintaining healthy sleep hygiene practices. This involves adhering to a consistent sleep schedule and avoiding activities that disrupt sleep, such as consuming caffeine or engaging in stimulating tasks before bedtime. If individuals encounter mood disturbances or sleep-related challenges, seeking assistance from campus resources like counseling or health services is recommended. For readers, understanding the link between sleep hygiene practices and mood states prompts reflection on personal sleep habits and encourages adjustments for better sleep hygiene, if necessary. Future research opportunities lie in investigating the sleep hygiene practices and mood states of LGBTQ+ individuals within academic settings, as this demographic has not been extensively explored in the present study. To enhance the validity and applicability of findings, future studies should aim for larger sample sizes to draw more precise conclusions regarding the impact of sleep hygiene practices on mood states. Expanding the study's scope can help identify gaps in existing research, leading to improvements in methodologies and the utilization of advanced sampling techniques like stratified sampling for increased accuracy and reliability. Additionally, longitudinal studies tracking changes in sleep hygiene practices and mood states over time offer a more comprehensive understanding of these relationships.

Acknowledgements

The researchers would like to thank and are particularly indebted to the following people who contributed much through a multitude of effort, hard work, and sacrifices that played an indispensable role in the completion of the study. To our research panels, for their exemplary guidance and supervision as well as for providing necessary information regarding this research. To our parents who confirmed care, sympathy, and assistance to assemble this study. This serves as a testament to your unconditional love and support for us. To all the people who supported us directly or indirectly to complete our study. And above all, to the Almighty God who gave the researchers strength and guidance from the beginning until the end.

REFERENCES

Arbinaga, F., Joaquin-Mingorance, M., & Fernandez-Cuenca, S. (2019). Expression of anger in university students according to perceived quality of sleep. *Sleep Science, 12*(1), 28-34. https://doi.org/10.5935/1984-0063.20190058

Bean, C. A. L., & Ciesla, J. A. (2020, November 10). Naturalistic partial sleep deprivation leads to greater next-day anxiety: The moderating role of baseline anxiety and depression. *ScienceDirect*. Retrieved March, 17, 2024, from https://www.sciencedirect.com/science/article/abs/pii/S0005789420301477

Bermundo, M. A., Frias, A. J., Manong, C. K., Manong, A., & Mendiola, C. (2019). Effects of sleep deprivation to the mental health stability of selected grade 9 students of Ramon Magsaysay (Cubao) High School (RMCHS). *Academia.edu*. Retrieved March, 9, 2024, from https://www.academia.edu/44918963/Effects_of_Sleep_Deprivation_to_the_Mental_Health_Stability_of_Selected_Grade_9_Students_of_Ramon_Magsaysay_Cubao_High_School_RMCHS_

Bryan, L. (2024, January 5). Reading before bed. *Sleep Foundation*. Retrieved April 3, 2024, from https://www.sleepfoundation.org/sleep-hygiene/reading-before-bed

Carter, L. (2023, August 17). What to do when you're angry and can't sleep. Sleep Bubble. Retrieved from https://www.sleepbubble.com/angry-and-cant-sleep/

Chen, W.-L., & Chen, J.-H. (2023, January 6). *ScienceDirect*.

Retrieved March, 9, 2024, from https://www.sciencedirect.com/science/article/abs/pii/S0091743519301501

Colt, B. A., & Reilly, M. D., M. P. H., J. M. (2019, September 26). An educational intervention to improve the sleep behavior and well-being of high school students. *National Library of Medicine, 3*. https://doi.org/10.22454/PRiMER.2019.871017

Culajara, C. L. (2023). Long Story Short, I Survived: An Exploration of the Meaning-making Stories of Suicide Attempt Survivors. *Asian Journal of Education and Social Studies, 49*(3), 10–28. https://doi.org/10.9734/ajess/2023/v49i31130

Ding, X., Li, Q., & Tang, Y.-Y. (2023). The thalamic clustering coefficient moderates the vigor–sleep quality relationship. *Sleep and Biological Rhythms, 21*. https://doi.org/10.1007/s41105-023-00456-2

Divina, L. A., Bindosano, C. L., Hammer-Appiah, M. N., Munthe, E. F., Bincang, A. G. F., & Batiller, K. (2019, December 18). Sleeping pattern, stress level and academic behavior of students enrolled in health related programs. *Jurnal-jurnal Universitas Advent Indonesia*. Retrieved March 9, 2024, from https://jurnal.unai.edu/index.php/isc/article/view/1091

Dusang, K. (2019, May 9). How stress can affect your sleep. Baylor College of Medicine. https://www.bcm.edu/news/how-stress-can-affect-your-sleep

Duthie, C. J., Cameron, C., Smith-Han, K., Beckert, L., Delpachitra, S., Garland, S. N., & Wibowo, E. (2024). Reasons for why medical students prefer specific sleep management strategies. *Behavioral Sleep Medicine,* 1-14. https://doi.org/10.1080/15402002.2024.2318261

Elgayar, S. L., Elgendy, S., & Youssef, T. M. (2024). Comparative effects of aerobic, resistance, and combined exercises on depression and sleep quality in women with controlled hypothyroidism: A randomized controlled trial. Advances in Rehabilitation / Postępy Rehabilitacji. https://doi.org/10.5114/areh.2024.136292

Epstein, L. J. (2017, November 9). Sleep and mood. Division of Sleep Medicine at Harvard Medical School. Retrieved April 3, 2024, from https://sleep.hms.harvard.edu/education-training/public-education/sleep-and-health-education-program/sleep-health-education-87

Forth, N. (2023, March 3). Does your mattress affect sleep quality? Endurance Beds. https://www.endurancebeds.co.uk/blogs/news/does-your-mattress-affect-sleep-quality

Gaarde, J., Hoyt, L. T., Hozer, E. J., Maslowsky, J., Deradorff, J., & Kyauk, C. K. (2020). So much to do before I sleep: Investigating adolescent-perceived barriers and facilitators to sleep. *Sage Journal, 52*(4). https://doi.org/10.1177/0044118X18756468

Gavin, M. L. (2020, June). What should I do if I can't sleep? (for Teens). KidsHealth. https://kidshealth.org/en/teens/sleepless.html

Glavin, E. E., Matthew, J., & Spaeth, A. M. (2022). Gender differences in the relationship between exercise, sleep, and mood in young adults. *Health Education & Behavior, 49*(1), 128-140. https://doi.org/10.1177/1090198120986782

Golden, B. (2019, March 9). Good sleep: Another essential factor for healthy anger. *PsychologyToday*. Retrieved March 17, 2024, from https://www.psychologytoday.com/us/blog/overcoming-destructive-anger/201903/good-sleep-another-essential-factor-healthy-anger

Grove, J. R., & Prapavessis, H. (1992). Abbreviated POMS (Revised Version). ResearchGate. https://www.researchgate.net/profile/Robert-Grove-3/publication/299823508_Abbreviated-POMS-Questionnaire-items-and-scoring-key/links/5705e07d08ae13eb88b97dc4/Abbreviated-POMS-Questionnaire-items-and-scoring-key.pdf?origin=publication_list

Gumasing, M. J. J., Delos Reyes, J. M. C., Dural, L. M. C., Mangaoang, S. D., & Victor, G. M. W. (2022, June 12-14). Effects of sleep quality on the fatigue level of students during COVID-19 pandemic. *IEOM Society*. Retrieved March 17, 2024, from https://ieomsociety.org/proceedings/2022orlando/519.pdf

Han, F., & Wang, Q. (2022, August 15). Positive and negative mood states mediated the effects of psychological resilience on emotional stability among high school students during the COVID-19 pandemic. *Frontiers in Psychology, 13,* Article 967669. https://doi.org/10.3389/fpsyg.2022.967669

Harding, E. C., Franks, N. P., & Wisden, W. (2022). Predicting and mitigating fatigue effects due to sleep deprivation: A review. *Frontiers in Neuroscience*. Retrieved March 9, 2024, from https://www.frontiersin.org/journals/neuroscience/articles/10.3389/fnins.2022.930280/full

Harris, A. L., Carmona, N. E., Moss, T. G., & Carney, C. E. (2021). Testing the contiguity of the sleep and fatigue relationship: a daily diary study. *Sleep, 44*(5), zsaa252. https://doi.org/10.1093/sleep/zsaa252

Hisler, G., & Krizan, Z. (2017). Anger tendencies and sleep: Poor anger control is associated with objectively measured sleep disruption. *Journal of Research in Personality, 71,* 17-26. https://doi.org/10.1016/j.jrp.2017.08.009

Jebb, A. T., Ng, V., & Tay, L. (2021). A review of key Likert scale development advances:1995–2019. *Frontiers in Psychology, 12,* Article 637547. https://doi.org/10.3389/fpsyg.2021.637547

Kim, Y. J., & Shin, D.-Y. (2021, July 31). A phenomenological study of tension relaxation in middle-aged women with sleep disorders in singing bowl. *KoreaScience*. Retrieved March 17, 2024, from http://koreascience.or.kr/article/JAKO202123861766325.page

Kinnunen, U., Laethem, M. V., Sianoja, M., & Bloom, J. d. (2022, August 6). Daily sleep in relation to subjective and physiological stress in an occupational context: Daily vigour as a mediator. Stress and Health. https://

doi.org/10.1002/smi.3185

Li, Y., Qin, Q., Sun, Q., Sanford, L. D., Vgontzas, A. N., & Tang, X. (2020, August 15). Insomnia and psychological reactions during the COVID-19 outbreak in China. *Sleep Medicine, 72,* 124-125. https://doi.org/10.1016/j.sleep.2020.04.020

Liguori, C., Zuccarelli, V., Spanetta, M., Izzi, F., Mercuri, N. B., & Placidi, F. (2023, January 6). Sleep−wake cycle dysregulation in idiopathic REM sleep behaviour disorder. *Journal of Sleep Research, e13234*. https://doi.org/10.1111/jsr.13234

Lopes, M. P. M., Cysneiros, L., Gutierres, G., e Silva, E. A., & Salmazo, V. B. H. (2009, June 3). Insufficient sleep in undergraduate students: An intervention based on a systematic literature review. *Consensus*. Retrieved March 19, 2024, from https://consensus.app/papers/0422-insufficient-students-intervention-based-pavoni/03d5422aeead540382fbf8feeb383608/?q=sleep+hygiene+and+mood+states+of+students&synthesize=on&year_min=2019

Luo, E. K., & O'Connell, K. (2023, April 18). Fatigue: Causes, diagnosis, treatment & more. *Healthline*. Retrieved April 3, 2024, from https://www.healthline.com/health/fatigue

Mastin, D. F., Bryson, J., & Corwyn, R. (2006). Assessment of sleep hygiene using the Sleep Hygiene Index. *Journal of Behavioral Medicine, 29*(3), 223–227. https://doi.org/10.1007/s10865-006-9047-6

McNair, D. M., Lorr, M., & Droppleman, L. F. (1992). Revised manual for the Profile of Mood States. San Diego, CA: Educational and Industrial Testing Services.

Mirończuk-Chodakowska, I., Witkowska, A. M., & Zujko, M. E. (2022, May 2). Sleep quality: A narrative review on nutrition, stimulants, and physical activity as important factors. *Nutrients, 14*(9), 1912. https://doi.org/10.3390/nu14091912

Mourzagh, A. (2023). Exploring the role of studying before sleeping using audio-visual aids in developing students memorization and recall: The case of first year EFL students at Mohamed Kheider University of Biskra. English Language Sciences of the Language. University of Biskra Repository. http://archives.univ-biskra.dz/handle/123456789/27075

Noor, S., Tajik, O., & Golzar, J. (2022). Simple random sampling. *International Journal of Education & Language Studies, 1*(2), 78-82. https://doi.org/10.22034/ijels.2022.162982

Palmer, P. B., O'Connell, D. G., & Chair, S.-L. E. (n.d.). Regression analysis for prediction: Understanding the process. Retrieved March 17, 2024, from https://pubmed.ncbi.nlm.nih.gov/20467520/

Panda, S. S., Jaipurkar, R., & Kumar, R. (2022). Effect of sleep deprivation on mood states of junior residents in the Obstetrics and Gynaecology Department: A prospective observational study. *Journal of Clinical & Diagnostic Research, 16*(9), QC01-QC04. https://doi.org/10.7860/JCDR/2022/55170.16822

Peri, C. (2021, June 7). Sleepiness: Cognitive and emotional effects. WebMD. Retrieved March 9, 2024, from https://www.webmd.com/sleep-disorders/features/emotions-cognitive

Peters, B. (2024, March 4). The importance of your bedroom sleep environment. *Verywell Health*. Retrieved April 3, 2024, from https://www.verywellhealth.com/the-importance-of-your-sleep-environment-3014944

PhD, S. M. (2022, October 11). Normal distribution. *Simply Psychology*. Retrieved March 17, 2024, from https://www.simplypsychology.org/normal-distribution.html

Radwan, A., Ashton, N., Gates, T., Kilmer, A., & VanFleet, M. (2021). Effect of different pillow designs on promoting sleep comfort, quality, & spinal alignment: A systematic review. *European Journal of Integrative Medicine, 42,* 101269. https://doi.org/10.1016/j.eujim.2020.101269

Ramamoorthy, S., Kamaldeen, D., Ravichandran, L., Sundaramahalingam, M., & Manikandan, S. (2019, September 30). Effect of stress on sleep hygiene among school-going adolescents in Chennai. *Journal of Family Medicine and Primary Care, 8*(9), 2920–2925. https://doi.org/10.4103/jfmpc.jfmpc_564_19

Short, M. A., Booth, S. A., Omar, O., Ostlundh, L., & Arora, T. (2020, August). The relationship between sleep duration and mood in adolescents: A systematic review and meta-analysis. *Sleep Medicine Reviews, 52,* Article 101311. https://doi.org/10.1016/j.smrv.2020.101311

Shriane, A. E., Russell, A. T., Ferguson, S. A., Rigney, G., & Vincent, G. E. (2020, June 3). Sleep hygiene in paramedics: What do they know and what do they do? PubMed. Retrieved March 9, 2024, from https://pubmed.ncbi.nlm.nih.gov/32507492/

Stewart, K. (2024, February 16). Pearson's correlation coefficient. Britannica. Retrieved from https://www.britannica.com/topic/Pearsons-correlation-coefficient

Tan, J., Mao, J., Jiang, Y., & Gao, M. (2021). The influence of academic emotions on learning effects: A systematic review. *International Journal of Environmental Research and Public Health, 18*(18), 9678. https://doi.org/10.3390/ijerph18189678

Thakur, A. (2023, December 1). Screening for sleep deprivation and mood states among staff nurses of tertiary care hospital in central India. *ResearchGate*. Retrieved March 17, 2024, from https://www.researchgate.net/publication/376086018_Screening_for_sleep_deprivation_and_mood_states_among_staff_nurses_of_tertiary_care_hospital_in_central_India

Triantafillou, S., Saeb, S., Lattie, E. G., Mohr, D. C., & Kording, K. P. (2019). Relationship between sleep quality and mood: Ecological momentary assessment study. *JMIR Mental Health, 6*(3), e12613. https://doi.org/10.2196/12613

World Health Organization. (n.d.). Stress. Retrieved

February 29, 2024, from https://www.who.int/news-room/questions-and-answers/item/stress

Xu, X., Shen, J., & Sun, Y. (2023, January 6). Environmental factors affecting sleep quality in summer: A field study in Shanghai, China. *ScienceDirect*. Retrieved March 9, 2024, from https://www.sciencedirect.com/science/article/abs/pii/S0306456521001455

Yan, Y., Lan, L., Zhang, H., Sun, Y., Fan, X., Wyon, D. P., & Wargocki, P. (2022). Association of bedroom environment with the sleep quality of elderly subjects in summer: A field measurement in Shanghai, China. *Building and Environment, 208,* 108572. https://doi.org/10.1016/j.buildenv.2021.108572

Zhang, R., Jiao, G., Guan, Y., Huang, Q., & Pan, J. (2023, June 29). Correlation between chronotypes and depressive symptoms mediated by sleep quality among Chinese college students during the COVID-19 pandemic. *Nature and Science of Sleep, 15,* 499-509. https://www.tandfonline.com/doi/full/10.2147/NSS.S403932