Rest for the Restless: Sleep Interventions to Promote Sleep Quality Among Low-Socioeconomic-Status Community College Students

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August 9, 2025

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In a modern world that never stops moving, sleep has become a luxury instead of a necessity. Many individuals experience grueling night shifts that do not end till the sun has begun to rise, have to-do lists that outlast the daylight, and must constantly reschedule rest breaks for "later." Society is facing a silent but deadly epidemic of sleep deprivation, with the CDC (2024) reporting that over a third of adult Americans are not getting as much sleep as they need. People of low-income socioeconomic status (SES) are disproportionately affected because even though sleep is a biological requirement, their lifestyles make it difficult to obtain. Quality sleep is locked behind stress, improper sleep environments, irregular work hours, and a lack of access to care and education. Among the most vulnerable are college students from low SES backgrounds who have to juggle academic pressures and financial responsibilities without sleep education and support. So, sleep is especially crucial for this population because it affects mental and physical health as well as academic success. The issue of sleep not only impacts health, but also the productivity and safety of society as a whole. Therefore, the proposed research will seek to understand how sleep interventions may improve sleep quality, academic performance, and mental and physical health of college students from low-socioeconomic backgrounds

Background and Significance

Role of Sleep

Sleep has numerous, crucial functions. It is vital for one's cognitive functions, health, metabolism, and muscle and tissue repair. First, sleep improves cognitive performance, increases alertness, allows for the formation of long-term memories, and reduces the likelihood of cognitive decline as one ages (Suni & Vyas, 2025). Second, sleep is essential for staying healthy.

According to Dr. Kenneth Wright, Jr., a sleep researcher at the University of Colorado, the immune system requires sleep as a time to repair (Wein, 2021). Poor sleep can also increase the risk for heart disease, type 2 diabetes, obesity, cancer, and dementia (John Hopkins Medicine, 2025). In addition to physical health, one's mental health is also impacted. Poor sleep increases negative emotional responses to stressors and decreases positive emotions, which can lead to an increased risk for depression, anxiety, and suicidal ideation (Columbia University Department of Psychiatry, 2022). Overall, sleep is vital, as it affects virtually every system in one's body by allowing it to rest, restore, and repair itself.

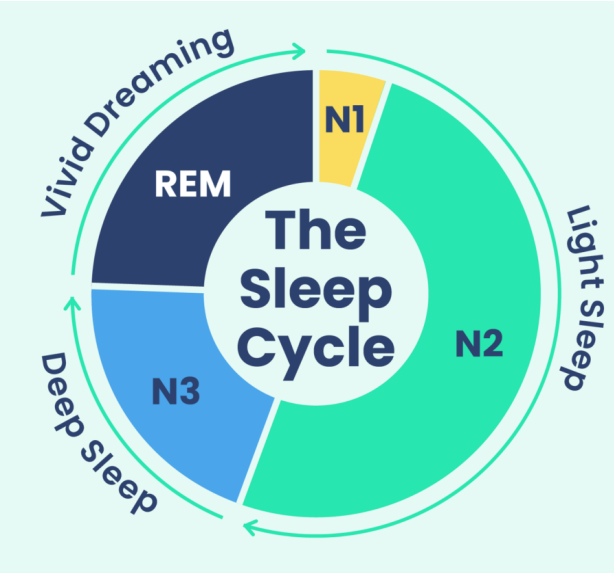
The Sleep Cycle

There are four stages of sleep: N1, N2, N3, and REM. REM stands for rapid eye movement, and N1 through N3 involve non-rapid eye movement (NREM) sleep (Suni & Singh, 2025). Sleep gradually deepens from N1 to REM, with around 75% of total sleep time spent in NREM. Each stage is associated with a different brain wave pattern that can be measured with an electroencephalogram (EEG). In N1, theta waves are documented. During this stage, heart rate and breathing begins to slow and muscles begin to relax. N1 acts as a bridge between being awake and asleep. In N2, the EEG records sleep spindles and K-complexes, which are distinct brainwave patterns that are associated with memory consolidation and preparation for deep sleep. During this stage, body temperature drops, and heart rate and breathing continue to slow. In N3, delta waves are shown. This stage is the hardest to wake up from, and during N3, bodily restoration and memory consolidation occurs. In REM, beta-like waves, similar to wakefulness, can be examined. During this stage, the brain becomes active and dreaming may occur. This stage is crucial to one's mental health because it aids emotional processing and stress regulation. Normally, people go through four to five sleep cycles each night, with each cycle lasting

approximately 90 to 110 minutes (Patel, Reddy, Shumway, & Araujo, 2024). See Figure 1 for a diagram of the full sleep cycle.

Figure 1

The Sleep Cycle



Note. The four stages of the sleep cycle are visualized according to their length. From Suni, E. (2023a, December 8). Stages of sleep: What happens in a sleep cycle. Sleep Foundation; Sleep Foundation. https://www.sleepfoundation.org/stages-of-sleep

Defining Good Sleep

Good sleep is determined by three main factors: sleep quantity, sleep quality, and sleep hygiene. Understanding how to improve in all three areas is therefore important if one wants to understand how to get a good night's sleep.

Sleep Quantity

The amount of sleep people need varies according to their age and health condition (Solodar, 2025). Children typically need more sleep than adults. Those who are ages 6-12 should

get 9-12 hours of sleep per 24 hours. Teens aged 13-18 should get 8-10 hours per 24 hours. Adults should get seven or more hours per night (Olson, 2023).

Sleep Quality

The quality of sleep is essential when it comes to what is considered "good" sleep. Some factors to consider here are sleep latency, sleep continuity, consistency, and REM sleep. Sleep latency is crucial because a normal adult should fall asleep within 10- 20 minutes of going to bed (Kushida, 2013). Furthermore, sleep should be continuous, meaning that one is not waking up multiple times in the middle of the night. Having a consistent sleep schedule is also important for high-quality sleep. One should also enter REM several times a night because REM sleep is critical for memory consolidation, emotional processing, and brain development (Summer, 2024).

Sleep Hygiene

Sleep hygiene refers to healthy habits that can be practiced in order to promote better sleep. The following are beneficial ways to improve sleep hygiene: set a consistent sleep schedule of seven to nine hours per night for most adults, limit bed usage to sleep only, and establish a bedtime routine by implementing low stimulation activities such as reading. Furthermore, environmental factors (e.g., quiet dark room) can help improve sleep latency, and physical activity throughout the day may deepen sleep (Solodar, 2025). Adjusting bad habits such as excess caffeine, alcohol, and stress can also improve sleep. It is best to customize individualized sleep habits since everybody's ideal conditions are different, and by tailoring one's sleep routine for long-term consistency improves sleep quality (Solodar, 2025). Practicing these sleep hygiene tips can improve quality of life because healthy sleep impacts mental and physical health on a broad spectrum.

Impact of Lack of Sleep

Considering that reduced sleep has been linked to 7 of the 15 leading causes of death in the U.S. (Chattu et al., 2018), sleep should be a fundamental human right. Sleep is crucial for numerous reasons. First, a lack of sleep can negatively impact cognitive functions such as memory or reaction time (Khan & Al-Jahdali, 2023). When these functions are impaired, daily actions such as driving can become extremely dangerous. In fact, 21% of fatal crashes involve a drowsy driver (Atherton, 2023). Well-slept drivers ensure safety on the road. Furthermore, a lack of sleep disproportionately affects children. Children with reduced sleep are more likely to struggle with verbal creativity, problem solving, inhibiting behaviour, and generally score lower on IQ tests (Gruber, n.d.).Drowsy Driving Is a Factor in 21% of Fatal Crashes. Why Don't We Talk About It More?

In addition, not getting enough sleep can compromise both mental and physical health. Sleep deficiency can be linked with many symptoms such as depression, suicide, difficulty coping with change, and increased risk of diabetes, heart attacks, high blood pressure, and more (National Heart, Lung, and Blood Institute, 2022). Finally, lack of sleep can slow down the overall productivity of a society. Workers sleeping less than six hours lose six working days per year, and workers sleeping six to seven hours lose 3.7 days per year. This means that the U.S. loses 1.23 million work days due to insufficient sleep, compared to other countries such as Canada with 0.08 million days. The 1.23 million work days lost in the U.S. translates to a $280B–$411B annual GDP loss (Hafner et al., 2017).

Literature Review

Sleep is often overlooked despite the vital role it plays in physical, emotional, and cognitive health. Disaparities in sleep health can often be caused by factors such as one's

socioeconomic status, one of the strongest predictors of poor sleep. The effects of poor sleep are amplified for college students, especially those of low SES, who suffer from academic pressure, financial stress, and a lack of good sleep habits. Oftentimes, they are not aware of how low quality sleep can worsen these factors. However, access to sleep education and proper healthcare can help improve their sleep. Positive sleep habit building can be a crucial factor of success for these students.

Relationship Between Socioeconomic Status and Sleep Quality

A narrative review by Papadopoulos and Sosso (2023) synthesized findings from 336 observational studies conducted between 1990 and 2019 and found that lower SES (measured in terms of income, employment, education, and subjective social status) is frequently associated with worsened sleep. Specifically, strong correlations were found in measures such as sleep latency, frequency of awakenings, and sleep efficiency. For example, 100% of the studies measuring sleep latency found that low SES was linked to a longer time needed to fall asleep. These disparities can be attributed to several factors including behavioral factors, such as smoking, alcohol use, and bad sleep hygiene; environmental factors, such as noisy neighborhood, house quality, and lack of housing; and psychological factors such as stress, depression, and anxiety. Furthermore, their economic situation such as financial difficulties and food security directly impacted sleep (Papadopoulos & Sosso, 2023).

Sleep quality is a key factor among SES, overall health, and sleep quality rather than sleep quantity. People with higher income said they had better sleep quality which in turn meant they had better physical and mental health. On the other hand, the quantity of sleep has a weak association with health. Moore et al. (2002) identified a difference between sleep quantity and quality. Specifically, the benefits of higher quality sleep were more important for people who

slept for less hours. In other words, for people of lower SES who do not have as much time for sleep, quality is especially crucial. Associations between SES and health disparities were modest but still statistically significant and consistent across different models (Moore et al., 2002).

Sleep quality is a pathway in which SES directly affects one's health (Stamatakis et al., 2007). People with lower incomes experience worse sleep due to factors such as stress, noisy neighborhoods, bad living conditions, unsafe environments, irregular sleep schedules, and anxiety. These are all factors contributing to worsened sleep health. In fact, adolescents classified as "poor" were four and a half times more likely to report insomnia in comparison to their counterparts, and youth in low income families were more likely to develop other sleep disorders (Felden et al., 2015)

Oftentimes, poor sleep is also due to a suboptimal work-life balance. In order to support themselves or their families, individuals of low SES suffer from irregular and unstable work hours (East et al., 2025). Workers with lower earnings were found to be more likely to work night shifts: 21.2% of workers earned less than the 25th percentile compared to 8.3% for those earning above the 75th percentile (Konopliov, 2024). The same study found that younger workers aged 15-24 were most likely to work nightshifts. Mothers often reported that they work a non-traditional schedule for their families, and parents with only a high school diploma were also more likely to work these non-standard schedules (Konopliov, 2024). These irregular schedules are associated with inconsistent sleep schedules, more napping, and shorter sleep durations (Reid et al., 2018). The Shift Work Sleep Disorder describes the phenomenon where the circadian rhythm is disrupted due to irregular shift times. In normal circumstances, sunlight acts as a cue for one's internal clock so that hormones can be released to tell the body when it should be active and when it should be resting. For people working night shifts, the hormonal

cues do not match their workday, therefore causing insomnia, trouble sleeping, hypersomnia, and excessive sleepiness (Cleveland Clinic, 2017).

Environmental Factors can Lead to Unhealthy Sleep Behaviors

There are numerous unhealthy behaviors present in low income individuals that compromise their sleep. Living in low income neighborhoods contributes to poor sleep because the increased noise and light pollution disrupts the natural sleep cycle, and access to green spaces is limited, reducing opportunities for physical activity and relaxation (Ellison, 2021). In fact, sleep researcher Wendy Troxel goes as far as saying, "[the] zip code matters as much as [a person's] genetic code" (Ellison, 2021, para. 9). Furthermore, these unhealthy factors are even more present within children, with young individuals in low income households having a later bedtime and more irregular sleep pattern (Felden et al., 2015). Irregular sleep and later bedtimes are associated with worsened grades for high school students and harm the developing brains of adolescents, specifically the amygdala (National Institutes of Health, 2024; Merz, 2024;). These unhealthy environmental factors and poorer grades can generate additional stress for these students.

Stress Levels

Lower SES is associated with numerous social and environmental conditions that contribute to chronic stress burden, including crowding, crime, noise pollution, discrimination, and other hazards or stressors (Baum et al., 1999). In other words, chronic stress may capture much of the variance in health and social outcomes associated with harmful aspects of lower social status. Low SES is generally associated with distress, prevalence of mental health problems, and health-impairing behaviors that are also related to stress. This creates an unhealthy sleep-stress cycle. When one is stressed, he or she has a harder time getting good sleep; however,

the lack of quality sleep creates even more stress for these individuals (APA, 2013). This is especially prominent in teens as more than a third of teens report that stress causes them to lie awake at night (APA, 2013).

Access to Healthcare

The connection between SES and healthcare is strong: Lower socioeconomic status correlates to poorer healthcare quality and accessibility. Survey responses from Los Angeles County and New York City found that participants with a lower SES reported more dissatisfaction with their healthcare due to factors such as transportation barriers, long wait times, and high costs (Caballo et al.. 2021). It is much harder to get quality sleep when one is sick (Billings et al., 2021). Furthermore, low SES individuals have less access to treatment for sleep related disorders such as sleep apnea and insomnia. The COVID-19 pandemic worsened these disparities. Many were structural problems such as under-resourced medical facilities and low reimbursement rates (Billings et al., 2021). A direct correlation exists between poor sleep and higher healthcare costs. In a study adjusted for factors like income and health, those who “always” had trouble sleeping had an increased healthcare cost of $3,462 in comparison to those who "never” experienced difficulty sleeping (Hui & Grander, 2015).

The Effects of Sleep Quality Among College Students

Sleep Affects the Physical Health of College Students

Sleep is critical when it comes to healing and repairing the heart and blood vessels, balancing hormones, supporting growth and development, boosting the immune system, and decreasing the risk of future health problems, including heart disease, high blood pressure, obesity, and stroke (National Heart, Lung, and Blood Institute, 2022). It is also crucial in providing hormonal balance, especially cortisol, leptin, and growth hormones in young adults,

and balancing reproductive hormones in women as sleep deprivation can disrupt the menstrual cycle (Island Reproductive Services, n.d.). These physical impacts are especially concerning for college students who are still young adults with busy schedules that could amplify these health risks.

Furthermore, poor-quality sleep, determined using the Pittsburgh sleep quality index, led to daytime dysfunction such as falling asleep in class, missing class due to illness, and a greater frequency use of OTC/prescription sleep aids and alcohol to induce sleep, which directly affects college students (Lund, Reider, Whiting, & Prichard, 2010). Oftentimes, using these sleep aids, specifically benzodiazepines or Z drugs, for too long or at too high a dose can cause dependence or even addiction (Cologne, Germany: Institute for Quality and Efficiency in Health Care, 2021). Benzodiazepines are drugs that affect the central nervous system and produce a relaxation effect, sometimes prescribed for insomnia (Cleveland Clinic, 2023). It is estimated by the German Centre for Addiction Issues that "1.5 to 1.9 million people in Germany are dependent on benzodiazepines" (Cologne, Germany: Institute for Quality and Efficiency in Health Care, 2021, para. 7). The use of OTC and prescription sleep aids can prove especially problematic as it can cause accidental death by overdose on its own or when mixed with antidepressants, opioids, or alcohol (Weiman, 2020). In fact, in 2023, there were 10,870 drug overdose deaths involving benzodiazepines (National Institute on Drug Abuse, 2024). Researchers at Rutgers found that young people who were prescribed benzodiazepines for common sleep conditions had a higher risk of overdose compared with other commonly prescribed sleep medications (Swenarton, 2022).

Sleep Affects the Mental Health of College Students

The relationship between sleep, stress, and mental health can often create a vicious cycle. House at al. (2023) compared first-generation college students (FGCS), typically coming from lower SES backgrounds, and non-first-generation college students (NFGCS) and found that FGCS reported noticeably higher levels of academic distress. FGCS put in a lot more hours than their peers in socializing, but there were no differences in extracurricular activities, relationship status, athlete status, family support, or social support. Furthermore, both in terms of average levels and distribution across financial stress categories, FGCS had substantially higher levels of financial stress. This is especially problematic as high levels of stress can increase the amount of time it takes to fall asleep, leading to worsened mental health (Dusang, 2019). A systematic review of 32 studies from diverse geographic locations found that poor sleep quality, affecting up to 50% of students, is significantly correlated with depressive symptoms (Dinis & Bragança, 2018). The relationship appeared to be bidirectional, with bad sleep quality both predicting and resulting from depression. These studies suggest first-generation college students are at a heightened risk of entering this harmful cycle where additional stress exacerbates sleep quality, which in turn exacerbates mental health issues, worsening academic performance, stress, and wellbeing.

Sleep Affects Academic Performance

Sleep is especially crucial for college students because it is often linked with academic success. A study conducted on college freshmen revealed that after accounting for background factors, too little and too much sleep are both associated with lower GPAs (Bermudez et al., 2022). Shorter sleepers had an average GPA of 3.21, longer sleepers had 2.95, and students with a normal duration had an average of 3.39. Interestingly, prior academic success was not a strong predictor of college sleep habits, so students'sleep habits adopted during college played a crucial

role in their academic success (Bermudez et al., 2022). Quality sleep is especially crucial for academic performance, making it important for colleges to implement interventions in order to improve sleep for their students.

Habit Development

In order to develop a good sleep routine, it is important to understand how to develop good habits. The process can begin with identifying any unhealthy habits and what triggers them. A plan with small and realistic goals can then be created. In addition, support from friends and family plays a valuable role in maintaining momentum. Tracking one's progress in a journal or app can boost success. Employing operant condition and using reinforcement can also shape behaviors more quickly (NIH, 2018). For example, negative punishment can be used when one is not practicing the habit that one wishes to develop, and positive reinforcement can be used when consistently practicing said habit (Cherry, 2024). These are ways to not only promote better sleep for college students, but also encourage the development of healthy habits in general.

Current Solutions

Potential remedies for the poor sleep schedules of college students have emerged from recent research. Chandler et al. (2022) conducted a meta-analysis to evaluate the effectiveness of multi and single-component sleep interventions. The review included 11 studies with a total of 5,267 participants aged 18–24 that tested either multi-component (e.g., Cognitive Behavioral Therapy for Insomnia) or single-component (e.g. sleep hygiene tips) programs. This study found that student's sleep improved moderately, anxiety improved slightly, and depression improved slightly. They also found that the program worked better for students that already had insomnia. As such, universities across the nation recognize the importance of sleep for their students and a number of schools have tried to intervene.

University Sleep Promotion Programs and Sleep Education Programs

To promote sleep, colleges and universities have implemented a variety of programs to help students get better sleep. The following are universities with sleep education related websites that are taking action to combat this sleep epidemic. The University of Texas at Austin has a page dedicated to sleep and sleep health under their well-being section. It mainly provides the faculty ways that they can help students such as adjusting deadlines from midnight to 8 p.m, providing access to free sleep assessments, and spacing out assignments for students so they have enough time to rest (Griffault, 2019). Cornell University has a refresh program that students can sign up for. Every week for eight weeks, an email is sent containing helpful information such as good sleep hygiene and cognitive strategies that students can implement into their daily lives (Cornell, 2020). Similarly, Harvard Medical School has a sleep and health education program which helps educate the public and healthcare providers in order to recognize, diagnose, and treat sleep problems effectively (Harvard, n.d.). These universities set examples of ways they can assist their students in achieving healthy sleep schedules through the use of educational websites and programs.

Purpose of Proposed Research

To address the issue of poor sleep habits and sleep deprivation in low SES college students, this research will examine how sleep intervention programs affect the sleep quality, academic performance, and mental and physical health of college students from low-socioeconomic backgrounds at a large, public, community college in Southern California. Solving this sleep epidemic requires more than just telling people to “just go to bed early”; these sleep seminars are designed and backed by research to promote better quality sleep and educate students about strategies they could use to improve their sleeping habits.

The amount of access to sleep education and sleep quality is strongly associated with SES (Patel, Grandner, Xie, Branas, & Gooneratne, 2010). The proposed research hopes to bridge the sleep inequality SES gap by testing the effectiveness of sleep interventions, such as sleep seminars, for college students of low SES. The goal is to provide them with resources that are more readily available to higher SES students. Since students from low SES backgrounds experience more stress, it is critical that they learn how to sleep better.

Research Design and Methods

Method

This study will collect data through the mixed methods approach. Quantitative data will be gathered through pre- and post-survey forms that will include standardized indexes, specifically Perceived Stress Scale (Cohen et al.,1983) as well as the Insomnia Severity Index (Shahid et al., 2011). Qualitative data will be collected through free response sections of the reflection survey forms distributed at the end of the four-week study as well as through optional weekly entries in the sleep habit tracker of participants. These entries should provide qualitative insight on behavior changes not captured through the quantitative surveys.

Participants

Students aged 18-22 at Pasadena City College will be recruited via social media or email where they will first fill out a demographic form without knowing the contents of the experiment. A total of 30 students (15 males and 15 females) will participate in the study. They will be selected based on inclusion criteria of a self-reported average of less than seven hours of sleep a night. If a participant declines, the next best candidate will be notified. Upon receiving participation confirmation, participants will receive a consent that outlines procedures, risks, and benefits. The study will comply with the ethical guidelines outlined by the APA, and participants

will remain anonymous and their data will be kept private (APA, 2022). To incentivize participation, students who complete the study will be entered in a raffle where two winners will be selected to win a $50 Amazon gift card each.

Materials

The researcher will design the demographic questionnaire as well as the consent form. The pre and post survey will include parts borrowed from the Perceived Stress Scale as well as the Insomnia Severity Index. The Perceived Stress Scale was developed in 1983 and acts as a reliable measurement of individual stress (EAP, n.d.; Mozumder, 2022). The Insomnia Severity Index developed by the University of Pennsylvania Perelman School of Medicine is a seven-item questionnaire that assesses sleep quality, symptom severity, and the impact of insomnia on everyday life using a Likert scale (Shahid et al., 2012). Taking five minutes to complete, the Index has been validated in insomnia patients ages 17–84, and initial psychometric testing by Bastien et al. (2001) showed acceptable internal consistency ($\alpha = .74$), with item-total correlations ranging from .36 to .54, indicating moderate reliability. In addition, the researcher will develop a digital habit tracker that participants can use to keep track of good sleep habits developed throughout the four weeks. The researcher will also provide funding for two $50 Amazon gift cards, which will act as the raffle prize upon completing the sleep seminars and reflection form.

Procedure

Thirty students who meet the selection criteria will be given consent forms to complete before they can officially participate in the study in a four week sleep wellness workshop. Upon signing, they confirm that they will attend all four sessions of the workshop, actively attempt to practice good sleep habits for a month, even outside of the sleep seminars, and honestly fill out

their sleep trackers. A pre-intervention survey will then be sent out that includes the Perceived Stress Scale as well as the Insomnia Severity Index for participants to complete.

Four sleep seminars will be conducted once a week for a month. Each week, different topics will be discussed, and participants will be expected to practice different habits at home throughout the week, and document their journey. The duration of these weekly seminars will vary but will not last longer than an hour and a half. . These seminars will take place in a multipurpose meeting room at Pasadena City College. The content of the sleep seminars are outlined below (see Table 1) and are based on the Refresh program at Cornell University and the Sleep Promotion program at the University of Texas, Austin (Cornell University, 2020; Griffault, 2019).

Table 1

Outline of Content for Sleep Seminars

	Duration	**Content**
Week 1: Sleep Biology and Habit Building	1.5 hrs	● Check-In and Icebreaker (10 min): In a small group of 7, students will give their names and what they hope to gain out of this experience. ● Sleep Biology Presentation (30 min): ○ Why we sleep: evolutionary, physical, and mental health functions it provides ○ What is considered "good" sleep: quality and quantity ○ Overview of sleep stages: NREM v.s. REM and Circadian Rhythm ○ Consequences of sleep deprivation: cognitive, emotional, physical, and longterm ● Brief Break (5 min) ● Sleep Habit Building Presentation (30 minutes) ○ What is sleep hygiene? ○ How to build good habits?

		○ Overview of week one habits: establishing a regular sleep schedule, limiting screentime and caffeine, avoid napping throughout the day ● Procedures and Weekly Expectation (15 minutes) ○ Distribute optional sleep kits (eye masks and ear plugs) ○ Explain and distribute sleep habit trackers ○ Provide anonymous form for any questions
Week 2: Deeper Dive into Sleep Hygiene and Sleep Routines	1 hr	● Check-In (10 min): Reflection on habits that did or did not go well in the past week ● Sleep Hygiene Presentation (30 min): ○ Importance of sunlight and reducing blue light exposure ○ Daily habits like diet, exercise, and caffeine/alcohol ○ Bedroom environment (noise, light, temperature) ○ Bedtime routine (wind-down time, low-stimulation activities, journaling) ○ "Sleep Association" strategies (bedroom should only be used for sleeping) ● Interactive Activity (10 min) ○ Build your own bedtime routine sheet ○ Week two habit to add: following the bedtime routine you built ● Q&A and adding habits included in your bedtime routine to your habit tracker (10 min)
Week 3: Common Sleep Disorders and Sleep's Implications on Societies	1 hr	● Check-In (10 min): Are there any abnormalities you notice when sleeping? ● Sleep Disorders and Implications Presentation (30 min): ○ Sleep Disorders (E.g. insomnia, sleep apnea, restless leg syndrome, etc.) ○ Warning signs and how to seek help ○ How modern life disrupts sleep health (technology, work culture, academic pressure) ○ Disparities in sleep (SES, race, occupation, etc.) ○ Sleep as a public health issue (accidents, healthcare costs, productivity) ● Discussion (10 min)

		○ How does your identity impact your sleep? ● Q&A and reflecting on your sleep habit tracker (10 min)
Week 4: Final Review, Longer Term Implications, and Wrap-up	1 hr	● Check-In (10 min): What is one thing you learned about sleep this month? ● Recap Kahoot (20 min): ○ Questions regarding material covered in the previous 3 sessions (giftcard prize) ● Recap Presentation/Discussion (20 min) ○ Long-term effects of sleep deprivation ○ How to continue to sustain new habits ○ Setting long term sleep health goals for the future ● Post Seminar Survey (10 min) The survey will be a parallel of the pre-seminar survey which will allow the Researcher to see whether the seminar was able to improve sleep quality. ● Debrief after class: Fill out a reflection Google Form regarding how participants felt the class affected their sleep.

After completing the sleep seminars, participants will be required to fill out a reflection Google form. The reflection will allow qualitative data to be gathered by including three main categories of questions: Background influence on sleep, perceived impact of intervention, and general feedback on the program. Background influence on sleep will ask participants how they think their socioeconomic and academic background affects their quality of sleep, and any challenges in their daily environment that might compromise sleep. Perceived impact of intervention will help the researcher understand whether or not the workshop was able to help improve sleep or stress levels for participants as well as if they feel more knowledgeable and empowered to improve their sleep health. The data collected from the weekly entries that participants can write on the sleep tracker will also be under this category. Finally, general feedback on the program will be collected to understand which parts worked well for participants and which parts did not.

Planned Data Analysis

The pre- and post-surveys that include the Insomnia Severity Index and the Perceived Stress Scale will be used to see if the workshop resulted in statistically significant improvements in sleep and stress levels, and a Chi-Square test will be conducted with this data. Based on the reflection data, the answers will be thematically categorized to find any patterns in responses, focusing on themes such as changes in sleep hygiene, perceived barriers to quality sleep, and motivation to develop and maintain positive long-term sleep habits. Correlational analysis will determine whether demographic data (e.g., age, race, and gender) are related to the Insomnia Severity Index and the Perceived Stress Scale. By doing so, it is possible to see whether age, race, and gender play a role in sleep. If age is not a factor, then the sample size is homogenous.

Preliminary Suppositions and Implications

Goals and Outcomes

Many community colleges do not offer sleep programs for their students, so this study hopes to provide the foundation for more sleep seminars at community colleges nationwide. If sleep seminars are seen to be effective, this will lay the groundwork for scaling up sleep education interventions at other colleges and for vulnerable populations beyond college campuses.

Risks and Challenges

Several risks and challenges may arise while conducting this research. One potential challenge is that people might not complete the survey or debrief form, or they may fill it out dishonestly, an inherent difficulty in self-report measures. However, since participants have signed the Informed Consent Form, they should be aware of what they have signed up for before the seminars even begin. Another potential challenge is that some participants may miss a

seminar or two due to uncontrollable factors such as illness, family emergency, or other causes. However, having 15 participants of each gender will help reduce the chances of having more than five participants absent during any one session. Finally, college students might be too busy to keep track of their sleep or get enough sleep. So, it will be necessary to conduct this program during a month without final exams or other large academic assignments. All steps will be taken to guard against these challenges and biases as much as possible.

Future Research

Future research could include further study of sleep disparities, for instance, by considering race or gender factors specifically. Socioeconomic status is closely connected to race (Stamatakis et al., 2007), so further research on race could contribute to better sleep seminars and programs that are mindful of specific ethnic and cultural needs. In addition, the role of gender could be explored further since hormones and menstrual cycles often determine sleep quality (Island Reproductive Services, n.d.). If a correlation between gender and sleep or stress is discovered, further research will be conducted regarding the relationship between sleep and gender.

Conclusion

The sleep epidemic is a serious public health crisis that affects everyone; however, it is too often overlooked. Sleep is strongly influenced by socioeconomic status, making people from lower SES backgrounds disproportionately affected. This is apparent in low-income college students who often face financial stress, poor sleep environments, and limited access to sleep education and healthcare. Therefore, a lack of sleep contributes to worsened mental health, physical health, and academic outcomes because sleep is an important factor to all bodily functions. Although there are existing university sleep programs, they are often only accessible

to each institution's own students and faculty. Most community colleges do not have sleep programs in place despite having a large student population from low-SES backgrounds. Therefore, it is vital that they take steps to implement interventions in order to improve academic success in their students and overall wellbeing.

The proposed research aims to address this sleep epidemic, starting with tackling the sleep inequality. It will test the effectiveness of a four-week sleep seminar designed for students of low SES to help them develop good sleep habits and provide sleep education. In doing so, the study hopes to improve sleep health and reduce disparities in sleep education among college students. If the program proves successful, then the sleep seminars will be duplicated for other colleges to finally provide rest for one of society's most restless demographic groups.

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