

Generation-Z and Sleep: Evaluating Quality, Practices, and Impacts among Students in Andhra Pradesh, India

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ABSTRACT

Background: Generation Z students frequently encounter difficulties such as academic demands, prolonged exposure to screens, and psychological stressors, all of which adversely affect their sleep quality. This study investigates the behavioural and psychological elements that shape sleep patterns among individuals aged 18 to 24 in Andhra Pradesh, with particular emphasis on the timing of sleep onset, overall sleep duration, and the presence of sleep disturbances. **Materials and Methods:** A cross-sectional online survey was conducted using Google Forms, with a total of 932 participants involved. The primary objective of this survey was to collect data on a range of sleep-related parameters, which encompassed sleep latency, duration, disturbances, and various potential influencing factors, including academic pressures, screen time, and psychological stressors. **Results:** While a majority of the students fell asleep within 30 min, a notable proportion experienced delays in falling asleep. The quantity of sleep reported by students varied widely, with many expressing that they failed to attain sufficient rest. Key factors that negatively impact sleep quality include heightened anxiety, academic stressors, and excessive engagement with electronic devices. **Conclusion:** Generation Z students in Andhra Pradesh face a decline in sleep quality due to a range of behavioural and psychological stressors, including academic demands, overuse of technology, and increased anxiety. By introducing targeted awareness programs and interventions that address these challenges, it is possible to improve sleep health and foster a more positive overall well-being for this group.

Keywords: Andhra Pradesh, Academic performance, Circadian rhythms, Cognitive performance, Generation-Z, Sleep hygiene, Sleep quality.

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INTRODUCTION

There exist notable generational disparities regarding sleep patterns. Generation Z, defined as individuals born between 1996 and 2010, exhibits a greater susceptibility to sleep disturbances compared to those born from 1981 to 1996. This increased vulnerability is largely attributed to the extensive use of technology and the elevated exposure to media during the night, both of which play a significant role in delaying the onset of sleep (Shochat *et al.*, 2013; Okawa *et al.*, 2007).

Increased use of digital media has been linked to poor sleep outcomes in adolescents, particularly difficulty initiating and maintaining sleep (Hale and Guan, 2015). The widespread engagement with electronic media, especially in the hours

leading up to sleep, hinders the capacity of teenagers and young adults to attain restorative sleep by disturbing circadian rhythms and heightening cognitive arousal (Cain *et al.*, 2010).

In today's digital world, Generation Z increasingly struggles to achieve good sleep quality. Prolonged exposure to screens, especially in the hours leading up to sleep, exposes individuals to blue light, which has the potential to interfere with the body's intrinsic circadian rhythms. The pressures associated with academic and professional environments in today's highly competitive society can greatly exacerbate feelings of stress and anxiety, thereby hindering both the onset and maintenance of sleep. Moreover, members of Generation Z often face irregular schedules due to their commitments to education, part-time jobs, and social activities. This inconsistency in sleep patterns can lead to disruptions in the body's circadian rhythms, making it challenging to develop stable and healthy sleep routines. Furthermore, the widespread issue of Fear of Missing Out (FOMO) is especially prevalent among individuals in this generation. Frequent nighttime engagement with social media is



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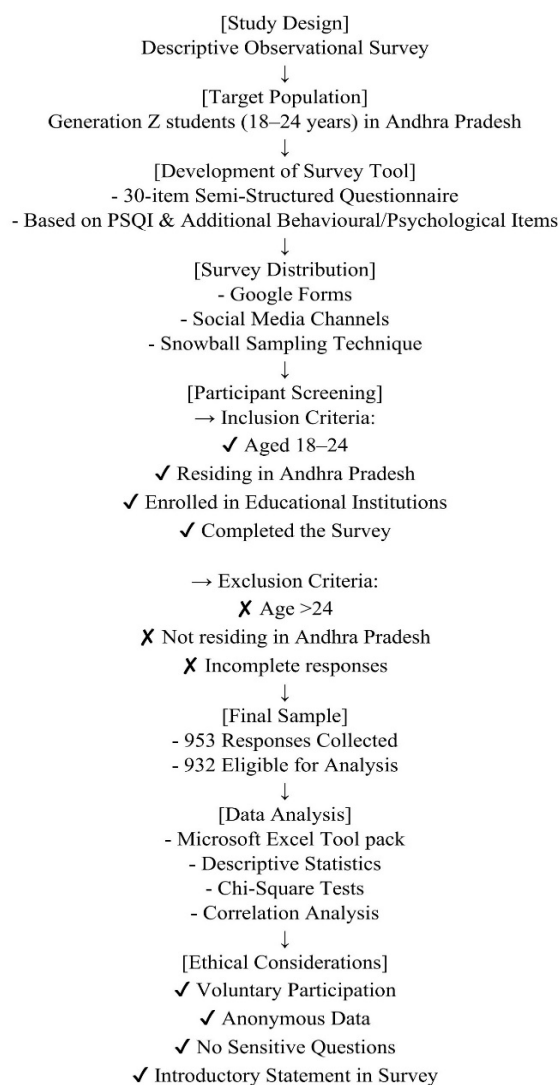
known to delay sleep timing and reduce sleep duration, especially among young adults (Carter *et al.*, 2016).

The pervasive influence of social media, combined with the rigours of extended academic commitments and elevated work-related stress, frequently results in students experiencing significant difficulties in obtaining sufficient rest. These elements foster late-night activities and irregular sleep patterns, complicating the process of relaxation and the transition to restorative sleep. Consequently, the insufficiency of sleep adversely impacts their daily functioning, manifesting as reduced productivity, heightened irritability, and an overall deterioration in well-being. Furthermore, the enticing nature of social media and the omnipresent glow of screens have become integral to the lifestyle of Generation Z. The habit of prolonged screen time, whether through incessant scrolling on social media platforms or binge-watching popular streaming series, perpetuates the temptation to sacrifice sleep for entertainment. Additionally, the academic pressures that characterise this generation often

exacerbate sleep deprivation. The lack of sufficient sleep among students is linked to a recurring pattern of exhaustion, subpar academic results, and emotional instability, especially in groups that engage in excessive screen time (Beattie *et al.*, 2015; Owens *et al.*, 2014).

This ongoing struggle with sleep deprivation and stress underscores the critical need for establishing effective sleep hygiene practices and cultivating a balanced lifestyle to support both health and efficiency. This research seeks to methodically investigate the behavioural and psychological elements influencing sleep quality in Generation Z students residing in Andhra Pradesh. The study will specifically examine aspects such as the onset of sleep, the duration of sleep, and the wider lifestyle factors that contribute to their sleep habits.

MATERIALS AND METHODS



Study Design

A descriptive observational survey methodology was utilised to examine the behavioural and psychological determinants affecting sleep quality in Generation Z students residing in Andhra Pradesh.

Hypothesis and Analytical Approach

The research conducted was a descriptive observational study focused on examining the sleep behaviours, habits, and contributing factors affecting Generation Z students in Andhra Pradesh. Rather than employing formal hypothesis testing through inferential statistical techniques, the study utilised descriptive statistics to investigate trends and relationships among various factors, including sleep duration, latency, academic stress, screen time, and self-assessed sleep quality.

Data Collection Procedure

A semi-structured questionnaire assessed multiple dimensions of sleep quality, including sleep duration, sleep latency, and associated behavioural and psychological factors. Comprising 30 questions, the instrument included demographic information alongside inquiries specifically related to sleep. The sleep-related items were derived from the Pittsburgh Sleep Quality Index (PSQI) (University of Pittsburgh, 2024), a well-established measure for evaluating sleep quality. Furthermore, the questionnaire incorporated inquiries about behavioural trends, academic stressors, lifestyle choices, and psychological pressures to offer a holistic understanding of the elements affecting sleep among the target demographic. The survey was disseminated via Google Forms through social media channels, successfully engaging a varied student population across Andhra Pradesh. This online distribution strategy was selected to facilitate accessibility and encourage broad participation, particularly among the technologically adept Generation Z cohort. Participants were recruited using a snowball sampling technique, whereby initial respondents forwarded the survey link to their acquaintances, thereby enhancing the efficiency of data collection and expanding the reach within the intended student population.

Inclusion and Exclusion Criteria

The study's inclusion criteria encompassed Generation Z students aged between 18 and 24 years who were living in Andhra Pradesh and were currently enrolled in educational institutions with access to the online survey platform. Conversely, the exclusion criteria ruled out individuals who fell outside the designated age range, those who were not residents of Andhra Pradesh, and participants who provided incomplete responses to the survey.

Sample Size/Participants

A total of 953 responses were collected for this research; however, only 932 were deemed eligible based on the established inclusion criteria. Responses from participants older than 24 years and

those living outside of Andhra Pradesh were omitted from the analysis to maintain a concentrated focus on Generation Z students aged 18 to 24 years from the state of Andhra Pradesh. Although no formal sampling formula was used, the 932 responses collected adequately reflect diverse experiences within the target demographic. Although no particular sampling formula was utilised, the 932 responses collected are deemed adequate for the scope of this study. The random sampling approach employed ensures that the sample reflects a comprehensive cross-section of the target demographic. Given the significant population of Generation Z students in Andhra Pradesh, this sample size is sufficiently large to facilitate the generalization of the results to the larger population. Additionally, the varied responses gathered from different regions and educational institutions within Andhra Pradesh enhance the credibility of the data obtained.

Data Analysis

The data gathered underwent analysis through the Microsoft Excel Toolpack. Descriptive statistics were utilized to encapsulate the demographic features and variables associated with sleep. To investigate the interrelationships among the variables of interest, inferential statistical methods, including chi-square tests and correlation analysis, were applied.

Ethical Considerations

Although formal written consent was not secured owing to the survey's online format, strict adherence to ethical standards was maintained throughout the process. The survey was crafted to be straightforward and succinct, deliberately avoiding any sensitive or intrusive inquiries. An introductory statement on the Google Form provided participants with information regarding the study's objectives and emphasized that their involvement was entirely voluntary. Furthermore, to safeguard the confidentiality of the responses, data was collected anonymously. These precautions were taken to address potential ethical issues and to ensure the protection of participants' privacy.

RESULTS

According to Table 1, the majority of participants fell within the 21 to 24 age range, with males constituting 66% of this group. In contrast, the 17 to 20 age group exhibited a higher percentage of female participants, accounting for 61.9%. This trend suggests that younger female students might be more inclined to actively participate in surveys, which could be indicative of heightened health awareness or a greater openness to involvement in research initiatives.

In terms of sleep duration, a significant portion of participants, specifically 39.6%, indicated that they sleep between 6 to 7 hr each night. This was followed by 25.96% of individuals who reported sleeping for more than 7 hr. Conversely, a minority, comprising only 7.6%, experienced sleep durations of less than 5 hr. These

results imply that although a majority of students achieve average sleep durations, a smaller subset may be encountering considerable academic or social pressures, which likely leads to reduced sleep times.

In terms of sleep latency, a significant portion of students, specifically 36%, reported falling asleep within a brief period of 1 to 5 min, indicating elevated levels of fatigue. Conversely, 16.2% of students experienced sleep onset delays exceeding 60 min, a phenomenon that may be attributed to factors such as stress or behaviours associated with night-time social media engagement, which is prevalent among Generation Z. The presence of extended sleep latency underscores a troubling disturbance in pre-sleep habits, which can adversely impact the overall quality of sleep.

According to Table 1, the analysis revealed a statistically significant disparity in sleep quality between genders, indicating that males experienced marginally superior sleep quality in comparison to females, as evidenced by a p -value of 0.032, which could be linked to variations in hormonal cycles related to gender, differing stress responses, lifestyle choices, subjective assessments of sleep quality, or the impact of environmental and social factors on sleep behaviours.

As depicted in Figure 1, the participants who averaged 6 to 7 hr of sleep exhibited the most significant challenges in maintaining concentration, with a reported difficulty rate of 37.82%, alongside a 41.4% incidence of inefficiency in their work. Students sleeping less than 5 hr reported higher anxiety and depression, highlighting the impact of poor sleep on Mental Health. This situation is further exacerbated by their demanding schedules and academic responsibilities.

As depicted in Figure 2, Social media usage emerged as the predominant activity for facilitating sleep, with 34.3% of individuals engaging in this practice, followed by 18.2% who opted for listening to relaxation music and 17.1% who preferred reading. The tendency to rely on screens before sleep contributes to sleep disturbances, primarily due to the interference of blue

light with melatonin synthesis. This situation underscores the importance of advocating for healthier sleep practices, such as relaxation exercises, which were reported by a mere 10.67% of the participants.

According to Table 2, frequent sleep disruptions were reported, with 623 participants indicating they often awakened during the night, 621 citing the necessity to use the washroom, and 529 experiencing discomfort due to excessive feeling of heat in the body. These findings underscore the significant influence of hydration practices and environmental factors on sleep quality, suggesting that night-time routines and temperature regulation improvements could enhance overall sleep experiences.

Participants who reported the best sleep quality, categorized as "Very Good," slept between 6 and 7 hr, with a total of 74 individuals in this group. In contrast, those who experienced shorter sleep durations of less than 5 hr exhibited significantly poorer sleep outcomes, including an increased prevalence of "Very Bad" sleep quality. These findings underscore the critical role of maintaining an adequate and consistent sleep duration. However, it is noteworthy that sleeping for more than 7 hr did not yield additional benefits and may even lead to diminishing returns, potentially as a result of disrupted sleep patterns.

According to Table 2, the relationship between the duration of sleep and its quality demonstrated a statistically significant trend, suggesting that an increase in sleep duration is associated with an improvement in sleep quality ($p = 0.004$), indicating a robust relation between extended sleep durations and enhanced sleep quality, implying the sufficient rest plays a crucial role in influencing sleep health outcomes.

Evaluations of sleep quality indicated that a mere 20.27% of participants classified their sleep as "Very Good," while 31.97% described it as "Fairly Bad," and 12.44% deemed it "Very Bad," as mentioned in Table 3. This significant occurrence of inadequate sleep quality correlates with inconsistent sleep habits, heightened

Table 1: Demographics and Sleep Patterns.

Category	Details	Males ($n=428$)	Females ($n=504$)	Total ($n=932$)
Age Group	17-20 Years	182 (34%)	246 (61.9%)	428 (45.9%)
	21-24 Years	353 (66%)	151 (38.03%)	504 (54%)
Hours of Sleep per Night	< 5 hr	33 (7.7%)	38 (7.53%)	71 (7.6%)
	5-6 hr	115 (26.86%)	134 (26.58%)	249 (26.71%)
	6-7 hr	169 (39.48%)	201 (39.88%)	370 (39.6%)
	> 7 hr	111 (25.93%)	131 (25.99%)	242 (25.96%)
Sleep Latency	1-5 min	154 (35.98%)	182 (36.1%)	336 (36%)
	16-30 min	135 (31.54%)	160 (31.74%)	295 (31.6%)
	31-60 min	69 (16.21%)	81 (16.07%)	150 (16%)
	> 60 min	70 (16.35%)	81 (16.07%)	151 (16.2%)

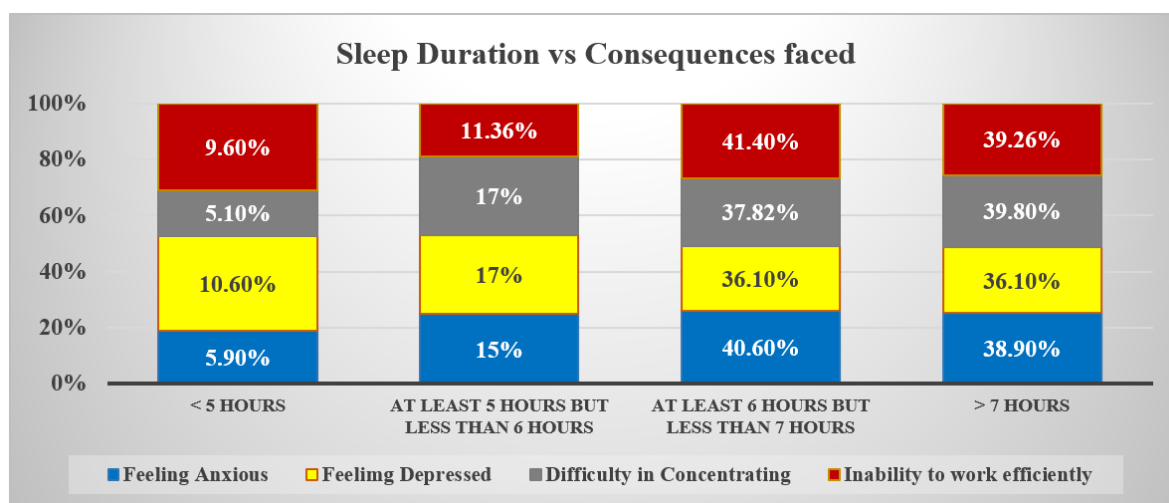


Figure 1: Sleep Duration vs. Consequences Faced among the Study Participants (n=932).

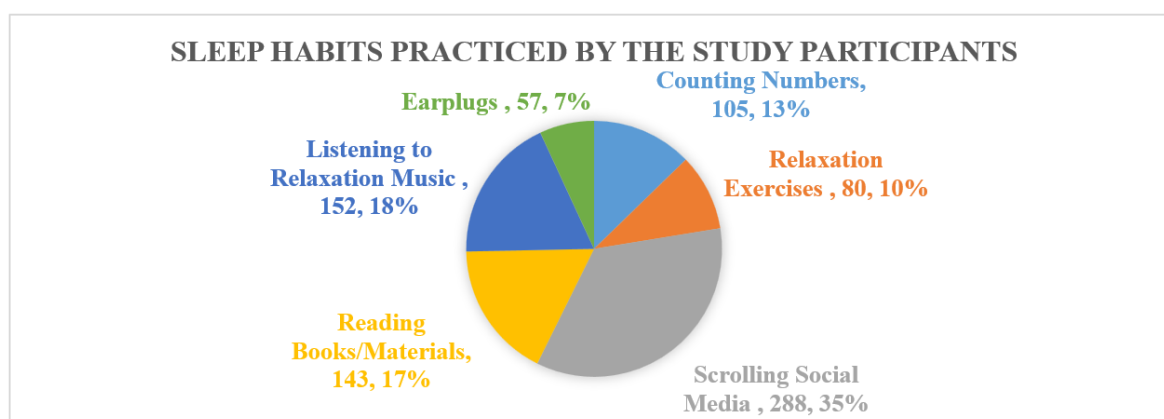


Figure 2: Sleep Habits practised by participants to induce sleep during sleep-onset difficulty.

stress levels, and disturbances in the surrounding environment, underscoring the necessity for targeted interventions.

Gender disparities in sleep quality were observed, with males indicating marginally superior "Very Good" sleep outcomes relative to their female counterparts, who, conversely, exhibited a lower incidence of "Very Bad" sleep, as mentioned in Table 3. This phenomenon may be attributed to variations in stress levels, hormonal influences, or differing lifestyle choices, suggesting that females might be more inclined to engage in healthier night-time practices. Collectively, these findings emphasise the critical role that lifestyle, behavioural habits, and environmental conditions play in shaping the sleep quality of Generation Z students in Andhra Pradesh, highlighting the need for targeted interventions to enhance their overall sleep health.

DISCUSSION

The results of this research highlight significant sleep disruptions among Generation Z students in Andhra Pradesh, indicating that a substantial number face challenges such as delayed sleep onset, poor sleep quality, and persistent sleep deprivation. This aligns with Kaya *et al.*, (2020), who found that smartphone overuse

delays sleep onset. Furthermore, our observation that a portion of participants reported sleeping for fewer than 5 hr is consistent with the work of Demirci *et al.*, (2015), who identified that academic pressures and digital interactions play a significant role in the prevalence of chronic sleep insufficiency.

Our findings highlight the significant impact of anxiety, rumination, and academic stress on sleep disruption, aligning with the study conducted by Zhang *et al.*, 2016, which established a clear connection between academic demands and diminished sleep quality among nursing students in China. Additionally, the results from Demirci *et al.*, (2015) reinforce this association by demonstrating that anxiety intensifies the adverse effects of smartphone usage on sleep patterns.

The delayed sleep phases identified in the present research, occurring generally between 11 PM and 1 AM, align with the findings of Carter *et al.*, (2016), who established a link between late-night engagement with social media and disruptions in circadian rhythms. This phenomenon is particularly prevalent among Generation Z, as highlighted by Jiang *et al.*, (2020), who noted their inclination towards social activities during the night. These observations underscore the necessity for implementing

interventions such as digital detox programs to help realign sleep schedules.

The majority of participants in our research evaluated their sleep quality as 'Fairly Good,' while a smaller group classified it as 'Very Bad.' These personal evaluations are consistent with findings from the study conducted by Okun *et al.*, (2009), which indicated that

disturbances related to stress frequently align with a diminished perception of sleep quality.

To tackle these challenges, it is essential to implement evidence-based interventions. Cognitive Behavioral Therapy (CBT), effectively addresses insomnia by helping individuals manage anxiety and change unhelpful sleep-related thoughts (Wang *et al.*, 2020). Sleep hygiene education-promoting regular sleep routines and reduced screen time-has shown positive outcomes (Dietrich *et al.*, 2016) and can be tailored to suit digital-age students. Additionally, educational strategies that promote sleep hygiene-focusing on maintaining consistent sleep patterns and minimising screen exposure-have been proven to produce beneficial results (Dietrich *et al.*, 2016) and can be adapted to align with the digital habits prevalent among today's youth.

Furthermore, encouraging regular aerobic exercise can mitigate the effects of a sedentary lifestyle exacerbated by digital media, thereby enhancing both the onset and duration of sleep (Wang *et al.*, 2020). Simple methods like lavender aromatherapy may also help relieve mild sleep disturbances (Wang & B  r  , 2020). Practices rooted in mindfulness, such as yoga, meditation, and progressive muscle relaxation, have also demonstrated a marked improvement in sleep quality (NCCH, 2018), especially when integrated into organised wellness programs.

Tools like sleep tracking apps and reminders can help students build healthier sleep routines. When integrated into institutional wellness programs, these tools, in conjunction with comprehensive behavioural approaches such as digital detoxification and designated periods without screen exposure, can significantly improve both student well-being and academic success.

This study has limitations. Its cross-sectional design prevents causal inference, and reliance on self-reported online data may introduce bias and exclude students without internet access. Subsequent studies should aim to implement longitudinal methodologies and adopt a more varied sampling approach to enhance the generalizability of findings and to elucidate causal connections.

Table 2: Sleep Practices and Contributing Factors.

Category	Details	Frequency
Contributing Factors for Sleep Disruption	Waking up in the night	623
	Needing to use the bathroom	621
	Feeling excessively hot	529
	Difficulty falling asleep	501
	Feeling excessively cold	300
	Difficulty breathing	260
Sleep Duration Impact	< 5 hr (<i>n</i> =71)	Very Good: 14
		Fairly Good: 18
		Fairly Bad: 25
		Very Bad: 14
	5-6 hr (<i>n</i> =249)	Very Good: 33
		Fairly Good: 88
		Fairly Bad: 92
		Very Bad: 36
	6-7 hr (<i>n</i> =370)	Very Good: 74
		Fairly Good: 102
		Fairly Bad: 102
		Very Bad: 48
	> 7 hr (<i>n</i> =242)	Very Good: 68

Table 3: Sleep Quality and Gender Comparison.

Category	Details	Males (<i>n</i> =428)	Females (<i>n</i> =504)	Total (<i>n</i> =932)
Sleep Quality	Very Good	87 (20.32%)	102 (20.23%)	189 (20.27%)
	Fairly Good	151 (35.28%)	178 (35.31%)	329 (35.30%)
	Fairly Bad	137 (32.1%)	161 (32%)	298 (31.97%)
	Very Bad	53 (12.38%)	63 (12.5%)	116 (12.44%)
Sleep Duration and Consequences	< 5 hr (<i>n</i> =71)	Anxious: 3	Depressed: 10	Concentrating: 10
	6-7 hr (<i>n</i> =370)	Concentrating: 73	Efficient: 73	Depressed: 34

CONCLUSION

This study highlights key behavioural and psychological factors that impact sleep among Generation Z students in Andhra Pradesh. High screen time, academic pressures, and issues like anxiety lead to delayed sleep onset, irregular schedules, and insufficient sleep. These disturbances negatively impact cognitive function, emotional stability, and academic performance. To address these issues, effective strategies such as cognitive-behavioural therapy, sleep hygiene education, and digital detox plans are essential. Additionally, promoting physical exercise, mindfulness, and aromatherapy can further improve sleep quality.

Institutions can enhance student sleep health by implementing customised sleep evaluations and educational initiatives, which improve well-being and academic performance while promoting long-term health. This research highlights the importance of personalised wellness programs for this population. Future studies should explore the long-term effects of these interventions and consider environmental and genetic factors affecting sleep. Addressing sleep quality in Generation Z is crucial for improving their quality of life and academic success.

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ABBREVIATIONS

Gen-Z: Generation-Z; **FOMO:** Fear of Missing Out; **PSQI:** Pittsburgh Sleep Quality Index; **CBT:** Cognitive Behavioral Therapy.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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