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Sleep Quality and Selected Lifestyle Behaviours in Bangladeshi University Students: A Cross-Sectional Study

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ABSTRACT: Sleep quality and lifestyle behaviors are critical for health and daily functioning among university students. This study aimed to examine the sleep-related effects and chosen lifestyle behaviors on a sample of 250 university students in Bangladesh mainly from Dhaka International University. Data were acquired by online and face-to-face surveys. A combined score of 47 points was used to examine lifestyle behaviors and sleep-related outcomes, and a second score of 13 points assessed sleep satisfaction and restfulness. The questionnaire was developed based on chosen concepts and domains of Pittsburgh Sleep Quality Index (PSQI), Sleep Hygiene Index (SHI) and Epworth Sleepiness Scale (ESS); however, the full standardized instruments and their original scoring algorithms were not employed. According to the 13-point score, 15.2% of the individuals had satisfactory sleep, 54.4% borderline sleep and 30.4% bad sleep. On the 47-point assessment, 47.2 percent were assessed as having moderate sleep quality with some negative characteristics, and 52.8 percent as having poor sleep and an unhealthy lifestyle, none reaching the highest grade. In terms of lifestyle behaviors, 42.0% of participants took caffeinated drinks four to five times weekly or daily, 55.5% exercised once weekly or infrequently or not at all, and 62.09% utilized electronic gadgets just before bedtime every night. Almost seven in ten reported sleeping less than seven hours a nite. These descriptive data imply unsatisfactory sleep-related consequences and suggest the need for future research with validated assessment tools and adequate analytical methods. The results indicate unsatisfactory sleep-related outcomes and other potentially unhealthy lifestyle behaviors among the surveyed university students. These descriptive results do not show causality between individual lifestyle behaviors and sleep outcomes. Further studies with established evaluation tools and adequate analytic approaches are needed.

1. Introduction

Sleep is a critical biological process that promotes physical health, emotional regulation, cognitive performance and overall wellbeing. Sufficient sleep enhances focus, learning, daily performance and memory retention, whereas inadequate or interrupted sleep can lead to diminished concentration, daytime drowsiness, emotional instability, and lower academic achievement. Sleep health is a

multidimensional construct that includes not only sleep time, but also subjective sleep quality, timing, regularity and absence of significant sleep disturbances. In order to ensure that adults are in the best possible health, the American Academy of Sleep Medicine and the Sleep Research Society both recommend that adults get a minimum of seven hours of sleep every single night. (Watson et al., 2015).

The pressures of their studies, diverse schedules, social activities and the use of electronic devices make university students more likely to have irregular sleeping patterns. Lifestyle behaviors such as caffeine consumption, physical activity and bedtime screen use may also be important for sleep health. Experimental evidence suggests that caffeine consumption in the vicinity of bedtime can disrupt sleep, as it is a central nervous system stimulant (Drake et al., 2013). Therefore, time of caffeine use may be a relevant factor when investigating sleep-related behaviors amongst students.

Another lifestyle element of interest in sleep research is physical activity. Exercise has been examined as a behavioral strategy to improve sleep. However, the association between exercise and sleep may depend on individual characteristics, activity patterns and other contextual factors (Buman & King, 2010). So too has the increased focus on the use of cellphones, laptops and other electronic devices around bedtime, as this may be associated with delayed bedtimes and changes to sleep patterns. Examining these behaviors combined may help characterize lifestyle patterns associated with good or poor self-reported sleep outcomes.

There are a number of well-established instruments to examine various elements of sleep. The Pittsburgh Sleep Quality Index (PSQI) is a questionnaire designed to measure subjective sleep quality and sleep disruptions over the past month (Buysse et al., 1989). The Epworth Sleepiness Scale (ESS) analyzes an individual's general tendency to fall asleep in different day-to-day scenarios (Johns, 1991), whereas the Sleep Hygiene Index (SHI) measures behaviors linked with sleep hygiene (Mastin et al., 2006). These tools measure related but different constructs and have their own specific items and scoring systems. A questionnaire that draws on similar subject areas should therefore not be considered equivalent to these standardized instruments unless the original instruments are administered and scored according to their established methods.

Evidence from Bangladesh indicates that sleep quality is a relevant research topic among university students. Using the PSQI, a cross-sectional study of 400

undergraduates from four public institutions in Bangladesh looked at how well people slept and whether or not there was a correlation between poor sleep quality and problematic internet use as well as other demographic and lifestyle variables (Islam et al., 2021). This report provides a background for future research on student sleep patterns in Bangladesh. However, descriptive information about sleep satisfaction, lifestyle behaviours, and self-reported sleep-related problems may also be useful for understanding the range of sleep-related experiences reported by students in individual university settings.

In addition to perceived sleep quality, self-reported symptoms associated with sleep disorders and their effects on daily functioning warrant attention. Difficulties initiating or maintaining sleep, frequent nighttime awakenings, and daytime tiredness may indicate sleep-related problems, but questionnaire responses alone cannot establish clinical diagnoses of conditions like sleep disorders including insomnia, obstructive sleep apnea, or RLS (Restless leg syndrome). Separation of these replies from clinical diagnosis enables for interpretation of the findings within the restrictions of a self-report survey.

1.1. Objective: In this regard, the current study investigated sleep quality and several lifestyle behaviors among university students in Bangladesh. The specific aims were to:

- To analyze selected lifestyle behaviors, including caffeine consumption, physical exercise, and electronic-device use before bedtime, as well as sleep-related outcomes;
- To explore overall sleep quality and patterns of sleep satisfaction and restfulness using a study-specific scoring system; and
- To describe self-reported sleep-related disorders or symptoms and their perceived impact on daily functioning.

A questionnaire based cross-sectional technique was adopted. The first two portions of the questionnaire were scored on the basis of study specific scoring systems while the findings were summarized using descriptive analysis.

2. Materials and Methods

2.1. Study Design and Setting

The participants in this cross-sectional study were university students in Bangladesh, and the research was conducted using a questionnaire. For the purpose of data collection, both online questionnaire responses and in-person participation were utilized. Most participants were students of Dhaka International University (DIU), Bangladesh. The questionnaire was entitled *"Sleep and Lifestyle: A Comprehensive Survey on Sleep Quality, Duration, and Disorders."*

The study was designed to describe sleep-related experiences and selected lifestyle behaviours and to explore their relationships using the responses collected at a single survey period.

2.2. Study Participants and Data Collection

In total, 250 university students participated in the survey. The questionnaire collected demographic and academic information, including age, gender, academic department, batch, year, semester, CGPA, occupation, and marital status.

The questionnaire was administered online and in person. The participation was entirely voluntary, and prior to participation, informed consent was sought. The survey included questions about caffeine consumption, exercise habits, electronic-device use, sleep duration, perceived sleep quality, restfulness upon waking, sleep disturbances, alcohol consumption, nicotine use, self-reported sleep-related conditions, as well as the influence that sleep issues are thought to have on day-to-day functioning. The data collection period, recruitment procedure, eligibility criteria, and handling of incomplete responses should be specified in the final manuscript according to the procedures actually followed during the study.

2.3. Eligibility Criteria

Inclusion criteria: An individual is eligible to participate in the study if he/she is a current student of a university in Bangladesh, voluntarily agrees to participate in the research, provides informed consent and completes the questionnaire.

Exclusion criteria: Individuals who were not enrolled at a university in Bangladesh or did not provide informed consent were considered ineligible. Duplicate submissions, if reliably identified, were excluded. Responses with insufficient information for a particular score were excluded from the corresponding score-based analysis.

2.4. Questionnaire Development and Structure

This questionnaire was prepared specifically for the purpose of the current investigation and comprised three objective-based parts. Its content covered selected domains relevant to sleep quality, sleep hygiene, daytime sleepiness, lifestyle behaviours, and self-reported sleep-related problems.

The PSQI, ESS, and SHI were consulted as background instruments for identifying relevant subject areas (Buysse et al., 1989; Johns, 1991; Mastin et al., 2006). However, the complete standardized versions of these instruments were not administered, and their original scoring algorithms were not used. The questionnaire and the two scoring systems described below should therefore be considered study-specific rather than validated versions of established sleep assessment instruments.

2.4.1. Part I: Lifestyle Factors and Sleep Quality

The first component was broken down into five parts namely:

1. Caffeine intake (frequency of intake, time of intake and number of caffeinated drinks drank each day).
2. Exercise habits: how often you exercise and when you exercise, how long your exercise sessions are, and whether you participate in relaxing activities such as yoga or meditation.
3. Electronic-device use: frequency of use prior to bedtime, period between cessation of device use and bedtime, use of devices in bed, and use of night mode or blue-light filters if applicable.
4. Sleep Quality: Self-rated quality of sleep, normal duration of sleep, frequency of waking feeling refreshed and reported sleep disorders.
5. General lifestyle factors: alcohol intake and smoking or nicotine use.

In this portion, replies were scored with a study-specific 47-point combination scoring system applied to

2.4.2. Part II: Sleep Satisfaction and Sleep Patterns

The second half contained questions regarding duration of sleep, regularity of sleep schedule, time of sleep start, self-evaluated sleep quality, restfulness after awakening, overnight awakening, daytime fatigue, sleep disturbances, usage of sleep aids, and contentment with present sleep patterns. Participants were classified according to selected indices of sleep satisfaction and restfulness using a study-specific scoring method (maximum potential score of 13 points).

2.4.3. Part III: Daily Functioning and Sleep-Related Disorders, as Self-Reported

The third section included self-reported data on sleep related illnesses and symptoms, including insomnia, sleep apnea and restless legs syndrome. Other questions related to frequency of symptoms, restfulness in the morning, focus, mood, and perceived effects on work or everyday activities. Lifestyle factors were also queried including caffeine, smoking, exercise, afternoon naps, alcohol use and sleep-aid use. No composite score was computed for this section. Responses were summarized in a descriptive manner. Conditions and symptoms described were regarded as self-reported information and not clinically validated diagnosis.

2.5. Scoring and Classification

2.5.1. Part I: Study-Specific 47-Point Combined Score

A study-specific scoring system was used to summarize selected lifestyle behaviours and sleep-related outcomes. Higher scores generally represented more favourable reported behaviours and outcomes. Scores assigned to individual items were summed to obtain a combined score with a stated maximum of 47 points. The categories of responses and the points that were assigned to them are provided in Table 1.

Table 1. Scoring criteria for the study-specific 47-point combined score

Component	Response category	Score
Caffeine consumption	Never	3
	Once a week or less	2
	2–3 times a week	1
	4–5 times a week or daily	0
Timing of caffeine consumption	Morning only	3
	Afternoon	2
	Evening	1
	Night	0
Number of caffeinated drinks per day	None	3
	1–2 drinks	3
	3–4 drinks	1
	More than 4 drinks	0
Exercise frequency	4–5 times a week or daily	3
	2–3 times a week	2
	Once a week	1
	Never	0
Timing of exercise	Morning or afternoon	3
	Evening	2

	Late night	1
Relaxation activities	Yes	3
	No	0
Electronic-device use before bedtime	Never	3
	Occasionally	2
	Sometimes	1
	Often or always	0
Time between stopping device use and bedtime	More than 1 hour	3
	30–60 minutes	2
	15–30 minutes	1
	Less than 15 minutes	0
Device use in bed	No	3
	Yes	0
Blue-light filter/night mode	Yes	2
	No or do not know	0
Overall sleep quality	Excellent	3
	Good	2
	Fair	1
	Poor or very poor	0
Sleep duration	7–8 hours	3
	6–less than 7 hours	2
	5–less than 6 hours or more than 8 hours	1
	Less than 5 hours	0
Feeling refreshed upon waking	Every day	3
	Most days	2
	Some days	1
	Rarely or never	0
Number of reported sleep problems	None	3
	One problem	2
	Two to three problems	1
	More than three problems	0
Alcohol consumption	Never or occasionally	3
	Sometimes	2
	Often or daily	0
Smoking/nicotine use	No	3
	Yes	0

The five components were scored on a maximum scale as follows: caffeine intake, 9 points; exercise patterns, 9 points; electronic device usage, 11 points; sleep quality, 12 points; and general lifestyle characteristics, 6 points. The specified maximum combined score was 47 pts.

The following study established categories were used to classify participants:

- Excellent sleep and healthy lifestyle: 36-47 points.
- Moderate sleep quality with certain negative factors: 24-35 points.
- Poor sleep and unhealthy lifestyle: fewer than 24 points.

The combined score was a study-specific descriptive measure, not a standardized diagnostic instrument.

2.5.2. Part II: Study-Specific 13-Point Sleep Satisfaction Score

A separate score was generated to put together selected indices of sleep satisfaction and restfulness. The 5 components were sleep duration, self-rated sleep quality, feeling refreshed upon waking, daytime fatigue and frequency of waking during the night. The highest possible total was 13 points.

Table 2. Scoring parameters for the study-specific 13-point sleep satisfaction score

Component	Response category	Score
Sleep duration	7–8 hours	3
	6–less than 7 hours	2
	Less than 6 hours or more than 8 hours	1
Self-rated sleep quality	Excellent	3
	Good	2
	Fair	1
	Poor or very poor	0
Feeling rested upon waking	Every day	3
	Most days	2
	Some days	1
	Rarely or never	0
Daytime tiredness	Never or rarely	2
	Sometimes	1
	Often or always	0
	Never or rarely	2

Frequency of waking during the night	Sometimes	1
	Often or always	0

The individual values were summed to a total score from 0 to 13. In this study, categories were defined to classify subjects as follows:

- Good sleep: 12–13 points.
- Sleep quality borderline: 8-11 pts.
- Poor sleep: 7 points or less.

These cut-offs were not adopted from a validated standardized instrument, but were defined for the present investigation.

2.5.3. Part III: Descriptive Assessment of Sleep-Related Problems

No composite score was computed for Part III. Self-reported sleep-related disorders or symptoms, symptom frequency, and perceived impact on daily functioning were summarized descriptively.

1.6.Statistical Analysis

Descriptive statistics (frequencies and percentages) were used to describe the demographic features, lifestyle behaviors, sleep patterns and replies on self-reported sleep-related disorders. The determinant for each item was the number of valid responses to that item.

Participants were categorized into their appropriate study-defined categories using the 47-point total score and the 13-point sleep pleasure score. Because the study was cross-sectional, any relationships found should not be taken as evidence of causation.

2.7. Ethical Considerations

Consent was acquired from participants prior to the collection of data.

3. Results

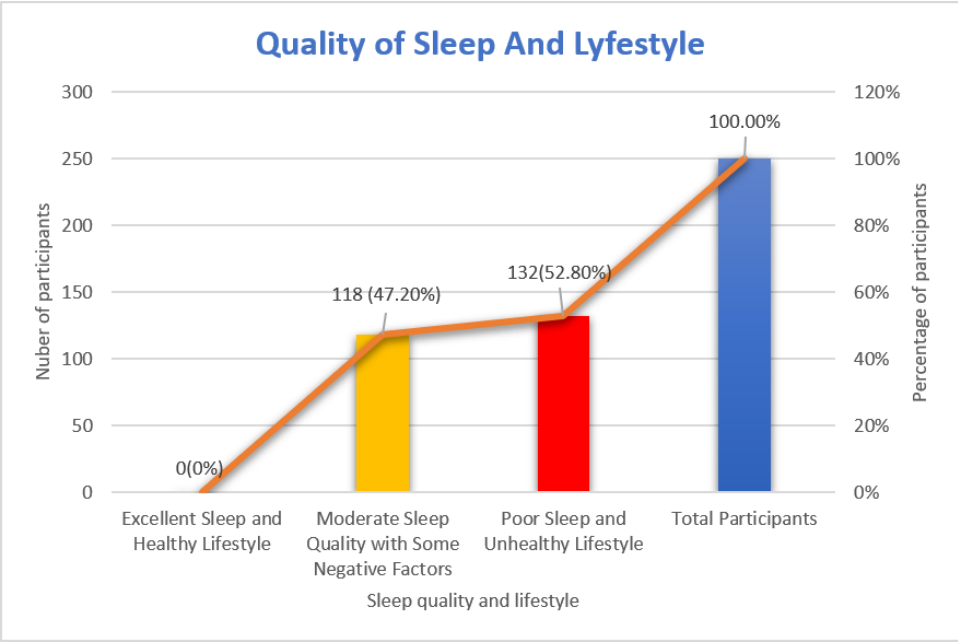

Figure 1. Sleep and Healthy Lifestyle Assessment Results.

3.1 The data shown in this chart is divided into two sets: in the X axis contains the quality of sleep and the lifestyle and the Y axis contains the numbers of participants with their percentages in each category. Three categories are featured on the chart: Total participants are 250 in total, among them 00% candidate who has excellent sleep quality and healthy lifestyle. This is an alarming situation of the students in our country. The red bar in the graph represents poor sleep quality with unhealthy lifestyle where 132 (52.80%) participants and the blue bar represents 118(47.20%) moderate sleep quality with some negative factors with their percentages.

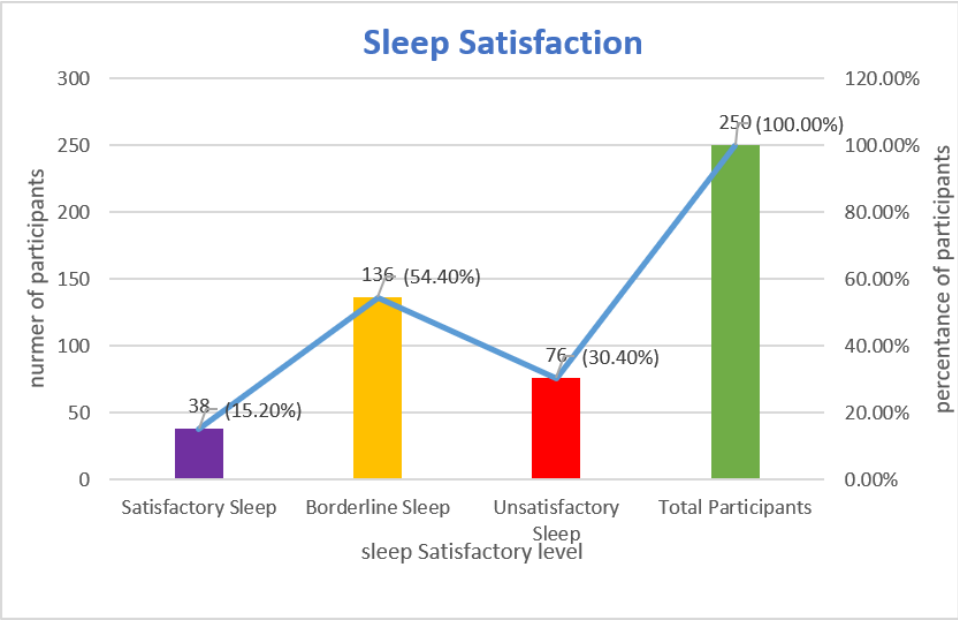

Figure 2. Evaluation of Students' Sleep satisfaction level.

3.2 This bar graph presents data on the sleep satisfaction level of students. The x-axis represents the different categories of sleep satisfaction while the y-axis indicates both the number of participants in each category and the corresponding percentages. The graph shows: only 15.20% students have satisfactory sleep while 54.40% students have borderline sleep and 30.40% students have unsatisfactory sleep

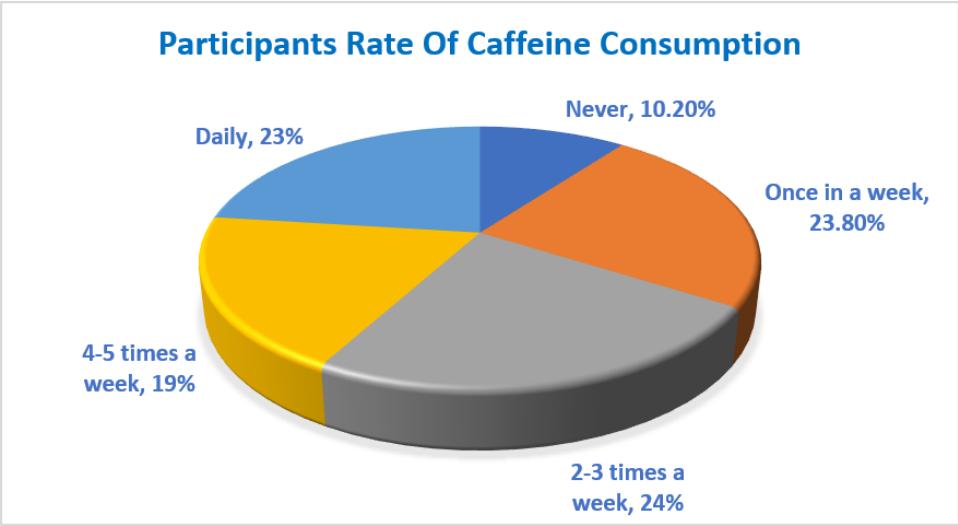

Figure 3. Participants Rate of Caffeine Consumption.

3.3 Based on the provided pie chart, here's a breakdown of caffeine consumption habits: The majority of participants (42%) drink coffee or tea 4-5 times or daily, which suggests that caffeine usage is relatively common in the sample.

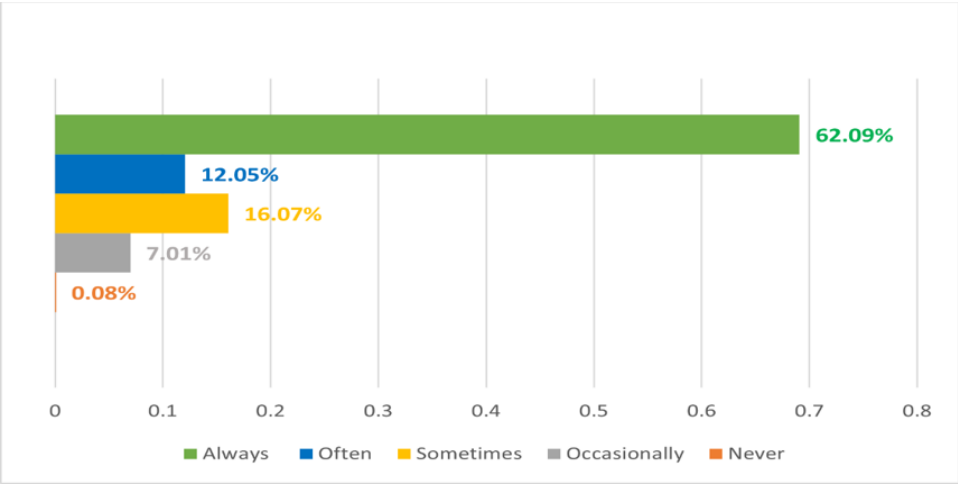

Figure 4. Percentage of using electronic devices right before Bed.

3.4 Here is an overview of the habits of using electronic devices before bedtime: Overall, an extremely high proportion of people (62.09%) say they use electronics device right before bed every night, suggesting that this practice is commonplace.

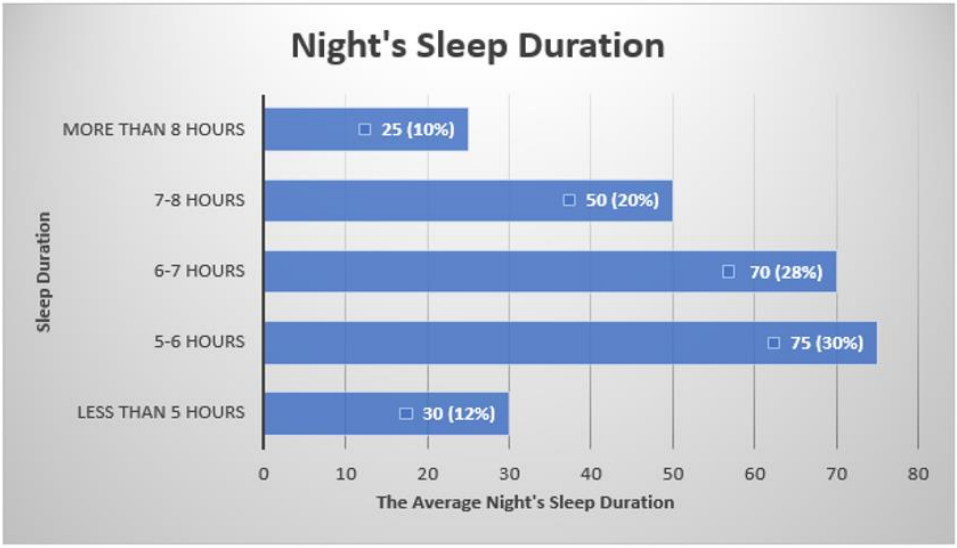

Figure 5. The Average Night's Sleep Duration

3.5 This bar chart represents the number of hours people sleep on average, based on 250 responses. The distribution shows that 30% of respondents sleep 5-6 hours, and another 28% sleep 6-7 hours per night. About 20% get 7-8 hours of sleep, while 12% sleep less than 5 hours. Only 10% of people report sleeping more than 8 hours per night.

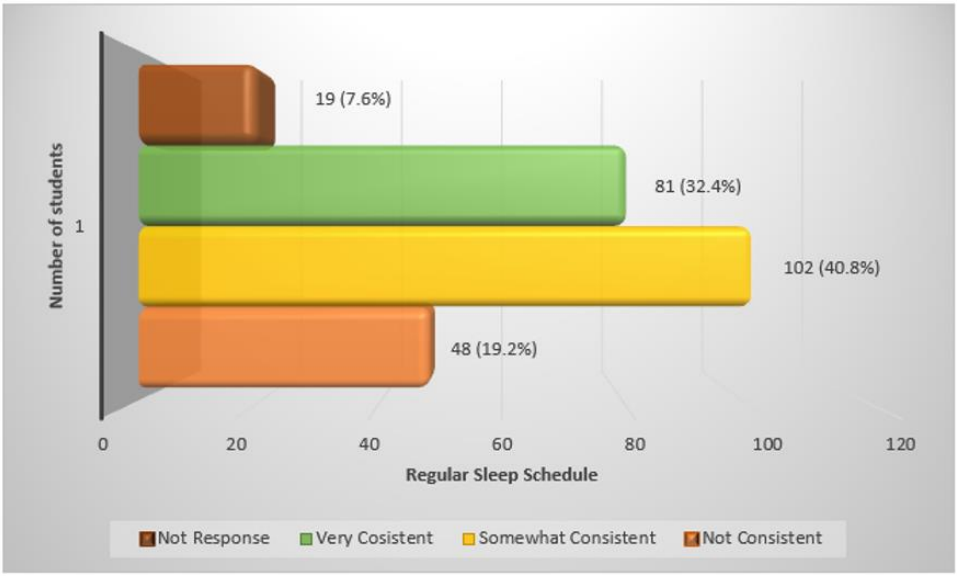

Figure 6. Consistent sleep routine: going to bed at the same hour daily.

3.6 Here is an analysis of the consistency of the sleep pattern based on the given bar chart where 7.6% students didn't respond, 32.4% were very consistent, 40.8% were somewhat consistent and 19.2% were not consistent in their regular sleep schedule.

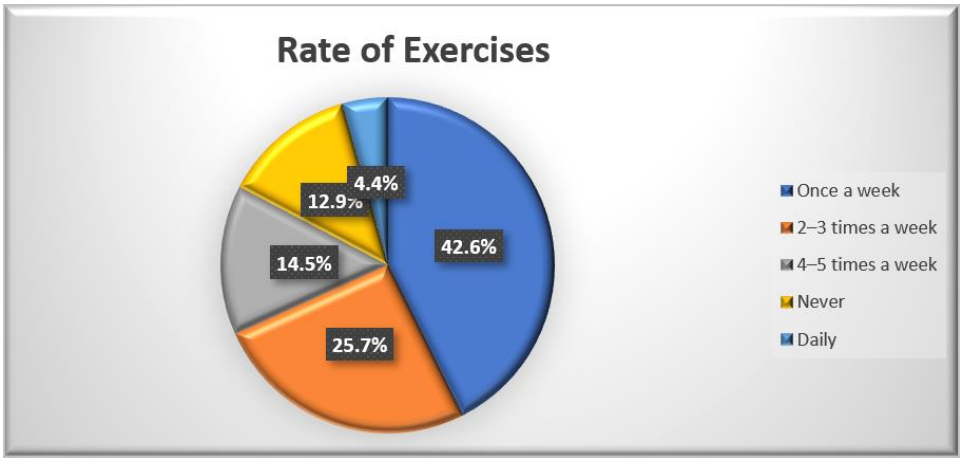

Figure 7. The rate of exercises per week of the students.

3.7 Here is an analysis of The Rates of Participants' Exercise based on the given pie chart where only 4.4% students exercise daily, 25.7% students 2-3 times per week, 14.5% students 4-5 times per week, 42.6% once in a week or rarely and 12.9% students never do exercises.

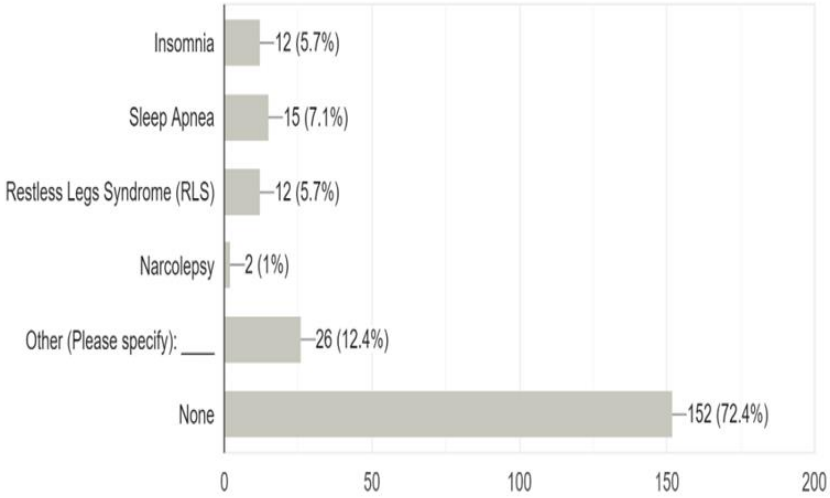

Figure 8. The percentage of sleep disorders

3.8 This chart shows self-reported sleep-related problems or symptoms and their perceived influence on everyday functioning. Not everyone answered this question.5.7% student are suffering from insomnia,7.1% sleep apnea,5.7% restless leg syndrome,1% narcolepsy,12.4% others (didn't specify) and 72.5% are not suffering from sleep related disorder.

4. Discussion

4.1. Overview of the principal findings

This cross-sectional survey explored sleep-related outcomes and selected lifestyle behaviours among 250 university students in Bangladesh. The principal findings indicate that sleep-related difficulties were common within the study sample. According to the study-specific 13-point sleep-related scoring system, 38 participants (15.2%) were classified as having satisfactory sleep, 136 (54.4%) as having borderline sleep, and 76 (30.4%) as having unsatisfactory sleep. Thus, 212 participants (84.8%) fell into the borderline or unsatisfactory categories. In the

separate 47-point composite sleep and lifestyle assessment, no participant was classified in the highest category, while 118 (47.2%) were classified as having moderate sleep quality with some negative factors and 132 (52.8%) as having poor sleep and an unhealthy lifestyle.

Based on these data, it appears that the individuals in this sample did not consistently report having positive experiences and behaviors connected to their lifestyles that were associated with sleep. However, the two scoring systems combine different questionnaire components and use study-defined categories. They should therefore be interpreted as descriptive indicators of responses within this study rather than as validated clinical classifications. In particular, the absence of participants in the highest category of the 47-point composite score does not establish that none of the students had healthy sleep habits; it indicates only that none met the study's predefined threshold for that composite category.

The findings are relevant to the broader discussion of student sleep health in Bangladesh. There was a correlation between problematic internet use and poorer sleep outcomes, as judged by the Pittsburgh Sleep Quality Index (PSQI), according to the findings of a cross-sectional study that included 400 students from four public institutions in Bangladesh (Islam et al., 2021). Although that study provides useful local context, its results cannot be directly compared with the present study's categories because the instruments, scoring procedures, and study populations differed.

4.2. Sleep duration and regularity of sleep schedules

Sleep duration was an important finding in the present survey. Of the 250 participants, 75 (30.0%) reported sleeping 5–6 hours per night, 70 (28.0%) reported 6–7 hours, 50 (20.0%) reported 7–8 hours, 30 (12.0%) reported less than 5 hours, and 25 (10.0%) reported more than 8 hours. 175 individuals, or 70 percent of the total, were in groups that reported sleeping for less than seven hours per night according to the categories that were reported.

Adults should get at least seven hours of sleep on a regular basis, according to the American Academy of Sleep Medicine and the Sleep Research Society, in order to maintain ideal health. (Watson et al., 2015). Regularly not getting enough sleep has been connected with poor health outcomes and reduced daytime functioning. So the proportion of participants reporting less than 7 hours sleep is worth noting. However, the sleep duration in the survey was assessed by self-report and the response

categories do not allow for specific sleep intervals. The results are not to be regarded as objective measures of sleep duration or as evidence that each person who reported less than 7 hours had functional impairment. Several plausible reasons could contribute to shorter sleep among university students include academic responsibilities, late night studying, recreational screen use, social activities, and unpredictable daily patterns. These are hypotheses, not established causes in this data set, since the published results do not reveal individual level relationships between these characteristics and sleep duration. Sleep schedule consistency was inconsistent as well. Among the overall sample, 81 participants (32.4%) had a highly constant schedule, 102 (40.8%) had a fairly consistent schedule and 48 (19.2%) had an inconsistent schedule; 19 (7.6%) did not respond. Thus, most responding students reported a very or somewhat consistent schedule, although a significant number noted variability. A regular sleep and waking schedule is an acceptable objective for sleep-health promotion, but the present descriptive data do not determine if schedule consistency was related to the sleep-satisfaction categories.

Universities could benefit students by supporting realistic and consistent sleep regimens, assisting students in planning study time before bed, and delivering sleep-health instruction during orientation or student-wellness activities. Such measures may be valuable, but they would need to be reviewed, not assumed, to be effective.

4.3. Self-reported sleep satisfaction, restfulness and daytime functioning

The study-specific sleep-related score identified 15.2% of the participants as having satisfactory sleep, 54.4% as having borderline sleep and 30.4% as having unsatisfactory sleep. The strength of the borderline category shows that a large proportion of the participants did not belong to either extreme of the study's classification. It may show a pattern of differences in sleep related experiences across factors such as length, perceived quality, how rested one felt on waking, tiredness during the day and waking during the night.

These features are significant since sleep health is not defined by sleep time alone. One could record a sufficient number of hours, yet still have a low perceived quality, or not feel refreshed. In contrast, self- assessed quality of sleep may be affected by factors other than sleep length, such as stress, daily responsibilities and the sleeping environment. Research on sleep assessment has so used multidimensional methodologies as the PSQI, which assesses various characteristics of sleep over a certain amount of time (Buysse et al., 1989).

4.4. Caffeine consumption and potential implications for sleep

Caffeine consumption was common among participants. The reported distribution was 10.2% who never consumed caffeinated drinks, 23.8% who consumed them once a week or less, 24.0% who consumed them 2–3 times per week, 19.0% who consumed them 4–5 times per week, and 23.0% who consumed them daily. Thus, 42.0% reported caffeine consumption either 4–5 times per week or daily.

Caffeine increases alertness, disturbs sleep, depending on dose, timing, and individual sensitivity. In an experimental study, Drake et al. revealed that a dose of 400 mg of caffeine at bedtime and 3 or 6 h before bedtime impacts sleep (Drake et al., 2013). This gives a credible explanation for the relevance of timing of caffeine use to investigations of sleep disorders in student populations.

4.5. Using electronic devices before sleep

The results of the presented study indicated that 62.09% of the participants were using electronic gadgets every night before bedtime. It indicates that the usage of devices at bedtime was widespread in the study sample. However, the determinant and exact answer coding for this % should be verified with the raw dataset before final submission.

There are many ways that electronic device use might influence sleep, including later bedtimes, more time spent on stimulating content, and nighttime light exposure. The use of light-emitting electronic gadgets at night has been found to impact sleep, circadian timing and next-morning alertness (Chang et al., 2015). Another analysis by Cain and Gradisar reviewed the association between electronic media use and sleep-related outcomes particularly among younger populations (Cain & Gradisar, 2010).

The results give a plausible context for understanding frequent usage of devices at bedtime in the present investigation. Practical recommendations can include designating a stop time for recreational device use before sleep, avoiding extended browsing in bed, and keeping a consistent bedtime. It may also be useful to examine with students whether late-night device use displaces the time available for sleep. These are fair health-promotion recommendations, but there is no current evidence that any particular intervention would change outcomes in this sample.

4.6. Exercise Frequency and Sleep-Related Lifestyle Behaviours

The results of the present study suggest that the university students evaluated were fairly rare in terms of regular physical exercise. Only 4.4% of the individuals reported exercising on a daily basis, 14.5% exercised 4–5 times per week and 25.7% exercised 2–3 times per week. Conversely, the biggest share (42.6%) reported exercising once a week or rarely and 12.9% reported never exercising. So, a majority of the participants (55.5%) reported little or no regular physical exercise.

Such a tendency suggests a possible shortcoming in the adoption of physically active lifestyles among the surveyed student cohort. Prior research has suggested that physical activity may be related to sleep outcomes. However, the strength and consistency of this relationship has differed between studies. A systematic review and meta-analysis of university students found mixed data regarding the relationship between physical activity and sleep quality, indicating that the relationship should not be considered consistent across student populations (Memon et al., 2021).

4.7. Self-Reported Sleep Disorders

Regarding self-reported sleep-related disorders, 72.5% of the respondents claimed no sleep-related disorder, while 7.1% reported sleep apnea, 5.7% insomnia, 5.7% restless legs syndrome, 1.0% narcolepsy, and 12.4% indicated other unexplained difficulties. These data suggest that while most respondents did not report a sleep-related condition, a subset of respondents had symptoms or problems that may merit further consideration.

However, these data are based on self-reported responses, rather than clinically validated illnesses, and not all participants answered this question. Thus, the results should be regarded with caution.

4.8. Implications for the health of university students

The findings of the current study indicate the co-occurrence of poor sleep patterns and many lifestyle behaviors potentially relevant to sleep health in university students in Bangladesh. About 70% of the participants reported sleeping fewer than 7 hours every night, with 54.4% of the individuals being classed as borderline sleep quality and 30.40% as unsatisfactory sleep quality based on the study-specific scoring system. These data indicate that both short sleep duration and negative sleep experience were widespread in the research population. Furthermore, 42.6% of the participants exercised once a week or infrequently and 12.9% did not exercise. Substantial proportions of participants reported caffeine usage (61.05%) and bedtime

electronic-device use (62.09%) according to the frequency categories recorded. These activities are of importance to sleep research as caffeine consumption, physical activity patterns, and use of electronic devices near bedtime may be connected to sleep timing, sleep duration and reported sleep quality.

Possible interventions include instructional resources on how much sleep is enough, encouragement to have regular sleep and wake periods, advice on caffeine consumption timing, measures to limit recreational screen time just before bed, and availability of physical activity and relaxing options. Students who have ongoing problems with sleep, significant daytime dysfunction, or symptoms of a sleep disorder may be advised to seek proper professional assessment rather than simply receiving lifestyle recommendations.

The efficiency of such measures should be determined in future research. For example, a follow-up research could assess sleep-related outcomes pre- and post- a structured sleep-health program. Alternatively, a review of the current data set may study connections between certain lifestyle behaviors and sleep outcomes. These approaches would give stronger evidence than believing that the behaviors highlighted in the present descriptive data produced the sleep-related patterns observed.

4.9. Strengths and weaknesses

A major strength of the present study is that the questionnaire included various dimensions of sleep and lifestyle such as sleep duration, schedule consistency, perceived sleep quality, restfulness, daytime tiredness, caffeine consumption, exercise, electronic device use, and environmental conditions. This general approach offers a basis for characterizing the sleep-related experiences of the surveyed university students.

There are certain limitations to the findings that should be considered. First, the study was cross-sectional, therefore the results given cannot identify temporal correlations or causal effects. Second, the outcome measures were self-reported and may be influenced by recollection inaccuracy, individual interpretation or reporting bias. Third, the available results do not establish that the sample is representative of all university students in Bangladesh, particularly because the sample composition and recruitment approach must be considered when generalizing the findings.

Third, the 13-point sleep-related score and the 47-point composite sleep and lifestyle score were study-specific scoring systems. Although the questionnaire drew on concepts addressed by established sleep instruments, the complete validated instruments and their original scoring algorithms were not administered. The resulting categories should not be interpreted as validated clinical thresholds. In addition, the 47-point score combines sleep-related outcomes with lifestyle behaviours, which limits its interpretation as a measure of sleep quality alone.

4.10. Conclusion

This study found a number of sleep-related problems and lifestyle behaviors among the 250 university students polled in Bangladesh. According to the study-specific scoring system, 54.4% of individuals were classified as having borderline sleep and 30.4% as having unsatisfactory sleep, while just 15.2% were classed as having excellent sleep. In addition, 70.0% reported sleeping < 7 hours every night. Potentially related lifestyle behaviors were also prevalent: 42.0% reported eating caffeinated drinks four to seven days per week, 62.09% reported using electronic devices every night before bedtime and 55.5% reported exercising once a week or fewer including never exercising. The results demonstrate the need of increasing sleep health and understanding of sleep-related lifestyle behaviors among university students. Universities can explore offering sleep-health instruction and promoting consistent sleep schedules, optimal caffeine intake, less recreational screen time before bed, and frequent physical activity. However, the cross-sectional design, self-reported data, and study-specific grading systems limit generalizability and exclude causal conclusions. Hence, the findings should be viewed as descriptive assessments and not clinical assessments. Further research employing validated instruments, representative samples and analytical methodologies are needed to clarify links between lifestyle behaviors and sleep outcomes and to evaluate targeted sleep-health interventions.

Conflict of Interest

The authors declare that they have no conflict of interest related to this study.

Data Availability Statement

Data supporting the findings of this investigation are available within the paper and its Supplementary Information. Raw data will be available on reasonable request by emailing the appropriate.

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