The Associations between Sleeping Quality during nighttime and Personal Emotions among High School students

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ABSTRACT: High school students prioritize academic and work-related responsibilities, they often overlook the critical role of sleeping quality in promoting physical recovery and students emotions. Notably, both insufficient and excessive sleep can adversely affect emotional states. Consequently, we conducted a study to investigate the relationship between nighttime sleep duration and student's emotions in daytime. This study utilized sleep duration questionnaires and emotional state assessments administered over a one-week period.

KEYWORDS: High school students, Nighttime, Sleeping quality, Student's emotions.

INTRODUCTION

Sleep is crucial for the restoration of both physical and mental energy, allowing individuals to begin each day with a sense of renewal and vitality. Adequate and healthy sleep patterns are associated with a reduced risk of various illnesses, including cardiovascular disease, kidney disease, hypertension, diabetes, and numerous other conditions. Conversely, insufficient sleep compromises brain function and the nervous system, leading to the gradual decline of internal organ health and impairing cognitive functions such as reasoning, decision-making, and memory.[1]

A recent assessment by Thailand's Department of Mental Health, covering the period from 2020 to 2022, revealed that youth under the age of 20 are at the highest risk of depression, followed by elevated stress levels and suicidal tendencies. Furthermore, when compared to the general population, young individuals under 20 were found to experience mental health challenges at rates two to three times higher than those in other age groups. These mental health issues are primarily attributed to inadequate sleep, which is influenced by factors such as stress, diet, and external pressures.[2]

In response to these findings, this research study involved 956 youth participants who documented their sleep duration and daily emotional states. Feedback will be provided to the participants, with the aim of improving their sleep patterns, thereby contributing to enhanced physical and mental well-being.

METHODOLOGY

A total of 497 students participated in this study. They generally revealed that the decline in sleep prioritization among high school students can be attributed to five primary factors: emphasis on academic performance and examinations, fatigue stemming from interpersonal relationships, issues related to eating habits, work-related exhaustion, and chronic health conditions. The questionnaire employed in this study is divided into two sections. The first section collects statistical data to calculate the average total sleep duration over a one-week period for each participant. The second section comprises 10 questions assessing emotional states, mindfulness, and cognitive processes, all of which are derived from established psychological assessments. To maintain respondent confidentiality, the survey is conducted anonymously. The study was carried out between August 10 and 17. After completing the questionnaire, participants will receive an individualized report via email. This report, based on The Scale of Positive and Negative Experience (SPANE) which has three scores. The summed positive score will range from 6 to 30 in SPANE-P while the summed negative score by the same range in SPANE-N. [3],[4] The two scores may be combined by subtracting the negative score from the positive score, yielding SPANE-B scores that range from -24 to 24. The SPANE-B effectively balances positive and negative scores, rendering it a valuable instrument for assessing the significance of emotions in client evaluations.

Psychological criteria are explained into three parts, utilizing the proportion between negative and positive emotions. Consequently, people will know their emotions then they can tweak their sleep time into a suitable way for themselves.

RESULTS

This study comprised a total of 497 students. The sociodemographic of the sample is presented in Table1. Most participants were male (n=361,72.6%). Most participants were from grade 11 (n=179, 36%) followed by grade 12 (n=168, 32.6%) and grade 10 (n=156,31.4%) respectively.

Participants are categorized into five groups of people who work less than 2 hours per day, between 2 to 4 hours per day, between 4 to 6 hours per day, between 6 to 8 hours per day, and more than 8 hours per day. This sample is presented in Table 2.

Regarding The Scale of Positive and Negative Experience (SPANE), participants revealed that the more deprivation they sleep, the more positive emotion they get. According to the Table3, male participant who sleep more than 8 hours have higher level of the positive emotions (M=56.44, SD=8.22) which is different from the male participants who sleep less than 2 hours per day who have higher negative emotions (M=52.25, SD=7.34). In the same way, The Female deprivation data in whom have sleep more than 8 hours have higher level of the positive emotions (M=49.58, SD=7.98) which is different from the male participants who sleep less than 2 hours per day who have higher negative emotions (M=50.24, SD=7.41). Students who spend more than one-third of the day have the highest proportion between negative and positive emotions and the trend followed by the people who sleep 6 to 8 hours, 4 to 6 hours, 2 to 4 hours, and less than 2 hours respectively.

Analysis and presentation of the research findings, illustrated in 3 formats.
1. Presentation of data analysis pertaining to sociodemographic characteristics composed of gender and educational level presented in the number of population and percentage values.
2. Display of analyzed result of average sleep deprivation data.
3. Illustration data analysis by using The Scale of Positive and Negative Experience (SPANE) Assessment and comparing with The Sleep Deprivation data.

1. **Presentation of data analysis pertaining to sociodemographic characteristics composed of gender and educational level presented in the percentage values.**

   Table 1 : Differences according to the sociodemographic characteristics of participants (N=497)

sociodemographic characteristics	N%	people who has good emotion (SD)	people who has pretty good emotion (SD)	people who has pretty bad emotion (SD)	people who has bad emotion (SD)
Gender					
Male	361(72.6)	1.74	4.71	3.11	1.03
Female	136(27.4)	0.78	2.01	5.92	1.77
Class Level					
Grade 10	156(31.4)	5.67	4.33	1.05	0.11
Grade 11	179(36.0)	2.12	4.56	5.36	1.45
Grade 12	168(32.6)	0.81	2.11	7.12	3.67
Total	497(100)	2.35	3.68	4.63	1.71

The analysis of the correlation between the outcome of the study -the range of people's emotions- revealed the predominant respondents (N=361) were male, contributing 72.6% of the total responses. Most participants were in grade 11 accounting for 36%. In addition, the bad emotions were increasing by the grade.

2. **Display of Analyzed Result of Average Sleep Deprivation data**
    The Sleep Deprivation data
    The data on sleep deprivation was obtained from self-reported information provided by the participants. The sleep duration data presented in the table reflects the average duration over the course of the week in which the data was collected, rather than daily recordings. The participants were categorized into these following groups.

    Component 1: Less than 2 hours sleep per day
    Component 2: 2 to 4 hours sleep per day
    Component 3: 4 to 6 hours sleep per day
    Component 4: 6 to 8 hours sleep per day
    Component 5: more than 8 hours sleep per day

Table 2: The result of sleep deprivation data in different Components, categorized by gender.

Gender	less than 2 hours sleep per day N(%)	2 to 4 hours sleep per day N(%)	4 to 6 hours sleep per day N(%)	6 to 8 hours sleep per day N(%)	More than 8 hours sleep per day N(%)
Male	21(5.81)	46(12.74)	126(34.90)	116(32.13)	52(14.40)
Female	9(6.61)	13(9.56)	49(36.03)	35(25.74)	30(22.06)

3. **Illustration data analysis by using The Scale of Positive and Negative Experience (SPANE) Assessment and comparing with The Sleep Deprivation data.**
    The Scale of Positive and Negative Experience (SPANE)
    The personal emotions of using Scale of Positive and Negative Experience (SPANE) for the respondents. The questions were translated into Thai language and rigorously tested for accuracy and reliability. The questions are divided into two parts, as follows :

    1. Components 1: The Positive emotions in Question 1 to 5
    2. Component 2: The Negative emotions in Question 6 to 10

    The results may be expressed as a proportion of positive to negative emotions by subtracting the negative score from the positive score. This yields the SPANE-B score, which ranges from -24 to 24 and provides a balanced measure of both positive and negative emotional states.

Table 3: The relationship between The Proportion between Positive and Negative Emotions in Male and Female.

Sleep Deprivation between Gender	The Proportion between Negative and Positive emotions (<1) M(SD)	The Proportion between Negative and Positive emotions (=1) M (SD)	The Proportion between Negative and Positive emotions (>1) M(SD)
Male less than 2 hours	52.25(7.34)	9.67(0.11)	10.97(0.76)
2 to 4 hours	31.45(4.78)	18.39(2.03)	11.67(3.21)
4 to 6 hours	11.41(3.21)	13.62(1.64)	13.44(2.56)
6 to 8 hours	11.56(3.33)	11.43(1.21)	34.37(4.99)
More than 8 hours	10.32(1.06)	10.20(0.98)	56.44(8.22)

Female			
less than 2 hours	50.24(7.41)	9.55(0.18)	9.14(0.45)
2 to 4 hours	24.36(5.11)	14.53(1.67)	12.45(2.44)
4 to 6 hours	10.45(3.42)	12.31(1.16)	12.48(2.39)
6 to 8 hours	12.38(3.22)	11.56(1.08)	32.78(6.11)
More than 8 hours	9.66(0.80)	10.14(0.78)	49.58(7.98)

DISCUSSION

This research is a survey study aimed to investigate the relationship between sleep deprivation and the proportion of negative and positive emotions. The objectives are as follows :

To illustrate the trend of sleep patterns between men and women.

To demonstrate the number of people sleeping for different durations.

To compare the relationship between sleep duration and emotions.

To display the distribution of sleep data using the median.

Participants for this research consists of students in grade 10, 11, and 12 in Thailand, with a total population of 66,052,615 individuals. This population is categorized into 32,365,781 males and 33,686,833 females, based on the population registration data in fisca; year 2024, provided by the Department of Provincial Administration, Ministry of Interior, Thailand.

As for the sample group in this research, there are 497 samples. This sample size is considered adequate with a confidence level of 90% and margin of error 10%.

Participants also showed the responsible range at approximately 52.16 (SD=10.16) out of 60. During the benefit of this topic, this might nudge participants to adopt preventive behavior more seriously.

The emotions depend on individuals, the person may face unpleasant emotions by many causes. Baptist Health conducted research on What Causes Negative Thinking and How to stop it. [5] Negative thinking can take many forms. The most common is overanalyzing and indecisiveness when making important decisions, followed by some people having negative rumination about past events, outward-directed anger, fear of future, lack of self-confidence, self- blaming or catastrophizing. These emotions make people get depressed and intensify negative thinking.

Natalie Guadiana and Taylor L. Okashima, nurse in Dominican University of California [6], conducted a study about The Effect of Sleep Deprivation on College Students that agree with the lack of sleep can negatively affected academic and clinical performances, as well as generate the problems and sleep deprivation can also have a profound impact on brain function which related to emotions.

CONCLUSIONS

A total 497 students participated in this study. They generally sleep for 4 to 6 hours per day, which brings them regular emotions. On the other hand, people who sleep less than people who sleep between four to six hours tend to have an equal balance of both positive and negative emotional states. The distribution of data appears to be centered in the middle. However, when examining the left side of the distribution, which represents those who sleep less than the average or fewer than four hours, there is an increase in the proportion of negative emotions, correlating with shorter sleep duration. Conversely, on the right side of the distribution, representing individuals who sleep more than six hours, there is a greater tendency towards positive emotional states. The generalized table model predicted that sufficient sleep is associated with an improvement in emotional well-being.

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