



CAUSES AND EFFECTS OF SLEEP DEPRIVATION ON THE ACADEMIC ACHIEVEMENT OF SENIOR HIGH SCHOOL STUDENTS

(Research article)

Irene M. Limpiado^{a *},

Muertegui National High School, Philippines

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Abstract

Deprivation of sleep is a widespread problem among teenagers. Senior high school students are the most likely to encounter it. Students' abilities suffer from lack of sleep, including decreased attention span, emotional swings, and memory consolidation. This study aimed to determine the causes and effects of sleep deprivation on the academic achievements of senior high school students. A cross-sectional research design was employed in this study and a self-administered survey questionnaire with 20 items for the causes and effects of sleep deprivation on the academic achievement of senior high school students was adopted and revised from Nacino and Serafines (2018) and Toyong (2020). It was distributed to 160 senior high school students of Muertegui National High School using a simple random sampling. The data gathered were statistically analyzed using descriptive statistics and z-test for statistical differences. Results revealed that the leading cause of sleep deprivation among most senior high school students was doing their school work at night, which results in sleep deprivation. While the effect of sleep deprivation on the students is daytime sleepiness, they are forced to be awake in class. There was a significant difference in the effects of sleep deprivation on academic achievement between male and female senior high school students. The study suggests that teachers should give fewer homework assignments, the school should promote and raise awareness about the adverse effect of sleep loss, and students should build effective time management and schedules.

Keywords: Academic achievement, sleep deprivation, sleeping habits, sleepiness

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*Corresponding author Irene M. Limpiado. ORCID ID.: <https://orcid.org/0009-0005-1128-2917>
E-mail: irenelimpiado77@gmail.com

1. Introduction

One of the most evident issues in modern society is sleep loss. According to a recent global sleep survey by Philips and K.J.T. Group (2019), 62% of adults worldwide feel as though they do not get enough sleep, and the majority of them indicated that they do not obtain 8 hours of sleep each night. In this study, both men and women discussed their typical sleeping problems and the obstacles that prevent them from getting enough sleep. According to Jorge et al. (2005), sleep is a crucial activity of human existence that is important for physical, cognitive, and psychological processes in teens and adults. Sleep is one of the specific daily activities that serves as one of the most critical components contributing to a person's health. As a result, numerous studies have indicated that insufficient sleep might harm a person's body.

Sleep deprivation is frequently referred to as sleep loss. This is when a person does not get enough sleep to feel rested the next day. Recent studies found that high school and college students frequently experience sleep problems. According to a systematic review of the Student Sleep Statistic (2022), 50% of students worldwide reported having sleep issues. Moreover, the number of students with sleep issues grew as the Philippines' senior high school program was extended by an additional two years. Consequently, adding this year to high school means students will soon have more outstanding obligations. Additionally, because of the numerous factors that contributed to the educational system's alterations, senior high school students found themselves in a stressful situation that increased their risk of sleep deprivation (Sygaco, 2021).

The academic factor is one of the common causes of sleep deprivation. It includes working on projects, completing assignments, or preparing for future tests. Students were getting less sleep during sleep hours due to these activities, mainly those who do not practice good time management. As a result, sleep-deprived students are more likely to feel exhausted and unproductive at school, which leads to academic failure (Rostam et al., 2020). Even though many researchers focus on identifying the adverse effects of sleep deprivation on students' performance, there are still gaps between the positive and negative factors that can cause a student to be sleep deprived and how it impacts their capacity to learn in school. The natural causes and effects of sleep deprivation on students' general academic achievement, particularly in senior high school students, remain mostly unexplored by researchers.

2. Method

2.1. Research Design

The study utilized a non-experimental descriptive specifically a cross-sectional research design in determining causes and effects of sleep deprivation to the academic

achievements of students in terms of age, sex, and grade level. Cross-sectional study defined as a type of observation study, or descriptive research which involves analyzing information about a population at a specific point in time (Simkus, 2021)

2.2. Respondents and Sampling Procedures

The study involved grade 11 and grade 12 senior high school students. Using the Slovin’s formula with a 5% margin error, the sample size is 157 out of 258 senior high school students, composed of 77 out of 126 grade 11 and 80 out of 132 grade 12 students, currently enrolled in Muertegui National High School of the school year 2022-2023. The respondents were selected with the use of simple random sampling that allowed every student to be part of the study.

Table 1. Demographic Profile of the Senior High School Students in terms of Age, Sex, and Grade Level

	<i>f</i>	%
Age		
16 -17	109	68
18 – 19	47	29
20 above	4	3
Total	160	100
Sex		
Male	68	43
Female	92	58
Total	160	100
Grade Level		
Grade 11	79	49
Grade 12	81	51
Total	160	100

2.3. Research Instrument

The study used an adopted and modified survey questionnaire from Nacino and Serafines (2018) with the research entitled The Negative Effect of Sleep Deprivation in the Academic Performance of Senior High School Students of Mount Carmel School of Maria Aurora, another adopted and modified survey questionnaire were from Toyong (2020), with the research entitled Sleeping Habits, Classroom Behaviour, and Academic Performance of Senior High School Students. There were ten (10) items for the causes of sleep deprivation and also, ten (10) items for the effects of sleep deprivation on the student's academic achievement. Part I of the survey instrument consisted of demographic profiles such as age, sex, and grade level. The information of the students was of utmost care and confidentiality.

Meanwhile, Part II of the survey was the revised questionnaire from the study of research entitled The Negative Effect of Sleep Deprivation in the Academic Performance of

Senior High School Students of Mount Carmel School of Maria Aurora. It was a five-point Likert scale ranging from 1=strongly disagree, 2= disagree, 3=undecided, 4=agree, and 5=strongly agree. Another section of the survey which is Part III is the effect of sleep deprivation on the academic achievement of the students. It is a revised survey questionnaire from Toyong (2020), with the research entitled *Sleeping Habits, Classroom Behaviour, and Academic Performance of Senior High School Students*. It has a five-point Likert scale ranging from 1= never, 2= rarely, 3= sometimes, 4= often, and 5= always. As a result, a higher score indicates greater sleep deprivation. The respondent was instructed to check the number that best describes their answer to the causes and effects of sleep deprivation.

2.4. Data Collection Procedure

After the study was proposed and approved by the research adviser, the researchers sent a letter of permission to conduct the study to the school head. The data gathering procedure was done on the rest week of February, from February 3-5, 2023. The researchers used a printed survey questionnaire. Before conducting the survey, the researchers asked permission from the class adviser to conduct the study with the students. After receiving the approval of the teacher, the researchers personally distributed the printed survey questionnaires to be filled out by the selected students. This was only done during the vacant and free time of the students. After answering the survey questionnaires retrieved immediately. After gathering the data, the researchers tallied the answers of the respondents and the data was entry and tabulated on MS Excel. After tabulated the researchers use the data coding to change the qualitative response of the respondents into numerical value based on the likert scale of agreement. Lastly, the researchers perform data cleaning to check for errors and correct it before data analyses.

2.5. Data Scoring and Interpretation

The interpretation of the mean was based on the following:

Score	Range	Response Choice
5	4.21- 5.00	Strongly Agree
4	3.41- 4.20	Agree
3	2.61- 3.40	Neutral
2	1.81- 2.61	Disagree
1	1.00- 1.80	Strongly Disagree

2.6. Data Analysis Procedure

The data gathered from research questions one, two, and three were statistically analyzed using descriptive statistics such as frequency, mean, standard deviation, percentage, and average weighted mean. Meanwhile, research question number four was analyzed using a z-test to determine the significant difference in the level of sleep among male and female

senior high school students at a 0.05 level of significance. The data gathered was processed using MS Excel Analysis ToolPak.

2.7. Ethical Consideration

The researchers applied the principles of ethical consideration. Regarding the involvement of the study, the respondents did not experience any harm. Before this, full consent was obtained from the teachers and students in Muertegui National High School. Moreover, the protection of the privacy or the anonymity of the research participants was ensured. The importance of voluntary participation was highly regarded. Providing inaccurate information of any kind and portraying the results of primary data in a biased manner was avoided. Meanwhile, during the research maintaining the most significant level of confidentiality and objectivity in debate and analysis was considered. Additionally, all affiliations of any kind, funding sources, and potential conflicts of interest were disclosed. Lastly, all communication regarding this action study was honest and truthful

3. Results and Discussion

The following table presents the statistical data and analysis relative to the problem pointed in the statement of the problem in the study. The corresponding analysis and interpretation are incorporated and presented clearly and concisely.

Table 2. *Demographic Profile of the Senior High School Students in terms of Age, Sex, and Grade Level*

	<i>f</i>	<i>%</i>
Age		
16 -17	109	68
18 – 19	47	29
20 above	4	3
Total	160	100
Sex		
Male	68	43
Female	92	58
Total	160	100
Grade Level		
Grade 11	79	49
Grade 12	81	51
Total	160	100

Table 1 demonstrates the demographic profile of the senior high school students enrolled in Muertegui National High School. The majority of the respondents are students aged from 16-17 years old (n=109, 68%), followed by 18-19 years old (n= 47, 29%), and 20 above (n= 4, 3%). In terms of sex, the majority of the respondents are females (n= 92, 58%), followed by males (n= 68, 43%). Meanwhile, in terms of grade level, majority of the respondents are from grade 12 (n= 81, 51%) followed by grade 11 students (n= 79, 49%), with a total of 160 senior high school students.

Table 3. *Causes of Sleep Deprivation on the Academic Achievements of Senior High School Students*

Statement	Mean	SD	Interpretation
1. Suffering from family problems or issues leads me to sleep deprivation.	3.02	0.251	Undecided
2. Doing my school works at night consumes time, which results in sleep deprivation.	3.69	0.279	Agree
3. Gadget exposures before bed leads me to sleep deprivation.	3.65	0.276	Agree
4. Watching favorite movies or series at night causes me to sleep late, which leads to sleep insufficiency.	3.64	0.275	Agree
5. Sleepovers with my friends can result in sleep deprivation.	3.06	0.251	Undecided
6. Playing mobile games before bed results in sleep deprivation.	3.24	0.255	Undecided
7. Studying for upcoming exams at night results in sleep deprivation.	3.50	0.266	Agree
8. My sleep insufficiency was influenced by my family member.	2.87	0.252	Undecided
9. Social media leads me to sleep deprivation.	3.60	0.272	Agree
10. Taking medications results in sleep deprivation.	2.69	0.257	Undecided
Average Weighted Mean	3.30		Undecided

Table 2 shows the causes of sleep deprivation on the academic achievement of senior high school students. Based on the survey, most of the causes of sleep deprivation that students experience is statement number two, which states that "Doing my school works at night consumes time which results in sleep deprivation" ($M=3.69$, $SD=0.279$) interpreted as Agree. It means that most senior high school students spent the majority of their time at night focusing on schoolwork, such as working on projects, finishing assignments, and studying for upcoming tests, which caused them to stay up late at night, busy cramming in order to meet academic obligations, rather than sleeping during the bedtime. Because of this, it is difficult to get enough sleep, which might affect performance and productivity the following day. Similarly, the findings above were supported by the study of Toyong (2020), which indicated that one of the leading causes of senior high school students' late-night sleep appears to be the completion of assignments, homework, and academic-related duties. Furthermore, if these students don't get enough sleep, their future physical and mental health may be at risk.

Meanwhile, the senior high school students least experience in terms of the causes of sleep deprivation is statement number ten which states that "Taking medications results in sleep deprivation" ($M=2.69$, $SD=0.257$), interpreted as Undecided. It shows that senior high school students are uncertain about how taking pharmaceuticals might affect their quality of sleep at night, given that certain medications have side effects that might either improve or disturb one's sleep.

This result contradicted the findings of Lund et al. (2010), who found that the use of prescription medications to control sleep and wakefulness among students was associated with sleep quality that led individuals to stay up late because it combats tiredness and maintains alertness at night.

Overall, the data indicated in Table 2 about the causes of sleep deprivation on senior high school student's academic performance is uncertain ($AWM= 3.30$). As a result of the various assertions, there are some indications that senior high school student's lack of sleep may be due to specific causes. It reveals that there are several causes contributing to lack of sleep, yet many senior high school students do not pay any attention to it.

This is similar to the findings of Sygaco, (2021) who found that many students experienced sleep deprivation for a variety of causes, it was impossible to determine if those reasons persisted over time. Results show that senior high school students in Muertegui National High School are accustomed to the causes of sleep deprivation that may affect their academic performance.

Table 4. Effects of Sleep Deprivation on the Academic Achievement of Senior High School Students

Statement	Mean	SD	Interpretation
1. I cut classes because I feel sleepy.	1.79	0.311	Never
2. I daydream in class.	2.18	0.298	Rarely
3. I struggle paying attention in class	2.62	0.260	Sometimes
4. I fall asleep during classes.	2.34	0.276	Rarely
5. I cannot participate actively in class because I am sleepy.	2.15	0.293	Rarely
6. I arrive late at class because I overslept.	2.51	0.265	Rarely
7. I feel tired during classes.	2.59	0.261	Rarely
8. I struggle answering activities because I feel sleepy	2.47	0.268	Rarely
9. I sleep in class during the vacant periods.	2.94	0.251	Sometimes
10. I try to stay awake in class.	3.09	0.251	Sometimes
Average Weighted Mean	2.47		Rarely

Table 3 shows the effects of sleep deprivation on the academic achievement of senior high school students. Based on the survey, most of the effects of sleep deprivation that students experience is statement number ten, which states that "I try to stay awake in class" (M=3.09, SD=0.251) interpreted as Sometimes. It means that most senior high school students try to stay engaged and awake during discussions and tasks, despite the fact students are sleep-deprived inside their classes. Students help themselves and fight against their perceived tardiness in order to complete the class and show respect for their teachers.

This is supported by Gikunda et al. (2014) stated that students who do not get enough sleep the night before have trouble focusing and paying attention in class, which prevents them from fully participating in class activities.

Meanwhile, the senior high school student's least experience in terms of the effects of sleep deprivation is statement number one "I cut classes because I feel sleepy" (M=1.79, SD=0.331), interpreted as Never. This indicates that the majority of senior high school

students who are sleep deprived do not skip or abandoned their classes. For students, skipping class is not a solution to deal with sleep deficit; instead, students would instead take naps during the vacant time to make up for the sleep they had lost.

This result is similar to the study of Ortilano and Pascual (2022), which stated that, even though most students were drowsy, unfocused, and not active in class because they were exhausted from staying up late working on projects and assignments, they still continue to attend class and prevent absenteeism.

Overall, the data indicated in Table 3 about the effects of sleep deprivation on senior high school students' academic performance showed (AWM= 2.47), which is interpreted as Rarely. Even though sleep deprivation is present among the respondents, the adverse effects of it on their academic achievement is not always observable or clearly shown among senior high school students. However, it is concluded that the effect of sleep loss to academic achievement do exist among senior high school students.

This contradicts to the findings of Jalali et al. (2020) concluded that sleep duration and sleep quality has no relationship at all with students' academic achievement. The capacity of a student to learn and retain knowledge was through student effort that will determine their potential to succeed and perform well in school.

Table 5. *Significant Difference in the Effects of Sleep Deprivation Among Male and Female Senior High School Students*

Group	Mean	Z-Crit	p – value	Decision
Male Students	2.47	1.96	0.03	Reject H _o
Female Students	2.46			

Level of Significance= 0.05

Table 4 shows the significant difference in the effects of sleep deprivation on the academic achievement of senior high school students. This table showed that male (M=2.47) and female (M= 2.46) senior high school students showed a gender difference in the effects of sleep deprivation. The null hypothesis should be rejected since the p-value (0.03) is lower than 0.05. Thus, there is a significant difference between the effects of sleep deprivation among male and female senior high school students in Muertegui National High School. Also, since the standard deviation of male students (SD= 0.417) is greater than female students (SD= 0.368), thus, it can be concluded that male students possess a higher chance of experiencing the effect of sleep deprivation on the academic achievement than female students.

The result has a similar finding to the study of Amin et al. (2009), which stated that there is a significant difference in the effects of sleep deprivation on academic achievement in terms of gender, where male students are more prevalent of sleep deprivation due to their habits and attitudes as compared with female students. Thus, male and female students have different abilities to cope up and deal with the effects of sleep deprivation.

4. Conclusions

The study's findings indicated that grade 11 and 12 students at Muertegui National High School were both experiencing sleep deprivation. In conclusion, the number of sleep hours they had each night affects their academic's performance the next day. Students are more likely to perform well if they are satisfied with their sleep.

A great technique to prevent lack of sleep is to balance the schedule and allow extra time for relaxation. Also, a student's mental, physical, social, and psychological health might benefit significantly from having a regular sleep routine. When the body isn't capable, forcing it to work at its best could have adverse effects. Academic success is an essential component of being a student, especially in senior high school when it is the only way to college to start of a new academic journey at universities. Students do their best to keep up with it, however, it is essential to keep in mind that sleeping enough is a must for every learner.

This study provides a new understanding of sleep deprivation's effects on students' academic achievement. It is made clear that sleep deprivation is a significant factor that can influence a learner's competency. Therefore, the prevalence of sleeplessness, when considering its harmful effect, calls for a solution. There is a significant difference in the effects of sleep deprivation on the academic achievement of male and female senior high school students.

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Appendix

A. Survey Test Questionnaire

Causes and Effects of Sleep Deprivation on the Academic Achievement of Senior High School Students

We, the researchers from Muertegui National High School, are conducting a research study entitled above. You are selected as the subjects of this study, and we humbly ask for your precious cooperation to complete the necessary information on the survey.

Direction: Kindly fill out this survey honestly

Part I: Demographic Profile

Grade & Section: _____

Sex: Male Female

Age: _____

Part II: Causes of Sleep Deprivation (Nacino & Serafines, 2018)

Direction: Please respond to the statement honestly and accurately. Use the scale to modify your answers, 5 (Strongly Agree) to 1 (Strongly Disagree). Check the number that best describes your answer. Responses will be kept strictly confidential.

Scale: 5 = Strongly Agree

4= Agree

3 = Undecided

2 = Disagree

1 = Strongly Disagree

Causes of Sleep Deprivation					
1. Suffering from family problems or issues leads me to sleep deprivation.					
2. Doing my school works at night consumes time, which results in sleep deprivation.					
3. Gadget exposure before bed leads me to sleep deprivation.					
4. Watching my favorite movies or series at night causes me to sleep late, which leads to sleep insufficiency.					
5. Sleepovers with my friends can result in sleep deprivation.					

6. Playing mobile games before bed results in sleep deprivation.					
7. Studying for upcoming exams at night exam results in sleep deprivation.					
8. My sleep insufficiency was influenced by my family member.					
9. Social media leads me to sleep deprivation.					
10. Taking medications results in sleep deprivation.					

Part III: Effects of Sleep Deprivation (Toyong, 2020)

Direction: For each statement in the survey, please indicate how much you observe this in a particular situation in yourself, using a scale of 5 (always) to 1 (never). Put a check on the right side of the statement. There are no wrong or correct answers. Answers will be kept confidential and unidentified.

- Scale: 5 = Always
 4= Often
 3 = Sometimes
 2 = Rarely
 1 = Never

Effects of Sleep Deprivation on the Academic Achievements					
1. I cut classes because I feel sleepy.					
2. I daydream in class.					
3. I struggle paying attention in class because I feel sleepy.					
4. I fall asleep during classes.					
5. I cannot participate actively in class because I am sleepy.					
6. I arrived late to class because I overslept.					
7. I feel tired during classes.					
8. I struggle answering activities because I feel sleepy.					
9. I sleep in class during the vacant periods.					
10. I try to stay awake in class.					