

The Effects Of Sleep Deprivation Towards The Academic Performance Of Ustp-Oroquieta Students

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Abstract: This study determined the effects of sleep deprivation on the academic performance of 2nd-year education students of the University of Science and Technology of Southern Philippines. Specifically, it sought to answer the following: (1) correlation and comparison of difference between number of hours sleep and academic performances in Eng111 and Educ90; (2) difference on students' flexibility towards sleep deprivation and demographic profile; and (3) correlation between the number of hours sleep and academic performances in terms of Cognitive, Psychomotor/Physical, and Environmental Factors

Correlational-descriptive research design was used in the study. A census was used in the collection of data in which 122 respondents participated. A researcher-made questionnaire was utilized. The analytical design used consisted of statistical procedures such as hypothesis testing, correlation, averages, standard deviations, and T-test.

The results showed that as the number of hours of sleep increased, students' academic performance in Eng111 and Educ 90 get better. Furthermore, a significant difference in both subjects and grades was found. With all the variables taken in this study, it can be inferred that without proper sleep, the brain's function such as the ability to concentrate, store data, and other cognitive activities will be hampered and/or paralyzed.

Keywords: Sleep Deprivation; BTLEd 2nd year; Academic Performance

1. Introduction

Sleep is a basic necessity of life. It is an important part of our daily routine where we spend about one-third of the 24-hour time doing it. It is a state on which the body and mind of an individual is relatively inactive and its muscles are relaxed. William C. Shiel Jr. (2017) defines sleep as our body's rest cycle. However, not all learners are getting enough sleep. Great examples of this are the 21st century learners or also referred as the net generation. In the study done by Gilbert and Weaver (2014), the two researchers found that sleep interferes with a student's academic, extracurricular and vocational choices. The National Sleep Foundation (2019) strictly recommended that teenagers and adults should sleep between 7-9 hours a properly respond to daily activities. Failure to sleep on the required number of hours will result into sleep deprivation. The purpose of this study is to explore the effects of sleep deprivation. This study will develop the students' awareness towards the importance of having an adequate sleep. In addition, it should also enlighten the minds of the learners of how late-night sleeping affects their capacity to learn and perform in school.

Statement of the Problem

This research attempted to identify the effects of sleep deprivation and how it affected the academic performance of USTP-Oroquieta students. Specifically, it sought to answer the following questions:

1. Was there a correlation between the number of hours sleep and the academic performance in:

1.1 *Eng111 (Art Appreciation)*

1.2 *Educ90 (Building and Enhancing Literacy Across Curriculum).*

of USTP-Oroquieta campus education students?

2. Was there a significant difference between students' grades in *Eng111 (Art Appreciation)* and in *Educ90 (Building and Enhancing Literacy Across Curriculum)* concerning their *number of hours of sleep*?

3. Was there any difference in the students' flexibility towards sleep deprivation considering their demographic profile:

3.1 *Age*

3.2 *Sex*

4. Was there a correlation between the number of hours of sleep and the academic performances in terms of :

4.1 *Cognitive*

4.2 Psychomotor/Physical

4.3 Environmental factors?

Hypotheses of the Study

The following hypotheses were formulated in null form and tested at 0.05 level of significance:

1.1. There is no significant relationship between number of hours of sleep and academic performance in Eng111;

1.2. There is no significant relationship between number of hours of sleep and academic performance in Educ90.

2.1. There is no significant difference in the grades in Eng111 between the students who spent 5 hours and below of sleep and students who spent 6 hours of sleep.

2.2. There is no significant difference in the grades in Educ90 between the students who spent 5 hours and below of sleep and students who spent 6 hours of sleep.

3.1 There is no significant difference in the average hours of sleep of students who is 18 to 20 years old and 21 years old and above.

3.2 There is no significant difference in the average hours of sleep between male and female students.

4.1 There is no significant relationship between number of hours of sleep and academic performance in terms of cognitive skills.

4.2 There is no statistically significant relationship between number of hours of sleep and academic performance in terms of physical/psychomotor skills.

4.3 There is no significant relationship between number of hours of sleep and environmental factor.

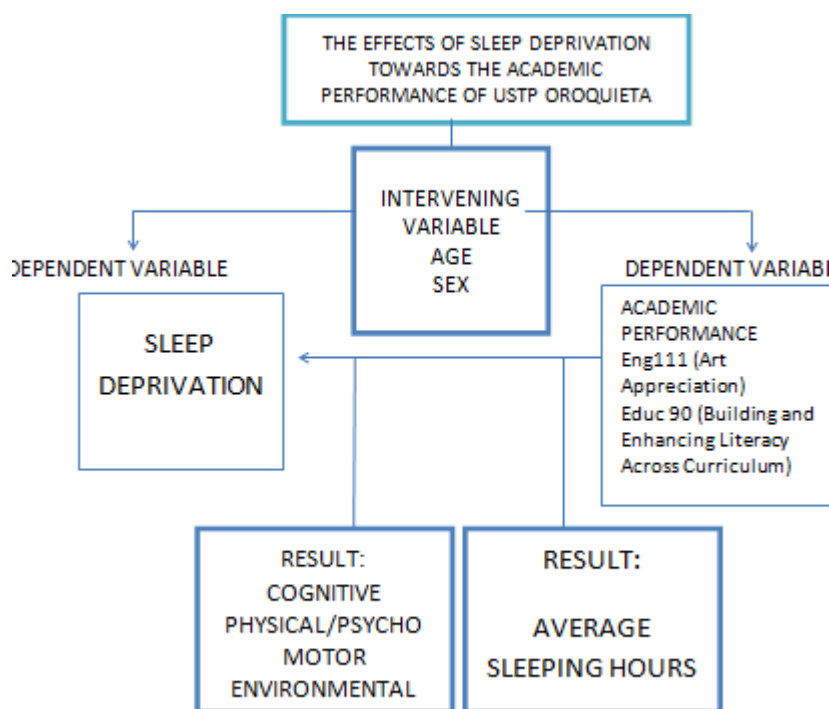
Conceptual Framework

Orodho (2005) points out that the conceptual structure as a model for presenting the relationship between variables in the analysis reveals independent variables, intermediate variables, and dependent variables.

The basic structure of this research is based on the principles of the repair and restoration theories of sleep where sleeping is significant for revitalizing and restoring the physiological processes that keep the body and mind healthy and properly functioning (Oswald, 1966). The role of sleep is to repair the body during times of inactivity in order to ensure proper biological functioning. The brain and body tissues are being healed and the chemicals required to function properly are being replenished.

This study was a correlational-descriptive which aimed to determine the relationship between the independent variable, the number of hours' sleep of education students in USTP- Oroquieta campus and their grade as the dependent variables. Intervening variables: age and sex of students were also considered in terms of their flexibility sleep deprivation. Results of the other variables were also being considered: cognitive, psychomotor/physical and environmental. Significant difference between the means of the grades in (Eng111 and Educ 90) and number of hours sleep were also determined.

Schematic Diagram



2. Methods

Participants

A total of one hundred twenty-two (122) second year students taking Bachelor of Technology Livelihood Education (BTLED) participated in this research endeavor. They were currently enrolled in the same academic year with same subjects. In this study, the researcher identified the students and handed them the questionnaires. This technique was employed to assess accurately and to avoid bias.

Design

Quantitative research design was used in this study, particularly the descriptive-correlational technique, in order to determine the effects number of hours of sleep on students’ academic performance. Saunders et al (2014) defines the descriptive research as one which looks with intense accuracy at the phenomenon and then describe precisely what the researcher sees. Correlation technique determined the relation between the number of hours sleep and students’ grades. Descriptive design describes students’ flexibility towards sleep deprivation. To present and describe numerical data collected from the research, tables and graphs were used.

Instrument

The study utilized researcher-made questionnaires which have undergone several reliability and validity tests conducted by: (1) registered guidance counselor, (2) registered psychometrician and (3) licensed professional teacher. Collectively, included in the instruments were the following: 1) researcher-made questionnaire which had 5 parts. Part 1 focused on the demographic profile (age, sex, address). Part 2, 3, 4 and 5 focused on the Cognitive, Physical & Psychomotor and Environmental Factors respectively.

Procedures

The preliminary preparation of the researcher involved seeking the approval of the Graduate School Dean for the title of the study. The approved title of the study is “THE EFFECTS OF SLEEP DEPRIVATION TOWARDS THE ACADEMIC PERFORMANCE OF USTP-OROQUIETA STUDENTS” The instruments used in the study were the researcher-made questionnaires.

The list of respondents came from the school’s registrar. A letter of consent was also sent to the head, so students would be allowed to participate in the research and be allowed to answer tests measured the data intended for the study.

Prior to the beginning of the data-gathering, a pre-administration process was observed. This involved setting of schedules with the respondents for testing, finding conducive venues, giving pre-discussions for clarification

and instruction about the instrument, and reassuring with an overview of the nature of the study to determine the participants willingness to participate as stipulated in the informed consent form or the participants option to withdraw consent at any time, and to withdraw any unprocessed data previously given.

GPA in Eng111 (Art Appreciation) and Educ 90 (Building and Enhancing Literacy Across Curriculum) was acquired from the school’s registrar with the consent of the students, faculty handling the aforementioned subjects, department chairperson and the academic head of the university.

Statistical Treatment

To produce accurate interpretation of the data, the following statistical tools were utilized.

1. Mean

The researcher employed the finding of the mean or average that was used to derive the central tendency of the data in question, such as finding the mean of the demographic profile of respondents (age, sex, number of sleeping hours), It is determined by adding all the data points in a population and then dividing the total by the number of points.

2. Weighted Mean

The researcher employed by multiplying the weight (or probability) associated with a particular event or outcome with its associated quantitative outcome and then summing all the products together. It was very useful when calculating a theoretically expected outcome where each outcome showed a different probability of occurrence, which is the key feature that distinguishes the weighted mean from the arithmetic mean.

3. T-Test

The researcher employed the used of *t*-test for two independent samples because the researcher explored on the difference between the means.

4. Hypothesis Testing

Hypothesis testing was used to answer the problems in this research and Microsoft Excel 2013 was used to perform the statistical tests in this study.

5. Correlation

Correlation is a statistical technique that showed whether and how strongly pairs of variables were related. The correlation coefficient that indicates the strength of the relationship between two variables.

6. Likert Scale

The researcher utilized a researcher-made questionnaire in which a 5-point Likert scale was employed to determine the level of agreement (Strongly Disagree=5; , Disagree=4;, Neither Disagree or Agree= 3; Agree=2, Strongly Agree=1) of each respondent towards the statements pertaining to the Cognitive, Physical and Environmental Factors (Likert, 1932).

3. Discussion of Results

Profile of Respondents

Table 1. Respondents’ Age, Sex, No. of Hours of Sleep and Academic Performance in Eng111 and Educ90

| VARIABLE | Section 1 | | Section 2 | | Section 3 | | Section 4 | |
|-----------------|-----------|---------|-----------|-----|-----------|---------|-----------|---------|
| *SEX | | | | | | | | |
| MALE | 3 | 9.37 % | 3 | 10% | 11 | 36.67% | 11 | 36.67% |
| FEMALE | 29 | 90.63% | 27 | 90% | 19 | 63.33% | 19 | 63.33% |
| *AGE GROUP | | | | | | | | |
| 18-20 | 26 | 81.25 % | 24 | 80% | 20 | 66.67 % | 17 | 66.67 % |
| 21-23 | 5 | 15.63 % | 6 | 20% | 5 | 16.67% | 8 | 16.67% |
| 24-26 | 0 | 0% | 0 | 0% | 3 | 10% | 3 | 10% |
| 27-29 | 1 | 3.12% | 0 | 0% | 2 | 6.66% | 2 | 6.66% |
| MEAN | 19.75 | | 19.60 | | 20.7 | | 21 | |
| *SLEEPING HOURS | | | | | | | | |

| | | | | | | | | |
|-----------------------|------|--------|------|--------|------|--------|------|--------|
| 3hrs | | | | | | | 1 | 3.33 % |
| 4hrs | 1 | 3.13% | 1 | 3.33% | 1 | 3.33% | 0 | |
| 5hrs | 2 | 6.25% | 7 | 23.33% | 16 | 53.33% | 6 | 20% |
| 6hrs | 29 | 90.62% | 22 | 73.33% | 13 | 43.33% | 23 | 76.67% |
| MEAN | 5.88 | | 5.7 | | 5.7 | | 5.4 | |
| *ACADEMIC PERFORMANCE | | | | | | | | |
| Eng111 | 1.55 | | 1.65 | | 1.79 | | 2.35 | |
| Educ90 | 2.21 | | 2.22 | | 1.92 | | 2.10 | |
| MEAN | 1.88 | | 1.94 | | 1.86 | | 2.23 | |

Table 1 shows the demographics of the sample. A majority of the participants are female (77 %). The most prevalent age range of participants is between 18-20 (71.31%) in which most of them have undergone senior high school.

It is also evident that these respondents have better academic standing in Eng111 (Arts Appreciation) than Educ 90. (Building and Enhancing Literacy Across Curriculum). Given with the same academic load, it is evident that Section C is performing academically among other sections. The National Sleep Foundation released new guidelines highlighting the required sleep time of young adult (18-25 years old) to sleep at least 7-9 hours (SleepFoundation.org, 2020) Thus, looking at the number of hours, it is evident that these respondents are undeniably sleep deprived.

The Relationship between the Number of Hours of Sleep and Academic Performance

Null hypothesis: There is no significant relationship between number of hours of sleep and academic performance in Eng111.

Alternative hypothesis: There is a significant relationship between number of hours of sleep and academic performance in Eng111.

Table 2. Correlation Results between Number of Sleeping Hours & Academic Performance in Eng111 and Educ 90

| Eng 111 | | Educ 90 | |
|-------------------------|--------|-------------------------|--------|
| Correlation coefficient | 0.2091 | Correlation coefficient | 0.2091 |
| Test Statistic (F) | 5.4891 | Test Statistic (F) | 5.4891 |
| p-value | 0.0208 | p-value | 0.0208 |

The research set the level of significance at 0.05.

There is a moderate positive relationship between the two variables because the correlation coefficient has positive value. Since the p-value of the test is less than 0.05, the null hypothesis is rejected. Thus, there is sufficient evidence to conclude that there is a significant relationship between number of hours of sleep and academic performance in Eng11 & Educ 90. In other words, as number of hours of sleep increases the academic performance in both ENG111 and Educ 90 got better.

This result was also supported by the study of Brigham and Women’s Hospital in 2017. The finding showed how a regular bed time had a significant impact on sleep, not just the number of hours slept. The said research measured sleep and circadian rhythms as well as the association to academic performance among college students. The research also found that students who had more regular sleep patterns had better average school grades. This implies that without proper sleep, the brain's function such as the ability to concentrate, store data, and other cognitive activities will be hampered and or paralyzed. The study also found out that irregular patterns of sleep and wakefulness correlated with lower GPA.

Difference between Students’ Grades in Eng111 and in Educ90 and Their Number of Hours of Sleep

Null hypothesis: There is no significant difference in the grades in Eng111 between the students who spent 5 hours and below of sleep and students who spent 6 hours of sleep.

Alternative hypothesis: There is a significant difference in the grades in Eng111 between the students who spent 5 hours and below of sleep and students who spent 6 hours of sleep

Table 3. Correlation Results between Students’ Grade in Eng111 and in Educ90 in relation to their Number of Sleeping Hours.

| Eng111 | | | Educ90 | | |
|---------------------------|-------------------|---------|---------------------------|-------------------|---------|
| | 5 hours and below | 6 hours | | 5 hours and below | 6 hours |
| Mean | 1.99 | 1.74 | Mean | 1.99 | 1.74 |
| Variance | 0.2204 | 0.1371 | Variance | 0.2204 | 0.1371 |
| Test Statistic (t) | 2.81 | | Test Statistic (t) | 2.81 | |
| p-value | 0.0068 | | p-value | 0.0068 | |

The research set the level of significance at 0.05.

Since the p-value of the test is less than 0.05, the null hypothesis is rejected. Thus, there is sufficient evidence to conclude that there is a significant difference in the grades in Eng111 & Educ 90 between the students who spent 5 hours and below of sleep and students who spent 6 hours of sleep.

Looking at the numbers, it is evident on how a single hour can benefit much our academic performance. Deciding how much sleep you need means considering your overall health, daily activities, and academic matters.

Difference between Students’ Average Number of Hours of Sleep and Their Age and Sex

Null hypothesis: There is no significant difference in the average hours of sleep of students who are 18 to 20 years old and 21 years old and above.

Alternative hypothesis: There is a significant difference in the average hours of sleep of students who are 18 to 20 years old and 21 years old and above.

Table 4. Correlation Results between No. of Sleeping Hours with respect to Age & Sex

| AGE | | | SEX | | |
|---------------------------|-----------------|------------------------|---------------------------|--------|--------|
| | 18-20 years old | 21 years old and above | | Male | Female |
| Mean | 5.72 | 5.56 | Mean | 5.66 | 5.68 |
| Variance | 0.2517 | 0.4964 | Variance | 0.4483 | 0.2861 |
| Test Statistic (t) | 1.19 | | Test Statistic (t) | -0.16 | |
| p-value | 0.2405 | | p-value | 0.8710 | |

The research set the level of significance at 0.05.

Since both p-value(s) of the tests is greater than 0.05, the null hypothesis cannot be rejected. Thus, there is insufficient evidence to conclude that there is a significant difference in the average hours of sleep of students who are 18 to 20 years old and 21 years old and above as well as the average hours of sleep between male and female students.

Correlation between the Number of Hours of Sleep and the Academic Performance in terms of Cognitive, Psychomotor/Physical, and Environmental Factors

Table 5 Correlation Results between Sleeping Hours and Various Factors

| COGNITIVE | | PSYCHOMOTOR | | ENVIRONMENTAL | |
|-------------------------|--------|-------------------------|--------|-------------------------|--------|
| Correlation coefficient | 0.0330 | Correlation coefficient | 0.0706 | Correlation coefficient | 0.0125 |
| Test Statistic (F) | 0.1311 | Test Statistic (F) | 0.6016 | Test Statistic (F) | 0.0189 |

| | | | | | |
|---------|--------|---------|--------|---------|--------|
| p-value | 0.7179 | p-value | 0.4395 | p-value | 0.8909 |
|---------|--------|---------|--------|---------|--------|

The research set the level of significance at 0.05.

There is a weak to almost no relationship between the two variables because the correlation coefficient is close to zero.

Since the p-value of the test is greater than 0.05, the null hypothesis cannot be rejected. Therefore, there is no statistically significant relationship between number of hours of sleep and the three aforementioned factors.

4. Conclusions and Recommendations

The study showed that with a greater number of hours spent for sleeping the higher the academic performance of the students as manifested in the findings. The study on the effects of sleep deprivation towards academic performance is highly recommended based on the findings of this research.

In addition, the researcher also recommends the students should value the essence of sleep. Moreover, they must learn to prioritize things and balance their academic activities as well as their sleep. Most importantly, time management should be observed at all times. For the parents, it is suggested that parents should monitor their children. They must look into the sleeping behaviors of their children and supervise them to avoid sleep deprivation. Teachers should help students build optimal sleep habits and will also monitor students' progress in all learning areas. For the school administration, they may also come up with policies and regulation for students who are sleep deprived, to those who have kids and even students who are far from school. The administration may draft policies to support students coming from another municipality. They may also use the findings in addressing diversity of learners towards developing a school culture.

Future research related to sleep deprivation may give more in-depth understanding and information of this study. Future researchers could build upon this study with numerous students to either confirm or disconfirm the results. Moreover, replication of study with the help of the students will make this study more consistent, reliable, and relatable data set. The future researchers can also utilize the results and come up with a replication on a different classroom setting which is timely on the Covid19. Furthermore, the results of this study will shed awareness and a wakeup call to this alarming deprivation of sleep among tertiary students.

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