SLEEP QUALITY AND LABORATORY PERFORMANCE OF BACHELOR OF TECHNOLOGY AND LIVELIHOOD EDUCATION STUDENTS OF SPAMAST

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ABSTRACT

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Sleep is an essential component of human health and well-being, as well as in learning and practice. Several studies have found links between students' sleep and cognitive functions. Sleep has been connected to academic achievement in elementary pupils and high school students in previous studies. However, few were related to students in college, and even fewer dealt with laboratory performance. This study aimed to investigate the relationship between sleep quality and laboratory performance of college students of SPAMAST. The study employed a descriptive-correlation method. Employing purposive sampling, the researcher selected 63 BTLED students. Descriptive statistics were used to determine the respondents' sleep quality levels and laboratory performances. Spearman correlation analysis was also employed to test the degree of association between the variables. The results

showed that the respondents performed very satisfactorily in their laboratory subjects. Their sleep quality level was fair, which indicated a few problems. The correlation analysis revealed that students' sleep quality had a negligible correlation with their laboratory performances. The computed p-value of $p > 0.05$ indicated that the association between the variables was not statistically significant. Further research on students' sleep quality, expanding the scope of the respondents, and inclusion of other factors related to sleep that may affect laboratory performance were recommended.

INTRODUCTION

Sleep is a vital component of human health and well-being, as well as learning and cognitive development. Several studies reported connections between sleep and the mental functions of the students. Dewald et al. (2010) suggested that insufficient sleep, increased frequency of short-term sleep, and late sleep onset and early wake-up times affect learning capacity and academic performance. Furthermore, Scott et al. (2011) concluded that reduced overnight sleep or altered sleep patterns have been associated with severe drowsiness and academic failure. Subsequently, poor nighttime sleep quality and the consequent daytime sleepiness negatively impact the physical and cognitive health of students, as well as their academic performance (Maheshwari & Shaukat, 2019). However, there are studies conducted that contradict the above-mentioned results. The studies by Jalali et al. (2020), Kasim (2011), and Sweileh et al. (2011) indicated no significant relationship between sleep quality and the academic performance of students, including those in laboratory subjects.

The laboratory is a crucial component of the interpersonal and intellectual development of Home Economics students. Generally, a well-equipped laboratory is necessary for effective practical learning. Home economics is the study of life itself, which entails preparing oneself to manage the various factors that influence one's lifestyle at home. A laboratory is one of the resources available to support the learning process. The laboratory can be used as a facility to deepen the concepts, learning methods, and enrich students' knowledge and

skills. Utilizing the laboratory facilities can help lecturers and students grasp

The concept facilitates the construction of learned concepts and develops thinking skills (Noviani et al., 2015). Economic education laboratories facilitate students' grasp and mastery of the subject matter by providing a location for experimental and exploratory activities. For teachers, laboratory-based teaching and learning activities facilitate the transmission of concepts that are less controlled by students, which may result in a reduction in class time.

Few researchers have looked at the impact of sleep on laboratory

performance among college students. This study examined the relationship between sleep quality and laboratory performance among SPAMAST students pursuing a Bachelor of Technology and Livelihood Education (BTLED) major in Home Economics. This study aimed to determine whether laboratory performance was associated with sleep quality and to investigate the relationship between sleep quality and laboratory performance among BTLED students using correlational analysis.

Objectives of the Study

The goal of this study was to examine the association of sleep quality with laboratory performance of Bachelor of Technology and Livelihood Education (BTLED) majors in Home Economics students who were enrolled in the Southern Philippines Agribusiness and Marine and Aquatic School of Technology (SPAMAST) during the first semester of SY: 2020-2021. The specific objectives were the following:

1. To determine the demographic profile of the BTLED students in terms of:
    - 1.1 age, and
    - 1.2 gender
2. To determine the level of sleep quality of the respondents in terms of:
    - 2.1 Daytime symptoms;
    - 2.2 Restorations after sleep;
    - 2.3 Problems Initiating;
    - 2.4 Maintaining sleep;
    - 2.5 difficulty waking; and
    - 2.6 Sleep satisfaction.
3. To determine the laboratory performance of the respondents based on their laboratory subject grades.
4. To determine the relationship between the sleep quality and laboratory performance of BTLED students.

CONCEPTUAL FRAMEWORK

Figure 1. *Schematic diagram showing the interaction between the dependent and independent variables of the study*

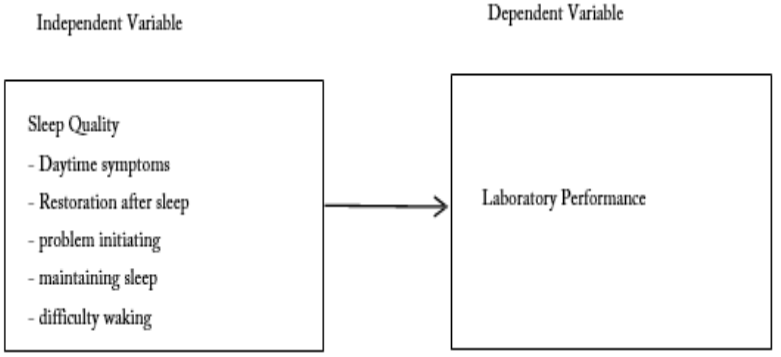

Figure 1 shows the conceptual framework of the study. Sleep quality is composed of six domains, namely: daytime symptoms, restorations after sleep, problems initiating and maintaining sleep, difficulty waking, and sleep satisfaction. Sleep quality is the independent variable (IV), and is directed to the dependent variable (DV) - the students' laboratory performance.

Hypothesis

Ho1: There is no significant relationship between students' sleep quality and their laboratory performance

MATERIALS AND METHODS

Research Design

This study employed a quantitative method and utilized a descriptive-correlational research design. In gathering data, the researcher used a descriptive survey.

Research Instrument

The instrument used was an adopted survey questionnaire known as the Sleep Quality Scale (SQS) formulated by Yi et al. (2006). This tool was developed using item and factor analysis on items with content validity. This test was based on the six domains of sleep quality, including daytime symptoms, restorations after sleep, problems initiating and maintaining sleep, difficulty waking, and sleep satisfaction. The Sleep Quality Scale questionnaire consisted of 28 statements, answerable as rarely, sometimes, often, or almost always. The scale was validated in individuals aged 18–59 years, reporting an internal consistency of 0.92 and a test-retest reliability of 0.81 (Shahid et al., 2012).

Respondents of the Study

In determining the respondents, the researchers used the purposive sampling technique. The target population of this study was the Bachelor of Technology and Livelihood Education major in Home Economics (BTLED-HE) students of the Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST), Malita Campus. These students were enrolled and had at least one laboratory subject. Presented in Table 1 is the distribution of the respondents.

Table 1. *Distribution of respondents*

Year Level	Population	Sample Size	Percentage
Second	43	32	50.79
Third	41	31	49.2
Total	84	63	100

Data Analysis

The students' Sleep Quality levels based on the Sleep Quality Scale questionnaire were interpreted as follows:

Table 2. *Qualitative description of students' sleep quality*

Range of Means	Descriptive Level	Interpretation
1.00-1.75	Good	With minimal sleep problems
1.76-2.50	Fair	With some sleep problems
2.51-3.25	Poor	With high sleep problems
3.26-4.00	Very Poor	With acute sleep problems

The students' laboratory performances were interpreted using the following range scale and descriptions:

Table 3. *Qualitative descriptions of students' laboratory performance*

Laboratory Performance	Qualitative Description
1.00-1.50	Excellent
1.51-2.00	Very Satisfactory
2.01-2.50	Satisfactory
2.51-3.00	Marginal

Data Gathering

After obtaining the necessary permissions to conduct the study, the researcher administered the Sleep Quality Scale (SQS) questionnaire through Google Forms. The researchers were able to obtain a sufficient 75% of the population responded. The laboratory performances of the respondents were also obtained from the college's registrar.

Statistical Analysis

The data gathered were tallied, tabulated, and prepared in a manner suitable for use in SPSS. Descriptive statistics were used to determine the respondents' sleep quality levels and laboratory performances. Spearman correlation analysis was employed to test the degree of association between the variables.

RESULTS AND DISCUSSIONS

Profile of the respondents

The demographic profile of the respondents is presented in Table 4. The majority of the respondents belonged to the age bracket of 21-25 which comprises 79.37%; 9 or 14.29% of the respondents belonged to 18-20 years old; 3 or 4.76% of respondents were in the age range of 26-30, and one (1.59%) belonged to the age bracket of 31-35. The overall age mean of the respondents was 22.83 years. The majority of the respondents were female, comprising 44 or 69.84%, while the males were 19 or 30.16%. In terms of marital status, all respondents were single except for one who was married.

Table 4. *Demographic profile of the respondents*

Particulars		Frequency (f)	Percentage
Age:	18-20	9	14.29
	21-25	50	79.37
	26-30	3	4.76
	31-35	1	1.59
Mean: 22.825			
Gender:	Male	19	30.16
	Female	44	69.84
Status:	Single	61	98.41
	Married	1	1.59

n=63, %100

The sleep quality of the respondents

Table 5 presents the sleep quality of the respondents. In general, the respondents exhibited a "Fair" sleep quality, which means that their sleep routine may not be perfect, but they encountered only a few minor sleep problems. This result contradicted some research results, which claimed that the majority of students in tertiary-level colleges suffered from "poor sleep quality" (Chiang et al., 2014; Lopes et al., 2013; Schlarb et al., 2017). Specifically, the respondents considered the "restorations after sleep" to have "high sleep problems," which corresponded to "poor" sleep quality. This implies that the respondents did not feel recovered from fatigue after sleep. This may also indicate that they kept waking up during their sleeping period. This finding aligns with the study results of Maheshwari and Shaukat (2019), who reported that most of their student respondents experienced sleep disturbances once or twice a week. Furthermore, Chiang et al. (2014) also reported that their student respondents indicated a higher frequency of waking up in the middle of the night or early in the morning.

Table 5. *The sleep quality level of the respondents*

Domains	Mean	Description
Daytime symptoms	2.483	Fair
Restoration after sleep	2.526	Poor
Problems initiating	2.36	Fair
Maintaining sleep	2.357	Fair
Difficulty waking	2.27	Fair
Sleep satisfaction	2.476	Fair
Overall Sleep Quality	2.44	Fair

The laboratory performances of the respondents

As indicated in Table 6, 29 or 46% of the respondents obtained "excellent" laboratory performance ratings, and 34 or 54% obtained "very satisfactory" ratings. It was worth noting that no respondents had grades below 2.00 or "satisfactory" or "marginal" ratings. In general, the respondents obtained a laboratory performance mean grade of 1.58, which had a qualitative description of "very satisfactory." It was noted that the BTLED program had strict admission and retention policies, which motivated students to excel academically.

Table 6. *Laboratory performance of the respondents*

Laboratory Performance	Quality Description	Frequency	Percentage
1.00-1.50	Excellent	29	46.00
1.51-2.00	Very Satisfactory	34	54.00
2.01-2.50	Satisfactory	0	0.00
2.51-3.00	Marginal	0	0.00

n=63; %=100

The relationship between sleep quality and laboratory performance

The Spearman correlation analysis results are presented in Table 7. Three domains of sleep quality, namely daytime symptoms, problems initiating sleep, and sleep satisfaction, yielded positive correlation coefficient values. In comparison, the other three domains, including restorations after sleep, maintaining sleep, and difficulty waking, showed negative correlation coefficients. However, the gained R-values were very minimal, ranging only from 0.026 to 0.174, with an overall R-value of 0.110. This revealed that the respondents' sleep quality, with its six domains, had a negligible correlation to their laboratory performances. Moreover, the generated p-values in Table 7 were all greater than the 0.05 level of significance, which is interpreted as "not significant". Hence, the null hypothesis was accepted, and it was concluded that there was no significant relationship between students' sleep quality and their laboratory performances.

This finding challenged the existing study results, which claimed that students' academic achievement was associated with sleep quality (Dewald et al., 2010; Maheshwari & Shaukat, 2019; Scott et al., 2011). However, it is worth noting that these existing research results were generally directed at students' academic success, rather than their laboratory performances. Moreover, the respondents' distribution in this study was also broad, compared to the current study, which focused only on the BTLED-HE students.

Nonetheless, the results of this study aligned with those of Sweileh et al. (2011) and Kasim (2011), who found no significant relationship between sleep quality and academic success. Similarly, the study by Jalali et al. (2020) concluded no significant relationship between sleep qualities in achieved and unachieved academic performances of the Students, including laboratory subjects.

Table 7. *Relationship between the sleep quality and laboratory performances of the respondents*

Domains	r-value	Description	p-value	Interpretation
Daytime symptoms	0.174	Negligible correlation	0.172	Not significant
Restoration after sleep	-0.095	Negligible correlation	0.460	Not significant
Problems initiating	0.156	Negligible correlation	0.222	Not significant
Maintaining sleep	-0.028	Negligible correlation	0.827	Not significant
Difficulty waking	-0.056	Negligible correlation	0.664	Not significant
Sleep Satisfaction	0.026	Negligible correlation	0.838	Not significant
Overall Sleep Quality	0.110	Negligible correlation	0.390	Not significant

CONCLUSION

Based on the findings, the researchers formulated the following conclusions. The demographic profile of the respondents indicates that most of them are between 21 and 25 years old, female, and single. On average, the respondents' sleep quality is "Fair." Fair sleep quality means that the respondents are experiencing both minor and major sleep problems that affect their sleep quality.

Regarding laboratory performance, the respondents obtained an average performance rating of 1.58, described as "very satisfactory." This means that most respondents achieved a grade of 90% or above. However, there is no significant relationship between the sleep quality of the respondents and their laboratory performances. The factors under sleep quality do not exhibit a significant correlation with the laboratory performances of the respondents.

RECOMMENDATIONS

Several educators and researchers have asserted that obtaining sufficient sleep is crucial to academic success. It has also been reported that sleepiness and poor sleep quality are prevalent among college students, affecting their academic achievement and daytime functioning. Although this may be generally true, the reported research results often overlook the impact of sleep quality on a specific group of students. The implication of the results may also suggest that the factors considered under sleep quality in this study do not exhibit a significant correlation with laboratory performance. This suggests that additional factors may need to be considered for sleep quality. Furthermore, very few studies have focused on students' laboratory performance, even though most laboratory activities involve physical activity. Thus, this study is both worthwhile and relevant.

Based on the results of this study, the following recommendations are proposed. The respondents in this study were limited to BTLED-HE students at SPAMAST. It would be worthwhile to consider studying the sleep quality of all college students, regardless of whether they are enrolled in laboratory subjects. Although the respondents exhibited a sleep routine with only a few minor sleep problems, they also reported not feeling recovered from fatigue after sleep. It is recommended to incorporate sleep and rest awareness into relevant subjects for students. Symposia and other related forums may also be conducted to promote students' well-being.

It is encouraged to continue involving and challenging the students to perform better in their academic endeavors through the integration of relevant laboratory activities, where they can best learn and exhibit their skills and talents. In this study, the respondents' sleep quality has a negligible correlation to their laboratory performances. This contradicts the general claim that students' performances are affected by the quality of their sleep. It is therefore recommended to explore other factors related to sleep—these may be biological or psycho-sociological factors—which may affect students' performances. There may also be some mediating variables between sleep quality and laboratory performance that warrant further investigation.

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