LIFESTYLE AND BEHAVIOR, NUTRITIONAL STATUS, AND DEPRESSION SYMPTOMS IN RELATION TO THE ACADEMIC ACHIEVEMENT OF JUNIOR AND SENIOR HIGH SCHOOL STUDENTS

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ABSTRACT

This study investigated the relationship between lifestyle and behavior, nutritional status, depression symptoms, and academic achievement of junior and senior high school students in selected secondary schools in the Division of Malaybalay City. The descriptive-correlational research design was employed. Data were gathered from 580 students chosen using total random sampling and were analyzed using descriptive statistics such as mean, frequency counts and percentage, Pearson-product moment correlation, and multiple linear regression.

The findings revealed that in lifestyle and behavior, students' physical activity involved 3 to 4 times of physical exercise per week. Their sleep patterns showed that they felt sleepy only 1 to 2 times weekly during their activities. Their screen time usage averaged 2 to 3 hours for different electronics, with mobile phones or smartphones more often used at over 3 hours.

Moreover, the students' nutritional status through their dietary behavior in terms of food choice revealed that they often put importance on choosing their foods. The diversity of their daily diet included vegetables, starches (e.g., rice and rice products) and meat/fish often, and fruits, milk, fats, sugar and beverage occasionally. The students' anthropometric measurements had an average weight of 95.90 lbs. and an average height of 178.65 cm. The depression symptoms experienced by the students were borderline to moderate depression levels.

The study also found that the students' academic achievement was very satisfactory. Furthermore, correlation and regression analyses showed that the variables, sleep patterns and depression symptoms, negatively and significantly impact students' academic achievement. Therefore, less frequency of daytime sleepiness and fewer depression symptoms could increase academic performance. Hence, these findings have implications for students' academic success and well-being, especially in improving their sleep quality and supporting effective interventions for depression.

KEYWORDS: *Lifestyle and behavior, nutritional status, depression symptoms, academic achievement*

1. INTRODUCTION

The educational touchstones of a secondary school diploma and a bachelor's degree epitomize the complete academic achievement of a student, and it has always been said that a good learner's grade point average results in a better future and lands a good-paying job. However, the UNICEF Education Strategy acknowledges that, at current trends, by 2030, 420 million children will fail to attain basic skills in childhood, and 825 million will fail to attain basic secondary-level skills. According to Narad and Abdullah (2016), academic performance is the knowledge gained that a teacher evaluates based on the educational goals that students and teachers set to achieve over a certain time.

Stea and Torstveit (2014) state that academic achievement is associated with having a healthy lifestyle and behavior that is much more likely to succeed in school. A healthy lifestyle includes eating well, exercising, getting enough sleep, dealing with stress, not using drugs, getting support from friends and family, and limiting screen time (Bodai, 2018; Dalle, 2012). Self-determination and a sense of enthusiasm lead to motivation, which helps a student understand the bigger picture and goals of both personal and academic processes (Singh, 2011).

The Philippines was the country with the highest prevalence of insufficient activity among boys (93%) by the World Health Organization (2016) since there are many factors involved in the said outcome. These include parental aspects, individual choice, and environmental aspects. Another equally important review article on physical activity and academic achievement has shown that significant influences on lifestyle, behavior and cognitive functioning improve students' academic achievement. Studies of clinical and public health guidelines indicate that youth need a minimum of 60 minutes per day of vigorous or moderate-intensity physical activity to optimize health and development. Though physical activity can start to harm mental health, like having an eating problem or training too hard, the important thing is finding balance and figuring out what works best for teenagers and not trying to overdo it (Potkin & Bunney Jr., 2012).

In connection with adolescents' lifestyles and behaviors regarding sleep patterns, experts suggest that a high school student should sleep at least 8 hours every 24 hours regardless of where or when the area or time. Studies have revealed that most adolescents have found strong links between electronic media such as television, computers, and video games and declining health problems such as obesity and poor sleep. The importance of sleep enhances memory consolidation, which is demonstrated in adults through skills and procedures and recalling facts. However, studies reveal that sleep and memory are relatively unstudied among adolescents, although school performance and consequent social functioning are associated with memory (Potkin & Bunney Jr., 2012). Likewise, little is known about the links between heavy screen time and electronic media and academic performance.

The relation of nutritional status to academic achievement is also interesting. Burrows et al. (2017) revealed that dietary intake influences academic achievement (Burrows et al., 2017), and proper nutrition for brain development, cognition, and academic achievement is highly important. Adolescents need a high dietary intake because they have high brain metabolic needs (Benton et al., 2010). They need to have a balanced and healthy diet of high nutrient-dense foods, including polyunsaturated fatty acids that is essential components in cell membranes to provide better cognition and promote academic achievement (Lee, J. M., et. al., 2016). Also, good nutrition is associated with the progress of perceptive and behavioral talents and improved school attendance. Nevertheless, recent evidence concerning the dietary patterns of young adults is due to a high intake of saturated fat and sucrose, increased consumption of fast foods, and low consumption of vegetables (Sijtsma et al., 2012).

On the other hand, undernutrition challenges global health (Svefors et al., 2016). Malnutrition is still a public health problem, leading to failure in children's somatic and mental development. This shows that malnutrition is considered a pressing problem that affects the ability of children to learn and causes them to perform at a lower level in school (Endalew et al., 2015). Accordingly, poor nutritional status affects school performance. In the long run, it results in poor critical thinking, damaging children's health, physical growth, and brain development, thus impairing their lives and leaving them with lower chances of finishing school and becoming highly productive adults. Hence, every learner should benefit from the nutritional components of each food and the quality of their diet.

Furthermore, depression has recently become the leading cause of disability worldwide (Friedrich, 2017). It has since become a worldwide public health concern and a significant contributor to the global burden of disease (Pilania, M., et, al., 2017). Based on the 2015 Population Estimate, an estimated 3.3% of Filipinos are experiencing depressive symptoms (World Health Organization, 2017). Without appropriate care and medical intervention, the condition can cause distress to individuals and their families. Despite this, few have given attention to complete treatment and monitoring by clinical and health-related professionals. With this concern, it is essential to look at school-aged young adults to identify those affected by depression and whether this concerns their academic achievement and relates to some characteristics of students, families, and educational background of parents, locality, and gender (Sharma, K. et al., 2016).

Following Bloom's Taxonomy (Bloom, 1994) of academic achievement, namely: knowledge, comprehension, application, analysis, synthesis, and evaluation, the relationship of academic achievement to the student's grading system is mandated by the Department of Education Order No. 8 series of 2015 (Plata, 2016). Assessment, then, is the indicator of quantifying the description of a student's performance through ranges derived by calculating the individual components of written works, performance tasks, and quarterly assessments. It is measured through a student's grades in a given school year, school achievement exams or standardized test scores in core subjects, grade point average (GPA), and teacher rating scales (Chowa et al., 2015).

In view of the above considerations, as a teacher and a nutritionist-dietitian, the researcher aspired to identify the underlying factors that could impact students' learning progress, especially those relevant to their health and wellness. Therefore, this study was conducted to determine the relationship between lifestyle and behavior in terms of physical activity, sleep pattern, and screen time; the nutritional status based on their dietary behavior in terms of food choice, dietary diversity, and anthropometric measurement; and the depression symptoms toward the academic achievement of the junior and senior high school students. Furthermore, it was conducted to clarify the association among variables that best predict the students' academic achievement.

2. OBJECTIVES
The study aimed to examine the relationship between the lifestyle and behavior, nutrition status, and depression symptoms of junior and senior high school students as the basis of their academic achievement. Specifically, it sought to:
1. Determine the lifestyle and behavior of junior and senior high school students in terms of physical activity, sleep pattern; and screen time;
2. Assess the nutritional status through dietary behavior of junior and senior high school students in terms of food choice, dietary diversity; and anthropometric measurement;
3. Ascertain the extent of depression symptoms among the junior and senior high school students;
4. Determine the academic achievement of junior and senior high school students;
5. Correlate the relationship between academic performance and lifestyle and behavior, nutritional status, and depression symptoms;
6. Identify the variable that best predicts the student's academic achievement.

3. METHODOLOGY
This research was to explore the relationships between the lifestyles, nutrition, depression, and academic performance of junior and senior high school students using a descriptive-correlational approach. Participants were selected through unrestricted random sampling and were asked to complete a semi-structured survey questionnaire. The survey covered physical activity, sleep patterns, screen time, dietary habits, weight, height, symptoms of depression, and academic achievements. Descriptive statistics were used to summarize the data, and Pearson's correlation coefficient was employed to analyze the strength and direction of the associations among these variables. The main aim was to investigate how different aspects of well-being may be connected to the academic achievements of teenagers.

4. SAMPLING DESIGN
The study utilized the descriptive-correlation research design. Descriptive research was used to describe the lifestyle and behavior in terms of physical activity, sleep pattern, and screen time; nutrition status through dietary behavior of the student's food choice and dietary diversity; depression symptoms; and academic achievement of junior and senior high school students. Moreover, the correlation research method was employed to determine the relationship between the independent and dependent variables of the study. Likewise, it identifies the predictor variables of academic achievement of junior and senior high school students.

5. STATISTICAL DESIGN
Descriptive statistics, such as frequency counts, percentages, and mean, were used to describe lifestyle and behaviors (i.e., physical activity, sleep pattern, and screen time); nutrition status through dietary behavior (i.e., food choice, dietary diversity of food items including vegetables, fruits, milk, starches, meat/fish, fats, sugar, beverages, and anthropometric measurement in terms of weight in pounds and height in centimeters); depressive symptoms; and academic achievement of the junior and senior high school students. Pearson's product-moment correlation coefficient was also utilized to measure the relationship between the independent and dependent variables. Furthermore, multiple linear regression analysis was used to identify the determinants of students' academic achievement.

6. GEOGRAPHICAL AREA
The study was conducted in the secondary schools of the Division of Malaybalay City, namely, Bukidnon National High School, Casisang Senior High School (Junior), Malaybalay City National High School, and Malaybalay City National Science High School.

The Bukidnon National High School is located along Fortich St, Sayre Highway in Malaybalay City. It was established in July 1941 and was formerly called Bukidnon High School and later renamed Bukidnon Provincial High School per Republic Act 2301, covering an area of 12.035 hectares. It is now known as Bukidnon National High School, providing quality education among junior and senior high school students. The majority of the students represent a vast population of young adults from the community as admission is regardless of

socioeconomic information, cultural background, and religious affiliation. There were 160 junior and 80 senior high school students who served as participants in the study, and 13 teachers were assigned for data collection.

Casisang Senior High School is an independent school is located in Barangay Casisang, which offers the general tract of K-12 education, headed by the secondary school principal. There were forty (40) senior high school and sixty (60) junior high school students that served as participants, with ten (10) teachers assigned for data collection.

Malaybalay City National High School is formerly Bukidnon National High School Annex-San Jose. In April 2013, Republic Act No. 10488 separated it from Bukidnon National High School, Malaybalay City, Bukidnon, converting it into an independent national high school. The school is located in San Jose, Malaybalay City. Aside from junior high school students, the school has offered the general strand for senior high school. There were eighty (80) junior high school and forty (40) senior high school students that served as participants, with six (6) teachers assigned for data collection.

In April 2013, through the Republic Act No 10466, Bukidnon National High School- Aglayan Annex was separated and known as Malaybalay City National Science High School. It is located at Barangay Aglayan, Malaybalay City, Bukidnon, currently offering junior and senior high school K-12 programs and serving the neighboring barangays as close as Linabo and far as San Martin and Bantuanon, Lantapan, Bukidnon. There were eighty (80) junior high school and forty (40) junior high school students that served as participants, with six (6) teachers assigned for data collection.

Three hundred (380) junior high school and two hundred (200) senior high school students participated as respondents in the study. The total participants were five hundred eighty (580) students from the secondary schools of Malaybalay City Division. A letter of informed consent was issued to the students, and those who declined to participate in the study were exempted. Table 1 shows the distribution of the number of respondents per school from the District of Malaybalay City.

Table 1. Total number of respondents per school from the District of Malaybalay City in Secondary Level for School Year 2021-2022

School	Total number of respondents		
	JHS	SHS	Total
Bukidnon National High School	160	80	240
Casisang Senior High School	60	40	100
Malaybalay City National High School	80	40	120
Malaybalay City National Science High School	80	40	120
Sub-Total	380	200	580
Grand Total		580	

7. RESULTS

This study sought to examine the relationship between lifestyle and behavior, nutritional status, depression symptoms, and academic achievement of junior and senior high school students in selected secondary schools in the Division of Malaybalay City. Specifically, it determined the students' lifestyle and behavior in terms of physical activity, sleep pattern, screen time; assessed the dietary behavior in nutrition status in terms of food choice, dietary diversity, and anthropometric measurement; ascertained the depression symptoms (level of depression); determined the level of academic achievement; correlated the independent and dependent variables; and identified the variables that best predict the students' academic achievement.

The study utilized a descriptive-correlational research design. This was conducted in the Division of Malaybalay City schools, namely: Bukidnon National High School, Casisang Senior High School (Junior High School included in the area), Malaybalay City National High School, and Malaybalay City National Science High School. Five hundred eighty (580) students participated in the study, which were selected using random sampling. Several instruments were adopted to collect relevant data for the study. Lifestyle and behavior in terms of physical activity, sleep pattern, and screen time were measured using the following: the Physical Activity Questionnaire for Adolescents (Kowalski et al., 1997); Cleveland Adolescent Sleepiness Questionnaire (Spilsbury et al., 2007); and the Screen Time Questionnaire (The Nemours Foundation/ KidsHealth. Reproduction, 2017). The nutritional status in terms of food choice, dietary diversity, and anthropometric measurement was collected using the Food

Choice Questionnaire (Szakaly et al., 2018), the Dietary Diversity Questionnaire (Smith et al., 2016), and the Quatelet Equation. The depression symptoms were measured using the Beck Depression Inventory (Beck et al., 1961). The collected data were analyzed using descriptive statistics like mean, frequency counts and percentage, Pearson product moment correlation, and multiple linear regression.

The results of the study revealed that students' lifestyle and behavior in terms of physical activities are interpreted as "sometimes" with an overall mean of 3.04. Their physical activities are 3–4 times per week, which mainly involve ordinary activities such as doing household chores, walking, and sitting down while talking or reading. Similarly, sleep pattern is described as "sometimes" with an overall mean of 2.87, showing daytime sleepiness frequency of 1 to 2 times per week. Also, screen time is rated "occasionally" with an overall mean of 2.93, indicating 2-3 hours of screen time that is usually spent on using mobile phones or smart phones.

The nutritional status of students showed that food choice had an overall mean of 3.82, indicating that their food choices are important that is dominantly based on taste and appearance. Dietary diversity had an overall mean of 3.47, which often consisted of rice (4.30), meat/fish (3.57), and vegetables (3.51), and occasionally consisted of fruits (3.48), beverages (3.41), milk (3.20), sugar (3.14), and fats (3.12). In terms of anthropometric measurement, the students had an average weight of 95.90 lbs. and an average height of 178.65 cm.

The depression symptoms exhibited by the students were found to be "often," with an overall mean of 1.54. These include the feelings of trying too hard, low body image and getting quickly tired.

The majority of the students' academic achievements were "very satisfactory" (85-89, 58.28%), followed by "outstanding" (90-100, 28.14%) and "satisfactory" (80-84, 12.58%). The average grade point average was 87.75, which denotes "very satisfactory" academic achievement of students in high school.

Among the independent variables of the study, sleep pattern ($r = -0.120$, $p = 0.004$) and depression symptoms ($r = -0.281$, $p = 0.000$) have a negative and significant correlation towards academic achievement. On the other hand, physical activity ($r = 0.061$, $p = 0.145$), screen time ($r = -0.045$, $p = 0.278$), food choice ($r = 0.032$, $p = 0.440$), dietary diversity ($r = 1.026$, $p = 0.581$), weight ($r = -0.024$, $p = 0.561$), and height ($r = -0.028$, $p = 0.501$) have no significant relationship to the academic achievement of students. This rejected the first null hypothesis that there is no significant relationship between junior and senior high students' academic achievement and lifestyle and behaviors, nutrition status, and depression symptoms.

Finally, regression analysis showed that the best predictors of students' academic achievement are depression symptoms with a beta coefficient of -0.281 and a probability of 0.000 ($p<0.01$) and sleep pattern with a beta coefficient of -0.053 and a probability of 0.019 ($p<0.05$). This disproved the second null hypothesis that there was no variable that best predicts academic achievement.

8. SUGGESTIONS

The following suggestions were drawn based on the findings and conclusions of the study:
The students are encouraged to spend more time doing moderate-to-vigorous exercise, such as playing sports (e.g., badminton, basketball), running, cycling, dancing, and cardio exercises. It is also essential that students take the necessary steps to improve their quality of sleep. A few of these include limiting screen time, reduce daytime naps, and following a schedule.

In addition, the students are impelled to make conscious efforts to cultivate healthy food habits and diets that include a variety of nutrient-rich foods. They may consult with a Nutritionist-Dietitian to determine their current nutritional status and provide advice on how to address their dietary requirements and achieve good nutrition and wellness.

Regarding their mental conditions, the students may seek advice from the school guidance counselors and treatment from a psychologist, psychiatrist, or doctor. They may increase their social interactions so they can talk with their friends, loved ones, family members, and teachers by simply having someone to listen to them and share their problems.

Parents are encouraged to pay attention to their children's physical, psychological, and social well-being, especially their mental health and sleep quality. They may develop ways to ensure that their children are not sleep

deprived. They could spend more time together and share their thoughts and feelings. They should connect with their children and attend to their needs to boost their self-esteem and support their welfare and academics.

The Department of Education's key officials, school administrators, guidance counselors, and teachers may adopt school-based intervention programs to prevent depression symptoms, such as mental health services, counseling and support programs, and depression and mental health awareness programs. The teachers are also advised to regularly monitor their students' psychosocial difficulties and well-being in the classroom.

Local government program officers and social workers in the Department of Social Welfare and Development may collaborate with the Department of Education to establish programs that assess and address students' mental health issues. They could improve their support services for individuals with depression.

Further studies may also be conducted to verify the findings of the study and to examine the factors that influence students' sleep quality and depression.

9. CONCLUSION

Having analyzed and interpreted the findings of the study, the researcher has drawn the following conclusions:
The junior and senior high school students' lifestyles and behavior were varied. They were doing habitual and moderate physical activities such as doing chores, walking, and sitting. They felt less sleepy during the daytime and frequently spent time with their phones.

The students believed that their food choices were essential to their health. They consumed a variety of foods in their diet, which was regularly composed of rice, meat or fish, and vegetables. Their average weight and height are considered normal for the age group.

In addition, the students had experienced several depressive symptoms. Thus, they may suffer from borderline clinical to moderate depression.

Most of the students had high academic achievement. Two variables were identified as influencing factors to academic achievement: sleep pattern and depression symptoms. Specifically, sleep patterns and depression symptoms had negative correlation to academic achievement. This means that the greater the prevalence of sleepiness and depression level, the lower the students' achievement.

Furthermore, depression symptoms are the best predictor of students' academic achievement. The second best predictor is students' sleep patterns. The significance of the impact of these variables highlights the value of quality sleep and optimum mental health on students' development.

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