

# The Association Between Lifestyles And Study Time With Academic Performance Among Secondary School Students In Malaysia: A Cross-Sectional Study

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## ABSTRACT

**Introduction:** Academic achievement plays a crucial role for the successful development of a person in society. It is thought to be linked to positive outcomes that are valued in the society and is thought to be contributed by many factors such as sleep, healthy diet, sufficient physical activity and studying being the major adjustable contributors (1). Hence, the purpose of this study is to determine the prevalence of time spent studying by students, adopted dietary practices, sleeping patterns and physical activities as well as to determine the extent to which they affect academic performances of the secondary school students in Malaysia.

**Methods:** The study was conducted among secondary school students in Malaysia. A total of 152 respondents were recruited through a convenience sampling method. A self-administered questionnaire was adapted based on the NHMS as well as the Pittsburgh Sleep Quality Index and was distributed online.

**Results:** Overall, most secondary school students in Malaysia spend 0-2 hours studying outside the classroom per day (65.1%), follow poor dietary practices (89.5%), sleep  $\geq 8$  hours per day (54.6%), and are physically inactive (64.5%). There was a statistically significant association between study time and academic performance ( $p < 0.05$ ), but there was no statistically significant association between dietary practices, sleeping patterns, and physical activity with academic performance ( $p > 0.05$ ).

**Conclusion:** As a whole, despite the consensus that a healthy lifestyle and more time spent studying would have a positive impact on academic performances, our research shows that only study time has a significant association with academic performance.

**Keywords:** study time, dietary practice, sleeping pattern, physical activity, academic performance

## INTRODUCTION

Education plays a foundational role in the development and prosperity of today's society (1). Academic success is crucial as it is thought to be linked to positive outcomes valued in the society. For example, in adults, a higher academic achievement leads to a higher likelihood of employment, higher salaries and lower likelihood to engage in criminal activity. This is also true for academically successful adolescents who are shown to have increased self-esteem, reduced levels of depression and anxiety and reduced likelihood of alcohol abuse or engagement in substance abuse (2). Academic achievement is an issue of concern among both students and their families. It is found to have an effect on students both personally and professionally (3).

Academic achievement is thought to be contributed by many factors, with sleep, healthy diet, sufficient physical activity and studying being the major adjustable contributors to the academic achievements of students (4).

It is widely thought that more time spent studying as well as a healthy lifestyle would have a beneficial influence on the academic performances of students when it comes to examinations. Despite this general consensus, a study done in the United States among medical school students from 2006 to 2011 has shown that a large portion of medical students are at increased cardiometabolic risk due to lifestyles not aligned with the national recommendations (5).

The purpose of this study is to determine the prevalence of time spent studying by students, adopted dietary practices, sleeping patterns and physical activities as well as to determine the extent to which they affect the academic performances of the secondary school students in Malaysia.

## MATERIALS AND METHODS

### Subjects

One hundred and fifty-two (152) secondary school students throughout Malaysia participated in the study through convenience sampling. This study was approved with ethical clearance from the CUCMS Research Ethics Review Committee (CRERC) [Reference No.: UOC/CRERC/ER/239]. Subjects were required to fill in a questionnaire that came in 2 languages, which are English and Bahasa Malaysia. They were also required to fill in assent and consent forms prior to participating in the study.

### Questionnaire

Questionnaires were distributed online to the secondary school students in Malaysia to collect quantitative data. The questionnaires have been adapted based on the National Health Morbidity Survey (NHMS) as well as the Pittsburgh Sleep Quality Index. The students were informed regarding the aim and significance of this study. Respondents were also informed of the confidentiality of the data collected. The questionnaires were self-administered. The questionnaire was divided into 5 sections as follows:

Section A: Sociodemographic Description (8 questions)

Section B: Study Time (5 questions)

Section C: Dietary Practices (5 questions)

Section D: Sleeping Patterns (6 questions)

Section E: Physical Activity (8 questions)

Section A consisted of questions regarding the sociodemographic background of the respondents. Sections B to E contained close-ended questions which are mostly yes or no questions along with some elaborations to their answers.

### Data Analysis and Data Interpretation

Statistical analysis was done using SPSS version 23. Descriptive analysis was presented as frequencies and percentages and were used to describe categorical data, while the mean and standard deviation were used to describe numerical data. Association between categorical variables was determined using Pearson's Chi-squared test for bivariate analysis, with a p-value of  $<0.05$  deeming the data statistically significant.

The objectives concerning prevalence were analyzed using descriptive statistics while the objectives concerning association were determined using Pearson's Chi-squared test/Pearson correlation.

## RESULTS

### Duration of Study Times

Among the 152 respondents, 99 (65.1%) studied 0-2 hours outside the classroom per day while 53 (34.9%) studied  $>2$  hours outside the classroom per day.

### Association Between Study Time and Academic Performance

An academic performance of  $\geq 3.50$  was more prevalent among the students who studied  $>2$  hours (81.1%) compared to those who studied only 0-2 hours (59.6%) outside the classroom per day. After analyzing the data, we found that there was an association between study time and academic performance among secondary school students in Malaysia (p-value=0.007).

### Prevalence of Dietary Practices

Among the 152 respondents, 16 (10.5%) adopted good dietary practices while 136 (89.5%) adopted poor dietary practices.

### Association Between Dietary Practices and Academic Performance

An academic performance of  $\geq 3.50$  was more prevalent among those who followed poor dietary

practices (68.4%) compared to those who followed good dietary practices (56.3%). After analyzing the data, we found that there was no association between dietary practices and academic performance among secondary school students in Malaysia (p-value=0.329).

### Sleeping Patterns

Among the 152 respondents, 69 (45.4%) slept  $<8$  hours per day while 83 (54.6%) slept  $\geq 8$  hours per day.

### Association Between Sleeping Patterns and Academic Performance

The prevalence of students who have an academic performance of  $\geq 3.50$  is similar among students who slept for  $\geq 8$  hours (68.7%) and those who slept for  $<8$  hours (65.2%) per day. There is no association between sleeping patterns and academic performance among secondary school students in Malaysia (p-value=0.651).

### Prevalence of Physical Activity

Among the 152 respondents, 54 (35.5%) were physically active while 98 (64.5%) were physically inactive.

### Association Between Physical Activity and Academic Performance

An academic performance of  $\geq 3.50$  is more prevalent among students who are physically inactive (72.6%) compared to those who are physically active (60.3%). There is no association between physical activity and academic performance among secondary school students in Malaysia (p-value=0.108).

## DISCUSSION

### Study Times

Among 152 respondents, 65.1% spent 0-2 hours studying outside the classroom. This is similar to a study done among university students in Iran in 2011 which showed that 68.8% of students spent

less than 5 hours studying per day (6) and another study done among university students in the United States that showed that 12.9% of students studied 2 or less hours per day and 46.0% of students studied 3-5 hours per day (7).

### **Association between Study Time and Academic Performance**

Our study showed that there was a significant association between study times and academic performance among secondary school students in Malaysia ( $p=0.007$ ). This finding is similar to a study done among university students in the United States in 2018 which showed a statistically significant association between the number of hours studied per day with academic performance with  $p=0.001$  (7) and another study done among secondary school students in Kelantan, Malaysia in 2016 which showed that there was an association between time spent studying and academic achievement, with  $p=0.035$  when studying alone and  $p=0.008$  when studying with friends (8).

### **Prevalence of Dietary Practices**

Among 152 respondents, 89.5% follow a poor dietary practice. This is similar to a study done in Kuala Lumpur, which found that 43.6% of school students practiced a poor diet. (9). The majority of secondary school students in Malaysia have an inadequate intake of fruits (71.1%), vegetables (53.3%), and water (53.3%). This is similar according to a study done on undergraduate university students in Finland, >70% consumed 'unhealthy food' items (cake/cookies, snacks, fast food/canned food, and lemonade/soft drinks) and <50% consumed 'healthy food' items (fish/seafood, meat/sausage products and cooked vegetables) (10).

### **Association Between Dietary Practices and Academic Performance**

There is no association between dietary practices and academic performance among secondary

school students in Malaysia as we failed to reject the null hypothesis, with a p-value of 0.329. Most of the students (56.3%) who practice good dietary practices have an academic performance of  $\geq 3.50$  while (68.4%) of the students who practice poor dietary practice have an academic performance of  $\geq 3.50$ . This is in contrast with a survey that came out with dietary intakes most reported to have positive associations with academic achievement were: breakfast consumption and global diet quality/meal patterns, whereas negative associations reported with junk/fast food. This study highlights that associations exist for dietary intakes characterized by regular breakfast consumption, lower intakes of energy-dense, nutrient-poor foods and overall diet quality with respect to outcomes of academic achievement. (11). Similarly, A study done on students in Nova Scotia, Canada showed that there is an association between dietary practices with academic performance. Students with poor dietary practices were significantly more likely to perform poorly during academic assessment (12). However, our study does not have any association between dietary practice and academic performance because we followed the (13) research studies that requires  $\geq 2$  servings of fruits,  $\geq 3$  servings of vegetables, and  $\geq 6$  glasses of plain water to consider a good dietary practice. Most secondary school students in Malaysia do not practice this adequate diet in their daily life.

### **Sleeping Patterns**

Overall, our study shows that 31.6% of the secondary school students in Malaysia sleep less than 6 hours per day, 45.6% slept 6-8 hours, and 22.8% reported to have more than 8 hours of sleep on a daily basis. The majority of the students sleep an average of 6-8 hours per day with a minority of 22.8% who sleep more than 8 hours which is supported by a study done in the United States that reported the majority of the students, 50.6% sleep 7-8 hours every day on a school night, whereas 4.9% reported to have 8.5-

9.5 hours of sleep and a negligible 0.7% of students reported 10 or more hours of sleep (14). This data is also supported by a study done by (15) in Chinat where over 93%, the majority of the students slept less than 8 hours during weeknights but tend to compensate by sleeping longer hours on the weekend for their weekday sleep deprivation.

### **Association Between Sleeping Patterns and Academic Performance**

There is no association between sleeping patterns and academic performance among secondary school students in Malaysia as we failed to reject the null hypothesis, with a p-value of 0.651. The majority of the secondary school students in Malaysia (68.7%) who sleep 8 or more hours per day have an academic performance of  $\geq 3.50$  while 65.2% of the students who sleep for 8 or less hours per day also have an academic performance of  $\geq 3.50$ . In comparison with a previous study (14), sleeping hours of less than 7 hours per day was found to be significantly associated with poorer school performance ( $P < 0.0005$  and  $P < 0.05$ , respectively). Poor nighttime sleep quality and the consequent daytime sleepiness may affect the physical as well as cognitive health of students and may cause the deterioration of their academic performance as a result (16). A study done in China also showed that sleeping hours on weekdays of less than 7 hours was associated with reports of poor academic performance to support this statement ( $P < 0.001$ , Odds ratio 1.98) (15).

### **Prevalence of Physical Activity**

In this study, we found out that the majority of Malaysian secondary school students were physically inactive with a percentage of 55.3%. The result is in line with a global survey data conducted (17) where students from the high-income Asia Pacific regions had the highest prevalence of physical insufficient activity in

both boys and girls in comparison to other regions.

### **Association Between Physical Activity and Academic Performance**

There is no association between physical activity and academic performance among secondary school students in Malaysia as we failed to reject the null hypothesis, with a p-value of 0.108. The majority of students who were physically inactive (72.6%) had academic performance of  $\geq 3.50$  while 60.3 % of the students who were physically active also had an academic performance of  $\geq 3.50$ . This however, contradicts with studies conducted by Haapala, as well as Cheah et al, where both in Finland and Malaysia respectively reported that inactive students had lower GPAs, compared to their highly active peers (18)(19). The deviation of results in this study from other studies are due to the current condition and situation while the study was being carried out. The study was carried out in the midst of Covid-19 pandemic and it had greatly affected and altered the lifestyle of students. Ruiz-Roso et al (20) reported in 2020 on evidence of physical activity habits' modifications among adolescents during Covid-19 confinement, despite the fairly high percentage of physical inactivity among adolescents in Europe and Latin America before and during the Covid-19 pandemic, in which was worse during the lockdown measures. Besides, UNICEF and UNFPA jointly commissioned the Families on the Edge study in May 2020 to explore the impact of the COVID-19 crisis on women and children in low-income urban families in Malaysia, and there is significant impact in the educational aspects as well. The report shows that following the Movement Control Order (MCO), 7% of upper secondary-age children reported not returning to school. Nearly 1 in 5 parents reported that their children have lost interest in school. During the MCO, nearly 9 in 10 only used mobile phones as learning devices, and 8 in 10 had no access to

computers (21). Due to the above, there are various variables that influence the outcome of the relationship between physical activity and academic performance among secondary school students in Malaysia as compared to studies that had been done before Covid-19 pandemic.

## CONCLUSIONS

Despite the consensus that a healthy lifestyle and more time spent studying would have a positive impact on academic performances, our research shows that only study time has a significant association with academic performance ( $p$ -value=0.007). However, our study also showed that there is no association between dietary practices, sleeping time, and physical activity with academic performance. The deviation of results in this study from other studies may be due to the fact that the study was carried out during the Covid-19 pandemic, which may have forced the students to alter their lifestyles in ways they may have not adopted otherwise. Therefore, further research is needed to assess the association between dietary practice, sleeping patterns and physical activity with academic performance among secondary school students in Malaysia once the current pandemic has been overcome.

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## Table Legends

**Table I Association between study time and academic performance**

An academic performance of  $\geq 3.50$  was more prevalent among the students who studied  $> 2$  hours (81.1%) compared to those who studied only 0-2 hours (59.6%) outside the classroom per day.

There is a highly significant association between study time and academic performance among secondary school students in Malaysia ( $p$ -value=0.007).

**Table II Association between dietary practices and academic performance**

An academic performance of  $\geq 3.50$  was more prevalent among those who followed poor dietary practices (68.4%) compared to those who followed good dietary practices (56.3%).

There is no association between dietary practices and academic performance among secondary school students in Malaysia ( $p$ -value=0.329).

**Table III Association between sleeping patterns and academic performance**

The prevalence of students who have an academic performance of  $\geq 3.50$  is similar among students who slept for  $\geq 8$  hours (68.7%) and those who slept for  $< 8$  hours (65.2%) per day.

There is no association between sleeping patterns and academic performance among secondary school students in Malaysia ( $p$ -value=0.651).

**Table IV Association between physical activity and academic performance**

An academic performance of  $\geq 3.50$  is more prevalent among students who are physically inactive (72.6%) compared to those who are physically active (60.3%).

There is no association between physical activity and academic performance among secondary school students in Malaysia ( $p$ -value=0.108).

**Table I Association between study time and academic performance**

Study Time	Academic Performance		Total, n (%)	Chi-squared Value	P-value
	$< 3.50$ n (%)	$\geq 3.50$ n (%)			
0-2 hours	40 (40.4)	59 (59.6)	99 (100.0)	7.253	0.007
>2 hours	10 (18.9)	43 (81.1)	53 (100.0)		

**Table II Association between dietary practices and academic performance**

Dietary Practices	Academic Performance		Total, n (%)	Chi-squared Value	P-value
	$< 3.50$ n (%)	$\geq 3.50$ n (%)			
Good	7 (43.8)	9 (56.3)	16 (100.0)	0.955	0.329
Poor	43 (31.6)	93 (68.4)	136 (100.0)		

**Table III Association between sleeping patterns and academic performance**



Hours of Sleep	Academic Performance		Total, n (%)	Chi-squared Value	P-value
	<3.50 n (%)	≥3.50 n (%)			
<8 hours	24 (34.8)	45 (65.2)	69 (100.0)	0.204	0.651
≥8 hours	26 (31.3)	57 (68.7)	83 (100.0)		

**Table IV Association between physical activity and academic performance**

Physical Activity Status	Academic Performance		Total, n (%)	Chi-squared Value	P-value
	<3.50 n (%)	≥3.50 n (%)			
Active	27 (39.7)	41 (60.3)	68 (100.0)	2.586	0.108
Inactive	23 (27.4)	61 (72.6)	84 (100.0)		