



UNIVERSITI PUTRA MALAYSIA

***IMPACT OF SLEEP QUALITY TOWARDS ACADEMIC PERFORMANCES
DURING ONLINE LEARNING AMONG UNDERGRADUATE STUDENTS AT A
PUBLIC UNIVERSITY IN MALAYSIA***

ATIHKA BINTI RAJAK

**Ip
FPSK5 2021 24**



**IMPACT OF SLEEP QUALITY TOWARDS ACADEMIC PERFORMANCES DURING
ONLINE
LEARNING AMONG UNDERGRADUATE STUDENTS AT A PUBLIC UNIVERSITY IN
MALAYSIA**

ATIHKA BINTI RAJAK

**BACHELOR OF NURSING
UNIVERSITI PUTRA MALAYSIA
SERDANG, SELANGOR**

SEPTEMBER 2021



**IMPACT OF SLEEP QUALITY TOWARDS ACADEMIC PERFORMANCES DURING
ONLINE
LEARNING AMONG UNDERGRADUATE STUDENTS AT A PUBLIC UNIVERSITY IN
MALAYSIA**

By

ATIHKA BINTI RAJAK

**THIS THESIS SUBMITTED TO THE FACULTY OF MEDICINE AND HEALTH SCIENCES,
UNIVERSITI PUTRA MALAYSIA AS
PARTIAL FULFILLMENT FOR THE DEGREE OF
BACHELOR OF NURSING**

SEPTEMBER 2021

All material contained within the thesis, including without limitation text, logos, icons, photographs and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia



ABSTRACT

IMPACT OF SLEEP QUALITY TOWARDS ACADEMIC PERFORMANCES DURING ONLINE LEARNING AMONG UNDERGRADUATE STUDENTS AT A PUBLIC UNIVERSITY IN MALAYSIA: A CROSS-SECTIONAL STUDY

Atihka, R., Ruthpackiavathy, R. D., Rosna, A. R.

Department of Nursing, Faculty of Medicines and Health Sciences, University Putra Malaysia

Introduction: During this COVID-19 pandemic, the teaching and learning activities were immediately shifted from traditional to online classes. The amount of time that student use on screen time has been increase which could have adverse effect on sleep health. Individual that has poor sleep quality in one night might possibly have lower chance to gain accurate information or knowledge (Heuer and Klein, 2003). Hence, this study is proposed in order to investigate the impact of poor sleep quality towards academic performances during online learning that focus among public university student in Malaysia. **Objective:** To investigate the impact of sleep quality towards academic performances during online classes among student at public university in Malaysia. **Methods:** This is a cross-sectional study from Sept 2020 until Sept 2021. The target population of this study is undergraduate student that currently attending online classes. Total 298 respondents collected using non-probability sampling. The data collection was collected through online platform. Then, the data was analyzed by using Statistical Package for Social Sciences (SPSS) version 22. **Results:** 298 respondents from undergraduate students had participated in this study. The finding shows that 19.8% of undergraduate student has a good sleep quality meanwhile 80.2% have poor sleep quality. For academic performances, the highest percent of CGPA was 3.00 above which is 90.3 percent. From the result, there is no significant relationship between sleep quality and academic performance among undergraduate students. **Conclusion:** This study found that majority of the student having poor sleep quality and good academic performances. Besides, it also discovered that sleep quality did not cause any significant impact on academic performance.

Keywords: Sleep quality, Academic performances, Pittsburgh sleep Quality Index, Grade Point Average

ABSTRACT

KESAN KUALITI TIDUR TERHADAP PRESTASI AKADEMIK SEPANJANG PEMBELAJARAN ATAS TALIAN DIANTARA PELAJAR UNIVERSITI AWAM DI MALAYSIA

Atihka, R., Ruthpackiavathy, R. D., Rosna, A. R.

*Department of Nursing, Faculty of Medicines and Health Sciences,
University Putra Malaysia*

Pengenalan: Semasa wabak COVID-19 pandemik ini, aktiviti pengajaran dan pembelajaran telah beralih hampir sepenuhnya dari kelas tradisional ke kelas dalam talian. Jumlah masa yang digunakan oleh pelajar untuk terdedah kepada skrin adalah meningkat, hal ini boleh memberi kesan buruk kepada kesihatan tidur. Individu yang mempunyai kualiti tidur yang rendah dalam berkemungkinan tinggi mempunyai peluang yang lebih rendah untuk memperoleh maklumat atau pengetahuan yang tepat (Heuer dan Klein, 2003). Oleh itu, kajian ini dijalankan adalah untuk mengkaji kesan kualiti tidur yang rendah terhadap prestasi akademik semasa pembelajaran dalam talian di kalangan pelajar universiti awam di Malaysia. **Objektif:** Untuk mengkaji kesan kualiti tidur terhadap prestasi akademik semasa kelas dalam talian di kalangan pelajar di universiti awam di Malaysia. **Metodologi:** Ini adalah kajian keratan rentas dari September 2020 hingga September 2021. Populasi sasaran kajian ini adalah pelajar sarjana yang kini mengikuti kelas dalam talian. Jumlah 298 responden yang dikumpulkan menggunakan persampelan bukan kebarangkalian. Pengumpulan data dikumpulkan melalui platform dalam talian. Kemudian, data dianalisis dengan menggunakan Statistical Package for Social Sciences (SPSS) versi 22. **Keputusan:** Sejumlah 298 orang responden dari kalangan pelajar universiti telah mengambil bahagian dalam kajian ini. Hasil kajian menunjukkan bahawa 19.8% kalangan pelajar mempunyai kualiti tidur yang baik sementara 80.2% mempunyai kualiti tidur yang rendah. Bagi prestasi akademik, peratus PNGK tertinggi adalah 3.00 dan ke atas dengan peratus 90.3 peratus. Hasil dapatan mendapati bahawa tiada hubungan yang ketara diantara kualiti tidur dan prestasi akademik di kalangan pelajar university di Malaysia. **Kesimpulan:** Kajian ini mendapati bahawa majoriti pelajar mempunyai kualiti tidur yang rendah dan prestasi akademik yang baik. Selain itu, kajian juga mendapati bahawa kualiti tidur tidak memberi kesan yang ketara terhadap prestasi akademik.

Kata kunci: Kualiti tidur, Prestasi akademik, *Pittsburgh sleep Quality Index*, Grade Point Average Gred Purata

ACKNOWLEDGEMENTS

With the name of Allah, All praise and gratefulness to Allah for giving me a chance to conduct my study and also increasing my patience and strength in completing this research study.

I would like to thank my supervisor, Dr Ruthpackiavathy A/P Rajen Durai and co-supervisor, Puan Rosna Binti Abdul Rahman for their advice, guidance and suggestions in overall towards the completion of my research study.

I want to thank my special friend Mohd Aiman bin Rosli who always willing to help and encouraging me not to give up in conducting this study. Also, not to forget, thanks to Nurul Fadhilah binti Ab Rahman and Muhammad Nurismail bin Mahyuddin for their continuous support and guide.

Last but not least, thank you to all the respondents who help me in term of participating in my research study and fill in my questionnaire. It really means a lot to me. Thank you for all the cooperation, kindness and support from all of you.

DECLARATION FORM

I hereby confirm that:

- This thesis is my original work;
- Quotations, illustrations and citations have been fully referenced
- This thesis has not been submitted previously or concurrently for any other degree at any other institutions;
- Intellectual property from the thesis and copyright of thesis are fully-owned by Universiti Putra Malaysia, as according to the Universiti Putra Malaysia (Research) Rules 2012;
- Written permission must be obtained from supervisor and the office of Deputy Vice- Chancellor (Research and Innovation) before thesis is published (in the form of written, printed or in electronic form) including books, journals, modules, proceedings, popular writings, seminar papers, manuscripts, posters, reports, lecture notes, learning modules or any other materials as stated in the Universiti Putra Malaysia (Research) Rules 2012;
- There is no plagiarism or data falsification/fabrication in the thesis, and scholarly integrity is upheld as according to the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) and the Universiti Putra Malaysia (Research) Rules 2012. The thesis has undergone plagiarism detection software.

Signature: _____ Date: 16 December 2021

Name and Matric No.: Atihka Binti Rajak 194733

Declaration by Members of Supervisory Committee

This is to confirm that:

- The research conducted and the writing of this thesis was under our supervision;
- Supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

.....

Dr Ruthpackiavathy A/P Rajen Durai

Supervisor

Department of Nursing and Rehabilitation

Faculty of Medicine and Health Sciences

Universiti Putra Malaysia

Date: 17 December 2021

.....

Puan Rosna Binti Abdul Raman

Co- Supervisor

Department of Nursing and Rehabilitation

Faculty of Medicine and Health Sciences

Universiti Putra Malaysia

Date: 17 December 2021

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	i
APPROVAL	iii
DECLARATION FORM	v
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATION	xiii
CHAPTER 1	1
INTRODUCTION	1
1.1 Background of the study	1
1.2 Problem Statement.....	2
1.3 Significance of the study.....	3
1.4 Objectives.....	3
1.4.1 General Objective	3
1.4.2 Specific Objectives	4
1.5 Null Hypothesis.....	4
1.6 Definition of Term	5
1.6.1 Contextual Definition.....	5
1.6.2 Operational Definition	6
1.7 Conceptual Framework.....	8
CHAPTER 2	9
LITERATURE REVIEW	9
2.1 Introduction.....	9
2.2 Sleep quality	9
2.3 Factors affecting sleep quality	10
2.4 Relationship between sleep and academic performances.....	11
CHAPTER 3	13
METHOD	13
3.1 Introduction.....	13

3.2 Study Design	13
3.3 Study Location	13
3.4 Study Sampling.....	14
3.4.1 Study Population.....	14
3.4.2 Study Duration	14
3.5 Sample Size.....	14
3.6 Sampling Method.....	16
3.7 Undergraduate Students.....	16
3.7.1 Inclusion Criteria	16
3.7.2 Exclusion Criteria.....	16
3.8 Study Instruments.....	17
3.9 Validity and Reliability.....	18
3.10 Data Collection	18
3.11 Data Analysis.....	18
3.11 Ethical Consideration.....	19
CHAPTER 4.....	21
RESULT	21
4.1 Introduction.....	21
4.2 Sociodemographic characteristics of undergraduate students.....	22
4.3 Sleep quality among undergraduate students	24
4.4 Relationship between socio-demographic characteristic and sleep quality.....	26
4.5 Relationship between sleep quality and academic performance	28
CHAPTER 5.....	30
DISCUSSION	30
5.1 Introduction.....	30
5.2 Sociodemographic characteristics of undergraduate students.....	30
5.3 Sleep quality among undergraduate students	31
5.4 Relationship between socio-demographic characteristic and sleep quality.....	32
5.5 Relationship between sleep quality and academic performance	32
5.6 Conclusion.....	33
CHAPTER 6.....	34
LIMITATION AND RECOMMENDATION	34

6.1 Limitation	34
6.2 Recommendation.....	35
REFERENCES.....	36
APPENDICES.....	44



LIST OF TABLES

Table		Page
Table 4.1	Frequency and percentage of socio-demographic characteristics	23
Table 4.2	Frequency and percentage of each component of PSQI	25
Table 4.3	Frequency and percentage of total score of PSQI	26
Table 4.4	Relationship between socio-demographic characteristic and academic performances	27
Table 4.5	Relationship between sleep quality and academic performance	28

LIST OF FIGURES

Figure

Page

Figure 1

Conceptual Framework

8



LIST OF APPENDICES

Appendix		Page
1	Written Permission for Instruments	42
2	Questionnaire	43
3	Information Sheet and Consent Form	50
4	Approval Letter from Ethics Committee	54
5	Approval Letter from Dean Faculty of Medicines and Health Science	55
6	Approval Letter from Dean Faculty of Engineering	55
7	Approval Letter from Dean Faculty of Ecology	57
8	Approval Letter from Dean faculty of Education	58
9	Gannt Chart	59

LIST OF ABBREVIATION

CGPA **Cumulative Grade Point Average**

PSQI **Pittsburgh Sleep Quality Index**



CHAPTER 1

INTRODUCTION

1.1 Background of the study

During this lockdown period, the teaching and learning activities were immediately shifted from physical to online classes. The excessive exposure to electronic gadget and artificial light may have adverse health effects. According to Khare et al, (2020) the blue light that emitted from the screens of electronic gadget such as smartphones, tablets, and laptops can inhibit the production of endogenous circadian melatonin that can contribute to changes in night alertness and sleep latency. University students shows greater tendency to have poorer sleep quality compared to others population, including irregular sleep patterns and sleep duration (Raley HR, Naber JL, Cross S, Perlow MB, 2016). Commonly, the lack of sleep can cause impaired cognition that will affect health (Wesensten, 2012). Gilbert and Weaver (2010) stated that poor sleep quality may lead to slump in activity performance and will increase anxiety level. Individual that has poor sleep quality in one night might possibly have lower chance to gain accurate information or knowledge (Heuer and Klein, 2003). This chapter will include the background, problem statement, research questions, significance of this study and research objective, which consists of general and specific objectives. The research hypothesis, definition of term, operational definition and conceptual framework also will be explained.

1.2 Problem Statement

Sleep quality during online classes among university student is currently understudied. In the review of the literature, it was found that there has been lacking of studies in Malaysia that focused on association of sleep quality towards academic performance during online classes in public university. Galambos, Vargas Lascano, Howard and Maggs (2013) found that there is no data to explain the significance of how sleep quality can affect academic performance. Luo, Pan, Choi, Mellish, and Strobel (2011) also state that there is an absence of literature about how disturbance of sleeping pattern can lead to poor academic performances during online classes.

Due to the increase of COVID-19 infections, physical classroom has been restricted. The transition to e- learning gave a great impact to students as they are required to adapt to a new learning environment. Virtual learning has increased the amount of time for students using digital devices everyday that could affect the sleeping pattern. It was also important to examine the student on understanding the relationship between sleep and academic performances. A significant drop in performance and the increasing level of anxiety are the most noticeable effect from sleep disturbances (Gilbert and Weaver 2010). Therefore, the purpose of this study is to investigate the association of sleep quality towards academic performance during online classes in public university in Malaysia and give awareness among students on the importance to improve their sleep quality for maintaining good academic performances.

1.3 Significance of the study

This study is significant because University students shows greater tendency to have poorer sleep quality compared to others population, including irregular sleep patterns and sleep duration (Raley HR, Naber JL, Cross S, Perlow MB, 2016). Students who practiced good sleep quality was able to study during the day, have good studying concentration and tend to enhance their academic performances (Rico, Sánchez Manzanares, Antino, and Lau, 2012). By understanding all the variables stated in this study, the student may be able to improve their sleeping patterns as well as their academic performances. The significance from the social aspect is that the results of this study can be used to support past participants in solving their problem and generate a large number of educated students who understand the effects of sleep disturbances during online class performances.

1.4 Objectives

1.4.1 General Objective

To investigate the impact of sleep quality towards academic performances during online classes among undergraduate students at a public university in Malaysia.

1.4.2 Specific Objectives

- i. To determine the relationship between sociodemographic characteristics and sleep quality during online classes among students at a public university in Malaysia.
- ii. To determine the sleep quality during online classes among students at a public university in Malaysia.
- iii. To determine the relationship between sleep quality and academic performances during online classes among students at a public university in Malaysia.

1.5 Null Hypothesis

$H_0 1$ = There is no relationship between sleep quality towards academic performances during online classes among student at a public university in Malaysia.

$H_0 2$ = There is no relationship between sociodemographic characteristics and sleep quality among student at a public university in Malaysia.

$H_0 3$ = There is no relationship between sociodemographic characteristics and academic performances during online classes among students at public university in Malaysia.

1.6 Definition of Term

1.6.1 Contextual Definition

Sleep quality

Sleep quality can be defined as one's satisfaction with sleep experience that includes such aspects like sleep initiation, maintenance of sleep, duration of sleep, and waking time (Kline C, 2014). The quality of sleep is determined by how one perceives his or her sleep habits at night, such as sleep depth, ability to remain asleep, and easier to fall asleep without medical aids (Lai and Say, 2013). Commonly, lack of sleep can cause impaired cognition that will affect health (Wesensten 2012).

Academic performances

Academic performances, typically as knowledge gained or skills learned in school subjects, measured by test scores or by teacher-assigned marks, or by both (Good and Brophy, 1990). According to Abid (2006) academic performance is usually depends on the individual study technique whether is it efficient or inefficient. Student academic performances are usually evaluate through cumulated grade point average (CGPA) or grade point average (GPA) at the end of each semester (Nakalema and Ssenyonga, 2013).

Online learning

Online learning is defined as a synchronous classroom where students communicate with instructors and others through internet or online computer learning. Students do not rely on their physical location to participate in this online learning (Singh, V., and Thurman, A., 2019). Another study stated that online learning is characterized as the delivery of knowledge via online environment using the internet for teaching and learning sessions.

1.6.2 Operational Definition

Sleep quality

This section defined by determine the impact of sleep quality using scoring in PSQI questionnaire. There are seven components to evaluate the quality of sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction. The sum of these seven components determined the sleep quality of respondents. Score 0 to 5 will be indicates as good sleep quality meanwhile score greater than 5 means poor sleep quality.

Academic performances

Student academic performances usually measured using grade point average (GPA) or cumulated grade point average (CGPA) at the end of each semester (Nakalema and Ssenyonga, 2013). This section defined according to cumulative grade point average of student during online classes.

Online learning

Respondents who participate in this research study are currently active in online learning.

1.7 Conceptual Framework

Below is the conceptual framework of this study. Based on evidence from the framework, socio demographic may be associated with the sleep quality of undergraduate student and sleep quality might have association towards academic performances during online classes. The concept of this study is in diagram as follow.

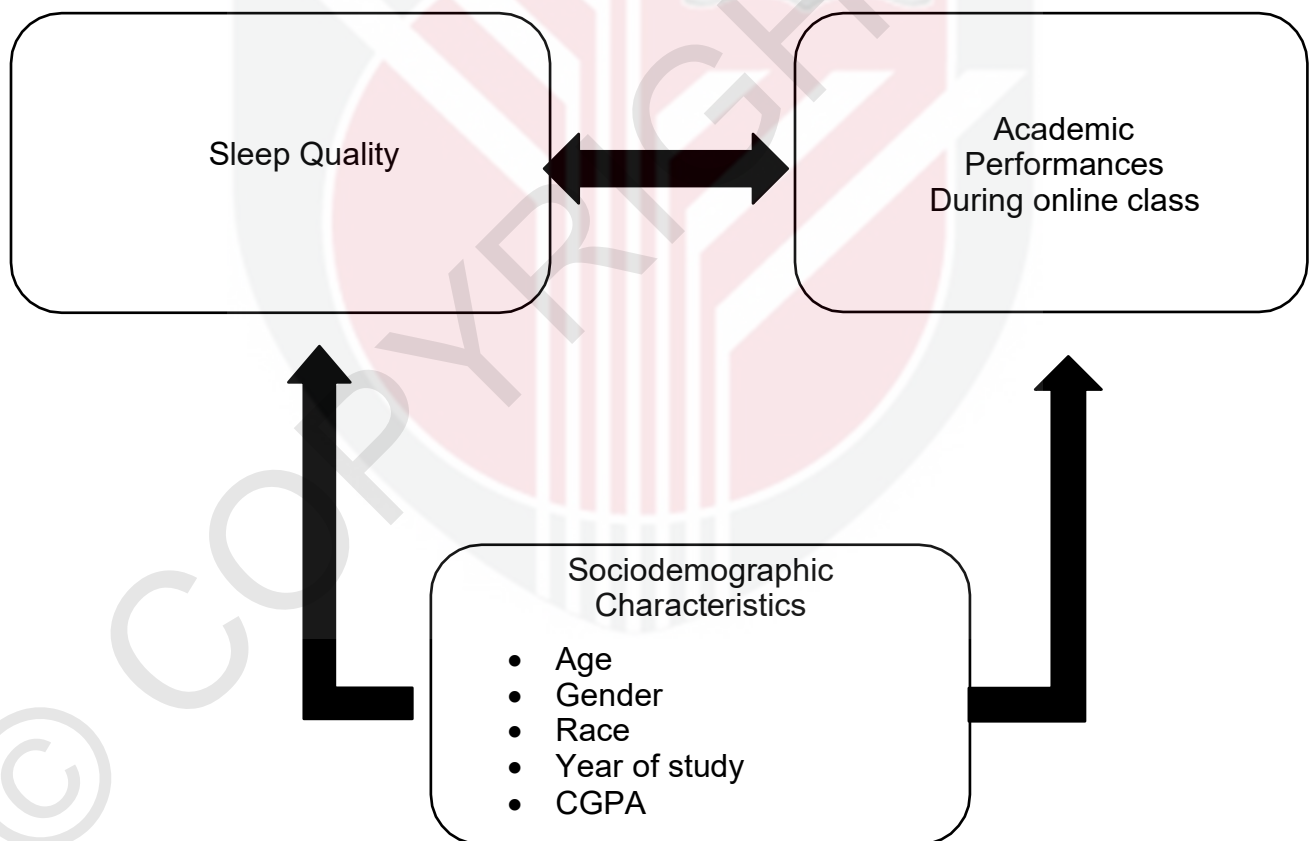


Figure 1: Conceptual Framework

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to review of the literature component in order to provide a rationale to support the need for this research study. This chapter will cover the following topics which is sleep quality, factor affecting sleep quality and relationship between sleep and academic performances.

2.2 Sleep quality

Sleep is an essential component to live a healthy life as it is required for growth, development, learning and rest. Sleep quality can be defined as the foundation for functioning cognitive, psychomotor and emotion. Sleep plays an important role of the students well-being because it helps in learning process and to retain knowledge (Anjum, Bajwa and Saeed, 2014).

According to a study by Stanley (2001) most of the adult population sleep seven to eight hours a night. Another study from Sivertsen, Glozier, Harvey & Hysing (2015) stated that the recommended hours of sleep is seven to nine hours for each night to function properly. The quality of sleep a crucial part of life, is as important as its duration for a good night sleep and healthy life.

In addition to the research that indicates the potential effects of poor sleep, other studies have concentrated on individual habits in order to determine possible causes of poor sleep. In students, emotional and academic stress can lead to poor quality of sleep, and the relationship appears to be circular.

2.3 Factors affecting sleep quality

The use of digital devices is inevitable among students today as online classes is the most preferred method instead of physical class during this pandemic. According to Czeisler et al., (2017) digital devices such as cell phones, laptops and computers and any devices that emit light had shown to significant disruption towards sleeping pattern. The author also stated that the disruptions of sleeping pattern was due to the screen time usage as it can push back one's bedtime as far as six hours.

A study by Yang et al., 2019 cited that one of the factor that lead to prolong sleep latency and shorter sleep duration is the usage of smartphone that becomes a routine before one sleep. Screen time can interrupt sleeping pattern by transmitting a surge of wakefulness because of the light wavelengths and can cause the body to suppress the production of melatonin. Melatonin is a hormone that is naturally produced in the body to promote sleep each night (Psychology Dictionary, 2016).

Jovanovski and Bassili (2007) conducted a study on observing the association between the academic performances of students who attend physical classes compared

with 23 online class participants. Researchers found that students that attended virtual classes facing great sleep cycle disruptions compared to those that attended physical classes because they were able to maintain their cycle of sleep and well rested.

2.4 Relationship between sleep and academic performances

Sleep is an essential part for students in the learning process to gain and memorize the information (Anjum. Bajwa, & Saeed, 2014). Sleep pattern of an individual arise from the relationship between the conditions and the circadian rhythm (Carskadon 2004). According to Onyper, Thacher, Gilbert, & Gradess (2012), individual that has altered in sleep pattern, their circadian rhythm will be confused, and this will lead to increase in sleepiness and academic alertness might be decreased.

Sufficient sleep is required to support satisfactory awareness and best performance of academic tasks among students. Various researchers (Field et al., 2012; Nadeem et al., 2012; Orsal, Orsal, Alparslan, & Unsal, 2012; Shochat et al., (2010) reported that insufficient sleep among students can cause anxiety, drowsiness, increased level of stress and reduce academic performance. Gilbert and Weaver (2010) stated that poor sleep quality may lead to reducing in activity performance and will increase anxiety level.

Additionally, a research done by Pace-Schott et al., (2009) on the impact of poor sleep quality in one night found that individuals who have sleep disturbance demonstrated

poorer performances on neuropsychological test compared to individual who slept 8 or more hours. Individual who has poor sleep quality in one night might possibly decrease the chance to gain accurate information or knowledge (Heuer and Klein, 2003).



CHAPTER 3

METHOD

3.1 Introduction

This chapter consists of study design, study location, study sampling, instruments and data analysis. This section will be discussed about the measures taken to protect the confidentiality and privacy of the undergraduate student who participated in the study.

3.2 Study Design

The study design chosen for this research study was quantitative study. The cross-sectional design was used to determine the impact of poor sleep quality towards academic performances during online learning among students at a public university in Malaysia.

3.3 Study Location

This study was conducted at University Putra Malaysia (UPM) involving students from various faculties, courses, and year of study via online platform.

3.4 Study Sampling

3.4.1 Study Population

This study focused on undergraduate students of UPM regardless their gender, faculty, course and year of study. This research was conducted on 298 participants who were selected by the using non-probability sampling selection specifically convenience sampling method to represent the participants who will be involved in this study.

3.4.2 Study Duration

The estimated duration to complete this study is approximately 3 months from June until September.

3.5 Sample Size

For the sample size estimation, this study used comparing two proportion sample size estimation (Comparing Two Proportions - Sample Size - Select Statistical Consultants, n.d.).

This formula will determine the number of respondents that will be chosen for the study.

$$n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2,$$

With:

n = Sample size

$Z_{\alpha/2}$ = critical value of the Normal distribution at $\alpha/2$ (e.g. for a confidence level of

95%, α is 0.05 and the critical value is 1.96)

Z_{β} = critical value of the Normal distribution at β (e.g. for a power of 80%, β is 0.2 and the critical value is 0.84)

p_1 and p_2 = are the expected sample proportions of the two groups.

<p>CGPA (Maheshwari G & Shaukat F, 2019)</p> <p>p_1: Proportion of students get CGPA <2.70 with poor sleep quality (68)</p> <p>p_2: Proportion of students get CGPA <2.70 with good sleep quality (52)</p>	$n = \frac{(1.96+0.84)^2 * (0.68(1-0.68) + 0.52(1-0.52))}{(0.68-0.52)^2}$ <p>n= 143</p>
<p>CGPA (Maheshwari G & Shaukat F, 2019)</p> <p>p_1: Proportion of student get CGPA >3.41 with poor sleep quality (45)</p> <p>p_2: Proportion of student get CGPA >3.41 with good sleep quality (61)</p>	$n = \frac{(1.96+0.84)^2 * (0.45(1-0.45) + 0.61(1-0.61))}{(0.45-0.61)^2}$ <p>n= 149</p>

Thus, the sample size for this study was chosen according to the highest sample size found in the calculation

n= 149

For two proportion sample size estimation, we need to multiply by 2 hence:

n=298

3.6 Sampling Method

In this study, convenience sampling was used as sampling method to recruit the respondents. Non-probability sampling is a sampling method that emphasize on sampling technique where the units that were investigated purely based on the decision of the researcher. Non-probability convenience sampling is based on referrals and that is how a researcher is able to generate a sample of respondents. The students during this study duration were required to answer the questionnaire until it reached the sample required which is the total of 298 respondents.

3.7 Undergraduate Students

3.7.1 Inclusion Criteria

Undergraduate students at public university in Malaysia who are currently active in online classes and willing to participate in this study.

3.7.2 Exclusion Criteria

Undergraduate students at public university who not currently active in online classes.

3.8 Study Instruments

Two research tools were used in this study which are Pittsburgh Sleep Quality Index and Cumulative Grade Point Average (CGPA). A survey form or questionnaire will be used to collect data from the sample respondents. The instruments are divided into two sections.

Section A consists of socio-demographic information such as age, ethnicity, gender, year of study and CGPA. Section B is Pittsburgh Sleep Quality Index (PSQI). The PSQI questionnaire consists of 9 self-rated questions. It has five open-ended questions that includes personal comments and opinions by the respondents on his/her sleeping experiences which have seven components that consists of subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping medication and daytime dysfunction.

For questions 5(a) to 5(i), 7 and 8, it compromised of “not during the past month”, “less than once a week”, “once or twice a week” and “three or more times a week”. For questions 6 it compromised of “very good”, “fairly good”, “fairly bad” and “very bad”. Question 9 compromised of “no problem at all”, “only a very slight problem”, “somewhat of a problem” and “a very big problem”. The questionnaire took approximately 5 minutes to answer and participant are free to answer it at anytime and anywhere since it was distributed on online platform.

3.9 Validity and Reliability

Before conducting the study, Content validity Index (CVI) was used to make sure of the validity of the questionnaires. The questionnaire is in the English version and was revised by supervisor. The PSQI has internal consistency and a reliability coefficient (Cronbach's alpha) of 0.83 for its seven components.

3.10 Data Collection

The data collection for this study was collected through online platforms and social media for easy reach out to students from other faculties. Questionnaire was made into online format using Google form. Researcher had explained to the participants on the purposes of the study and ensure the privacy and confidentiality which is the utmost priority. Participant Information Sheet was added to the first page of questionnaire and make sure the participant has read and understood all the terms allocated.

3.11 Data Analysis

The data was analysed by using Statistical Packages for Social Sciences (SPSS) version 22. The appropriate statistical procedures were used depending on the study objectives. Descriptive analysis was used to analyse descriptive data and inferential statistic to draw conclusions of the study. The data was collected from 298 respondents from undergraduate students of UPM. For the socio- demographic part, it involves data on age, ethnicity, gender and CGPA. The value of skewness and kurtosis will be used for descriptive statistics function. The normal distribution has a skewness of 0 while the

kurtosis for a normal distribution is 3. The non-parametric test will be used if the skewness and kurtosis not resulted in the normal distribution.

Correlation test was used to determine whether there are significant relationships between the two sets of dependent data. Spearman correlation coefficient is used to measure association between two categorical variables which involves association between sleep quality and academic performances.

Kruskal Wallis Test was used to determine the relationship between more than two independent variable of socio-demographic characteristic which is age, race, year of study and CGPA between sleep quality. Meanwhile, Mann-Whitney (U) Test was used for two independent variable which is gender between sleep quality. P-value helped to determine the significance of the results from the study. P-value ≤ 0.05 will be considered as statistically significant that indicate the existence of a relationship between the dependent and independent variables.

3.11 Ethical Consideration

A written approval and permission was obtained from Ethics Committee for Research Involving Human Subject (JKEUPM). All the participants were provided with a participant information sheet about their willingness to join the study. Participants had to fill the informed consent before participating in this study. Participant were free to ask any clarification about the study since the contact information of the researchers were

provided. The participation is voluntary which means the participants have the right to withdraw at any time without any consequences from this research study. All the participants' confidential information will be kept and is not traceable by other individuals and be kept secured in Google Account that can only be accessed by the researchers. The downloaded data will be kept in a password protected computer, thumb-drive and cloud account.



CHAPTER 4

RESULT

4.1 Introduction

This chapter provides a socio-demographic profile of the respondents, information about cumulative grade point average CGPA and sleep quality of undergraduate students. The data pertaining to socio-demographic profile is presented in Table 4.1.

This information is essential to determine the socio-demographic characteristics, sleep quality among student, academic performances during online classes, relationship between sociodemographic characteristics and sleep quality and relationship between sleep quality and academic performances that are presented later in this chapter. Two hundred ninety eight respondents were sampled and answered the questionnaire that was distributed during the period of data collection. This accounted for 100 percent response rate of this study.

4.2 Sociodemographic characteristics of undergraduate students

The data from Table 4.1 implies that majority of the respondents were in the range of 21-23 years old (90.9%) thus belonging to the middle age group. The rest of the respondents belonged to the first age group (6%) where the respondents age ranged from 18-20 years old and the remaining (3%) were from the last age group where the age range is 24 years old and above.

The majority of the respondents are females which is 64.8 percent while male is only 35.2 percent. The respondents consisted of different races such as Malay (59.1%), Chinese (12.4%), Indian (4.0%) and others (29.4%). Based on the table, most of the respondents were fourth year student (39.9) followed by third year (31.9%) and the rest are fifth year (8.1%) and first year (6.4%). From the result, most of the respondents performed greatly in their academic performance as 90.3 percent of the respondents scored a CGPA 3.00 and above.

The normality test is not significantly different which the value of Shapiro-Wilk was p less than 0.005. The skewness and kurtosis were 0.141 and 0.281 respectively thus it also indicated that it is not in normal distribution curve. Thus, non-parametric test will be used to find the association between sociodemographic characteristic and sleep quality.

Table 4.1 Frequency (n) and percentage (%) of socio-demographic characteristics among undergraduate student at public university in Malaysia.

Socio-demographic Characteristics	Frequency (n)	Percentage (%)
Age		
18-20 years old	43	14.4
21-23 years old	234	78.5
Above 24 years old	21	7.0
Gender		
Male	105	35.2
Female	193	64.8
Race		
Malay	155	52
Chinese	44	14.8
Indian	23	7.7
Others	76	25.5
Year of study		
First year	30	10.1
Second year	40	13.8
Third year	92	30.9
Fourth year	114	38.3
Fifth year	21	7.0

CGPA		
Below 2.00	2	0.7
2.00-2.49	5	1.7
2.50-2.99	22	7.4
3.00 and above	269	90.3

4.3 Sleep quality among undergraduate students

Table 4.3 shows the overall result of sleep quality that was obtained from total score of seven components in PSQI. These seven components are sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction to evaluate the sleep quality.

The sum of these seven components determined the sleep quality of respondents based on their score. Score 0 to 5 indicates good sleep quality meanwhile score greater than 5 means poor sleep quality. The result shows that most of the respondents were experiencing poor sleep quality compared to those having good sleep quality with the ratio 4:1.

The frequency of poor sleep quality is 239 (80.2%) while good sleep quality is 59 (19.8%).

Mean value calculated which is 1.80.

Table 4.2 Frequency (n) of sleep quality among undergraduate student

	Sleep Quality, (n)	
	Good Sleep Quality	Poor Sleep Quality
Age		
18-20 years old	4	39
21-23 years old	53	181
Above 24 years old	2	19
Race		
Malay	29	125
Chinese	17	27
Indian	4	19
Others	9	67
Year of study		
First year	2	17
Second year	4	37
Third year	19	76
Fourth year	29	90
Fifth year	5	19
CGPA		
Below 2.00	1	1
2.00-2.49	1	4
2.50-2.99	1	21

3.00 and above	56	213
Gender		
Male	22	83
Female	37	156

Table 4.3 Frequency (n) and percentage (%) of respondents score on PSQI

	Frequency	Percentage	Mean (Standard Deviation)
Good Sleep Quality	59	19.8	1.80(±0.399)
Poor Sleep Quality	239	80.2	

4.4 Relationship between socio-demographic characteristic and sleep quality

To assess the relationship between socio-demographic characteristic and sleep quality, a Kruskal Wallis and Man-Whitney (U) test was conducted.

Table 4.4 Relationship between socio-demographic characteristic and sleep quality among undergraduate students at public university in Malaysia

	Sleep Quality, (n)		Kruskal Wallis Test	p-value
	Good Sleep Quality	Poor Sleep Quality		
Age				
18-20 years old	4	39	5.58	0.061
21-23 years old	53	181		
Above 24 years old	2	19		
Race				
Malay	29	125	15.80	0.005
Chinese	17	27		
Indian	4	19		
Others	9	67		
Year of study				
First year	2	17	5.20	0.26
Second year	4	37		
Third year	19	76		
Fourth year	29	90		
Fifth year	5	19		
CGPA				
Below 2.00	1	1		

2.00-2.49	1	4	4.53	0.20
2.50-2.99	1	21		
3.00 and above	56	213		
	Good Sleep Quality	Poor Sleep Quality	Mann-Whitney (U)	p-value
Gender				
Male	22	83	9 952	0.71
Female	37	156		

4.5 Relationship between sleep quality and academic performance

The normality test is not significantly different with the value of Shapiro-Wilk is p less than 0.005. Thus, non-parametric test which is Spearman Correlation Test was used to find the relationship between sleep quality and academic performance among undergraduate students at public university in Malaysia, the p-value is 0.203 indicated that it was not significant.

Table 4.5 Relationship between sleep quality and academic performance among undergraduate students at public university in Malaysia.

		CGPA	PSQI
CGPA	Correlation Coefficient	1.00	-0.071

Spearman's	p-value	-	0.203
rho	N	298	298
PSQI	Correlation Coefficient	-0.071	1.00
	p-value	0.203	-
	N	298	298



CHAPTER 5

DISCUSSION

5.1 Introduction

The main objective of this study is to investigate the impact of sleep quality towards academic performances during online classes among undergraduate students at public university in Malaysia. In this chapter, results from the analysis data will be discussed according to the specific objective of this study.

5.2 Relationship between socio-demographic characteristic and sleep quality

Respondent's age were arranged in three categories in which were 21-23 years old, 18-20 years old and above 24 years old. Majority female had took part in this study. This was similar to a study conducted by Jalali et al. (2020) stated that only 33 percent of the respondents were male. Until today, there were no researches that associate the quality of sleep among university student with sociodemographic variables (Araújo et al., 2014).

Kruskal Wallis Test analysis revealed that there was no significant relationship between age, year of study and CGPA with sleep quality where the p value of these variables were 0.06, 0.26 and 0.20 respectively. From the Mann-Whitney (U) test result, there was no significant relationship between gender and sleep quality where p-value was 0.71. This result was similar to one of the previous research by Lemma, S (2013) which showed that there was no significant relationship between the two variables, gender and sleep quality.

However, from the finding using Kruskal Wallis Test analysis, it showed that there was a significant relationship between sleep quality and race where p-value is 0.005

Thus, it can be concluded that socio-demographic data did not affect the sleep quality except for the race whereby, sleep quality and race was significant with a p-value of 0.005.

5.3 Sleep quality among undergraduate students

The results showed that majority of the respondents were experiencing poor sleep quality where the percentage is 80.2% while only 19.8% of respondents experienced good sleep quality. In this study, the mean \pm standard deviation for the sleep quality among undergraduate student was 1.80 ± 0.399 . A study by Becker, C. M (2008) proved that majority of the students reported having poor sleep quality (n=10,346) than having good sleep quality (n= 6,333). University students show greater tendency to have poorer sleep quality compared to others population, including irregular sleep patterns and sleep duration (Raley HR, Naber JL, Cross S, Perlow MB, 2016). A study performed by Krishnan, V., and Collop, N. A. (2006) stated that females have better sleep quality than men, with longer sleep duration, shorter sleep-onset latency and good sleep efficiency. Another study also stated that females experienced sleep problems and poor sleep quality than men (Gu D, 2010).

5.4 Relationship between sleep quality and academic performance

Spearman Correlation analysis revealed that there was no significant relationship between sleep quality and academic performance as p value is 0.20 corresponding to the study performed by Onyper, S. V (2012) which found that the Pearson Correlation between sleep and GPA was not significant where p- value was 0.05 (two-tailed significance <0.01). Another study by Nihayah et al. (2011) also showed that there was no association between sleep and academic performances.

A research was performed by Sweileh and his colleagues (2011) on 400 Palestinian students and the result was that sleep quality did not cause any significant impact on academic achievement. Another study by Kazim M. (2011) revealed that sleep deprivation did not have any correlation with test scores based on his research on 189 medical students of a medical college in Pakistan. This showed that academic performances might be affected by other factors like their behaviour, time and schedule, focus and attendance (Nouhi et al., 2008). There are three factors contributing to good academic performances which are the level of intelligence of individual, the interest to study and the learning skills (Nouhi et al., 2008). A study conducted by Ahmed et al. (1988) showed that the factors which can influence student's academic performances (GPA) was self-motivation by student, learning skill and student's economic status.

5.5 Conclusion

The aim of this study research was to explore the effects of quality sleep towards academic performances. This study found that majority of the students were having poor sleep quality and good academic performances. Besides, it was also discovered that sleep quality did not cause any significant impact on academic performance. Similar to other study by Nihayah et.al. (2011) also showed that there was no association between sleep and academic performances.

CHAPTER 6

LIMITATION AND RECOMMENDATION

6.1 Limitation

Due to Covid-19 pandemic, it was difficult to approach the respondents to acquire all the information needed to complete this study. Although the dean of each faculty provided a list of students' email, most of the time there was no response. Therefore, other platforms such as social media was used to approach respondents who met the requirements of this research study.

Besides, since the majority of the respondents were females, it made it difficult to find the significance of sleep quality based on gender. The uneven distribution of data collected between both genders was unable to conclude which one is the most susceptible with sleep quality problem. This problem also same goes to other sociodemographic characteristic which were race, age and year of study.

6.2 Recommendation

This study discovered that a longitudinal study is required to achieve better result and data collection to find the association between sleep quality and academic performances. It is not recommended to do a cross sectional study on studying the relationship between sleep quality and academic performance as a short-term study is not suitable to give the best result.

On top of that, to ensure a better result in finding the association between socio-demographic data and sleep quality, an appropriate sampling method is required. This will make the analysis of data easier and avoiding improper distribution of data according to each category.

Further research study is also recommended to determine whether marital status, course of study or other obligation outside of university had an impact towards their academic performance and sleep quality.

REFERENCES

Abid, H. C. (2006). Effect of guidance services on study attitudes, study habits and academic achievement of secondary school students. *Bulletin of Education and Research*, 28, 35-45

Ahmed B, Ahmed LB, Al-Jouhari MM. 1988. Factors determining the performance of medical students of the Faculty of Medicine, University of Kuwait. *Med Educ* 22(6):506–508

Anjum, A., Bajwa, M. A., & Saeed, R. (2014). Sleep patterns among medical and nonmedical students of University of Lahor, 2010–11. *Professional Medical Journal*, 21(1), 148-15

Araújo, M. F. M. de, Lima, A. C. S., Araújo, T. M. de, Veras, V. S., Zanetti, M. L., & Damasceno, M. M. C. (2014). Association of sociodemographic factors and sleep quality in brazilian university students. *Texto & Contexto - Enfermagem*, 23(1), 176–184. doi:10.1590/s0104-07072014000100021

Becker, C. M., Adams, T., Orr, C., & Quliter, L. (2008). Correlates of quality sleep and academic performance. *Health Educator*, 40(2) 82-89.

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh sleep quality index: A new instrument for psychiatric practice and research. *Psychiatry Research*, 28(2), 193–213. doi:10.1016/0165-1781(89)90047-4

Carskadon, M. A. (2004). Sleep deprivation: Health consequences and societal impact. *Medical Clinics of North America*, 88(3), 767-776. doi:10.1016/j.mcna.2004.03.001

Comparing Two Proportions - Sample Size - Select Statistical Consultants. (n.d.). Retrieved February 13, 2020, from <https://select-statistics.co.uk/calculators/sample-size-calculator-two-proportions/>

Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2012). Depression and related problems in university students. *College Student Journal*, 46(1), 193-202

Galambos, N. L., Vargas Lascano, D. I., Howard, A. L., & Maggs, J. L. (2013). Who sleeps best? Longitudinal patterns and covariates of change in sleep quantity, quality, and timing across four university years. *Behavioral Sleep Medicine*, 11(1), 8-22. doi:10.1080/15402002.2011.596234

Gilbert, S. P., & Weaver, C. C. (2010). Sleep quality and academic performance in university students: A wake-up call for college psychologists. *Journal of College Student Psychotherapy*, 24(4), 295-306. doi:1080/8756225.2010.509245

Good, T. L., & Brophy, J. E. (1990). *Educational psychology: A realistic approach* (4th ed.). White Plains, NY: Longman Publishing Company

Gu, D., Sautter, J., Pipkin, R., & Zeng, Y. (2010). Sociodemographic and Health Correlates of Sleep Quality and Duration among Very Old Chinese. *Sleep*, 33(5), 601–610. doi:10.1093/sleep/33.5.601

Heuer, H., & Klein, W. (2003). One night of total sleep deprivation impairs implicit learning in the serial reaction task, but not the behavioral expression of knowledge. *Neuropsychology*, 17(3), 507. doi:10.1037/0894-4105.17.3.507

Hershner, S., & Chervin, R. (2014). Causes and consequences of sleepiness among college students. *Nature and Science of Sleep*, 73. doi:10.2147/nss.s62907

Jalali, R., Khazaei, H., Paveh, B. K., Hayrani, Z., & Menati, L. (2020). The Effect of Sleep Quality on Students' Academic Achievement. *Advances in Medical Education and Practice*, 11

Jovanovski, D., & Bassili, J. N. (2007). The relationship between morningness-eveningness preference and online learning. *Biological Rhythm Research*, 38(5), 355-365. doi:10.1371/journal.pone.0008032

Khare R, Mahour J, Ohary R, Kumar S. (2020). Impact of online classes, screen time, naps on sleep, and assessment of sleep-related problems in medical college students during lockdown due to coronavirus disease-19 pandemic. *Natl J Physiol Pharm Pharmacol* 2021;11 (Online First). DOI:10.5455/njppp.2021.10.09235202006092020

Kline C. (2013), Sleep Quality. In: Gellman M.D., Turner J.R.(eds) *Encyclopedia of Behavioral Medicine*. Springer, New York, NY.

Krishnan, V., & Collop, N. A. (2006). Gender differences in sleep disorders. *Current Opinion in Pulmonary Medicine*, 12,383-389.

Lai, P.P., & Say, Y.H. (2013). Associated Factors of Sleep Quality and Behavior among Students of Two Tertiary Institutions in Northern Malaysia, Vol 68 No 3. Retrieved <http://www.e-mjm.org/2013/v68n3/sleep-quality.pdf>

Lemma, S., Berhane, Y., Worku, A., Gelaye, B., & Williams, M. A. (2016). Good quality sleep is associated with better academic performance among university students in Ethiopia. *Sleep Breath*, .2013; 18, 257-263. doi 10.1007/s11325-013-0874-8

Luo, Y., Pan, R. C., Choi, J. H., Mellish, L., & Strobel, J. (2011). Why choose online learning: Relationship of existing factors and chronobiology. *Journal of Educational Computing Research*, 45(4), 379-397.

Maheshwari G, Shaukat F (April 01, 2019) Impact of Poor Sleep Quality on the Academic Performance of Medical Students. *Cureus* 11(4): e4357. DOI 10.7759/cureus.4357

Nadeem, M., Ali, A., Maqbool, S., & Zaidi, S. U. (2012). Impact of anxiety on the academic achievement of students having different mental abilities at university level in Bahawalpur (Southern Punjab) Pakistan. *International Online Journal of Education Sciences*, 4(3), 519-528.

Nakalema, G. and J. Ssenyonga. (2013). Academic Stress: Its Causes and Results at a Ugandan Abid, H. C. (2006). Effect of guidance services on study attitudes, study habits and academic achievement of secondary school students. *Bulletin of Education and Research*, 28, 35-45

Nihayah, M., Ismarulyusda, I., Syarif, H. L., Zakiah, M. S. N., Baharudin, O., & Fadzil, M. H. (2011). Sleeping Hours and Academic Achievements: A Study among Biomedical Science Students. *Procedia - Social and Behavioral Sciences*, 18, 617–621. doi:10.1016/j.sbspro.2011.05.090

Onyper, S. V., Thacher, P. V., Gilbert, J. W., & Gradess, S. G. (2012). Class start times, sleep, and academic performance in college: A path analysis. *The Journal of Biological & Medical Rhythm Research*, 29(3), 318-335. doi:10.3109/07420528.2012.655868

Orsal, O., Orsal, O., Alparslan, G. B., & Unsal, A. (2012). Evaluation of the relation between quality of sleep and anxiety among university students. *Journal of Society for Development in New Net Environment in B & H Health Med*, 6(7), 2244-2255.

Pace-Schott, E. F., Hutcherson, C. A., Bemporad, B., Morgan, A., Kumar, A., Hobson, J. A., & Stickgold, R. (2009). Failure to find executive function deficits following one night's total sleep deprivation in university students under naturalistic conditions. *Behavioral Sleep Medicine*, 7(3), 136-163. doi:10.1080/15402000902976671

Phillips, A. J. K., Clerx, W. M., O'Brien, C. S., Sano, A., Barger, L. K., Picard, R. W., ... Czeisler, C. A. (2017). Irregular sleep/wake patterns are associated with poorer 7(1). doi:10.1038/s41598-017-03171-4

Psychology Dictionary. (2016). How to cure insomnia without dangerous drugs. from <http://psychologydictionary.org/article/how-to-cure-insomniawithout-dangerous-drugs/>

Raley HR, Naber JL, Cross S, Perlow MB. (2016). The Impact of Duration of Sleep on Academic Performance in University Students. *Madridge J Nurs*. 2016; 1(1): 11-18. doi: 10.18689/mjn- 1000103

Rico, R., Sánchez-Manzanares, M., Antino, M., & Lau, D. (2012). Bridging team faultiness by combining task role assignment and goal structure strategies. *Journal of Applied Psychology*, 97(2), 407-420. doi:10.1037/a0025231

Sansgiry S, Bhosle M, Sail K. 2006 October 15. Factors that affect academic performance among pharmacy students. *Am J Pharm Educ* 70(5):104–113

Shochat, T., Flint-Bretler, O., & Tzischinsky, O. (2010). Sleep patterns, electronic media exposure, and daytime sleep-related behaviours among Israeli adolescents. *Acta Paediatrica*, 99(9), 1396-1400. doi:10.1111/j.1651-2227.2010.01821

Singh, V., & Thurman, A. (2019). How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). *American Journal of Distance Education*, 33(4), 289–306. doi:10.1080/08923647.2019.1663082

Sivertsen, B., Glozier, N., Harvey, A. G., & Hysing, M. (2015). Academic performance in adolescents with delayed sleep phase. *Sleep Medicine*, 16(9), 1084–1090. doi:10.1016/j.sleep.2015.04.011

Stanley, N. (2001). *Handbook of sleep medicine*. Edited by John M. Shneerson, Blackwell Science. Pages: 237. ISBN: 0-632-05135-3. Price: ?49.50. Human

Psychopharmacology: Clinical and Experimental, 16(2), 196–196.
doi:10.1002/hup.283

Sweileh WM, Ali IA, Sawalha AF, Abu-Taha AS, Zyoud SH, Al-Jabi SW. (2011). Sleep habits and sleep problems among Palestinian students. *Child Adolesc Psychiatry Mental Health*. 2011;5(1):25. doi:10.1186/1753-2000-5-25





Wesensten, N. J. (Ed.). (2012). *Sleep deprivation, stimulant medications, and cognition*. Cambridge University Press MA.

Yang, S.-Y., Chen, K.-L., Lin, P.-H., and Wang, P.-Y. (2019). Relationships among health-related behaviors, smartphone dependence, and sleep duration in female junior college students. *Soc. Health Behav*. 2:26

APPENDICES

APPENDIX 1- WRITTEN PERMISSION FOR INSTRUMENTS

Request to use sleep measure/**instruments** (PSQI) Inbox x

 **Gasiorowski, Mary** <GasiorowskiMJ@upmc.edu>
to me ▾ 20 Jan 2021, 06:50   

Sent on behalf of Dr. Buysse

Dear Athika Rajak,

You have my permission to use the PSQI for your research study. You can find the **instrument**, scoring instructions, the original article, links to available translations, and other useful information at www.sleep.pitt.edu under the Measures/**Instruments** tab. Please ensure that the PSQI is accurately reproduced in any on-line version (including copyright information). We request that you do cite the 1989 paper in any publications that result.

Note that Question 10 is not used in scoring the PSQI. This question is for informational purposes only, and may be omitted during data collection per requirements of the particular study.

This copyright in this form is owned by the University of Pittsburgh and may be reprinted without charge only for non-commercial research and educational purposes. You may not make changes or modifications of this form without prior written permission from the University of Pittsburgh. If you would like to use this **instrument** for commercial purposes or for commercially sponsored research, please contact the Office of Technology Management at the University of Pittsburgh at 412-648-2206 for licensing information.

Good luck with your research.

Sincerely,

Daniel J. Buysse, M.D.
Professor of Psychiatry and Clinical and Translational Science
University of Pittsburgh School of Medicine

Daniel J. Buysse, M.D.
Professor of Psychiatry and Clinical and Translational Science
University of Pittsburgh School of Medicine
E-1123 WPIC
3811 O'Hara St.
Pittsburgh, PA 15213
T: (412) 246-6413
F: (412) 246-5300
buyssej@upmc.edu

This e-mail may contain confidential information of UPMC or the University of Pittsburgh. Any unauthorized or improper disclosure, copying, distribution, or use of the contents of this e-mail and attached document(s) is prohibited. The information contained in this e-mail and attached document(s) is intended only for the personal and confidential use of the recipient(s) named above. If you have received this communication in error, please notify the sender immediately by e-mail and delete the original e-mail and attached document(s).

-----Original Message-----
From: Athika Rajak <mail@sleep.pitt.edu>
Sent: Sunday, January 17, 2021 2:18 AM
Subject: New Message From Center for Sleep and Circadian Science - Request to use sleep measure/**instruments**

Name: Athika Rajak
Email: athikarajak98@gmail.com
Instrument: Pittsburgh Sleep Quality Index (PSQI)
Organization: University Putra Malaysia
Country: Malaysia
Description: Final Year Project
Modifications:
Source of Funding: Not Funded

APPENDIX 2- QUESTIONNAIRE



FACULTY OF MEDICINE AND HEALTH SCIENCES DEPARTMENT OF NURSING

NUR 4999

**RESEARCH TITLE: Impact of Sleep Quality towards Academic Performances
during Online Learning among Undergraduate Students at a Public University in
Malaysia**

QUESTIONNAIRE

RESEARCHER: Atihka Binti Rajak

SUPERVISOR: Ruthpackiavathy A/P Rajen Durai (Dr.)

Instruction:

This study is conducted for academic purpose. All information will be kept private and confidential. Thank you for your cooperation in answering the questionnaire.

QUESTIONNAIRES

Section A: Socio-demographic data

Please tick (/) in the appropriate box

1. Age

- 18-20 years old
- 21-23 years old
- Above 24 years old

2. Gender

- Male
- Female

3. Race

- Malay
- Chinese
- Indian
- Others

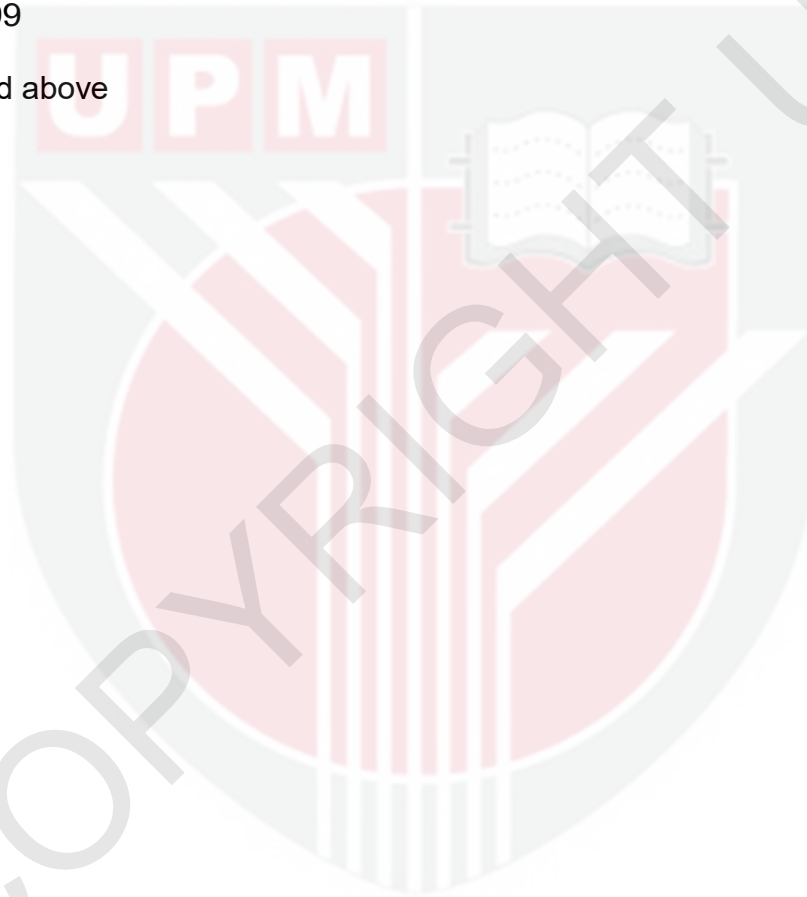
4. Year of study

- First year
- Second year
- Third year

- Fourth year
- Fifth year

5. Academic performances (CGPA)

- Below 2.00
- 2.00-2.49
- 2.50-2.99
- 3.00 and above



Section 2: Pittsburgh Sleep Quality Index PSQI

INSTRUCTIONS:

The following questions relate to your usual sleep habits during the past month only.

Your answers should indicate the most accurate reply for the majority of days and nights in the past month.

Please answer all questions.

1. During the past month, what time have you usually gone to bed at night?

BED TIME _____

2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?

NUMBER OF MINUTES _____

3. During the past month, what time have you usually gotten up in the morning?

GETTING UP TIME _____

4. During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)

HOURS OF SLEEP PER NIGHT _____

For each of the remaining questions, check the one best response. Please answer all questions.

5. During the past month, how often have you had trouble sleeping because you . .

a) Cannot get to sleep within 30 minutes

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

b) Wake up in the middle of the night or early morning

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

c) Have to get up to use the bathroom

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

d) Cannot breathe comfortably

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

e) Cough or snore loudly

- Not during the past month

- Less than once a week
- Once or twice a week
- Three or more times a week

f) Feel too cold

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

g) Feel too hot

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

h) Had bad dreams

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

i) Have pain

- Not during the past month
- Less than once a week
- Once or twice a week

- Three or more times a week

j) Other reason(s), please describe _____

How often during the past month have you had trouble sleeping because of this?

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

6, During the past month, how would you rate your sleep quality overall?

- Very good
- Fairly good
- Fairly bad
- Very bad

7. During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

9. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- No problem at all
- Only a very slight problem
- Somewhat of a problem
- A very big problem

Appendix 3- Information Sheet and Consent Form



**JAWATANKUASA ETIKA UNIVERSITI
UNTUK PENYELIDIKAN MELIBATKAN
MANUSIA (JKEUPM) UNIVERSITI
PUTRA MALAYSIA, 43400 UPM
SERDANG, SELANGOR, MALAYSIA**

FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

- 1. STUDY TITLE:** Impact of sleep quality towards Academic Performances during Online Learning among Undergraduate students at Public University in Malaysia
- 2. INTRODUCTION:** In this study, researcher will investigate the relationship between sleep quality towards academic performances of online learning.

3. WHAT WILL YOU HAVE TO DO?

Please take your time to read through and consider this information carefully before you decide if you are willing to participate. Your participation in this study is voluntary. You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

Undergraduate students at public university who currently not active in online classes

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

Benefits to the chosen university in improving academic performances of the students during online classes.

(b) TO THE INVESTIGATOR?

Result that obtained from this study can help in arranging some ways to improve the quality of sleep and academic performances among online learning student and as reference for the use of upcoming reseach about this topic

6. WHAT ARE THE POSSIBLE RISKS?

There is no possible risk in this study

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

All your information obtained in this study will be kept and handled in a confidential manner, in accordance with applicable laws and/or regulations. When publishing or presenting the study results, your identity will not be revealed without your expressed consent. The participation is voluntary that means the participant have the right to withdraw from this research study at any time without any consequences and had to fill the inform consent before participating in this study.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

If you have any questions related to this study, please do not hesitate to contact my supervisor at 012-2688275 or email ruthpackiavaty@upm.edu.my. You can also contact me Atihka Binti Rajak at 014-8010455 or email to atihkarazak98@gmail.com.



9. CONSENT

I Identity Card No.
address.....
..... hereby voluntarily agree to take
part in the research stated above *(clinical /drug trial/video recording/ focus
group/interview-based/ questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible
adverse effects and complications (as written in the Respondent’s Information Sheet). I
understand that I have the right to withdraw from this research at any time without giving
any reason whatsoever. I also understand that this study is confidential and all information
provided with regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to
me be used in any form of publication or presentation (if applicable)

* delete where necessary

Signature
(Respondent)

Signature
(Witness)

Date :.....

Name :.....

I/C No. :.....

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned
research.

Date

Signature

(Reseracher)

APPENDIX 4 – Approval Letter from Ethics Committee

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)

Date: 9 May 2021

Dear Prof./Dr./Mr./Ms.,

APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled '**Impact of Sleep Quality towards Academic Performances during Online Learning among Undergraduate Students at a Public University in Malaysia**' has been approved.

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (<http://www.tncpi.upm.edu.my/failedokumen>).

If you have any enquiries, please contact Ms. Nurulhasanah Ishak (03-97691605) or Ms. Nor Ellia Abd Ajis (03-97691244).

Note: Please use this reference number for any transaction.

- **JKEUPM-2021-127**

Thank you.

Yours faithfully,

Prof. Dr. Zamberi Sekawi
Chair
Ethics Committee for Research Involving Human Subjects
Universiti Putra Malaysia

APPENDIX 5 – Approval Letter from Dean Faculty of Medicine and Health Science



DEKAN FPSK / UPM <dean.medic@upm.edu.my>
to ABDULLAH, me ▾

7 Jun 2021, 16:28



Assalamualaikum wbt,

Saya tiada halangan.
Terima kasih.

"BERILMU BERBAKTI"

Saya yang menjalankan amanah,

Profesor Dr Zamberi Sekawi
Dekan
Fakulti Perubatan dan Sains Kesihatan
Universiti Putra Malaysia
Tel: 603 - 9769 2602



APPENDIX 7 – Approval Letter from Dean Faculty of Ecology



SAIFUL BAHRIE BIN ABDUL MANAP / FEM <sbahrie@upm.edu.my>
to MOHAMAD, me

8 Jun 2021,

Malay > English [Translate message](#)

Walaikumsalam WBT Atihka Rajak,

Untuk makluman, pihak FEM tiada halangan untuk membantu saudara dalam menjalankan kajian.

Sehubungan itu, mohon makluman bentuk bantuan yang diperlukan bagi membolehkan pihak fakulti membantu saudara dengan lebih efektif lagi.

Saya juga boleh dihubungi melalui emel ini atau boleh hubungi /teks mesej di talian .tel 013-2333 264.

Sekian.

SAIFUL BAHRIE BIN ABDUL MANAP
Penolong Pendaftar Kanan
Pejabat Timbalan Dekan (Akademik, Antarabangsa & HEPA)
Fakulti Ekologi Manusia
Tel: 03 9769 7160 | Fax: 03 89435385

APPENDIX 9 – GANTT CHART

No	PROJECT	2020				2021								
		Sept	Oct	Nov	Dec	Jan	Feb	Mac	Apr	Mei	Jun	July	Aug	Sept
1	Identify the research problem													
2	Gather relevant information													
3	Preparing draft proposal													
4	Proposal correction with supervisor													
5	Submission draft research proposal													
6	Permission from JKEUPM													
7	Data collection and analysis													
8	Discussion of data													
9	Preparation and													

