SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG NURSING STUDENT IN USM AND UITM

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SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG NURSING STUDENT IN USM AND UITM

by

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TABLE OF CONTENTS

Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

N	–	frequency
%	–	percentage
SD	–	standard deviation
USM	–	Universiti Sains Malaysia
UiTM	–	Universiti Teknologi Mara

SLEEP QUALITY AND ACADEMIC PERFORMANCE AMONG NURSING STUDENT IN USM AND UITM

ABSTRACT

Sleep is a repetitive and reversible neurobehavioral state characterized by relative perceptual detachment and insensibility to the external stimuli. A cross-sectional study has been conducted to determine mean score sleep quality among diploma and degree nursing students in USM and UiTM. This study also examined the difference between sleep quality and academic performance among diploma and degree nursing students in USM and UiTM. Fisher Exact Test was used to determine the association between sleep quality and academic performance among nursing students in USM and UiTM. A total of 298 undergraduate nursing students, 196 nursing students from USM and 102 nursing students from UiTM were recruited through simple random sampling method. Data were collected from April 2022 until May 2022 using google form and analysed using SPSS version 26.0 for a window. The result in this study revealed that majority nursing students in USM and UiTM had poor sleep quality ($p = 0.534$, $p = 0.614$). The difference showed that there is no significant association between sleep quality and academic performance among nursing students in USM and UiTM ($p= 1.000$). In conclusion, a good sleep quality needed for nurses to ensure deliver the best nursing care.

KUALITI TIDUR DAN PRESTASI AKADEMIK DALAM KALANGAN PELAJAR KEJURURAWATAN USM DAN UITM

ABSTRAK

Tidur adalah keadaan *neurobehavioral* yang berulang dan boleh diterbalikkan yang dicirikan oleh perpisahan persepsi relatif dan ketidakpekaan terhadap rangsangan luar. Kajian keratan rentas telah dijalankan untuk menentukan kualiti skor min tidur dalam kalangan pelajar diploma dan ijazah kejururawatan di USM dan UiTM. Kajian ini juga mengkaji perbezaan antara kualiti tidur dengan prestasi akademik dalam kalangan pelajar diploma dan ijazah kejururawatan di USM dan UiTM. *Fisher Exact Test* digunakan untuk menentukan perkaitan antara kualiti tidur dengan prestasi akademik dalam kalangan pelajar kejururawatan di USM dan UiTM. Seramai 298 pelajar kejururawatan sarjana muda, 196 pelajar kejururawatan dari USM dan 102 pelajar kejururawatan dari UiTM telah diambil melalui kaedah persampelan rawak mudah. Data dikumpul dari April 2022 hingga Mei 2022 menggunakan kaedah borang Google dan dianalisis menggunakan SPSS versi 26.0 untuk *Window*. Keputusan dalam kajian ini menunjukkan majoriti pelajar kejururawatan di USM dan UiTM mempunyai kualiti tidur yang lemah ($p = 0.534$, $p = 0.614$). Hasil kajian menunjukkan tidak terdapat perbezaan yang ketara antara kualiti tidur dengan prestasi akademik dalam kalangan pelajar kejururawatan di USM dan UiTM ($p= 1.000$). Kesimpulannya, kualiti tidur yang baik diperlukan untuk jururawat untuk memastikan memberikan penjagaan kejururawatan yang terbaik.

CHAPTER 1

INTRODUCTION

This first chapter gives the background of the study for this research. Furthermore, researcher also has listed the objectives and benefits of conducting this study.

1.1 Background of the study

Sleep is a repetitive and reversible neurobehavioral state characterized by relative perceptual detachment and insensibility to the external stimuli (Carskadon & Dement, 2011). Besides, sleep have a huge impact on cognitive performance, alertness and mood of an individual (Worley, 2018). The normal average sleep duration for an adult is 7 to 9 hours per night to maintain optimal body functions (Watson et al., 2015). If an individual has less than the normal average sleep duration, it will affect the health outcome that may cause chronic disease such as diabetes, depression, hypertension and stroke (Watson et al., 2015). In addition, there are four stages of sleep consisting of rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep (Worley, 2018).

Adequate sleep affects the cognitive performance such as learning, memorising process, attention and decision making (Maheshwari & Faizan, 2019). So, adequate sleep is crucial for an undergraduate student in their learning process and achieving their target in healthier way. Nowadays, undergraduate students experienced low sleep quality and sleep deprivation (Khin, Mohd Said & Siti NurHizwany, 2016). Insufficient sleep during night due to stay up for accomplish their assignment as deadline around the corner (Khin et al., 2016). This can lead to sleepiness and lethargy during the daytime. Moreover, student's academic performance will get affected by sleepiness during daytime since it impairs their ability to pay attention and focus in the class (Khin et al., 2016).

Research has revealed that sleep quality varies across different culture in the world. Previous study suggested that cultures different in many components of sleep such as environment, arrangements, and segmentation of sleep (Airhihenbuwaa et al., 2016). A study in 2004 by ACNielsen demonstrated a global survey that indicated 41% of Japanese people sleep less than 7 hours per day and 12% of Indonesians people sleep less than 6 hours per day. Specifically, for the Asian people, ACNielsen concluded that Japanese people have the lowest sleep quality compared to other countries in Asia (Cherasse, 2011). Poor sleep management can lead to serious sleep disorders and other related disease which can lead to mortality.

1.2 Problem Statement

A good sleep management is so important for students. Without a proper sleep quality, the body will get affected physically and emotionally, eventually lead to poor academic performance (Rathakrishnan et al., 2021). A study by Nurismadiana & Lee (2018) shows prevalence of poor sleep quality among students in Malaysia was 70.6% and most of them suffer with poor sleep quality were female with prevalence 55.3%. Good sleep quality is essential for nursing students because they must perform clinical practices in the clinical area while remaining alert to their surroundings. Thus, nurses play important roles and responsibilities in taking care of the patient's life.

Even though there are many studies in this topic, there are several research gap. Firstly, the correlation between total score sleep quality and academic performance among nursing students in Malaysia generally left unanswered. Previous studies in Malaysia regarding this topic is generally focus on certain, particularly among nursing student in International Islamic University, Malaysia (IIUM) (Khin, 2018; Rathakrishnan,

2021). In this study, correlation between total score sleep quality and academic performance among nursing students will involve the public universities in Malaysia. In addition, nursing students have special characteristics in which they need to fulfil both university and Malaysia Nursing Board requirements including the class at the same time with practical training in hospital. Thus, the schedule of nursing students is different compared to other students which can negatively impact on the academic performance (Gallego-Gómez et al., 2021).

Secondly, there is no consensus regarding this study. In previous study by Gallego-Gómez et al (2021), there is a positive correlation between sleep habits and academic performance among nursing students in university. In addition, there is similar research among nursing students at the International Islamic University, Malaysia that also resulted a positive correlation between the variables. Conversely, other previous study indicated there is no significant correlation between sleep quality and academic performance (Jalali et al., 2021). Hence, the objective in this study is to determine the correlation between total score of sleep quality and academic performance (CGPA) among diploma and degree nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM). Other than that, nursing students also have the same routine as the professional nurse, in which they have to perform the clinical practice by shift hence, it will affect sleep quality. The problem is not end there, in their clinical practice which also contribute to their academic performance, they need to complete their task such as case study and case presentation. After completing the theory, the nursing student should apply the knowledge at their clinical practices. A long duration in the clinical areas such in a real workplaces and dealing with deliver nursing care can be hectic to the students while learning new things (Noland & Carmack, 2014). So, good time management dealing with task and clinical practice especially enough sleep very

important for nursing students to make sure they feel fresh the next day especially if they have shift for the next day.

Next, a good quality of sleep can make sure the nursing students do the right decision making process for the patients. Not getting enough sleep before the work eventually slower the reaction and this condition can harm the patient's condition. To be a professional nurse, patient's safety is the most important thing we need to take care of. So, before nurses take care of other people, they need to take care of themselves first. In addition, a good quality of rest for body perform properly vital make sure anything bad happen (Noland & Carmack, 2014). Thus, the brain must properly rest to perform task properly such as remember everything needs to do especially when delivering drug to the patients as their needs.

Then, nurse is the most closed with the patients after relatives. So, nurses should have a good mood interacting with the patients. Not getting enough sleep also can make the nurse stress in the workplace. Delivering nursing care in a conscious mind is very important to prevent any mistake or harm toward patients. So, a nurse should have enough sleep to feel fresh and clear mind during handling the patients. During the education, many nursing students have experienced a challenging transition from traditional classes to shift and rotations. Fears of medical errors and adverse events can often lead to student burnout (Noland & Carmack, 2014).

1.3 Research Question

1.3.1 What is total mean score of sleep quality among diploma and degree nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM)?

1.3.2 What is the academic performance (CGPA) among diploma and degree nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM)?

1.3.3 Is there a significance of score of sleep quality between diploma nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM)?

1.3.4 Is there a significance of score of sleep quality between degree nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM)?

1.3.5 Is there a significance between sleep quality level and academic performance (CGPA) among diploma nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM)?

1.3.6 Is there a significance between sleep quality level and academic performance (CGPA) among degree nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM)?

1.4 Research Objective

1.4.1 General Objective

To determine the association between sleep quality and academic performance (CGPA) among diploma and degree nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.4.2 Specific Objective

1.4.2.1 To determine total mean score of sleep quality among diploma and degree nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.4.2.2 To determine academic performance (CGPA) among diploma and degree nursing students in USM and UiTM among diploma and degree nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.4.2.3 To examine the difference mean score of sleep quality between diploma nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.4.2.4 To examine the difference means score of sleep quality between degree nursing students in Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.4.2.5 To examine the association between sleep quality level and academic performance (CGPA) among diploma nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.4.2.6 To examine the assosiation between sleep quality level and academic performance (CGPA) among degree nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.5 Research Hypothesis

H_o – There is no significance association between sleep quality level and academic performance (CGPA) among diploma nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

H_A – There is a significance association between sleep quality level and academic performance (CGPA) among diploma nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

Ho – There is no significance association between sleep quality level and academic performance (CGPA) among degree nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

H_A – There is a significance association between sleep quality level and academic performance (CGPA) among degree nursing students Universiti Sains Malaysia (USM) and Universiti Teknologi Mara (UiTM).

1.6 Conceptual and Operational Definitions

Table 1.1 Conceptual and operational definitions

Sleep	Sleep is a repetitive and reversible neurobehavioral state characterized by relative perceptual detachment and insensibility to the external stimuli (Carskadon and Dement, 2011). In this study, sleep refer to the state of rest in which the eyes are closed, the body is inactive and, the mind does not think.
Sleep Quality	Sleep quality is the measurement how well of we are sleeping whether the sleep is restful and restorative (National Sleep Foundation, 2020). In this study, sleep quality refers to the how well students sleep according to the Pittsburgh Sleep Quality Index (PSQI) questionnaire.

Sleep Management	Sleep management defined as sleep routines or plan practiced by an individual to promote a healthy sleep habits. In this study, sleep management refers to the sleep routine practiced by students according to the Pittsburgh Sleep Quality Index (PSQI) questionnaire.
Academic performance	Academic performance is defined as "result of learning, prompted by the teaching activity by the teacher and produced by the student", (Lamas, 2015). In this study, academic performance refers to the measurement of students achievement across various academic subjects using their latest Cumulative Grade Point Average (CGPA).
Nursing student diploma and degree in UiTM and USM	"Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all setting, including the promotion of health, the prevention of illness, and the care of ill, disable and dying people", (ICN, 2002). In this study, nursing refers to the profession within health care sector focused on care of individuals, families and communities.
Student	Cambridge Advanced Learner's Dictionary defined student as an individual who is learning at school, college or university. In this study, students refer to the undergraduate students who is learning in university.

1.7 Significance of Study

Nursing students with poor quality of sleep may have implication on their academic performance. The common problems students with poor sleep quality are daytime sleepiness and low concentration. This study can identify the pattern and quality of sleep among nursing students in Malaysia. This is so important in which it detects sleep problems such as sleep deprivation and insomnia among undergraduate students. The identification of possible causes of low sleep quality can be determined in this study. Thus, various of intervention can be done to improve the quality of sleep among the nursing students which can affect their future professional work.

This study concerns the research gap regarding the sleep quality among nursing students and its impact on their academic performance. On the other hand, this study significant to the public health which it concerns about the sleep quality among nursing student and implication to the physical and mental health of the students. Moreover, acknowledgement from this study is to enhance the evidence sleep problem experienced by students. Hence, the Ministry of Health can an appropriate action towards this problem to improve the sleep quality among students in which can maintain optimal physiological and psychological health.

On the other hand, this study also can provide a relevant information to the nursing educator regarding their students. This study contributes in understanding sleep disorder of nursing students that vital to the academic success. Other than that, study of sleep and academic performance among nursing students also contribute to the identification of healthy mental and physical of a student. Sleep vital to maintain a healthy body and function properly. According to Watson et al (2015), getting enough sleep which consist of 7 to 9 hours per night recommend as a regular basis to promote the optimum health among the adults aged over 18 years old. In addition, a good quality of sleep is essential

for the proper functioning of the organism. Sleep is also needed to maintain the cellular and physiological functions of human. Without a proper sleep, an individual is vulnerable to various physiological and behavioural changes. It can detrimental to the individual's health and its cognitive processes.

Moreover, the healthcare system also can improve the quality of nursing care using the result of this study, in which proper education and training regarding sleep pattern of nursing students to prevent any unwanted events in the clinical area. Hence, nursing students should be safe for enter to the clinical area in which they are working in the health care system like a professional nurse. A study shows shift work especially for evening and night shift workers always have less than optimal sleep per day (James, Honn, Gaddameedhi & Van Dongen, 2017). The relationship between shift work and sleep loss is significant among nurses which can impairs the cognitive performance and it also can encourage the workplace incidents such as needlestick and sharp injuries, medication errors, and harm long-term health status of patients (Satterfield & Van Dongen, 2013).

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter generally reviewing the current literature related to sleep quality and academic performance among nursing students in Malaysia. This chapter also will describe a detail conceptual framework used in this study.

2.2 Prevalence of Sleep Pattern

United States reported 35.2% of all adult experience sleep duration less than seven hours per night which is less than a healthy sleep requirement (CDC, 2017). Moreover, insufficient sleep by race ethnicity after adjusting for age, black adults are likely sleeping to little compared to the white adults. A clear differences shows 46.3% of Native Hawaiians, 45.8% of black people, 40.4% of American Indians, 37.5% of Asians, 34.5 of Hispanic, and 33.4% of white adults reporting getting less than seven hours of sleep per day (Kingsbury, Buxton & Emmons, 2013). While in Malaysia reported 33.8% of the general population were reported to have insomnia symptoms and 12.2% had chronic insomnia. The high prevalence is probably due to the possible underlying physical and mental health problem. (Zailinawati, Mazza & Teng, 2012).

2.3 Sleep and Health

A good sleep management contribute to a better health outcome. A consensus suggest that adults aged between 18 to 60 years old required seven to nine hours of sleep per night to promote the best function of body and maintain optimal health (Watson et al., 2015). The characteristics of healthy sleep require sufficient period, a proper timing

and regularity, and the absences of sleep disorder or disturbance (Watson et al., 2015). Studies show insufficient sleep is linked to negative physiological and psychological health outcome and poorer quality of life (Chattu et al., 2019; Liu et al., 2016). The cumulative effects of sleep loss and sleep disturbances have been linked to a variety of detrimental health consequences including cardiovascular disease, cognitive impairment and mental illness such as depression (Darchia et al., 2018).

On the other hand, chronic sleep deprivation among undergraduate student become worry topic due to it is associated with worse health outcome (Zeek et al., 2015). Sleep problems among undergraduate students are often associated with mental health issues. According to previous studies, students with insomnia are likely suffer mental health disorders such as chronic depression, anxiety and stress (Taylor et al., 2013; Sing & Wong, 2010). Recognizing the early symptoms of poor sleep quality that related to mental health problems essential for further interventions in which students involved can receive proper treatments and have a better quality of life.

In the study by Medic, Wille & Hemels (2017), stated that short term of sleep disruption can lead to emotional distress, chronic stress, mental health problems, cognition and memory impairments and reduced the quality of life of an individual. Long-term of sleep disruption may cause hypertension, cardiovascular disease, weight problems, metabolic disorder and also can cause certain cancer and death (Medic et al., 2017). Hence, the precaution step to avoid sleep disruption is always had the optimal sleep as recommended.

2.4 Sleep and Academic Performance

Sleep is essential part of human health and it affect the part of learning process. Previous studies have indicated inadequate sleep and low quality of sleep can affect the learning capacity and academic performance among students (Duarte et al., 2014; Owen & Weiss, 2017). Furthermore, a survey among college students in the United States found that those who have present anxiety and depression reported high prevalence of sleep problems, which consequently have negative impact on their academic performance (Boehm, Lei, Lloyd & Prichard, 2016).

Furthermore, a study by Becker et al (2018) among college students in United States using Pittsburgh Sleep Quality Index (PSQI) instrument indicated prevalence 25% to 33% of student experience poor sleep quality. The result also reported important finding as sleep quality give a significant impact on the student's functioning on daytime (Becker et al., 2018). The consequences have an impact on a student's academic performance and can cause increased sleepiness during the day. This study also found that the mental health of students has correlation with sleep problems. The symptoms of anxiety and depression were related with poorer sleep quality, sleep duration, sleep latency and sleep efficiency (Becker et al., 2018). Thus, this study also conclude that mental health symptoms are associated with poor quality of sleep. Hence, the sleep and both physiological and psychological health have correlation to each other and the responsible parties should give attention this issue to ensure students will have quality of life in the future.

Sleep plays crucial role in memory consolidation and learning process in which contribute to academic performance. Students need to manage their sleep by practicing an adequate sleep duration per night and better sleep quality to improve their academic performance. Previous study shows students who are experience better sleep duration and

sleep quality have better academic performance (Okano et al., 2019). Furthermore, students who had sleep duration less than requirement, tend to experience excessive daytime sleepiness and have lower performance during the day (Zeek et al., 2015). Hence, insufficient cognitive function due to low sleep quality among students lead to lower academic performance (Zeek et al., 2015).

2.5 Theoretical Framework of the Study

In this study, Conservation of Resources (COR) theory adopted by Hobfoll (1989) was used as theoretical framework. The concept of the COR theory explain how stress and motivation are linked. When people experience stressful situations, they are motivated to protect their resources. The COR theory focuses on the fluctuation of common resources that a group of people use when a stressor occurs. Previous study used this framework to determine the relationship between sleep health, resources, stress, and academic performance (Chiang, 2017). The purpose of this study is to determine the relationship between sleep management and academic performance among nursing students in Malaysia. In addition, objects, conditions, personal traits, and energy were divided into four groups. According to the COR theory, initial resource gain or loss leads to future resource gain or loss. In this study, objects, conditions, and energy are classified as external resources, and personal traits classified as internal resources.

In this framework, objects defined as physical objects of value due to utility, rarity or symbolism such as housing and transportation. Also, conditions is a states of being that value due to their general desirability such as tenure and seniority. Then, energy in this framework mean resources that are valued in that they lead to acquired other resources. And lastly, personal traits defined as characteristics that help people to recover from an events such as personal skills, hardiness and self-efficiency. The conceptual frameworks in this study is based on the objective, which is to determine the relationship between

sleep management and academic performance among nursing students. Figure 1 shows the adaptation model based on COR theory to determine the relationship between sleep management and academic performance among nursing students.

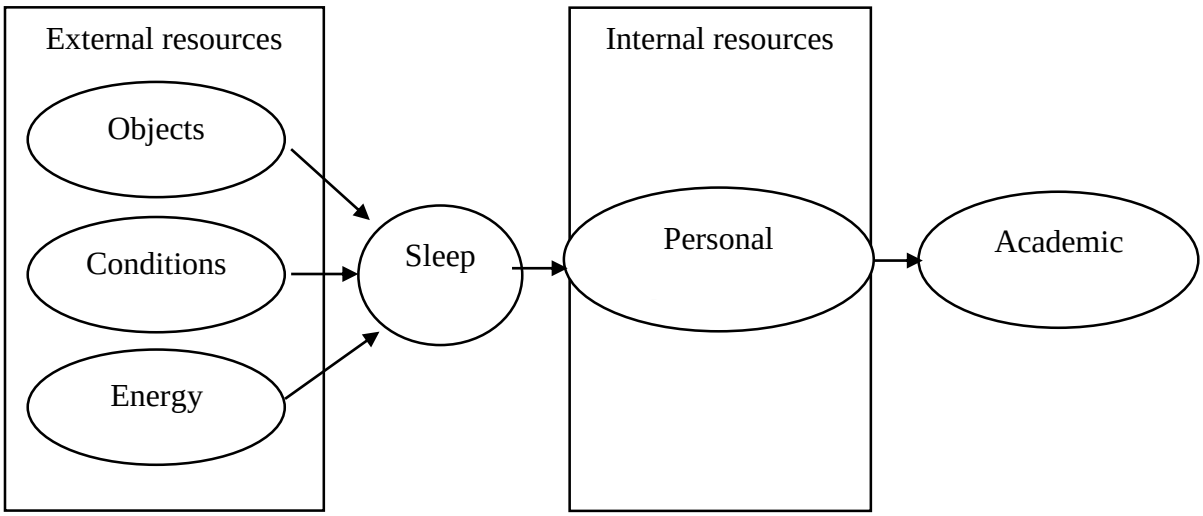


Figure 1: Conceptual framework based on Conservation of Resources (COR) theory adapted by Hobfoll (1989)

For this study, the relationship between sleep and academic performance will be assessed.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter will discuss and explain the approach and method used in this study.

3.2 Research Design

The study is a cross-sectional study design which allow the researcher to collect the data quickly and obtained the data inexpensively by using a google form survey. In this study, researcher aimed to determine the association between sleep quality and academic performance among nursing students in USM and UiTM.

3.3 Research Location

The study was conducted through online which is google form survey and distributed at public university in Malaysia which offering nursing program excluding nursing private college. The university chosen for this study are Universiti Sains Malaysia (USM) and Universiti Teknologi MARA (UiTM). The reason is both of this university offering diploma nursing programme for three years and degree nursing programme for four years at the same time. This will help the study to gain more knowledge and information by comparing the results gained from the respondents.

Diploma in Nursing programme of USM offered by the School of Health Sciences in 2007 with the acquisition of 81 students in order to meet the shortage of nursing workforce at the Hospital Universiti Sains Malaysia and Malaysia in general.

3.4 Research Duration

This study was conducted from November 2021 to July 2022.

3.5 Research Population

The target population of this study are nursing students who are joining nursing program in the public universities in Malaysia. The sample population for this study are nursing students from Universiti Sains Malaysia (USM) and Universiti Teknologi MARA (UiTM). The reason is both of this university offering diploma nursing programme for three years and degree nursing programme for four years at the same time.

3.6 Subject Criteria – Inclusion and Exclusion Criteria

Table 3.1 Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Full time students Enrolled in undergraduate nursing program (diploma or degree)	Students who repeat coursework so as not to interfere with the actual CGPA result

3.7 Sampling Plan

3.7.1 Sample and Estimation

$$n = \left[\frac{Z}{\Delta}\right]^2 p(1-p)$$

n = Sample size

Z = 95 % confidence interval (CI) = 1.96

Δ = precision = 0.05

p = anticipated population proportion

Objective 1

According to previous study, the prevalence of students that had poor sleep quality is 30.4 % (Gallego-Gómez et al., 2021), thus

$$\mathrm{n} = \left[\frac{1.96}{0.05}\right]^2 0.30(1 - 0.30)$$

n = 323

After considering 10% of response rate,

323 x 10% = 32

Hence,

n = 355

Objective 2

According to previous study, the prevalence of students that had bad poor academic performance is 47.9% (Gallego-Gómez et al., 2021), thus,

$$n = \left[\frac{1.96}{0.05}\right]^2 0.48(1 - 0.48)$$

n = 384

After considering 10% of response rate,

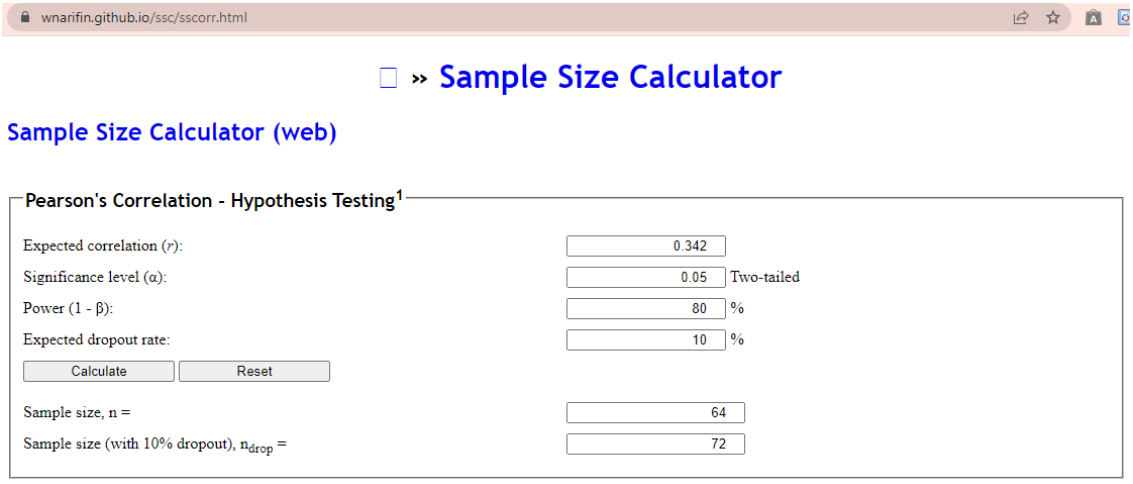
384 x 10% = 38

Hence,

n = 422

Objective 3

According to previous study, the r value is 0.342 in which shows a positive relationship between quality of sleep and undergraduate students' academic performance (Rathakrishnan et al., 2021). By using Sample Size Calculator from https://wnarifin.github.io/ssc/sscorr.html, thus



So, according to the calculation above, the sample size choose in this study are 422.

3.7.2 Sampling Method

This study used a stratified random sampling method. Firstly, the sample size will be divided by two since this study included two universities. So each university require 211 respondents. The selection of respondent is based on a randomizer system using the list name of students. The total number of students will be obtained from Dean from School of Health Sciences USM and Dean from Faculty of Health Science UiTM. Table 3.1 and table 3.2 showed the sampling fraction for each level of study for each university. This is to make sure the number of respondents is evenly divided for each class.

Table 3.2 Total number of students in each course by year

University	Courses	Year 1	Year 2	Year 3	Year 4
USM	Diploma	55	51	70	-
	Degree	34	35	32	25
UiTM	Diploma	25	30	67	-
	Degree	36	70	49	59

Calculation of the determination of the number of students to be selected

$$\frac{\text{Total number nursing students in each class}}{\text{Total nursing students in each university}} \times \text{number respondents required for each university}$$

$\frac{55}{302} \times 211 = 38\ (Diploma\ year\ 1\ USM)$

$\frac{35}{302} \times 211 = 25\ (Degree\ year\ 2\ USM)$

$\frac{51}{302} \times 211 = 36\ (Diploma\ year\ 2\ USM)$

$\frac{32}{302} \times 211 = 23\ (Degree\ year\ 3\ USM)$

$\frac{70}{302} \times 211 = 49\ (Diploma\ year\ 3\ USM)$

$\frac{25}{302} \times 211 = 18\ (Degree\ year\ 4\ USM)$

$\frac{34}{302} \times 211 = 24\ (Degree\ year\ 1\ USM)$

$\frac{36}{336} \times 211 = 23\ (Degree\ year\ 1\ UiTM)$

$\frac{70}{336} \times 211 = 44\ (Degree\ year\ 2\ UiTM)$

$\frac{49}{336} \times 211 = 31\ (Degree\ year\ 3\ UiTM)$

$\frac{59}{336} \times 211 = 38\ (Degree\ year\ 4\ UiTM)$

$\frac{25}{336} \times 211 = 16\ (Diploma\ year\ 1\ UiTM)$

$\frac{30}{336} \times 211 = 19\ (Diploma\ year\ 2\ UiTM)$

$\frac{67}{336} \times 211 = 43\ (Diploma\ year\ 4\ UiTM)$

Table 3.3 Total number of students selected in each course by year

University	Courses	Year 1	Year 2	Year 3	Year 4
USM	Diploma	38	36	49	-
	Degree	24	25	23	18
UiTM	Diploma	16	19	43	-
	Degree	23	44	31	38

3.8 Research Instrument

In this study, data collected using Pittsburgh Sleep Quality Index (PSQI) instruments to facilitate sleep assessment. This questionnaire was adopted from Buysse, Reynolds, Monk, Berman and Kupfer (1989) and the permission was obtained as shown in appendix B.

3.8.1 Instrument

The questionnaire is divided into 3 sections.

Section A: Socio-demographic data

Section A consisted of five questions regarding socio-demographic background including gender, age, ethnic, level of study, and university.

Section B: Pittsburgh Sleep Quality Index (PSQI)

The instruments will be use in this study is Pittsburgh Sleep Quality Index (PSQI) in which adopted from Buysse, Reynolds, Monk, Berman and Kupfer (1989). The PSQI is a self-report questionnaire consists of seven domain including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month. The Pittsburgh Sleep Quality

Index (PSQI) consists of nineteen self-rated questions. The 19 questions are combined to form seven components of sleep assessment seven domain including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month.

Section C: Academic Performance

Academic performance was assessed using the latest Cumulative Grade Point Average (CGPA) of the students. The CGPA of the students will be obtained from the academic office. Another question related to academic performance, such as time spent on study and revision, and academic discussion, is also included in this section.

3.8.2 Translation of Instrument

The questionnaire is originally in English. The questionnaire is no need to translated since the respondents are students.

3.8.3 Validity and Reliability

The original PSQI questionnaire has validated by original author and Backhaus et al among primary insomnia patients. The reliability Cronbach's Alpha coefficient was 0.83 (Buysse et al, 1998; Backhaus et al, 2002).

3.9 Variable

3.9.1 Variable Measurement

Table 3.4 Independent and dependent variable

Independent Variable	• Socio-demographic background
Dependent Variable	• Academic Performance (CGPA) • Sleep Quality Score (PSQI)

3.9.2 Variable Scoring

The Pittsburgh Sleep Quality Index (PSQI) consists of nineteen self-rated questions. The 19 questions are combined to form seven components of sleep assessment seven domain including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month in which each question has point of 0 = no difficulty to 3 = severe difficulty. All question indicated "0" with no difficulty and "3" with most difficult. Then, the sum of all score of 19 questions counted as a global score with range between "0" until "21" points in which "0" indicated no difficulty at all and "21" indicated most difficult in all aspects (Buysse et al, 1988). Interpretation of the total score out of 21 in which 5 and less than 5 associated with good sleep quality and more than 5 associated with poor sleep quality.

3.10 Data Collection Plan

After gaining approval from the Human Research Ethical Committee (HREC), Universiti Sains Malaysia and permission for data collection obtained from Dean from School of Health Sciences USM, and Dean from Faculty of Health Science UiTM, the data collection will start.

Firstly, the researcher will provide and obtain consent from the respondents through email and/or mobile application such as Whatsapp and briefly receive information sheets regarding the study. The respondents also will be acknowledged that their participation is voluntary and their confidentiality and privacy will be ensured. Then, respondents need to complete the self-rated questionnaire via online in which estimated to be completed in 10 to 15 minutes. After completing the question, the whole

questionnaire will be collected. In addition, the data obtained only can be accessed only by the researcher.

3.10.1 Flow Chart of Data Collection

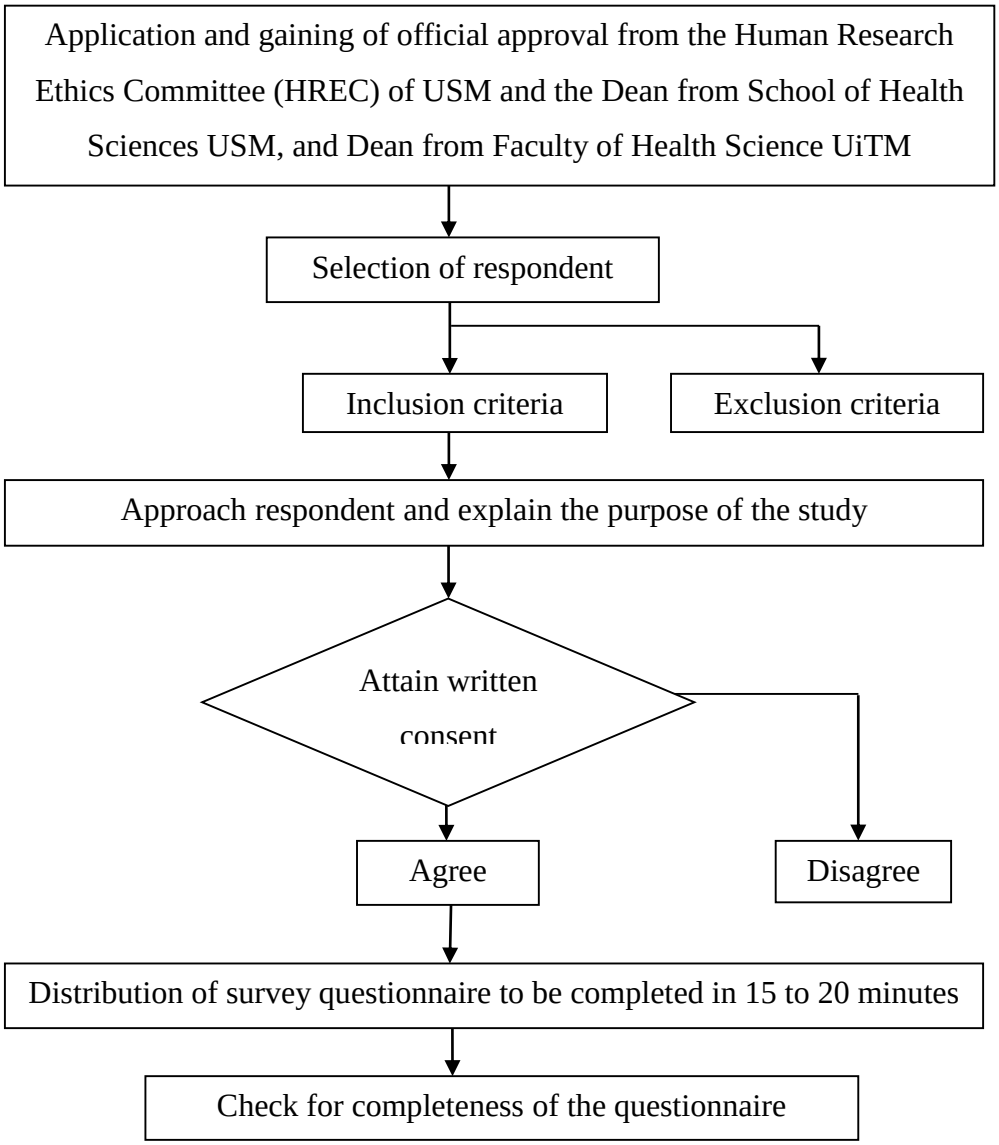


Figure 2 Flow Chart of Data Collection