

IMPACT OF LIFESTYLE AND PSYCHOLOGICAL
FACTORS ON LOW SLEEP QUALITY AMONG
UNIVERSITY STUDENTS IN MALAYSIA

BY

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PREFACE

This study aims to examine the factors influencing sleep quality among individuals, particularly in the context of modern lifestyle behaviors. Sleep plays a vital role in maintaining both physical and mental well-being; however, many individuals experience poor sleep quality due to various daily habits and psychological factors. In recent years, increased screen usage, higher caffeine consumption, and elevated stress levels have become common, potentially contributing to sleep disturbances.

This research focuses on three main factors that may affect sleep quality, including screen use, caffeine intake, and stress level. These factors are widely present in daily life and may significantly influence an individual's sleep patterns and overall health. By analyzing the relationships between these variables, this study seeks to provide a clearer understanding of how lifestyle and psychological factors impact sleep quality.

The findings of this study are expected to offer useful insights for individuals, healthcare professionals, and policymakers in promoting healthier lifestyles and improving sleep habits. It is hoped that this research will contribute to raising awareness about the importance of good sleep quality and support the development of effective strategies to enhance overall well-being.

ABSTRACT

Sleep quality is an important element of our everyday physical health, cognitive performance, and emotional well-being, especially for university students. However, poor sleep quality has become more common among Malaysian university students as a result of their diverse lifestyle habits and psychological demands. Despite the rising volume of research on sleep, there is a scarcity of studies that investigate the combined impact of lifestyle and psychological factors in the Malaysian setting. To address these gaps, this study focuses on three major factors that may influence poor sleep quality: screen time, caffeine use, and stress levels. A quantitative study approach was used, and data were gathered by a self-administered online survey given to Malaysian university students using Google Forms. A total of 400 responses were received, but only 384 valid responses were used in the data analysis. The data were analysed with the Statistical Package for the Social Sciences (SPSS), which included descriptive, reliability, preliminary, and inferential analyses including multiple regression. The findings show that a significant majority of students had moderate or poor sleep quality. Among the independent factors, screen use and stress levels were found to have a significant positive relationship on poor sleep quality, with stress being the most powerful predictor. In contrast, caffeine consumption had no statistically significant effect. These data imply that psychological and behavioural aspects are more important in regulating sleep quality than lifestyle consumption behaviours alone. By identifying the key determinants of poor sleep quality, this study helps universities, healthcare professionals, and policymakers design effective interventions, such as stress management programs and digital wellness initiatives, to improve students' sleep quality, academic performance, and overall well-being.

Keywords: sleep quality; screen use; caffeine intake; stress level; university students; Malaysia

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
BMC	BioMed Central
CCQ	Caffeine Consumption Questionnaire
CGPA	Cumulative Grade Point Average
COVID-19	Coronavirus Disease of 2019
HPA	Hypothalamic-Pituitary-Adrenal axis
PSQI	Pittsburgh Sleep Quality Index
PSS	Perceived Stress Scale
SPSS	Statistical Package for Social Sciences
SQS	Sleep Quality Scale
VIF	Variance Inflation Factor

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CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter provides an overview of the study on the impacts of lifestyles and psychological habits on low sleep quality among Malaysian university students. It starts with a general overview of the importance of sleep and the definition of sleep quality. It then explains how sleep quality relates to lifestyle and psychological well-being among university students. The chapter also outlines the research background by focusing on the challenges and findings of other related research and literature reviews. Followed by the problem statements, which include the ideal, the reality, research gaps, and the consequences. This will provide an understanding of the relationship between the independent variables of screen use, stress, anxiety, and sleep quality outcomes among university students. Moreover, this chapter will also illustrate the research objectives and questions, hypotheses, and significance of the study.

1.1 Research Background

Sleep is necessary for everyone to survive, function, and maintain a healthy life. This is because sleep is a fundamental biological function. Besides resting the body, sleep also allows the mind to recover from the demands of daily activities. Obtaining adequate sleep can boost the immune system, improve memory, and preserve general well-being. On the other hand, the human mind and body cannot perform at their best without getting enough sleep. According to Ong et al. (2023),

sleep quality is not simply about the number of hours spent asleep. Instead, it is about how restorative and restful sleep is. An individual might sleep for a long duration but still feel tired and unrefreshed after waking up from sleep if the sleep quality is poor.

The sleep quality term is often used to capture this broader experience of sleep. This refers to the overall satisfaction of an individual with their sleep, which is measured across diverse dimensions. These include sleep latency (how long it takes to fall asleep), sleep duration (how many hours slept), continuity (the ability to stay asleep throughout the night without waking frequency) and sleep depth (the level of refreshment and restfulness felt after waking). Therefore, high sleep quality is a key to maintaining healthy well-being, productivity, and effective cognitive functioning. Conversely, poor sleep quality is consistently linked to a wide range of negative outcomes, such as insufficient sleep, disrupted sleep, weight gain, a decrease in memory, unstable mood, and contributes to mental health problems like stress, anxiety, and depression that sometimes lead to serious consequences like hypertension (Muharyani, 2019).

Sleep quality is becoming increasingly important among adolescents and young adults, particularly university students. This is because this age group is in a developmental stage where learning capacity, academic achievement, and emotional stability are directly linked to sleep patterns. Adequate sleep not only helps prevent illness but also enhances the ability to cope with stress and achieve a better academic performance. Conversely, poor sleep is associated with increased tiredness, daytime dysfunctions such as sleepiness, and reduced concentration, making it difficult for students to focus during lectures or actively participate in academic activities. For example, according to Khor Yong Jie et al. (2024), they found that more than half of Malaysian dental undergraduates slept fewer than six hours each night, which is significantly below the global recommendation of seven to nine hours. They also identified caffeine consumption as one of the factors

influencing sleep quality. Additionally, poor academic performance and common behavior such as skipping classes among students are found to be interrelated with low sleep quality. This highlights a concerning trend among young adults in higher education, where lack of sleep directly affects both health and learning.

In this digital age, lifestyle choices are a key contributing factor to the poor sleep quality problem. One common cause of low sleep quality among university students before bedtime is excessive screen time on electronic devices such as smartphones, laptops, and tablets. These gadgets emit blue light, which disrupts the body's natural sleep-wake cycle and often keeps the mind active when it should be relaxing. According to Kamaruzihan and Soe (2023), university students in Malaysia often spend more than six hours a day on screens, with 56.5% reporting poor sleep quality as measured by the Pittsburgh Sleep Quality Index (PSQI). These findings indicate that while technology is vital for learning and socializing, it can also interfere with sleep patterns. Given that students need adequate sleep to achieve higher academic performance and succeed academically.

Psychological factors further intensify the problem. The two most common mental health issues are stress and anxiety, which are commonly faced by university students. Both mental problems are highly associated with poor sleep quality due to heavy academic workload, pressure from exams, and personal challenges. Poor stress management can raise the stress level and lead to difficulty falling asleep and staying asleep throughout the night. for example, Ting et al. (2023) reported that there are 60.5% of medical students in Malaysia suffer from low sleep quality due to stress levels. Similarly, 60.6% of students in another study identified the main reason for disrupted sleep are due to an increased demand in academic pressure. These findings highlighted that stress is not only a psychological issue but also has a direct impact on physical health and daily functioning.

Although there is a growing body of international research on sleep quality, there remains a gap in systematically examining how both lifestyle and psychological factors, including screen use, caffeine intake, and stress level, influence sleep quality among university students in Malaysia. Most of the existing studies have examined these factors in isolation, without considering how they interact with each other to affect the sleep quality among students. It is critically important to address these gaps, as understanding the combined effects of both factors allows for gaining a clearer picture of what truly leads to poor sleep among all university students. These will also help most universities to create more effective interventions to solve these gaps through awareness programs on healthy technology use, workshops and webinars on coping management, and sleep hygiene education.

This study aims to examine how lifestyle and psychological factors, such as stress, screen time, and caffeine intake, influence poor sleep quality among university students in Malaysia, as sleep quality issues have been reported in both groups of university students but have rarely been examined together. Additionally, it aims to contribute to the growing body of research on students' mental and physical health and well-being, while also giving helpful recommendations to enhance overall quality of life and academic success.

1.2 Problem Statement

Sleep is one of the important needs for maintaining good health and daily life. A good sleep helps to control our emotions, think clearly and logically, and do well in our work and studies. For university students, good sleep is critical for concentrating in class, stronger memory, and energy in coping with academic stress, such as exams and assignments. Unfortunately, in Malaysia, most students do not obtain the good sleep quality that they need, which is often linked to their lifestyle such as using

electronics devices during late at night and drinking too many caffeinated drinks, leading to delayed sleep onset and worsening sleep outcomes (Nurul Qistina & Soe, 2023). Besides that, low sleep quality is also affected by psychological factors, such as stress and anxiety, as mentioned in Yu and Wan (2022). There are 60% of students who have sleep problems due to internet addiction. While there are also more than half of university students in various fields do not obtain the recommended sleep duration of seven to nine hours of sleep (Know Yong Jie et al., 2024). Students from complex fields such as the health science-related field of study reported high levels of poor sleep quality, particularly when it falls under stress-related conditions (Huang et al., 2024). These findings show that sleep problems are common and cut across many student groups.

Although the researchers have studied sleep problems faced among adolescents in Malaysia, most studies have only focused on one factor at a time; for example, some researchers focused only on stress or caffeine intake, while some researchers focused on screen time. This has given the comprehensive insight and various relevant information to conduct this study. However, it does not show the full picture of how the overall factors are interrelated to each other. Moreover, most of the studies also did not show how factors influence low sleep quality in both private and public universities, as some studies only focus on a narrow population. For example, dental or students from medical university in Malaysia show a high prevalence that is linked to caffeine consumption. Therefore, these have limited the researchers' understanding of combined influences across the broader student population and the combined effect of the factors. In reality, students often deal with several issues at once, which are very common in this group, such as they might staying up late at night to study as they stressed about upcoming exams and tests, scrolling on their phone before sleep, and drinking coffee or other caffeinated drinks to stay refreshed and awake from sleepiness. With this, it has not revealed how those diverse factors combine and interact to affect sleep quality among both groups. This lack of research creates certain gaps in understanding the actual causes of poor sleep among university students in Malaysia.

Searching answer to this gap is critical as poor sleep would have led to serious consequences on students' lives. It can cause low academic performance, such as getting low grades in exams, a decrease in the ability to concentrate, and a reduction in memorizing function. These have made it difficult to keep up with the university workload. It also causes emotional coping problems, like mood swings, stress, and anxiety, that, if not managed well, can lead to a serious condition like depression with irrational thoughts like suicide. Over the long term, lack of good sleep may raise the risk of health problems, such as high blood pressure, weight gain, and weaken the overall immune system (Lakshme et al., 2025). Moreover, stress and poor sleep quality can feed into each other because of increase in stress levels can make an individual face difficulties in falling asleep, and if a person does not get enough rest, it will cause the stress to become even worse. This has created a negative cycle that affects both academic performance and students' personal well-being. If do not study how these factors work together, universities may only create partial solutions, like reducing the consumption of caffeine by limiting the vending machines from selling too many caffeinated drinks, while ignoring the other major issues, which include excessive screen time and high stress levels that are also commonly caused a decrease in sleep quality.

This study will explore the combined effects of lifestyle factors such as screen time and caffeine intake, and psychological factors such as stress level, on sleep quality among university students in Malaysia. Instead of examining each factor separately, this research will adopt an integrated approach to understand how all factors collectively impact the sleep quality of students. By doing this, the researchers can provide clearer evidence about what really causes poor sleep. The results can help universities create better programs to address this problem by conducting workshops or inviting professionals to give talks on improving sleep quality, stress management, and providing guidance on healthy caffeine intake. With these efforts, it can assist in improving sleep quality, which in turn can boost students' academic performance, emotional health, and overall well-being.

1.3 Research Objective

1.3.1 General Objective

To investigate how psychological and lifestyle factors affect university students in Malaysia's poor sleep quality.

1.3.2 Specific Objective

- To examine the association between screen time and poor sleep quality.
- To examine the association between caffeine intake and poor sleep quality.
- To examine the association between stress level and poor sleep quality.

1.4 Research Question

1.4.1 General Research Question

What are the impacts of lifestyle and psychological factors on poor sleep quality among university students in Malaysia?

1.4.2 Specific Research Questions

- Will screen time affect poor sleep quality?
- Will caffeine intake affect poor sleep quality?
- Will stress level affect poor sleep quality?

1.5 Hypotheses of the Study

- H1: Poor sleep quality is greatly influenced by screen time.
- H2: Poor sleep quality is greatly influenced by caffeine intake.
- H3: Poor sleep quality is greatly influenced by stress level.

1.6 Significance of the Study

Previous research examining the relationship between lifestyle and psychological factors and sleep quality has often been limited to specific groups of students, such as those in particular academic programs or disciplines. Only a few studies have been carried out on Malaysian university students as a whole. As a result, there remains a limited understanding of how the unique lifestyle patterns and psychological pressures faced by Malaysian undergraduates influence their sleep quality. This study seeks to fill that gap by providing new and context-specific insights.

This study is important because it addresses the rising issue of poor sleep quality among Malaysian university students, who frequently deal with stressful academic schedules, bad eating habits, midnight screen use, and irregular routines. The study will assist in determining the primary causes of poor sleep quality in this group by analyzing the combined impact of lifestyle behaviors, such as screen time, intake of caffeine, nutrition, and physical exercise, and psychological habits, such as stress, anxiety, and procrastination. It is crucial to comprehend these root reasons since inadequate sleep has been repeatedly connected to long-term health issues, emotional instability, cognitive decline, and poor academic achievement (Kamaruzihan & Soe, 2023).

Additionally, a lot of students are still unaware of how daily decisions and emotional states directly impact their capacity to get good sleep. Therefore, by increasing awareness, the results of this study might encourage students to undertake psychological and lifestyle changes that will enhance their sleep hygiene.

Beyond personal awareness, the study has larger institutional and social implications. Through the identification of the lifestyle and psychological characteristics most closely linked to poor sleep quality, the research can help build student-specific mental health initiatives, behavioral treatments, and educational health promotion programs. The results might be used, for instance, by academic institutions to develop seminars on stress reduction, sleep hygiene education, and responsible screen usage. Counsellors on campus and medical professionals might use the data to create specialized treatments and support networks for students who have sleep problems (Ee & Gan, 2022).

Last but not least, the study will contribute useful local data to enhance the body of existing literature, as research in this field is still scarce in the Malaysian higher

education setting. The research presented here may be used by university administrators, legislators, and healthcare professionals to develop more comprehensive methods that improve students' sleep quality while also improving their academic performance, mental health, and general well-being.

1.7 Chapter Layout

Chapter 1

In the first chapter of the reports, the introduction, research background, problem statement, summary of the study's objective and questions, research hypotheses, significance of the research, and chapter layout are all included. In addition, this chapter's summary will be provided.

Chapter 2

The chapter 2 will include a comprehensive literature review about the study issues. This chapter will address the introduction, underlying theories, literature review involving one dependent variable and two independent variables, the construction of hypotheses, and explanations of the suggested conceptual framework. In order to sum up the important ideas covered in chapter 2; a summary will also be presented.

Chapter 3

In Chapter 3 of the reports, the research methodology used in the study will be discussed. In the current chapter, the research design, data collection method, sampling design, target demographics, frame and location, components, sampling technique, and sampling size will all be covered. Other than that, chapter 3 will

also describe the research tools used for data collection, construct measurement, data analysis, and data processing activities. Finally, this chapter concludes with a summary of all the important topics discussed.

1.8 Chapter Summary

In summary, the first chapter provided a summary of the research on the issue. The potential influence of behavior and psychological habits on poor sleep quality has been addressed in this chapter. Finding potential influencing elements results in the development of research hypotheses, which in turn highlighted the importance and significance of the study. The variables of the research and framework will be further explained in the next chapter by examining the relevant literature.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In our daily life, sleep is a critical physiological process for humans. It plays a vital role in the overall health and daily function, especially for students of a tertiary institution, who are university students. They are often reported to have poor sleep quality due to various factors. Psychological factors like stress on academic, and their choice of lifestyle, including too much intake of caffeinated drinks, which is normally used to deal with daytime sleepiness, and screen use on technology devices, particularly smartphones, that will lead to exposure to blue light, which could reduce the release of the melatonin hormone that promotes sleep (sleepresearchfou, 2023). With that, it shows a huge impact on the human body's circadian rhythm by making it hard to fall asleep. Therefore, it is important to understand that sleep is crucial for our brain functions. If undergo low sleep quality or sleep deprivation and insomnia, it might affect functions such as learning ability, concentration, memory, mood regulation, as well as overall well-being and academic performance (Harvard Medical School, 2025).

In this chapter, the research will review the underlying theory, which the study underpinned by the Arousal theory, which explains how these lifestyle habits and psychological factors can increase physiological and cognitive arousal, thereby disrupting optimal sleep. Besides that, researchers have also described literature reviews on previous studies' frameworks which related to the objectives have been made. Next, conceptual frameworks and hypotheses statements show the relationship between the dependent variable and the independent variables.

2.1 Underlying Theories

Arousal theory explains that humans perform at their best in daily activities when their arousal level is balanced. According to Cherry (2022), too little arousal can lead to low motivation and poor performance, while too high arousal can make it hard to focus and function well. Arousal can be either physiological or cognitive. Physiology includes a faster heart rate and body activation, while cognitive involves high mental alertness and constant thinking. Pre-Sleep Arousal Theory applies this idea to sleep, suggesting that when an individual is too alert either physically or mentally before sleep, they may need to take a longer time to fall asleep, keep waking up during sleep, and experience poor sleep quality.

For university students in Malaysia, lifestyle and psychological factors often increase arousal levels initially before sleep. This prevents both body and mind from moving smoothly into a resting mood, which could lead students to face difficulty in getting a good sleep. In this study, the researchers will focus on three key factors, which include screen time, caffeine intake, and stress level, that affect low sleep quality among university students in Malaysia.

Screen use is one of the factors that raises pre-sleep arousal. Physiologically, the blue light from electronic devices that everyone uses in daily lives, including smartphones, tablets, laptops, and other devices, decreases melatonin, which is the hormone that helps regulate sleep. This has interrupted the circadian rhythm and makes someone difficult to feel sleepy (Arshad et al., 2021). Cognitively, activities like social media, gaming, TV shows, and streaming keep a person's brain to stay active, increase alertness, and delay sleep onset (Mohd Saat et al., 2024). Together, these effects increase arousal and reduce the quality of sleep.

Caffeine intake also plays a role in disrupting sleep quality. Physiologically, caffeine blocks adenosine receptors, preventing sleep pressure from building up and activating the nervous system, which promotes wakefulness (Szlapinski et al., 2023). Cognitively, caffeine helps in reducing fatigue and raises alertness, especially if taken later in the day. This means caffeine helps an individual to stay awake, so they will feel very refreshed until late at night, which leads to a delay in falling asleep, reduced deep sleep, and frequent awakenings. These effects are matched to the Pre-Sleep Arousal Theory, because high activation before bed reduces sleep quality.

Stress level has also affected both body and mind. Physiologically, stress activates the hypothalamic-pituitary-adrenal (HPA) axis, which increases the cortisol levels and keeps the body awake (Sheng et al., 2021). Cognitively, according to Chiew et al. (2022), stress leads to an increase in factors like worry, overthinking, and intrusive thoughts, which prevent relaxation and disturb sleep. Both forms of arousal interfere with the ability to fall and stay asleep.

Overall, factors of screen time, caffeine intake, and stress have shown a rise in both physiological and cognitive arousal before sleep. When arousal levels are too high, students will face a problem of struggling to initiate and maintain good sleep, which leads to poor sleep quality among university students in Malaysia and provides the basis for this study.

2.2 Review of the Literature

2.2.1 DV: Low Sleep Quality

Sleep quality is defined as an individual's self-satisfaction with all aspects of the sleep experience (Nelson et al., 2021). As for low sleep quality, it means a subjective perception of poor sleep caused by the inability to fall asleep, short duration of sleep, frequent awakening, and non-restorative rest. In a previous study, found that Malaysian university students reported having a high prevalence of low sleep quality, with the percentage exceeding 60% of students. According to Phang et al. (2021), Inadequate sleep has been linked to a decrease in students' academic performance, impairing in paying attention during class, and an increase in susceptibility to mental health problems such as anxiety and stress. There is also global research that supports these findings, indicating that young adults nowadays are mostly with irregular schedules, high usage of technology devices, and demanding workloads, which are leading to them experiencing chronic sleep disturbances (Dongol et al., 2022). Therefore, adequate sleep for university students is important since it influences their overall health and well-being. To stay focused and concentrate in class, as well as enhance academic performance without being affected by daytime sleepiness, students should aim to obtain a minimum of seven hours of sleep daily.

2.2.2 IV 1: Screen Used (Lifestyle Habit)

Multiple studies have shown that in the era of digital technology, the term "screen use" has become increasingly prevalent as technology is becoming an integral part of one's life for entertainment to encompass work, academic, and social interaction. However, excessive use and dependency on digital

devices have been consistently associated with poor sleep quality among university students. According to Arshad et al. (2021) study found that prolonged exposure to digital devices such as smartphones, tablets, laptops, and television, especially in the evening time is significantly associated with shorter sleep duration and heightened sleep latency among Malaysian undergraduates. On the other side, Mohd Saat et al. (2024) had also shown that adolescents' daily smartphone usage is approximately 7.2 hours, which is slightly higher than before the COVID-19 lockdown, where the previous average was 4 hours per day. This is because the majority of the post-COVID-19 digital device requirements were needed for online learning. The continuity of the lifestyle habit since the pandemic has shown the result of nearly 60% of individuals experiencing poor sleep quality, which is higher than 40% reported in the previous study.

2.2.3 IV 2: Caffeine Intake (Lifestyle Habit)

Consumption of caffeine is one of the other prevalent lifestyle habits influencing sleep quality. Evidence from local research shows that most Malaysian university students consume caffeinated drinks daily, such as coffee, tea, and energy drinks, to manage academic demands by avoiding sleepiness. According to Sulaiman et al. (2024), research among medical students, 70.9% of the participants' primary choice is tea, 68.5% prefer coffee, and 43.3% prefer soft drinks or energy drinks. Based on the findings of Ng et al. (2022), it is proven that medical students might have abused on using caffeine as a cognitive aid for them to deal with the heavy study loads, assignments, examination preparation, as well as maintaining their social life, which has added to the sleep deprivation, as caffeine act as a brain stimulant in which it helps in keeps an individuals to stay awake. Additionally, one study found that 400 mg of caffeine taken 0, 3, or 6 hours before sleep time had a significant disruption to sleep, and the findings for

this study also stated that even at 6 hours, caffeine would still reduce sleep time by more than an hour. Internationally, research also underlined that caffeine's role as an adenosine receptor antagonist interrupts the natural circadian cycle, preventing the build-up of "sleep pressure" and prolonging alertness (Riera-Sampol et al., 2022).

2.2.4 IV 3: Stress Level (Psychological Factor)

Stress is a major psychological factor that can negatively affect a person's sleep quality in terms of both physiological and psychological ways. Local studies have found that most Malaysian university students face moderate to high levels of stress, primarily due to heavy academic workloads, various assessments and examinations, financial concerns, and uncertainties, including future career prospects (Phang et al., 2021). There is research that has found hyperarousal is the effect caused by chronic stress, which leads to the perpetuation of sleeping disorders like insomnia and fragmented sleep patterns (Dongol et al., 2022). Other than that, research conducted by Ahmad Fuad et al. (2024) had also highlighted that participants had agreed that the reason for attending exams is the major stress, with insufficient preparation for study, as students are more likely to have last-minute study for examinations. Therefore, will be stressed due to they need to study until late at night by memorising and understanding all topics that might come out in the exam. This has significantly shown how studying late at night due to stress impacts on poor sleep quality.

2.3 Proposed Conceptual Framework

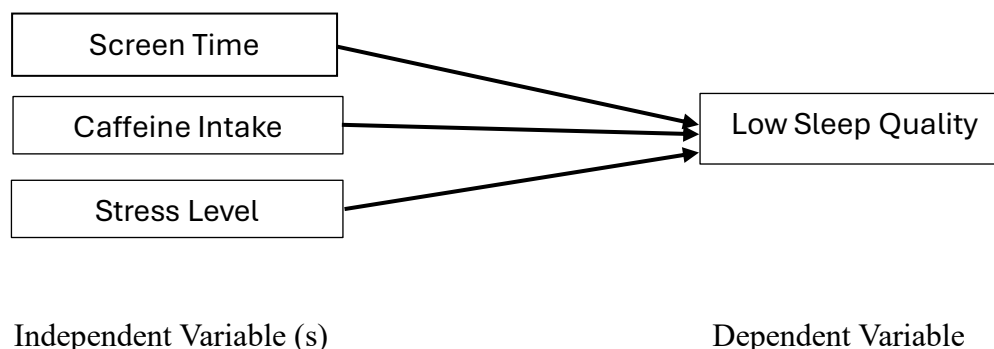


Figure 2.1: Conceptual Framework

The proposed conceptual framework is to provide a theoretical foundation for research on the effects of lifestyle behaviors and psychological habits on poor sleep quality among Malaysian university students. The dependent variable; poor sleep quality, and the independent variables; Screen Used (Lifestyle Habit), Caffeine Intake (Lifestyle Habit) and Stress Level (Psychological Factor) are identified by this conceptual framework as being linked.

This framework is supported by the Pre-Sleep Arousal Theory, which explains how increased physiological and cognitive arousal affects sleep and wakefulness. It makes the case that major elements that boost arousal over an ideal threshold and limit the start and continuity of sleep include excessive screen time, high coffee intake, and higher stress levels. The selection of these three independent variables was based on their direct alignment with the key principles of the theory: cognitive stimulation (mental alertness, intrusive thoughts, and concern) and physiological stimulation (blue light exposure and central nervous system activation). Additionally, rather than focusing on structural or external factors like room conditions or ambient noise, this study examines lifestyle and psychological aspects at the individual level that influence pre-sleep arousal to better understand sleep quality among university students.

According to the Pre-Sleep Arousal Theory, the framework logically connects each of these three variables, including screen time, caffeine use, and stress level, to poor sleep quality through the process of raised arousal. Theoretically, it makes sense: exposure to stimulating light, pharmaceutical stimulation, and psychological stress all raise arousal over the ideal threshold for everyone, which delays the beginning of sleep, disrupts sleep, and reduces the depth of sleep.

2.4 Hypotheses Development

2.4.1 Poor sleep quality is greatly influenced by Screen Time

Due to the stimulation of cognitive activity and the blocking of the production of melatonin by blue light, screen time, especially before bed, has been extensively associated with sleep problems. By increasing physiological and psychological arousal, stimulating material or light-emitting gadgets can postpone the start of sleep and lower the quality of sleep overall, according to the Arousal Theory. The long-term use of computers and smartphones at night has been linked in earlier research to short sleep duration, delayed circadian rhythms, and an increase in symptoms of insomnia in young people (Hartstein et al., 2024b). Additionally, the addictive qualities of social media and streaming services may encourage erratic sleep patterns and putting off going to bed (Zhong et al., 2025b). Based on these results, this study suggests that screen use has a significant impact on poor sleep quality.

2.4.2 Poor sleep quality is greatly influenced by Caffeine Intake

University students frequently consume caffeine to fight against exhaustion, but its stimulating effects on the central nervous system frequently interfere with the regulation of sleep. Caffeine reduces slow-wave sleep and delays the onset of tiredness by blocking adenosine receptors, which lowers the quality of sleep overall (Wallace et al., 2025). High caffeine intake, especially in the evening, was consistently associated with worse sleep quality and more nightly awakenings, according to a review of the literature on college students' sleep (Wang & Bíró, 2020). Furthermore, studies have demonstrated that 400 mg dosages of caffeine might delay the beginning of sleep and decrease restorative sleep phases, even when consumed up to 12 hours before bedtime (Schlichtiger et al., 2025). Consistent with these results, this study postulates that caffeine consumption has a significant impact on poor sleep quality.

2.4.3 Poor sleep quality is greatly influenced by Stress Level

Among university students, stress is one of the most powerful psychological factors that contributes to poor sleep. Excessive stress triggers the hypothalamic–pituitary–adrenal (HPA) axis, which raises cortisol levels and causes physiological hyperarousal that disrupts the initiation and maintenance of sleep. According to Wang and Bíró (2020b), stress is a critical factor contributing to irregular sleep schedules and non-restorative sleep. According to a study published in BMC Psychology, college students who felt more stressed had considerably worse sleep, with depressed symptoms and a diminished sense of purpose in life serving as mediators (Huang et al., 2024). Similarly, a study published in BMC Medical

Education discovered that academic burnout is mediated by perceived stress and that poor sleep quality is a contributing factor (Zakiei et al., 2025). These findings demonstrate that stress not only interferes with sleep cycles but also intensifies the detrimental effects of inadequate sleep on one's emotional and intellectual well-being.

2.5 Chapter Summary

In summary, the underlying theories and literature review on the dependent variable, poor sleep quality, and its two independent variables, psychological habits and lifestyle behaviors, have been covered in this chapter. Following an explanation of the proposed conceptual framework for this research topic, hypotheses are developed. The research methods used in this study will be described and discussed in the chapter that follows.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents all the techniques together with approaches that researchers use to perform their research. The research begins by explaining the research methodology through an overview of the research design. The research will employ two different data collection methods that include primary data alongside secondary data. The study will benefit from two types of data collection methods, including primary and secondary data, because they offer both theoretical knowledge as well as empirical support for research. Besides that, this research will also cover sampling data techniques used. Finally, the research covers data processing and analysis, which uses Statistical Package for the Social Sciences (SPSS) software. This chapter ends with a chapter summary to sum up the entire Chapter Three.

3.1 Research Design

Research design represents an exact framework which guides the study operations to achieve its defined objectives and questions. The research follows a quantitative approach to examine how lifestyle and psychological elements affect low sleep quality among Malaysian university students. This quantitative methodology studies complex situations that require an understanding of the individual experience, and generating insights into social and human behavior. According to Hassan (2024), it often consists of numerical data that can be measured, counted, and analyzed statistically. It can be used to measure variables,

detect patterns and forecast results. The same intervention also paralleled earlier studies regarding the effects lifestyle and psychological factors, including stress level, screen time, and caffeine intake, on low sleep quality. This ensures that the results obtained are reliable and comparable.

The data for this research were collected through online survey questionnaire. The questionnaires are used to measure the relationship between lifestyle and psychological factors, which include screen time, caffeine intake, stress level, and the dependent variable of the study, low sleep quality, which involves perceived sleep disturbance and daytime dysfunction, that is, poor sleep outcomes. This technique used can ensure systematic achievement of objectives and produce dependable data about the factors that affect sleep quality among Malaysian university students.

3.2 Data Collection Methods

Two types of data collection methods were used in this study, including primary and secondary data. These will help in gaining a better understanding of how particular factors influence low sleep quality among university students in Malaysia.

3.2.1 Primary Data

Primary data are gathered through a self-administered online survey, commonly known as an online questionnaire distributed via Google Forms to a targeted focus group. Students from various universities in Malaysia were the respondents, where they received the link through social media and

communication platforms such as Instagram, WhatsApp and Microsoft Teams to participate in completing the survey. This questionnaire employs a five-point Likert scale, which allowed measurement of independent variables, screen time and caffeine intake, as well as dependent variables, such as low sleep quality, which includes perceived sleep disturbance and daytime dysfunction. Using survey questionnaires helps maintain consistency in responses, making the data suitable for conducting statistical analysis.

3.2.2 Secondary Data

Published literature and reliable sources are known as secondary data. This includes journals, dissertations, books, and credible online sources. These accessible sources and materials provide theoretical foundations, support the research framework development, and validate the constructs measured in the research. Secondary data assists in grounding the study in existing knowledge by comparing prior and current research findings.

3.2.3 Data Collection Procedure

The data collection process for the full study was conducted from January 2026 to March 2026. To reach more participants in both east and west Malaysia, the survey was distributed using a variety of social media platforms, including Microsoft Teams, Instagram, RedNote, WhatsApp, and others. A total of 400 responses were gathered at the completion of the response collection period. However, after data screening and verification, 384 valid responses were retained for the analytic process, the remaining responses were eliminated because of negligent response patterns that did not fit the real research inclusion criteria. This is to ensure that the overall quality of the collected data was a valid dataset to be used during the

subsequent analysis.

3.3 Sampling Data

3.3.1 Target Population

The target population of this study involves university students in Malaysia, including both private and public university students. This targeted group is chosen because they are more likely to have established habits of excessive screen time exposure and often consume caffeinated drinks to refresh. Besides that, high academic stress is also common in this group due to the competitiveness and pressure given by the institutions and lecturers. These influence low sleep quality. Focusing on university students who enrolled in both public and private institutions has helped the researchers to meet the study's main objective. It can also ensure that the findings remain relevant to a group that is both accessible and highly affected by the issues under investigation.

3.3.2 Sampling Frame and Sampling Location

The sampling frame refers to the randomly selected subset of a population of people that the researcher is interested in contacting (Elizabeth & Andrea, 2015). In this study, the sampling frame covers students who had enrolled to join tertiary studies from both public and private universities across Malaysia. As the survey is conducted using Google Forms and distributed throughout online platforms, the sampling location is open for all

institutions or regions that have access to the online survey questionnaire without any restriction to those who are willing to participate. By researching a wide range of university students with diverse academic levels and disciplines, the researcher could have gained different insights.

3.3.3 Sampling Elements

Respondents who fit the specified criteria make up the sampling elements for this study. These responders must be enrolled in either a private or public university. Besides that, there are no restrictions placed on whether they have experienced low sleep quality because the purpose of the research is to come out with a broad range of experiences. This allows inclusion of both groups of university students which include those with both low and high sleep quality, with different academic outcomes. This inclusion will help in ensuring more accurate comparisons and strengthen the validity of the findings across different populations of university students.

3.3.4 Sampling Technique

There are two categories of sampling techniques, which are probability sampling and non- probability sampling (Elfil & Negida, 2017). In this study, the non-probability sampling was applied in this study for selecting participants based on the study's subjective judgment rather than random selection. As this study is focusing on the group of university students in all entire Malaysia, it is hard to acquire the entire list of every single information of the whole Malaysia to conduct a random selection, however, the statistic of MOHE 2023 were accessible regarding the overall student population that is approximately 1,247,908 student enrolled in the higher educational institutions across Malaysia. Therefore, the researchers chose to

use a non-probability method, which is more suitable to apply in this research without a sampling frame. Convenience sampling was the primary method used by the researcher in sampling respondents in this case, as participants were selected on the basis of their availability and willingness to respond to the survey. This method was chosen due to its practicality, efficiency, and ease of access to respondents who met the research criteria within a limited time frame.

3.3.5 Sampling Size

Sample size was defined as the number of participants included in the study. The sample size was defined as the number of individuals selected from the general population who were considered representative of the actual population for this specific study (Coursera, 2024). To obtain a suitable sample size, the researcher used the table developed by Krejcie and Morgan (1970) to select the sample size from the large population of university students in Malaysia. According to *Statistik Pendidikan Tinggi 2023: Kementerian Pendidikan Tinggi* (2023), in 2023, the total number of university students in Malaysia was about 1,247,908. According to the Krejcie and Morgan table, a university student population of 384 solid respondents is the minimum sample size for this study. However, to avoid the possibility of data mistakes, this study targeted 400 students to enhance data reliability. Sample size for Krejcie and Morgan is listed in Table 3.1 below.

Table 3.1:

Determine Sample Size of a Known Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1300	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Source: Krejcie & Morgan (1970)

3.4 Research Instrument

Research instruments refer to the equipment used to collect, measure, as well as analyze data needed by the study. This can include surveys, interviews, observation checklists, or digital forms to collect and gather reliable and relevant information from targeted respondents (Mallory-Kani, 2022). A quantitative methodology will be used to analyze on gathered information. This quantitative research will focus on gathering numerical data and attempting to generalize it across groups of individuals or clarify a specific occurrence. The survey questionnaire will be administered to a targeted group which consists of university

students in Malaysia. This questionnaire was formed by Google Forms, which consists of five sections, including sections A, B, C, D, and E, using a five-point Likert scale. Respondent can answer the questionnaire using closed-ended questions by only choosing the most appropriate option that best indicates their agreement level with the following statements, ranging from “strongly disagree” to ‘strongly agree’. This structure helps ensure the consistency, clarity, and suitability for a quantitative analysis.

3.4.1 Pilot Testing

Pilot testing is a preliminary test or study that is conducted before a large-scale or full study of research (Williams, 2023). The primary purpose of conducting a pilot study is to evaluate the clarity, structure, and reliability of items of the questionnaire before the full study survey. A pilot study was with a small sample of 30 respondents who have a low sleep quality that was influenced by several lifestyle and psychological factors. The researchers administered a survey using Google Forms to obtain feedback from the pilot respondents, which used to adjust and improve the flow of the instrument, refine ambiguous statements, and ensure the questions are easily understood by them (Wagle, 2025). Additionally, the preliminary test was conducted to help enhance the overall data collection process quality and the validity of the questionnaire, as well as minimize the potential errors. The pilot research will also be used to check how consistent the measuring scales are within themselves. Cronbach's alpha was used to check for reliability, and for research tools in the social sciences, values of 0.70 and above are acceptable.

3.5 Construct Measurement (Scale and Operational Definitions)

3.5.1 Scale of measurement

Measurement scales refer to the classification and definition of variables. Psychologist Stanley Stevens created the four standard scales of measurement: nominal, ordinal, interval, and ratio. Every measurement scale has characteristics that influence the correct way to analyze the data. The assessed properties include identity, magnitude, equal intervals, and a minimum value of zero (Williams, 2021).

3.5.1.1 Nominal Scale

The nominal scale of measurement defines the data's identity property. This scale lacks numerical significance despite having some properties. Although the data can be categorized, it cannot be divided, multiplied, added, or removed from one another. Furthermore, it is hard to quantify the variation between data points. For instance, the labels "Male" and "Female" are used to categorize respondent gender under the questionnaire's demographic profile in Figure 3.1.

1. Gender *

☐ Male

☐ Female

Figure 3.1 Nominal Scale

3.5.1.2 Ordinal Scale

The ordinal scale defines data that is arranged in a certain order. Even though each value is rated, no information is given that would show how the categories vary from one another. These numbers cannot be added to or removed from. For example, figure 3.2 in the questionnaire shows the respondents' levels of education.

4. Current Educational Level *

- ☐ Foundation
- ☐ Diploma
- ☐ Degree
- ☐ Master
- ☐ PhD
- ☐ Other: _____

Figure 3.2 Ordinal Scale

3.5.1.3 Interval Scale

The difference between data points may be evaluated even though the interval scale considers the characteristics of nominal and ordered data. This kind of data displays the specific differences between the variables together with their order. For the questions in Sections B, C, D and E, the interval scale measurement was adopted. For instance, figure 3.3 shows the question involved strongly disagree, disagree, neutral, agree, and strongly agree.

1. I have difficulty falling asleep. *

	1	2	3	4	5	
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree

Figure 3.3 Interval Scale

3.5.1.4 Ratio Scale

All four measuring scales' features are included in ratio scales. The information can be categorized in order, contains intervals, is nominal, defined by identity, and can be broken down into exact values. The variables of ratio include things like weight, height, and distance. For example, in Figure 3.2 in the questionnaire, it has been classified by respondent age group. Such as “18 and below”, “19 to 21”, “22 to 24”, and “25 and above”.

2. Age *

☐	18 and below
☐	19 - 21
☐	22 - 24
☐	25 and above

Figure 3.4 Ratio Scale

3.5.2 Measurement of Independent Variables and Dependent Variables: Operational Definition

Section A: Demographic

Background information on responders is collected in this section. Among the variables are year of study, gender, age, ethnic group, campus location, educational level, and current CGPA. To measure this, ordinal and nominal scales are used. The nominal scale for "Gender", but the ordinal scale with ordered categories is used to assess "Age" and "Current CGPA." Classifying individuals and analyzing potential demographic variations in sleep quality are made easier with the use of this data.

Section B: Dependent Variable – Sleep Quality

The dependent variable, sleep quality, is measure by using the Sleep Quality Scale (SQS). Ten items collect different aspects of sleep, such as difficulty falling asleep, restfulness, concentration, and the effects of poor sleep such as irritability, and loss of interest. Responses are scored on a five-point Likert interval scale ranging from 1 Strongly Disagree to 5 Strongly Agree. Higher scores indicate poorer sleep quality. Items such as “I have difficulty falling asleep” and “Poor sleep makes me lose interest in study or others” represent the operationalization of this construct. These items are all based on Yi et al. (2006).

Section C: Independent Variable – Screen Use

In this section screen use is measured through 6 items assessing the frequency and impact of digital device usage, such as phone, computer, and

TV. Items include “I often spend more time with any screen than I planned” and “I use digital device before sleeping.” This section’s items, which are based on Nagata et al. (2025) and Kaur et al. (2021), are all measured on an interval scale ranging from "Strongly disagree" to "Strongly agree."

Section D: Independent Variable – Caffeine Intake

The Caffeine Consumption Questionnaire is used to evaluate caffeine consumption (CCQ). The 8 items in this section assess actions and beliefs connected to caffeine, including "I rely on caffeine to help me stay awake," and "Consuming caffeinated beverages has become part of my daily routine." The items are taken from Choi (2020), and the responses are scored on an interval scale ranging from "Strongly disagree" to "Strongly agree." Higher scores link to more caffeine intake, which may be a factor in lower quality sleep.

Section E: Independent Variable – Stress Level

Stress level can be evaluated with the Perceived Stress Scale (PSS). This scale consists of ten questions that measure perceived stress levels experienced over the prior month. Examples of statements are, “In the last month, I have felt that I am unable to control the important things in my life” and “In the last month, I have felt difficulties were piling up so high that I could not overcome them.” These items, which are taken from Harris et al. (2023), are scored on an interval scale that goes from "Strongly disagree" to "Strongly agree."

3.6 Data Processing

Data processing is the process of gathering data and turning it into information that can be used. Correct data processing is crucial to avoid negatively impacting the final result, or data output, and is often carried out by a data scientist or group of data scientists (Tom , 2025).

3.6.1 Data Checking

After data entry, the data were carefully reviewed to ensure accuracy and to verify correct input. The questionnaire also has to specify the independent and dependent variables in detail.

3.6.2 Data Editing

Data editing is the process of carrying out checks to detect missing, invalid, or inconsistent elements or possibly inaccurate data entries.

3.6.3 Data Coding

The obtained data will be entered into a database by a computer. Each response to each question will be entered using a numerical style. Age is coded as 1 for “18 and below”, 2 for “19–21”, 3 for “22–24”, and 4 for “25 and above”, while gender is marked as 1 for “males” and 2 for “females”.

Education is coded from 1 to 4, where 1 indicates “Foundation” and 4 represents “Doctor of Philosophy”. Campus location was coded from 1 to 13 to represent Johor, Kedah, Kelantan, Kuala Lumpur, Melaka, Negeri Sembilan, Pahang, Perak, Perlis, Sabah, Sarawak, Selangor, and Terengganu, respectively. Similarly, the year of study was coded as 1 for Year 1, 2 for Year 2, 3 for Year 3, 4 for Year 4, and 5 for others. Current CGPA was coded as 1 for “3.50–4.00”, 2 for “3.00–3.49”, 3 for “2.20–2.99”, and 4 for “2.00–2.19”. Malay people are designated as 1, Chinese people as 2, Indian people as 3, and others as 4. Rate of sleep quality is recorded as "poor" or "good," with 1 denoting "very poor" and 4 denoting "very good."

A five-point Likert scale, where 1 indicates "strongly disagree" and 5 indicates "strongly agree," was used to measure responses for the components in Sections B to E. The Sleep Quality Scale (10 items), Screen Use (6 items), Caffeine Consumption Questionnaire (8 items), and Perceived Stress Scale (10 items) all had this coding applied to them. The dataset was standardized by transforming ordinal and categorical replies into numerical codes. This allowed for uniformity in data entry and efficient analysis of the variables using both descriptive and inferential statistical methods.

3.6.4 Data Transcribing

The code for each question labelled in the above table will be added to the Statistical Package for Social Sciences database (SPSS).

3.7 Data Analysis

3.7.1 Descriptive Analysis

A descriptive statistic is a short group of useful coefficients that gives a summary of a certain data collection, which might be a representative sample or the entire population. Measures of central tendency and measures of variable spread are the two types of descriptive statistics (Hayes, 2024). Through descriptive analysis, our group was able to understand the gender distribution among 30 respondents, with 63.3% being female and 36.7% being male. The analysis will be presented graphically using tables, charts, and graphs. These data visualization techniques will help provide a clearer understanding of the survey findings and support further interpretation and analysis.

3.7.2 Reliability Analysis

Reliability analysis is an essential part of research that assesses the consistency of measuring instruments such as questionnaires and surveys, particularly in the social sciences. One of the most often used metrics for evaluating reliability is Cronbach's Alpha. Values of the coefficients nearer 1 suggest more reliability. Cronbach's Alpha values of 0.7 or above are considered good; values over 0.8 indicate great dependability, while values over 0.9 indicate exceptional internal consistency (SPSS Analysis, 2024).

Table 3.2:

Reliability Test

Variables	Items	Cronbach's alpha value	Reliability
Sleep Quality	10	0.726	Acceptable Reliability
Screen Used	10	0.777	Acceptable Reliability
Caffeine Intake	10	0.896	Good Reliability
Stress Level	10	0.759	Acceptable Reliability

The Cronbach's alpha for Sleep Quality is 0.726, which is in the acceptable range (0.70–0.80). This means the 10 items used to measure it are reliable. For Screen Use, the Cronbach's alpha is 0.777, also in the acceptable range, showing that its 10 items are consistent and reliable. The Cronbach's alpha for Caffeine Intake is 0.896, which is in the good range (0.80–0.90). This suggests that its 10 items have high reliability. Lastly, Stress Level has a Cronbach's alpha of 0.759, which is also acceptable. This means the 10 items measuring Stress Level are reliable.

3.7.3 Preliminary Analysis

The purpose of preliminary analysis is to find, regulate, and correct errors in data by inspecting, examining, and analyzing it before primary analysis. With the use of preliminary analysis, screening, cleaning, first research, fixing or handling incorrect entries, and spotting outliers, missing values, and other unusual entries in the dataset are all made easier (Pulka, 2022). Research methodology helps in the description of the research design in the study, ensuring that the procedure is systematic and reproducible, and the literature review enables to analyze pertinent concepts and prior research to develop a theoretical framework for the inquiry.

3.7.4 Inferential Analysis

Inferential statistics is a branch of statistics that uses a variety of analytical techniques to extrapolate population data from sample data (Cuemath, 2023). This study's dependent variable is poor sleep quality, whereas its independent factors include screen time, caffeine intake, and stress level. Another objective was to investigate the connection between these factors and the dependent variable. The study was used multiple regression to find out if the independent factors significantly affected the dependent variable.

3.8 Chapter Summary

In conclusion, our research framework has been created to address research design, data collection methods, sampling strategy, research instruments, measurement constructs, and data processing and analysis procedures. The Statistical Package for Social Sciences (SPSS) was used to evaluate the reliability of the surveys.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter illustrates the findings of the study and provides a detailed analysis of the data collected from respondents. The results are organised systematically to address both research objectives and test the hypothesis developed in earlier chapters. This chapter begins with a descriptive analysis of the respondent's demographic profiles, followed by an analysis of the main variables using appropriate statistical measures. This includes assessing central tendencies, administering a scale reliability test, and screening preliminary data to ensure the accuracy and validity of the data. Furthermore, inferential analyses are used to investigate the relationships between variables and establish the significance of the given hypotheses. The findings are then evaluated and discussed in light in relation to the research objective and the current literature. Overall, this chapter presents and interprets the facts comprehensively, forming the basis of the conclusions and recommendations in the next chapter.

4.1 Descriptive Analysis

4.1.1 Respondent Demographic Profile

4.1.1.1 Gender

Table 4.1:

Descriptive Analysis for Gender

Gender	Frequency	Percentage (%)	Valid Percentage (%)	Cumulative Percentage (%)
Male	134	34.9	34.9	34.9
Female	250	65.1	65.1	100.0

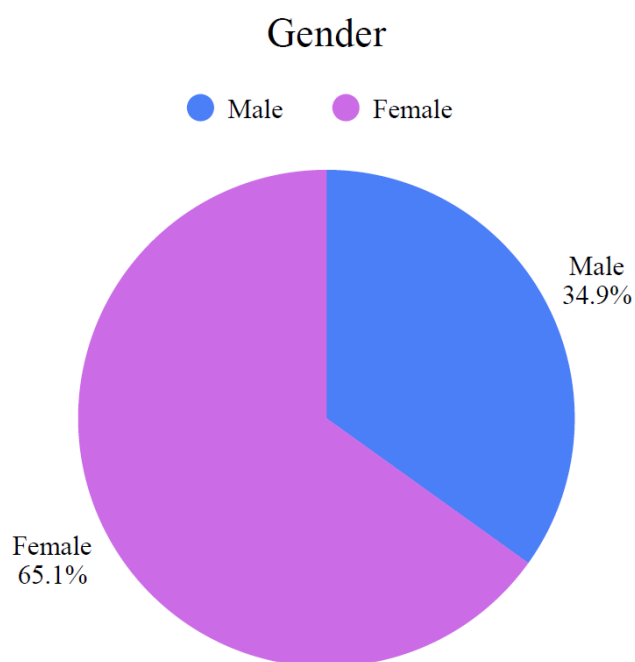


Figure 4.1: Descriptive Analysis for Gender

The table and figure 4.1 above illustrate the gender breakdown of the responders. A total of 384 individuals participated in this study, with 134 (34.9%) being male and 250 (65.1%) being female. The findings indicate that the sample is predominantly female, which reflects a moderately uneven gender distribution of respondents. However, this distribution is considered acceptable for this study, as it still provides an adequate representation of both genders. This distribution may also have implications for the findings, as both

lifestyle and psychological factors that influence low sleep quality may be different between male and female university students.

4.1.1.2 Age

Table 4.2:

Descriptive Analysis fore Age

Age	Frequency	Percent (%)	Valid Percentage (%)	Cumulative Percent (%)
18 and below	28	7.3	7.3	7.3
19 - 21	149	38.8	38.8	46.1
22 - 24	163	42.4	42.4	88.5
25 and above	44	11.5	11.5	100.0

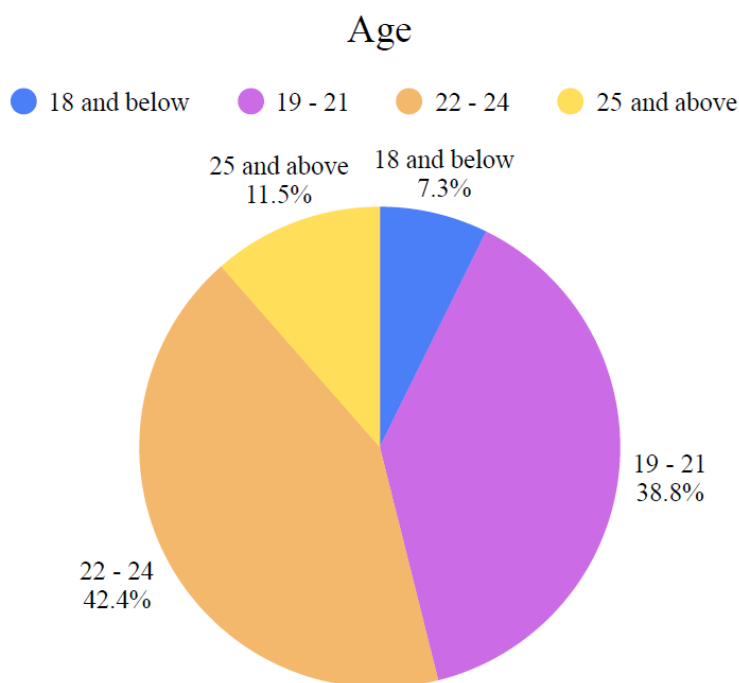


Figure 4.2: Descriptive Analysis for Age

The above table and figure illustrate the distribution of respondents. Among 384 respondents, 28 (7.3%) were at the aged of 18 and below, 149 (38.8%) of them were aged between 19 to 21, 163 (42.4%) were between 22 to 24, and the rest of 44 (11.5%) were aged 25 and above. According to these statistics, the majority of responders were between the ages of 22 to 24, with those aged 19 to 21 following closely behind. These findings indicate that the majority of the participants in this study are in the average age range of university students. This distribution is appropriate for the study because it represents the study's target demographic, that are Malaysian university students.

4.1.1.3 Ethnic Group

Table 4.3:

Descriptive Analysis for Ethnic Group

Ethnic Group	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Malay	36	9.4	9.4	9.4
Chinese	299	77.9	77.9	87.2
Indian	46	12.0	12.0	99.2
Other	3	0.8	0.8	100.0

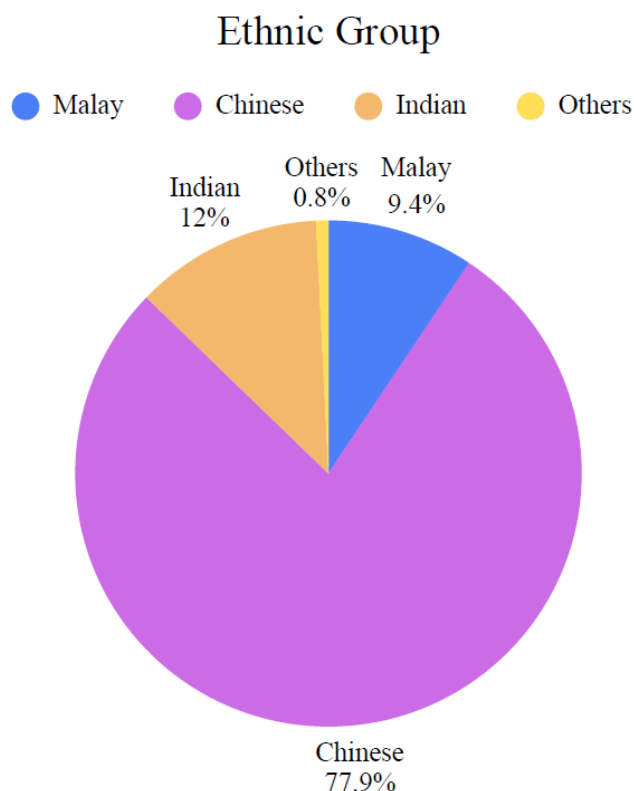


Figure 4.3: Descriptive Analysis for Ethnic Group

The above shows the distribution of respondents by ethnic group. Among those 384 respondents, there were 36 (9.4%) Malay, 299 (77.9%) Chinese, 46 (12.0%) Indian, and 3 (0.8%) belonged to the other ethnic groups. The findings indicate that most of the respondents were Chinese, which reflects a highly uneven distribution of ethnic representation in the sample. However, all major groups in Malaysia are represented, which provides some level of diversity within the study.

4.1.1.4 Current Educational Level

Table 4.4:

Descriptive Analysis for Current Educational Level

Current Educational Level	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Foundation	43	11.2	11.2	11.2
Diploma	31	8.1	8.1	19.3
Degree	259	67.4	67.4	86.7
Master	37	9.6	9.6	96.4
PhD	13	3.4	3.4	99.7
Other	1	0.3	0.3	100.0

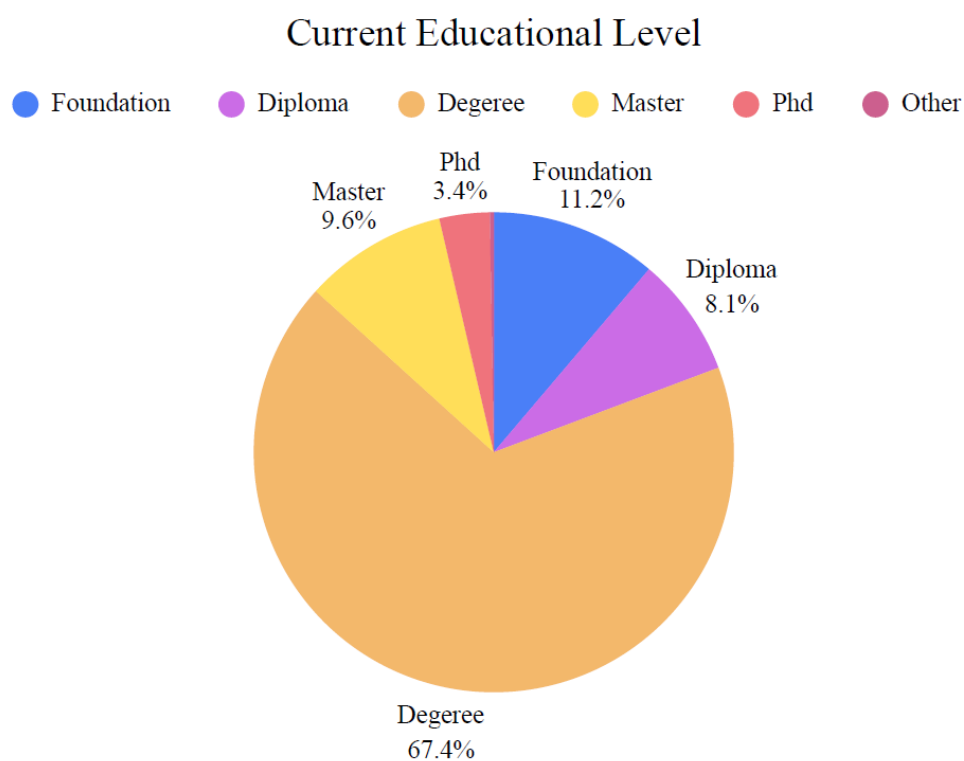


Figure 4.4: Descriptive Analysis for Current Educational Level

The above shows the distribution of respondents by current educational level. Among those 384 respondents, most of them were 259 (67.4%) who were currently pursuing a degree, 43 (11.2%) were in foundation programmes, 37 (9.6%) were at the master's level, 31 (8.1%) were diploma students, 13 (3.4%)

of them were pursuing a PhD, and the one person (0.3%) fell under other categories of education. The findings show a high concentration at the undergraduate level, followed by smaller proportions from other educational levels. This distribution of data reflects the structure of the university student population in Malaysia, where undergraduate students constitute the largest group overall. The variation in responses was achieved by utilizing convenience sampling, whereby participants from various levels of education were selected on the basis of their availability and readiness to respond.

4.1.1.5 Campus Location

Table 4.5:

Descriptive Analysis for Campus Location

Campus Locations	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Johor	8	2.1	2.1	2.1
Kedah	10	2.6	2.6	4.7
Kelantan	10	2.6	2.6	7.3
Malacca	11	2.9	2.9	10.2
Negeri Sembilan	12	3.1	3.1	13.3
Pahang	17	4.4	4.4	17.7
Penang	15	3.9	3.9	21.6
Perak	209	54.4	54.4	76.0
Perlis	10	2.6	2.6	78.6
Sabah	14	3.6	3.6	82.3
Sarawak	6	1.6	1.6	83.9
Selangor	26	6.8	6.8	90.6
Terengganu	14	3.6	3.6	94.3

Federal Territory of Kuala Lumpur	9	2.3	2.3	96.6
Federal Territory of Labuan	8	2.1	2.1	98.7
Federal Territory of Putrajaya	5	1.3	1.3	100.0

Campus Location

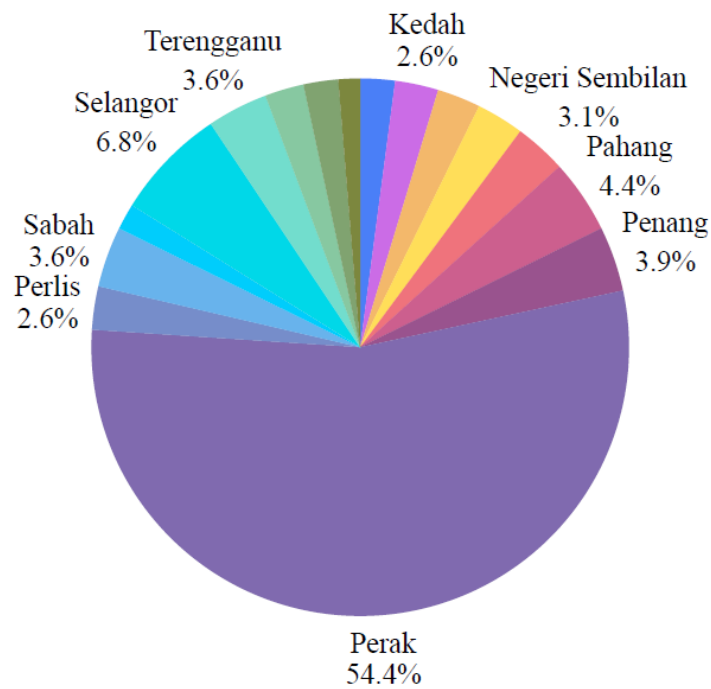


Figure 4.5: Descriptive Analysis for Campus Location

The above shows the distribution of respondents by campus location. Among 384 respondents, most of them were from Perak, which represented 209

respondents (54.4%), followed by Selangor with 26 respondents (6.8%), 17 respondents (4.4%) from Pahang, 15 respondents (3.9%) from Penang. Next, both Terengganu and Sabah consist of 14 respondents (3.6%), while there were 12 respondents (3.1%) from Negeri Sembilan, and 11 respondents (2.9%) from Malacca. Other than that, Kedah, Kelantan, and Perlis each consist of 10 respondents (2.6%), while Johor and the Federal Territory of Labuan each consist of 8 respondents (2.1%), and the Federal Territory of Kuala Lumpur had 9 respondents (2.3%). Lastly, there are 5 (1.3%) and 6 (1.6%) respondents respectively for the Federal Territory of Putrajaya and Sarawak. Overall, this data indicates that there are more than half of the respondents are based in Perak, which suggests that this campus location had the highest participation in the study.

4.1.1.6 Rate of Sleep Quality

Table 4.6:

Descriptive Analysis for Rate of Sleep Quality

Rate of Sleep Quality	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Very Poor	72	18.8	18.8	18.8
Fairly Poor	122	31.8	31.8	50.5
Fairly Good	137	35.7	35.7	86.2
Very Good	53	13.8	13.8	100.0

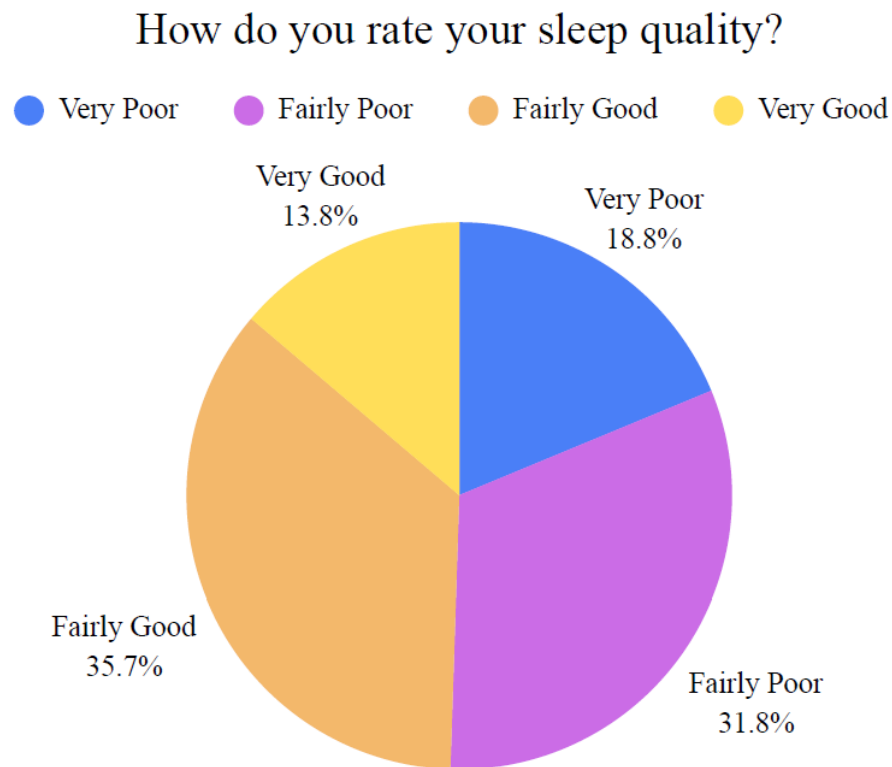


Figure 4.6: Descriptive Analysis for Rate Sleep Quality

The above table 4.6 and figure 4.6 shows the distribution of respondent self-reported sleep quality. Among 384 respondents, most of them rated their sleep quality as Fairly Good sleep quality, which is 137 respondents (35.7%), followed by Fairly Poor sleep quality with 122 respondents (31.8%). While the other two are below 100, which are 72 (18.8%) and 53 (13.8%) respectively, for Very Poor and Very Good sleep quality. These findings show that a considerable half of university students have had moderate and inadequate sleep, with over half rating their sleep quality as Fairly Poor or Very Poor. These highlight the potential influence of lifestyle habits and psychological factors on low sleep quality among university students in Malaysia.

4.1.2 Central Tendencies Measurement of Constructs

Table 4.7:

Descriptive statistics for Central Tendency Measurement of Constructs

Variables	Sample Size, N	Mean	Standard Deviation
SleepQuality_AVE	384	3.36094	0.619429
ScreenUse_AVE	384	3.74062	0.823426
CaffeineIntake_AVE	384	3.3815125	1.2055575
StressLevel_AVE	384	3.26822	0.92408

A total of sample size participants in this study is $N = 384$, the Table 4.7 shows the Sleep Quality had a mean of 3.36094 and a standard deviation (SD) of 0.619429 averagely, indicating generally moderate sleep quality with relatively low variability, whereas Screen Use had a slightly higher variability, with a mean of 3.74062 and a standard deviation of 0.823426, which has suggesting that the participants are engaged in screen activities moderately frequently. Next, Caffeine Intake showed a mean of 3.3815125 ($SD = 1.2055575$), reflecting moderate consumption of caffeinated drinks but with greater variability among respondents. Lastly, Stress Level was reported at a mean of 3.26822 with a SD of 0.92408, which indicates a moderate level of stress among respondents. Overall, they demonstrated moderate levels across all constructs, with caffeine intake showing the most diverse patterns among all.

4.2 Scale Measurement

Table 4.8:

Cronbach's Alpha Rule of Thumb

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: Garba, 2021

Cronbach's alpha (α) is used to assess the reliability of measuring tools in this study, as shown in Table 4.8. It is useful to assess the internal consistency of a set of research items, which reveals how effectively the items collectively measure the same underlying construct. The table demonstrates that when Cronbach's alpha is less than 0.5, it is considered unacceptable. Next, if Cronbach's alpha is more than or equal to 0.5 but less than 0.6, the scale is regarded poor. When Cronbach's alpha is greater than or equal to 0.6 but less than 0.7, the reliability is questioned. When Cronbach's alpha is greater than or equal to 0.7 but less than 0.8, the scale is classified as acceptable. Finally, when the Cronbach's alpha is greater than or equal to 0.8 but less than 0.9, the scale is considered to have good reliability, whereas when the Cronbach's alpha is greater than or equal to 0.9, the scale is considered to be extremely reliable. To ensure the study's reliability, the scale should have a Cronbach's alpha of at least 0.6.

Table 4.9:

Summary of Cronbach's Alpha Results

Variables	Cronbach's Alpha	Items	Reliability
Sleep Quality	0.724	10	Acceptable
Screen Use	0.783	5	Acceptable
Caffeine Intake	0.897	8	Good
Stress Level	0.782	5	Acceptable

As shown in Table 4.9, the reliability test results indicate that the construct has appropriate internal consistency. Sleep Quality has a Cronbach's alpha of 0.724 over ten items, indicating that the scale is falls under the acceptable range. Next, the Cronbach's alpha for Screen Use is 0.783 across five items, indicating that it is also acceptable. Then, caffeine intake with 0.897 across eight items, which has achieved a higher Cronbach's alpha among all variables, reflecting a good reliability. Lastly, Stress Level, Cronbach's alpha has reached a range of 0.782 across five items with acceptable reliability. However, during the reliability analysis, several items from each construct were removed to improve the Cronbach's alpha values to meet the acceptable threshold of 0.7 and above. The deletion of those items has enhanced the internal consistency of the measurement scales. Besides the sleep quality measurement instrument not being removed or deleted, several items were removed from the original scale of the other three constructs, including screen use, caffeine intake, and stress level. Despite the extraction of selected items, each construct still retained a sufficient number of items to ensure adequate representation and its validity. After the refinements, The reliability results indicate that the measurement tools utilized are reliable and appropriate for future investigation in this study.

4.3 Preliminary Data Analysis

Preliminary data analysis includes examining, cleaning, and comprehending the dataset before performing deep statistical analysis. This stage ensures that the data is suitable for the planned analysis and assists in finding problems like missing values, outliers, or non-normal distributions that may compromise the reliability of the findings (Sharifnia et al., 2025).

4.3.1 Normality Test

Table 4. 10

Normality Test Result

Variables	Skewness	Kurtosis
Sleep Quality	(0.209)	(0.133)
Screen Use	(0.509)	1.071
Caffeine Intake	(0.628)	(0.716)
Stress Level	(0.728)	2.965

For many statistical analyses involving independent and random variables, a normality test is often used to determine if research data follow a normal distribution. Two important metrics used to measure this are skewness and kurtosis. Skewness indicates how symmetrical the distribution is, while kurtosis indicates whether the data are heavy-tailed or light-tailed in comparison to a normal distribution (editage, 2022).

The normality test results show that all variables are within the acceptable range for skewness and kurtosis. The skewness values for Sleep Quality, Screen Use, Caffeine Intake, and Stress Level fall between -2 and +2,

indicating a reasonably symmetrical distribution. In addition, all kurtosis values are within the acceptable range of -7 to +7, suggesting no serious deviation from normality. Therefore, the data are considered normally distributed and suitable for further analysis.

4.3.2 Multicollinearity Test

Table 4. 11

Multicollinearity Test Result

Independent Variables	Collinearity Statistics	
	Tolerance	VIF
Screen Use	0.948	1.055
Caffeine Intake	0.995	1.005
Stress Level	0.952	1.050
a. Dependent Variable : Sleep Quality		

The multicollinearity test in SPSS is used to determine if the independent variables in a regression model are significantly correlated. The results' dependability may be reduced by a high correlation. Two crucial metrics are tolerance and the Variance Inflation Factor (VIF). Each variable makes a distinct contribution to the model when tolerance levels around 1 and VIF values below 5 show no substantial multicollinearity (JMP Statistical Discovery, 2026).

Table presents the multicollinearity statistics for the independent variables: Screen Use, Caffeine Intake, and Stress Level. The analysis reveals that all variables have Tolerance values between 0.948 and 0.995, significantly above the 0.10 threshold. Correspondingly, the Variance Inflation Factor (VIF) values range from 1.005 to 1.055, which are well below

the common cutoff of 5.0. These results indicate that there is no significant multicollinearity among the independent variables, ensuring the reliability of the regression coefficients for predicting Sleep Quality.

4.4 Inferential Analysis

Inferential analysis is a technique that using sample data for predicting a larger population. It enables researchers to find trends or links between variables in the sample and make predictions. Instead of just summarizing sample data, significant conclusions that are representative of the entire population can be reached by employing this strategy (Cuemath, 2023).

4.4.1 Multiple Regression Analysis

Multiple regression analysis is a statistical method used to examine the relationship between one dependent variable and two or more independent variables. It helps determine how well the independent variables collectively influence the dependent variable. The coefficient of determination, known as R squared (R^2), is commonly used to assess the model's predictive accuracy, as it indicates the proportion of variance in the dependent variable explained by the model (Sun et al., 2023).

Table 4. 12

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.411 ^a	0.169	0.162	0.56705
a. Predictors: (Constant), SL Average, CI Average, SU Average				
b. Dependent Variable: SQ Average				

R Value

The R value shows how strongly and in which direction the dependent variable's observed and predicted values are related (Sharma & Mishra, 2026). Based on the model summary table (Table 4.12), the R value is 0.411, showing a positive relationship between the predictors and the outcomes.

R Square

R Square calculates the percentage of the variance in the dependent variable that the independent variables in the model can account for (Bock, 2018). Table 4.1 shows R Square as 0.169, meaning that 16.9% of the variation in sleep quality is explained by stress level, caffeine intake, and screen use.

Adjusted R Square

Adjusted R Square adjusts the R^2 value based on the number of predictors in the model (CFI, 2020). As shown in Table 4.12, the Adjusted R Square is 0.162, which is close to R^2 , indicating a good fit and no overfitting.

Standard Error of the Estimate

Standard Error of the Estimate is a statistical measure used to quantify the accuracy of regression model's predictions (Libretexts, 2022). In Table 4.12, the Standard Error of the Estimate is 0.56705, indicating that the model's prediction accuracy is acceptable.

Table 4.13

ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.768	3	8.256	25.676	<.001 ^b
	Residual	122.186	380	0.322		
	Total	146.954	383			
a. Dependent Variable: SQ Average						
b. Predictors: (Constant), SL Average, CI Average, SU Average						

The results of the ANOVA show the statistical importance of the regression model, with an F-value of 25.676 and a p-value less than 0.001. This indicates that the independent variables (stress level, caffeine intake, and screen use), as a group, have a significant effect on the dependent variable (sleep quality). Therefore, the model is suitable for further analysis.

Table 4. 14

Coefficients Table

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.527	0.240		6.372	<.001 ^b
	SUAverage	0.236	0.045	0.253	5.264	<.001 ^b
	CI Average	(0.036)	0.024	(0.070)	(1.488)	0.138
	SL Average	0.335	0.063	0.269	5.602	<.001 ^b
a. Dependent Variable: SQ Average						

Interpretation

H1: Poor sleep quality is greatly influenced by screen use.

According to the table, the p-value for caffeine intake is 0.138 and the coefficient is $B = (0.036)$. The relationship is not statistically significant because the p-value is higher than the alpha value of 0.05. This means that caffeine intake does not significantly or consistently affect the quality of sleep in this model. H2 is therefore not supported.

H2: Poor sleep quality is greatly influenced by caffeine intake.

According to the table, the p-value for caffeine intake is 0.138 and the coefficient is $B = (0.036)$. The relationship is not statistically significant because the p-value is higher than the alpha value of 0.05. This means that caffeine intake does not significantly or consistently affect the quality of sleep in this model. H2 is therefore not supported.

H3: Poor sleep quality is greatly influenced by stress level.

As shown in the table, the coefficient for Stress Level is $B = 0.335$ and $p < 0.001$. Furthermore, it has the highest standardized beta value ($\beta = 0.269$),

indicating that stress level is the strongest predictor among the significant variables. The result is statistically significant ($p < 0.05$), suggesting that individuals with higher stress levels experience significantly poorer sleep quality. Thus, H3 is supported.

Regression Equation

$$y = a + b_1 (x_1) + b_2 (x_2) + b_3 (x_3)$$

x_1 = Screen Use

x_2 = Caffeine Intake

x_3 = Stress Level

$$\text{Sleep Quality} = 1.527 + 0.236(\text{Screen Use}) - 0.036(\text{Caffeine Intake}) + 0.335(\text{Stress Level})$$

Highest Contribution

Among the three independent variables under the standardized coefficient, stress level has the most significant beta value (0.269), making it the most significant predictor of poor sleep quality. This indicates that, when all other predictors in the model keep constant, stress level has the greatest unique contribution to explaining changes in the dependent variable, sleep quality. Basically, people who are under a lot of stress are more likely to have worse quality sleep.

Second Highest Contribution

Screen Use is the second strongest predictor of poor sleep quality, with a standardized beta value of 0.253. This suggests that, after controlling for stress level and caffeine intake, screen use still contributes significantly to

explaining the variation in sleep quality. People who spend more time on screens are more likely to experience a decline in their sleep quality.

Lowest Contribution

Caffeine Intake has the weakest unique contribution among the predictors, with the lowest standardized beta value of 0.070. Furthermore, as the p-value for caffeine intake (0.138) is greater than 0.05, it does not have a statistically significant effect on sleep quality in this study. This shows that compared to stress and screen use, caffeine intake is the least effective factor and does not reliably contribute to the prediction of sleep quality within this specific model.

4.5 Conclusion

This chapter explains how to understand and analyze statistical data. The demographic profiles of 383 respondents were analyzed descriptively, and the findings were displayed as tables and pie charts. Version 31.0 of IBM Statistical SPSS was used to conduct the statistical analysis. Multiple regression analysis was used to examine the correlations between the independent and dependent variables, and Cronbach's alpha was utilized to assess their reliability. To better understand the results, Chapter 5 will provide a deeper description and analysis.

CHAPTER 5: DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.0 Introduction

This chapter will give the study's discussion, conclusion, and implications on the influence of lifestyle and psychological variables on low sleep quality among Malaysian university students. Based on the findings from Chapter 4, this chapter interprets the data collected from 384 respondents from various backgrounds and locations in relation to the research objectives, focusing on the effects of screen use, caffeine intake, and stress level on low sleep quality. This chapter 5 will analyze and summarize the important results from the data analysis section, as well as their managerial and theoretical implications, limitations, and recommendations for future research.

5.1 Summary of Statistical Analysis

5.1.1 Summary of Descriptive Analysis

The descriptive analysis for the respondents demographic profile demonstrates that the majority of the 384 participants were female, while males represented a smaller proportion compared to females. Besides that, in terms of ethnicity, most of them were Chinese, followed by a minority of other ethnic groups, including Malay, Indian, and others. Next, most respondents in

this study were between the ages of 19 and 24 years old, with relatively similar representation in the age groups of 19 – 21 and 22 – 24. This distribution reflected the typical age range of university students in Malaysia, where the smaller proportion of respondents who participated in this study were aged 18 and below or 25 and above.

Regarding the current educational level, the sample was largely composed of undergraduate students who were pursuing their bachelor's degree, then followed by smaller proportions of university students in foundation, diploma, and postgraduate programmes, including master's degree and Doctor of Philosophy (PhD). Additionally, for the campus locations data indicated that over half of the respondents were based in Perak, with the remaining participants distributed across other states, including Selangor, Pahang, Penang, Sabah, Terengganu, and other states, including the Federal Territory region.

Furthermore, the self-reported sleep quality part has shown that most of the respondents were experiencing moderate sleep levels, with the largest proportion of respondents rated their sleep quality as “Fairly Good”, followed by “Fairly Poor”. A smaller proportion of respondents chose to rate their sleep quality as “Very Poor” or “Very Good”. This pattern indicates that there is a substantial number of university students in Malaysia who may be experiencing suboptimal sleep, which highlights the relevance of examining both lifestyle and psychological factors that could influence their sleep quality.

5.1.2 Summary of Respondent Central Tendencies

Measurement of Constructs

This section presents the summary of the participants' central tendencies of the main constructs in this study, which includes both lifestyle and psychological factors, and also sleep quality. The previous analysis chapter focuses on the mean, M and standard deviation, SD values to describe the overall responses of the respondents.

All in all, the results indicate that the mean values for the constructs fall within the moderate to high range of interpretations, with sleep quality ($M = 3.36094$, $SD = 0.619429$), screen use ($M = 3.74062$, $SD = 0.823426$), caffeine intake ($M = 3.3815125$, $SD = 1.2055575$), and stress level ($M = 3.26822$, $SD = 0.92408$). This suggests that the respondents were generally exhibiting moderate levels of lifestyle and psychological factors that affect their sleep quality. While the standard deviation values obtained from data analysis were relatively low, this indicates that the responses were not widely dispersed and there was a reasonable range of consistency among 384 participants.

Particularly, the lifestyle factors, including screen use and caffeine intake, showed a moderate mean value, implying that the university students moderately engage in those behaviors that may have a significant effect on their sleep patterns. Similarly, the psychological factors of stress levels among university students in Malaysia, which also recorded a moderate mean score, indicate that the respondents experience a certain level of emotional influence that could affect their sleep quality.

Other than that, the mean score of the sleep quality suggests that most of the respondents have experienced a moderate or suboptimal sleep quality, which

is consistent with the findings from the descriptive analysis. This further supports the presence of sleep-related issues among university students in Malaysia.

Finally, the central tendency analysis underscores that both independent variables in this study, lifestyle and psychological factors are present at moderate levels and may play a role in influencing sleep quality among university students in Malaysia.

5.1.3 Summary of Reliability Analysis

The reliability analysis was conducted to assess the internal consistency of the measurement instruments used in the study, including the measurement for the sleep quality, screen use, caffeine intake, and stress level. In this research, all constructs had achieved a reliability result from acceptable to good reliability scores, with values ranging from 0.724 to 0.897. According to Cronbach's alpha rules of thumb, the acceptable range should be more than 0.7. Therefore, among all constructs, the caffeine intake's Cronbach's alpha is the highest compared to the other constructs, which falls within a good range. However, the acceptable reliability levels of the internal consistency range achieved were partly due to the refinement of measurement items during the analysis process, where selected items were removed to improve the Cronbach's alpha value. After the refinement, these results show that the measurement instruments used were consistent and reliable, and they are suitable for further interpretation and statistical analysis in examining the influence of both lifestyle and psychological factors on sleep quality among university students in Malaysia.

5.1.4 Summary of Preliminary Analysis

Before conducting more statistical analysis, a preliminary analysis was carried out to make sure the dataset matched the required assumptions. Kurtosis and skewness values were used to evaluate the data's normality. Sleep quality, screen use, caffeine intake, and stress level were all found to fall within acceptable skewness (-2 to +2) and kurtosis (-7 to +7) ranges, suggesting that the data are roughly normally distributed.

Additionally, the correlation between the independent variables was examined using the multicollinearity test. The Variance Inflation Factor (VIF) values were below 5, and all tolerance values were above 0.10, according to the findings. This suggests that the independent variables do not significantly show multicollinearity.

Overall, the preliminary analysis confirms that the dataset satisfies the required assumptions and is suitable for further inferential analysis.

Overall, the preliminary analysis confirms that the dataset satisfies the required assumptions and is suitable for further inferential analysis.

5.1.5 Summary of Inferential Analysis

To investigate the relationship between the independent variables, screen used, caffeine intake, and stress level, and the dependent variable, sleep quality, multiple regression analysis was conducted. The dependent variable and the predictors have a moderately good connection, as indicated by the results' R value of 0.411. The R Square value of 0.169 indicates that the independent

factors account for 16.9% of the variation in sleep quality. The standard error of the estimate (0.56705) shows acceptable prediction accuracy, and the adjusted R Square value of 0.162 suggests a reasonable model fit.

The ANOVA results show an F-value of 25.676 with a significance value of less than 0.001, indicating that the overall regression model is statistically significant. This means that the combination of screen use, caffeine intake, and stress level effectively predicts sleep quality.

The coefficients table shows that screen use ($B = 0.236$, $p < 0.001$) and stress level ($B = 0.335$, $p < 0.001$) are significant predictors of sleep quality, while caffeine intake ($B = -0.036$, $p = 0.138$) is not statistically significant. Among the predictors, stress level is the strongest factor, followed by screen use, whereas caffeine intake has the least contribution.

Overall, the findings indicate that stress level and screen use play important roles in influencing sleep quality, and the regression model is appropriate for explaining the relationship among the variables.

5.2 Discussions of Major Findings

5.2.1 Screen Use and Sleep Quality

The results of this study show that screen use has a major impact on sleep quality. The multiple regression analysis showed a significant positive correlation between screen time and poor sleep quality, with a regression coefficient (B) of 0.236 ($p < 0.001$). This suggests that people who use electronics more frequently are more likely to have lower quality sleep.

This variable contributed to explaining the 16.9% variance in sleep quality ($R^2 = 0.169$), suggesting that although the overall explanatory power of the model is moderate, screen use remains an important behavioral factor. The standardized beta value ($\beta = 0.253$) further confirms that screen use is one of the key predictors of sleep quality in this study.

These findings are consistent with recent research highlighting the negative impact of screen exposure on sleep. According to Brosnan et al. (2024), increased screen use, particularly before bedtime, is associated with reduced sleep duration and poorer sleep quality due to blue light exposure and delayed melatonin production. Similarly, Mohd Saat et al. (2024) found that excessive screen time significantly contributes to sleep disturbances and poorer mental well-being.

Furthermore, the stimulating nature of digital content may increase cognitive arousal, making it more difficult for individuals to fall asleep. This suggests that behavioral habits, such as limiting screen time before bedtime, are crucial in improving sleep quality. Overall, these findings highlight the importance of managing screen use as a key factor in promoting better sleep outcomes.

5.2.2 Caffeine Intake and Sleep Quality

The outcome of this study show that caffeine intake has no significant effect on the quality of sleep. The regression analysis shows a coefficient of $B = -0.036$ ($p = 0.138$), suggesting that there is no statistically significant correlation between caffeine intake and sleep quality. This indicates that the sample's sleep quality is not significantly impacted by caffeine intake.

Although caffeine is commonly known to affect sleep, the results of this study suggest otherwise. This variable showed the lowest contribution among the predictors, with a standardized beta value of $\beta = -0.070$, indicating minimal impact. This may be due to variations in individual tolerance levels, as well as differences in the timing and amount of caffeine consumption.

Recent literature also suggests mixed findings regarding caffeine and sleep. According to Gardiner et al. (2023), the effect of caffeine on sleep depends largely on individual sensitivity, dosage, and the timing of intake. Similarly, Phan et al. (2025) found that moderate caffeine consumption does not significantly disrupt sleep for all individuals, particularly when consumed earlier in the day.

Therefore, the insignificant result in this study may be explained by the respondents' consumption patterns and physiological differences. Overall, this study does not support the hypothesis that caffeine intake significantly influences sleep quality.

5.2.3 Stress Level and Sleep Quality

The results of this study indicate that, among all the variables, stress level has the biggest influence on sleep quality. The multiple regression analysis showed a significant positive correlation between stress level and poor sleep quality, with a regression coefficient (B) of 0.335 ($p < 0.001$). This suggests that people who are under more stress are more likely to have trouble in sleeping.

This variable was identified as the strongest predictor, with the highest standardized beta value ($\beta = 0.269$), suggesting that stress level contributes the most to explaining variations in sleep quality. Despite the model explaining 16.9% of the variance overall, stress remains the most influential factor compared to other predictors.

These results are in keeping with previous research that highlights how stress affects sleep. According to Zhang et al. (2024), psychological stress is strongly associated with sleep disturbances, including insomnia and reduced sleep quality. Similarly, Alwhaibi and Aloola (2023) reported that stress disrupts emotional and physiological processes, making it difficult for individuals to maintain healthy sleep patterns.

In addition, stress can increase cognitive and emotional arousal, leading to difficulty in falling and staying asleep. This highlights the importance of stress management strategies in improving sleep quality. Overall, these findings confirm that stress level is the most critical factor influencing sleep quality in this study.

5.3 Implications of the Study

5.3.1 Managerial/Practical Implications

The findings of this study have practical implication for universities, student support services, as well as healthcare professionals working with university students in Malaysia. First and foremost, the first independent variable, screen use, was found to be more moderately associated with lower sleep quality, this suggests that the prolonged exposure to screen blue lights especially before bedtime can influence individuals sleep patterns negatively. In universities, they should implement more digital wellness programs, talk, and workshops to educate university students on the impact of screen time on circadian rhythms and sleep quality (Zhong et al., 2025).

Moving on to the second independent variables of caffeine intake, the relation of it and the sleep quality highlights the need for targeted nutritional education. Universities should conduct more event or education to raise awareness and provide a proper guidance on the timing and quantity of caffeine consumption, so that it helps them to understand how the consumption patterns actually influence sleep latency and duration (Rosdi & Hamirudin, 2023; Sulaiman et al., 2024). In university cafeterias or campus food outlets can provide alternative drinks to replace caffeinated beverages. This may further support healthier sleep behaviors by solving this problem.

Next, the stress levels among university students were shown to highly influence their sleep quality, which indicates a significant psychological dimension to sleep issues. Regarding this, universities should strengthen the

availability of their mental health resources, including implementing more stress management and other emotional release related workshops and talks by professionals, increasing the accessibility of counselling, and conducting a mindfulness training workshop and related event. Such interventions can help students to develop coping strategies to reduce their academic and personal stress greatly, with potential benefits for sleep quality (Huang et al., 2024).

Finally, the combined influence of all these variable factors on sleep quality suggests the importance for holistic wellness initiatives. Universities in diverse states could integrate sleep education into orientation programs, promoting regular healthy sleep schedules, and offer routines that encourage balanced lifestyle habits. By addressing the interrelatedness of lifestyle and psychological factors that contribute to moderate or suboptimal sleep, student health units can improve overall academic performance and well-being.

5.3.2 Theoretical Implications

Beyond practical applications, this study contributes to the academic understanding of how both variables, lifestyle and psychological factors affect sleep quality among university students in Malaysia. Regarding screen use, the results support existing models of sleep and technology, which propose that evening exposure to electronic devices can delay melatonin onset and disrupt individuals' sleep architecture. This has reinforced the theoretical frameworks that integrate behavioral determinants into sleep prediction models.

The findings in this study related to the second independent variable, that is caffeine intake, consistently align with stimulant-sleep interaction theories, which posit that caffeine acts on adenosine receptors, thereby reducing sleep

pressure and heightening alertness (Phan et al., 2025). The moderate mean consumption observed in this study provides empirical evidence to prove that, specifically in the Malaysian university context, it extends some of the existing research that has predominantly focused on Western populations.

Furthermore, stress levels have reinforced the stress-sleep model in terms of health psychology, which suggests that higher perceived stress is linked directly to poorer sleep quality. This is because it increased both physiological and cognitive arousal. By demonstrating the relationship between stress levels and sleep quality in the university setting, the research provided support for theories that view these psychological factors as central influences on individuals' sleep regulation.

In short, the emphasis on sleep quality as an outcome has been greatly influenced by both lifestyle and psychological factors, which support multidimensional sleep models that include behavioural, emotional, and environmental determinants (Ying et al., 2023). This study's findings have also highlighted that the value for future research lies in examining both the mediating and moderating variables, like coping styles or social support, that may shape all these relationships.

5.4 Limitations of the Study

This study provides valuable insights into the impact of lifestyle and psychological factors on low sleep quality among university students in Malaysia. However, there are several limitations that should be acknowledged. First, this study employed a cross-sectional survey design, which captures data at a single time. This design

allows for identifying associations between all variables including sleep quality, lifestyle and psychological factors, particularly on screen use, caffeine intake, and stress levels, but it cannot establish causality. For example, according to Xu et al. (2025), while higher stress is associated with lower sleep quality, it cannot be confirmed stated that whether stress causes poor sleep or whether poor sleep heightens the stress levels.

Next, is regarding the self-reported data. In this study, all measurements were collected using self-administered questionnaires using the Likert Scale measurement. This method is susceptible to recall bias and social desirability bias, where respondents may underreport or overreport their behavior such as screen use, caffeine intake, or stress levels. Even though the reliability analysis result range is considered acceptable to good in terms of Cronbach's alpha internal consistency (0.724 – 0.897), self-reported data cannot fully capture the actual behavior or physiological measure of an individual's sleep quality.

Additionally, the study focused on screen use, caffeine intake, and stress level as predictors that may affect individuals' sleep quality. However, there are still have other potential influencing factors, such as physical activity, dietary habits, academic workload, or napping patterns that have not been included in the study. These factors may also significantly affect the sleep quality to become low among university students. Therefore, these exclusions of diverse factors will limit the researcher to have a comprehensive and in-depth understanding in this study (Liu et al., 2021).

Moreover, the sample size of 384 respondents who have a university background, though sufficient for statistical analysis, may not fully represent all university students in Malaysia, as most of the participants were specifically from Perak, with fewer from other regions. Differences in campus environment, cultural practices, and diverse lifestyle habits across Malaysia may limit the generalizability of the

results (Ahmad et al., 2023). Besides that, there are also biases on different educational levels as most of the respondents collected were undergraduate students from a degree, but rarely from a master's degree and a doctor of philosophy (PhD). As the educational level goes higher, the stress level may be higher compared to the lower educational levels. The other routines and habits of theirs would also be different. This has greatly narrowed down the understanding of individuals with diverse backgrounds and regions.

Despite all of these limitations, the study provides important insights into the moderate influence of both lifestyle and psychological factors that influence lower sleep quality, and it lays a foundation for further research using more robust designs as well as broader variables to be discussed for future studies.

5.5 Recommendation for Future Research

First, future studies should adopt longitudinal or experimental designs to better understand causal relationships between lifestyle and psychological factors and sleep quality. Because this study's cross-sectional design only identifies associations, it cannot determine directionality — for example, whether stress leads to poor sleep or poor sleep increases stress (Xu et al., 2025). Longitudinal tracking or intervention studies would help clarify these temporal relationships and strengthen causal inference.

Next, researchers should incorporate objective measurements and a broader set of variables to overcome limitations of self-reported data and narrow predictor selection. Objective measures such as actigraphy, wearable sleep trackers, or biochemical markers for caffeine intake can supplement self-reported

questionnaires that are prone to recall and social desirability bias (Robbins et al., 2021). Additionally, including other influential factors such as physical activity, dietary habits, academic workload, and nap patterns, would offer a more comprehensive understanding of determinants of sleep quality in students (Liu et al., 2021).

Third, future research should aim for larger, more diverse samples with representation across regions, universities, and educational levels. Since this study predominantly sampled undergraduates from Perak, its findings may not fully generalize to all Malaysian university students. Including participants from different states and age groups and performing subgroup analyses such as by educational level or cultural background, would enhance generalizability and reveal possible nuanced patterns in stress, lifestyle, and sleep dynamics (Ong et al., 2023).

Lastly, by improving study methods and including a more diverse group of students, future research can provide clearer and more reliable insights into how lifestyle habits and psychological factors interact to affect sleep. This kind of understanding is crucial for creating practical and effective programs that truly help university students sleep better and improve their overall well-being.

5.6 Conclusion

The results of this study show that a variety of behavioral and psychological factors significantly influence the quality of sleep among Malaysian university students, with psychological distress and screen usage being the most significant factors. However, stress level was found to be the main predictor of sleep problems, closely followed by long screen time, while caffeine intake had no statistically significant

effect. Due to the prevalence of academic pressure and reliance on technological devices, many students are still susceptible to sleep disturbances despite an underlying understanding of sleep hygiene. Future studies using objective biometric sleep data is also necessary. Practically speaking, improving university students' general health and academic performance requires institutional interventions that emphasize methods for reducing stress and digital wellbeing.

REFERENCES

- Alwhaibi, M., & Al Aloola, N. A. (2023). Associations between Stress, Anxiety, Depression and Sleep Quality among Healthcare Students. *Journal of Clinical Medicine*, 12(13), 4340. <https://doi.org/10.3390/jcm12134340>
- Arshad, D., Joyia, U. M., Fatima, S., Khalid, N., Rishi, A. I., Rahim, N. U. A., Bukhari, S. F., Shairwani, G. K., & Salmaan, A. (2021). The adverse impact of excessive smartphone screen-time on sleep quality among young adults: A prospective cohort. *Sleep Science*, 14(4). <https://doi.org/10.5935/1984-0063.20200114>
- Bock, T. (2018, September 8). *What is R-Squared?* Displayr. <https://www.displayr.com/what-is-r-squared/>
- Brosnan, B., Haszard, J. J., Meredith-Jones, K. A., Wickham, S.-R., Galland, B. C., & Taylor, R. W. (2024). Screen Use at Bedtime and Sleep Duration and Quality Among Youths. *JAMA Pediatrics*, 178(11). <https://doi.org/10.1001/jamapediatrics.2024.2914>
- CFI. (2020, April 29). *Adjusted R-squared*. Corporate Finance Institute. <https://corporatefinanceinstitute.com/resources/data-science/adjusted-r-squared/>
- Cherry, K. (2022, May 6). *How Arousal Theory of Motivation Works*. Verywell Mind. <https://www.verywellmind.com/the-arousal-theory-of-motivation-2795380>
- CHIEW , Y. N., LOGISH , A. B., & TAN, W. H. (2022). *RELATIONSHIP OF SLEEP QUALITY, PERCEIVED STRESS, AND CREATIVITY AMONG*

UNDERGRADUATES IN MALAYSIA A RESEARCH PROJECT
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FACULTY OF ARTS AND SOCIAL SCIENCE UNIVERSITI.

http://eprints.utar.edu.my/4579/1/FYP_PY_CYN_2022.pdf

Choi, J. (2020). Motivations Influencing Caffeine Consumption Behaviors among College Students in Korea: Associations with Sleep Quality. *Nutrients*, 12(4), 953. <https://doi.org/10.3390/nu12040953>

Coursera. (2024, November 22). *What is sample size?* Coursera.
<https://www.coursera.org/articles/what-is-sample-size>

Cuemath. (2023). *Inferential Statistics - Definition, Types, Examples, Formulas*.
Cuemath. <https://www.cuemath.com/data/inferential-statistics/>

Dongol, E., Shaker, K., Abbas, A., Assar, A., Abdelraoof, M., Saady, E., Hassan, A., Youssef, O., Essam, M., Mahmoud, M., & Leschziner, G. (2022). Sleep quality, stress level and COVID-19 in university students; the forgotten dimension. *Sleep Science*, 15(Spec 2), 347–354.
<https://doi.org/10.5935/1984-0063.20210011>

editage. (2022, September 27). *Normality Test: What is Normal Distribution?* *Methods of Assessing Normality | Editage*. Educational Articles for Researchers, Students and Authors - Editage Blog.
<https://www.editage.com/blog/normality-test-methods-of-assessing-normality/>

Ee, Y., & Gan, W. (2022). Factors Associated with Sleep Quality Among Malaysian Undergraduate Students During the COVID-19 Pandemic.

Medicine & Health, 17(2), 169–180.

<https://doi.org/10.17576/mh.2022.1702.13>

Elfil, M., & Negida, A. (2017). Sampling methods in Clinical Research; an Educational Review. *Emergency*, 5(1), 52.

<https://pmc.ncbi.nlm.nih.gov/articles/PMC5325924/>

Elizabeth , G., & Andrea , M. (2015). *Sampling Frame - an overview* | *ScienceDirect Topics*. Sciencedirect.com.

<https://www.sciencedirect.com/topics/computer-science/sampling-frame>

Fuad, A., Yusnana Mohd Rizuan, Nur, Fiefiey Syahanim Heitin, Ravindran, D.

A., Nur, & Hanis, N. (2024). Stress Factors among University Students: A Case Study at Universiti Kebangsaan Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 14(11), 1694–1707.

<https://doi.org/10.6007/ijarbss/v14-i11/21956>

Gardiner, C., Weakley, J., Burke, L. M., Roach, G. D., Sargent, C., Maniar, N.,

Townshend, A., & Halson, S. L. (2023). The effect of caffeine on subsequent sleep: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 69(101764), 101764. <https://doi.org/10.1016/j.smrv.2023.101764>

Harris, K. M., Gaffey, A. E., Schwartz, J. E., Krantz, D. S., & Burg, M. M.

(2023). The perceived stress scale as a measure of stress: Decomposing score variance in longitudinal behavioral medicine studies. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 57(10), 846–854. <https://doi.org/10.1093/abm/kaad015>

Hartstein, L. E., Mathew, G. M., Reichenberger, D. A., Rodriguez, I., Allen, N.,

Chang, A.-M., Chaput, J.-P., Christakis, D. A., Garrison, M., Gooley, J. J.,

- Koos, J. A., Bulck, J. V. D., Woods, H., Zeitzer, J. M., Dzierzewski, J. M., & Hale, L. (2024). The Impact of Screen Use on Sleep Health across the lifespan: a National Sleep Foundation Consensus Statement. *Sleep Health: Journal of the National Sleep Foundation*, 10(4).
<https://doi.org/10.1016/j.sleh.2024.05.001>
- Harvard Medical School. (2025, July 23). *Effects of sleep deprivation - Harvard Health*. Harvard Health. <https://www.health.harvard.edu/staying-healthy/effects-of-sleep-deprivation>
- Hassan, M. (2024, March 26). *Research Design - Types, Methods and Examples*. Research Method. <https://researchmethod.net/research-design/>
- Hayes, A. (2024). *Descriptive statistics: Definition, overview, types, example*. Investopedia.
https://www.investopedia.com/terms/d/descriptive_statistics.asp
- Huang, W., Wen, X., Li, Y., & Luo, C. (2024). Association of perceived stress and sleep quality among medical students: the mediating role of anxiety and depression symptoms during COVID-19. *Frontiers in Psychiatry*, 15.
<https://doi.org/10.3389/fpsyt.2024.1272486>
- Huang, Y., Yang, L., Liu, Y., & Zhang, S. (2024). Effects of perceived stress on college students' sleep quality: a moderated chain mediation model. *BMC Psychology*, 12(1). <https://doi.org/10.1186/s40359-024-01976-3>
- JMP Statistical Discovery. (2026). *Multicollinearity*. Jmp.com.
<https://www.jmp.com/en/statistics-knowledge-portal/linear-models/what-is-multiple-regression/multicollinearity>

- Kamaruzihan, N. Q. M., & Soe, M. K. (2023). A comparative study: Impact of screen time on sleep quality among university students and school children. *Journal of Pharmacy*, 3(1), 75–85.
<https://doi.org/10.31436/jop.v3i1.168>
- Kaur, N., Gupta, M., Kiran, T., Malhi, P., & Grover, S. (2021). Development and evaluation of the digital-screen exposure questionnaire (DSEQ) for young children. *PLOS ONE*, 16(6), e0253313.
<https://doi.org/10.1371/journal.pone.0253313>
- Khor Yong Jie, Mohamad, N., Munirah Mohd Adnan, Nor, Hamid, A., & Zurainie Abillah. (2024). Factors associated with poor sleep quality among dental students in Malaysia. *PeerJ*, 12, e17522–e17522.
<https://doi.org/10.7717/peerj.17522>
- Kohyama, J. (2021). Which Is More Important for Health: Sleep Quantity or Sleep Quality? *Children*, 8(7), 542. <https://doi.org/10.3390/children8070542>
- Lakshme Shree, Raja, S., Khang, Y. Y., Arvinder-Singh Harbaksh, & Bainun Ipoh. (2025). Sleep quality, sleep hygiene practices and their influencing factors among Malaysian university students: A cross-sectional study. *Malaysian Family Physician*, 20(22), 1–11.
<https://doi.org/10.51866/oa.717>
- Liu, X., Lang, L., Wang, R., Chen, W., Ren, X., Lin, Y., Chen, G., Pan, C., Zhao, W., Li, T., Han, C., He, L., & Gu, Y. (2021). Poor sleep quality and its related risk factors among university students. *Annals of Palliative Medicine*, 10(4), 4479–4485. <https://doi.org/10.21037/apm-21-472>

- Mallory-Kani, A. (2022, September 27). *Research Methodologies: Research Instruments*. Paperpile.libguides.com.
<https://paperpile.libguides.com/c.php?g=1235589&p=9041188>
- Mohd Saat, N. Z., Hanawi, S. A., Hanafiah, H., Ahmad, M., Farah, N. M. F., & Abdul Rahman, N. A. A. (2024). Relationship of screen time with anxiety, depression, and sleep quality among adolescents: a cross-sectional study. *Frontiers in Public Health*, 12.
<https://doi.org/10.3389/fpubh.2024.1459952>
- Muharyani, P. W. (2019). RELATIONSHIP BETWEEN SLEEP HYGIENE AND SLEEP QUALITY IN ADOLESCENTS AGED 12-15 YEARS. *Jurnal Ilmu Kesehatan Masyarakat*, 10(1), 59–66.
<https://doi.org/10.26553/jikm.2019.10.1.59-66>
- Nagata, J. M., Shim, J., Ramappa, S., Deshpande, I., Low, P., Kiss, O., Ganson, K. T., Testa, A., He, J., & Baker, F. C. (2025). Social epidemiology of bedtime screen use behaviors and sleep outcomes in early adolescence. *Sleep Health*. <https://doi.org/10.1016/j.sleh.2025.05.005>
- Nelson, K. L., Davis, J. E., & Corbett, C. F. (2021). Sleep quality: An evolutionary concept analysis. *Nursing Forum*, 57(1), 144–151.
<https://doi.org/10.1111/nuf.12659>
- Ng, J. Y., Chong, Z. M., Harshana Sivam, & Nu, M. (2022, July 15). *Association between Caffeinated Beverages Consumption and Sleep Quality of Undergraduate Medical Students: A Cross-sectional Study*. ResearchGate.
https://www.researchgate.net/publication/362013693_Association_between

n_Caffeinated_Beverages_Consumption_and_Sleep_Quality_of_Undergra
duate_Medical_Students_A_Cross-sectional_Study

Nurul Qistina, M. K., & May, K. S. (2023). (PDF) *A comparative study: Impact of screen time on sleep quality among university students and school children*. ResearchGate.

https://www.researchgate.net/publication/368455528_A_comparative_study_Impact_of_screen_time_on_sleep_quality_among_university_students_and_school_children

Ong, S. C., Azman, N., & Ho, H. T. (2023). Factors Associated With Sleeping Quality and Behaviors Among University Students in Malaysia. *Sleep Medicine Research*, 14(1), 43–49.

<https://doi.org/10.17241/smr.2022.01536>

Phan, D. M., Lam, M. Y., & Trang, M. N. (2025). Regular caffeine consumption & subjective sleep quality: A systematic review. *The Journal of Aging Research & Lifestyle*, 14, 100005.

<https://doi.org/10.1016/j.jarlif.2025.100005>

Phang, E., & Man, Y. (2021). *A STUDY OF SLEEP QUALITY AND STRESS ON ACADEMIC PERFORMANCE AMONG UNDERGRADUATE STUDENTS IN MALAYSIA*.

http://eprints.utar.edu.my/4348/1/FYP_PY_EP_2021.pdf

Pulka, B. M. (2022). Preliminary Analysis of The Determinants of SMEs Performance. *Global Business Management Review (GBMR)*, 14(1), 1–19.

<https://doi.org/10.32890/gbmr2022.14.1.1>

RICHARL. (2025). *Krejcie Morgan*. Scribd.

<https://www.scribd.com/document/416893652/Krejcie-Morgan>

Riera-Sampol, A., Rodas, L., Martínez, S., Moir, H. J., & Tauler, P. (2022).

Caffeine Intake among Undergraduate Students: Sex Differences, Sources, Motivations, and Associations with Smoking Status and Self-Reported Sleep Quality. *Nutrients*, 14(8), 1661. <https://doi.org/10.3390/nu14081661>

Robbins, R., Quan, S. F., Barger, L. K., Czeisler, C. A., Fray-Witzer, M., Weaver, M. D., Zhang, Y., Redline, S., & Klerman, E. B. (2021). Self-reported sleep duration and timing: A methodological review of event definitions, context, and timeframe of related questions. *Sleep Epidemiology*, 1, 100016. <https://doi.org/10.1016/j.sleep.2021.100016>

Rosdi, N., & Hamirudin, A. H. (2023). CAFFEINE INTAKE AND ITS ASSOCIATION WITH STRESS AND SLEEP QUALITY AMONG UNDERGRADUATE STUDENTS AT INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) KUANTAN. *INTERNATIONAL JOURNAL of ALLIED HEALTH SCIENCES*, 7(5). <https://doi.org/10.31436/ijahs.v7i5.843>

Schmickler, J. M., Blaschke, S., Robbins, R., & Mess, F. (2023). Determinants of sleep quality: A cross-sectional study in university students. *International Journal of Environmental Research and Public Health*, 20(3). <https://doi.org/10.3390/ijerph20032019>

Sharifnia, A. M., Kpormegbey, D. E., Thapa, D. K., & Cleary, M. (2025). A Primer of Data Cleaning in Quantitative Research: Handling Missing Values and Outliers. *PubMed*. <https://doi.org/10.1111/jan.16908>

- Sharma, S., & Mishra, R. (2026). *Nomophobia and Social Interaction Anxiety Among Students*. <https://www.ijfmr.com/papers/2026/2/70858.pdf>
- Sheng, J. A., Bales, N. J., Myers, S. A., Bautista, A. I., Roueinfar, M., Hale, T. M., & Handa, R. J. (2021). The Hypothalamic-Pituitary-Adrenal Axis: Development, Programming Actions of Hormones, and Maternal-Fetal Interactions. *Frontiers in Behavioral Neuroscience*, 14(601939). <https://doi.org/10.3389/fnbeh.2020.601939>
- sleepresearchfou. (2023, June 16). *The Impact of Technology on Sleep: How Screens Affect Your Sleep Quality - Sleep Research Foundation*. Sleep Research Foundation. <https://sleepresearchfoundation.com/2023/06/16/the-impact-of-technology-on-sleep-how-screens-affect-your-sleep-quality/>
- SPSS Analysis. (2024, July 18). *Cronbach's Alpha (α) Using SPSS - Reliability Analysis - Explained*. Statistical Analysis Services for Academic Researches. <https://spssanalysis.com/cronbachs-alpha-in-spss/>
- Statistik Pendidikan Tinggi 2023 : Kementerian Pendidikan Tinggi*. (2023). <https://www.mohe.gov.my/en/download/statistics/2023-3/1473-bab-1-makro-2023-pdf/file>
- Sulaiman, N., Ali, A., Zakaria, M. K., Shahim, M. R. A., Jean, S. W., & Jalil, A. M. M. (2024). Caffeine Consumption, Sleep Quality and Mental Health Outcomes Among Malaysian University Students. *National Journal of Community Medicine*, 15(05), 370–378. <https://doi.org/10.55489/njcm.150520243858>

- Sun, Y., Wang, X., Zhang, C., & Zuo, M. (2023). Multiple Regression: Methodology and Applications. *Highlights in Science, Engineering and Technology*, 49, 542–548. <https://doi.org/10.54097/hset.v49i.8611>
- Szlapinski, S. K., Charrette, A., Guthrie, N., & Hilmas, C. J. (2023). Paraxanthine safety and comparison to caffeine. *Frontiers in Toxicology*, 5. <https://doi.org/10.3389/ftox.2023.1117729>
- Tan, C. P. Y., & Greenwood, K. M. (2021). Stress, Sleep and Performance in International and Domestic University Students. *Journal of International Students*, 12(1). <https://doi.org/10.32674/jis.v12i1.3299>
- Ting, C. H., Muhammad, Fatin, W., Kuan, S. M., & Nurul Azah Afifah, Ariffin. (2023). Body, Mind, and Plate: Exploring the Links between Sleep Quality, Perceived Stress, and Eating Behaviour among Medical Students in a Malaysian University - UNIMAS Institutional Repository. *Unimas.my*. <http://ir.unimas.my/id/eprint/43777/2/Body%2C%20Mind%2C.pdf>
- Tom , K. (2025). Data processing. *Ibm.com*. <https://doi.org/1038701235.component.crop-thumbnail-16-by-9-retina.ts=0>
- Wagle, K. (2025, May 3). *Pilot Testing: Importance, Steps & Challenges - Public Health Notes*. Public Health Notes. https://publichealthnotes.com/pilot-testing-importance-steps-challenges/#Importance_of_Pilot_testing
- Wallace, A. L., Aguinaldo, L., Thomas, M. L., McCarthy, M. J., & Meruelo, A. D. (2025). Preliminary Findings on Caffeine Intake, Screen Time, Social Factors, and Psychological Well-Being: Their Impact on Chronotype and

Sleep Health in Hispanic Adolescents. *Sleep Advances*.

<https://doi.org/10.1093/sleepadvances/zpaf019>

Wang, F., & Bíró, É. (2021). Determinants of sleep quality in college students: A literature review. *EXPLORE*, 17(2), 170–177.

<https://doi.org/10.1016/j.explore.2020.11.003>

Williams, M. N. (2021). Levels of measurement and statistical analyses. *Meta-Psychology*, 5. <https://doi.org/10.15626/mp.2019.1916>

Williams, T. (2023, February 12). *What is Pilot Testing? Explanation, Examples & FAQs*. Dovetail.com. <https://dovetail.com/research/pilot-testing/>

Xu, L., Yan, W., Hua, G., He, Z., Wu, C., & Hao, M. (2025). Effects of physical activity on sleep quality among university students: chain mediation between rumination and depression levels. *BMC Psychiatry*, 25(1).

<https://doi.org/10.1186/s12888-024-06450-3>

YI, H., SHIN, K., & SHIN, C. (2006). Development of the Sleep Quality Scale. *Journal of Sleep Research*, 15(3), 309–316. <https://doi.org/10.1111/j.1365-2869.2006.00544.x>

Ying, W., Dai, X., Zhu, J., Xu, Z., Lou, J. Q., & Chen, K. (2023). What complex factors influence sleep quality in college students? PLS-SEM vs. fsQCA. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1185896>

Zakiei, A., Habibolah Khazaie, Azadi, M., Mohsenpour, S., & Saeid Komasi. (2025). The mechanism of sleep quality's effect on academic burnout: examining the mediating role of perceived stress. *BMC Medical Education*, 25(1). <https://doi.org/10.1186/s12909-025-07617-6>

- Zhang, J., Xiang, S., Li, X., Tang, Y., & Hu, Q. (2024). The impact of stress on sleep quality: a mediation analysis based on longitudinal data. *Frontiers in Psychology, 15*. <https://doi.org/10.3389/fpsyg.2024.1431234>
- Zhong, C., Masters, M., Donzella, S. M., Diver, W. R., & Patel, A. V. (2025). Electronic Screen Use and Sleep Duration and Timing in Adults. *JAMA Network Open, 8*(3), e252493–e252493. <https://doi.org/10.1001/jamanetworkopen.2025.2493>

APPENDICES

APPENDIX A

Number of Students' Enrolment by State (2023)

Bil. No.	Peringkat Pengajian Level of Studies	Kategori IPT HEIs Category	Kemasukan / Intake			Enrolmen / Enrolment			Keluaran / Output		
			L / M	P / F	J / T	L / M	P / F	J / T	L / M	P / F	J / T
Jumlah / Total	Universiti Awam Public universities	74,917	118,112	193,029	230,128	362,973	593,101	55,497	93,469	148,966	
	IPTS Private HEIs	84,420	95,703	180,123	257,467	301,225	558,692	50,229	59,925	110,154	
	Politeknik Polytechnics	14,787	12,000	26,787	44,375	35,129	79,504	11,661	9,661	21,322	
	Kolej Komuniti Community Colleges	5,641	3,625	9,266	10,093	6,518	16,611	4,375	3,096	7,471	
Jumlah Keseluruhan Grand Total		179,765	229,440	409,205	542,063	705,845	1,247,908	121,762	166,151	287,913	

APPENDIX B

Sample Questionnaire

Impacts of Lifestyles and Psychological Factors on Low Sleep Quality among University Students in Malaysia

Dear respondents,

We are students of Bachelor of Business Administration (Honours) Healthcare Management from Teh Hong Piow faculty of Business and Finance (THP FBF), University Tunku Abdul Rahman (UTAR). Currently, we are conducting a final year project research study on the “Impacts of Lifestyles and Psychological Factors on Low Sleep Quality among University Students in Malaysia”.

This questionnaire comprises **FIVE** sections. Section A is on demographics. Sections B, C, D, and E cover all of the variables in this study. Please read the instructions carefully before answering the questions. All questions are relatively short, simple and easy to answer. Please answer **ALL** questions in **ALL** sections. Completion of this questionnaire will take you 5 to 10 minutes.

Please take a moment to share your thoughts. There are no correct or incorrect responses, we are only interested in your individual perspective. Your voluntary involvement in this online survey may be crucial to attaining the study’s aims.

Your assistance in completing this questionnaire is very much appreciated. Thank you for your participation. If you have any questions or inquiries, kindly contact us through: ashleyfsc04@lutar.my. Thank you very much for taking the time to fill this questionnaire.

Your sincerely,

ASHLEY FOO SIEW CHIN 24ABB00177

YANG, CHUN 23ABB01728

PERSONAL DATA PROTECTION NOTICE

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes: Name, identity card, place of birth, address, education history, employment history, medical history, blood type, race, religion, photo, personal information and associated research data.
2. The purposes for which your personal data may be used are inclusive but not limited to:
 - a) For assessment of any application to UTAR
 - b) For processing any benefits and services
 - c) For communication purposes
 - d) For advertorial and news
 - e) For general administration and record purposes
 - f) For enhancing the value of education
 - g) For educational and related purposes consequential to UTAR
 - h) For replying any responds to complaints and enquiries
 - i) For the purpose of our corporate governance
 - j) For the purposes of conducting research/ collaboration
3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.
4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.
5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

1. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.
2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
3. You may access and update your personal data by writing to us at _____.

Acknowledgment of Notice

- [] I have been notified and that I hereby understood, consented and agreed per UTAR above notice.
[] I disagree, my personal data will not be processed.

.....
Name:
Date:

Section A: Demographic

In this section, you are required to

1. Gender
 - ☐ Male
 - ☐ Female

2. Age (years)
 - ☐ 18 and below
 - ☐ 19 – 21
 - ☐ 22 – 24
 - ☐ 25 and above

3. Ethnic group
 - ☐ Malay
 - ☐ Chinese
 - ☐ Indian
 - ☐ Others

4. Campus location
 - ☐ Johor
 - ☐ Kedah
 - ☐ Kelantan
 - ☐ Kuala Lumpur
 - ☐ Melacca
 - ☐ Negeri Sembilan
 - ☐ Pahang
 - ☐ Perak
 - ☐ Perlis
 - ☐ Sabah

- Sarawak
- Selangor
- Terengganu
- Federal Territory of Kuala Lumpur
- Federal Territory of Putrajaya
- Federal Territory of Labuan

5. Educational Level

- Foundation
- Diploma
- Degree
- Master
- PhD
- Others

6. How do you rate your sleep quality?

- Very Poor
- Fairly Poor
- Fairly Good
- Very Good

Section B: Sleep Quality: Sleep Quality Scale (SQS)

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1.	I have difficulty falling asleep.	1	2	3	4	5
2.	I fall into a deep sleep.	1	2	3	4	5
3.	I toss and turn.	1	2	3	4	5
4.	I feel refreshed after sleep.	1	2	3	4	5
5.	Poor sleep makes me irritated.	1	2	3	4	5
6.	My sleep hours are enough.	1	2	3	4	5
7.	Poor sleep makes me loss interest in study or others.	1	2	3	4	5
8.	Poor sleep makes me lose desire in all things.	1	2	3	4	5
9.	Poor things makes me forget things more easily.	1	2	3	4	5
10.	Poor sleep makes it hard to concentrate at study.	1	2	3	4	5

Section C: Screen Use

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1.	My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	1	2	3	4	5
2.	I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	1	2	3	4	5
3.	I cannot control the time I spend in front of any screen.	1	2	3	4	5
4.	I have a TV set or an Internet-connected electronic device (computer, iPad, and phone) in your bedroom.	1	2	3	4	5
5.	Spend time online on social media.	1	2	3	4	5
6.	I use digital devices before sleeping.	1	2	3	4	5

Section D: Caffeine Intake: Caffeine Consumption Questionnaire (CCQ)

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1.	Caffeine helps me when I am tired.	1	2	3	4	5
2.	I find that caffeine improves my ability to concentrate.	1	2	3	4	5
3.	I rely on caffeine to help me stay awake.	1	2	3	4	5
4.	Consuming caffeinated beverages has become part of my daily routine.	1	2	3	4	5
5.	I find it relaxing to drink caffeinated beverages.	1	2	3	4	5
6.	After consuming caffeine, I feel refreshed.	1	2	3	4	5
7.	Caffeine makes me feel more energetic.	1	2	3	4	5
8.	I enjoy the atmosphere associated with consuming caffeinated beverages.	1	2	3	4	5

Section E: Stress Level: Perceived Stress Scale (PSS)

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1.	In the last month, I have been upset because of something that happened unexpectedly.	1	2	3	4	5
2.	In the last month, I have felt that I were unable to control the important things in my life.	1	2	3	4	5
3.	In the last month, I have felt nervous and “stressed”.	1	2	3	4	5
4.	In the last month, I have felt confident about my ability to handle my personal problems.	1	2	3	4	5
5.	In the last month, I have felt that things were going my way.	1	2	3	4	5
6.	In the last month, I have found that I could not cope with all the things that I had to do.	1	2	3	4	5
7.	In the last month, I have been able to control irritations in my life.	1	2	3	4	5
8.	In the last month, I have felt that I were on top of things.	1	2	3	4	5
9.	In the last month, I have been angered because of things that were outside of my control.	1	2	3	4	5

10.	In the last month, I have felt difficulties were piling up so high that I could not overcome them.	1	2	3	4	5
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-THANK YOU FOR YOUR PARTICIPATION-

APPENDIX C

Research Instrument (Google Form)



The Impacts of Lifestyles and Psychological Habits on Low Sleep Quality Among University Students in Malaysia

Dear respondents,

We are students of Bachelor of Business Administration (Honours) Healthcare Management in the Faculty of Business and Finance, University Tunku Abdul Rahman (UTAR). The purpose of this study is to study the impacts of lifestyles and psychological habits on low sleep quality among Malaysian university students.

This questionnaire comprises of 6 sections. Section A is on demographic. Section B, C, D and E cover all of the variables in this study. Please read the instructions carefully before answering the questions. All questions are relatively short, simple and easy to answer. Please answer ALL questions in ALL sections. Completion of this questionnaire will take you 5 to 10 minutes.

Please take a moment to share your thoughts. There are no correct or incorrect responses, we are only interested in your individual view perspective. Your voluntary involvement in this online survey may be crucial to attaining the study's aims.

Your survey response will be used purely for academic purpose, and any other use is strictly banned. The collection information will be kept private and confidential. Your assistance in completing this questionnaire is very much appreciated. Thank you for your participation. If you have any question or concerns regarding to this questionnaire, please feel free to contact us at ashleyfsc04@1utar.my

If you decide to complete this questionnaire, this will be taken as you voluntarily agree and provide consent to participate in this study. Thank you very much for taking the time to fill this questionnaire. Your sincerely,

ASHLEY FOO SIEW CHIN 24ABB00177

YANG, CHUN 23ABB01728

ashleyfsc04@1utar.my [Switch account](#)

* Indicates required question

Email *

Your email

Next Clear form

Personal Data Protection Notice

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes Name, identity card, place of birth, address, education history, employment history, medical history, blood type, race, religion, photo, personal information and associated research data.
2. The purposes for which your personal data may be used are inclusive but not limited to:
 - a) For assessment of any application to UTAR
 - b) For processing any benefits and services
 - c) For communication purposes
 - d) For advertorial and news
 - e) For general administration and record purposes
 - f) For enhancing the value of education
 - g) For educational and related purposes consequential to UTAR
 - h) For replying any responds to complaints and enquiries
 - i) For the purpose of our corporate governance
 - j) For the purposes of conducting research/ collaboration
3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.
4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.
5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.
7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
8. You may access and update your personal data by writing to us at ashleyfsc04@1utar.my

Acknowledgment of Notice *

☐ I have been notified by you and that I hereby understood, consented and agreed per UTAR above Notice.

☐ I disagree, my personal data will not be processed

Back Next Clear form

Section A: Demographic Profile	
Please select one answer for each of the following:	
1. Gender * ☐ Male ☐ Female	5. Campus Location * ☐ Johor ☐ Kedah ☐ Kelantan ☐ Malacca ☐ Negeri Sembilan ☐ Pahang ☐ Penang ☐ Perak ☐ Perlis ☐ Sabah ☐ Sarawak ☐ Selangor ☐ Terengganu ☐ Federal Territory of Kuala Lumpur ☐ Federal Territory of Labuan ☐ Federal Territory of Putrajaya
2. Age * ☐ 18 and below ☐ 19 - 21 ☐ 22 - 24 ☐ 25 and above	
3. Ethnic Group * ☐ Malay ☐ Chinese ☐ Indian ☐ Other: _____	
4. Current Educational Level * ☐ Foundation ☐ Diploma ☐ Degree ☐ Master ☐ PhD ☐ Other: _____	
6. How do you rate your sleep quality? * ☐ Very Poor ☐ Fairly Poor ☐ Fairly Good ☐ Very Good	
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Section B: Sleep Quality

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

Level of agreement

1 - Strongly disagree

2 - Disagree

3 - Neutral

4 - Agree

5 - Strongly agree

1. I have difficulty falling asleep. *

12345

Strongly disagreeStrongly agree

2. I fall into a deep sleep. *

12345

Strongly disagreeStrongly agree

3. I toss and turn. *

12345

Strongly disagreeStrongly agree

4. I feel refreshed after sleep. *

12345

Strongly disagreeStrongly agree

5. Poor sleep makes me irritated. *

12345

Strongly disagreeStrongly agree

6. My sleep hours are enough. *

12345

Strongly disagreeStrongly agree

7. Poor sleep makes me loss interest in study or others. *

12345

Strongly disagreeStrongly agree

8. Poor sleep makes me lose desire in all things. *

12345

Strongly disagreeStrongly agree

9. Poor things makes me forget things more easily. *

12345

Strongly disagreeStrongly agree

10. Poor sleep makes it hard to concentrate at study. *

12345

Strongly disagreeStrongly agree

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Section C: Screen Use

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

Level of agreement

1 - Strongly disagree

2 - Disagree

3 - Neutral

4 - Agree

5 - Strongly agree

1. My mind is constantly busy with one or more screens of the television, phone, *
tablet, computer, etc.

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

2. I often spend more time with any screen (TV, computer, tablet, phone, etc.) than *
I planned.

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

3. I cannot control the time I spend in front of any screen. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

4. I have a TV set or an Internet-connected electronic device (computer, iPad, and *
phone) in my bedroom.

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

5. I spend a lot of time on social media. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

6. I use digital devices before sleeping *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

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Section D: Caffeine Intake (e.g. coca-cola, pepsi, mountain dew, energy drink, chocolate, coffee, and tea)

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

Level of agreement

1 - Strongly disagree

2 - Disagree

3 - Neutral

4 - Agree

5 - Strongly agree

1. Caffeine helps me when I am tired. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☒ Strongly agree

2. I find that caffeine improves my ability to concentrate. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☒ ☐ Strongly agree

3. I rely on caffeine to help me stay awake. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☒ ☐ Strongly agree

4. Consuming caffeinated beverages has become part of my daily routine. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☒ ☐ ☐ Strongly agree

5. I find it relaxing to drink caffeinated beverages.

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☒ ☐ Strongly agree

Clear selection

6. After consuming caffeine, I feel refreshed. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☒ ☐ Strongly agree

7. Caffeine makes me feel more energetic. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☒ ☐ ☐ Strongly agree

8. I enjoy the atmosphere associated with consuming caffeinated beverages. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☒ ☐ Strongly agree

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Section E: Stress Level

Based on your personal experience, please select the most appropriate option that best indicates your agreement level with the following statements.

Level of agreement

1 - Strongly disagree

2 - Disagree

3 - Neutral

4 - Agree

5 - Strongly agree

1. In the last month, have been upset because of something that happened unexpectedly. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

2. In the last month, I have felt that I am unable to control the important things in my life. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

3. In the last month, I have felt nervous and "stressed". *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

4. In the last month, I have felt confident about my ability to handle my personal problems. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

5. In the last month, I have felt that things were going my way. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

6. In the last month, I have found that I could not cope with all the things that I had to do. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

7. In the last month, I have been able to control irritations in my life. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

8. In the last month, I have felt that I am on top of things. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

9. In the last month, I have been angered because of things that were outside of my control. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

10. In the last month, I have felt difficulties were piling up so high that I could not overcome them. *

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

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Impact of Lifestyle and Psychological Factors on Low Sleep Quality Among University Students in Malaysia

APPENDIX D

Pilot Study's SPSS Variable View

Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1 Gender	Numeric	8	2	Gender	(1.00, Male), None	None	8	Right	Nominal	Input
2 Age	Numeric	8	2	Age	(1.00, 18 an...	None	8	Right	Ordinal	Input
3 EthnicGroup	Numeric	8	2	EthnicGroup	(1.00, Malay...	None	8	Right	Nominal	Input
4 Other_Ethni...	String	25	0	Other_EthnicGroup	None	None	8	Left	Nominal	Input
5 Educational_...	Numeric	8	2	Educational_level	(1.00, Four...	None	8	Right	Ordinal	Input
6 Other_Educ_...	String	25	0	Other_Educational_level	None	None	8	Left	Nominal	Input
7 CampusLoca...	Numeric	8	2	CampusLocation	(1.00, Johor...	None	8	Right	Nominal	Input
8 RateSleep_...	Numeric	8	2	How do you rate your sleep quality?	(1.00, Very...	None	8	Right	Ordinal	Input
9 SQ1	Numeric	8	2	I have difficulty falling asleep.	(1.00, Stron...	None	8	Right	Scale	Input
10 SQ2	Numeric	8	2	I fall into a deep sleep.	(1.00, Stron...	None	8	Right	Scale	Input
11 SQ3	Numeric	8	2	I toss and turn.	(1.00, Stron...	None	8	Right	Scale	Input
12 SQ4	Numeric	8	2	I feel refreshed after sleep.	(1.00, Stron...	None	8	Right	Scale	Input
13 SQ5	Numeric	8	2	Poor sleep makes me irritable.	(1.00, Stron...	None	8	Right	Scale	Input
14 SQ6	Numeric	8	2	My sleep hours are enough.	(1.00, Stron...	None	8	Right	Scale	Input
15 SQ7	Numeric	8	2	Poor sleep makes me lose interest in study or others.	(1.00, Stron...	None	8	Right	Scale	Input
16 SQ8	Numeric	8	2	Poor sleep makes me lose desire in all things.	(1.00, Stron...	None	8	Right	Scale	Input
17 SQ9	Numeric	8	2	Poor sleep makes me forget things more easily.	(1.00, Stron...	None	8	Right	Scale	Input
18 SQ10	Numeric	8	2	Poor sleep makes it hard to concentrate at study.	(1.00, Stron...	None	8	Right	Scale	Input
19 SU1	Numeric	8	2	My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	(1.00, Stron...	None	8	Right	Scale	Input
20 SU2	Numeric	8	2	I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	(1.00, Stron...	None	8	Right	Scale	Input
21 SU3	Numeric	8	2	I cannot control the time I spend in front of any screen.	(1.00, Stron...	None	8	Right	Scale	Input
22 SU4	Numeric	8	2	I keep without sleep deprived because I control any screen or watch something on that screen.	(1.00, Stron...	None	8	Right	Scale	Input
23 SU5	Numeric	8	2	I have rules regarding when, where, what, and how to watch digital screen.	(1.00, Stron...	None	8	Right	Scale	Input
24 SU6	Numeric	8	2	I have a TV set or an internet-connected electronic device (computer, iPad, and phone) in your bedroom.	(1.00, Stron...	None	8	Right	Scale	Input
25 SU7	Numeric	8	2	Spend time online on social media.	(1.00, Stron...	None	8	Right	Scale	Input
26 SU8	Numeric	8	2	Use a computer/laptop for studying.	(1.00, Stron...	None	8	Right	Scale	Input
27 SU9	Numeric	8	2	In the past week, you had phone calls, text messages, or emails that wake you after trying to go to sleep.	(1.00, Stron...	None	8	Right	Scale	Input
28 SU10	Numeric	8	2	In the past week, when you woke up during the night, you have used your phone or other device to send messages/play games/search or browse the Internet/use social media/read or write emails.	(1.00, Stron...	None	8	Right	Scale	Input
29 C11	Numeric	8	2	Caffeine helps me when I am tired.	(1.00, Stron...	None	8	Right	Scale	Input
30 C12	Numeric	8	2	I find that caffeine improves my ability to concentrate.	(1.00, Stron...	None	8	Right	Scale	Input
31 C13	Numeric	8	2	Drinking caffeinated beverages is important in social situations.	(1.00, Stron...	None	8	Right	Scale	Input
32 C14	Numeric	8	2	I rely on caffeine to help me stay awake.	(1.00, Stron...	None	8	Right	Scale	Input
33 C15	Numeric	8	2	Consuming caffeinated beverages has become part of my daily routine.	(1.00, Stron...	None	8	Right	Scale	Input
34 C16	Numeric	8	2	It is good to relax with a cup of a caffeinated beverage.	(1.00, Stron...	None	8	Right	Scale	Input
35 C17	Numeric	8	2	After consuming caffeine, I feel refreshed.	(1.00, Stron...	None	8	Right	Scale	Input
36 C18	Numeric	8	2	It makes me feel that I am full of energy.	(1.00, Stron...	None	8	Right	Scale	Input
37 C19	Numeric	8	2	I enjoy the atmosphere associated with consuming caffeinated beverages.	(1.00, Stron...	None	8	Right	Scale	Input
38 C110	Numeric	8	2	It has become a ritual for me.	(1.00, Stron...	None	8	Right	Scale	Input
39 SL1	Numeric	8	2	In the last month, I have been upset because of something that happened unexpectedly.	(1.00, Stron...	None	8	Right	Scale	Input
40 SL2	Numeric	8	2	In the last month, I have felt that I am unable to control the important things in my life.	(1.00, Stron...	None	8	Right	Scale	Input
41 SL3	Numeric	8	2	In the last month, I have felt nervous and "stressed".	(1.00, Stron...	None	8	Right	Scale	Input
42 SL4	Numeric	8	2	In the last month, I have felt confident about my ability to handle my personal problems.	(1.00, Stron...	None	8	Right	Scale	Input
19 SU1	Numeric	8	2	My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	(1.00, Stron...	None	8	Right	Scale	Input
20 SU2	Numeric	8	2	I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	(1.00, Stron...	None	8	Right	Scale	Input
21 SU3	Numeric	8	2	I cannot control the time I spend in front of any screen.	(1.00, Stron...	None	8	Right	Scale	Input
22 SU4	Numeric	8	2	I keep without sleep deprived because I control any screen or watch something on that screen.	(1.00, Stron...	None	8	Right	Scale	Input
23 SU5	Numeric	8	2	I have rules regarding when, where, what, and how to watch digital screen.	(1.00, Stron...	None	8	Right	Scale	Input
24 SU6	Numeric	8	2	I have a TV set or an internet-connected electronic device (computer, iPad, and phone) in your bedroom.	(1.00, Stron...	None	8	Right	Scale	Input
25 SU7	Numeric	8	2	Spend time online on social media.	(1.00, Stron...	None	8	Right	Scale	Input
26 SU8	Numeric	8	2	Use a computer/laptop for studying.	(1.00, Stron...	None	8	Right	Scale	Input
27 SU9	Numeric	8	2	In the past week, you had phone calls, text messages, or emails that wake you after trying to go to sleep.	(1.00, Stron...	None	8	Right	Scale	Input
28 SU10	Numeric	8	2	In the past week, when you woke up during the night, you have used your phone or other device to send messages/play games/search or browse the Internet/use social media/read or write emails.	(1.00, Stron...	None	8	Right	Scale	Input
29 C11	Numeric	8	2	Caffeine helps me when I am tired.	(1.00, Stron...	None	8	Right	Scale	Input
30 C12	Numeric	8	2	I find that caffeine improves my ability to concentrate.	(1.00, Stron...	None	8	Right	Scale	Input
31 C13	Numeric	8	2	Drinking caffeinated beverages is important in social situations.	(1.00, Stron...	None	8	Right	Scale	Input
32 C14	Numeric	8	2	I rely on caffeine to help me stay awake.	(1.00, Stron...	None	8	Right	Scale	Input
33 C15	Numeric	8	2	Consuming caffeinated beverages has become part of my daily routine.	(1.00, Stron...	None	8	Right	Scale	Input
34 C16	Numeric	8	2	It is good to relax with a cup of a caffeinated beverage.	(1.00, Stron...	None	8	Right	Scale	Input
35 C17	Numeric	8	2	After consuming caffeine, I feel refreshed.	(1.00, Stron...	None	8	Right	Scale	Input
36 C18	Numeric	8	2	It makes me feel that I am full of energy.	(1.00, Stron...	None	8	Right	Scale	Input
37 C19	Numeric	8	2	I enjoy the atmosphere associated with consuming caffeinated beverages.	(1.00, Stron...	None	8	Right	Scale	Input
38 C110	Numeric	8	2	It has become a ritual for me.	(1.00, Stron...	None	8	Right	Scale	Input
39 SL1	Numeric	8	2	In the last month, I have been upset because of something that happened unexpectedly.	(1.00, Stron...	None	8	Right	Scale	Input
40 SL2	Numeric	8	2	In the last month, I have felt that I am unable to control the important things in my life.	(1.00, Stron...	None	8	Right	Scale	Input
41 SL3	Numeric	8	2	In the last month, I have felt nervous and "stressed".	(1.00, Stron...	None	8	Right	Scale	Input
42 SL4	Numeric	8	2	In the last month, I have felt confident about my ability to handle my personal problems.	(1.00, Stron...	None	8	Right	Scale	Input
43 SL5	Numeric	8	2	In the last month, I have felt that things were going my way.	(1.00, Stron...	None	8	Right	Scale	Input
44 SL6	Numeric	8	2	In the last month, I have found that I could not cope with all the things that I had to do.	(1.00, Stron...	None	8	Right	Scale	Input
45 SL7	Numeric	8	2	In the last month, I have been able to control emotions in my life.	(1.00, Stron...	None	8	Right	Scale	Input
46 SL8	Numeric	8	2	In the last month, I have felt that I am on top of things.	(1.00, Stron...	None	8	Right	Scale	Input
47 SL9	Numeric	8	2	In the last month, I have been angered because of things that were outside of my control.	(1.00, Stron...	None	8	Right	Scale	Input
48 SL10	Numeric	8	2	In the last month, I have felt difficulties were piling up so high that I could not overcome them.	(1.00, Stron...	None	8	Right	Scale	Input
49 R_SQ2	Numeric	8	2	I fall into a deep sleep.	(1.00, Stron...	None	10	Right	Scale	Input
50 R_SQ4	Numeric	8	2	I feel refreshed after sleep.	(1.00, Stron...	None	10	Right	Scale	Input
51 R_SQ6	Numeric	8	2	My sleep hours are enough.	(1.00, Stron...	None	10	Right	Scale	Input
52 R_SQ5	Numeric	8	2	I have rules regarding when, where, what, and how to watch digital screen.	(1.00, Stron...	None	10	Right	Scale	Input
53 R_SL4	Numeric	8	2	In the last month, I have felt confident about your ability to handle my personal problems.	(1.00, Stron...	None	10	Right	Scale	Input
54 R_SL5	Numeric	8	2	In the last month, I have felt that things were going my way.	(1.00, Stron...	None	10	Right	Scale	Input
55 R_SL7	Numeric	8	2	In the last month, I have been able to control emotions in my life.	(1.00, Stron...	None	10	Right	Scale	Input
56 R_SL8	Numeric	8	2	In the last month, I have felt that I am on top of things.	(1.00, Stron...	None	10	Right	Scale	Input
57 SQ_mean	Numeric	8	2		(1.00, Stron...	None	10	Right	Scale	Input
58 SU_mean	Numeric	8	2		(1.00, Stron...	None	10	Right	Scale	Input
59 C1_mean	Numeric	8	2		(1.00, Stron...	None	10	Right	Scale	Input
60 SL_mean	Numeric	8	2		(1.00, Stron...	None	10	Right	Scale	Input

APPENDIX F

Pilot Study's SPSS Results (Cronbach's Alpha)

Dependent Variable: Sleep Quality (SQ)

Scale: Reliability Test For Sleep Quality

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.726	10

Item Statistics

	Mean	Std. Deviation	N
I have difficulty falling asleep.	3.0000	1.28654	30
I fall into a deep sleep.	2.4000	1.22051	30
I toss and turn.	3.6333	1.09807	30
I feel refreshed after sleep.	2.6000	1.24845	30
Poor sleep makes me irritated.	4.0333	1.15917	30
My sleep hours are enough.	2.9000	1.24152	30
Poor sleep makes me loss interest in study or others.	3.8667	1.10589	30
Poor sleep makes me lose desire in all things.	3.4667	1.25212	30
Poor sleep makes me forget things more easily.	3.7333	1.14269	30
Poor sleep makes it hard to concentrate at study.	3.9667	.96431	30

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I have difficulty falling asleep.	30.6000	36.179	.129	.747
I fall into a deep sleep.	31.2000	34.166	.293	.719
I toss and turn.	29.9667	34.171	.347	.710
I feel refreshed after sleep.	31.0000	32.552	.402	.701
Poor sleep makes me irritated.	29.5667	33.495	.372	.706
My sleep hours are enough.	30.7000	29.941	.615	.664
Poor sleep makes me loss interest in study or others.	29.7333	32.547	.481	.690
Poor sleep makes me lose desire in all things.	30.1333	33.016	.365	.707
Poor sleep makes me forget things more easily.	29.8667	32.051	.501	.686
Poor sleep makes it hard to concentrate at study.	29.6333	34.378	.400	.703

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
33.6000	39.834	6.31146	10

Reliability

Independent Variable 1: Screen Use (SU)

Scale: Reliability Test For Screen Use

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.777	10

Item Statistics

	Mean	Std. Deviation	N
My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	4.0000	1.05045	30
I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	4.0333	1.06620	30
I cannot control the time I spend in front of any screen.	3.3667	1.24522	30
I keep without sleep deprived because I control any screen or watch something on that screen.	3.2667	1.17248	30
I have rules regarding when, where, what, and how to watch digital screen.	2.7667	1.25075	30
I have a TV set or an Internet-connected electronic device (computer, iPad, and phone) in your bedroom.	4.0333	1.18855	30
Spend time online on social media.	4.2000	.84690	30
Use a computer/laptop for studying.	4.6000	.56324	30
In the past week, you had phone calls, text messages, or emails that wake you after trying to go to sleep.	2.9000	1.34805	30
In the past week, when you woke up during the night, you have used your phone or other device to send messages/play games/search or browse the Internet/use social media/read or write emails.	3.4000	1.30252	30

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	32.5667	34.392	.549	.746
I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	32.5333	32.671	.693	.727
I cannot control the time I spend in front of any screen.	33.2000	33.338	.512	.749
I keep without sleep deprived because I control any screen or watch something on that screen.	33.3000	31.941	.674	.726
I have rules regarding when, where, what, and how to watch digital screen.	33.8000	36.924	.248	.786
I have a TV set or an Internet-connected electronic device (computer, iPad, and phone) in your bedroom.	32.5333	36.602	.295	.778
Spend time online on social media.	32.3667	34.516	.706	.735
Use a computer/laptop for studying.	31.9667	41.826	.015	.792
In the past week, you had phone calls, text messages, or emails that wake you after trying to go to sleep.	33.6667	34.299	.389	.768
In the past week, when you woke up during the night, you have used your phone or other device to send messages/play games/search or browse the Internet/use social media/read or write emails.	33.1667	34.213	.416	.763

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
36.5667	42.254	6.50031	10

Reliability

Independent Variable 2: Caffeine Intake (CI)

Scale: Reliability Test For Caffeine Intake

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.896	10

Item Statistics

	Mean	Std. Deviation	N
Caffeine helps me when I am tired.	3.5333	1.19578	30
I find that caffeine improves my ability to concentrate.	3.9333	.98027	30
Drinking caeinated beverages is important in social situations.	3.1667	1.36668	30
I rely on caffeine to help me stay awake.	3.8000	.96132	30
Consuming caffeinated beverages has become part of my daily routine.	2.7333	1.33735	30
It is good to relax with a cup of a caeinated beverage.	3.4333	1.33089	30
After consuming caffeine, i feel refreshed.	3.6667	1.02833	30
It makes me feel that I am full of energy.	3.7000	1.11880	30
I enjoy the atmosphere associated wirth consuming caffeinated beverages.	3.5000	1.13715	30
It has become a ritual for me.	2.7667	1.45468	30

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Caffeine helps me when I am tired.	30.7000	63.528	.509	.894
I find that caffeine improves my ability to concentrate.	30.3000	66.562	.447	.897
Drinking caeinated beverages is important in social situations.	31.0667	57.582	.734	.879
I rely on caffeine to help me stay awake.	30.4333	64.944	.568	.891
Consuming caffeinated beverages has become part of my daily routine.	31.5000	58.741	.690	.882
It is good to relax with a cup of a caeinated beverage.	30.8000	59.959	.628	.887
After consuming caffeine, i feel refreshed.	30.5667	61.633	.742	.880
It makes me feel that I am full of energy.	30.5333	60.671	.731	.880
I enjoy the atmosphere associated wirth consuming caffeinated beverages.	30.7333	63.582	.540	.892
It has become a ritual for me.	31.4667	54.602	.835	.871

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
34.2333	74.668	8.64105	10

Reliability

Independent Variable 3: Stress Level (SL)

Scale: Reliability Test For Stress Level

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.759	10

Item Statistics

	Mean	Std. Deviation	N
In the last month, I have been upset because of something that happened unexpectedly.	3.6000	1.37966	30
In the last month, I have felt that I am unable to control the important things in my life.	3.4000	1.32873	30
In the last month, I have felt nervous and "stressed".	3.8333	1.23409	30
In the last month, I have felt confident about your ability to handle my personal problems.	2.3000	1.05536	30
In the last month, I have felt that things were going my way.	2.7667	1.00630	30
In the last month, I have found that I could not cope with all the things that I had to do.	3.1333	1.19578	30
In the last month, I have been able to control irritations in my life.	2.6667	1.18419	30
In the last month, I have felt that I am on top of things.	2.9000	1.18467	30
In the last month, I have been angered because of things that were outside of my control.	3.5667	1.27802	30
In the last month, I have felt difficulties were piling up so high that I could not overcome them.	3.3667	1.32570	30

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
In the last month, I have been upset because of something that happened unexpectedly.	27.9333	36.202	.545	.720
In the last month, I have felt that I am unable to control the important things in my life.	28.1333	33.568	.768	.683
In the last month, I have felt nervous and "stressed".	27.7000	35.390	.697	.698
In the last month, I have felt confident about your ability to handle my personal problems.	29.2333	46.254	-.015	.789
In the last month, I have felt that things were going my way.	28.7667	43.495	.199	.765
In the last month, I have found that I could not cope with all the things that I had to do.	28.4000	42.455	.210	.767
In the last month, I have been able to control irritations in my life.	28.8667	42.602	.204	.767
In the last month, I have felt that I am on top of things.	28.6333	40.585	.342	.750
In the last month, I have been angered because of things that were outside of my control.	27.9667	36.792	.563	.718
In the last month, I have felt difficulties were piling up so high that I could not overcome them.	28.1667	34.833	.675	.699

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
31.5333	47.154	6.86688	10

APPENDIX G

Full Study's SPSS Variable View

Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1 Gender	Numeric	8	2	Gender	(1.00, Male), None	8	8	Right	Nominal	Input
2 Age	Numeric	8	2	Age	(1.00, 18 an., None	8	8	Right	Ordinal	Input
3 EthnicGroup	Numeric	8	2	EthnicGroup	(1.00, Malay, None	8	8	Right	Nominal	Input
4 Other_Ethnic	String	25	0	Other_EthnicGroup	None	None	8	Left	Nominal	Input
5 Educational_Level	Numeric	8	2	CurrentEducationalLevel	(1.00, Four., None	8	8	Right	Ordinal	Input
6 Other_Educ.,_String	String	25	0	Other_CurrentEducationalLevel	None	None	8	Left	Nominal	Input
7 CampusLoca...	Numeric	8	2	CampusLocation	(1.00, Johor., None	8	8	Right	Nominal	Input
8 RateSleep...	Numeric	8	2	How do you rate your sleep quality?	(1.00, Very., None	8	8	Right	Ordinal	Input
9 S01	Numeric	8	2	I have difficulty falling asleep.	(1.00, Stron., None	8	8	Right	Scale	Input
10 S02	Numeric	8	2	I fall into a deep sleep.	(1.00, Stron., None	8	8	Right	Scale	Input
11 S03	Numeric	8	2	I lose and turn.	(1.00, Stron., None	8	8	Right	Scale	Input
12 S04	Numeric	8	2	I feel refreshed after sleep.	(1.00, Stron., None	8	8	Right	Scale	Input
13 S05	Numeric	8	2	Poor sleep makes me irritated	(1.00, Stron., None	8	8	Right	Scale	Input
14 S06	Numeric	8	2	My sleep hours are enough.	(1.00, Stron., None	8	8	Right	Scale	Input
15 S07	Numeric	8	2	Poor sleep makes me lose interest in study or others.	(1.00, Stron., None	8	8	Right	Scale	Input
16 S08	Numeric	8	2	Poor sleep makes me lose desire in all things.	(1.00, Stron., None	8	8	Right	Scale	Input
17 S09	Numeric	8	2	Poor sleep makes me forget things more easily.	(1.00, Stron., None	8	8	Right	Scale	Input
18 S010	Numeric	8	2	Poor sleep makes it hard to concentrate at study.	(1.00, Stron., None	8	8	Right	Scale	Input
19 S011	Numeric	8	2	My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	(1.00, Stron., None	8	8	Right	Scale	Input
20 S012	Numeric	8	2	I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	(1.00, Stron., None	8	8	Right	Scale	Input
21 S013	Numeric	8	2	I cannot control the time I spend in front of any screen.	(1.00, Stron., None	8	8	Right	Scale	Input
22 S014	Numeric	8	2	I have a TV set or an internet-connected electronic device (computer, iPad, and phone) in my bedroom.	(1.00, Stron., None	8	8	Right	Scale	Input
23 S015	Numeric	8	2	I spend a lot of time on social media.	(1.00, Stron., None	8	8	Right	Scale	Input
24 S016	Numeric	8	2	I use digital devices before sleeping.	(1.00, Stron., None	8	8	Right	Scale	Input
25 C01	Numeric	8	2	Caffeine helps me when I am tired.	(1.00, Stron., None	8	8	Right	Scale	Input
26 C02	Numeric	8	2	I find that caffeine improves my ability to concentrate.	(1.00, Stron., None	8	8	Right	Scale	Input
27 C03	Numeric	8	2	I rely on caffeine to help me stay awake.	(1.00, Stron., None	8	8	Right	Scale	Input
28 C04	Numeric	8	2	Consuming caffeinated beverages has become part of my daily routine.	(1.00, Stron., None	8	8	Right	Scale	Input
29 C05	Numeric	8	2	I find it relaxing to drink caffeinated beverages.	(1.00, Stron., None	8	8	Right	Scale	Input
30 C06	Numeric	8	2	After consuming caffeine, I feel refreshed.	(1.00, Stron., None	8	8	Right	Scale	Input
31 C07	Numeric	8	2	Caffeine makes me feel more energetic.	(1.00, Stron., None	8	8	Right	Scale	Input
32 C08	Numeric	8	2	I enjoy the atmosphere associated with consuming caffeinated beverages.	(1.00, Stron., None	8	8	Right	Scale	Input
33 SL1	Numeric	8	2	In the last month, have been upset because of something that happened unexpectedly.	(1.00, Stron., None	8	8	Right	Scale	Input
34 SL2	Numeric	8	2	In the last month, I have felt that I am unable to control the important things in my life.	(1.00, Stron., None	8	8	Right	Scale	Input
35 SL3	Numeric	8	2	In the last month, I have felt nervous and "stressed".	(1.00, Stron., None	8	8	Right	Scale	Input
36 SL4	Numeric	8	2	In the last month, I have felt confident about my ability to handle my personal problems.	(1.00, Stron., None	8	8	Right	Scale	Input
37 SL5	Numeric	8	2	In the last month, I have felt that things were going my way.	(1.00, Stron., None	8	8	Right	Scale	Input
38 SL6	Numeric	8	2	In the last month, I have found that I could not cope with all the things that I had to do.	(1.00, Stron., None	8	8	Right	Scale	Input
39 SL7	Numeric	8	2	In the last month, I have been able to control irritations in my life.	(1.00, Stron., None	8	8	Right	Scale	Input
40 SL8	Numeric	8	2	In the last month, I have felt that I am on top of things.	(1.00, Stron., None	8	8	Right	Scale	Input
41 SL9	Numeric	8	2	In the last month, I have been angered because of things that were outside of my control.	(1.00, Stron., None	8	8	Right	Scale	Input
42 SL10	Numeric	8	2	In the last month, I have felt difficulties were piling up so high that I could not overcome them.	(1.00, Stron., None	8	8	Right	Scale	Input
13 S05	Numeric	8	2	Poor sleep makes me irritated	(1.00, Stron., None	8	8	Right	Scale	Input
14 S06	Numeric	8	2	My sleep hours are enough.	(1.00, Stron., None	8	8	Right	Scale	Input
15 S07	Numeric	8	2	Poor sleep makes me lose interest in study or others.	(1.00, Stron., None	8	8	Right	Scale	Input
16 S08	Numeric	8	2	Poor sleep makes me lose desire in all things.	(1.00, Stron., None	8	8	Right	Scale	Input
17 S09	Numeric	8	2	Poor sleep makes me forget things more easily.	(1.00, Stron., None	8	8	Right	Scale	Input
18 S010	Numeric	8	2	Poor sleep makes it hard to concentrate at study.	(1.00, Stron., None	8	8	Right	Scale	Input
19 S011	Numeric	8	2	My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	(1.00, Stron., None	8	8	Right	Scale	Input
20 S012	Numeric	8	2	I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	(1.00, Stron., None	8	8	Right	Scale	Input
21 S013	Numeric	8	2	I cannot control the time I spend in front of any screen.	(1.00, Stron., None	8	8	Right	Scale	Input
22 S014	Numeric	8	2	I have a TV set or an internet-connected electronic device (computer, iPad, and phone) in my bedroom.	(1.00, Stron., None	8	8	Right	Scale	Input
23 S015	Numeric	8	2	I spend a lot of time on social media.	(1.00, Stron., None	8	8	Right	Scale	Input
24 S016	Numeric	8	2	I use digital devices before sleeping.	(1.00, Stron., None	8	8	Right	Scale	Input
25 C01	Numeric	8	2	Caffeine helps me when I am tired.	(1.00, Stron., None	8	8	Right	Scale	Input
26 C02	Numeric	8	2	I find that caffeine improves my ability to concentrate.	(1.00, Stron., None	8	8	Right	Scale	Input
27 C03	Numeric	8	2	I rely on caffeine to help me stay awake.	(1.00, Stron., None	8	8	Right	Scale	Input
28 C04	Numeric	8	2	Consuming caffeinated beverages has become part of my daily routine.	(1.00, Stron., None	8	8	Right	Scale	Input
29 C05	Numeric	8	2	I find it relaxing to drink caffeinated beverages.	(1.00, Stron., None	8	8	Right	Scale	Input
30 C06	Numeric	8	2	After consuming caffeine, I feel refreshed.	(1.00, Stron., None	8	8	Right	Scale	Input
31 C07	Numeric	8	2	Caffeine makes me feel more energetic.	(1.00, Stron., None	8	8	Right	Scale	Input
32 C08	Numeric	8	2	I enjoy the atmosphere associated with consuming caffeinated beverages.	(1.00, Stron., None	8	8	Right	Scale	Input
33 SL1	Numeric	8	2	In the last month, have been upset because of something that happened unexpectedly.	(1.00, Stron., None	8	8	Right	Scale	Input
34 SL2	Numeric	8	2	In the last month, I have felt that I am unable to control the important things in my life.	(1.00, Stron., None	8	8	Right	Scale	Input
35 SL3	Numeric	8	2	In the last month, I have felt nervous and "stressed".	(1.00, Stron., None	8	8	Right	Scale	Input
36 SL4	Numeric	8	2	In the last month, I have felt confident about my ability to handle my personal problems.	(1.00, Stron., None	8	8	Right	Scale	Input
37 SL5	Numeric	8	2	In the last month, I have felt that things were going my way.	(1.00, Stron., None	8	8	Right	Scale	Input
38 SL6	Numeric	8	2	In the last month, I have found that I could not cope with all the things that I had to do.	(1.00, Stron., None	8	8	Right	Scale	Input
39 SL7	Numeric	8	2	In the last month, I have been able to control irritations in my life.	(1.00, Stron., None	8	8	Right	Scale	Input
40 SL8	Numeric	8	2	In the last month, I have felt that I am on top of things.	(1.00, Stron., None	8	8	Right	Scale	Input
41 SL9	Numeric	8	2	In the last month, I have been angered because of things that were outside of my control.	(1.00, Stron., None	8	8	Right	Scale	Input
42 SL10	Numeric	8	2	In the last month, I have felt difficulties were piling up so high that I could not overcome them.	(1.00, Stron., None	8	8	Right	Scale	Input
43 S02R	Numeric	8	2	I fall into a deep sleep.	(1.00, Stron., None	10	8	Right	Scale	Input
44 S04R	Numeric	8	2	I feel refreshed after sleep.	(1.00, Stron., None	10	8	Right	Scale	Input
45 S06R	Numeric	8	2	My sleep hours are enough.	(1.00, Stron., None	10	8	Right	Scale	Input
46 S04R	Numeric	8	2	In the last month, I have felt confident about my ability to handle my personal problems.	(1.00, Stron., None	10	8	Right	Scale	Input
47 S05R	Numeric	8	2	In the last month, I have felt that things were going my way.	(1.00, Stron., None	10	8	Right	Scale	Input
48 S07R	Numeric	8	2	In the last month, I have been able to control irritations in my life.	(1.00, Stron., None	10	8	Right	Scale	Input
49 S08R	Numeric	8	2	In the last month, I have felt that I am on top of things.	(1.00, Stron., None	10	8	Right	Scale	Input
50 SO_AVE	Numeric	8	2	SO Average	(1.00, Stron., None	10	8	Right	Scale	Input
51 SU_AVE	Numeric	8	2	SU Average	(1.00, Stron., None	10	8	Right	Scale	Input
52 CL_AVE	Numeric	8	2	CL Average	(1.00, Stron., None	10	8	Right	Scale	Input
53 SL_AVE	Numeric	8	2	SL Average	(1.00, Stron., None	10	8	Right	Scale	Input

Impact of Lifestyle and Psychological Factors on Low Sleep Quality Among University Students in Malaysia

APPENDIX H

Full Study's SPSS Data View

Gender				Age	Ethnic Group	Other Ethnic Group	Education Level	Other Education Level	Campus Location	Rate of Sleep Quality	SQ1	SQ2	SQ3	SQ4	SQ5	SQ6	SQ7	SQ8	SQ9	SQ10	SQ11	SQ12	SQ13	SQ14	SQ15	SQ16	CI1	CI2	CI3	CI4		
1	1.00	4.00	3.00	5.00	7.00	3.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00		
2	2.00	3.00	3.00	3.00	7.00	3.00	3.00	3.00	4.00	3.00	5.00	2.00	5.00	5.00	3.00	5.00	4.00	3.00	4.00	5.00	4.00	3.00	2.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	
3	2.00	3.00	3.00	3.00	10.00	3.00	3.00	4.00	4.00	4.00	5.00	4.00	5.00	5.00	3.00	4.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	
4	1.00	2.00	2.00	3.00	13.00	3.00	3.00	4.00	3.00	5.00	4.00	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	4.00	3.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	
5	2.00	3.00	2.00	6.00	8.00	3.00	1.00	4.00	4.00	3.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	2.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	
6	2.00	3.00	2.00	3.00	8.00	4.00	2.00	4.00	4.00	2.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	
7	1.00	3.00	2.00	2.00	8.00	2.00	3.00	3.00	2.00	3.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
8	2.00	2.00	2.00	3.00	8.00	3.00	4.00	4.00	4.00	2.00	4.00	2.00	4.00	2.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	5.00	4.00	4.00	3.00	5.00	4.00	5.00	4.00	
9	1.00	3.00	2.00	3.00	8.00	1.00	4.00	4.00	4.00	2.00	5.00	2.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	5.00	4.00	4.00	1.00	1.00	1.00	1.00	1.00	
10	1.00	2.00	2.00	3.00	8.00	1.00	5.00	1.00	5.00	2.00	2.00	4.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.00	1.00	1.00	3.00	1.00	4.00	4.00	
11	1.00	3.00	2.00	3.00	8.00	3.00	2.00	5.00	4.00	5.00	5.00	5.00	4.00	2.00	1.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	2.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
12	2.00	3.00	2.00	3.00	8.00	2.00	1.00	4.00	2.00	5.00	5.00	4.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	2.00	4.00	4.00	4.00	3.00	5.00	2.00	2.00	2.00	
13	1.00	3.00	2.00	3.00	8.00	2.00	2.00	5.00	4.00	2.00	5.00	4.00	4.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	2.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	
14	2.00	2.00	2.00	3.00	8.00	2.00	2.00	4.00	4.00	5.00	4.00	4.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	2.00	2.00	2.00	2.00	
15	2.00	3.00	2.00	3.00	8.00	2.00	1.00	1.00	5.00	2.00	5.00	2.00	5.00	2.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	4.00	5.00	2.00	2.00	2.00	2.00	2.00	2.00	
16	1.00	3.00	1.00	3.00	8.00	2.00	2.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	2.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	
17	2.00	3.00	2.00	3.00	8.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	4.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	3.00	4.00	2.00	3.00	2.00	4.00	1.00	2.00	
18	2.00	3.00	2.00	3.00	8.00	3.00	2.00	2.00	3.00	4.00	5.00	4.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	2.00	3.00	4.00	3.00	2.00	4.00	5.00	4.00	5.00	
19	1.00	3.00	2.00	3.00	8.00	1.00	2.00	3.00	2.00	3.00	5.00	3.00	5.00	5.00	5.00	2.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	1.00	4.00	1.00	5.00	5.00	
20	2.00	3.00	2.00	3.00	8.00	3.00	4.00	3.00	4.00	3.00	5.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	2.00	5.00	5.00	2.00	5.00	2.00	2.00	
21	2.00	3.00	2.00	3.00	8.00	2.00	4.00	1.00	4.00	2.00	4.00	1.00	4.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
22	1.00	3.00	2.00	3.00	8.00	1.00	2.00	4.00	4.00	2.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	2.00	4.00	3.00	4.00	4.00	5.00	4.00	5.00	4.00	
23	2.00	3.00	2.00	3.00	8.00	3.00	4.00	5.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.00	2.00	2.00	2.00	4.00	5.00	4.00	4.00	4.00	4.00	
24	2.00	3.00	2.00	3.00	8.00	3.00	5.00	2.00	5.00	1.00	4.00	1.00	5.00	5.00	4.00	5.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.00	2.00	2.00	2.00	2.00	
25	1.00	2.00	2.00	3.00	8.00	1.00	5.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	
26	2.00	2.00	2.00	3.00	8.00	1.00	1.00	5.00	1.00	5.00	1.00	5.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	1.00	1.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
27	1.00	3.00	2.00	3.00	8.00	2.00	4.00	3.00	3.00	3.00	3.00	2.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00	2.00	3.00	4.00	5.00	4.00	5.00	2.00	1.00	1.00	
28	2.00	3.00	2.00	3.00	8.00	3.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	5.00	5.00	5.00	5.00	4.00	5.00	4.00	5.00	5.00	
29	2.00	3.00	2.00	3.00	15.00	1.00	3.00	4.00	4.00	4.00	2.00	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00	4.00	3.00	4.00	5.00	2.00	2.00	2.00	2.00	2.00	
30	1.00	2.00	2.00	3.00	12.00	2.00	5.00	5.00	5.00	5.00	5.00	1.00	5.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
31	2.00	3.00	2.00	3.00	9.00	1.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.00	4.00	4.00	4.00	1.00	2.00	5.00	1.00	5.00	1.00	
32	1.00	2.00	2.00	3.00	4.00	2.00	3.00	3.00	4.00	3.00	5.00	2.00	5.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	3.00	2.00	2.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	
33	2.00	3.00	2.00	3.00	5.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	5.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	2.00	2.00	2.00	2.00	
34	1.00	2.00	2.00	3.00	9.00	2.00	3.00	4.00	3.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	3.00	2.00	2.00	5.00	5.00	5.00	2.00	2.00	
35	1.00	2.00	2.00	3.00	4.00	3.00	3.00	4.00	4.00	3.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
36	1.00	2.00	2.00	3.00	4.00	3.00	2.00	4.00	4.00	2.00	4.00	2.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
37	2.00	3.00	2.00	3.00	5.00	4.00	3.00	3.00	2.00	3.00	4.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	2.00	3.00	2.00	2.00	2.00	
38	1.00	2.00	2.00	3.00	5.00	2.00	4.00	4.00	4.00	2.00	4.00	2.00	4.00	2.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
39	1.00	3.00	2.00	2.00	12.00	2.00	4.00	4.00	4.00	2.00	5.00	2.00	4.00	2.00	4.00	2.00	4.00	2.00	4.00	4.00	5.00	5.00	4.00	2.00	4.00	4.00	2.00	5.00	4.00	5.00	4.00	5.00
40	1.00	2.00	2.00	3.00	12.00	2.00	5.00	1.00	5.00	2.00	2.00	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
41	2.00	3.00	2.00	3.00	12.00	2.00	2.00	5.00	4.00	5.00	5.00	5.00	4.00	2.00	1.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	4.00	2.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	
42	1.00	3.00	2.00	3.00	12.00	1.00	1.00	4.00	2.00</																							

Impact of Lifestyle and Psychological Factors on Low Sleep Quality Among University Students in Malaysia

[illegible]

Impact of Lifestyle and Psychological Factors on Low Sleep Quality Among University Students in Malaysia

196	200	300	100	300	800	300	200	400	200	400	400	400	400	400	400	200	200	200	500	200	200	200	100
197	100	100	300	300	800	300	300	300	300	300	200	400	400	300	300	200	400	300	400	200	300	500	200
198	200	400	200	400	800	100	200	200	300	400	500	400	500	400	500	200	300	400	300	200	200	100	100
199	200	300	200	300	800	100	200	300	200	300	500	300	500	200	500	500	500	500	500	500	200	200	100
200	100	200	200	300	800	400	400	300	400	300	500	300	300	400	300	300	400	400	200	500	500	500	500
201	200	200	200	100	800	300	400	100	400	200	400	100	400	500	500	400	500	500	400	200	500	400	500
202	200	300	200	300	800	300	200	400	200	500	500	400	400	400	400	400	400	400	500	500	500	100	100
203	200	400	200	400	800	100	400	500	400	200	200	200	200	200	200	400	400	200	200	200	400	500	500
204	200	300	200	300	800	400	500	200	500	100	400	100	500	400	500	400	400	300	300	200	100	100	100
205	200	200	200	300	800	200	500	500	500	400	500	400	500	500	400	500	500	400	500	400	500	500	500
206	200	200	200	300	800	300	100	500	100	500	100	500	300	300	300	300	400	200	100	100	500	200	200
207	200	200	200	300	800	300	400	300	300	300	300	200	400	300	400	400	400	300	200	300	400	500	100
208	200	100	300	100	800	200	400	400	500	400	500	200	200	200	400	400	100	500	200	100	500	100	100
209	200	200	200	100	800	300	300	400	400	400	200	400	400	500	400	400	400	300	400	300	400	500	500
210	100	300	200	300	800	300	500	500	500	500	500	100	500	400	500	500	500	500	500	100	500	400	500
211	100	300	200	300	800	100	400	500	400	500	400	200	200	200	200	400	400	400	200	400	400	100	100
212	200	300	300	300	800	200	300	300	400	300	500	200	500	500	300	500	400	300	200	200	400	500	200
213	200	200	200	100	800	400	300	400	400	400	500	400	300	400	500	500	500	500	500	400	500	500	500
214	200	100	200	100	800	300	300	400	300	500	400	400	500	500	500	500	400	500	400	300	200	100	100
215	100	100	200	100	800	200	100	400	400	300	500	300	500	500	400	400	400	400	400	200	200	500	500
216	100	100	200	100	800	100	200	400	400	200	400	200	400	400	400	400	400	200	400	400	400	400	200
217	100	100	200	100	800	300	300	300	200	300	400	200	400	400	400	400	400	400	400	200	300	100	200
218	100	100	200	100	800	300	400	400	400	200	400	200	400	200	500	500	400	400	500	400	200	500	100
219	200	200	200	100	800	300	400	400	400	200	500	200	400	200	400	400	500	500	400	400	200	400	400
220	200	200	200	100	800	300	500	100	500	200	200	400	100	100	100	200	100	100	100	500	100	200	500
221	200	300	200	300	800	300	200	500	400	500	500	500	400	200	100	500	500	500	400	200	500	500	200
222	200	300	200	300	800	300	100	400	200	500	500	400	400	200	400	400	400	400	200	200	400	200	100
223	100	200	200	300	800	100	200	500	400	200	500	400	400	500	500	400	500	500	200	400	500	200	100
224	100	400	200	300	800	300	200	400	400	500	400	400	200	200	400	400	400	500	400	400	400	400	100
225	200	200	200	300	800	400	100	100	500	200	500	200	500	400	500	500	500	500	400	400	500	500	500
226	200	200	200	300	800	200	200	400	200	400	400	400	400	400	400	400	400	200	200	200	200	500	200
227	100	200	200	300	800	400	300	300	300	300	200	400	400	300	300	200	400	400	300	400	200	300	400
228	100	300	200	300	800	200	200	200	300	400	500	400	500	400	400	500	200	300	400	300	200	100	100
229	100	300	200	300	800	400	200	300	200	300	500	300	500	500	200	500	500	500	500	500	500	200	200
230	200	300	200	300	800	300	400	300	400	300	500	300	300	400	300	300	400	400	400	200	500	500	400
231	100	400	200	300	800	100	400	100	400	200	400	100	400	500	500	400	400	500	500	400	200	500	400
232	200	300	200	300	800	100	200	400	200	500	400	400	400	400	400	500	200	400	300	400	400	400	200
233	200	400	200	300	800	300	400	500	400	200	200	200	200	200	200	200	400	200	200	200	400	400	200
234	200	200	200	300	800	200	500	200	500	100	400	100	500	400	500	400	400	400	300	300	200	200	500
235	200	200	200	300	800	200	500	500	500	400	500	400	500	500	400	400	500	500	500	400	500	400	200
236	100	200	200	300	800	200	100	500	400	200	500	500	300	300	300	400	400	200	100	500	100	500	200
237	200	300	200	300	800	200	400	300	300	300	200	400	400	300	300	400	400	300	200	300	400	500	200
238	200	300	200	200	800	200	400	400	500	400	500	200	200	200	400	400	100	500	200	100	500	500	100
239	100	200	200	300	800	300	300	400	400	400	200	400	500	400	400	400	300	400	300	400	500	500	200
240	100	200	200	300	800	200	500	500	500	500	500	100	500	400	500	500	500	500	500	100	500	500	500
241	100	200	200	300	800	200	400	400	400	400	500	400	400	400	400	400	400	400	200	400	500	400	500
242	100	400	200	300	800	100	300	300	400	300	500	200	500	500	300	500	400	300	200	200	400	500	500
243	200	300	300	300	800	400	300	400	400	400	400	500	400	300	400	500	500	500	400	500	400	100	200
244	200	200	200	300	800	300	300	400	300	500	400	400	500	500	500	500	400	500	400	300	200	200	500
245	200	200	200	300	800	300	100	400	400	300	500	300	500	500	400	400	400	400	200	200	500	500	500
246	200	200	200	300	800	200	200	400	400	200	400	200	400	400	400	400	400	400	200	400	200	500	500
247	100	200	200	300	800	200	300	300	200	300	400	200	400	400	400	400	400	400	400	300	100	100	100
248	200	100	200	100	800	400	400	400	400	200	400	200	400	200	500	500	400	400	500	400	200	500	400
249	200	100	200	100	800	300	400	400	400	200	500	200	400	200	400	400	500	500	400	400	200	100	100
250	200	200	200	100	800	200	500	100	500	200	200	400	100	100	100	200	100	100	100	500	100	400	200
251	200	200	200	100	800	400	200	500	400	500	500	500	400	100	100	500	500	400	400	200	500	100	400
252	200	200	200	100	800	200	100	400	200	500	500	400	400	200	200	400	400	400	400	200	400	500	200
253	200	200	200	300	800	300	200	500	400	200	500	400	400	500	500	400	500	500	200	400	500	200	100
254	200	200	200	100	800	300	200	400	400	500	400	400	200	200	400	400	400	500	400	400	400	500	200
255	200	100	200	100	800	200	100	100	500	200	200	500	200	500	500	500	500	400	400	500	500	500	500
256	200	200	200	300	800	300	200	400	200	400	400	400	400	400	400	400	400	200	200	200	500	500	500
257	200	200	200	300	800	200	300	300	300	200	200	400	400	300	300	200	400	400	300	400	500	500	500
258	200	300	200	300	1200	300	200	200	300	400	500	400	500	400	500	200	300	400					

Impact of Lifestyle and Psychological Factors on Low Sleep Quality Among University Students in Malaysia

313	200	200	200	300	500	200	200	500	400	200	500	400	500	500	400	500	200	400	400	500	400	500	500	500
314	200	300	200	300	400	200	200	400	400	500	400	400	200	200	400	400	500	400	400	400	100	100	100	200
315	200	100	200	300	200	400	100	100	500	200	500	200	500	400	500	500	500	400	400	500	100	100	100	100
316	100	100	200	200	800	200	200	400	200	400	400	400	400	400	400	400	200	200	200	500	500	500	500	
317	200	200	200	300	700	200	300	300	300	300	200	400	400	300	300	200	400	400	300	400	200	300	500	400
318	200	200	200	100	500	200	200	200	300	400	500	400	500	400	500	200	300	400	300	200	200	400	400	500
319	100	200	200	200	100	300	200	300	200	300	500	300	500	500	200	500	500	500	500	500	200	400	500	400
320	100	200	200	300	600	100	400	300	400	300	500	300	300	300	400	300	400	400	400	200	500	500	500	500
321	100	100	200	100	1000	300	400	100	400	200	400	100	400	500	500	400	400	500	500	400	200	500	400	200
322	200	300	200	200	1000	200	200	400	200	500	400	400	400	400	400	500	200	400	300	400	400	500	400	200
323	200	400	200	300	400	200	400	500	400	200	200	200	200	200	200	200	400	400	200	200	400	400	500	500
324	200	400	200	400	1300	400	500	200	500	100	400	100	500	400	500	400	400	300	300	200	200	200	200	200
325	100	300	200	300	500	300	500	500	500	400	500	400	500	500	400	500	500	500	400	500	400	400	500	400
326	200	200	200	300	1200	400	100	500	100	500	100	500	300	300	300	200	400	200	100	100	500	500	100	100
327	200	300	200	300	1500	300	400	300	300	300	300	200	400	300	400	400	300	200	300	400	500	400	100	100
328	200	300	200	400	1000	100	400	400	500	400	500	200	200	200	400	400	100	500	200	100	500	500	400	400
329	200	300	200	500	800	300	300	400	400	400	200	400	400	400	400	400	300	400	300	400	500	400	500	500
330	100	100	200	400	100	200	500	500	500	500	500	100	500	400	500	500	500	500	100	500	100	200	200	200
331	100	300	200	500	600	200	400	500	400	500	400	400	200	200	200	200	400	400	200	400	200	500	200	100
332	200	300	300	400	1600	300	300	300	400	300	500	200	500	500	300	500	400	300	200	200	500	100	200	500
333	100	400	200	300	700	300	300	400	400	400	400	500	400	300	400	500	500	500	400	500	400	500	500	100
334	100	300	300	500	1500	300	300	400	300	500	400	400	500	500	500	400	500	400	300	200	200	500	400	200
335	200	400	200	400	1600	100	100	400	400	300	500	300	500	500	400	400	400	400	400	200	200	500	400	500
336	200	300	200	400	300	200	200	400	400	200	400	200	400	400	400	400	400	200	400	400	500	200	200	100
337	200	300	100	400	500	100	300	300	200	300	400	200	400	400	400	400	400	400	200	300	500	100	500	400
338	100	200	300	500	700	100	400	400	400	200	400	200	400	200	500	500	400	400	500	400	200	500	400	100
339	200	300	100	300	1100	100	400	400	400	200	500	200	400	200	400	400	500	400	200	400	500	200	200	400
340	200	400	300	400	900	400	500	100	500	200	200	400	100	100	100	200	100	100	100	500	100	100	400	200
341	100	400	200	300	1200	400	200	500	400	500	500	500	300	100	500	500	500	400	200	500	400	500	400	500
342	100	400	300	200	800	200	100	400	200	500	500	500	400	200	400	400	400	200	200	400	200	400	500	100
343	100	300	200	400	800	300	200	500	400	200	500	400	400	500	500	400	500	200	400	400	500	100	200	200
344	100	100	200	500	800	300	200	400	400	500	400	400	200	200	400	400	400	500	400	400	400	100	100	500
345	200	300	200	300	900	200	100	100	500	200	500	200	400	500	500	500	500	400	400	500	200	500	500	200
346	100	300	200	100	900	200	200	400	200	400	400	400	400	400	400	400	200	200	200	500	400	400	100	500
347	200	200	300	200	1000	200	300	300	300	300	200	400	400	300	300	200	400	400	300	400	200	300	500	500
348	200	300	100	300	1300	200	200	200	200	300	400	500	400	500	400	500	200	300	400	300	200	200	500	100
349	200	400	200	500	400	300	200	300	200	300	500	300	500	500	200	500	500	500	500	400	500	400	500	400
350	100	300	300	200	300	300	400	300	400	300	500	300	300	300	400	300	400	400	400	200	500	500	400	200
351	200	400	300	300	1500	200	400	100	400	200	400	100	400	500	500	400	400	500	500	400	200	500	500	200
352	200	200	200	400	600	300	200	400	200	500	400	400	400	400	400	500	200	400	300	400	400	500	200	400
353	200	100	200	300	700	200	400	500	400	200	200	200	200	200	200	200	200	400	200	200	200	500	500	500
354	100	200	100	300	100	300	500	200	500	100	400	100	500	400	500	400	400	300	300	300	200	500	200	200
355	100	400	200	200	1000	100	500	500	500	400	500	400	500	500	400	500	500	500	400	500	400	100	400	100
356	200	300	200	500	700	300	100	500	100	500	100	500	300	300	300	300	400	200	100	100	500	500	500	500
357	200	100	200	300	1100	100	400	300	300	300	200	300	200	400	400	400	300	200	300	400	500	500	200	200
358	100	400	100	200	800	300	400	400	500	400	500	200	200	200	400	400	100	500	200	100	500	500	200	400
359	100	100	200	400	1000	300	300	400	400	400	200	400	400	500	400	400	300	400	300	400	500	400	100	500
360	100	300	300	200	1200	100	500	500	500	500	500	100	500	400	500	500	500	500	500	100	500	500	400	500
361	100	400	100	200	900	300	400	500	400	500	400	400	200	200	200	400	400	400	200	400	400	500	100	500
362	100	200	200	100	800	300	300	300	400	300	500	200	500	500	300	500	400	300	200	200	200	400	400	400
363	100	300	300	300	700	100	300	400	400	400	400	500	400	300	400	500	500	400	500	400	400	400	200	500
364	100	300	300	200	1400	100	300	400	300	500	500	400	400	500	500	500	400	400	300	200	200	500	500	400
365	200	100	300	500	700	300	100	400	400	300	500	300	500	500	400	400	400	400	400	200	200	400	100	500
366	100	200	100	400	200	300	200	400	400	200	400	200	400	400	400	400	400	400	200	400	400	400	500	500
367	100	300	200	200	1300	300	300	300	200	300	400	200	400	400	400	400	400	400	200	300	200	200	400	200
368	200	200	200	200	400	100	400	400	400	200	400	200	400	200	500	500	400	400	500	400	200	500	100	200
369	200	100	300	100	1500	100	400	400	400	200	500	200	400	200	400	400	500	400	400	200	400	500	200	400
370	100	300	200	300	300	400	500	100	500	200	200	400	100	100	100	200	100	100	100	500	100	100	400	100
371	100	200	300	100	800	100	200	500	400	500	500	400	200	100	500	500	500	400	400	200	500	500	100	400
372	100	100	300	500	1400	100	100	400	200	500	500	400	400	200	400	400	400	200	200	400	400	500	500	200
373	200	200	200	300	600	3																		

APPENDIX I

SPSS Descriptive Analysis

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	134	34.9	34.9	34.9
	Female	250	65.1	65.1	100.0
	Total	384	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 and below	28	7.3	7.3	7.3
	19 - 21	149	38.8	38.8	46.1
	22 - 24	163	42.4	42.4	88.5
	25 and above	44	11.5	11.5	100.0
	Total	384	100.0	100.0	

EthnicGroup

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	36	9.4	9.4	9.4
	Chinese	299	77.9	77.9	87.2
	Indian	46	12.0	12.0	99.2
	Other	3	.8	.8	100.0
	Total	384	100.0	100.0	

Other_EthnicGroup

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		381	99.2	99.2	99.2
	Chindo (2 + Indonesian)	1	.3	.3	99.5
	Siamese	1	.3	.3	99.7
	Tanzanian	1	.3	.3	100.0
	Total	384	100.0	100.0	

CurrentEducationalLevel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Foundation	43	11.2	11.2	11.2
	Diploma	31	8.1	8.1	19.3
	Degree	259	67.4	67.4	86.7
	Master	37	9.6	9.6	96.4
	PhD	13	3.4	3.4	99.7
	Other	1	.3	.3	100.0
	Total	384	100.0	100.0	

Other_CurrentEducationalLevel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		383	99.7	99.7	99.7
	ACCA	1	.3	.3	100.0
	Total	384	100.0	100.0	

CampusLocation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Johor	8	2.1	2.1	2.1
	Kedah	10	2.6	2.6	4.7
	Kelantan	10	2.6	2.6	7.3
	Malacca	11	2.9	2.9	10.2
	Negeri Sembilan	12	3.1	3.1	13.3
	Pahang	17	4.4	4.4	17.7
	Penang	15	3.9	3.9	21.6
	Perak	209	54.4	54.4	76.0
	Pertis	10	2.6	2.6	78.6
	Sabah	14	3.6	3.6	82.3
	Sarawak	6	1.6	1.6	83.9
	Selangor	26	6.8	6.8	90.6
	Terengganu	14	3.6	3.6	94.3
	Federal Territory of Kuala Lumpur	9	2.3	2.3	96.6
	Federal Territory of Labuan	8	2.1	2.1	98.7
	Federal Territory of Putrajaya	5	1.3	1.3	100.0
	Total	384	100.0	100.0	

How do you rate your sleep quality?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Poor	72	18.8	18.8	18.8
	Fairly Poor	122	31.8	31.8	50.5
	Fairly Good	137	35.7	35.7	86.2
	Very Good	53	13.8	13.8	100.0
	Total	384	100.0	100.0	

APPENDIX J

SPSS Descriptive Statistics of Dependent Variable and Independent Variable

Dependent Variable: Sleep Quality (SQ)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I have difficulty falling asleep.	384	1.00	5.00	2.9896	1.26197
I fall into a deep sleep.	384	1.00	5.00	2.4115	1.20377
I toss and turn.	384	1.00	5.00	3.6302	1.07365
I feel refreshed after sleep.	384	1.00	5.00	2.6120	1.23185
Poor sleep makes me irritated.	384	1.00	5.00	4.0417	1.13032
My sleep hours are enough.	384	1.00	5.00	2.8984	1.21891
Poor sleep makes me loss interest in study or others.	384	1.00	5.00	3.8672	1.08902
Poor sleep makes me lose desire in all things.	384	1.00	5.00	3.4635	1.23429
Poor sleep makes me forget things more easily.	384	1.00	5.00	3.7292	1.13090
Poor sleep makes it hard to concentrate at study.	384	2.00	5.00	3.9661	.95398
Valid N (listwise)	384				

Independent Variable: Screen Use (SU)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	384	1.00	5.00	4.0026	1.02832
I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	384	1.00	5.00	4.0365	1.04655
I cannot control the time I spend in front of any screen.	384	1.00	5.00	3.3698	1.21939
I have a TV set or an Internet-connected electronic device (computer, iPad, and phone) in my bedroom.	384	1.00	5.00	3.2734	1.14747
I spend a lot of time on social media.	384	1.00	5.00	3.2214	1.22441
I use digital devices before sleeping	384	1.00	5.00	4.0208	1.17395
Valid N (listwise)	384				

Independent Variable: Caffeine Intake (CI)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Caffeine helps me when I am tired.	384	1.00	5.00	3.3464	1.58891
I find that caffeine improves my ability to concentrate.	384	1.00	5.00	3.3906	1.52730
I rely on caffeine to help me stay awake.	384	1.00	5.00	3.1875	1.62912
Consuming caffeinated beverages has become part of my daily routine.	384	1.00	5.00	3.0260	1.66498
I find it relaxing to drink caffeinated beverages.	384	1.00	5.00	3.3828	1.58874
After consuming caffeine, I feel refreshed.	384	1.00	5.00	3.5729	1.54815
Caffeine makes me feel more energetic.	384	1.00	5.00	3.5052	1.54649
I enjoy the atmosphere associated with consuming caffeinated beverages.	384	1.00	5.00	3.6406	1.56195
Valid N (listwise)	384				

Independent Variable: Stress Level (SL)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
In the last month, have been upset because of something that happened unexpectedly.	384	1.00	5.00	2.7109	1.31363
In the last month, I have felt that I am unable to control the important things in my life.	384	1.00	5.00	3.4219	1.31437
In the last month, I have felt nervous and "stressed".	384	1.00	5.00	3.6589	1.01466
In the last month, I have felt confident about my ability to handle my personal problems.	384	1.00	4.00	2.3151	1.03827
In the last month, I have felt that things were going my way.	384	1.00	5.00	2.7760	.99179
In the last month, I have found that I could not cope with all the things that I had to do.	384	1.00	5.00	2.7214	1.42450
In the last month, I have been able to control irritations in my life.	384	1.00	4.00	2.6823	1.16435
In the last month, I have felt that I am on top of things.	384	1.00	5.00	2.9167	1.15996
In the last month, I have been angered because of things that were outside of my control.	384	1.00	5.00	3.8281	1.21636
In the last month, I have felt difficulties were piling up so high that I could not overcome them.	384	2.00	5.00	3.6849	1.03827
Valid N (listwise)	384				

APPENDIX K

SPSS Reliability Test

Dependent Variable: Sleep Quality (SQ)

Reliability Statistics

Cronbach's Alpha	N of Items
.724	10

Item Statistics

	Mean	Std. Deviation	N
I have difficulty falling asleep.	2.9896	1.26197	384
I fall into a deep sleep.	2.4115	1.20377	384
I toss and turn.	3.6302	1.07365	384
I feel refreshed after sleep.	2.6120	1.23185	384
Poor sleep makes me irritated.	4.0417	1.13032	384
My sleep hours are enough.	2.8984	1.21891	384
Poor sleep makes me loss interest in study or others.	3.8672	1.08902	384
Poor sleep makes me lose desire in all things.	3.4635	1.23429	384
Poor sleep makes me forget things more easily.	3.7292	1.13090	384
Poor sleep makes it hard to concentrate at study.	3.9661	.95398	384

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I have difficulty falling asleep.	30.6198	35.030	.117	.747
I fall into a deep sleep.	31.1979	32.807	.298	.716
I toss and turn.	29.9792	33.054	.337	.709
I feel refreshed after sleep.	30.9974	31.245	.407	.698
Poor sleep makes me irritated.	29.5677	32.403	.364	.705
My sleep hours are enough.	30.7109	28.833	.615	.661
Poor sleep makes me loss interest in study or others.	29.7422	31.315	.482	.687
Poor sleep makes me lose desire in all things.	30.1458	31.712	.369	.705
Poor sleep makes me forget things more easily.	29.8802	30.816	.500	.683
Poor sleep makes it hard to concentrate at study.	29.6432	33.113	.396	.702

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
33.6094	38.369	6.19429	10

Independent Variable 1: Screen Use (SU)

Reliability Statistics

Cronbach's Alpha	N of Items
.783	5

Item Statistics

	Mean	Std. Deviation	N
My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	4.0026	1.02832	384
I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	4.0365	1.04655	384
I cannot control the time I spend in front of any screen.	3.3698	1.21939	384
I have a TV set or an Internet-connected electronic device (computer, iPad, and phone) in my bedroom.	3.2734	1.14747	384
I use digital devices before sleeping	4.0208	1.17395	384

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My mind is constantly busy with one or more screens of the television, phone, tablet, computer, etc.	14.7005	11.484	.633	.721
I often spend more time with any screen (TV, computer, tablet, phone, etc.) than I planned.	14.6667	11.403	.630	.721
I cannot control the time I spend in front of any screen.	15.3333	10.818	.579	.736
I have a TV set or an Internet-connected electronic device (computer, iPad, and phone) in my bedroom.	15.4297	10.293	.725	.683
I use digital devices before sleeping	14.6823	13.189	.280	.832

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
18.7031	16.951	4.11713	5

Independent Variable 2: Caffeine Intake (CI)

Reliability Statistics

Cronbach's Alpha	N of Items
.897	8

Item Statistics

	Mean	Std. Deviation	N
Caffeine helps me when I am tired.	3.3464	1.58891	384
I find that caffeine improves my ability to concentrate.	3.3906	1.52730	384
I rely on caffeine to help me stay awake.	3.1875	1.62912	384
Consuming caffeinated beverages has become part of my daily routine.	3.0260	1.66498	384
I find it relaxing to drink caffeinated beverages.	3.3828	1.58874	384
After consuming caffeine, I feel refreshed.	3.5729	1.54815	384
Caffeine makes me feel more energetic.	3.5052	1.54649	384
I enjoy the atmosphere associated with consuming caffeinated beverages.	3.6406	1.56195	384

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Caffeine helps me when I am tired.	23.7057	72.830	.651	.886
I find that caffeine improves my ability to concentrate.	23.6615	72.674	.692	.882
I rely on caffeine to help me stay awake.	23.8646	72.551	.642	.887
Consuming caffeinated beverages has become part of my daily routine.	24.0260	72.281	.634	.888
I find it relaxing to drink caffeinated beverages.	23.6693	72.149	.680	.883
After consuming caffeine, I feel refreshed.	23.4792	71.065	.749	.877
Caffeine makes me feel more energetic.	23.5469	71.282	.741	.878
I enjoy the atmosphere associated with consuming caffeinated beverages.	23.4115	73.298	.646	.887

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
27.0521	93.016	9.64446	8

Independent Variable 3: Stress Level

Reliability Statistics

Cronbach's Alpha	N of Items
.782	5

Item Statistics

	Mean	Std. Deviation	N
In the last month, have been upset because of something that happened unexpectedly.	2.7109	1.31363	384
In the last month, I have felt that I am unable to control the important things in my life.	3.4219	1.31437	384
In the last month, I have felt nervous and "stressed".	3.6589	1.01466	384
In the last month, I have found that I could not cope with all the things that I had to do.	2.7214	1.42450	384
In the last month, I have been angered because of things that were outside of my control.	3.8281	1.21636	384

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
In the last month, have been upset because of something that happened unexpectedly.	13.6302	13.053	.692	.693
In the last month, I have felt that I am unable to control the important things in my life.	12.9193	14.048	.566	.739
In the last month, I have felt nervous and "stressed".	12.6823	15.001	.677	.715
In the last month, I have found that I could not cope with all the things that I had to do.	13.6198	12.048	.735	.674
In the last month, I have been angered because of things that were outside of my control.	12.5130	17.885	.193	.848

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
16.3411	21.348	4.62040	5

APPENDIX L

Preliminary Data Analysis

Descriptive Statistics

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
SQ Average	384	-.209	.125	-.133	.248
SU Average	384	-.509	.125	1.071	.248
CI Average	384	-.628	.125	-.716	.248
SL Average	384	-.728	.125	2.965	.248
Valid N (listwise)	384				

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.411 ^a	.169	.162	.56705

a. Predictors: (Constant), SL Average, CI Average, SU Average

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.768	3	8.256	25.676	<.001 ^b
	Residual	122.186	380	.322		
	Total	146.954	383			

a. Dependent Variable: SQ Average

b. Predictors: (Constant), SL Average, CI Average, SU Average

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics Tolerance
		B	Std. Error	Beta			
1	(Constant)	1.527	.240		6.372	<.001	
	SU Average	.236	.045	.253	5.264	<.001	.948
	CI Average	-.036	.024	-.070	-1.488	.138	.995
	SL Average	.355	.063	.269	5.602	<.001	.952

Coefficients^a

Model		Collinearity Statistics VIF
1	(Constant)	
	SU Average	1.055
	CI Average	1.005
	SL Average	1.050

a. Dependent Variable: SQ Average

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	SU Average	CI Average	SL Average
1	1	3.878	1.000	.00	.00	.01	.00
	2	.090	6.563	.01	.03	.94	.02
	3	.022	13.266	.02	.83	.00	.34
	4	.010	19.728	.97	.13	.05	.63

a. Dependent Variable: SQ Average

APPENDIX M

Similarity Report

Page 2 of 85 - Integrity Overview

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