WONG JING NI PREVALENCE OF MENSTRUAL MIGRAINE AMONG UNIVERSITY STUDENTS AND ITS IMPACT ON QUALITY OF LIFE

Prevalence of Menstrual Migraine Among University Students and Its Impact on Quality of Life: A Cross-Sectional Study

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DECEMBER 2024

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By

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21UMB05510

A Research proposal submitted to the Department of Physiotherapy, M. Kandiah Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman, in partial fulfilment of the requirements for the Degree of Bachelor of Physiotherapy (Hons).

December 2024

PREVALENCE OF MENSTRUAL MIGRAINE AMONG UNIVERSITY STUDENTS AND ITS IMPACT ON QUALITY OF LIFE: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Menstrual migraines, associated with hormonal fluctuations during the menstrual cycle, are a common but underrecognized condition. They can significantly impair daily functioning and quality of life, yet research into their prevalence and impact among university students remains limited, particularly in Malaysia. This study aims to address this gap by exploring the prevalence of menstrual migraines in this population and their effects on physical and mental health, highlighting the importance of tailored interventions to improve well-being.

Objective: This study investigated the prevalence of menstrual migraines among Malaysian female university students aged 18–25 and their impact on quality of life.

Methods: A cross-sectional study with 384 participants used convenience sampling. Data were collected via an online survey incorporating demographic questions, the Menstrual Migraine Assessment Tool (MMAT), and the 12-Item Short Form Survey (SF-12). Pearson's correlation analysed the relationship

between menstrual migraines and quality of life using IBM SPSS Statistics version 26.

Results: The study involved 384 female university students aged 18 to 25, with 30.2% (n=116) reporting menstrual migraines. Participants with menstrual migraines had lower SF-12 Physical Component Summary (PCS) and Mental Component Summary (MCS) scores compared to those without, with mean PCS and MCS scores of 43.3±5.91 and 38.6±8.21, respectively and an overall SF-12 score of 77.3±6.66. Mental health decline was more pronounced. Pearson's correlation analysis showed a fair negative correlation between menstrual migraines (MMAT) and quality of life (SF-12) ($r = -0.347$, $p < 0.05$), indicating that menstrual migraines reduced quality of life.

Conclusion: Menstrual migraines are prevalent among female university students and adversely affect their quality of life, underscoring the need for targeted interventions to support their well-being and academic performance.

Keywords: Prevalence, Menstrual Migraine, University Students, Quality of Life

ACKNOWLEDGMENTS

With the completion of this research project, I would like to express my gratitude to all of the participants who spent the time to participate in my research. This project would not have been finished without their support and cooperation. I am extremely grateful for all of your assistance and contributions.

Furthermore, I would like to express my sincere gratitude towards my supervisor, Ms Swapneela Jacob, for all of her guidance and support throughout the proposal preparation up to this point. Ms Swapneela’s insightful feedback and expertise have guided me until the thesis's completion. I want to convey my sincere appreciation to her for her contribution. Moreover, I would like to express my gratitude towards Mr. Tarun Amalnerkar as co-supervisor, for helping me in my research project.

Lastly, I would like to express my gratitude to my family and friends for their unwavering support and patience as I worked on this research project.

APPROVAL SHEET

This Research project entitled "**PREVALENCE OF MENSTRUAL MIGRAINE AMONG UNIVERSITY STUDENTS AND ITS IMPACT ON QUALITY OF LIFE: A CROSS-SECTIONAL STUDY**" was prepared by WONG JING NI and submitted as partial fulfilment of the requirements for the degree of Bachelor of Physiotherapy (HONOURS) at Universiti Tunku Abdul Rahman.

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PERMISSION SHEET

It is hereby certified that **WONG JING NI** (ID No: **21UMB05510**) has completed this Research project entitled "PREVALENCE OF MENSTRUAL MIGRAINE AMONG UNIVERSITY STUDENTS AND ITS IMPACT OF QUALITY OF LIFE: A CROSS SECTIONAL STUDY"

under the supervision of **Ms. Swapneela Jacob** (Supervisor) from the Department of Physiotherapy, M. Kandiah Faculty of Medicine and Health sciences, and **Mr Tarun Amalnerkar** (Co-Supervisor) from the Department of Physiotherapy, M. Kandiah Faculty of Medicine and Health sciences.

Yours truly,

(WONG JING NI)

DECLARATION

I hereby declare that the Research project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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Date: 19/12/2024

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LIST OF ABBREVIATIONS

MM	Menstrual Migraine
UTAR	Universiti Tunku Abdul Rahman
MMAT	Menstrual Migraine Assessment Tool
SF-12	12-Item Short Form Survey
SERC	Scientific and Ethical Review Committee
SPSS	Statistical Package for Social Science Software
M	Mean
SD	Standard Deviation
SF-12v2	Second Version of The Short Form-12 Health Survey
PF	Physical Functioning
RP	Role Physical
BP	Bodily Pain
GH	General Health
VT	Vitality
SF	Social Functioning
RE	Role Emotional
MH	Mental Health
PCS	Physical Summary Scores
MCS	Mental Summary Scores
SF-36	36-Item Short-Form Survey

CHAPTER 1

INTRODUCTION

1.1 Chapter Overview

This chapter will outline the study's background information and context for the whole research thesis, followed by a discussion of the significance and relevance of the current study, research objectives, and operational definitions of terms.

1.2 Background of study

1.2.1 Menstrual Migraine

The International Classification of Headache Disorders categorizes "menstrual" or "catamenial" migraine (MM) into two types: pure menstrual migraine and menstrual-related migraine. A pure menstrual migraine is defined as a migraine that occurs exclusively on the first and second days of menstruation in at least two out of three menstrual cycles and does not occur at any other time during the cycle. In contrast, a menstrual-related migraine can happen at any point throughout the menstrual cycle, not just during menstruation (Olson & Hansen, 2021).

Migraines are not just severe headaches; they are a neurological condition characterised by various symptoms, including intense discomfort on one side of the head that can be described as pulsating or throbbing. Menstrual migraines and hormone headaches occur just before or during menstruation. They can be worsened by motion, brightness, smell, or voice. These symptoms may last from a few hours to several days (Menstrual Migraines: Treatment, Pain Relief & Symptoms, n.d.). It is essential to clarify what is meant by pure menstrual migraine and how it differs from menstrual-related migraine.

1.2.2 Menstrual Migraine Cause by Sex Hormones

Menstrual migraine affects an estimated 10% of the world's population and is most common among individuals aged 20 to 50 (Walter, 2022). The menstrual cycle is regulated by varying levels of sex hormones, including estrogen and progesterone. Estrogen levels are lowest during menstruation and gradually increase throughout the follicular phase, peaking the day before ovulation (Raffaelli et al.,2023). Decreasing estrogen levels are believed to make blood vessels more susceptible to prostaglandins, which are associated with neurogenic inflammation (Cupini et al.,2020). Migraines are associated with prostaglandins, which can cause symptoms such as headaches, nausea, and vomiting.

So, the declined level of estrogen during menstruation will be the cause of the menstrual migraine. Menstrual migraine also known as hormonal headaches are also caused or exacerbated by fluctuating amounts of estrogen and progesterone which regulate menstrual periods and pregnancy (Migraines, Headaches, and Hormones, n.d.). Most of the female who suffers from migraines report that migraine relates to their periods.

1.2.3 Drugs for Menstrual Migraine May Cause Side Effects

The primary goal of acute care is to relieve symptoms quickly. According to the Ministry of Health Malaysia, when the first signs of a headache occur, Medications should be taken as soon as possible to reduce the intensity of pain or to stop it entirely. Examples of painkillers include paracetamol (Panadol). If pain relief does not occur after a few hours, the medication can be taken again.

If these medications are taken in excess, they may worsen headaches, so it is important not to use them too frequently. Patients should also be made aware of potential adverse effects, such as gastrointestinal issues and allergies related to the medications, before using painkillers (Dottie, 2011). For women experiencing moderate to severe migraine episodes, triptans are often the initial suggested course of therapy (NSAIDs for Migraine, n.d.). Triptans may cause heart palpitations, nausea, and vertigo. The 'triptan sensation' includes flushing, tingling, neck pain, and chest pressure, which

are the most common side effects associated with triptans. (Nicolas & Nicolas, 2023).

Menstrual migraines are already painful for females, and adding the medication's adverse effects will make them even more miserable. Regular physical activity, maintaining a healthy weight, a nutritious diet, and adopting a better lifestyle, like getting enough sleep can help reduce the frequency and severity of attacks. These aspects must be considered while developing menstrual migraine (Agbetou & Adoukonou, 2022).

1.2.4 Quality of Life Affect by Menstrual Migraine

Migraine is the third leading cause of disability among young people aged 15 to 49 years. Patients suffering from migraines often perform poorly in school and struggle with social activities, especially those involving family and leisure (Thiagarajan et al., 2022). Clinical practice has shown that many patients with menstrual migraines also experience symptoms of anxiety and depression, sleep difficulties, and other distressing mental and physical issues, leading to a reduced quality of life. Factors such as age, depressive symptoms, and the frequency and severity of pain all affect the quality of life for patients suffering from menstrual migraines (Luo et al., 2022). In Malaysia, more than 70% of females reported experiencing fatigue, headaches, and changes in appetite during their menstruation. (Azhary et al., 2022).

1.2.5 Prevalence of Menstrual Migraine

Menstrual migraine is a critical public health concern affecting women worldwide. Studies conducted across various nations have shed light on its prevalence in diverse populations. For example, research in Nigeria examined the frequency of menstrual-related headaches among senior secondary school females (Adebayo et al., 2020). Similarly, a study among Spanish university students revealed the incidence of menstrual migraine in this demographic (Fernández-Martínez et al., 2020).

In Brazil, an investigation into college students highlighted the prevalence of menstrual migraine, underscoring the importance of addressing menstrual migraine as a public health issue (Tavares et al., 2021). More recently, Chalmer et al. (2023) emphasized the need for continued research on menstrual migraines to better understand and manage this condition.

There has been little research on the quality of life and its related aspects in menstrual migraine patients. Based on the characteristics of menstrual migraine, more research into aspects associated with quality of life with menstrual migraine is recommended (Luo et al., 2022). Throughout this study, we will have a better understanding of the prevalence of menstrual migraine among university students and how menstrual migraine can impact the quality

of life. Additionally improves knowledge about menstrual migraine among the university students.

Overall, this underscores that menstrual migraine is a prevalent and impactful disorder. It necessitates further attention to improve early detection, enhance management strategies, and ultimately improve the quality of life for affected women. Cross-national studies provide valuable insights into its occurrence, impact and treatment, emphasising the importance of comprehensive public health interventions.

1.2.6 Importance of Study

As there is less similar research or study conducted among university students in Malaysia, this study is carried out to determine the prevalence of menstrual migraine among university students and the impact of menstrual migraine on quality of life. There has been little research on the quality of life and its related aspects in menstrual migraine patients. Based on the characteristics of menstrual migraine, more research into aspects associated with quality of life with menstrual migraine is recommended (Luo et al., 2022).

Throughout this study, we will have a better understanding of the prevalence of menstrual migraine among university students and how menstrual migraine can impact the quality of life. Additionally improves knowledge about menstrual migraine among the university students.

1.2.7 Concluding Remark

This study aims to find out the prevalence of menstrual migraine among university students and its impact on quality of life. This study will focus on cross-sectional studies of the prevalence of menstrual migraines and their impact on the quality of life of university students in Malaysia.

1.3 Problem Statement

There exists a significant research gap regarding the prevalence and impact of menstrual migraines among university students in Malaysia. While studies have investigated menstrual disorders and migraines in various populations, there is limited focus on menstrual migraines specifically within the context of university students, regardless of whether they are medical or non-medical students. This lack of targeted research is concerning, as menstrual migraines can profoundly disrupt female students' daily lives, affecting their academic performance, social engagement, and overall well-being.

Menstrual migraines are known to exacerbate the challenges already associated with menstruation, including job and school absences, diminished productivity, and lower quality of life. For instance, Abdullah et al. (2020) highlighted how menstrual-related issues significantly impair academic performance, reduce interest in sports, and limit participation in social activities. Additionally, Vashisht et al. (2018) reported that approximately 65% of girls found menstruation interfered with school activities, leading to missed classes, examinations, and lessons due to discomfort, anxiety, and the fear of leakage or stains.

When the debilitating symptoms of menstrual migraines are added to the existing discomforts of menstruation, the quality of life for female university students is further compromised. These challenges necessitate addressing the limited understanding of menstrual migraines in the university setting. Therefore, this research aims to examine the prevalence of menstrual migraines and their effects on the quality of life among university students. By doing so, this study seeks to provide better support for students facing menstrual migraines and contribute to improving their academic and social experiences in university life.

1.4 Rationale of The Study

Investigating the prevalence of menstrual migraines and their impact on individuals' lives is crucial, as limited research has been conducted on this topic in Malaysia, particularly among university students. While there are existing studies on menstrual disorders like dysmenorrhea and premenstrual syndrome, there is a significant gap in understanding how menstrual migraines specifically affect the quality of life for university students, encompassing both medical and non-medical disciplines.

This research is essential to determine the frequency of menstrual migraines and their impact on students' well-being, including academic performance, class attendance, and participation in sports and social activities. By examining this aspect, the research aims to provide valuable insights that can inform healthcare strategies, increase awareness, and ultimately enhance the quality of life for individuals with menstrual migraines in a university setting. This study on prevalence can help university students learn coping strategies for menstrual migraine attacks.

1.5 Scope of Study

This research will be conducted using a Google Form questionnaire. The population will be university students aged between 18 and 25. This study will focus on the prevalence of menstrual migraines among university students and its impact on quality of life.

1.6 Research Question

1. What is the prevalence of menstrual migraine among university students?

2. What is the impact of menstrual migraine on the quality of life among university students?

1.7 Objectives of Study

1. To determine the prevalence of menstrual migraine among female university students.

2. To assess the impact of menstrual migraine on quality of life in university students.

1.8 Operational Definition

1. Prevalence- Prevalence refers to the total number of individuals in a population who have a disease or health condition at a specific period of time, usually expressed as a percentage of the population (Havard School of Public Health, 2012).

2. Menstrual Migraine- A period headache that occurs before or during the menstrual cycle. The symptoms are more severe than a typical headache, including throbbing or pulsating head pain, light sensitivity, and nausea (Menstrual Migraines: Treatment, Pain Relief & Symptoms, 2021).

3. University Students- individuals who enrolled in a college or university.

4. Quality of Life- Is a measurement of an individual's capacity to perform physically, emotionally, and socially in his or her surroundings at a level that meets his or her standards (THE CONCEPTUAL and OPERATIONAL DEFINITION of QUALITY of LIFE: A SYSTEMATIC REVIEW of the LITERATURE, 2004).

1.9 Hypothesis

Null Hypothesis (H0)

H0 – There is no association between the impact of menstrual migraine on quality of life in university students.

Alternate Hypothesis (HA)

HA – There is an association between the impact of menstrual migraine on the quality of life in university students (2-tailed).

HA – The impact of menstrual migraine will be negatively associated with quality of life in university students (1-tailed).

CHAPTER 2

LITERATURE REVIEW

2.1 Chapter Overview

This chapter will highlight the themes of the research issues that are linked by using previous journal articles, evidence and literature as the primary basis and structure for the area under study.

2.1.1 Prevalence of menstrual migraine among university students

Hormonal influences significantly affect migraines, particularly with menstruation serving as a common trigger among female migraine sufferers. The International Classification of Headache Disorder ICHD-3 acknowledges two categories of menstrual migraine. Which is migraine related to menstruation and pure menstrual migraine. Women diagnosed with menstrual migraine often express that migraines occurring during menstruation are characterized by increased pain, longer duration, greater disability, and less responsiveness to treatment (Cupini et al., 2020).

According to Fernández-Martínez et al. (2020), a significant percentage, specifically 45.15% of the individuals included in the study indicated that they encountered menstrual migraines. Among women with migraines, there was a higher ratio of individuals facing sleep-related issues. Fatigue emerged as the most reported symptom among those experiencing migraines during their menstrual period. Therefore, the Menstrual Migraine Assessment Tool (MMAT) was designed and validated to determine the prevalence of menstrual migraine among premenopausal women (Tepper et al., 2008).

According to Vetvik and MacGregor (2021), about 20-25% of female students are migraineurs in the general community and 22-70% of patients who visit headache clinics suffer from menstrual migraine. Perimenstrual migraine attacks are linked to significantly higher impairment than non-perimenstrual events in women with menstrual migraine diagnoses. Despite having few effective preventive strategies and a pathophysiological mechanism that is still poorly understood, menstrual migraine is a frequent illness that is linked to significant disability. It needs to be regarded as a unique illness deserving of more funding and attention for investigation.

Menstrual migraine affects 20–25% of female migraineurs, according to a systematic review; rates vary depending on the population and study design (Vetvik & MacGregor, 2021). Menstrual migraine was reported by 57.9% of migraineurs in a Saudi Arabian study of women of reproductive age, indicating a high prevalence in this population (Zainah Al-Qahtani et al., 2024). Different prevalence rates have been reported by studies that specifically focus on university students. For example, a study conducted among female undergraduate students at Addis Ababa University revealed that 11.4% of them suffered from menstrual-related headaches, which had a major negative influence on their social and academic lives (Ali et al., 2024). According to a different Bangladeshi study, migraine prevalence was 21.4% overall, with female students being disproportionately affected (Rafi et al., 2022). 7.2% of medical students in Sudan experienced migraine-type headaches, which may include menstrual migraines, according to a cross-sectional study (Osman Ali et al., 2022). Menstrual migraines may be a subset of general migraines, as a systematic review found that the pooled prevalence of general migraines was 16.1% among male university students and 21.7% among female students (Wang et al., 2015).

2.1.2 Cause of Menstrual Migraine

Menstrual migraine is mainly caused by the low concentration of estrogen during pre-menstruation and menstruation periods. The estrogen withdrawal hypothesis was initially proposed by Sommerville in 1972. In his intervention study, six women experiencing regular premenstrual or menstrual migraines were given intramuscular injections of estradiol before the onset of menstruation. Before the intervention, blood samples were collected from all six participants. The first menstrual cycle served as a control with no intervention, while the second cycle involved intramuscular injection of estradiol.

The result indicated a noticeable delay in the expected onset of migraines, extending by a few days after the injection of estradiol valerate. In some cases, the onset was even delayed until after the conclusion of menstrual bleeding. This delayed migraine onset correlated with a significant decrease in plasma estradiol levels, following a period of sustained high levels induced by the injection (Raffaelli et al., 2023).

A decrease in estrogen can make individuals more susceptible to factors like elevated prostaglandin levels. Prostaglandins not only induce neurogenic inflammation but also act as mediators and modulators of pain stimuli and the inflammation will cause the headache during menstruation. Changes in estrogen

levels can also influence pain sensitivity by affecting serotonin and opioid receptors. Insufficient serotonin, a brain chemical is linked to chronic migraines that don't respond well to pain medication. Dysfunction in serotonin is being studied in menstrual migraines and mood disorders (Nappi et al., 2022).

According to Rafi et al. (2022), in the research sample, menstrual migraine was highly associated with anxiety and depression symptoms. Participants with anxiety symptoms were more likely to get headaches than those with depressed symptoms. The most common migraine triggers indicated by the subjects were high levels of stress, frequent sleep disturbances, academic pressure and outside noise. Regular exercise may have a preventative effect on migraine frequency, despite the fact that irregular exercise can cause migraine attacks. This is likely because people who exercise frequently have a different migraine-triggering threshold. It can be said that regular exercise may have a higher migraine-triggering threshold than the person who irregularly exercises. Moreover, an increase in screen time was associated with a worsening of menstrual migraine. However, the work-from-home technique during the COVID-19 lockdown period caused people to stare at screens for extremely long periods. It has negatively impacted people's everyday lives, leading to sleep issues and creating psychological disorders, all of which have been shown to exacerbate headache attacks in menstrual migraineurs. Additional lifestyle factors that have been identified as menstrual migraine risk factors include substance addiction, tobacco use and consuming cola beverages.

2.1.3 Quality of Life Affected by Menstrual Migraine

Patients experiencing menstrual migraines showed notably lower health-related quality of life across various areas compared to those with non-menstrual migraines. Factors such as the frequency of headaches, the extent of their impact on daily activities, and symptoms of depression were significantly linked to the health-related quality of life in individuals with menstrual migraines.

The health-related quality of life was assessed using the 12-Item Short Form Survey (SF-12). Research from the United States found that health-related quality of life was worse in a population sample of migraineurs who took the SF-12. This study proved that migraines have a notable independent impact on health-related quality of life (Lipton et al., 2003). The SF-12 is a twelve-item health-related quality of life questionnaire that evaluates eight health areas, including mental and physical health. General Health (GH), Physical Functioning (PF), Role Physical (RP) and Body Pain (BP) are domains connected to physical health. Vitality (VT), Social Functioning (SF), Role Emotional (RE) and Mental Health (MH) are measures that are connected to mental health.

The tool has been proven effective in treating a variety of chronic illnesses (Huo et al., 2018). Migraines pose a significant burden on patients, profoundly impacting their quality of life. The study revealed that individuals with menstrual migraines had lower average scores in five dimensions (physical functioning, role-physical, general health, social functioning, and mental health) compared to those with non-menstrual migraines. Furthermore, menstrual migraine patients scored lower than non-menstrual migraine patients in both the physical component summary and mental component summary (Luo et al., 2022).

Menstrual migraine sufferers who have more frequent migraine attacks and a greater impact on everyday life might compromise their quality of life by affecting their physical well-being. As the frequency of headaches increases, consequently does the quality of life associated with migraines (R. et al., 2020). Irimia's latest study found a positive linear relationship between headache frequency and the incidence of anxiety and depression in migraine patients. Individuals who have more than three headache days per month are more likely to experience anxiety and depression (Irimia et al., 2021).

Menstrual migraines, beyond their physical discomfort, have far-reaching implications on an individual’s mental well-being. The persistent nature of these migraines can contribute to heightened levels of anxiety and depression

(Handy et al., 2022). The chronic pain and emotional distress associated with menstrual migraines may also lead to fatigue, creating a complex interplay of physical and mental strain. The burden of managing menstrual migraines, coupled with the emotional toll of anxiety and depression can impede one's ability to concentrate and engage fully in various aspects of life, including academic pursuits (Mofatteh, 2020). The resulting fatigue further exacerbates the challenge, making it difficult to focus on studies and daily activities such as sports activities.

Menstrual migraine occurs on the two days preceding a period or the first three days of a period. The person who undergoes menstrual migraines will also experience premenstrual syndrome such as changes in appetite, weight gain, stomach discomfort, headache, breast swelling and tenderness, nausea, constipation, anxiety, and mood swings (Gudipally & Sharma, 2021). Menstrual migraine and psychological stress during menstruation may have a significant impact on female students, resulting in absenteeism, distraction, and decreased school attendance, which may influence female students' academic performance. Most females miss school during menstruation due to discomfort or fear of blood stains, which is sometimes accompanied by humiliation and isolation (Onobumeh et al., n.d.). If the students miss school, their social activities with their friends and participation in sports will also be affected.

According to Shaik et al. (2015), menstrual migraine is a severe, throbbing headache that occurs on one side of the head and is very frequent. Usually, it is linked to phonophobia, photophobia, nausea or vomiting. The majority of migraineurs suffer from recurring episodic episodes, which can develop into more frequent and severe attack patterns. Over months or years, the frequency and intensity of headaches can increase to the point where they become chronic migraines. These attacks are linked to significant functional impairments that affect social, professional, relatives and academic lives and may have both physical and psychological impacts. Both during and in between migraine attacks, these deficits may manifest. In comparison to age and sex-matched healthy controls, migraineurs typically report lower subjective well-being and a lower quality of life during their pain-free times.

Studies have indicated that women who suffer from menstrual migraines have a considerably lower quality of life than women who do not. Patients with menstrual migraine had impairments in all five domains of health-related quality of life, according to a study published in BMC Women's Health. In particular, physical and mental health factors were strongly linked to headache frequency, headache impact on day-to-day functioning, and depressive symptoms (Science X, 2022). Menstrual migraines primarily impact three interrelated domains: social support, mental health, and physical health. Because of the frequency and intensity of their migraines, which have a major effect on their physical health, patients frequently report higher levels of disability and interference in daily

activities. Furthermore, because mental health conditions like depression, anxiety, and suicidal thoughts are closely linked to menstrual migraine patients' health-related quality of life, these conditions are common in this population. Furthermore, poorer mental health outcomes are associated with lower perceived social support, indicating that social factors are important for overall well-being and making the difficulties faced by people with menstrual migraine even more severe (Raggi et al., 2012).

Menstrual migraines have a significant and complex effect on quality of life. In addition to debilitating physical symptoms, women with menstrual migraine experience severe psychological distress that impairs their general well-being. In light of these results, healthcare professionals must acknowledge the particular difficulties experienced by women with MM and apply specialised treatment plans to enhance health-related quality of life. Future studies should look into the complicated relationships between menstrual migraines and different psychosocial factors as well as practical ways to improve the lives of those who are impacted.

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CHAPTER 3

METHODOLOGY

3.1 Chapter Overview

This chapter will outline the research methodology used, emphasising the research design, sampling design, research instrument and demonstrating the procedures of research in detail.

3.2 Research Design

The cross-sectional study was the research design of this study to determine the prevalence of menstrual migraine among university students and its impact on quality of life.

3.3 Research Setting

The questionnaire was distributed online using Google Form and participants in this study were recruited using a convenience sampling method using social media platforms such as WhatsApp, Telegram, Instagram and Little Red Book. In addition, face-to-face recruitment took place at the UTAR Sungai Long campus in Selangor. The investigator also encouraged participants to share

the questionnaire link with their friends who met the inclusion criteria, which motivated them to participate in the study.

3.4 Ethical Approval

This study received ethical approval from the Scientific and Ethical Review Committee (SERC) at UTAR (Appendix A). After carefully reading the information sheet and personal data protection notice, each participant was obligated to sign a consent form before filling out the questionnaire to ensure that they were willing to participate in this study.

3.5 Study Population

Female university students aged between 18 to 25 years old.

3.6 Sample Size

The sample size was measured by the OpenEpi software (OpenEpi - Toolkit Shell for Developing New Applications, n.d.). The estimated citizen of female university students in Malaysia, aged 18 to 25 years, was one million and based on the assumptions that 50% (+ or -5) of female university students aged 18 to 25 years old have menstrual migraine with a 95% confidence interval and 80% power of the study, the calculated sample size was 384 individuals.

Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(*N*):	1000000
Hypothesized % frequency of outcome factor in the population (*p*):	50%+/-5
Confidence limits as % of 100(absolute +/- %)(*d*):	5%
Design effect (for cluster surveys-*DEFF*):	1

Sample Size(*n*) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	384
80%	165
90%	271
97%	471
99%	664
99.9%	1082
99.99%	1512

Equation

Sample size $n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$

Results from OpenEpi, Version 3, open source calculator--SSPropor
Print from the browser with ctrl-P
or select text to copy and paste to other programs.

Figure 1: OpenEpi Software Sample Size Calculation

3.7 Inclusion Criteria

The inclusion criteria for the research are 18 to 25 year-old female university students in Malaysia with regular menstrual cycle which is 28 ± 7 days.

3.8 Exclusion Criteria

Aside from migraine, any identified primary headache disease is considered, as well as any secondary headache disorder, with the exception of medication-overuse headaches and undifferentiated headaches (Rafique et al.,

2020). Conditions such as any diagnosed sleep disorder, the use of prescription medication within the last six months, or any other type of neurological or musculoskeletal migraine are also considered.

3.9 Research Instrument

The questionnaire will be created using Google Forms and will include several main sections, starting with a personal data protection notice, informed consent form, demographic data, 12-item Short Form Survey (SF-12) and Menstrual Migraine Assessment tool (MMAT).

A brief introduction of the study including the purpose of the study, procedures, length of participation, risks and benefits, confidentiality information and voluntary nature of the study was provided to ensure participants have additional information before proceeding to the questionnaire.

Personal Data Protection Notice and informed consent were mentioned in the first sections to solve the participant's question or clarification. In the following section, the demographic data form was provided to collect essential information from participants, including their name, age, gender, university, type of course and year of study. The screening of exclusion criteria was also involved to exclude the participants who did not meet the inclusion criteria such as a

history of post-traumatic headache. Additionally, some questions are about menstrual migraine that are related to pain assessment for menstrual migraine.

3.9.1 Menstrual Migraine Assessment Tool

The menstrual migraine assessment tool (MMAT) is a 3-question questionnaire developed and validated to screen for menstrual migraine in obstetrics and gynecology. Menstrual migraine was identified by the MMAT with a good degree of specificity (0.74) and high sensitivity (0.94). Therefore, the MMAT was created and approved for use in obstetrics and gynecology clinics as a quick screening tool for menstrual migraine (Tepper et al., 2008). The MMAT questionnaire consists of three questions. If a participant answers yes to question 1 and at least one other yes, they are considered to have a menstrual migraine. Otherwise, participants will consider that they do not have menstrual migraines.

3.9.2 12-Item Short Form Survey

The 12-Item Short Form Survey (SF-12) showed strong interval consistency, with Mosier's Alpha values of 0.88 for the physical composite scale (PCS) and 0.82 for the mental health composite scale (MCS). The annual test-retest correlations, corrected for demographic variables were 0.61 for PCS and 0.57 for MCS, showing moderate to good long-term reliability. The findings

indicate that the SF-12 is an appropriate tool for measuring health-related quality of life in the Medicaid population with combined physical and mental disorders or similar cohorts (Huo et al., 2018).

The second edition of the Short Form -12 Health Survey (SF-12v2) was used to evaluate the participants' quality of life. Physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH) are the eight domains that are covered by the questionnaire's 12 items. The Physical Component Summary (PCS) and Mental Component Summary (MCS) scores can be utilized for calculating two summary measures based on the domains. Both domains are scored on a 0-100 scale, where 0 donates the lowest possible quality of life and 100 the highest quality of life. The PCS and MCS were purposefully calibrated so that a difference of 10 points corresponds to the standard deviation in the general population of the United States, and 50 represents the average rating for this population. Additionally, in this study, the reference population used is the United States population with 50 for the mean and 10 for the standard deviation used during the calculation for the z-score of the SF-12 (Jankowska & Golicki, 2021).

3.10 Procedure

Participants for this study were recruited through convenience sampling, using social media platforms such as WhatsApp, Instagram, Telegram and Little Red Book after receiving ethical approval from the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman. This study used a cross-sectional study with a target population of 384 participants. Eligible participants aged 18 – 15 were asked to complete an online questionnaire via Google Forms. Those who met the eligibility requirements and decided to participate provided demographic and relevant information.

However, participants who did not meet the eligibility requirements were excluded from the study. When participants met all of the inclusion criteria, they were briefly informed about the study's purpose. An informed consent form was provided and signed to ensure their voluntary participation in the study. The participants completed the MMAT questionnaire to determine the prevalence of menstrual migraine. Participants also completed the SF-12 questionnaire, which assesses the quality of life affected by menstrual migraine. Inferential analysis was performed after data collection, and a report was written.

3.11 Data Analysis

After data editing was performed to clean and remove incorrect or empty data, the collected data were analysed using IBM Statistical Package for Social Science (SPSS) software version 26.0 and Microsoft Excel to produce study results. Demographic data such as name, age, gender, university and year of study were analysed using descriptive statistics and reported as frequency, percentage, Mean (M) and Standard Deviation (SD).

The Shapiro-Wilk test was used to assess the data's normality. Pearson's correlation was used to examine the relationship between the 12-item Short Form Survey (SF-12) and the Menstrual Migraines Assessment Tool (MMAT). The correlation coefficients (r) were used to report the data. Table 3.1 displays the correlation coefficients (r) that were used to report the data. Table 3.1 displays the correlation's strength and significance values. A significance level of $p<0.05$ was established for Pearson's correlation.

Table 3.1: The grading table of Pearson's correlation coefficient

Scale of correlation coefficient	**Value**
$0< r \leq 0.19$	Very Low Correlation
$0.2 \leq r \leq 0.39$	Low Correlation
$0.4 \leq r \leq 0.59$	Moderate Correlation
$0.6 \leq r \leq 0.79$	High Correlation
$0.8 \leq r \leq 1.0$	Very High Correlation

CHAPTER 4

RESULTS

4.1 Chapter Overview

This section will describe the result of the data collection process conducted for this research study. First, thorough demographic information about the participants was provided. The outcomes of the inference tests will then be examined in detail. The findings shall be presented in a systematic manner beginning with any applicable graphical representation such as bar charts and pie charts, followed by a brief analysis with a relevant tabulation summary at the end of each respective component if necessary.

A sum of 395 responses was collected for this research. After implementing the inclusion and exclusion criteria, it was discovered that 11 participants (2.8%) were eliminated from the study, while 384 participants (97.2%) fulfilled the criteria for inclusion. Exclusions included 1 participant who objected to the consent form protecting their privacy, 7 participants who were older than 25, and 3 participants who had been diagnosed with a headache.

4.2 Demographic of Participants

4.2.1 Gender

This study included a total of 384 participants, all of whom were female university students. Figure 4.1 shows the gender distribution of the responses in this research.

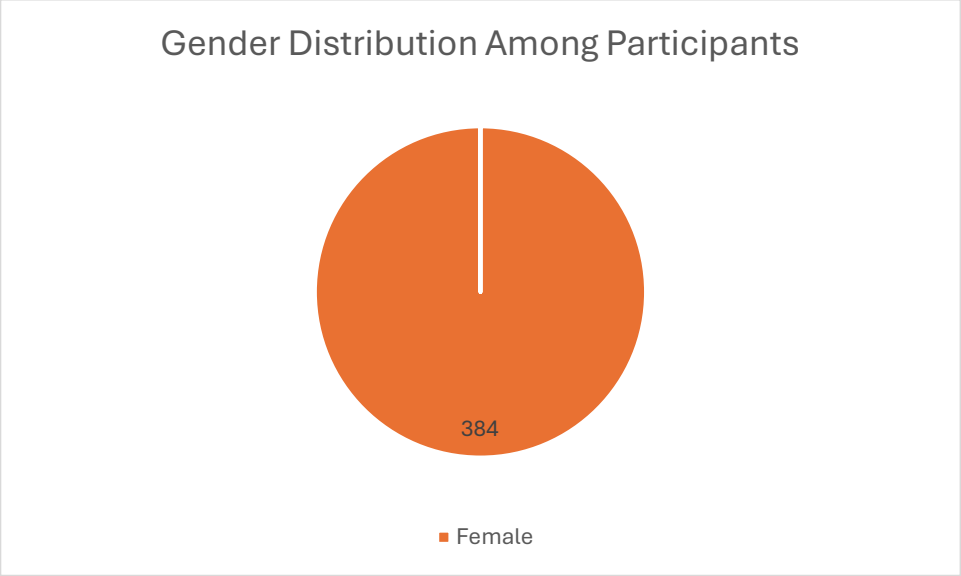

Figure 4.1: Gender distribution among participants

4.2.2 Age

The age distribution of the study participants is shown in Figure 4.2. The participants are between the ages of 18 and 25. Participants are 21 years old the most commonly. There are 130 participants who are 21 years old. The mean age of the 384 participants is 20.81 years with a standard deviation of 1.658.

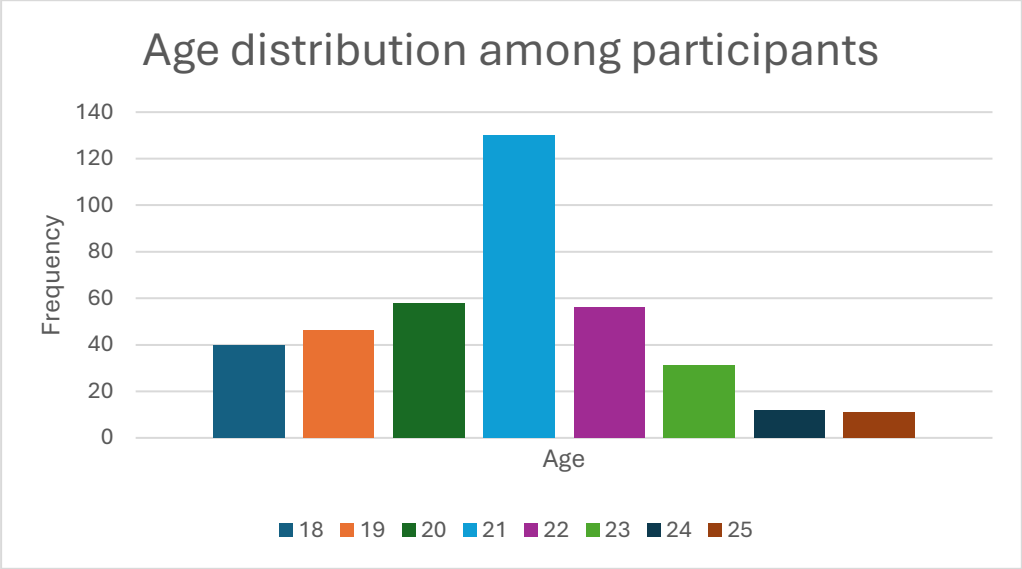

Figure 4.2: Age distribution among participants

Table 4.1: Mean and standard deviation of age of participants

Age

Mean	N	Std. Deviation
20.81	384	1.658

4.2.3 University of The Participants

Figure 4.3 presents the university distribution of the study participants. The responses are mostly from Universiti Tunku Abdul Rahman, 253. The fewest participants which are 1 are from Equator College, Han Chiang College, MAHSA University, Monash University (Malaysia Campus), and Omega College, respectively.

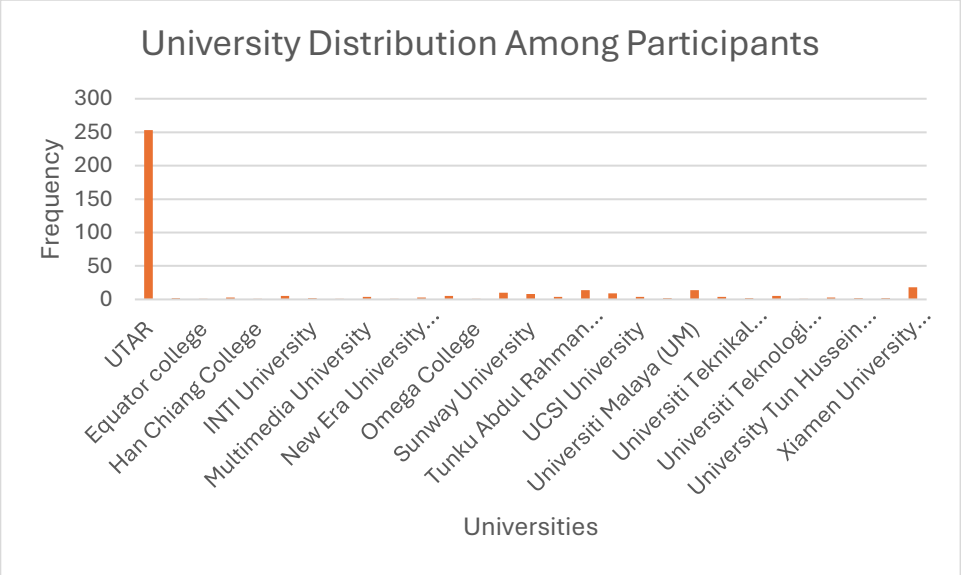

Figure 4.3: University distribution among participants

4.2.4 Year of Study

Figure 4.4 displays the study year distribution among study participants. The participants are mainly year 3 students, with a total of 150. The foundation has the fewest participants, with only 37.

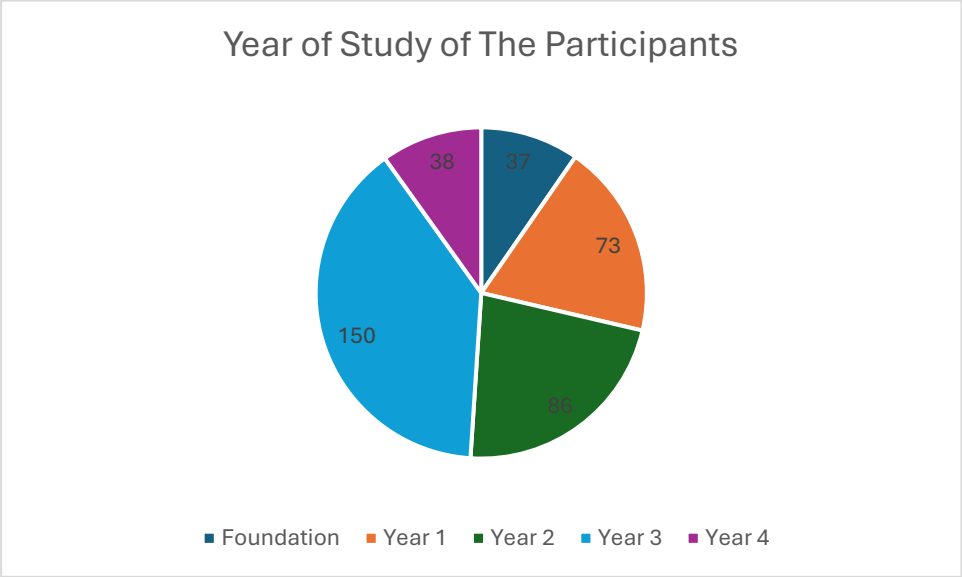

Figure 4.4: Distribution of year of study of the participants

4.2.5 Summary of The Demographic Data

This section focuses on presenting the demographic data information of the participants through a comprehensive summary of the entire subsection by tabulation (Table 4.2). Gender, age, university and year of study among participants which are female university students in Malaysia were demonstrated in Table 4.2 and were shown as frequency and percentage and Mean (M) and Standard Deviation (SD) respectively.

Table 4.2: Demographic data of participants

Demographic Data	**Frequency, n (%)**	**Mean ± SD**
Age		
18	40 (1.104)	20.81±1.658
19	46 (0.120)	
20	58 (0.151)	
21	130 (0.339)	
22	56 (0.146)	
23	31 (0.081)	
24	12 (0.031)	
25	11 (0.029)	
Gender		
Female	384 (1.00)	

Male	0 (0.00)
University	
UTAR	253 (0.659)
Asia Pacific University (APU)	2 (0.005)
Equator college	1 (0.003)
FAME International College	3 (0.008)
Han Chiang College	1 (0.003)
HELP University	5 (0.013)
INTI University	2 (0.005)
MAHSA University	1 (0.003)
Multimedia University	4 (0.010)
Monash University (Malaysia Campus)	1 (0.003)
New Era University College	3 (0.008)
University of Nottingham Malaysia	5 (0.013)
Omega College	1 (0.003)
Universiti Sains Malaysia (USM)	10 (0.026)
Sunway University	8 (0.021)
University of Technology Sarawak (UTS)	4 (0.010)
Tunku Abdul Rahman University of Management and Technology (TAR UMT)	14 (0.036)
Taylor's University	9 (0.023)
UCSI University	4 (0.010)

Universiti Kebangsaan Malaysia (UKM)	2 (0.005)
Universiti Malaya (UM)	14 (0.040)
Universiti Putra Malaysia (UPM)	4 (0.010)
Universiti Teknikal Malaysia Melaka (UTeM)	2 (0.005)
Universiti Teknologi Malaysia (UTM)	5 (0.013)
Universiti Teknologi Petronas (UTP)	1 (0.003)
Universiti Utara Malaysia (UUM)	3 (0.008)
University Tun Hussein Onn Malaysia (UTHM)	2 (0.005)
Wawasan Open University	2 (0.005)
Xiamen University Malaysia (XMUM)	18 (0.047)
Year of Study	
Foundation	37 (0.096)
1	73 (0.190)
2	86 (0.224)
3	150 (0.391)
4	38 (0.099)

Data on age and gender are presented as total numbers, n (percentage), and means ± standard deviations. Data regarding universities and years of study are presented as total numbers, n (percentage).

4.3 Outcome Measures

4.3.1 Prevalence of Menstrual Migraine

Prevalence of menstrual headache in the study population was found to be 30.2% with 116 out of 384 participants reporting its occurrence. Conversely, 69.8% which is 268 participants did not report menstrual migraines. To determine the presence of menstrual migraines, participants completed the MMAT questionnaire, which consisted of three questions. Participants were classified as having menstrual migraine as they answered with yes to question 1 and at least one other yes in the three questions.

The mean MMAT score for participants with menstrual migraine was 1.30 with a standard deviation of 0.460 as shown in Table 4.3. This shows that MMAT scores for participants with menstrual migraine demonstrated relatively low variability around the mean. These findings highlight that nearly one-third of the study population experiences menstrual migraines, which may impact their quality of life and functional outcomes.

Table 4.3: Frequency, mean and standard deviation of menstrual migraine for the participants

MMAT	Frequency, n (%)	Mean ± SD
Yes	116 (0.302)	1.30±0.460
No	268 (0.698)	

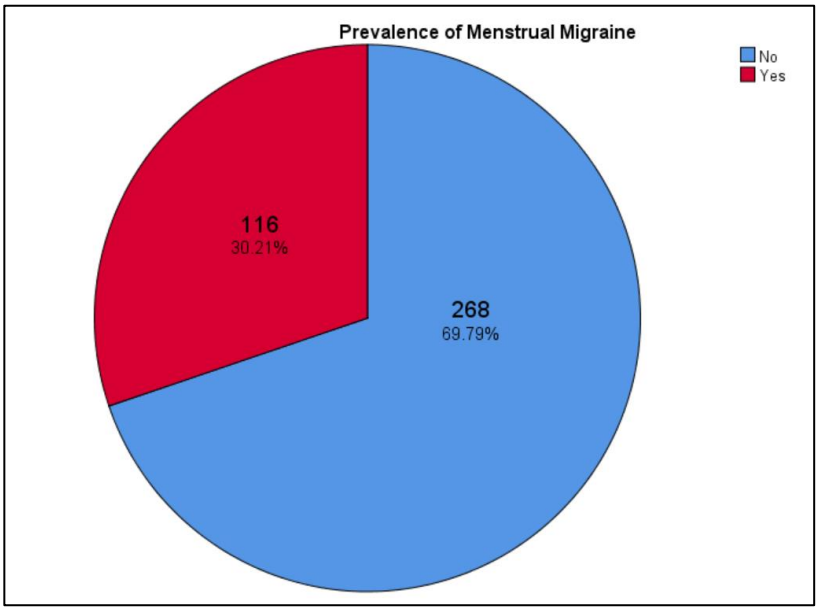

Figure 4.5: Prevalence of menstrual migraine among participants

4.3.2 Quality of Life of Overall Participants

The overall quality of life among the participants was assessed using SF-12, with a mean score of 82±9.1. Based on the results, 54.69% of participants (n = 210) reported a low quality of life, while 45.31% (n = 174) reported a high quality of life, as presented in Figure 4.6. Further analysis revealed the mean and standard deviation of the Physical Component Summary (PCS) score was 43.4±6.29, while the mean and standard deviation of the Mental Component Summary (MCS) score was 39.0±8.06, presented in Table 4.4.

Table 4.4: Frequency, mean and standard deviation for SF-12 of the overall participants

Outcome Measures	**Frequency, n (%)**	**Mean ± SD**
SF-12		82±9.1
High quality of life	174 (0.453)	
Low quality of life	210 (0.547)	
PCS		43.4±6.29
MCS		39.0±8.06

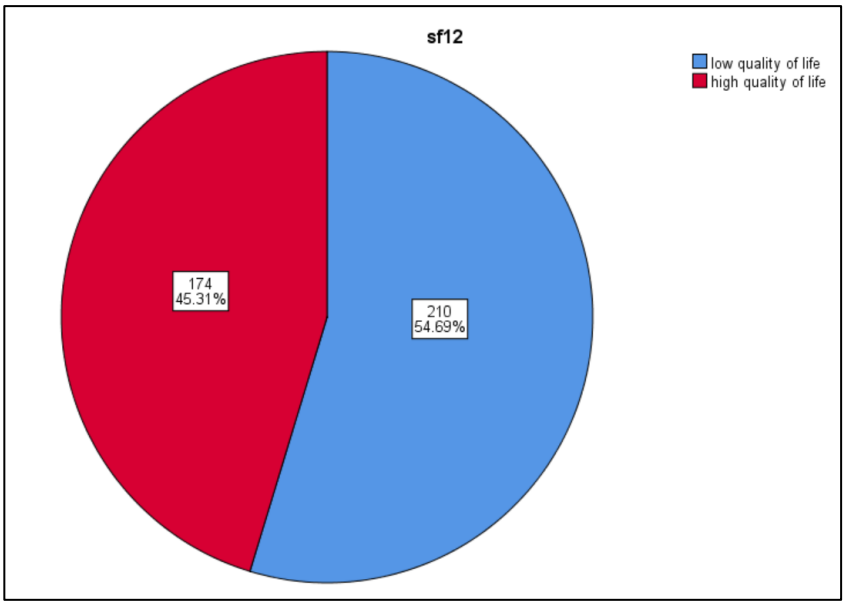

Figure 4.6: Distribution of quality of life for the participants

4.3.3 Quality of Life of Menstrual Migraine Participants

Among the 384 participants, there are 116 of responses that have menstrual migraines. The quality of life among the menstrual migraine participants was assessed using SF-12, with a mean score of 77.3±6.66. Based on the results, 98.28% of participants (n = 114) reported a low quality of life, while 1.72% (n = 2) reported a high quality of life, as presented in Figure 4.7. Further analysis revealed that the mean and standard deviation of the Physical Component Summary (PCS) score was 43.3±5.91, while the mean and standard deviation of the Mental Component Summary (MCS) score was 38.6±8.21, presented in Table 4.5.

Table 4.5: Frequency, mean and standard deviation for SF-12 of the menstrual migraine participants

Outcome Measures	**Frequency, n (%)**	**Mean ± SD**
SF-12		77.3±6.66
High quality of life	2 (0.017)	
Low quality of life	114 (0.983)	
PCS		43.3±5.91
MCS		38.6±8.21

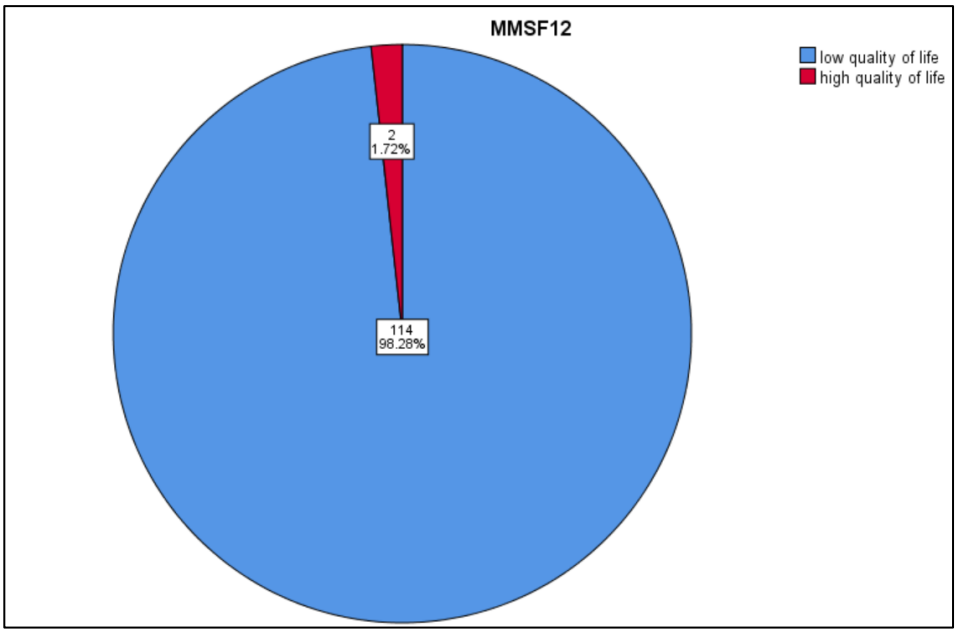

Figure 4.7: Distribution of quality of life for the menstrual migraine participants

4.4 Inferential Analysis

This part will show the inferential analysis used for the research study, plus the Normality Test and Pearson's Correlation.

4.4.1 Normality Test

The Shapiro-Wilk test was used to measure the distribution of MMAT and SF-12 score data. Shapiro-Wilk tests yielded p-values of 0.000 for MMAT and 0.060 for SF-12. The SF-12 is larger than the p-value threshold which is 0.05. This means that the SF-12 is normally distributed while MMAT deviates significantly from the normal distribution.

Because the MMAT is not normally distributed, the skewness and kurtosis values should be investigated further to understand the distribution patterns better. The skewness value should be between -1.96 and +1.96, according to the test results. If not, the Kurtosis value would be determined to continue the test. The Kurtosis value ranges from -1.96 to +1.96, which is 0.865 indicating that the data is normally distributed. Table 4.6 displays the results of the normality test. The findings demonstrated that MMAT, have a normal distribution, falling between skewness -1.96 and +1.96.

These findings indicate the importance of using appropriate statistical methods to ensure accurate data interpretation. The deviation from normality means that parametric tests like Spearson's correlation may produce invalid results, making Pearson's correlation a more reliable choice for this analysis.

Table 4.6: Tests of normality for MMAT and SF-12

Variable	Shapiro-Wilk (p value)	Skewness
MMAT	0.000	0.865
SF-12	0.060	

4.4.2 Pearson's Correlation Analysis

Because the data meet the normality assumptions required for parametric tests, the relationship between MMAT and SF-12 scores was examined using Pearson's correlation analysis. As shown in Table 4.7, the results revealed a statistically significant negative correlation between MMAT and SF-12 scores ($r= -0.347$, $p<0.05$). This presents a fair strength, inverse relationship, suggesting that higher scores on the MMAT are related to lower quality of life as measured by SF-12.

Correlations

		MMAT	SF-12
MMAT	Pearson Correlation	1	-.347
	Sig. (2-tailed)		.000
	N	384	384
SF-12	Pearson Correlation	-.347	1
	Sig. (2-tailed)	.000	
	N	384	384

Correlation is significant at the 0.01 level (2-tailed).

Table 4.7: Correlation between MMAT and SF-12

4.5 Hypothesis Testing

H0 – There is no association between the impact of menstrual migraine on quality of life in university students.

HA – There is an association between the impact of menstrual migraine on the quality of life in university students (2-tailed).

HA – The impact of menstrual migraine will be negatively associated with quality of life in university students (1-tailed).

Pearson's Correlation Analysis was conducted to determine the association between the impact of menstrual migraines and the quality of life in university students. The confidence level was set at α=0.05. Therefore, the null hypothesis will be rejected of the significant if the significant value (P value) is less than 0.05. The null hypothesis is accepted if the significant value (P value) is larger than 0.05. The significant impact of menstrual migraine on the quality of life in university students was determined by comparing the results of the

Menstrual Migraine Assessment Tool (MMAT) and the 12-item Short Form Survey (SF-12). The test showed a P value of 0.01 for both the Menstrual Migraine Assessment Tool (MMAT) and 12-item Short Form Survey (SF-12) with 2-tailed. Thus, the null hypothesis was rejected, and an alternate hypothesis was accepted with there is an association between the impact of menstrual migraine on quality of life in university students.

CHAPTER 5

DISCUSSION

5.1 Chapter Overview

The first section of this chapter summarises the key findings. Then, for each segment, an overview and interpretation of the findings based on the research objectives were shown, followed by a comparison to previous research and justification. The chapter then discusses the limitations of the current study, as well as recommendations for future studies, before concluding the study.

5.2 Discussion

5.2.1. Prevalence of Menstrual Migraine

This study's target population is the female university student in Malaysia. Menstrual migraine is a specific type of migraine that occurs in relation to the menstrual cycle. It is defined as migraine headache, that typically happens within the last two days of the menstrual cycle and the first three days of menstruation. This condition is linked to the fluctuation of hormones, particularly estrogen and is recognized for its distinct pattern among women (Raffaelli et al., 2023). The menstrual migraine assessment tool (MMAT) was used for the research to determine the occurrence of menstrual migraine among female university students in Malaysia. The Menstrual Migraine Assessment Tool (MMAT)

contains 3 questions and with yes to question 1 and at least one other yes, the participants will be considered as having menstrual migraine.

Based on the findings from Table 4.3, among 384 participants, there are 116 which is 30.2% of female university students have menstrual migraine while 286 which is 69.8% of female university students do not have menstrual migraines. A previous study by Fernández-Martínez et al. (2020) reported a prevalence of menstrual migraines among Spanish university students, with an important percentage, specifically 45.15% of the individuals included in the study using an ad-hoc self-report questionnaire that contained questions about the menstrual migraine. The result of the study is slightly lower than the previous study, even though both studies recruited the same group of participants which is female university students.

This can be explained that the ad-hoc self-report questionnaire from the previous study can sometimes lead to a higher reported prevalence due to recall bias or subjective interpretation of symptoms. Participants may overreport symptoms they perceive as consistent with menstrual migraines or misidentify other types of headaches as menstrual migraines. Moreover, there is no mention of the validity and reliability of the ad-hoc self-report questionnaire in the previous study. This method also lacks clinical confirmation, which can result in

overestimation compared to studies using more rigorous diagnostic criteria, such as structured interviews or medical evaluations.

The difference in study populations and sample sizes likely contributed to the variation in menstrual migraine prevalence between the current study and the previous study. The previous research focused on nursing students, who are more prone to elevated stress due to their rigorous academic demands, clinical responsibilities and emotional pressures (Black Thomas, 2021). Stress is a recognized trigger for menstrual migraines, potentially leading to the higher prevalence observed in the previous study. In addition, the previous study had a smaller sample size of 299 participants, compared to 384 participants in my study. Larger sample sizes tend to provide more reliable and generalizable results, possibly accounting for the lower prevalence of menstrual migraine in my study (Sim et al., 2021). Moreover, the broader population in my study included students from diverse courses with varying stress levels, reducing the overall prevalence of menstrual migraines.

Physiological and lifestyle factors may be contributing factors to menstrual migraines in my population which is the female university students. A poor diet, high levels of academic stress and irregular sleep patterns are all common among university students and are known to trigger menstrual migraines (Rafi et al., 2022). The main physiological cause is still changes in

hormones during the menstrual cycle, especially variations in estrogen levels. Furthermore, the frequency of menstrual migraines may be made worse by environmental factors like extended screen time and physical activity. The prevalence of menstrual migraines found in my study is probably affected by these combined factors.

5.2.2 Impact on Quality of Life of Overall Participants

The SF-12 questionnaire, which assesses both mental and physical health aspects, was used to evaluate the participants' quality of life. The respondents' overall state of physical and mental health was reflected in their mean SF-12 score of 82±9.1. The average of participants in the category of low quality of life, which is below 83, is less than half of the score. The results showed that 45.31% (n = 174) of the participants had a high quality of life, whereas a significant proportion (54.69%, n = 210) reported a low quality of life. Figure 4.6 provides a visual representation of this distribution.

The following analysis of the aspects of mental and physical health showed significant differences. The average Physical Component Summary (PCS) score was 43.4±6.29. Mental health is a critical area of concern, as evidenced by the Mental Component Summary (MCS) score, which had a mean of 39.0±8.06. Both Physical Component Summary (PCS) and Mental

Component Summary (MCS) scores are less than half of the score which is 50. This result shows that a major number of participants had issues with their physical and mental health. Table 4.4 provides a summary of these findings.

5.2.3 Impact on Quality of Life of Menstrual Migraine Participants

Participants who experienced menstrual migraine were likely to report lower scores in both PCS and MCS, highlighting the effect of menstrual migraine on quality of life. The lower Mental Component Summary (MCS) scores imply that menstrual migraines contribute to emotional distress, diminished vitality and social role limitations in addition to physical functionality. The Physical Component Summary (PCS) scores show difficulties with everyday physical tasks, which may relate to the debilitated migraine symptoms during menstruation (Lacson et al., 2010).

Based on Table 4.5, the average Physical Component Summary (PCS) score of the menstrual migraine participants is 43.4, while the average mental component summary (MCS) score the 38.6. According to the SF-12, among the 116 participants, 114 participants are in the group of low quality of life. Comparing the scores of the Physical Component Summary (PCS) and Mental Component Summary (MCS) of the menstrual migraine participants, the Mental Component Summary (MCS) is lower than the Physical Component Summary

(PCS). This indicates that menstrual migraine affects more in the mental aspects compared to the physical aspects. However, both the average physical component summary (PCS) and mental component summary (MCS) of the menstrual migraine participants have scores below half of the score of 50. This also showed that menstrual migraine has a severe impact on both the physical and mental aspects of the menstrual migraine participants.

According to the results, menstrual migraines have an immense effect on the mental health of female university students, triggering a series of emotional and psychological issues (Ashalya Pirthiraj & Raisuyah Bhagwan, 2023). The unexpected nature of migraines frequently creates fear and anxiety in students, who are continually concerned about when the next attack will disturb their academic and personal lives. For example, students preparing for an important exam may undergo increased stress because of the physical burden of migraines, which is caused by the mental pressure of feeling unprepared. Cognitive impairments such as difficulty concentrating and memory lapses can compound academic work difficulties, developing emotions of failure and self-doubt (Dhakal & Bobrin, 2023).

Social isolation is also usual, as university students may withdraw from classmates because of the shame associated with discussing menstruation health or their inability to participate in activities during periods (Benshaul-Tolonen et

al., 2020). Over time, these experiences can result in chronic stress, emotional tiredness and depressive symptoms, underlining the critical need for integrated healthcare solutions that address both the medical and psychological elements of menstrual migraines.

Even though menstrual migraines affect more on the mental aspects of female university students, menstrual migraines also have a severe impact on the physical aspects of the students as the physical component summary (PCS) score is less than 50. Menstrual migraines have a major effect on the physical well-being of female university students, often resulting in terrible pain that disrupts everyday activities. These headaches are typically accompanied by nausea, vomiting and increased sensitivity to light and sound, making it difficult for students to attend courses or focus and academic work (Chaudhary, 2021). For example, a student may have a sudden migraine during a lecture, requiring her to leave and miss valuable studying. Repeated occurrences can cause chronic fatigue since the pain disturbs sleep and exacerbates exhaustion (Rustom et al., 2022).

Plus, physical activities like exercise or even attending school may become difficult because of the persistent discomfort, resulting in diminished physical fitness and increased stress. These physical symptoms have an indirect effect that not only reduces academic production but also participation in

extracurricular activities, affecting the overall quality of life (Wong et al., 2020). These limitations showed the importance of focused physical health interventions, such as appropriate medication and lifestyle changes, for reducing the physical impact of menstrual migraines on this population.

The importance of focused treatments to enhance the quality of life for people with menstrual migraines is highlighted by these findings. The overall negative effects of menstrual migraine on well-being may be diminished by addressing both mental and physical health issues.

5.2.3 Correlation Between MMAT and 12-Item Short Form Survey

Table 4.7 shows a statistically significant fair negative correlation (r= -0.347,) between the Menstrual Migraine Assessment Tool (MMAT) and the 12-item short-form survey (SF-12) quality of life scores (Schober et al., 2018). This indicates that participants with menstrual migraine have higher MMAT scores, indicating discomfort from menstrual migraine symptoms, and lower SF-12 scores, indicating lower quality of life. By influencing their physical health, and menstrual migraines female students who complain of more common migraine attacks and a higher effect of headaches on daily life may have lower health-related quality of life. As the frequency of headaches increased, a decline in migraine quality of life was observed (Luo et al., 2022). The inverse relationship between these variables suggests that menstrual migraines affect physical health and mental well-being, which are important components of overall quality of life.

The fair strength of this correlation emphasizes how significantly menstrual migraines affect female university students' everyday functioning and life. Participants with positive menstrual migraines measured by the menstrual migraine assessment tool (MMAT) are associated with more frequent or severe menstrual migraines, which may interfere with social, academic and personal obligations (Awaki et al., 2024). In particular, participants with higher MMAT scores showed lower PCS and MCS scores, indicating that the physical and mental of the university students were also affected. These results are consistent with the knowledge that menstrual migraines, caused by hormonal changes, can

result in long-term discomfort, exhaustion and mental anguish which lower the quality of life.

The essential correlation found in this study is similar to previous studies that presented the negative effect of menstrual migraines on quality of life. The results showed the importance of properly identifying and managing menstrual migraines, particularly in groups like female university students who might experience extra stressors that worsen migraine symptoms. The negative effects of menstrual migraines on quality of life may be lessened by addressing them with focused interventions, such as medication, lifestyle changes or stress reduction techniques like having proper sleep, adequate exercise and regular meals (Haghdoost & Togha, 2022). These findings present the necessity for medical professionals to acknowledge menstrual migraines as a disorder that requires improving the physical and mental health of those who experience them as well as relieving their symptoms.

5.3 Comparison with Previous Study

5.3.1 Alignment with Previous Study

Compared to the previous study, Fernández-Martínez et al. (2020), both of the studies emphasize the prevalence and negative effect of menstrual headaches on university students. Fernández-Martínez et al. (2020) discovered a

prevalence of 45.15% among Spanish university students, which is higher than my study which is 30.21%. Despite the difference in prevalence, both studies emphasize the prevalence of menstrual migraines and how they significantly impact the quality of life, with common negative outcomes of the physical and mental including social participation and emotional well-being. Besides, both studies have the same sample size and age group which is female university students aged 18 to 25.

While comparing my study with Luo et al. (2022), the previous study used standardized tools to find out the impact of menstrual migraines on quality of life. Luo et al. (2022) used the 36-item Short-Form Survey (SF-36), which measures the 8 subdomains of health which are physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH). These eight domains are into two categories which are physical component summary (PCS) and mental component summary (MCS). For my current study, I used the SF-12, a condensed version of the SF-36 that can shorten the time for the participants to answer the questionnaire as university students are very busy with their studies. SF-36 contain 36 questions which is too much for the participants to answer. So, SF-12 is more suitable for this study which is for university students. Despite differences in tool length, both studies highlight menstrual migraines' negative impact on physical and mental health, with obvious decreases in both PCS and MCS scores. Menstrual migraine patients' average PCS and MCS scores were

67.82, which were significantly fewer than those of non-menstrual migraine patients (Luo et al., 2022). In my study, the PCS score is 43.3 and the MCS score is 38.6, which is largely lower than the previous research. This showed that menstrual migraine affects more in the physical and mental aspects of female university students in Malaysia.

5.3.2 Differences in Findings

Fernández-Martínez et al. (2020) used a sample size of 299 Spanish university students, while my study used 384 Malaysian university students. The fact that their study had a slightly smaller sample size may have influenced the reliability of its findings. A larger sample size is more likely to reflect the population under study, leading to fewer margins of error and lower standard deviation. Moreover, larger sample sizes increase the test's power, making it more likely to detect true effects. Larger sample sizes also allow researchers to avoid reporting false-positive or false-negative results (Charlesworth Author Services, 2022). So the current study is more reliable compared to the previous study in terms of the power of sample size. Methodologically, both studies used a cross-sectional design, but Fernández-Martínez et al. (2020) used an ad-hoc self-report questionnaire that contains questions about menstrual migraines, while my study used a menstrual migraines assessment tool (MMAT).

Previous study found a rate of 45.15% for menstrual migraine, which is higher than the 30.21% observed in my study. In the previous study's ad-hoc self-report questionnaire, there is no validity and may have produced a higher reported prevalence due to recall bias or subjective interpretation of symptoms. Participants may over-report symptoms they think are consistent with menstrual migraines or mistakenly identify other types of headaches as menstrual migraines (Althubaiti, 2016). For my study, I used the menstrual migraines assessment tool (MMAT) which consists of 3 questions that assess the temporal relationship between migraines and menstrual cycle, symptoms and severity of migraines and consistency across the cycle. The menstrual migraine assessment tool (MMAT) has been validated and is user-friendly, making it suitable for obstetrics and primary care providers (Tepper et al., 2008). This disparity may be due to differences in diagnostic criteria, cultural perceptions or even varying levels of awareness and reporting of menstrual migraines across populations.

Furthermore, Fernández-Martínez et al. (2020) did not find out the impact of menstrual migraines on quality of life. However, my study used the SF-12 to assess both physical and mental effects. This inclusion of the SF-12 allowed for a detailed examination of how menstrual migraines affect well-being, offering a broader perspective than Fernández-Martínez et al. (2020). These showed the study's unique contribution to investigating the occurrence and consequences of menstrual migraines among university students. Fernández-Martínez et al. (2020) study more on the prevalence and the risk factors for

menstrual migraine, including oral contraceptives, dysmenorrhea, dizziness, irritability and cola beverages.

While comparing Luo et al. (2022) and the current study, Luo et al. (2022) determined the quality of life of 506 patients, in contrast to my study's broader look at the prevalence and the quality of life of Malaysian university students. The previous study has a larger sample size of the population that has a larger power of study than the current study. The average age of the study population for Luo et al. (2022) is 23.62, not necessarily university students. While the current study is more focused on university students aged 18 to 25. Unlike the current study, Luo et al. (2022) used the SF-36 to investigate the eight health domains and categorized them into Physical Component Summary (PCS) and Mental Component Summary (MCS), while in my current study, SF-12 used, a shorter but equally effective tool that produced same measure outcomes with SF-36. In the current study, the SF-12 is used to determine the score of PCS and MCS, and how many participants have low quality of life and high quality of life respectively. However, in Luo et al. (2022), the SF-36 is used to determine the scores of PCS and MCS only and does not classify the participants into the low quality of life and high quality of life groups.

Luo et al. (2022) also investigated the effect of migraine on daily activities using the Headache Impact Test-6 (HIT-6), as well as the symptoms of anxiety and depression using the Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HAMD). For social support, use the Perceived Social Support Scale (PSSS), for sleep quality, use the Pittsburgh Sleep Quality Index (PSQI), and for suicidal ideation, use the Self-Rating Suicide Scale (SIOSS). Although Luo et al. (2022) do not study the prevalence of menstrual migraine, they study more aspects of the health of the participants.

5.3.3 Cultural and Demographic Factors

Differences in culture and population characteristics are among the major reasons for variations in the prevalence and impact of menstrual migraine across studies. The present study involves a sample of aged 18 to 25 female university students in Malaysia where different ethnic groups, cultural beliefs and university-related stress are present. A multicultural society comprising the Malay, Chinese and Indian populations in Malaysia influences the way menstrual-associated problems are viewed and managed.

At times, cultural attributes associated with menstruation, for instance, may inhibit communication, awareness and management of menstrual migraines. The cultural prejudice associated with menstruation in some Malaysian

communities may discourage open discussions about menstrual health, potentially leading to underreporting of symptoms and delayed treatment of menstrual migraines (Syed Abdullah, 2022). Furthermore, university students face academic pressures and lifestyle changes especially during the exam week such as irregular sleep patterns and dietary habits, which can increase the frequency and severity of migraines (Bouloukaki et al., 2023).

Fernández-Martínez et al. (2020) investigated a similar demographic which is Spanish university students. However, Cultural differences between Spain and Malaysia may explain discrepancies in results. Menstrual health is discussed more openly in Spain and healthcare services are more accessible (Medina-Perucha et al., 2023). The prevalence of menstrual migraines in their study (45.15%) was significantly higher than the 30.31% found in the current study. These differences may be due to the Spanish students' increased awareness and willingness to report symptoms. Furthermore, the Spanish healthcare system's universal access could lead to earlier diagnosis and better management, potentially influencing the reported prevalence and perceived impact compared to Malaysian university students who most lack information about menstrual migraines and are unaware of the signs and symptoms of menstrual migraines disorder as a medical issue (Y Nor Asyikin et al., 2015).

Luo et al. (2022) studied adult Chinese women patients with a mean age of 23.62 years and used the SF-36 survey to measure their health-related quality of life. While the current study used the shortened version of SF-36, SF-12. The SF-12 takes a more student-focused approach, which is appropriate for the study's target population of university students. Cultural and demographic differences could explain the variations in results between Luo et al. (2022) and the current study. The Chinese women patients, not necessarily university students have higher PCS and MCS scores which are 67.82 and 60.31 respectively which are higher than the PCS and MCS scores of the current study 43.3 and 38.6. This may be due to more stress more university students on their studies as stress is one of the major causes of menstrual migraine. Traditional Chinese beliefs about menstruation and migraine management, as well as the widespread use of herbal remedies, may influence symptom perception and reporting (Lyu et al., 2022). Furthermore, Luo et al. (2022) have a broader age range including women with more established healthcare routines, which contrasted with the current study's younger university population as the study settings of Luo et al. (2022) is at the neurology department of a hospital in western China. This population difference could help explain the disparity in the effect of quality of life.

5.4 Implications of Findings

5.4.1 Practical Implications for University Students

Menstrual migraines have a major effect on quality of life, which is crucial for university students. Migraines can impair academic performance, resulting in decreased focus, productivity and absenteeism owing to pain and discomfort (Osman Ali et al., 2022). Furthermore, they can hinder participation in extracurricular activities and social connections, isolating them and affecting their mental health. Addressing menstrual migraines is critical for students' academic progress and overall health, emphasising the importance of focused interventions, awareness campaigns and readily available support services in university settings.

Flexible deadlines, extra exam time and access to calm rest areas can all help students manage their symptoms and complete their studies more effectively (Hsu & Goldsmith, 2021). Universities must prioritise the well-being of students suffering from menstrual headaches to provide a supportive and inclusive learning environment. By addressing the particular challenges that students with menstrual migraines experience, institutions can ensure that all students have equal opportunities to achieve success in their academic pursuits. Furthermore, encouraging open communication and destigmatising discussions about menstruation health can contribute to a more understanding and accommodating campus environment for students impacted by this illness.

Students with menstrual migraines might benefit greatly from tools like flexible attendance policies, quiet places to rest and adjustments for missed tests or assignments. In the end, improving academic achievement and general well-being for students can result from creating an environment of empathy and support within the university. Universities must acknowledge how menstrual migraines affect students' academic performance and put in place measures to accommodate their demands (Munro et al., 2021). Universities may foster a more welcoming and encouraging environment for all students by proactively dealing with this problem.

5.4.2 Healthcare Recommendation

This study underscores the necessity of all-encompassing healthcare approaches to treat menstrual migraines in university students. Early identification of impacted students can be enhanced by routine screenings at university health clinics using instruments like the menstrual migraine assessment tool (MMAT). NSAIDs like painkillers include diclofenac (Voltaren), ibuprofen, naproxen (Synflex), mefenamic acid (Ponstan), paracetamol (Panadol) and other drugs. This treatment can be repeated if, after a few hours, there is still no improvement. These drugs should not be used too often, though as they might make headaches worse if taken in excess. Students should also be aware of the possible side effects of painkillers such as stomach problems and drug allergies before using them (Dottie, 2011).

The frequency and severity of symptoms can be decreased in addition to pharmaceutical therapies by encouraging healthy behaviours such as frequent aerobic exercise, yoga and mindfulness exercises. Additional help for general well-being can come from lifestyle counselling that emphasises stress management, sleep hygiene and hydration. Students can maintain their intellectual, social and physical health by incorporating these treatments into university health programs. Early treatment of migraine symptoms and lifestyle modifications can help students better manage their menstrual migraines and avoid disruptions to their everyday routines (Agbetou & Adoukonou, 2022). Students can take charge of their health and well-being by receiving information and tools for managing menstrual migraines such as the risk factors and causes of menstrual migraines and ways to reduce stress. Providing students with the skills and information they need to manage their migraines can enhance their general quality of life and academic achievement (Rustom et al., 2022).

University students' quality of life can be greatly enhanced by combining pharmaceutical and non-pharmacological methods for treating menstrual migraines (Haghdoost & Togha, 2022). Effective symptom control is achieved by incorporating early screening with NSAIDs like Voltaren, ibuprofen, naproxen (Synflex), mefenamic acid (Ponstan) and paracetamol (Panadol) and employing instruments like the Menstrual Migraine Assessment tool (MMAT). Additionally, migraine frequency and intensity can be decreased by adopting good lifestyle habits like frequent exercise, stress reduction and adequate sleep (Deng et al., 2024). These interventions, which are customised to meet the

individual needs of each student, can promote improved social interaction, academic achievement and general well-being.

5.4.3 Public Health Significance

Beyond their effects on individuals, menstrual migraines cause a large public health risk because of their capacity to lower productivity in society and put a burden on healthcare systems (Awaki et al., 2024). Insufficient knowledge of menstrual migraines, especially among female university students, can worsen their symptoms and delay diagnosis (Verhaak et al., 2020). Public health campaigns that incorporate education about menstrual migraines may promote conversations about the issue and encourage early interventions.

Public health policy can be more effectively shaped by expanding research to examine the ways in which healthcare access, socioeconomic factors and lifestyle changes affect menstrual migraines. Encouraging broad access to expert care, particularly in areas with limited resources, will guarantee that disadvantaged groups get the assistance they require. Furthermore, educating people about the cultural stigma associated with menstruation may lower barriers to care-seeking and provide a supportive environment for those who are impacted (Babbar et al., 2021).

Overall, a comprehensive strategy that addresses every aspect of menstrual migraines is crucial for improving outcomes and quality of life for those affected. We can help to reduce the effect of this condition on individuals and society as a whole by concentrating on education, research and access to care. Furthermore, raising awareness among healthcare practitioners about the unique issues that people with menstrual migraines encounter can lead to improved treatment options and support (Chalmer & Lønberg, 2023). By promoting policy changes that prioritise menstrual health and healthcare equity, we may help to create a more inclusive and understanding environment for those who struggle with these menstrual migraines.

5.5 Strengths and Limitations

5.5.1 Strengths of Study

Current research is effective in a few key fields. Initially, the validated instrument such as the 12-item Short Form Survey (SF-12) to assess the quality of life of female university students in both mental and physical domains and the Menstrual Migraines Assessment tool (MMAT) used to measure the prevalence of menstrual migraines. Data that is detailed and reliable is guaranteed by this methodology's integrity. Although the 12-item short-form survey (SF-12) is a shortened version of the 36-item Short-Form Survey (SF-36), SF-12 is a concise yet thorough tool that enables effective evaluation while maintaining depth and is more suitable for the study population which is female university students.

The inclusion of an estimated sample size of 384 people considerably strengthens the validity of the current study. The sample size was determined using OpenEpi software with a 95% confidence interval and 80% power of the study, ensuring that the findings correctly reflect the greater population of Malaysian female university students. By adopting a sample size that balances feasibility and representative, the study reduces the possibility of sampling bias while also providing enough statistical power to discover relevant patterns and connections, making the findings transferable to similar groups.

The current study fills a significant gap in Malaysian research, specifically on menstrual migraines among female university students. While research on menstrual disorders such as dysmenorrhea exists. There is a lack of data on menstrual migraine in this population. Furthermore, most studies have only focused on medical students, overlooking other fields of study. Furthermore, no study has specifically examined the effect of menstrual migraines on university students' quality of life. By addressing these gaps, this study provides critical insights that are currently missing from Malaysian academic literature.

Furthermore, the online recruitment strategy proved to be a successful and cost-effective method of reaching a large and diverse sample of participants. Employing widely used social media platforms like WhatsApp, WeChat, Telegram, Instagram, and Little Red Book, participants from various universities

in Malaysia were able to be recruited, ensuring inclusively a wider range of responses. This approach reflects current data collection trends, particularly in reaching out to university students who are active on these platforms.

Furthermore, the study's dual focus on the occurrence of menstrual migraines and their effect on quality of life adds significantly to its value. By linking these two components, the study provides a more complete picture of how menstrual migraines affect menstrual migraines to highlight the real-world consequences, such as how menstrual migraines affect their physical and mental health, academic performance and social participation. This comprehensive approach strengthens the case for developing more tailored healthcare interventions that address the student's physical and psychological difficulties. These strengths highlight the study's contribution to both academic research and practical healthcare strategies, which have the potential to inform policy, raise awareness and improve support systems for university students suffering from menstrual migraines.

5.5.2 Limitations of Study

While this study provides some understanding of the prevalence and effect of menstrual migraines among university students, several limitations should be noted. First, the use of the self-report questionnaire is a potential

limitation because it can introduce response bias. Participants may unintentionally misremember their symptoms, resulting in an inaccurate assessment of the frequency, severity or duration of their menstrual migraines. Furthermore, the desire to present oneself positively may lead to socially desirable responses, such as participants underreporting the severity of their symptoms or overestimating their ability to control the symptoms. These factors may affect the reliability and validity of data collected, even when using validated instruments such as the menstrual migraines assessment tool (MMAT) and 12-item short-form survey (SF-12). Although these tools have been validated and used in similar studies, the inherent bias of self-reporting cannot be eliminated and this must be considered when interpreting the results (Althubaiti, 2016).

Second, the study's cross-sectional design presents a limitation in determining the causal relationship between menstrual migraines and quality of life. Because the data was collected at a single point in time, it only provides a snapshot of the association between these two variables and cannot determine the directionality of the relationship. It is unclear whether menstrual migraines are the primary cause of decreased quality of life or if other factors influence the severity of symptoms. To truly understand causality, longitudinal studies would be required, allowing for the observation of how menstrual migraines and quality of life evolve over time and whether one factor has a direct influence on the other.

Finally, while focusing on university students is important for understanding the impact of menstrual migraines in this specific demographic, it means that the study excludes other important groups, such as older women or those with different educational backgrounds. The study's narrow demographic focus limits its ability to capture a broader range of factors that may influence the prevalence and impact of menstrual migraines, such as professional life, family responsibilities and age-related health changes. These factors may play an important role in how menstrual migraines affect people outside of the university settings. Overall, while the study provides useful information, its limitations indicate that future research should focus on addressing these gaps through more diverse sampling, longitudinal designs and further investigation of causal relationships.

5.6 Future Research Directions

5.6.1 Longitudinal Studies

Longitudinal studies are required to better measure the long-term effects of menstrual migraines on university students' quality of life. By following participants over time, these studies can investigate how menstrual migraines affect not only immediate symptoms but also long-term academic performance, social participation and mental well-being. Such research could also look into the efficacy of different treatment options, such as NSAIDs, lifestyle changes and psychological interventions and how these strategies affect outcomes over time. Finally, this would provide more information about the ongoing prevalence

of menstrual migraines and aid in the development of long-term healthcare solutions for this population.

5.6.2 Intervention Studies

Future research should look into the efficacy of specific interventions for relieving menstrual migraines and increasing the overall quality of life for university students. Interventions could include stress management programs that use techniques like mindfulness, cognitive-behavioural therapy or relaxation exercises to address the psychological factors that contribute to migraines' severity. Furthermore, dietary changes such as increasing magnesium intake or decreasing caffeine consumption, could be investigated for their ability to influence the frequency and intensity of menstrual migraines.

Pharmacological interventions, such as nonsteroidal anti-inflammatory drugs (NSAIDs) should be evaluated for their effectiveness in pain management and menstrual migraine prevention. Moreover, lifestyle interventions such as exercise routines, yoga and proper sleep hygiene should be investigated to determine their effectiveness in reducing the duration and intensity of menstrual migraine attacks. Researchers should also investigate how combining multiple interventions can have a synergistic effect. Randomized controlled trials or intervention-based studies would provide valuable evidence as to which

approaches result in the most significant improvements in the health and well-being of menstrual migraine sufferers.

5.6.3 Broader Population Studies

Expanding the study to include women from a variety of settings, such as rural areas, non-university environments and diverse socioeconomic backgrounds, would improve understanding of menstrual migraines across populations. Investigating women outside of university settings could reveal how work-life balance, family responsibilities and occupational stressors affect the prevalence and severity of menstrual migraines. Other than that, comparing cultural attitudes towards menstruation and pain management practices across regions can reveal cultural differences in migraine symptoms and coping mechanisms. Such inclusive research would help improve healthcare interventions, ensuring that they meet the diverse needs of all women. This comprehensive approach to studying menstrual migraines may result in more targeted and effective treatment options for women from diverse backgrounds. By considering a wide range of factors that may influence menstrual migraines, healthcare providers can better assist women in managing their symptoms and improving their quality of life.

CHAPTER 6

CONCLUSION

This study provides an understanding of the prevalence and impact of menstrual migraines in university students, with a specific focus on female university students in Malaysia, a demographic that has often been overlooked in previous research. The findings show that a significant proportion of students suffer from menstrual migraines, which have a negative effect on both their physical and mental health. These findings show the significance of regular screening for menstrual migraines in university healthcare systems and the interventions to relieve symptoms and improve quality of life.

The use of validated tools such as the Menstrual Migraines Assessment tool (MMAT) and 12-item Short-Form Survey (SF-12) ensure the results; reliability and the large sample size of 384 participants add strength to the findings, making them more applicable to a larger population of university students. Besides, this study fills a gap in existing research, as previous studies have primarily focused on disorders such as dysmenorrhea, whereas menstrual migraines, particularly in terms of quality of life, have not been thoroughly studied, especially in Malaysia.

This study also points out the deep effect that menstrual migraines have on quality of life, affecting physical and mental aspects significantly. Physically, the condition is specified by debilitating headaches, fatigue and disruptions in daily life, which commonly affect students' ability to attend classes, be involved in social activities or maintain consistent academic performance. Mentally, menstrual migraines have been linked to increased stress, anxiety and a decline in emotional well-being, as the unpredictability and intensity of symptoms can exacerbate feelings of frustration and helplessness.

These combined effects highlight the critical importance of treating menstrual migraines not only as a medical issue but also as a public health concern with far-reaching educational and social consequences. The findings showed the importance of incorporating migraine management strategies into the university health services, such as encouraging exercise, stress-reduction techniques and providing access to NSAIDs and other therapeutic interventions. These measures, which alleviate the physical and mental effects of menstrual migraines, can significantly increase the overall quality of life and academic success of affected students.

In a nutshell, this study increases understanding of how menstrual migraines impair daily functioning and psychological health, setting the stage for further research and targeted healthcare strategies aimed at improving the well-being of female university students.

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APPENDIX A – ETHICAL APPROVAL LETTER

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/78-363/2024

23 September 2024

Mr Muhammad Noh Zulfikri bin Mohd Jamali
Head, Department of Physiotherapy
M. Kandiah Faculty of Medicine and Health Sciences
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang, Selangor

Dear Mr Muhammad Noh,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your students' research project from Bachelor of Physiotherapy (Honours) programme enrolled in course UMFD3026. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
27.	Prevalence of Menstrual Migraine Among University Students and Its Impact on Quality of Life: A Cross Sectional Study	Jing Ni Wong	Ms Swapneela Jacob Co- supervisor Mr Tarun Amalnerkar	
28.	Prevalence of Functional Constipation and Its Impact on Quality of Life Among Young Adults: A Cross Sectional Study	Ow Yong Jie Min		

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
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Tel: (603) 9086 0288 **Fax**: (603) 9019 8868
Website: www.utar.edu.my

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, M. Kandiah Faculty of Medicine and Health Sciences
Director, Institute of Postgraduate Studies and Research

APPENDIX B – INFORMED CONSENT FORM

Prevalence of Menstrual Migraine Among University Students and Its Impact on Quality of Life: A Cross-Sectional Study

You are invited to participate in a research study conducted by WONG JING NI, from Bachelor of Physiotherapy (Hons) University Tunku Abdul Rahman (UTAR), Sungai Long Campus.

Purpose of the Study

The purpose of this research study is to investigate the prevalence of menstrual migraines among female university students in Malaysia and assess its impact on their quality of life.

Procedures

If you agree to be in this study, you will be asked to click on the Google Form link that was provided, sign this informed consent form, and answer all the questions that were provided, after answering, press the 'submit' button and your data will be recorded and collected.

Length of Participation

The questionnaire consists of 3 parts. You will spend around 10-15 minutes to complete this questionnaire.

Risks and Benefits

There are no risks from being in this study, but there are benefits that you will be able to test whether you have menstrual migraines and also review your quality of life towards menstrual migraines.

Confidentiality

No information that will make it possible to identify you, will be included in any reports to the University or in any publications.

Research records will be stored securely and only approved researchers will have access to the records.

Voluntary Nature of the Study

Participation in this study is voluntary. If you withdraw or decline participation, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

Contacts and Questions

If you have any questions, clarifications, concerns and complaints, about the research, you may contact me, WONG JING NI at 011-21227212 through WhatsApp or send an email to ginny1122516@1utar.my.

Thank you for your time and participation.

If you read the information sheet and agree to participate in this study, please tick the checkbox

☐ I have read the above statements and agree to take part in this study

E-signature (Eg. Wong Jing Ni)

Your answer

APPENDIX C – PERSONAL DATA PROTECTION NOTICE

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: a) Name b) Identity card c) Place of Birth d) Address e) Education History f) Employment History g) Medical History h) Blood type i) Race j) Religion k) Photo
l) 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
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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 ginny1122516@1utar.my.

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.

E-signature (Eg. Wong Jing Ni)

Your answer

Date

Date

dd/mm/yyyy

APPENDIX D – DEMOGRAPHIC DATA FORM

Demographic Data

Name *

Your answer

Age *

- ○ 18
- ○ 19
- ○ 20
- ○ 21
- ○ 22
- ○ 23
- ○ 24
- ○ 25
- ○ Other:

Gender *

- ○ Female
- ○ Male
- ○ Other:

University (Eg: University Tunku Abdul Rahman) *

Your answer

Course (Eg: Bachelor of Physiotherapy) *

Your answer

Year of study *

- ○ Year 1
- ○ Year 2
- ○ Year 3
- ○ Year 4
- ○ Other:

APPENDIX E – EXCLUSION CRITERIA

Are you suffering from any diagnosed headache? *

If Yes, please mention on other: E.g.: Post-traumatic headache
If No, just answer No

Your answer

Are you suffering from any diagnosed sleep disorder?
If Yes, please mention on other: E.g.: Obstructive sleep apnea syndrome
If No, just answer No

Your answer

Are you suffering from any diagnosed neurological or musculoskeletal migraine?
If Yes, please mention on other: E.g.: Neck pain
If No, just answer No

Your answer

Are you taking any prescription medicine in the previous 6 months
If Yes, answer Yes
If No, just answer No

Your answer

APPENDIX F – MENSTRUAL MIGRAINE ASSESSMENT TOOL

Menstrual Migraine Assessment Tool

The menstrual migraine assessment tool (MMAT) is
a 3-question questionnaire developed and validated to screen for menstrual migraine in obstetrics and gynecology.

Do you have headaches that are related to your period (occur between 2 days before the onset of your period, until the third day of your period) most months? *

- ◯ Yes
- ◯ No

When my headaches are related to my period, they eventually become severe. *

- ◯ Yes
- ◯ No

When my headaches are related to my period, light bothers me more than when I don't have a headache. *

- ◯ Yes
- ◯ No

APPENDIX G – 12-ITEM SHORT-FORM SURVEY

12 -Item Short Form Survey (SF-12)

The 12-Item Short Form Health Survey (SF-12) is a self-reported survey that measures how health impacts a person's daily life.

In general, would you say your health is *

- ◯ Excellent
- ◯ Very good
- ◯ Good
- ◯ Fair
- ◯ Poor

The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? *

	No, not limited at all	Yes, limited a little	Yes, limited a lot
Moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.	◯	◯	◯
Climbing several flights of stairs.	◯	◯	◯

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health? *

	Yes	No
Accomplished less than you would like.	○	○
Were limited in the kind of work or other activities.	○	○

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)? *

	Yes	No
Accomplished less than you would like.	○	○
Did work or activities less carefully than usual.	○	○

During the past 4 weeks, how much did pain interfere with your normal work (including work outside the home and housework)? *

- ○ Not at all
- ○ Slightly
- ○ Moderately
- ○ Quite a bit
- ○ Extremely

These questions are about how you have been feeling during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks... *

	None of the time	A little of the time	Some of the time	A good bit of the time	Most of the time	All of the time
Have you felt calm and peaceful?	○	○	○	○	○	○
Did you have a lot of energy?	○	○	○	○	○	○
Have you felt down-hearted and blue?	○	○	○	○	○	○

During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

- ○ None of the time
- ○ A little of the time
- ○ Some of the time
- ○ Most of the time
- ○ All of the time

APPENDIX H – TURNITIN REPORT

turnitin

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This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

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APPENDIX I – TABLE ON CORRECTION AFTER EXAMINER'S FEEDBACK

TABLE ON CORRECTION AFTER EXAMINER'S FEEDBACK

Examiner's feedback	Amendment after correction	Page & Paragraph
Make the abstract more concise	The abstract becomes more concise	Page II and III
In the Intro- mention less about the menstrual cycle and medications- reduce the content	Reduced the content about the menstrual cycle and medications	Page 1 paragraph 2, Page 3 paragraph 2
Repetitions of topics in sections 1.2.5 and 1.2.6 are there	The repetitions of topics in sections 1.2.5 and 1.2.6 are reduced	Page 5 paragraph 3
Need to specify the problem statement more	The problem statement is more specific	Page 7 paragraph 3 to page 8
Objective 2 - need to reframe- " To assess the impact of	Change to assess the impact of menstrual migraine in university students	Page 10 paragraph 2
Review Lit- lacks analysis. add more studies	The additional literature review was added	Page 15, page 21 paragraph 2, page 22
Add hypothesis for 2nd objective	The hypothesis for 2nd objective was added and hypothesis testing was done	Page 12, page 49-50

Checked by supervisor,

Swapneela

Name: Swapneela Jacob

Date: 2/1/2025