OW YONG JIE MIN

PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS

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# PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS: A CROSS-SECTIONAL STUDY

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**BACHELOR OF PHYSIOTHERAPY (HONOURS)**

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# PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS

By

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**PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS**

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## ABSTRACT

**Background:** Functional constipation (FC) is a common gastrointestinal condition affecting both adults and children globally. This study focuses on young adults aged 18–25, including university students, among whom the prevalence of FC in Malaysia is 16.2%, with higher rates in females (17.4%). Contributing factors include sedentary lifestyles, poor sleep, low physical activity, unhealthy diets, and insufficient fiber intake. FC significantly impacts quality of life, causing haemorrhoids, pelvic floor dysfunction, faecal incontinence, and abdominal discomfort. Prolonged straining can weaken pelvic floor muscles, pressure pelvic organs, and impair bladder function. This study explores the prevalence of FC and its effect on young adults' quality of life.

**Objective:** To determine the prevalence of functional constipation among young adults and to assess its impact on their quality of life.

**Methods:** In this cross-sectional study, a valid and reliable questionnaire is used in data collection. 422 participants will be recruited. A consent form and demographic data will be provided for the individuals to fill out. Then, the participants are required to fill up the following questionnaire. The questionnaire consists of a Faecal Incontinence and Constipation Questionnaire, a stool chart and Short Form-12. The SPSS software is used for the analysis of collected data.

**Results:** This research study recruited 422 participants with a mean age of 21.56 years. The gender distribution of 77% female and 23% male participants. Based on the results, the prevalence of FC was found to be 24.88%, which shows that 105 participants identified as having FC. In this study, QoL was evaluated utilizing validated tools which as the SF-12 questionnaire, and the data indicated that 28.91% of participants had a low QoL. The data was further analysed with the participants with FC, which revealed that 80.95% of participants experienced low QoL. A significant negative correlation ($r = -0.345$, $p<0.05$) was established between FC and QoL, suggesting that as the

severity of FC increased, QoL decreased. The Physical Component Summary (PCS) and Mental Summary (MCS) scores from the SF-12 were affected, although the decline in mental health was notably more severe.

**Conclusion:** According to this study, FC is quite common among young adults and has a significant negative influence on quality of life, especially mental health. The results point to the necessity of focused health education and interventions to enhance lifestyle choices, increase consciousness, and lessen the stigma attached to FC. By addressing these issues, young people's general welfare can be improved and the psychological and physical effects of this illness can be lessened. It is advised that further studies be done to examine management and preventative tactics that work for this population.

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**APPROVAL SHEET**

This research project entitled "**PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS: A CROSS-SECTIONAL STUDY**" was prepared by OW YONG JIE MIN and submitted as partial fulfillment of the requirements for the degree of Bachelor of Physiotherapy (HONOURS) at Universiti Tunku Abdul Rahman.

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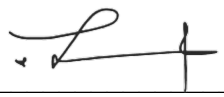

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**PERMISSION SHEET**

It is hereby certified that **OW YONG JIE MIN** (ID No: **21UMB03874**) has completed this Research project entitled "PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS: 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 Medical and Health science.

Yours truly,

_____

(OW YONG JIE MIN)

**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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## TABLE OF CONTENT

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ABBREVIATIONS

| | |
|---|---|
| FC | Functional Constipation |
| FICQ | Faecal Incontinence and Constipation Questionnaire |
| SF-12 | Short-Form 12 |
| PCS | Physical Component Summary |
| MCS | Mental Component Summary |
| QoL | Quality of Life |
| M | Mean |
| SD | Standard Deviation |
| N | Frequency |
| p | p-value (Significant value) |
| IBS | Irritable Bowel Syndrome |

# CHAPTER 1

# INTRODUCTION

## 1.1 Chapter Overview

This chapter will first discuss the background of the study. Functional constipation, Rome criteria, global prevalence of functional constipation, quality of life and relevance of the present study were introduced in brief to provide a background overview. The chapter continued with the research questions, followed by the research objectives and the operational definitions of terms.

## 1.2 Background of the study

### *1.2.1 Functional Constipation*

Functional constipation (FC) is a common gastrointestinal disorder that affects both adults and children worldwide (Vilanova-Sanchez & Levitt, 2020; Vriesman et al., 2020). It is also known as chronic idiopathic constipation, it describes persistent alimentary stoppage caused by malfunction or disruption in the physiological processes involved in bowel movements for a variety of causes, excluding irritable bowel syndrome (IBS) and without the presence of organic lesions or structural abnormalities that would complicate bowel movements (Aziz et al., 2020; Mearin et al., 2016; Shin et al., 2019). While this is a global issue, it is not considered life-threatening. The symptoms of FC include infrequent or hard stool passage, difficulty in complete stool evacuation, and bowel symptoms that may relate to an underlying illness (Bharucha et al., 2013; Lim et al., 2016).

### *1.2.2 Rome criteria*

The Rome criteria have been more frequently utilized in cross-sectional research over the last 20 years to evaluate the prevalence of functional constipation worldwide (Barberio et al., 2021). According to Lim et al. (2016), Rome III's diagnostic criteria for functional constipation include several symptoms: unusual stool frequency and consistency, straining during bowel movements, a sensation of incomplete evacuation, feelings of anorectal obstruction or blockage, and the use of manual manoeuvres to facilitate defecation. These symptoms must occur in at least 25% of bowel movements. Lim et al. (2016) have mentioned the criterion used for the corresponding supporting symptoms must be satisfied for defecations at least sometimes or frequently for a person to be classified as functionally constipated.

### *1.2.3 Global prevalence of functional constipation and its factors*

Surveys show that the average global prevalence of constipation is 16%, with 10.1% of cases identified as FC based on Rome III criteria (Zhang et al., 2022). In Asia, the prevalence of FC has been rising over the past decade, affecting 15% to 23% of female and around 11% of males (Gwee et al., 2013). According to recent studies, the reported prevalence of constipation in the overall adult population ranges from 2-27 % (Vu et al., 2024).

Colon cancer was the most prevalent digestive system illness among Malaysians, accounting for eleven of the top causes of morbidity and death (Lim et al., 2016). It has been observed that alimentary stoppage increases the exposure of colon cancer (Arora et al., 2012). High rates of constipation-related morbidity have been linked to sedentary lifestyles, low education levels, and poor dietary habits, including insufficient fruit and vegetable consumption, inadequate water intake, and not eating enough vegetables (Forootan et al., 2018; Li et al., 2019; Liu et al., 2019). Apart from that, sleep quality may be related to the occurrence of FC (Zhang et al., 2022). Recent research has found a strong correlation between gastrointestinal disorders or symptoms and sleep disturbances (Orr et al., 2020). Moreover, study have revealed that gastrointestinal function is impacted by both sleep and the circadian cycle (Vernia et al., 2021).

### *1.2.4 Quality of Life*

The term "quality of life (QoL)" has been created to encompass both the positive and negative aspects of a person's living conditions. Health is one of the most significant factors influencing QoL and is often used to evaluate various dimensions of it. QoL can be described as a person’s self-assessment of their life in relation to the goals and values they have considered when making decisions (Gliav & Lindberg, 1997).

Young adults experience crucial physical and mental development during a transitional phase between school and social life. It is clear that individuals will inevitably encounter both positive and negative life situations, which can affect their emotions in various ways. Stressful life circumstances can lead to emotional and behavioural issues. Research indicates that these problems may result in gastrointestinal constipation, which can cause irritation and facial acne, as well as more severe conditions such as intestinal blockages, haemorrhoids, fissures, and other ailments. These health issues can negatively impact both their daily lives and academic performance (Brochard et al., 2019; Lim et al., 2016; The Lancet Gastroenterology & Hepatology, 2019).

It has been established that functional constipation significantly impairs quality of life due to the presence of haemorrhoids, pelvic floor dysfunction, faecal incontinence, and abdominal discomfort (Diaz et al., 2023; Lim et al., 2016). An increasing number of studies on FC have been conducted in recent years, but there have been relatively few on FC and related issues among university students and young adults (Zhang et al., 2022). Research shows that females with functional constipation face more difficulties in relaxing their pelvic floor muscles and exhibit lower maximum voluntary contraction values compared to those without functional constipation (Miotto et al., 2023). Prolonged straining from constipation can weaken the muscles in the pelvic floor, increase pressure on pelvic organs and nerves, and cause bladder dysfunction. This can also lead to repeated episodes of unintentional bowel discharge (Beth

Israel Deaconess Medical Center, n.d.). The above research has shown that prolonged stasis of the bowel without treatment will lead to critical disease which impacts the QoL. Therefore, this study aims to investigate how the prevalence of functional constipation impacts the quality of life in young adults.

### *1.2.5 Importance and relevance of study*

Based on a few previous research, the findings show that the prevalence of constipation worldwide is estimated at around 16.1% with 10.1% having functional constipation which is diagnosed by the Rome III criteria (Barberio et al., 2021; Forootan et al., 2018). In Malaysia, there is a concern regarding the prevalence of constipation with an average of 93.1% of lumpy and hard stool and 79.3% of straining during bowel movement (Mamat Ibrahim et al., 2022). Nonetheless, only one study has shown the prevalence of functional constipation in Malaysia, specifically among university students (Lim et al., 2016). Hence, this study aims to determine the prevalence of functional constipation among young adults and how it impacts quality of life.

Long-term constipation may adversely impact health in several ways, including face acne and irritation, haemorrhoids, and other disorders that can interfere with academic performance and daily activities. Thus, it is critical to begin appropriate health treatments for the young adult population (Vu et al., 2024). Furthermore, physiotherapy assists in treating constipation through the

application of pelvic floor physical therapy, manual therapy, coordination training, visceral mobilisation, and biofeedback training. Constipation is also manageable by implementing lifestyle changes and dietary adjustments such as eating more fibre, establishing a regular bowel habit, and relaxation and stress management (Physio Tattva, n.d.).

### 1.3 Research questions

1. What is the prevalence of functional constipation among young adults?

2. What is the impact of functional constipation on the quality of life among young adults?

### 1.4 Problem statement

The QoL among young adults may be compromised due to FC. This condition is often linked to poor dietary choices, such as junk food consumption, high stress levels, and irregular bowel habits. Contributing factors include smoking, insufficient physical activity, delayed bowel movements, and a general lack of awareness about the issue (Lim et al., 2016). Young adults experiencing FC commonly face various health problems, including stomach discomfort, headaches, haemorrhoids, and pelvic floor damage. These issues may be directly or indirectly related to functional constipation. According to Lim et al. (2016), the epidemiological features of FC, as uncovered in the study, may facilitate the

formulation of public policies targeted at promoting elevated awareness and prompt identification of these symptoms. This can be attributed to the timely recognition of symptoms and subsequent treatment-seeking by affected individuals, which can effectively prevent complications associated with the ongoing ailment. (Lim et al., 2016). Chronic straining from constipation can weaken pelvic floor muscles, increase pressure on pelvic organs and nerves, and lead to bladder dysfunction and repeated involuntary bowel movements (Beth Israel Deaconess Medical Center, n.d.). The care of pelvic floor dysfunction resulting from functional constipation includes physiotherapy. The pelvic floor muscles that are too tight are recognised in pelvic floor physical therapy, and the physical therapist can then teach the patient stretches to enhance the muscles' coordination. To ease the tension in the pelvic floor muscles, physiotherapists can also suggest relaxation methods including acupuncture, yoga, warm baths, and exercises (Cleveland Clinic, 2024). Despite existing literature, there is a lack of comprehensive insights into the prevalence of FC among young adults and its various effects. Only a study by Lim et al. (2016) discussed regarding FC and its impact among tertiary education students in Malaysia. To address this gap, this study will examine the frequency of functional constipation and its relationship with other aspects of QoL.

### 1.5 Rationale of Study

FC is a common issue among young adults due to lifestyle changes brought about by postponed defecation, increased screen time and the lack of

physical activity. Young adults such as university students population tend to suffer from FC and have complications such as stomach discomfort, headache, haemorrhoid and pelvic floor damage (Diaz et al., 2023). Prolonged straining due to constipation may result in the weakening of the muscles in the pelvic floor, increased pressure on pelvic organs and nerves, along with dysfunction of the bladder and repeated occurrences of unintentional bowel discharge (Beth Israel Deaconess Medical Center, n.d.). The number of studies about the prevalence of FC among the young adult population is relatively low. Therefore, the purpose of this study is to determine the prevalence of FC and its impact on the QoL among young adults.

### 1.6 Research Objectives

1. To determine the prevalence of functional constipation among young adults.
2. To assess the impact of functional constipation on the quality of life among young adults.

### 1.7 Operational Definition

1. Functional constipation:

Bowel symptoms such as hard stool consistency, difficulties or infrequent stool passage, and incomplete stool evacuation are the main characteristics of this

disorder, which may be secondary to an underlying disease (Bharucha et al., 2013; Lim et al., 2016).

2. Prevalence:

In a given time period, the percentage of individuals who possess a particular attribute is referred to as the population proportion (National Institute of Mental Health, n.d.).

3. Quality of life:

It is an idea that seeks to include the state of well-being, whether it be of a group of people or an individual, concerning all aspects of their life at a given moment in time, both positive and negative (Teoli & Bhardwaj, 2023).

## 1.8 Structure of research project

In this research paper, the study's background includes research questions, research objectives, importance, and relevance, which were introduced in Chapter 1. The literature review on relevant topics from previous studies was then reviewed in Chapter 2. The methodology for this study was detailed in Chapter 3, which also covered the research design, sample design, research instrument, and data collection and analysis procedures. Chapter 4 presents the results of descriptive and inferential data analysis. Finally, Chapter 5 provides

an overview of the study's findings, limitations, and recommendations for further research. Chapter 6 will be the conclusion of the study.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Chapter overview

This chapter included reviewing past studies and literature on different topics and providing the guidelines for this research project. The topics are type of constipation, prevalence of FC, level of awareness, FC and symptoms, risk factors and complications of FC, and research gap of the study.

## 2.2 Type of Constipation

Constantly having difficult and infrequent bowel motions, usually three or fewer times a week, is a sign of constipation. Referrals to colorectal surgeons and gastroenterologists are often made for one of the most common gastrointestinal issues in the United States (Bharucha & Lacy, 2020; Peery et al., 2019). Constipation is a common condition that often goes unrecognized until patients experience complications, such as anorectal disorders (Diaz et al., 2023).

There are three distinct varieties of constipation, each with distinct traits and underlying causes. FC, sometimes referred to as primary constipation, is a prevalent subtype that frequently affects both adults and children and is characterised by difficult and infrequent bowel motions that lack a clear anatomical or biological aetiology (Diaz et al., 2023; Levin, 2019). The

pathophysiology underlying FC is multifactorial and not well understood. Factors contributing to FC include pain, fever, dehydration, dietary and fluid intake, psychological issues, toilet training, medications, and a family history of constipation (Diaz et al., 2023).

Normal transit constipation, slow transit constipation, and outlet constipation are the three different types of primary constipation that have been defined in studies. First of all, a person with normal transit constipation experiences constipation, but their faeces have a normal consistency and pass through their digestive tract at a regular rate (Villines, 2023). While the stool transit through the colon is normal, patients find it difficult to evacuate their bowels (Diaz et al., 2023). Individuals with normal transit constipation may experience symptoms such as abdominal bloating and pain (Villines, 2023).

Moreover, slow transit constipation is uncommon and typically affects middle-aged women (Villines, 2023). Study stated that slow transit constipation is defined by infrequent bowel movements, reduced urgency, or straining during defecation (Diaz et al., 2023). Peristalsis, the usual post-meal stimulation of the intestines, is absent in people with delayed transit constipation. As a result, faeces take longer to transit through the colon and food passes through the digestive tract more slowly than usual (Villines, 2023). Additionally, individuals suffering from slow transit constipation face significant challenges due to

decreased phasic motor activity in the colon, which can greatly impact their quality of life (Diaz et al., 2023).

Eventually, disruption to the pelvic floor muscles results in outlet constipation. In females, these muscles support the uterus as well as the bladder and colon. Damage to the pelvic floor muscles or nerves causes outlet constipation, which makes it difficult for a person to pass faeces. Pregnancy and delivery are two of the many causes of this harm (Villines, 2023). Prolonged or severe straining to empty the bowels, pain-induced delays in bowel movements, the need to use hands for assistance in bowel movements, a sensation of incomplete evacuation, or the application of perineal pressure during defecation are some possible indications of outlet constipation (Diaz et al., 2023; Villines, 2023).

Another prevalent subtype of constipation is chronic idiopathic constipation, which is characterised by irregular bowel movements and difficulties passing stool. Chronic idiopathic constipation has no obvious physiological or anatomical basis for the ongoing pain and irregularity in bowel movements, unlike FC, which may have obvious underlying causes. Less than 5% of instances had an underlying aetiology found. This subtype is distinguished by its chronic character, which frequently lasts for a long time, and its main symptom, which is difficult and infrequent bowel motions. To reduce symptoms

and enhance the patient's quality of life, treatment usually consists of a mix of nutritional adjustments, modifications to lifestyles, and, in certain situations, pharmaceutical interventions (Diaz et al., 2023).

Secondary constipation, which is a third subtype of constipation, can be associated with specific causes such as medications, certain medical disorders, dietary issues, or structural abnormalities in the gastrointestinal tract (Diaz et al., 2023). According to Villines (2023), secondary constipation is most frequently caused by hypothyroidism, diabetes, depression, Irritable Bowel Syndrome (IBS), blood vessel or brain diseases such as dementia, the use of certain medications such as opioids and chemotherapy or inflammatory bowel diseases such as Crohn's and ulcerative colitis. Vitamin and mineral shortages, anal fissures, nerve damage, spinal cord injuries, colon cancer, and nervous system disorders including multiple sclerosis and Parkinson's disease are less frequent causes of secondary constipation (Villines, 2023). Secondary constipation is frequently treated by addressing the underlying cause, which may include modifying medication, treating underlying medical issues, or altering one's diet. To successfully reduce the symptoms of constipation, these underlying issues must be properly identified and managed (Diaz et al., 2023).

## 2.3 Prevalence of Functional Constipation

According to Barberio et al. (2021) and Forootan et al. (2018), it has been reported that the estimated average prevalence of constipation worldwide is approximately 16%, with 10.1% of individuals diagnosed with FC according to the Rome III criteria. Reports indicate that the prevalence of constipation globally can range from 8.2% to 32.9% based on these criteria (Chu et al., 2014; Peppas et al., 2008). Based on another study, it discovered that alimentary stoppage affects approximately 9% of children worldwide, with prevalence rates varying from 0.7% to 29.6%. (Wald & Sigurdsson, 2011).

Approximately 15% of the adult population in Western countries is estimated to experience chronic constipation, with prevalence rates ranging from 4% to 28% (Wald & Sigurdsson, 2011). Prolonged constipation affects a significant portion, reaching 30% of individuals residing in Western nations, leading to obvious repercussions on both healthcare costs and overall well-being (Iovino et al., 2013). Between 1.9% and 27.2% of people worldwide are affected by FC. In Europe, the prevalence is 17.1%, while in Oceania, it is 15.3%. In North America, the range of affected individuals varies between 1.9% and 27.2%. A recent epidemiological survey conducted in the United Kingdom, Canada, and the United States found that 7.8% of adults experience functional constipation. (Mamat Ibrahim et al., 2022).

Numerous studies have been conducted on the Saudi population to evaluate the prevalence of constipation among the general public. These studies have revealed a prevalence rate of 4.4% in the central region. Additionally, another study found that the prevalence of constipation in the Makkah region is 22% (Hemdi et al., 2023).

Alimentary stoppage is said to be more common in Asian nations including China, Korea, Hong Kong, and India, where rates vary from 8.2% to 16.7% (Tamura et al., 2016). In these Asian countries, it affects 15% to 23% of females and approximately 11% of males, with an increasing prevalence in recent years (Gwee et al., 2013). There is a growing concern regarding the occurrence of stasis of the bowel among individuals in Malaysia, characterized by characteristics such as lumpy and hard stool (93.1%) and straining which comprise 79.3% (Mamat Ibrahim et al., 2022). This difference between populations can be related to a variety of constipation criteria, symptom duration, study techniques, subject age distribution, and epidemiological statistics. Data on prevalence by age distribution are also limited due to age differences across research groups (McCague et al., 2024).

Given that FC is more common among older individuals than in younger groups, the majority of the investigations focused on this population. Research on the older adult population has shown a broad range of prevalence rates, from

7.5% to 40%; rates among inpatients and residents of nursing homes are much higher. Different diagnostic screening methods and ethnic differences in the populations under study are to blame for this wide discrepancy in reported FC rates (Esra Bozkurt et al., 2024). According to the Rome III criteria, a 19.6% prevalence of FC was found in a prospective study of 899 community-dwelling individuals in South Korea between the ages of 72 and 86 (Jeong et al., 2021). A prevalence of FC of 10.7% was found in another study conducted in Korea on 1278 persons 65 years of age or older who lived in the community that used the Rome IV criteria (Lim et al., 2021). According to the Rome III criteria, a study of 384 different elderly people in Spain who were 70 years of age or older—including those living in hospitals, nursing homes, and the community—found that 26.8% of them had FC (Arco et al., 2022). Study shows that 14.8% of older adults in Malaysia suffer from chronic constipation which is diagnosed by Rome III criteria (Abdul Wahab et al., 2022). The differences observed in various studies emphasize how diagnostic criteria and demographic factors can significantly influence the results.

While most research focuses on older populations, there are limited studies targeting specific subgroups, such as university students and young adults. For instance, only a few research studies focused on the population of university students who also engaged in this topic as young adults and university students have the same age range. In Pakistan, the occurrence was determined to be 16.1%. A research investigation conducted in Karachi in 2011 found that the

incidence rate of FC among medical students was recorded at 34%. (Khatri et al., 2011). The prevalence of operational constipation among university students in China has been noticed to range from 9.37% to 27.17% (Zhang et al., 2022). A study conducted by Zhang et al. (2022) found that the prevalence of functional constipation among university students in Hunan, China, was 5.1%. Additionally, according to Omagari et al. (2020), the prevalence of chronic stultification among female undergraduate students in Japan was 9.2%. Another study shows that there was a prevalence of 13.7% of chronic constipation among Japanese university students (Vu et al., 2024). A study conducted by Lim et al. (2016) found that 16.2% of university students in Malaysia experienced FC, with a notably higher prevalence among female students at 17.4%.

Constipation affects approximately 15% of the general population, with higher rates observed in women and individuals over the age of 60 (Yildirim et al., 2021). Despite being more prevalent among the elderly, constipation can also manifest in younger demographics, with females exhibiting a higher incidence than males (Omagari et al., 2020). The occurrence rate of constipation in North America ranges from 4% to 28%, with a higher prevalence in females compared to males, regardless of the evaluation method used. Studies indicate that approximately 5% of males and 15% of females are affected by constipation. The incidence of constipation tends to increase with age, particularly in males over 60, while in females, the increase is consistent across all age groups. (Wald et al., 2007). The study by Ilyas et al. (2021) shows that a high occurrence of FC

was found among female students, which was 72.7% with a sex ratio of 0.37 and this indicates that FC was more common among females, compared to males.

Only one study conducted by Lim stated above shows the prevalence of FC in Malaysia, but the population is among university students. This shows a lack of prevalence of FC among young adults in Malaysia. Therefore, this study aims to determine the prevalence of FC among young adults aged 20 to 24 years in the Selangor area.

**2.4 Level of awareness**

A cross-sectional research which included 1855 participants, carried out in Riyadh was conducted to assess the overall knowledge of the general population about the condition of alimentary stoppage. The study found that 75% of participants were aware of constipation and its potential complications (Ahmed et al., 2020). In the study by Ahmed et al. (2020), 86.4% of the study participants concurred that insufficient intake of dietary fibre constitutes a perilous element leading to stultification, whereas 91% acknowledged the vital role played by sufficient water consumption in averting constipation. Moreover, a noticeable gap in the level of consciousness was caught in sight among different age groups (Ahmed et al., 2020). Furthermore, another study indicated that 70% of the 778 participants exhibited an understanding of stultification and its problem, with a significant variation in awareness across different age groups,

educational backgrounds, and personal encounters (Hemdi et al., 2023). In conclusion, the studies mentioned indicate that Saudi Arabia has a strong awareness of FC.

Apart from the aforementioned research, a few more studies carried out in Asian nations offer valuable perspectives on the degree of knowledge regarding constipation and functional constipation. The Knowledge, Attitudes, and Practices (KAP) of pregnant women about constipation were evaluated in Shanghai research. It was discovered that pregnant women knew enough about constipation, had good attitudes, and took proactive measures to avoid it. Factors that greatly impacted knowledge levels were age, professional experience, and previous constipation instruction (Lin et al., 2024). Even in groups with comparatively high levels of health knowledge, this emphasises the significance of customised health education.

Other than that, a different study examined Singaporean healthcare workers' attitudes and understanding of managing constipation. Only 34% of respondents were aware of the Rome IV criteria for FC, indicating considerable gaps. These results imply that awareness and implementation of standardised rules might differ greatly, even in professional contexts (Chua et al., 2023). These studies highlight the value of focused interventions to improve knowledge and treatment of FC, particularly for certain populations such as pregnant

mothers and medical professionals. Data on public knowledge in Asian nations, especially Malaysia, is still lacking, nonetheless. This emphasises the necessity of more studies in a range of demographics.

## 2.5 Functional Constipation and Symptoms

Constipation is characterized by persistent difficulty in defecation, which includes a reduction in bowel movements, straining, the passage of hard and painful stools, and a feeling of discomfort (Ilyas et al., 2021). Constipation is commonly defined as having fewer than three bowel movements per week. Patients experiencing constipation often report prolonged time spent on defecation, with significant straining involved. They also frequently experience a persistent feeling of discomfort (Sandler & Drossman, 1987).

In clinical medicine, healthcare professionals often define constipation as the experience of unsatisfactory bowel movements accompanied by a reduced frequency of stools. In contrast, patients typically describe their constipation based on symptoms such as straining, the presence of hard stools, difficulty with defecation, and other related issues. According to the Rome III guidelines for diagnosing functional constipation, the symptoms are characterized by abnormal stool consistency and frequency, the occurrence of straining, the sensation of incomplete evacuation, feelings of anorectal obstruction or blockage, and the

need for manual interventions in at least 25% of bowel movements (Lim et al., 2016).

FC is a condition that shows symptoms related to the bowel, which can be either the main issue or a result of an underlying medical condition. These symptoms may include difficulty passing stools, infrequent bowel movements, the presence of hardened stool, or the inability to fully empty the bowels (Bharucha et al., 2013; Lim et al., 2016). The diagnosis of primary or FC must exclude secondary constipation, as 'red flag' symptoms may indicate a more serious underlying disease necessitating further examination (McCague et al., 2024). Misdiagnosis and inadequate treatment of constipation can lead to chronicity lasting up to ten years (Michaud et al., 2009).

Functional constipation (FC) is diagnosed when two or more of the following six indicators are present: exertion during at least 25% of bowel movements, stools that are dense or firm, a feeling of incomplete evacuation, a sensation of blockage in the rectum, manual manoeuvres used to assist with bowel movements, and fewer than three bowel movements per week. The determination of whether stools are lumpy or hard is based on the Bristol Stool Scale, specifically types 1 or 2. Additionally, a diagnosis of FC is confirmed if both of the following conditions are met: infrequent loose stools without the use

of laxatives and failure to meet the Rome IV criteria for irritable bowel syndrome (IBS) (Yamamoto et al., 2022).

### 2.6 Risk Factors and Complications of Functional Constipation

Recent scientific studies indicate that a sedentary lifestyle, poor dietary habits, and various factors such as low consumption of fruits and vegetables, inadequate water intake, and lack of awareness all contribute to a higher prevalence of FC (Forootan et al., 2018; Li et al., 2019; Liu et al., 2019). In addition to the known factors, the occurrence of FC may be related to the individual's sleep quality (Zhang et al., 2022). The World Health Organization's (WHO) survey has discovered that 27% of the global population encountered disruptions during their sleep (Shinjyo et al., 2020). Recent studies have indicated a relationship between those with gastrointestinal diseases or symptoms and a high prevalence of sleep problems (Orr et al., 2020). Moreover, it has been revealed that both sleep patterns and the circadian rhythm bring effects to the gastrointestinal functionality (Vernia et al., 2021). The main lifestyle manner linked with FC in medical students was found to be a diet with insufficient fibre, decreased hydration, and delayed defecation (Ilyas et al., 2021). A low-fiber diet can contribute to constipation because the fiber found in fruits and vegetables helps to increase the volume of food in the intestines. This volume slows down the movement of food, allowing for a gradual uptake of nutrients and ultimately helping to relieve constipation (Mamat Ibrahim et al., 2022). According to Zhang et al. (2022), a positive correlation was found

between the prevalence of FC among university students and several factors. These factors include complex dietary patterns, moderate to severe sleep disorders, excessive eating, long meal durations, and poor defecation practices such as using mobile devices or reading while on the toilet. Additionally, smoking and a lack of physical activity may contribute to FC. The research also indicated that psychosocial issues experienced at a young age, such as behavioural and emotional disorders, temper tantrums, and sleep problems, are associated with an increased likelihood of constipation and soiling (McCague et al., 2024).

The pathogenesis of functional constipation (FC) is complex and involves various factors and risk elements, including genetic predisposition, socioeconomic conditions, underlying organic diseases, drug side effects, and behavioural factors. The underlying organic diseases encompass a range of disorders that affect the gastrointestinal, neurological, psychogenic, metabolic, and endocrine systems, all of which can contribute to constipation. Behavioural factors that may play a role in functional constipation include insufficient fibre intake, low fluid consumption, lack of physical activity, changes in eating patterns, and an inadequate response to the urge to defecate. Research conducted in 2011 found a higher prevalence of functional constipation among younger adults, which may be attributed to unhealthy lifestyle practices that are significantly linked to the development of this condition (Ilyas et al., 2021). A research investigation revealed that a significant portion of participants,

specifically 54.4%, were classified as sedentary or lacking physical activity. Individuals with a sedentary lifestyle in the study showed a lower frequency of defecation, firmer stool consistency, and reduced estimated stool output volumes compared to the overall healthy population (Mena & Lee, 2013). Research indicates that the consumption of dietary fiber and liquids has a positive correlation with the frequency of bowel movements and the volume of stool passed by adults experiencing functional constipation. It is likely that insufficient intake of these dietary components may have contributed to worsening their constipation. Additionally, while increased levels of physical activity were associated with greater severity of constipation, a lack of physical activity is generally recognized as a contributing factor to the condition (Mena & Lee, 2013).

The impact of functional constipation (FC) on a person's quality of life depends on the severity of the condition and its underlying causes. Some less commonly experienced consequences of constipation include abdominal discomfort or cramps, a decreased quality of life, haemorrhoids, anal fissures, pelvic floor damage, faecal incontinence, urinary retention, and rectal prolapse (Diaz et al., 2023).

Untreated FC can result in several long-term complications that significantly impact an individual's health and QoL. One of the most serious

complications associated with chronic constipation is faecal impaction. This occurs when hard, dry stool accumulates in the rectum or colon, making it difficult or even impossible to pass (Alburakan et al., 2022). The condition can lead to abdominal pain and distension, causing severe discomfort and bloating. As the blockage progresses, individuals may experience nausea, sometimes accompanied by vomiting. If not addressed, faecal impaction can cause tears in the intestinal wall, potentially leading to life-threatening infections or peritonitis (Obokhare, 2012).

Chronic straining to pass stool can cause the rectum to protrude through the anus, leading to serious complications such as tissue damage and necrosis if not treated properly (Forootan et al., 2018). Additionally, straining during bowel movements can result in swollen veins in the rectal area, known as haemorrhoids. This condition can be painful and may cause bleeding. Haemorrhoids can also become thrombosed, resulting in increased pain and discomfort (Basilisco & Coletta, 2013; Cheng et al., 2016).

Furthermore, hard stools can lead to tears in the anal tissue, called anal fissures, which can be extremely painful. This pain may create a cycle where individuals avoid bowel movements out of fear, which, in turn, exacerbates constipation. Chronic constipation can disrupt normal bowel function and lead to incontinence, characterized by an involuntary loss of stool control (Forootan

et al., 2018). Moreover, the pressure from impacted stool in the rectum can affect urinary function, causing difficulties in completely emptying the bladder (Cheng et al., 2016).

In short, the confounding factors that lead to FC are sedentary lifestyles, physical inactivity, poor defecation habits, low fibre consumption, inadequate water intake, protracted meal durations, excessive eating and sleep disorders. The complications caused by faecal continence (FC) include abdominal discomfort or cramps, decreased quality of life, haemorrhoids, anal fissures, pelvic floor dysfunction, faecal incontinence, urinary retention, and rectal prolapse.

**2.7 Research gap of the study**

While further research is needed to explore the frequency of fever complications (FC) in specific geographic regions, the findings from Ilyas et al. (2021) in their meta-analysis highlight the significant global impact of this disorder and its implications for healthcare systems worldwide. Recently, there has been a decrease in the number of investigations into FC across diverse populations. However, many studies have focused on FC and its associated factors in young adults (Zhang et al., 2022).

According to Lim et al. (2016), the study focused exclusively on the university student population, which falls within the young adult age range. However, this is the only study conducted in Malaysia that examines the prevalence of food consumption patterns among tertiary education students. Furthermore, this study was conducted 8 years ago. There may be changes in the prevalence of FC among this age group in Malaysia. In a study, Lim et al. (2016) noted that several factors need to be considered for further investigation. These include levels of physical activity, emotional and psychological variables, dietary habits, and overall quality of life. Understanding these connections is essential for exploring how these elements influence the manifestation of symptoms.

There is a lack of studies examining the prevalence of functional constipation in the young adult population, particularly in Malaysia. While several studies have identified risk factors leading to functional constipation in adults, there is limited research specifically focusing on young adults. Due to the differing lifestyles between young adults and the general adult population, the prevalence of functional constipation is likely to yield different results. Additionally, there is insufficient research on how functional constipation affects the quality of life among young adults, including aspects such as general health and social activities. Therefore, this study aims to determine the prevalence of functional constipation in young adults in Malaysia and assess its impact on their quality of life.

# CHAPTER 3

# METHODS

## 3.1 Chapter overview

This chapter will discuss the research methodology employed, including the research design, ethical approval, sampling strategy, research instruments, study procedures, and data analysis techniques.

## 3.2 Research Design

A cross-sectional study investigates the prevalence of functional constipation and its impact on the quality of life among young adults.

Cross-sectional studies are observational investigations that analyze data from a population at a single point in time. These studies are often used to assess the prevalence of health-related outcomes, understand factors influencing health, and describe characteristics of a population. This type of study is valuable for laying the groundwork for preliminary findings that can inform more in-depth investigations in the future (Wang & Cheng, 2020).

### 3.3 Ethical approval

All participants were required to read and e-signature the information sheet and consent form in Google form. The information sheet included the study procedure which will give an overall view of the study. This study was performed after obtaining ethical approval by the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman (refer to Appendix A).

### 3.4 Sampling design

The sample size was calculated using the Krejcie and Morgan table (https://www.research-advisors.com/tools/SampleSize.htm). The estimated population of young adults aged between 20-24 in Selangor are 456,118 (Open DOSM, 2023). Based on Krejcie and Morgan table, the sample size is 384 participants to achieve a 95% confidence level and a 5% margin of error (The Research Advisors, 2006). Another 10% will be added to the final sample size to account for participants who drop out, totalling 422 participants.

The samples were selected using a convenient sampling method in which the participants were recruited online or face-to-face. In convenience sampling, the focus lies on its economical nature, simplicity, and the immediate access to subjects. The chief purpose of convenience sampling is to acquire data from participants who are quickly available to the researcher. Nevertheless, there exist several disadvantages associated with the convenience sampling technique. The

most conspicuous drawback of this approach is its propensity for bias. Consequently, it is recommended that researchers exercise caution in considering convenience sampling as representative of the broader population. Additionally, another significant issue of concern pertaining to convenience sampling is the prevalence of outliers. Due to the considerable likelihood of self-selection occurring in non-probability sampling, outliers can significantly compromise this method of selecting participants. Outliers are defined as instances that are deemed not to conform to the dataset. Given that the convenience sampling method is susceptible to substantial concealed biases, it renders the outcomes increasingly unpredictable (Etikan, 2016).

The inclusion criteria of the participants for this study are a) Male and female aged between 20-24 years old, b) Subjects that have experienced at least 2 symptoms of the Rome III criteria, c) Subjects that have lumpy or hard stools during every bowel movement, d) Subjects that straining during every bowel movement (Diaz et al., 2023). Nevertheless, the exclusion criteria are a) young adults with pre-existing gastrointestinal conditions, b) young adults with any systemic disease, organic bowel disease and irritable bowel syndrome (Ilyas et al., 2021), c) young adults with organic diseases such as cancer and inflammatory diseases, neurological or endocrine disorders, d) young adults with secondary constipation induced by medication, e) young adults who smoke, f) female young adults with a history of giving birth.

### 3.5 Research Instruments

#### Faecal Incontinence and Constipation Questionnaire (FICQ)

The Faecal Incontinence and Constipation Questionnaire (FICQ) is a tool developed by Focus on Therapeutic Outcomes Inc. in collaboration with a physical therapist. Its purpose is to evaluate how defecation disorders affect a patient's perceived functional status related to pelvic floor issues. The FICQ is a self-administered questionnaire consisting of 20 items, with 15 items focused on bowel leakage and 5 items addressing constipation. Each item is paired with its own inquiry scale and corresponding definition. The questionnaire uses a Likert scale, allowing individuals to express their level of agreement or disagreement with each statement (Upadhyay, n.d.). In the study by Wang et al. (2014), the scoring of FICQ is discussed.

This study focuses specifically on functional constipation, so the questionnaire will only include questions related to constipation issues. The questionnaire will cover several key elements, including the frequency of bowel movements, the number of times enemas and laxatives are used within a month, the level of strain experienced during defecation, and the need for manual assistance (Upadhyay, n.d.). With permission, the FICQ was obtained from a reliable Internet source. The FICQ has been validated as a reliable tool to assess the impact of defecation disorders on a patient's perceived functional status related to pelvic floor disorders (Wang et al., 2014). This section of the questionnaire includes three modified questions based on the Rome III criteria

for FC. These questions address the presence of lumpy or hard stools, the sensation of incomplete evacuation, and the feeling of anorectal obstruction or blockage during defecation (Lim et al., 2016).

**Bristol Stool Chart**

The Bristol stool chart is a tool used to categorize different types of faeces into seven distinct groups. It serves as a diagnostic instrument for identifying conditions such as constipation, diarrhoea, and irritable bowel syndrome. Types 1 and 2, which are hard lumps, indicate constipation. In contrast, Types 5 to 7 are watery and suggest diarrhoea, often accompanied by urgency. Types 3 and 4 are considered ideal stools, as they are easier to pass. (Continence Foundation of Australia, 2023). The Bristol Stool Chart has been validated for identifying constipation, diarrhoea, and irritable bowel syndrome. This chart was included in the questionnaire to give a clearer view to the participants and help them classify their conditions according to their stools.

**12-item Short Form Survey (SF-12)**

To assess the impact of functional constipation on quality of life, the 12-item Short Form Survey (SF-12) is utilized. The SF-12 is a self-reported evaluative tool designed to measure how one's well-being affects their daily activities. It was created as a shorter alternative to the SF-36, which was

developed as part of the Medical Outcomes Study. The primary aim of the SF-12 is to reduce the burden on respondents. In terms of content, the SF-12 covers the same eight domains as the SF-36 (Thomas, n.d.).

1. Limitations in physical activities because of health problems
2. Limitations in social activities because of physical or emotional problems
3. Limitations in usual role activities because of physical health problems
4. Bodily pain
5. General mental health (psychosocial distress and well-being)
6. Limitations in usual role activities because of emotional problems
7. Vitality (energy and fatigue)
8. General health perceptions

The SF-12 template used in this study was obtained from a reliable source (Carepatron, n.d.). The SF-12 has been shown to be valid and reliable for determining its impact on quality of life related to daily activities.

The 12 items on the questionnaire cover eight domains: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). The Physical Component Summary (PCS) and Mental Component Summary (MCS) scores can be combined to create two domain-specific summary measures. Both domains are rated on a scale of 0 to 100, with 0

indicating the lowest possible QoL and 100 indicating the best QoL. The PCS and MCS were cautiously calibrated such that a difference of 10 points equates to the standard deviation in the general population of the United States, and 50 indicates the population's average rating. Furthermore, in this study, the reference population is the United States population, with a mean value of 50 and SD of 10 for calculating SF-12 scoring (Jankowska & Golicki, 2021).

Participants receive a picture illustrating the proper technique for defecation after completing the questionnaire. The ideal posture for bowel movements involves raising the knees and keeping the feet flat on a supportive surface. This hip positioning helps relax the muscles in the rectum, making it easier to defecate. In contrast, sitting with the hips at a 90-degree angle or using a raised toilet seat increases pressure on the rectal muscles, leading to more straining (Meinema, n.d.). This picture is to provide more information to the participants with FC and learn the good defecation technique.

Other than that, a picture of exercises for constipation was attached at the end of the questionnaire. It concludes with the best position for treating constipation in mild cases. These positions massage the digestive organs while increasing blood flow and oxygen delivery. It promotes peristalsis and encourages faeces to pass through the digestive system. These poses included supine twist, seated twist, wind-relieving pose and child’s pose (Boyle, 2023).

### 3.6 Procedure

This study employs a cross-sectional design, which requires the participation of young adults. Eligible participants are males and females aged between 20 and 24 years. To qualify for the study, participants must have experienced at least two symptoms from the Rome III criteria, specifically lumpy or hard stools and straining during every bowel movement. An online questionnaire (Google Form) was distributed to the participants, consisting of two parts.

1. Demographic data (refer to Appendix E)

   This section collects the individual's gender and age to filter candidates according to the study's inclusion requirements.

   The exclusion criteria outlined in this part of the questionnaire include pre-existing gastrointestinal conditions, systemic diseases, organic diseases, and IBS. Additionally, individuals experiencing secondary constipation due to medication are also excluded from participating in this study. Participants are required to answer questions regarding any pre-existing gastrointestinal conditions.

2. Informed consent form (refer to Appendix II)

Participants were randomly selected from a convenience sample through social media platforms such as Facebook, Instagram, and WhatsApp. Additionally, in-person recruitment was conducted around Selangor. After reading the information section, those who met the inclusion criteria proceeded to give their consent.

Data collection took place at Universiti Tunku Abdul Rahman Sungai Long Campus in Selangor for face-to-face participants. Over a three-week period, each participant approached at the university was informed about the study's purpose and asked for their consent to participate. Ineligible and excluded participants did not provide their demographic and relevant information, while eligible participants were included in the study.

### 3.7 Data analysis strategies

Following data editing to exclude inaccurate or blank data, IBM SPSS Statistics software version 26 and Microsoft Excel were used to analyse the data and generate the study's findings. Descriptive statistics were used to examine demographic data, such as age and gender, and the results were presented as frequency, percentage, Mean (M), and Standard Deviation (SD). The Shapiro-Wilk technique was used to determine if the data were normal. Pearson's

correlation was used to examine the connection between functional constipation and its effects on quality of life. The correlation coefficient (r), significant values, and correlation strength were analysed (Table 4.7). For the Pearson's Correlation test, $p<0.05$ was designated as the significant value.

# CHAPTER 4

# RESULTS

## 4.1 Chapter overview

This chapter summarises the results of the data acquired throughout the investigation. The participants' demographic data were provided first, followed by the descriptive statistics and results of the inferential tests. The findings will be presented in a systematic manner, beginning with any applicable graphical representations such as bar charts and pie charts, followed by a brief review with a relevant tabulation summary at the end of each separate component if necessary.

This study research received a total of 437 replies. The application of inclusion and exclusion criteria revealed that 422 individuals (96.57%) satisfied the inclusion criteria, while 15 participants (3.43%) were excluded from the research. Exclusions included 2 participants (13.33%) who disagreed with the consent form to protect their privacy, 5 participants (33.33%) who were over the age of 24, and 8 participants (53.33%) who had gastrointestinal conditions, were diagnosed with organic or systemic disease, or had Irritable Bowel Syndrome (IBS).

## 4.2 Demographic of Participants

### *4.2.1 Gender*

This study involved 422 participants in total with 97 males and 325 females. Figure 4.1 shows the gender distribution of participants in this study. The participants consist of 23% males and 77% females.

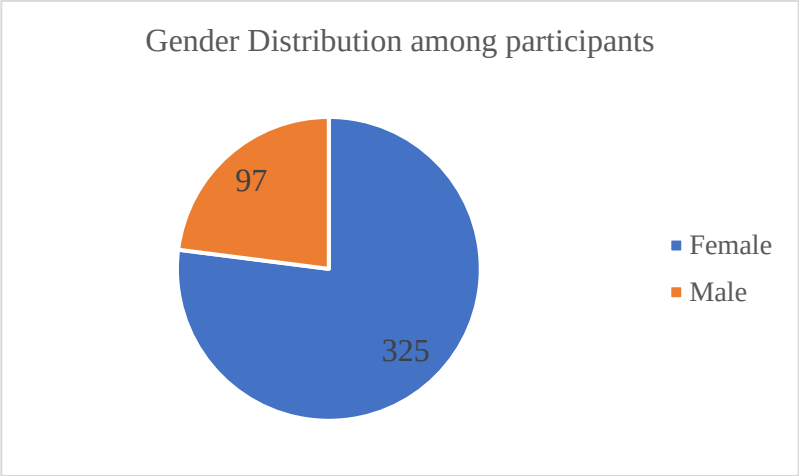


Figure 4.1: Gender distribution among participants

### *4.2.2 Age*

Figure 4.2 shows the age distribution among the participants for this study. The participants range from 20 years old to 24 years old. The most frequently occurring age number is 21 years old. There are 175 of them who are 21 years old. In Table 4.1, the mean age of 422 participants is shown (21.56 years old) and the standard deviation of age is 1.26.

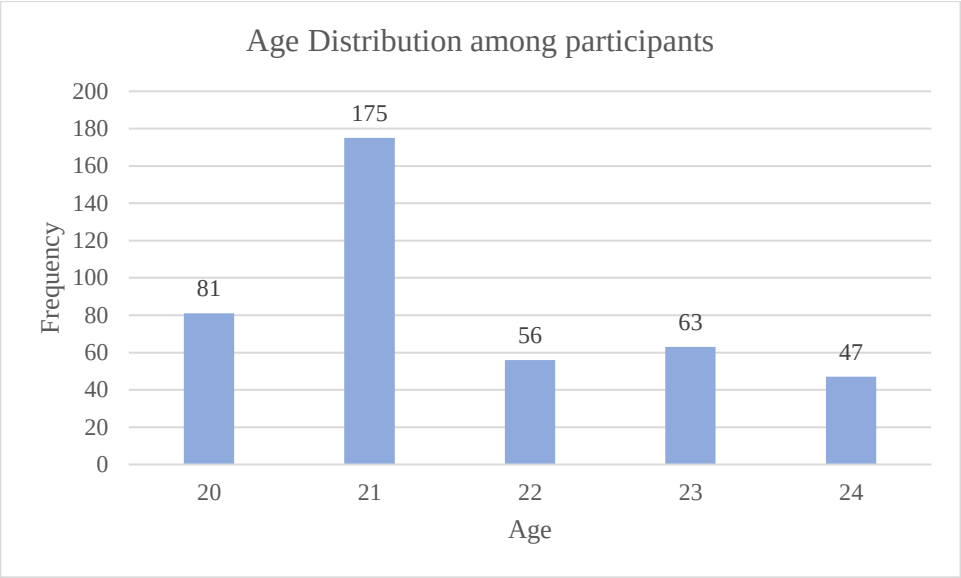


Figure 4.2: Age distribution among participants

Table 4.1: Mean & Standard deviation of age among participants

| | **Mean** | **Standard Deviation** |
|---|---|---|
| **Age** | 21.56 | 1.26 |

### *4.2.3 Summary of the demographic data*

The participant's age and gender distributions are presented in Table 4.2 and are expressed as frequency and percentage, as well as Mean (M) and Standard Deviation (SD), respectively. There are 325 females and 97 males among the total 422 participants. Their standard deviation (SD) is 1.26 and their mean age is 21.56 years old.

Table 4.2: Demographic data of participants

| Demographic Data | Frequency, n (%) | Mean ± SD |
|---|---|---|
| **Age** | | 21.56 ± 1.26 |
| 20 | 81 (19.19) | |
| 21 | 175 (41.47) | |
| 22 | 56 (13.27) | |
| 23 | 63 (14.93) | |
| 24 | 47 (11.14) | |
| **Gender** | | - |
| Male | 97 (22.99) | |
| Female | 325 (77.01) | |

Data of age and gender are presented as the total number, n (percentage), and means ± standard deviations.

## 4.3 Outcome Measure

### *4.3.1 Prevalence of Functional Constipation*

Figure 4.3 shows the prevalence of functional constipation among the participants in this study by utilizing the Faecal Incontinence and Constipation Questionnaire (FICQ). A total of 33 scores, from 0 to 10 is considered as no constipation while from 11 to 33 is considered as constipation (Wang et al., 2014). Based on the data collected, 105 participants (24.88%) have functional constipation among the total of 422 participants. The remaining 317 participants (75.12%) did not have functional constipation. Table 4.3 shows that the mean

score of the FICQ among the participants is 7.59 and the standard deviation of the score is 5.39. The prevalence of FC is determined by the scoring in FICQ.

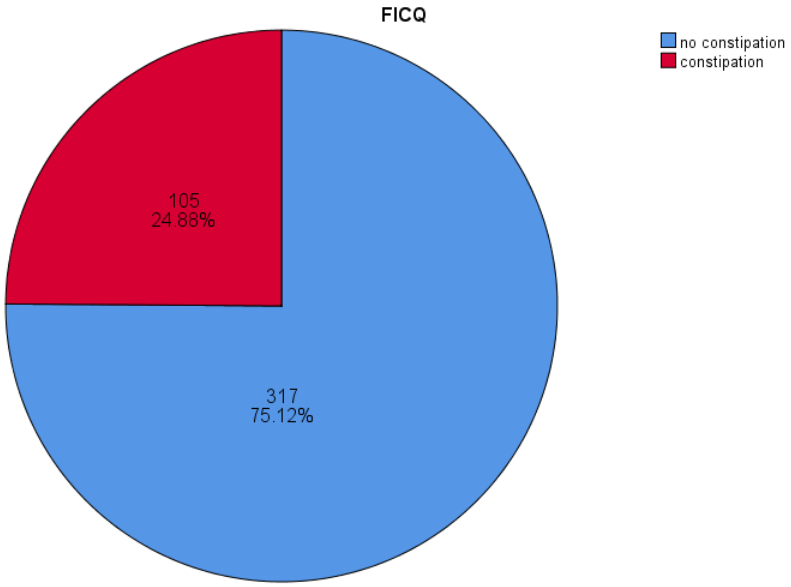


Figure 4.3: Prevalence of Functional Constipation among the participants

Table 4.3: Frequency, Mean & Standard Deviation of the FICQ

| **Outcome Measure** | **Frequency, n (%)** | **Mean ± Standard Deviation** |
|---|---|---|
| **FICQ** | | 7.59 ± 5.39 |
| Constipation | 105 (24.88) | |
| No constipation | 317 (75.12) | |

### *4.3.2 Quality of Life*

According to Figure 4.4, 122 participants (28.91%) have a low QoL based on the scoring in Short-Form 12 (SF-12). Among the 422 participants, 300 participants (71.09%) have a high quality of life. Table 4.4 shows the mean score and standard deviation based on the responses of participants in SF-12 which are 84.48 and 9.42 respectively. The questions of SF-12 are divided into two domains, which are Physical Component Summary (PCS) and Mental Component Summary (MCS). Among the 422 participants, the mean score of PCS is 43.35 and the SD is 6.77 while the mean score of MCS is 41.13 and the SD is 7.76 (Table 4.4).

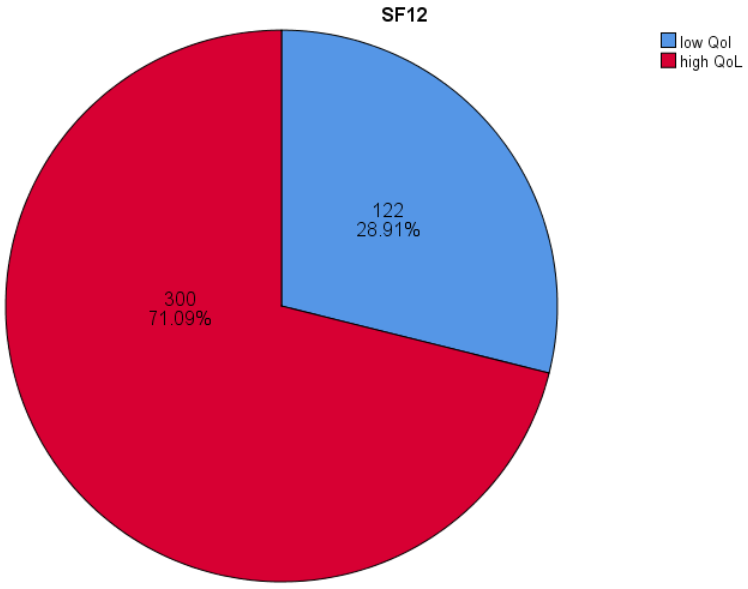


Figure 4.4: Quality of Life among all the participants.

Table 4.4 Frequency, Mean & Standard Deviation of the SF-12

| Outcome Measure | Frequency, n (%) | Mean ± Standard Deviation |
|---|---|---|
| **SF-12** | | 84.48 ± 9.42 |
| High QoL | 300 (71.09) | |
| Low QoL | 122 (28.91) | |
| **PCS** | | 43.35 ± 6.77 |
| **MCS** | | 41.13 ± 7.76 |

### *4.3.3 Quality of Life with the Presence of FC*

Figure 4.5 shows that among the 105 participants with FC, 85 participants (80.95%) have low QoL based on the scoring in SF-12. 20 participants with FC (19.05%) have a high QoL. Table 4.6 shows the mean score and standard deviation based on the responses of participants with FC in SF-12 which are 86.62 and 10.61 respectively. Among the 105 participants with FC, the mean score of PCS is 43.41 and the SD is 6.85 while the mean score of MCS is 43.20 and the SD is 8.35 (Table 4.5).

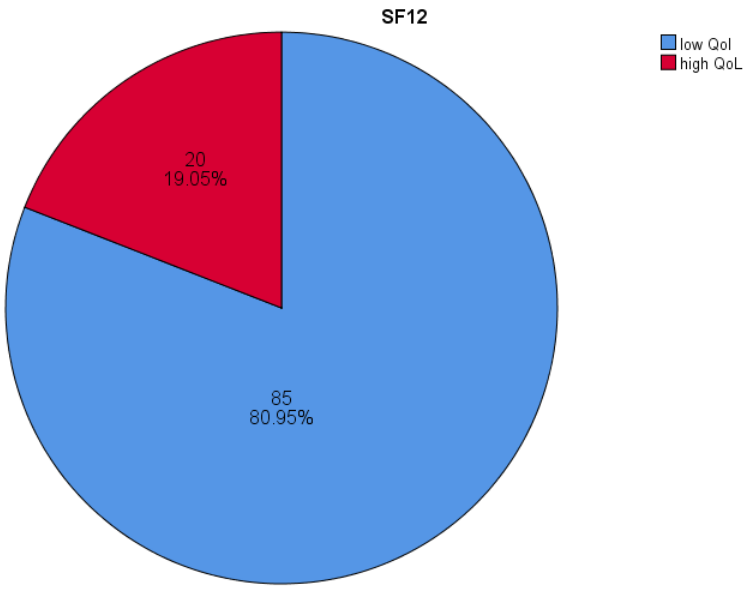


Figure 4.5: Quality of Life among the participants with FC.

Table 4.5: Frequency, Mean & Standard Deviation of the SF-12 among the participants with FC.

| Outcome Measure | Frequency, n (%) | Mean ± Standard Deviation |
|---|---|---|
| **SF-12** | | 86.62 ± 10.61 |
| High QoL | 20 (19.05) | |
| Low QoL | 85 (80.95) | |
| **PCS** | | 43.41 ± 6.85 |
| **MCS** | | 43.20 ± 8.35 |

## 4.4 Inferential Analysis

This section will discuss the inferential analysis, which was used for the research project, including the Normality test and Pearson's Correlation.

### *4.4.1 Normality Test*

Tests of Normality using Shapiro-Wilk were conducted to assess the date distribution of all dependent variables including the Faecal Incontinence and Constipation Questionnaire (FICQ) and Short-Form 12 (SF-12). The data is considered normally distributed if the p-value is greater than 0.05. If the p-value is less than 0.05, the skewness of the data is calculated. The data is deemed normally distributed if the skewness value lies between -1.96 and +1.96. From the Normality Test results, it was shown that all dependent variables including FICQ and SF-12 are normally distributed (Table 4.6).

Table 4.6: Test of Normality for FICQ and SF-12

| Variable | Shapiro-Wilk (p-value) | Skewness |
|---|---|---|
| **FICQ** | 0.000 | 1.407 |
| **SF-12** | 0.016 | -0.167 |

### *4.4.2 Pearson's Correlation Analysis*

In this study, the relationship between functional constipation and its impact on quality of life was determined by two outcome measures, which are the Faecal Incontinence and Constipation Questionnaire (FICQ) and Short-Form 12 (SF-12). The normality test shows that two variables are normally distributed. Therefore, Pearson's Correlation Analysis was conducted to determine the relationship between these two variables using the data collected. The test result is presented in Table 4.7. It was found that the correlation between FICQ and SF-12 was fair, negative and statistically significant ($r = -0.345$, $p < 0.05$). $r^2 = 0.119$, which means that 11.9% of the variation in the quality of life is associated with the change in the prevalence of functional constipation or 88.1% of the variation in the quality of life is due to other factors.

Table 4.7: Correlation between FICQ and SF-12

| **Pearson Correlation** | **FICQ** | **SF-12** |
|---|---|---|
| **FICQ** | 1 | -0.345 |
| **SF-12** | -0.345 | 1 |

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

# CHAPTER 5

# DISCUSSION

## 5.1 Chapter Overview

The findings interpreted from the results sections will be discussed in this chapter in order to bring them into line with the goals. It consists of the interpretation of prevalence findings, the impact of FC on QoL and clinical and public health implications. Following this, the study's strengths, limitations and suggestions for future studies will also be discussed. The chapter will end with a comprehensive summary and analysis of this research.

## 5.2 Discussion

### *5.2.1 Interpretation of Prevalence Findings*

The findings of this study revealed that the prevalence of functional constipation among young adults is 24.88%, indicating a significant health issue within this age group in young adults. Out of 422 participants, 105 participants were experiencing constipation by the time of data collection (Table 4.4).

The results indicated a significant frequency of FC among young adults. This is consistent with previous research, which indicates that the global prevalence of FC ranges between 10.1% and 16%, depending on the diagnostic criteria and demographic analysed (Barberio et al., 2021). The findings are consistent with global data on the frequency and effect of FC, but they also highlight specific issues encountered by young adults. For example, whereas FC

is commonly investigated in elderly people, its incidence in younger groups is typically underestimated. Young adults may also experience a stronger psychological impact due to their greater vulnerability to stigma and increased expectations for social involvement and productivity. Furthermore, sedentary activity, low fibre intake, stress, and irregular eating habits make the young adult population more vulnerable (Lim et al., 2016).

This prevalence rate is comparable to studies conducted in China with the target population of university students, which reported rates ranging from 9.37% to 27.17% (Zhang et al., 2022). A study in Japan also shows that the prevalence of constipation among female undergraduate students was 9.2% (Omagari et al., 2020). Furthermore, 13.7% of Japanese university students were diagnosed with chronic constipation by the latest research (Vu et al., 2024). Studies carried out in university settings reveal that this age group has a high prevalence of FC, which is frequently associated with lifestyle and environmental variables such as lengthy sedentary study hours, inconsistent meal scheduling, and limited accessibility to nutritious food options (Lim et al., 2016). Based on the study comparison above, it indicates that differences may be attributed to variations in lifestyle, dietary patterns and cultural factors.

In this study, the Faecal Incontinence and Constipation Questionnaire (FICQ) was used to accurately represent the severity and frequency of symptoms. Some of the studies mentioned above, based on the Rome III criteria, have also

indicated a high burden of constipation in younger groups, in particular among students, as a result of academic work stress, irregular eating habits, and insufficient physical exercise (Lim et al., 2016).

The high prevalence of functional constipation observed could be linked to factors such as low dietary fiber intake, inadequate hydration and sedentary lifestyles, which are commonly reported among young adults. Studies have shown that young adults were more likely to be on a low-fibre diet, reduced water consumption and delayed defecation (Ilyas et al., 2021). The prevalence of FC among undergraduates was found to be positively correlated with a number of factors, such as complicated eating habits, moderate to severe sleep disorders, excessive eating, prolonged meal times, and unfavourable defecation behaviours including using mobile devices and reading while defecating (Zhang et al., 2022).

Previous studies have shown that university students in Malaysia had a prevalence of FC of 16.2%, with female students having a substantially higher prevalence of 17.4% (Lim et al., 2016). The increasing prevalence of FC (24.88%) indicates that the lifestyle of young adults is getting worse compared to the study conducted in 2016 with the same population. Neither is a sedentary lifestyle nor bad eating habits; young adults are adapting to a more serious condition of sedentary lifestyle with less physical activity. These findings underline the need to raise awareness and provide early intervention for

addressing functional constipation in this particular population, as it can have severe implications for both physical and psychological health (Vriesman et al., 2020).

### *5.2.2 Impact of Functional Constipation on Quality of Life*

The association between FC and QoL was investigated using the Short Form 12 (SF-12) Health Survey, which revealed a considerable negative correlation. The study demonstrated a fair statistically significant negative correlation between FC (measured by FICQ) and QoL (measured by SF-12) with a correlation coefficient value ($r$) of -0.345 and a p-value less than 0.05. This finding underscores that FC impacts both physical and mental dimensions of health. Physically, constipation causes discomfort, abdominal pain, bloating and exhaustion which limit daily functioning and reduce productivity. Mentally, the persistent nature of constipation contributes to anxiety, embarrassment and even depressive symptoms (Belsey et al., 2010; Lim et al., 2016). In short, this indicates that a higher prevalence of constipation correlates with a lower quality of life.

The findings presented in Table 4.4 clearly show that the PCS score is higher than the MCS score among all the recruited subjects. Among the 422 participants, with a mean score of 41.13 ± 7.76, the MCS is somewhat lower than the PCS, which has a mean score of 43.35 ± 6.77. As for the 105 participants with FC, the results reveal that FC has a greater influence on the MCS compared

to the PCS with the mean and SD of 43.20 ± 8.35 and 43.41 ± 6.85 respectively (Table 4.5). Both PCS and MCS are indicators of health-related quality of life; greater functioning is indicated by higher ratings (Ware et al., 1998). According to the SF-12, this indicates that among people with FC, the mental health component of quality of life is reduced more than the physical health component. The lower MCS score aligns with existing literature that highlights the psychological burden of FC (Nag et al., 2020; Yamamoto et al., 2022).

Mental health is greatly impacted by symptoms like ongoing pain, shame, and irritation since they can cause anxiety, social disengagement, and even depressed tendencies (Karami et al., 2017; Liang et al., 2022). A study found that both clinical and self-reported constipation were correlated with an increased risk of depression (Yun et al., 2024). From the perspective of children with constipation, particularly when combined with incontinence, this condition creates social embarrassment, lowers their self-esteem, and causes anxiety. Alternatively, recent research has revealed that anxiety may be one of the most important elements in diminishing QoL since it impairs an individual's functioning and impacts multiple aspects of their everyday lives. Further studies have also revealed psychological abnormalities such as obsessive-compulsive and antisocial personality (Karami et al., 2017). On the other hand, although physical symptoms like discomfort and bloating do play a role in PCS decline, the effect is somewhat less noticeable (Karasawa et al., 2024).

These findings are consistent with previous research indicating that functional constipation negatively impacts both physical and mental health (Wald & Sigurdsson, 2011). Although FC is seldom linked with life-threatening consequences, it is becoming increasingly clear that such people have a much lower QoL than non-constipated populations. According to the study, 20% of adults with childhood constipation who did not respond to therapy had considerably worse QoL scores than the 80% who were effectively treated. Existing literature confirms these findings, demonstrating that persons with FC regularly report poorer QoL ratings in categories such as general health, social functioning, and vitality than the general population (Karasawa et al., 2024).

The diminished QoL experienced by young adults suffering from FC could have a detrimental impact on their academic achievements, social relationships, and overall health, highlighting the necessity for focused health interventions. Research has indicated that children with chronic functional constipation reported notably lower QoL ratings in emotional, social, physical, and educational domains when compared to their healthy counterparts. This implies that such adverse effects might extend into young adulthood, compromising academic success and social engagements due to related psychological distress and anxiety (Karami et al., 2017). Additionally, a scoping review addressed the psychosocial ramifications of constipation in childhood, pointing out that chronic constipation can result in enduring emotional and psychological challenges that may persist into later life. The ongoing nature of this condition can lead to a diminished QoL for those affected, influencing their

social interactions and academic performance (McCague et al., 2024). In a qualitative investigation centered on children experiencing chronic constipation, it was revealed that 62.5% of participants reported that their academic performance was adversely affected by constipation and faecal incontinence (Kaugars et al., 2010). Together, these studies highlight the critical need to tackle FC through targeted health initiatives to enhance the QoL for those impacted, especially young adults facing difficulties in both academic and social environments.

The psychological impact of FC is significant since individuals frequently feel stigmatised while discussing bowel health. This might result in a delayed diagnosis and treatment, worsening symptoms. Individuals who retreat socially due to shame and discomfort become even more isolated, making it difficult for them to seek help or participate in normal activities. Addressing these psychological issues is critical to improving impacted people's QoL (Belsey et al., 2010). The significant relation shown between the mental health component of the SF-12 and FICQ scores emphasises the importance of a multidisciplinary approach to FC treatment, including psychological counselling and support.

### *5.2.3 Clinical and Public Health Implications*

This result emphasizes the necessity of treating both the physical and mental aspects of FC in therapeutic therapy. Integrating stress management,

mental health support, and counselling into therapy sessions may assist in reducing the mental health effects of FC and enhance overall QoL. The study's findings highlight the need for early identification and management of FC among healthcare practitioners (Dovey et al., 2023; George & Borello-France, 2017). Routine functional constipation screening should be undertaken in clinical and community settings, with a focus on young adults. Early detection can aid in prompt care and prevent problems (George & Borello-France, 2017).

A comprehensive strategy that includes dietary changes, pharmaceutical therapy, and psychosocial support is suggested. Healthcare professionals should encourage young adults to develop good bowel habits, such as increasing fibre consumption, engaging in regular physical exercise, and adequate hydration (Dovey et al., 2023). Low fibre diets, poor hydration, and sedentary lifestyles were identified as primary causes of FC in this particular population. The findings indicate that modifiable lifestyle variables play an important role in both the prevalence and treatment of FC (Zhang et al., 2022). Increasing fibre consumption, engaging in regular exercise, and adequate hydration are all easy but effective ways to ease discomfort. Previous research has shown that such lifestyle adjustments greatly enhance bowel health and alleviate constipation symptoms (Lim et al., 2016).

Behavioural treatment in adolescents as well as adults is primarily concerned with restoring normal defecation mechanisms and is advised in

patients with FC caused by dyssynergic defecation. To prevent the destruction of rectal sensation and function in individuals with these conditions, behavioural improvements such as taking time to defecate and responding quickly to the desire to defecate are required (Vriesman et al., 2020).

Biofeedback training and physiotherapy are treatments intended to improve control over the pelvic floor muscles that facilitate defecation. Biofeedback training assists in helping adults and adolescents with functional constipation and dyssynergic defecation. Several RCTs have shown that among those with constipation, biofeedback therapy outshines placebo or common treatment options such as diet, education, and laxatives (Vriesman et al., 2020). This shows that young adults may benefit from identical therapy, which can aid with stooling.

A study reveals that treating psychological aspects is critical in effectively managing FC, recommending that healthcare practitioners should prioritise mental health assistance as part of treatment programs (Gozali et al., 2023). Stress management is crucial since stress has been known to negatively impact gastrointestinal motility and aggravate symptoms. Young adults, particularly students and early-career professionals, frequently encounter significant levels of stress, therefore stress reduction approaches like mindfulness and relaxation methods are critical components of FC management. Stress has a substantial impact on the development of FC aggravation because it

directly affects gastrointestinal function via the gut-brain axis (Nall, 2019). A study found that exposure to stressful life events was strongly associated with increased prevalence of constipation. This emphasises the need to manage psychological aspects in clinical care (Devanarayana & Rajindrajith, 2010). Stress management is thus an important aspect of managing FC since it helps to lower the extent of symptoms and enhance general well-being.

Young adults require targeted therapies that suit their unique lifestyle and psychological demands. This involves an educational initiative to increase awareness of bowel health and promote early medical consultation. Such activities can assist in reducing the stigma around FC and encourage proactive management (Cochrane, 2021). Education initiatives aimed at this age range might raise knowledge of the signs and symptoms of functional constipation and encourage better lives. Workplaces and educational institutions can explore health-promoting programs such as nutritious food selections and physical activity possibilities (Dovey et al., 2023).

### 5.3 Strengths of study

The strength of this study includes the relevance of the topic, use of validated tools, comprehensive analysis, large sample size and focus on an understudied population. First and foremost, FC is a prevalent but under-discussed issue, particularly among young adults, making it relevant to the present population. Concentrating on this group draws attention to a health

concern that, although having a major influence on the quality of life of young people, is usually overlooked in research on older individuals. The emphasis of this study highlights the impact of this illness on an age group that is frequently thought to be in good health. The study closes a significant gap in the literature on gastrointestinal health by emphasising the prevalence and its effect on quality of life. The knowledge acquired helps healthcare providers become more aware of the issue and promotes the inclusion of constipation treatment in young adults' regular care.

The study then used the Short Form-12 (SF-12) and the Faecal Incontinence and Constipation Questionnaire (FICQ), which are both well-acknowledged for their validity and reliability in evaluating gastrointestinal symptoms and QoL, respectively. By using these validated tools, the results are guaranteed to be reliable and comparable to those of other research. Furthermore, these instruments enable the thorough assessment of the psychological and physical aspects of health, which strengthens and adds significance to the study. In general, the utilisation of these standardised questionnaires improves the accuracy and rigour of the study's findings, offering a more comprehensive comprehension of how gastrointestinal problems affect QoL. Furthermore, incorporating both psychological and physical aspects enables a more comprehensive evaluation of health outcomes concerning constipation and faecal incontinence.

Aside from that, this study's strength also contained thorough analysis. This study examines the effects of FC on quality of life by examining physical and mental health aspects independently using SF-12 scores, namely PCS and MCS, in addition to reporting the prevalence of FC. By offering insights into the condition's complex impacts on day-to-day living, this method guarantees a comprehensive grasp of its burden. Furthermore, this study is able to pinpoint possible areas for focused treatments to enhance the general QoL for those impacted by FC by analysing the distinct elements of mental and physical health independently. This comprehensive approach adds depth to the findings and contributes valuable information for healthcare providers and policymakers looking to address the challenges faced by those with FC.

In addition, the sample size for this study consists of 422 people. The study's sample size of 422 individuals is sufficient for achieving statistically significant results and lowering the possibility of random error. A bigger sample size also guarantees more representativeness, which improves the findings' applicability to the young adult population. This study's huge sample size raises the possibility that the findings will be reliable and generalisable to a larger variety of circumstances. With more assurance, the results may be applied to a larger group of young adults. Additionally, a bigger sample size boosts the study's ability to identify real impacts and enables more reliable statistical analysis. This strengthens the basis for inferences and decision-making by enhancing the validity and trustworthiness of the study findings.

Last but not least, this study concentrated on a population group that has not received enough attention. Because constipation is more common among older persons, the majority of studies on the topic focus on this population. This study's emphasis on young adults illuminates a distinct demographic that is increasingly experiencing FC as a result of stress, sedentary lifestyles, and unhealthy eating patterns. Identifying the causes of constipation in young adults can assist guide preventative and focused treatments. For healthcare workers dealing with this population, this research may potentially offer insightful information on how to enhance general digestive health. In general, treating young people's constipation can enhance their general well-being and QoL.

### 5.4 Limitation of study

Although the study offers insightful information, it has drawbacks. It is challenging to determine causal linkages in cross-sectional studies since they only collect data at one particular moment in time. The study, for example, demonstrates a relationship between FC and lower QoL, but it is unable to establish whether FC causes low QoL or vice versa. The directionality of this link over time requires longitudinal research. Cross-sectional research could also fail to take into consideration confounding variables that could affect the findings. As a result, longitudinal studies should be explored in future studies to offer a more thorough knowledge of the connection between FC and QoL. Furthermore, the study found that long-term follow-up investigations gave insights into the course of FC in adulthood (Bongers et al., 2009).

Other than that, both recall bias and social desirability bias may be introduced by the use of self-reported questionnaires (FICQ and SF-12). Inaccurate reporting may result in participants forgetting specifics about their symptoms. Furthermore, research demonstrates that recollection bias is highly widespread in cross-sectional studies. Participants recall exposure information differently depending on their result status, or they recall outcome information based on their exposure (Wang & Cheng, 2020). Regarding the social desirability bias in this study, individuals could underreport the severity of their symptoms or the effect on their QoL since talking about bowel movements is stigmatised. These biases should be taken into account when evaluating the study's findings since they may have an effect on their validity. To lessen these biases and guarantee accurate reporting from participants, researchers would need to look at alternate data collection methods.

On the other hand, the study's exclusive emphasis on one age group is a further disadvantage. Although the study's focus is young adults, contrasting their results with those of other demographics, such as adolescents or elderly people might provide an insightful perspective. Age-group variations in coping strategies, QoL effect, or symptom intensity, for instance, may offer a more comprehensive picture of FC. Furthermore, investigating the ways in which FC appears in various age groups may help identify possible treatments or support plans that would work better for particular demographics. A more focused and individualised strategy for treating FC across the lifespan may be influenced by this comparison method.

The study finds a strong correlation between FC and mental health, but it fails to look at certain mental health issues like depression or anxiety. Taking these factors into account might provide further insight into how mental health affects QoL and how severe FC is. Furthermore, researching how FC interacts with certain psychological disorders may assist in customising support services and therapies for those who are affected by both (Wang et al., 2023). This all-encompassing strategy might result in better methods for controlling FC and enhancing general well-being.

### 5.5 Recommendations for future study

The cross-sectional design of the current study makes it challenging to determine a causal association between FC and QoL. A longitudinal strategy will be useful and suitable in future research to monitor the development of FC and its effects on QoL over time. Examining whether treatments like dietary modifications, stress reduction, or physical exercise will result in any appreciable improvements in symptoms and quality of life is another benefit of longitudinal research. Additionally, it determines risk variables or triggers that might indicate when young adults' FC begins to develop or worsen.

Future research might include objective measures to confirm and enhance these findings, even though self-reported instruments like the SF-12 and FICQ are useful. For instance, a clinical evaluation that involves physical examinations or diagnostic testing to validate FC. For more precise data

collection, individuals may utilise stool diaries in which they record their bowel motions, irregularities in their faeces, and related symptoms. Further research may also look at physiological signs or biomarkers that may be associated with the severity of FC.

However, the connection between FC and mental health is clear but hasn't been well investigated. Future research ought to look at the relationship between particular psychological disorders like stress, worry, or depression and FC. Future studies is advised to examine how the gut-brain axis mediates the effects of stress and psychological distress on gastrointestinal symptoms, as the aforementioned studies have indicated that the gut-brain axis is influenced by stress levels. Future studies could also assess how well psychological therapies like mindfulness, cognitive-behavioural therapy (CBT), or biofeedback treatment work to manage FC.

In addition, since dietary practices and physical activity are known to contribute to constipation but were not thoroughly examined in this study, future research is advised to examine these aspects. It is advisable to evaluate how certain dietary patterns, fibre consumption, and hydration levels contribute to the prevention or amelioration of FC. Future research may also examine how regular exercise and a sedentary lifestyle affect intestinal motility and symptom severity. Moreover, future studies could involve intervention trials to evaluate how well dietary and lifestyle changes can manage FC.

In future studies, it is recommended to concentrate more on stress and coping strategies given the link between stress and gastrointestinal health. Future studies should consider investigating the precise mechanisms—such as changes in gut motility or microbiota—through which stress exacerbates FC. Future studies are advisable to examine the coping mechanisms employed by young adults to deal with stress and how well they work to lessen FC symptoms. Future research, however, may examine the combined effects of multi-component therapies, such as stress management, exercise, and nutrition, on symptom alleviation and QoL

# CHAPTER 6

# CONCLUSION

In conclusion, this cross-sectional study examined the prevalence of FC and its impact on QoL among young adults. According to the results, 24.88% of the participants had FC, highlighting it as a significant health concern in this population. Compared to past studies on Malaysian university students, which found a prevalence of 16.2%, this prevalence is considerably greater. The rise may be the result of recent lifestyle changes, including less physical exercise, poor eating habits, and higher stress levels, especially among young adults adjusting to independent living and academic work requirements.

Using the FICQ and SF-12, the study showed a fair, negative connection ($r=-0.345$, $p<0.05$) between FC and QoL. The MCS score was more affected by FC than the PCS score, indicating that the psychological impact of FC is more than its physical implications. Physical restrictions are caused by symptoms including bloating, stomach pain, and prolonged straining, while mental health problems like anxiety, social disengagement, and depressive symptoms are made worse by the shame and stigma surrounding FC. These results are consistent with previous research showing that FC dramatically lowers QoL by interfering with everyday activities and mental health.

Several public health and therapeutic consequences arise from the significant frequency and effect of FC among young individuals. To avoid

problems and improve QoL, early detection and treatment of FC are crucial. Regular screening for FC in this population should be the primary objective for healthcare providers, who should use validated instruments like the FICQ. Dietary advice to encourage fiber-rich diets, stress-reduction techniques, and methods to increase physical activity levels are all examples of interventions. It is also important to address the psychological aspects of FC since therapy and mental health care can lessen the psychological suffering brought on by the illness.

Additionally, educational programs are required to decrease the stigma associated with gut health and increase knowledge of FC. These initiatives ought to focus on young adults in educational and professional contexts, stressing the value of a balanced diet, consistent exercise, and prompt medical attention. For those with more severe symptoms, physiotherapy techniques such as pelvic floor therapy and biofeedback training may also be beneficial.

While this study offers valuable insights, its cross-sectional design limits its ability to establish causal relationships. Future longitudinal investigations could illuminate the interplay between QoL, lifestyle factors and FC. Broadening the scope to include diverse populations and a range of age groups may improve the relevance of the findings.

In conclusion, FC significantly adversely affects the physical and mental well-being of young adults, requiring a multidisciplinary approach to address its prevalence and repercussions. By enhancing awareness and encouraging early interventions, public health initiatives alleviate the effects of FC and enhance the overall QoL for this at-risk demographic.

# CHAPTER 7

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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<br><br>Co- supervisor<br>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 | | |
| 29. | A Study to Anlayse the Correlation Between Migraine Symptoms, Motion Sensitivity and Balance Impairment: A Cross-sectional Study Among University Students | Stella Chen Sing Yi | Ms Kiruthika Selvakumar | |
| 30. | A Study to Analyse the Impact of Headache on Level of Physical Activity and Dynamic Balance Among University Students | Lee Wan Fei | | |

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.

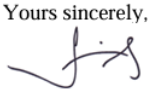
(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

**Kampar Campus :** Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
**Tel**: (605) 468 8888 **Fax**: (605) 466 1313
**Sungai Long Campus :** Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
**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 Functional Constipation and its impact on Quality of Life among Young Adults

**Research Participant Information Sheet**

Universiti Tunku Abdul Rahman
Faculty of Medicine and Health Sciences
Department of Physiotherapy
Bachelor of Physiotherapy (Honours)

**Information Sheet to Participate in the Study**

"PREVALENCE OF FUNCTIONAL CONSTIPATION AND ITS IMPACT ON QUALITY OF LIFE AMONG YOUNG ADULTS"

Student Investigator: Ow Yong Jie Min
Department: Department of Physiotherapy
Course Name and Course Code: UMFD3026 RESEARCH PROJECT
Year and Semester: Year 3 Semester 1
Research Supervisor: Ms Swapneela Jacob

You are being requested to volunteer for this research study that is being conducted as part of the requirement to complete the above-mentioned Course.
Please read this information sheet and contact me to ask any questions that you may have before agreeing to take part in this study.

**Purpose of the Research Study**

The purpose of this study is to determine the association between prevalence of functional constipation and its impact on quality of life among young adults.

**Procedures**

If you agree to be in this study, you will be requested to fill up a questionnaire regarding functional constipation. The questionnaire will take 5-10 minutes to complete. The relevant data will then be collected and analysed.

**Length of participation**

One-time participation only

**Risks and Benefits**

No risk will be involved throughout the current study.
The benefits of participating in this study include increased awareness of the risk factors that lead to functional constipation and the impact on quality of life.

**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 or complaints, about the research, the researcher conducting this study can be contacted at 016-5582144, or by email at jieminoy@1utar.my.

My Research Supervisor, Ms Swapneela Jacob, can be contacted at 017-2277671, or by email at swapneela@utar.edu.my if there are any inquiries, concerns or complaints about the research and there is a wish to talk to someone other than individuals on the research team.

If you have 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 (E.g. Ow Yong Jie Min) *

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
d) For advertorial and news
e) For general administration and record purposes
f) For enhancing the value of education
g) For educational and related purposes consequential to UTAR
h) For replying any responds to complaints and enquiries

i) For the purpose of our corporate governance
j) For the purposes of conducting research/ collaboration

3. Your personal data may be transferred and/ or disclosed to third party and/ or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose 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 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 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 to assist you in respect of the purposes and/ or for any other purposes related to the purpose.

8. You may access and update your personal data by writing to us at jieminoy@1utar.my

Acknowledgement 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 (E.g. Ow Yong Jie Min) *

Your answer

Date *

Date

dd/mm/yyyy

## APPENDIX D – KREJCIE AND MORGAN (1970) TABLE

**Required Sample Size†**

| Population Size | Confidence = 95% Margin of Error | | | | Confidence = 99% Margin of Error | | | |
|---|---|---|---|---|---|---|---|---|
| | 5.0% | 3.5% | 2.5% | 1.0% | 5.0% | 3.5% | 2.5% | 1.0% |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| 20 | 19 | 20 | 20 | 20 | 19 | 20 | 20 | 20 |
| 30 | 28 | 29 | 29 | 30 | 29 | 29 | 30 | 30 |
| 50 | 44 | 47 | 48 | 50 | 47 | 48 | 49 | 50 |
| 75 | 63 | 69 | 72 | 74 | 67 | 71 | 73 | 75 |
| 100 | 80 | 89 | 94 | 99 | 87 | 93 | 96 | 99 |
| 150 | 108 | 126 | 137 | 148 | 122 | 135 | 142 | 149 |
| 200 | 132 | 160 | 177 | 196 | 154 | 174 | 186 | 198 |
| 250 | 152 | 190 | 215 | 244 | 182 | 211 | 229 | 246 |
| 300 | 169 | 217 | 251 | 291 | 207 | 246 | 270 | 295 |
| 400 | 196 | 265 | 318 | 384 | 250 | 309 | 348 | 391 |
| 500 | 217 | 306 | 377 | 475 | 285 | 365 | 421 | 485 |
| 600 | 234 | 340 | 432 | 565 | 315 | 416 | 490 | 579 |
| 700 | 248 | 370 | 481 | 653 | 341 | 462 | 554 | 672 |
| 800 | 260 | 396 | 526 | 739 | 363 | 503 | 615 | 763 |
| 1,000 | 278 | 440 | 606 | 906 | 399 | 575 | 727 | 943 |
| 1,200 | 291 | 474 | 674 | 1067 | 427 | 636 | 827 | 1119 |
| 1,500 | 306 | 515 | 759 | 1297 | 460 | 712 | 959 | 1376 |
| 2,000 | 322 | 563 | 869 | 1655 | 498 | 808 | 1141 | 1785 |
| 2,500 | 333 | 597 | 952 | 1984 | 524 | 879 | 1288 | 2173 |
| 3,500 | 346 | 641 | 1068 | 2565 | 558 | 977 | 1510 | 2890 |
| 5,000 | 357 | 678 | 1176 | 3288 | 586 | 1066 | 1734 | 3842 |
| 7,500 | 365 | 710 | 1275 | 4211 | 610 | 1147 | 1960 | 5165 |
| 10,000 | 370 | 727 | 1332 | 4899 | 622 | 1193 | 2098 | 6239 |
| 25,000 | 378 | 760 | 1448 | 6939 | 646 | 1285 | 2399 | 9972 |
| 50,000 | 381 | 772 | 1491 | 8056 | 655 | 1318 | 2520 | 12455 |
| 75,000 | 382 | 776 | 1506 | 8514 | 658 | 1330 | 2563 | 13583 |
| 100,000 | 383 | 778 | 1513 | 8762 | 659 | 1336 | 2585 | 14227 |
| 250,000 | 384 | 782 | 1527 | 9248 | 662 | 1347 | 2626 | 15555 |
| 500,000 | 384 | 783 | 1532 | 9423 | 663 | 1350 | 2640 | 16055 |
| 1,000,000 | 384 | 783 | 1534 | 9512 | 663 | 1352 | 2647 | 16317 |
| 2,500,000 | 384 | 784 | 1536 | 9567 | 663 | 1353 | 2651 | 16478 |
| 10,000,000 | 384 | 784 | 1536 | 9594 | 663 | 1354 | 2653 | 16560 |
| 100,000,000 | 384 | 784 | 1537 | 9603 | 663 | 1354 | 2654 | 16584 |
| 300,000,000 | 384 | 784 | 1537 | 9603 | 663 | 1354 | 2654 | 16586 |

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## APPENDIX E – DEMOGRAPHIC DATA FORM

**Demographic Data**

Age *

- ◯ 20
- ◯ 21
- ◯ 22
- ◯ 23
- ◯ 24
- ◯ Other: _____

Gender *

- ◯ Male
- ◯ Female

## APPENDIX F – EXCLUSION CRITERIA FORM

**Exclusion criteria**

Do you have any pre-existing gastrointestinal conditions (any ailments linked to the digestive system, including throat, stomach and intestines) ? *
(example: coeliac disease, colorectal cancer, diarrhoea or vomitting, fecal incontinence)

- ◯ Yes
- ◯ No

If **YES** at the previous question, please state the conditions.

Your answer

Have you had an systemic disease? *
(example: high blood pressure, diabetes mellitus, rheumatoid arthritis, cardiovascular disease)

- ◯ Yes
- ◯ No

If **YES** at the previous question, please state the conditions.

Your answer

Have you had any organic disease? *
(example: cancer & inflammatory disease, neurological or endocrine disorders)

- ◯ Yes
- ◯ No

If **YES** at the previous question, please state the conditions.

Your answer

Have you had Irritable Bowel Syndrome (IBS)? *
IBS is a group of symptoms that occur together, including repeated pain in your abdomen and changes in your bowel movements, which may be diarrhea, constipation, or both.

- ◯ Yes
- ◯ No

Have you had any secondary constipation induced by medication (example: opioids, antidepressants, anticholinergic agents, calcium blockers, proton pump inhibitors) ? *

- ◯ Yes
- ◯ No

If **YES** at the previous question, please state the conditions.

Your answer

# APPENDIX G – FAECAL INCONTINENCE AND CONSTIPATION QUESTIONNAIRE

**Faecal Incontinence and Constipation Questionnaire (FICQ)**

How often do you have a bowel movement? *

- ◯ More than once a day
- ◯ One time daily
- ◯ Every other day
- ◯ 3 times per week
- ◯ Once a week or less

How often do you use enemas (injections of fluids used to cleanse or stimulate the emptying of your bowel) per month? *

- ◯ Seldom or never
- ◯ Once a month
- ◯ Several times a month
- ◯ Several times per week
- ◯ Everyday

How often do you use laxatives (medicine that promotes bowel movements) per month? *

- ◯ Seldom or never
- ◯ Once a month
- ◯ Several times a month
- ◯ Several times per week
- ◯ Everyday

Do you have to strain to have a bowel movement? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

Do you have to manually assist to have a bowel movement? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

How often did you hear audible intestinal sounds? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

How often did you feel abdominal pain and distention (an enlargement, dilation, or ballooning effect) ? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

How often did you have lumpy or hard stools? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

How often did you feel the sensation of incomplete evacuation during defecation? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

How often did you feel the sensation of anorectal obstruction or blockage (inability to propagate stool of the rectum) during defecation? *

- ◯ Rarely or never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Always

## APPENDIX H – SHORT FORM – 12

**12-Item Short Survey Form (SF-12)**

In general, would you say your health is *

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

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

Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling or playing golf? *

- ◯ Yes, limited a lot
- ◯ Yes, limites a little
- ◯ No, not limited at all

Climbing several flights of stairs *

- ◯ Yes, limited a lot
- ◯ Yes, limites a little
- ◯ No, not limited at all

Accomplished less than you would like *

- ◯ Yes
- ◯ No

Were limited in the kind of work or other activities *

- ◯ Yes
- ◯ No

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)?

Accomplished less than you would like *

- ◯ Yes
- ◯ No

Didn't do work or other activities as carefully as usual *

- ◯ Yes
- ◯ No

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

- ◯ Not at all
- ◯ A little bit
- ◯ Moderately
- ◯ Quite a bit
- ◯ Extremely

These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling.

Have you felt calm and peaceful? *

- ◯ All of the time
- ◯ Most of the time
- ◯ A good bit of the time
- ◯ Some of the time
- ◯ A little bit of the time
- ◯ None of the time

Did you have a lot of energy? *

- ◯ All of the time
- ◯ Most of the time
- ◯ A good bit of the time
- ◯ Some of the time
- ◯ A little bit of the time
- ◯ None of the time

Have you felt downhearted or blue? *

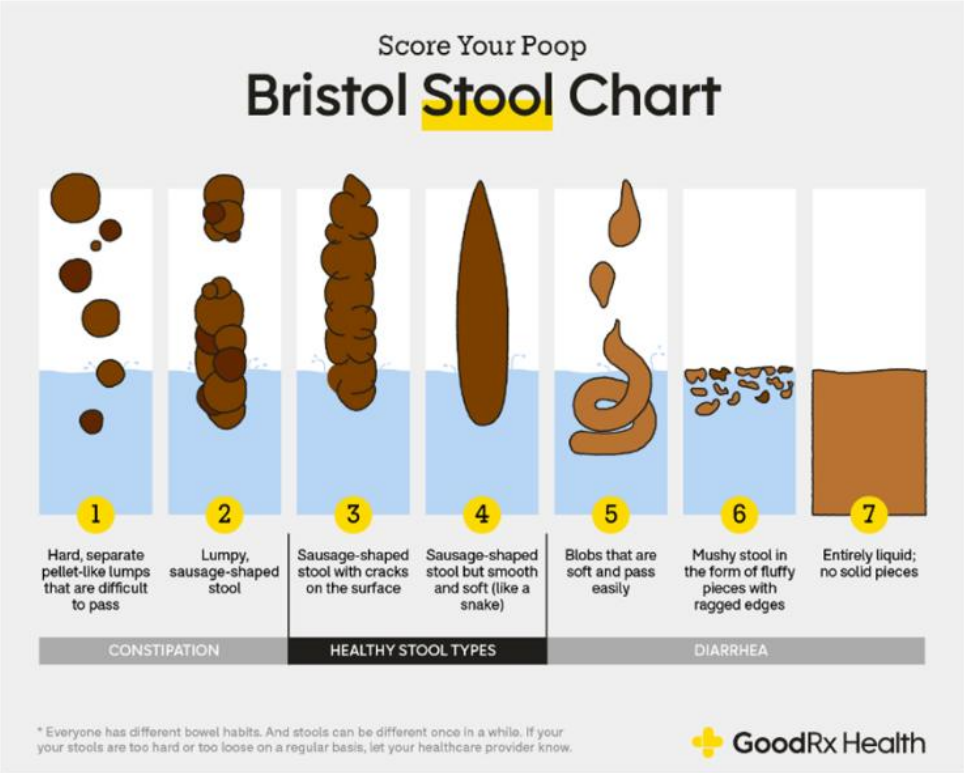
- ◯ All of the time
- ◯ Most of the time
- ◯ A good bit of the time
- ◯ Some of the time
- ◯ A little bit of the time
- ◯ None of the time

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

- ◯ All of the time
- ◯ Most of the time
- ◯ Some of the time
- ◯ A little bit of the time
- ◯ None of the time

## APPENDIX I – BRISTOL STOOL CHART

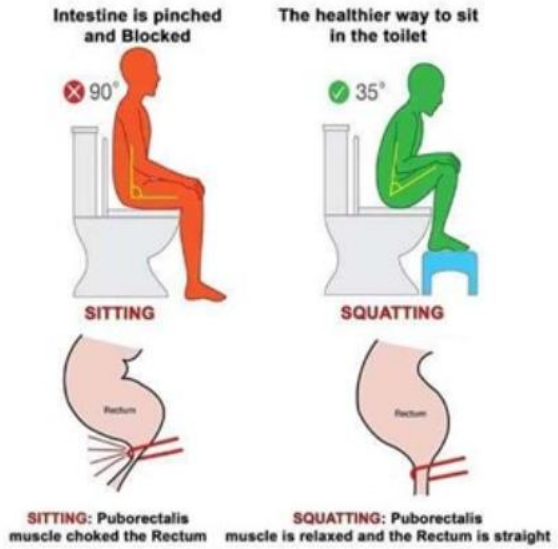
**Bristol Stool Chart**



## APPENDIX J – GOOD DEFECATION TECHNIQUE & CONSTIPATION EXERCISE

### Good Defecation Techniques

The following picture shows the techniques for good defecation progress.




### Exercises for Constipation

## APPENDIX K – TURNITIN REPORT

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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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ABSTRACT

**Background:** Functional constipation (FC) is a common gastrointestinal condition affecting both adults and children globally. This study focuses on young adults aged 18–29, including university students, among whom the prevalence of FC in Malaysia is 16.2%, with higher rates in females (17.4%). Contributing factors include sedentary lifestyles, poor sleep, low physical activity, unhealthy diets, and insufficient fiber intake. FC significantly impairs quality of life, causing haemorrhoids, pelvic floor dysfunction, faecal incontinence, and abdominal discomfort. Prolonged straining can weaken pelvic floor muscles, pressure pelvic organs, and impair bladder function. This study explores the prevalence of FC and its effect on young adults' quality of life.

**Objective:** To determine the prevalence of functional constipation among young adults and to assess its impact on their quality of life.

**Methods:** In this cross-sectional study, a valid and reliable questionnaire is used in data collection. 422 participants will be recruited. A consent form and demographic data will be provided for the individuals to fill out. Then, the participants are required to fill up the following questionnaires. The questionnaire consists of a Faecal Incontinence and Constipation Questionnaire, a stool chart and Short Form-12. The SPSS software is used for the analysis of collected data.

**Results:** This research study recruited 422 participants with a mean age of 21.36 years. The gender distribution of 77% female and 23% male participants. Based on the results, the prevalence of FC was found to be 24.88%, which shows that 105 participants identified as having FC. In this study, QoL was evaluated utilizing validated tools which as the SF-12 questionnaire, and the data indicated that 20.91 % of participants had a low QoL. The data was further analysed with the participants with FC, which revealed that 80.95% of participants experienced low QoL. A significant negative correlation ($r = -0.345$, $p < 0.05$) was established between FC and QoL, suggesting that as the severity of FC increased, QoL decreased. The Physical Component Summary (PCS) and Mental Summary (MCS) scores from the SF-12 were affected, although the decline in mental health was notably more severe.

**Conclusion:** According to this study, FC is quite common among young adults and has a significant negative influence on quality of life, especially mental health. The results point to the necessity of focused health education and interventions to enhance lifestyle choices, increase consciousness, and lessen the stigma attached to FC. By addressing these issues, young people's general well-fare can be improved and the psychological and physical effects of this illness can be lessened. It is advised that further studies be done to examine management and preventative tactics that work for this population.

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## APPENDIX L – TABLE ON CORRECTION AFTER EXAMINER'S FEEDBACK

## TABLE ON CORRECTION AFTER EXAMINER'S FEEDBACK

| Examiner's feedback | Amendment after correction | Page & Paragraph |
|---|---|---|
| Make abstract concise | Abstract is concise | Page II, Paragraph 1 |
| Shorten background | Background is shorten | Page II, Paragraph 1 |
| Introduction use the latest studies | Latest studies are added | Page 2, Paragraph 1 |
| Double-check the statistical analysis method to be used | The statistical analysis method is confirmed. | Page 47, Paragraph 1 |
| Include the scoring method for the questionnaire and the cutoff point for FICQ | The scoring method and cutoff point are included with proven studies. | Page 41, Paragraph 1 |
| Problem statement – lack of rotation to support statements | More relevant studies are added. | Page 7, Paragraph 1 |
| References – first letter should be capitalised in article name | Corrections are made. | Page 69-77 |
| The reliability and validity of tools used are not reported | The reliability and validity of tools used are reported with proven studies. | Page 31, Paragraph 2<br>Page 33, Paragraph 2 |

Checked by supervisor,

_____Swapneela_____

Name: Swapneela Jacob

Date: 2/1/2025