PREVALENCE AND ASSOCIATED FACTORS OF CONSTIPATION AMONG HOSPITALISED ADULT PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

NURUL IZZAH BINTI MUHAMAD ZAIDI

BACHELOR OF NURSING (HONOURS)

SCHOOL OF HEALTH SCIENCES

UNIVERSITI SAINS MALAYSIA

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By

NURUL IZZAH BINTI MUHAMAD ZAIDI

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LIST OF ABBREVATIONS

Hospital USM - Hospital Universiti Sains Malaysia

HREC - Human Research Ethics Committee

WHO - World Health Organization

KELAZIMAN SEMBELIT DAN FAKTOR TERPILIH DALAM KALANGAN PESAKIT DEWASA HOSPITAL DI HOSPITAL UNIVERSITI SAINS MALAYSIA

ABSTRAK

Adalah dijangkakan bahawa mereka yang mempunyai masalah kesihatan berisiko untuk sembelit disebabkan oleh banyak faktor yang berkaitan. Oleh itu, kajian ini bertujuan untuk menilai kelaziman sembelit dan faktor-faktor yang berkaitan dengannya di kalangan pesakit dewasa yang dimasukkan ke hospital. Kajian keratan rentas telah dijalankan di dua wad perubatan dan dua wad pembedahan, di Hospital Universiti Sains Malaysia dari Januari 2022 hingga April 2022. Seramai 137 pesakit dewasa, berumur antara 18-65 tahun dan memenuhi kriteria inklusi telah dipilih secara rawak sebagai responden kajian ini. Data dikumpul menggunakan soal selidik yang ditadbir sendiri dan data dianalisis dengan perisian Statistical Package for Social Science (SPSS) versi 26.0 windows. Ujian tepat Pearson's Chi Square atau Fisher digunakan untuk menentukan perkaitan faktor terpilih dengan sembelit. Keputusan menunjukkan bahawa kelaziman sembelit adalah 26.3% dan kebanyakan responden mempunyai najis jenis 1 pada Skala Najis Bristol. Hanya umur didapati dikaitkan secara signifikan dengan sembelit (p=0.029) dari segi faktor sosio-demografi. Kajian itu juga mendedahkan bahawa pengambilan air kosong dan aktiviti fizikal tidak dikaitkan dengan sembelit. Oleh itu, dapat disimpulkan bahawa sembelit adalah berleluasa dalam kalangan pesakit dewasa yang dimasukkan ke hospital di Hospital USM. Oleh itu, terdapat keperluan untuk memberi tumpuan kepada pesakit yang dimasukkan ke hospital supaya langkah pencegahan sembelit dapat dielakkan dan mengelakkan komplikasi yang lebih teruk seperti sembelit kronik di kalangan mereka.

PREVALENCE AND ASSOCIATED FACTORS OF CONSTIPATION AMONG HOSPITALISED ADULT PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

ABSTRACT

It is expected that those with health problems are at risk for constipation due to its many associated factors. Thus, this study aims to assess the prevalence of constipation and its associated factors among hospitalized adult patients. A cross-sectional study was conducted in two medical and two surgical wards, in Hospital Universiti Sains Malaysia from January 2022 to April 2022. A total of 137 adult patients, aged between 18-65 years old and fulfilled the inclusion criteria were randomly selected as the respondents of this study. The data was collected using a self-administered questionnaire and data were analysed with Statistical Package for Social Science (SPSS) version 26.0 windows. Pearson's Chi Square or Fisher exact test was used to determine the association of selected factors with constipation. The results showed that the prevalence of constipation was 26.3% and most respondents had stool type 1 on Bristol Stool Scale. Only age was found as significantly associated to constipation (p=0.029) in terms of socio-demographics factors. The study also revealed that plain water intake and physical activity were not associated to constipation. Therefore, it can be concluded that constipation is prevalent among hospitalised adult patients in Hospital USM. Thus, there is a need to focus on hospitalised patients so that the preventative measure for constipation can be and avoid of a more severe complications such as chronic constipation among them.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

According to Collins Dictionary (2021), an adult is a mature, fully developed person and it has reached the age when they are legally responsible for their actions. Meanwhile according to the World Health Organization (WHO), an adult is a person older than 19 years of age unless national law delimits an earlier age (WHO, 2016).

As an individual progresses through adulthood, a variety of factors can affect the aging process. Each person experiences age-related changes based on many factors like biological factors such as molecular and cellular changes are called primary ageing, while aging that occurs due to controllable factors, such as lack of physical exercise and poor diet, is called secondary aging. In adulthood, there are three stages which are early adulthood (age 20-40), middle adulthood (age 40-65) and lastly late adulthood (age 65 above) (Beck, 2021).

Physical development is one of the changes that take place during adulthood. During early adulthood, the physical maturation is complete even though height and weight may increase slightly (Amarya et al., 2018). In early adulthood also physical abilities like muscle strength, reaction time, sensory abilities and cardiac functioning are at their peak and hormonal changes also occurred. For middle adulthood, the physical changes in bodies will be more noticeable and usually people will begin to think a physical development again. One of the most noticeable changes is the loss of skin elasticity. The final stage of physical changes takes place during late adulthood and it leads to a

considerable effect to the bodies. Those wrinkles will become more noticeable and we may start to develop brown age spots on the skin (Roundy, 2021).

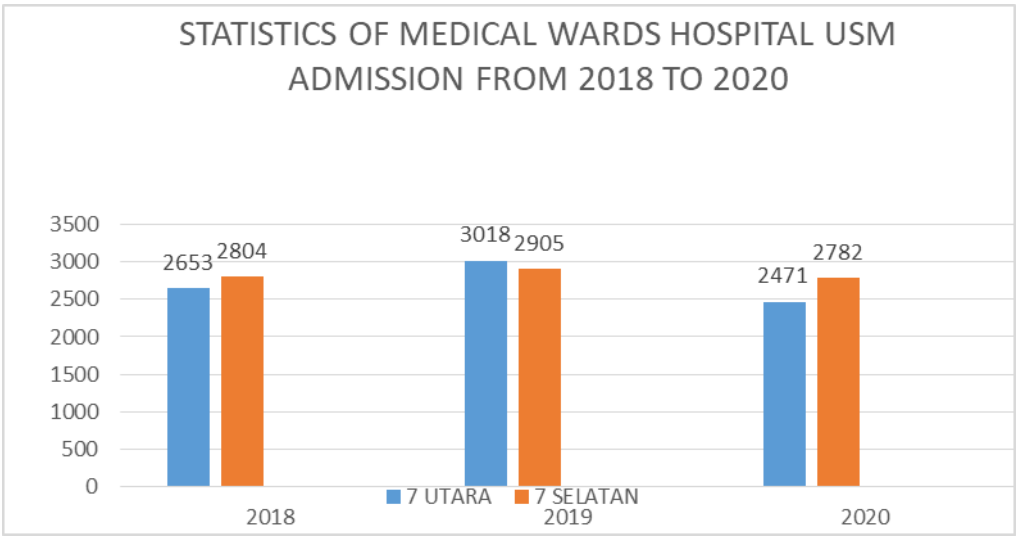
Other physical changes that occurs in adults are psychological and emotional. In early adulthood, these changes are going to be more noticeable than the physical ones. This is an important stage in adult emotional and psychological development, and a person strive to find our place in the world. During this time, important life decisions are made about career and living arrangements (Andrew et al., 2006). The adulthood process also can cause changes in bodily functions due to intrinsic factors like genetic and co-morbid disease. These changes can cause functional bodily deterioration of the adult almost in all body system including the gastrointestinal system. One of the common health problems relating to gastrointestinal system among adult population is constipation, which will be the focus of this study (Klaus et al., 2015).

Constipation is defined as having fewer than three bowel movements a week (Mayo Clinic, 2021). The symptoms include difficulty to defecate for several days or passing hard, dry, or lumpy stools, and feeling incomplete defecation, abdominal bloating, cramps or pain, decreased appetite and lethargy (Myvmc, 2016). It also can be considered constipation if the person experienced two or more of these symptoms (Dore et al., 2018). According to World Gastroentology Organisation (2010), constipation is a symptom, not a disease.

Constipation is the most common digestive disorders among the general population, occurs predominantly among the female gender (Tamura et al., 2016). It affects all ranges of age, but most frequently affects individual ages 65 and above (Markland et al., 2013) .The prevalence of constipation was reported between 15% and 20% and can increase to 50 %, which increase with age (Markland et. al., 2013). Its overall

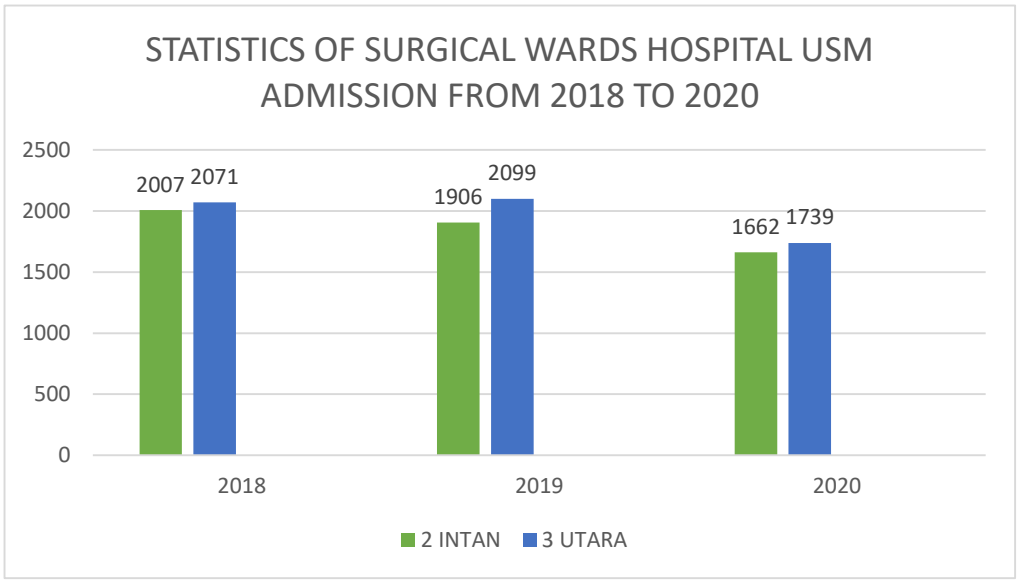
prevalence in Malaysia however, was indicated at 24-37%, based on self-reported constipation (Ruziatun, 2021).

Constipation also common in patients with acute medical conditions at the time of admission to hospital. Alteration in patients' patterns of elimination while in hospital has long been identified as either a potential or an actual nursing diagnosis that requires attention (Richmond & Devlin 2003; Kyle 2007). A study conducted by Noiesen et al., (2014) showed that 43% of patients who were admitted for more than three days developed signs of constipation during their stay in hospital. Factors contributing to constipation among hospitalised patients include age, reduced diet and fluid intake, being bedridden, suppressing bowel movements, and the use of bedpan and drugs (Richmond & Wright 2004). Other than that, among 123 patients who had undergone thoracic surgery, 50% developed constipation during the first postoperative period, and it took an average of 17 days after discharge before normal bowel habits were re-established (Rasmussen & Pedersen 2010). According to Leonard (2018), post- surgery constipation can lead to a surgical incision reopening. Figure 1.1 and 1.2 shows the statistics of medical and surgical wards admission at Hospital Universiti Sains Malaysia (Hospital USM).



(Source: Unit Rekod Perubatan, Hospital USM 2021)

Figure 1.1: Statistics of medical wards Hospital USM admission from 2018 to 2020



(Source: Unit Rekod Perubatan, Hospital USM 2021)

Figure 1.2: Statistics of surgical wards Hospital USM from 2018 to 2020

There are several types of assessment to detect constipation. One of the assessments is by using the Bristol Stool Chart (Figure 1.3). This stool chart was developed in 1997 by a team of healthcare providers at the British Royal Infirmary in Bristol, England as a clinical assessment tool (Norman, 2021). Based on this chart, faeces can be classified into seven groups. The type of stool or faeces depends on the time it

spends in the colon. There are seven types of stool in the image and it were determined by type 1 is separate hard lumps, type 2 is sausage shape but lumpy, type 3 is like a sausage but with crack on the surface, type 4 is like a sausage snake, smooth and soft, type 5 is soft blobs with clear cut edge and easily passed, Type 6 is fluffy pieces with ragged edges and type 7 is entirely liquid (Carol, 2015).

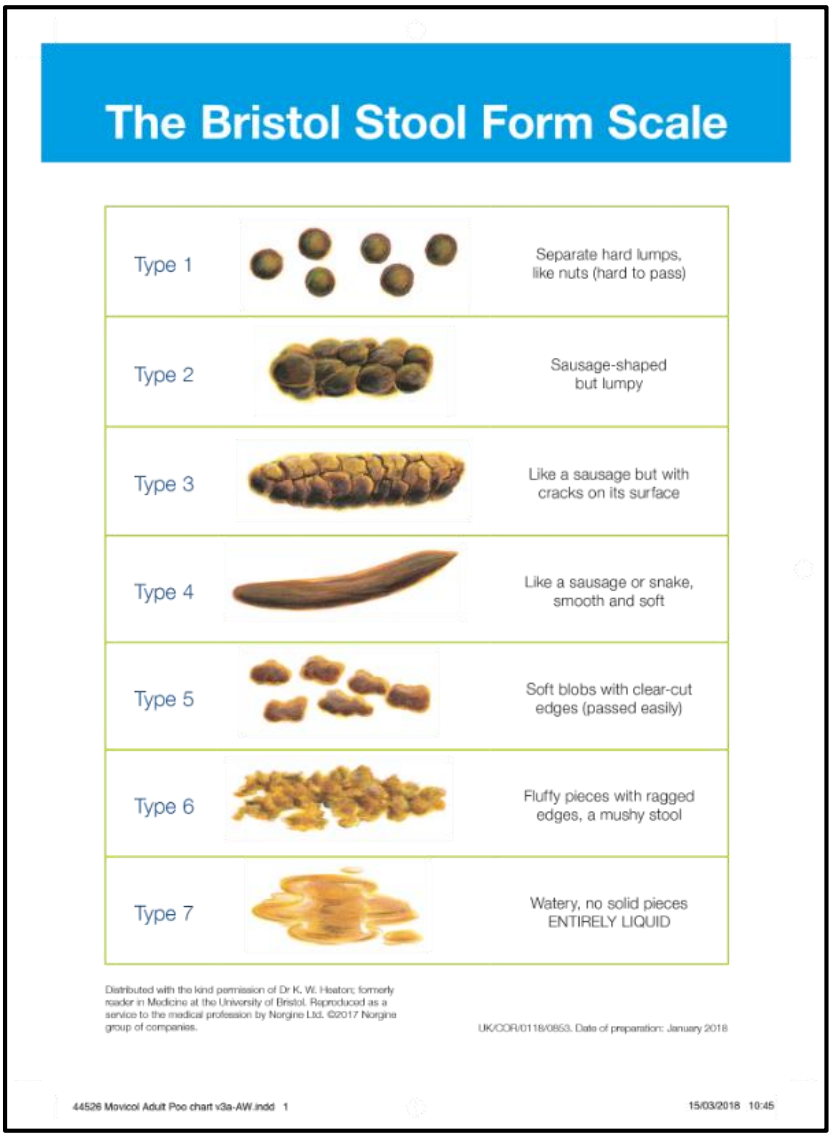


Figure 1.3: Bristol Stool Chart (Source: Heaton & Lewis, 1997*)*

There are several causes of constipation in general. Constipation happens when the colon absorbs too much water from the waste product (stool/poop), which dries out the stool making it hard in consistency and difficult to push out of the body (Cleveland Clinic, 2021). It may also cause by lack of fibre in the diet, reduced water consumption, sedentary lifestyle, stress and advanced age. Constipation may also be due to lack of fluids in the diet and when an adult does not eat regular or balanced meals. Water and other fluids add bulk to the stool, relieve constipation, and make the stools soft. Lack of movement and exercise also can contribute to constipation (Ananya, 2019).

Constipation, if left untreated, may lead to other serious bowel problems such as faecal impaction, urinary retention, haemorrhoids and faecal incontinence. According to a clinical review, constipation can 5-6 times increased the risk of faecal impaction, while the relative risk for development of haemorrhoids with constipation is up to a ratio of 4.1 (Leung et al., 2011)

It may also leads to discomfort and affects the patient's quality of life. The physical and mental impact of constipation on quality of life is significant and can be compared to other common health problems such as osteoarthritis, osteoporosis and chronic allergies (Rajput & Saini, 2014). Data from a general health survey in the United Kingdom showed that people with chronic constipation reported reduced functioning roles (that is, the ability to carry out everyday activities) and increased pain scores compared to those without constipation (Speed et al., 2010). Once admitted to the hospital, patients are often subjected to invasive procedures (enemas, manual evacuation or investigative procedures), which increase anxiety and discomfort (Al-Momani et al., 2018). It is a preventable condition and its treatment is mainly to lessen healthcare costs

1.2 Problem Statement

The current prevalence of constipation in the adult population is remain unknown although much research had been conducted in this area of care. This is maybe due to the results of research is not applicable to generalize population or the constipation prevalence trends are not yet stable. Constipation is thought to be a chronic problem caused by a multi-functional disorder affecting approximately 20% of the world's population (Gomes et al., 2019). It was reported that the prevalence of constipation varies between 2.6% to 26.9% in the general adult population depending to the associated factors and the population of the study (Schmidt & De Gouveia Santos, 2014). However, the recent community prevalence of self-reported constipation in Asian is higher compared to other parts of the world range 1.4% to 32.9% (Patimah et al., 2017). While in another study, the prevalence of constipation in university students in Malaysia was 16.2% (Lim et al., 2016).

Changes in patients' elimination patterns while in the hospital have long been identified as either a potential or an actual nursing diagnosis that requires attention (Kyle, 2007). Constipation is well known in hospital settings to increase the risk of poor health outcomes, disability, and increased healthcare costs. It frequently increases the patients' hospital stay, causes pain and distress, and significantly impacts on the patients' overall well-being (Noiesen et al., 2014).

Although there are many published studies on constipation in adult population (Lim et al., 2016; Moezi et al., 2018; B. L. Werth et al., 2020; Yurtdaş et al., 2020), such studies on hospitalised patients in Malaysia however, is still lacking. Similar study was done previously by Arifah Nadiah (2014) in Hospital USM, but it was not published elsewhere. Thus, a study for hospitalised patients is needed to determine the recent

progression of this health problem taking into account its impact on the quality of life of its sufferers (Yurtdaş et al., 2020).

Hence, all these gaps have inspired the researcher to conduct a study on constipation among hospitalised adult patients in Hospital USM.

1.3 Research Question

i. What is the prevalence of constipation among hospitalised adult patients in Hospital USM?
ii. Is there any association between socio demographic characteristic (age, gender, marital status, level of education and income**),** plain water intake, physical activity and prevalence of constipation among hospitalised adult patients in Hospital USM?

1.4 Research Objectives

1.4.1 General Objectives

The aim of this study is to determine the prevalence and associated factors of constipation among hospitalised adult patients in Hospital USM.

1.4.2 Specific objectives

Specific objective of this study are:

i. To determine the prevalence of constipation among hospitalised adult patients in Hospital USM.
ii. To examine the association between socio demographic characteristic (age, gender, marital status, level of education and income), plain water

intake, physical activity and prevalence of constipation among hospitalised adult patients in Hospital USM.

1.5 Hypothesis

HA – There is a significant association between socio-demographic characteristic (age, gender, marital status, level of education and income), plain water intake, physical activity and prevalence of constipation among hospitalised adult patients in Hospital USM.

HO – There is no significant association between socio-demographic characteristic (age, gender, marital status, level of education and income), plain water intake, physical activity and prevalence of constipation among hospitalised adult patients in Hospital USM.

1.6 Conceptual and operational definitions

Table 1.1: Conceptual and Operational definitions

Terms	Conceptual Definition	Operational Definition
Constipation	Constipation is a condition in which they may have fewer than three bowel movements a week; stools that are hard, dry, or lumpy; stools that are difficult or painful to pass; or a feeling that not all stool has passed. (U.S. Department of Health and Human Services, 2018).	In this study, constipation was identified by using the Bristol Stool Chart among hospitalised adult patients in Hospital USM.
Adult	Adult is a person who has reached adulthood and individual 18 years of age is typically considered adult	In this study, all adult patients of medical and surgical wards in Hospital USM aged 18 years until

	(American Psychological Association , 2020).	65 years old were selected as the respondents.
Prevalence	Prevalence refers to the total number of individuals in a population who have a disease or health condition at a specific period of time, usually expressed as a percentage of the population (Harvard T.H. Chan, 2012).	In this study, the prevalence of constipation were identified among hospitalised adult patients in Hospital USM.
Associated Factor	Associated factor is a fact or situation that influences the result of something (Cambridge Dictionary,2021).	In this study, the possible factors that were tested are socio-demographic characteristics, plain water intake and physical activity.

1.7 Significance of this study

This study was conducted to determine the prevalence and associated factors of constipation among hospitalised adult patients in Hospital USM. The findings of this study is predicted as very important. This is because the finding can added new knowledge on constipation among hospitalised adult patients. Other than that, it will help increase awareness among healthcare providers and patients towards the importance of early detection of constipation and early treatment for adult population with constipation. On the other hand, this research will aid in improving diagnosis, investigation, and management of constipation, especially among hospitalised adult patients.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provide general information about constipation in adult patients, the prevalence and its associated factors based on related and recent articles on constipation. This chapter also will provide the detail description of conceptual framework that had been used in this study.

2.2 Prevalence of constipation among adult population

The prevalence of constipation varies from 4% to 29% in various parts of the world and is considered to be a major health problem (Tantawy et al., 2017). The prevalence of constipation in the general population is approximately 20% (Al-Momani et al., 2018). A systematic review and meta-analysis by Forootan et al. in 2018 showed that the average prevalence of constipation in adults has been estimated 16% worldwide ranged between 0.7% and 79%. A study among hospitalized patients in India reported prevalence was 20.3% (Chauhan & Saini, 2019). Other than that, the prevalence constipation among 373 hospitalised patient at Denmark was 39% (Noiesen et al., 2014)

A study conducted at three Western countries; the United states, Canada and the United Kingdom reported that the prevalence among these countries was ranges between 7.9% to 8.6% (Palsson et al., 2020). Meanwhile, a cross sectional study between Turkish population was 16.6% that was considered high (Yurtdaş et al., 2020). While in a cross sectional study conducted by Moezi et al., (2018) reported the prevalence among adult in Iran was 8.1%.

Besides, community prevalence of self-reported constipation in Asian was 1.4% to 32.9% (Patimah et al., 2017). A cross sectional study involve five regions in China reported that prevalence of constipation was 6% (Y.-F. Zhao et al., 2011). An online survey have been done in Japan and the prevalence was reported at 28% (Tamura et al., 2016). While in India, Rajput & Saini, (2014), reported that the prevalence was 16.8% in a community based survey. Meanwhile, the prevalence constipation in Indonesia was 21.6% that involve 227 of adult aged population (Nisa, 2020).

Whereas in Malaysia, a systematic review in 2017 showed the prevalence of constipation in Malaysia was 20% (Patimah et al., 2017). A cross sectional study involve students of Universiti Putra Malaysia reported the prevalence was 16.2% (Lim et al., 2016). Obviously, the wide range of prevalence in these studies is due to different study populations, differences in method of data collection and the criteria used to identify constipation (Schmidt & De Gouveia Santos, 2014).

2.3 Factor associated to constipation among adult population

There are many associated factors of constipation in adult population as reported in the literature. These factors include socio-demographic characteristics (gender, advance age, education level and marital status, income), water intake and physical activity (World Gastroenterology 2010; Lindberg et al., 2010;Yurtdaş et al., 2020). All these factors are explained further in the following sections.

2.3.1 Socio-demographic characteristics

Age and constipation

Advanced age was found to be the second most common component linked with constipation in the integrative review, and it was mentioned in seven of the eleven research (Schmidt & De Gouveia Santos, 2014). According to Moezi et al., (2018), the

largest percentage of constipation increased with age, which is related to a higher rate of co-morbidities in the elderly, such as Diabetes Mellitus, chronic renal failure, and cerebrovascular accident. Constipation was shown to be more prevalent in the senior group in Al-Momani et al., (2018). A systematic review by Mugie et al., (2011) found that 16 studies reported on the relationship between age and prevalence of constipation and they concluded that constipation become gradually more prevalent after the age of 60 year.

Gender and constipation

Constipation is a common condition that affects the female gender disproportionately, similar to age. There is a lot of studies to back this up statement (Dennison, 2005). According to Leung et al evidence-based's review from 2011, women are two to three times more likely than males to develop constipation. A higher risk of pelvic floor damage during labour (Leung et al., 2011) could be one of the reasons. An integrative literature review involve 11 studies stated that female gender was identified as a factor for constipation in all of the studies retrieved (Schmidt & De Gouveia Santos, 2014). Meanwhile a systematic review in United State found that, the majority of the reviewed studies reported a predominance of females in the prevalence of constipation (Mugie et al., 2011). Similar findings was also reported in a systematic review and Meta – analysis, that constipation is markedly seen in women as compared with that of male individuals (Forootan et al., 2018). Furthermore, a cross-sectional study conducted in Southern Iran, found that the prevalence was 9.3 percent (95 percent, CI: 8.5-10.2) in female participants (Moezi et al., 2018). A study by Yurtdaş et al., (2020) also found a statistically significant link between constipation status and gender.

Marital Status and constipation

A cohort study at Iran showed that married patient has higher percentage (84.6%) in experiencing constipation compared to single and divorced (Moezi et al., 2018). A study by Ragab et al., (2021) in Egypt also reported that there were significant link between marital status and constipation. However, a study recently done in Malaysia among tertiary students concluded that there were no significant differences found between marital status and prevalence of constipation (Lim et al., 2016). Marital status affected the level of constipation misperception although development of chronic constipation was not influenced by marital status (Nisa, 2020). It is likely that married individuals may have better recognition of constipation symptoms because their potentially constipated spouses inform these individuals about the symptoms (Lee et al., 2014).

Educational Level and constipation

A cross sectional study among 4561 adult living in Turkey reported that university graduates were mostly experienced constipation compared to those with secondary and primary school education level (Yurtdaş et al., 2020). Similar findings was reported in another study by Moezi et al., (2018) in Iran, whereby participants who were illiterate were mostly developed constipation then others. Moreover, in a survey based information from 10,914 adults in United States women with a higher education level (POR: 0.8; 95% CI: 0.7, 0.9) were significantly associated with constipation (Markland et al., 2013).

Household income and constipation

Low socioeconomic status has long been thought to be a cause of constipation (Forootan et al., 2018). The meta- analysis by Suares & Ford (2011) found only six studies

that looked at the relationship between socioeconomic status and the presence of constipation symptoms. Pooled data revealed a slight increase in the prevalence of chronic constipation in individuals with lower socioeconomic status compared to those with higher socioeconomic status (OR 1.32; 95 percent CI 1.11–1.57), but not between those with medium and higher socioeconomic status (OR 1.01; 95 percent CI 0.92–1.10). The article review from Washington reported that constipation was 1.3 times more likely to occur in families of low socioeconomic status (Jamshed et al., 2011). However, no statistically significant relationship between income and constipation was reported in Lim et al., (2016).

2.3.2 Plain Water Intake

Constipation is commonly associated with insufficient hydration and water intake. In senior age, a minimum of two litres of water per day is required to maintain bowel function, keep the mouth moist, and keep the body hydrated (Klaus et al., 2015). Low liquid consumption remained a predictor of constipation among women (POR: 1.3; 95 percent CI: 1.0, 1.6) and men (POR: 1.3; 95 percent CI: 1.0, 1.6) in an analysis based on data from 10,914 people (20 years) from the 2005-2008 cycles of the National Health and Nutrition Examination Surveys (POR: 2.4; 95 percent CI: 1.5, 3.9). Besides, constipation should be treated with more liquid, according to this study (Markland et al., 2013 In a randomised controlled experiment conducted by Leung et al. in 2011, they found that greater fluid consumption relieved constipation in the presence of a high-fibre meal.

2.3.3 Physical Activity

As part of the Hong Kong Student Obesity Surveillance (HKSOS) project, a cross-sectional study was conducted in Hong Kong to examine the association of constipation with physical activities. The survey reported that constipation was prevalent in 15.4 percent of students (95 percent CI: 14.9–15.8).They also found that constipation was consistently linked to a lack of exercise (adj.OR: 1.26; 95 percent CI: 1.16, 1.36), a lack of non-exercise physical activities (adj.OR: 1.21; 95 percent CI: 1.10, 1.33), and excessive sedentary behaviour (adj.OR: 1.25; 95 percent CI: 1.17, 1.34) (Huang et al., 2014). According to Moezi et al., (2018) those who participated in less physical activity had a higher percentage of constipation than those who participated in more physical activity. However, a study by Rajput & Saini, (2014)in India found that a high prevalence of physical inactivity was not significantly related to constipation, and another study found the same thing, so regular physical activity is recommended.

2.4 Theoretical and Conceptual framework of study

The theoretical framework that are used to guide this study is the relationship between associated factors with constipation theory by Mohamad (2017). This framework shows the linkage between different factors and constipation. It shows that factors affecting constipation are an independent variable related to the dependent variable which is the prevalence of constipation. The factor that been discussed in this framework are socio-demographic, diseases, lifestyle and medications. Mohamad, (2017) explained in socio-demographic the factor that involve with constipation was age, race, sex, education, employment, marital status and income. Life style factors involve in lifestyle are dietary intake, plain water intake, physical activity and smoking. Yurtdaş et al., (2020) stated that lifestyle factors such as inadequate fluid, water and fibre intake, low physical activity and low consumption of vegetables and fruits are associated with constipation.

For the medications factors, medication that involved in this framework are analgesic, anti- hypertensive, anti- depression, anti- epileptic, anti –psychotic, Antacid, Calcium supplement and iron supplement. Gandell et al (2013) stated that medications are a secondary cause of constipation and such causes are more easily identified. In a study on new chronic constipation patients, use of medications such as and psycholeptic were noted to be independent factors associated with an increased risk for persistent chronic constipation. Lastly, one of the factor in this framework is the presence of co morbidity (disease). The disease that can cause constipation includes Diabetes Mellitus, Hypertension, Dyslipidaemia Stroke, thyroid disease, chronic joint pain, lung disease, and Parkinson’s disease. Other than that, primary neurological diseases (specifically Parkinsonism, dementia, and multiple sclerosis) are also statistically significant in the association with risk of chronic constipation (Carrasco et al., 2018).

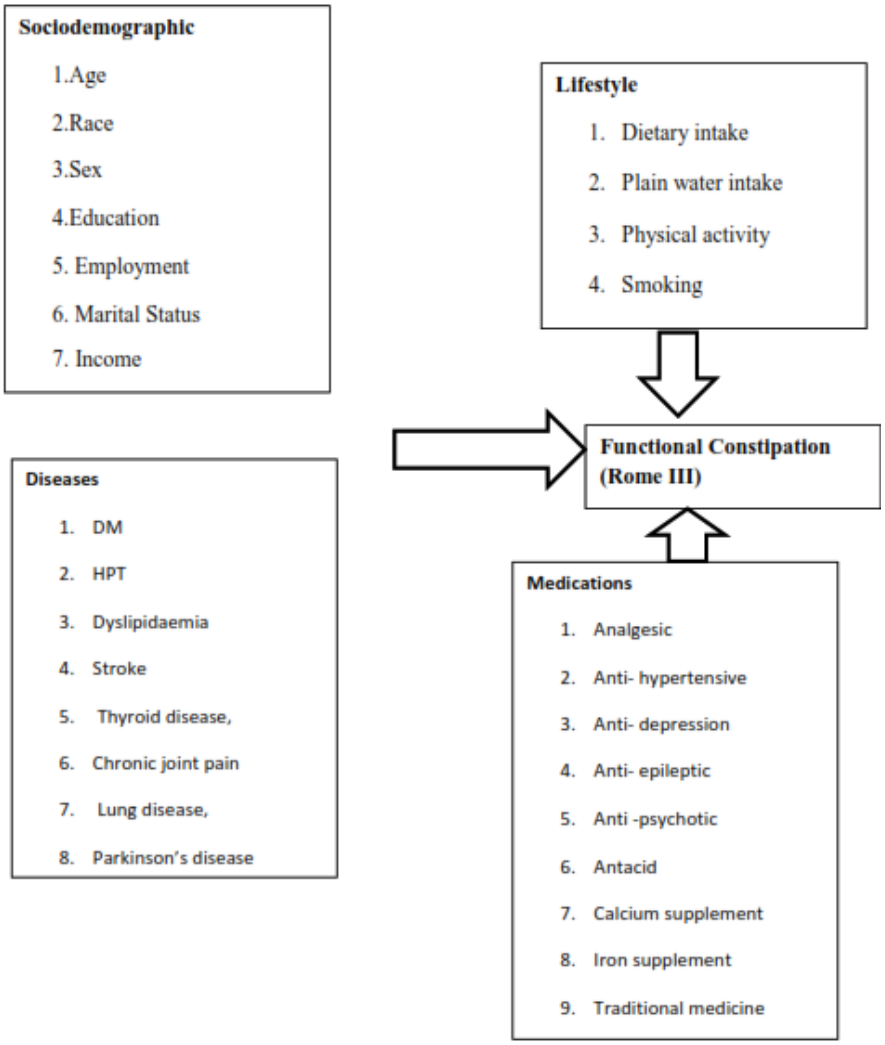


Figure 2.1 The relationship between associated factor and constipation

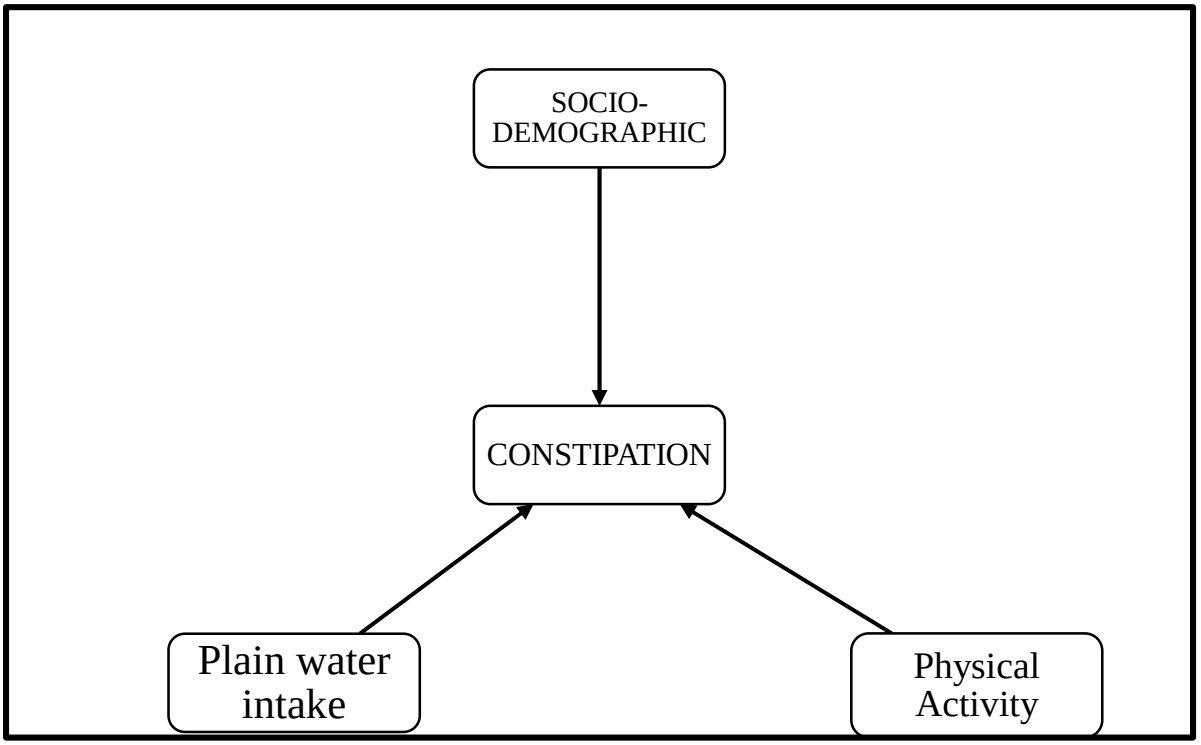


Figure 2.2 Conceptual Framework of associated factors and constipation

Using the relationship between associated factors with constipation theory, this study explores socio-demographic factors that include age, gender, and marital status, level of education, income, plain water intake and physical activity. Additionally, this theory also can examine the prevalence of constipation among adult patients. For the outcomes, this study showed how many hospitalised adult patients in Hospital Universiti Sains Malaysia had constipation and which the factors associated to it. . Overall, this conceptual is available to determine the associated factors of constipation among hospitalised adult patients in Hospital USM.

CHAPTER 3

METHODOLOGY AND METHODS

3.1 Introduction

This chapter explains the approach and rationale used to support the chosen research methodology. Determining and understanding a suitable research design is necessary for attaining the purpose of study.

3.2 Research Design

A research design is a plan that describes how, when and where data are to be collected and analysed (Rahi, 2017). A cross-sectional study design was utilized in this research project. This is because in a cross sectional study, data are collected on the whole study population at a single point in time to examine variables of interest (Polit & Beck, 2016). Moreover, in a cross sectional, the researcher is able to measure the outcome and the exposure of the respondents at the same time.

This study aims to determine the prevalence of constipation among hospitalised adult patients in Hospital Universiti Sains Malaysia and also to examine the association between socio demographic characteristic (age, gender, marital status, level of education and income), plain water intake, physical activity.

3.3 Study Setting and Population

This study was conducted at Medical and Surgical wards in Hospital Universiti Sains Malaysia. This study involved hospitalised adult patients age 18 to 65 years old.

3.4 Sampling Plan

The sample size calculations were done for all objectives of the study and the largest sample size was be chosen as the right sampling size for this study.

3.4.1 Subject criteria

Inclusion Criteria

Subject are selected as participant if they are:

- Age 18 to 65 years old (Yurtdaş et al., 2020)
- Admitted in general medical (7 Utara and 7 Selatan) and surgical (3 Utara and 2 Intan) wards in Hospital Universiti Sains Malaysia
- Able to understand, speak and write Bahasa Melayu

Exclusion Criteria

Subject are excluded from this study if they are:

- Had a stoma or other gastrointestinal disease and had indications of colorectal cancer
- Had underlying previous abdominal or pelvic surgery

3.4.2 Sample Size Estimation

The number of sample size for each objective are as follows:

For Objective 1, sample size calculation was to determine the prevalence of constipation among general adult patients in Hospital Universiti sains Malaysia. Sample size was calculated using single proportion formula as follows:

$$n = (\frac{z}{\Delta})^2 \, p(1-p)$$

n= minimum required sample

Z= 95% confidence interval (CI) = 1.96

Δ = precision= 0.10

P = Prevalence of constipation among general adult = 16.6 % (Yurtdaş et al., 2020)

$$n = (\frac{z}{\Delta})^2 \, p(1-p)$$

$$n = (\frac{1.96}{0.10})^2 \, 0.166(1-0.166)$$

n = 54

The sample size was 54 and after considering 20% of drop out, the calculated sample size was 68. The total calculated sample sized for the first objective is 68 respondents.

For Objective 2 , to examine the associated factors between socio demographic, water intake, physical activity and prevalence of constipation among the general population in Hospital Universiti Sains Malaysia. The sample size is estimated using PS software version 3.1.2 (Figure 3.1). The parameters were as follow:

α=0.05

power = 0.8

P0 = Prevalence of male adult patients with constipation (Yurtdaş et al., 2020)

P1 = Prevalence of female adult patients with constipation

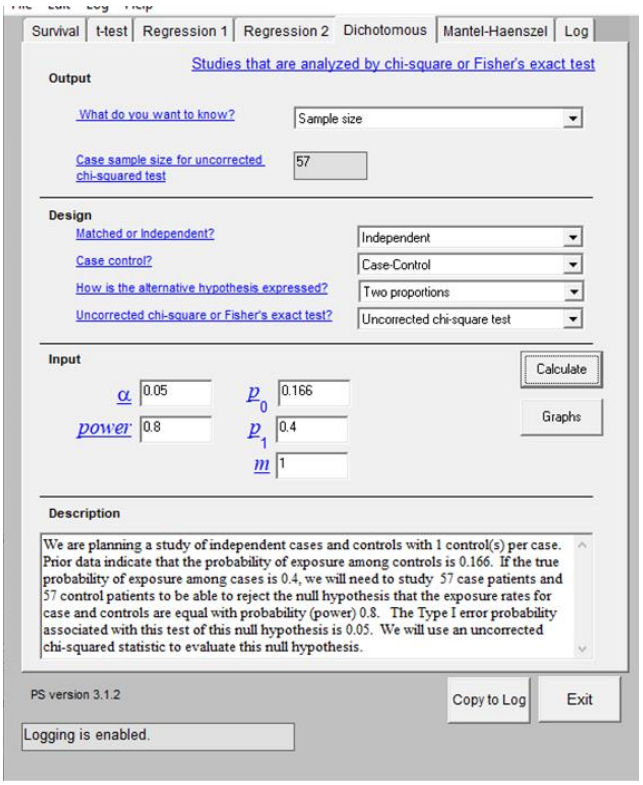


Figure 3.1 Sample size estimation using PS software

After testing with selected factors, the sample size was 114 and after considering 20% of drop-out the final sample is 137 respondents. Thus, the sampling size for this study is 137 respondents as larger sample size provide more accurate mean values, identify outliers that could skew the data in a smaller sample and provide a smaller margin of error (Zamboni, J. 2019).

3.4.3 Sampling Method

This study used simple random sampling method to select the respondents. Simple random sampling is the randomized selection of a small segment of individuals or members from a whole population. It provides each individual or member of a population with an equal and fair probability of being chosen. The simple random sampling method is one of the most convenient and simple sample selection techniques (Corporate Finance

Institute. 2021). Based on the list name of patients obtained from registration book, potential respondent was selected randomly by using a randomizer programme. Then, the researcher approached them individually and face to face for their consent. The probability of each subject being selected had the equal probability of being chosen to participate in this study (Chua, 2016).

3.5 Instrumentation

Data from the respondents were collected via self-administered questionnaires in this study. For Section A, B and C the questionnaire was adopted from a recent study by Wahab et al., (2019).

Section A comprises socio-demographic information, whereas Section B contains constipation identification and Section C contains water intake. The permission to use the scale was obtained from the author.

Meanwhile, the World Health Organization's Global Physical Activity Questionnaire (GPAQ) Malay version was used to assess the level of physical activity (Soo et al., 2015).

3.5.1 Instrument

This questionnaire used in this study consists of four sections.

SECTION A: Socio-demographic Characteristics

The section consists of seven questions of socio-demographic background of adult patients include age, gender, marital status, occupation, level of education, household income. It is categorized as an independent variable of this study.