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PREVALENCE OF CONSTIPATION AND ITS ASSOCIATED FACTORS AMONG ELDERLY AT SELECTED PRIVATE CARE HOMES IN SELANGOR

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BY

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A project submitted as a partial fulfillment of the requirement for the degree of Bachelor of Science (Nutrition and Community Health) from the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

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WHO	World Health Organization
BMI	Body Mass Index
MNA-SF	Mini Nutritional Assessment Short Form
IPAQ-E	International physical Activity Questionnaire for Elderly
MET	Metabolic Equivalent of Task
RNI	Recommended Nutrient Intake
MANS	Malaysian Adult Nutrition Survey
MDG	Malaysian Dietary Guideline
DASS-21	Depression, Anxiety and Stress Scale 21
IJT	Indeks Jisim Tubuh
RSK	Rumah Seri Kenangan
IBS	Irritable Bowel System
BSFS	Bristol Stool Form Scale
NHANES	National Health and Nutrition Examination Surveys
HADS	Hospital Anxiety and Depression Scale
FC	Functional Constipation
CC	Chronic Constipation

ABSTRACT

PREVALENCE OF CONSTIPATION AND ITS ASSOCIATED FACTORS AMONG ELDERLY AT SELECTED PRIVATE CARE HOMES IN SELANGOR

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Constipation was a most common health problem among elderly. This cross-sectional study aimed to determine the prevalence of constipation and its associated factors among elderly at selected private care homes in Selangor. A total of 114 subjects were participated from 10 private care homes in Selangor after purposively selected. Subject's anthropometric measurement which are height and weight were measured to calculate their Body Mass Index (BMI). Subjects were then asked to complete the questionnaire consisting five components which are socio-demographic characteristics (age, sex, ethnicity, education level, marital status, previous occupation and current monthly expenses), risk of malnutrition, dietary intake, physical activity, depression and stress level and constipation severity assessment by face-to-face interview. Majority of the subjects were male (64.0%), Malay (58.8%), had secondary education level (50.9%) with current monthly expenses below than RM100 (66.7%). Their mean age was 70 ± 8 years. The mean BMI of the subjects was 23.62 ± 5.78 kg/m^2 indicating normal BMI. This study found that the prevalence of constipation among these subjects was 7.0%. The variables that had significantly associated with constipation were sex (p=0.025), depression (p=0.001) and stress (p=0.001). No significant association was found between socio-demographic characteristics (age, ethnicity, education level, marital status, previous occupation and current monthly expenses), risk of malnutrition, dietary intake, physical activity and constipation. In conclusion, being a female, having depression and stress were significantly associated with constipation among elderly in private care homes, Selangor. Future study needs to be done to investigate more details about the factors and the prevention of constipation problem among elderly.

ABSTRAK

KELAZIMAN SEMBELIT DAN FAKTOR-FAKTOR YANG BERKAITAN DENGANNYA DALAM KALANGAN WARGA TUA DI PUSAT JAGAAN SWASTA TERPILIH DI SELANGOR

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Sembelit adalah masalah kesihatan yang biasa berlaku di kalangan warga tua. Kajian keratan rentas ini bertujuan untuk menentukan kelaziman sembelit dan faktor-faktor yang berkaitan dengannya di kalangan warga tua di rumah jagaan swasta yang terpilih di Selangor. Jumlah responden adalah seramai 114 orang daripada 10 rumah jagaan swasta di Selangor selepas dipilih secara bertujuan. Pengukuran antropometrik responden seperti tinggi dan berat adalah bertujuan untuk mengira Indeks Jisim Tubuh (IJT) mereka. Responden kemudian diminta menjawab soalan yang terdiri daripada lima komponen seperti ciri-ciri sosio-demografi (umur, jantina, etnik, tahap pendidikan, status perkahwinan, pekerjaan terdahulu dan perbelanjaan bulanan semasa), risiko kekurangan zat makanan, pengambilan makanan, aktiviti fizikal, tahap kemmurungan dan tekanan serta penilaian keterukan sembelit. Ianya dijalankan secara temuduga bersemuka. Majoriti responden adalah lelaki (64.0%), Melayu (58.8%), mempunyai tahap pendidikan sekolah menengah (50.9%) dengan perbelanjaan bulanan semasa di bawah RM100 (66.7%). Purata umur mereka ialah 70 ± 8 tahun dan BMI responden ialah 23.62 ± 5.78 kg/m^2 menunjukkan normal IJT. Kajian ini mendapati bahawa kelaziman sembelit di kalangan warga tua ini adalah sebanyak 7.0%. Pembolehubah yang mempunyai kaitan secara signifikan dengan sembelit adalah jantina ($p=0.025$), kemurungan ($p=0.001$) dan tekanan ($p=0.001$). Tiada perkaitan yang signifikan ditemui antara ciri-ciri sosio-demografi (umur, etnik, tahap pendidikan, status perkahwinan, pekerjaan terdahulu dan perbelanjaan bulanan semasa), risiko kekurangan zat makanan, pengambilan makanan, aktiviti fizikal dan sembelit. Sebagai kesimpulan, wanita, mengalani kemurungan dan tekanan mempunyai kaitan yang signifikan dengan sembelit dalam kalangan warga tua di rumah jagaan swasta, Selangor. Kajian akan datang perlu dilakukan untuk menyiasat lebih banyak maklumat mengenai faktor-faktor dan pencegahan masalah sembelit di kalangan warga tua.

CHAPTER 1

INTRODUCTION

1.1 Background

Population aging or elderly is a global phenomenon which has a major effect on a human life as recently, there has been a sharp increase in the number of elderly worldwide. The World Health Organization (2002) state that United Nation defined aging or elderly as a person who aged 60 years and above. They agreed that the cut-off of older people age is 60 years and above. Another definition of elderly is it defined as a biological, sociological, economic and chronological phenomenon (Karim, 1997). The chronological phenomenon definition follows the recommendation of the United Nation and the Ministry of Health which is the elderly means people with aged 60 years and above.

The total population of worldwide elderly in 2010 were estimated 524 million people which are 8.0% of the world's population. However, by 2050, this number is expected to nearly triple to about 1.5 billion representing 16.0% of the world's population

(Suzman & Beard, 2011). This remarkable phenomenon is being driven by the low birth rate, low fertility and increase life expectancy. As the older people live longer with a fewer child entering the population, this would cause the number of older people to contribute more to the total population of the world. In Malaysia, the population of elderly in 2018 was estimated 2.1 million which is 6.5% of the total population (Department of Statistics Malaysia, 2018). However, the percentage of elderly is expected to increase by 14.5% of the total population in 2040 (Department of Statistics Malaysia, 2016). This phenomenon shows that the total population of elderly will raise up over the year.

Since the total population of the elderly is raising up, this phenomenon leads the government and non-government to take care of their welfare and provide facilities. One of the facilities build for them was a care home. Nowadays, there are a lot of care homes that provided to the elderly and most of the care homes will provide a good accommodation, supervision from a staff and a meal. In Malaysia, one of the examples of government care homes under Department of Social Welfare is Rumah Seri Kenangan (RSK). There are 10 RSK in Malaysia which are RSK Kangar Perlis, RSK Taiping Perak, RSK Seri Iskandar Perak, RSK Cheras Selangor, RSK Seremban Negeri Sembilan, RSK Cheng Melaka, RSK Johor Bahru, RSK Kemumin Kelantan and RSK Bedong Kedah (Department of Social Welfare, 2018). The RSK was purposely established to provide custody and protection to the poor elderly in order to ensure their well-being and quality of life. While the others were the private care homes that registered under the Department of Social Welfare. Private care homes are the care homes that personally manage by an individual.

Even though the total population of the elderly increase over the year and there are a lot of welfare aid provided for them, they are still facing a common health issue such as constipation. Constipation is practically defined by a patient as reduced frequency or ease of stool passage from what is deemed the normal or expected pattern for that individual (Gray, 2011). Thus, they will complain about the reduced stool frequency or straining on their own perception. According to Rome III criteria, constipation is one of the subtypes of Irritable Bowel Symptom (IBS) and it measures based on stool consistency and not stool frequency (Lacy & Patel, 2017). The Rome III criteria defined a people have constipation if they experienced two or more of the symptoms. The symptoms were straining during at least 25% of defecation, lumpy or hard stools in at least 25% of defecation, sensation of incomplete evacuation for at least 25% of defecations, sensation of anorectal obstruction or blockage for at least 25% of defecation, manual manoeuvres to facilitate at least 25% of defecations and fewer than three defecations per week (Gray, 2011).

In general, constipation not only may give a bad effect on health status but also in economic and social life. According to Sanchez & Bercik (2011), a high cost need for constipation treatment and physician's visit for prescription of drugs. In terms of social life, constipation may cause loss of work productivity (Sanchez & Bercik, 2011). Therefore, in this recent study, it will determine the prevalence of constipation and its associated factors among elderly at selected private care homes in Selangor.

1.2 Problem Statement

Constipation problem most commonly occurred in the elderly population as this problem was the worldwide issue. The prevalence of constipation among the elderly in Shanghai, China was 4.9% (Wang & Lin, 2017). Whereas the prevalence in Spain was 18.1% (Falcon et al., 2007) and the Netherlands was 24.5% (Meinds et al., 2017). In addition, about 27.0% prevalence of constipation among elderly in Australia (Chiarell, Brown & McElduff, 2000), 56.9% in Japan (Komiya et al., 2019) and 24.8% in Egypt (Farahat, El-esrigy & Salama, 2017). Meanwhile, in Malaysia, a study by Lim, Rosita, Chieng, & Hazizi (2016) revealed that the prevalence of constipation among university student was 16.2% and another study by Ng, Jia, Low, Yeoh and Gan (2016) shows 20.0% of subjects in all groups (adolescents, adults, women of childbearing and elderly) was constipated. However, there was limited number of study focused on constipation problem among the elderly in Malaysia.

Being healthy was the most common barrier among the elderly because as the people getting older, they become susceptible to the health problem. Among various factors associated with constipation among the elderly, there were some major factors were studied in this study. One of the factor was socio-demographic. Increasing age was one of the most risk factors in the susceptibility of the health problem and nutritional problem. In a study by Zhang et al. (2015), it founds that the prevalence rate of constipation was 32.6% increased with age. A review article by Mugie, Benninga, & Di Lorenzo (2011) showed that the constipation rate seems increasing after the age of 60

years and the majority the gender was females. While, low socio-economic class contributed to the constipation symptoms (Bytzer et al., 2001). Therefore, this study was further investigated and the outcomes from the socio-demographic factors from this study were compared with the outcome from the previous study.

Another factor was a body weight status which consisted of height, weight and Body Mass Index (BMI). A study by Moghimi-Dehkordi et al. (2009) and Koppen, Velasco-ben, Benninga, Lorenzo & Saps (2016) showed there was no significant association between BMI and constipation. However, this finding was contrasted with a study made by Song (2012), where it founds there was a significant association between BMI and constipation. These mixed findings from the previous study encourage this study to further investigate the association between body weight status and constipation. Therefore, it was provided a clearer outcome regarding this factor.

Next factor associated with constipation was a risk of malnutrition. Risk of malnutrition was common in the elderly and a study by Dore et al. (2018) showed that women who was constipated have low nutritional status. However, this study was very limited and did not determine whether a risk of malnutrition was associated with constipation or not. In contrast, there was another study by Vassilakou et al. (2017) that showed a significant association between the risk of malnutrition and constipation. Different findings from these previous study were detected and this encouraged to make a further investigation. As a result, it provided clearer findings and better understanding.

Dietary intake and physical activity were both important factors that need attention. Highly saturated fat intake (Taba Taba Vakili et al., 2015) and a low intake of dietary fibre (Markland, Palsson, & Goode, 2013) were associated with constipation. However, these study did not further investigate the association of constipation with other nutrients such as calorie, carbohydrate and protein. For physical activity, Chien (2011) stated that sedentary behavior and a high level of physical activity were associated with constipation. Similar to a study by Moezi et al. (2018), physical activity also associated with constipation. Both of these factors were investigated in this study to compare the outcomes from the previous study.

Last factors were depression and stress. Depression was significantly associated with constipation (Dore et al., 2018); (Chan et al., 2005). However, there was a lack of finding from the previous study that investigated the association between stress and constipation. Therefore, this recent study was provided a new finding of this association and then it was compared with the previous study.

Last but not least, there was a lack of study investigating the factors associated with constipation especially among older people in Malaysia. This caused their awareness to prevent this problem decline and finally, the problem becomes severe. The severity of constipation reducing the health status of the elderly and increase the economic burden. Therefore, this recent study aimed to determine the prevalence of constipation and its associated factors among elderly at selected private care homes in Selangor.

1.3 Research Questions

1. What is the prevalence of constipation among elderly in selected private care homes in Selangor?
2. What are the associations of socio-demographic characteristics, body weight status, risk of malnutrition, dietary intake, physical activity, depression and stress level with constipation among elderly in selected private care homes in Selangor?

1.4 Significance of Study

Constipation was one of the serious health issue but not well aware by public. It was because there are lack of study reporting the prevalence of constipation among elderly previously in Malaysia. Therefore, this study was important to determine the prevalence of constipation among elderly at private care homes in Selangor and also to determine the associations between socio-demographic characteristics, body weight status, risk of malnutrition, dietary intake, physical activity, depression and stress level with constipation.

Besides, this study served as the baseline for future research for the other researchers who was interested to further their study in this field. Other than that, it also help to provide an information to the care home institution, nursing home or health care

providers to help the elderly to be healthy at their age. In addition, this study provided a beneficial information for policy makers to develop a new policy and implement an effective intervention program for the elderly population in our country.

All of the findings in this study provided a new knowledge about the health status and constipation rate among the older people population in Malaysia and specifically for Selangor. Since the study research about constipation among elderly in Malaysia still lacking, thus this issue needs more intention from the researchers. Therefore, in future this study may help to give a specific information about the constipation rate among elderly and the specific factors that may contribute to the constipation rate. In terms of nutrition field, the findings in this study may improve the calorie intake, adequacy intake of fibre and water intake of elderly. Hence, it will improve the nutritional status of elderly.

1.5 Objectives

General objective

To determine the prevalence and factors associated with constipation among elderly at selected private care homes in Selangor.

Specific objectives

1. To determine the socio-demographic characteristics, body weight status, risk of malnutrition, dietary intake, physical activity, depression and stress level of the elderly at selected private care homes in Selangor.
2. To assess the prevalence of constipation among elderly at selected private care homes in Selangor.
3. To determine the associations of socio-demographic characteristics, risk of malnutrition, dietary intake, physical activity, depression and stress level with constipation among elderly at selected private care homes in Selangor.

1.6 Hypothesis

There are associations of socio-demographic characteristics, body weight status, risk of malnutrition, dietary intake, physical activity, depression and stress level with constipation among elderly at selected private care homes in Selangor.

1.7 Conceptual Framework

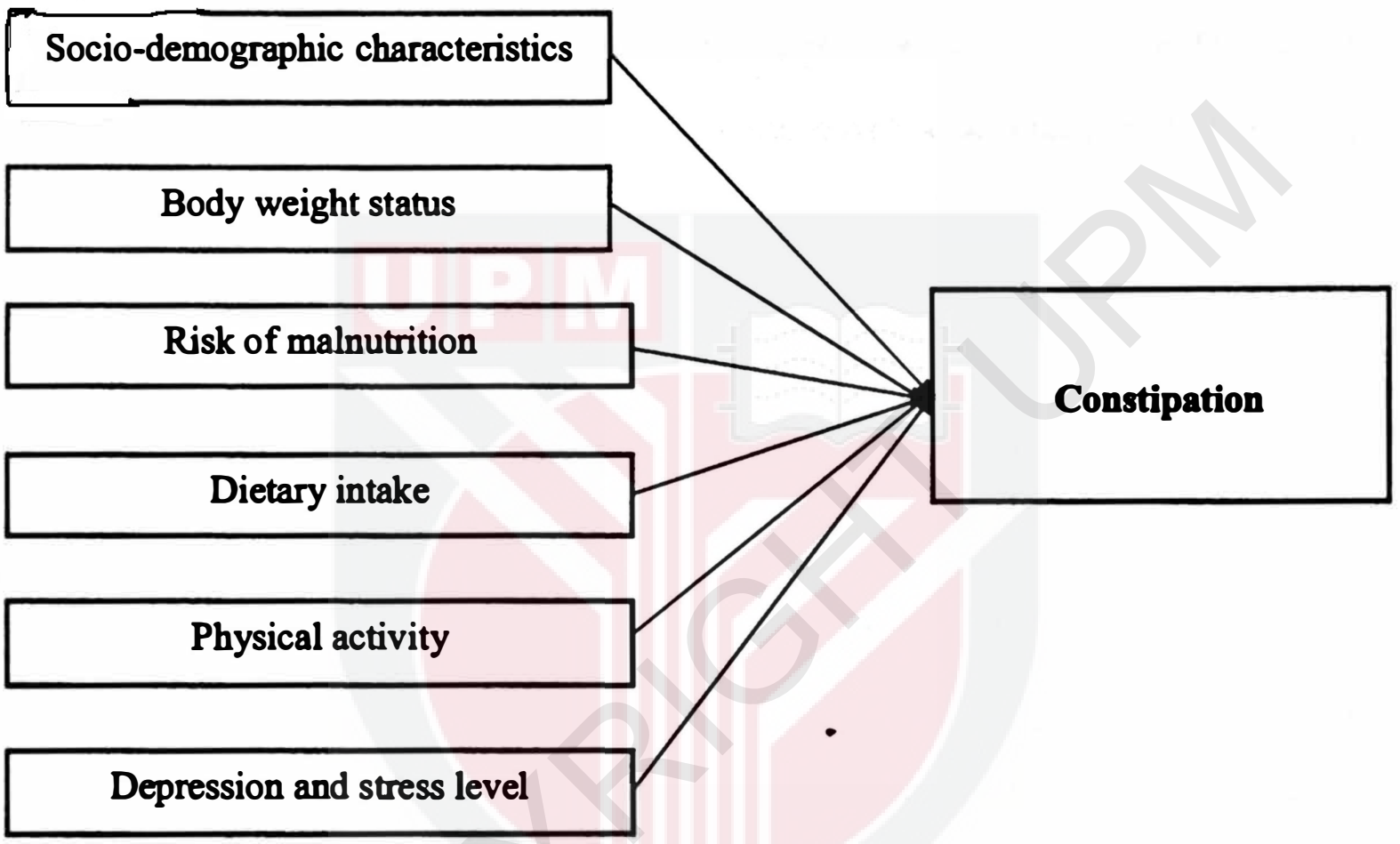

Figure 1.1: An overview of conceptual framework of the study

In this study, the dependent variable (DV) was a constipation whereas the independent variable (IV) were socio-demographic characteristics, body weight status, risk of malnutrition, dietary intake, physical activity, depression and stress level. This study aimed to determine the prevalence of constipation and its associated factors such as demographic characteristics, body weight status, risk of malnutrition, dietary intake, physical activity, depression and stress level among elderly at selected private care homes in Selangor.

The association of socio-demographic characteristics and body weight status with constipation was supported by study Wang & Lin (2017), association between risk of malnutrition and constipation was supported by Dore, Pes, Bibbò, Tedde, & Bassotti (2018), association between dietary intake and constipation was supported by Ng et al. (2016); Taba Taba Vakili, Nezami, Shetty, Chetty, & Srinivasan (2015); Salehi, Eftekhar & Mohammad (2010). The association between physical activity and constipation was supported by Moezi, Salehi, Molavi & Poustchi (2018) and the association of depression and stress level with constipation was supported by Rajindrajith (2010); Eng, Chan, Hui, & Lam (2003). This conceptual framework was developed based on the previous study to determine the prevalence of constipation and its associated factors among elderly at the selected private care homes in Selangor. The previous studies were important as it will give the evidence based to the present study.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview of Constipation

Constipation is one of the common problem on the gastrointestinal tract (GIT) that may affect all stage of aged. In the previous study, most of the researchers defined constipation based on Rome III criteria (Schmidt & De Gouveia Santos, 2014); (Tamura et al., 2016); (Meinds, van Meegdenburg, Trzpis, & Broens, 2017); (Falcon, Sanchez, Diaz-Rubio, & Rey, 2017); (Lim et al., 2016); (Wang & Lin, 2017). Definition of constipation based on Rome III criteria developed from Rome II criteria where it was adjusting the time frame of constipation symptoms (Xin et al., 2014). According to Canadian Association of Gastroenterology, constipation may defined as a symptom based and not a disease, including a combination of three elements which are less than three stools per week, stool in the form of hard and lumpy and difficult stool passage (Pare et al., 2007). Bristol Stool Form Scale (BSFS) is another instruments used to indicate constipation (Figure 2.1). There are seven types of stool (faeces) according to this scale. Type 1-2 indicates constipation, type 3-4 indicates a normal stool while type 5-7 may indicate diarrhoea.

A common occurrence of constipation among elderly can be categorized as normal transit constipation, slow transit constipation and obstructed defecation (Frattini & Nogueras, 2008). Normal transit constipation also known as 'functional' constipation is the most common type of constipation seen among the clinicians among the people (Andrews & Storr, 2011). Whereas, according to Frattini & Nogueras (2008), slow transit constipation can be diagnosed by a complete history, physical exam and a battery of specific studies.

Figure 2.1: Bristol Chart

2.2 Prevalence of Constipation

The prevalence of constipation worldwide was inconsistence across the countries. Some countries have a higher prevalence of constipation and some countries have a low prevalence of constipation. There were some previous studies that investigated the prevalence of constipation worldwide and it was summarized in Table 2.1. According to a study by Wang & Lin (2017), its reported that the prevalence of constipation among the 1950 women with aged 50 years and older that living in the communities of Yangpu District, Shanghai China, was 4.9%. This study was a cross-sectional study and purposely to determine the prevalence of constipation among the elderly women population in Shanghai, China. However, there was limited generalizability of the findings in this study as there was only one district selected in Shanghai as a study population.

Another study made among the elderly in Spain that aged more than 65 years to evaluate the prevalence of constipation and the data collected by using telephone interviews. The findings of this study showed that the prevalence of constipation was 18.1% with the frequency of 181 respondents from total respondents of 1000 people (Falcon, Sanchez, Diaz-Rubio, & Rey, 2017). Another study by Meinds, van Meegdenburg, Trzpis, & Broens (2017) found that the prevalence of constipation in Netherland among Dutch population was 24.5% from 1259 of the total of respondents with statistically significance $p<0.001$.

In Australia, three groups of women consist of 14 761 young women, 14 070 middle-aged women and 12 893 older people were complete a postal health survey and the prevalence of constipation were 14.1%, 26.6% and 27% respectively (Chiarelli, Brown, & Mcelduff, 2000). Whereas in Japan, there was a study to determine the prevalence of constipation and pollakisuria among older patients receiving home medical care with mean aged 80 years. Out of 153 of total participants, about 56.9% had a constipation problem (Komiya et al.,2019). Another prevalence of constipation among 258 elderly attending Hai Tany Family Health Center, Damietta Governorate in Egypt was 24.8% (Farahat, El-esrigy & Salama, 2017).

Meanwhile, in Malaysia, there were lack of previous studies about the prevalence of constipation specifically among the elderly. Most of the previous study only investigated the prevalence of constipation among general population. A study by Lim et al. (2016) shows that the prevalence among 1 662 students in Universiti Putra Malaysia with aged range 18 to 65 years was 16.2%. Another study made by Ng, Jia, Low, Yeoh, & Gan (2016) shows the prevalence of constipation was 20.0% in all groups consist of adolescents, adults, women childbearing and elderly.

Table 2.1: Prevalence of constipation worldwide

Author(s), year	Setting	Subjects	Tools	Prevalence
Wang & Lin (2017)	Shanghai, China	1 950 women with aged 50 years and older	Rome III criteria	4.9 %.
Falcon et al. (2017)	Spain	Random sample of Spanish population 65 years and above.	Rome III criteria	18.1 %
Meinds et al. (2017)	Netherlands	1 259 of Dutch population with aged range 18 to 65 years.	Rome III criteria	24.5 %
Chiarell, Brown & McElduff (2000)	Australia	14 761 young women, 14 070 middle-aged and 12 893 older women.	Self-reported	14.1%, 26.6%, 27.0%
Komiya et al.(2019)	Japan	A patient in the Observational Study of Nagoya Elderly with Home Medical Care with mean aged 80 years.	Self-reported	56.9%
Farahat, El-esrigy & Salama (2017)	Egypt	All elderly patients aged 60 years and above.	Rome III criteria and BSFS	24.8%
Lim et al. (2016)	Malaysia	Malaysian students enrolled in Universiti Putra Malaysia with aged range 18 to 65 years.	Rome III criteria and BSFS	16.2 %
Ng et al. (2016)	Malaysia	A total of 202 Malaysian participants comprising 50 adolescents, 50 adults, 52 women childbearing and 50 elderly.	Agachan Constipation Score	20.0% (in all groups)

2.3 Factors Associated With Constipation

Based on the previous study, there were several factors associated with constipation. The associated factors were summarized in Table 2.2 and explained as below.

2.3.1 Socio-demographic Characteristics

Socio-demographic characteristics such as age and sex largely associated with constipation among the elderly in the past studies. A cross-sectional study about the prevalence of constipation in Shanghai, China conducted by Wang and Lin (2017) found that the constipation rate increase among the women from 4.5% in the 50-59 years age group to 6.0% in the 80 years and above age group. Thus, the increasing age among the elderly would probably cause constipation. Another cross-sectional study by Lamas et al. (2017) also have similar findings where it founds that the mean age was higher among those with constipation rather than non-constipation among the residents in an institutional geriatric care. However, this study was limited by its cross-sectional study design.

Constipation also most common in women than in men and it can be revealed by the different constipation rate. From a population study among 9 264 participants in Iran, 752 of them diagnosed having a constipation and 62.0% and 38.0% were the percentage of constipation rate for both women and men respectively (Moezi et al., 2018). This findings can be supported by another study by Dore et al. (2018), where the findings of

her study showed that the constipation among elderly at Northern Sardinia was present in 32.1%, more commonly in women with percentage 35.4% and only 28.3% in men. Thus, the sex was associated with constipation among elderly.

2.3.2 Body Weight Status

Body weight status presented as Body Mass Index (BMI). There were several studies that had discussed an association between BMI and constipation. However, the findings were inconsistent. Some studies shows a significant association between BMI and constipation whereas, some study shows no significant association.

In previous study by Moghimi-Dehkordi et al. (2009) to assess the association between obesity and constipation among adult at Tehran province, Iran, it founds that the mean BMI for the constipated participants was 26.5 ± 4.7. The finding of this study also showed that 40.0% and 20.0% of the adult being overweight and obese respectively. However, there was no statistical significance (p=0.72).

Another study by Koppen, Velasco-ben, Benninga, Lorenzo, & Saps (2016) aimed to examine the association between functional constipation and excessive body weight among 2 820 children with aged in between 8-18 years old across four regions in Colombia. Out of 368 from 2 820 of the children were found to have constipation. The

constipated children was made in 12.9% of normal-weight children, 13.1% of overweight children and 14.9% of obese children. There was no statistical difference (p=0.73).

The association between BMI and constipation also may supported by a cross sectional study for the sample of 186 elderly from five Senior Citizens Centres in Jeju-Si where the study aimed to measure the prevalence of constipation in community-dwelling elders and to analyse factors. The findings revealed that the BMI ≥25 kg/m^2 were the only factors associated with an increased likelihood of constipation (Song, 2012). This study showed a statistical significant between BMI and constipation but had a limitation where it does not examined all factors that may have potentially contribute to the constipation in elderly such as dietary intake, medication and multiple comorbid conditions.

2.3.3 Risk of Malnutrition

Malnutrition is related with decrease in bone mass, immune function, delayed post-surgery recovery, high hospitalization rate, cause increase mortality and generally will decline the functional status (Ahmed, 2010). Older people tend to be more prone to malnutrition problem and this problem also contribute to the prevalence of constipation worldwide.

According to a prospective observational single-centre study at Northern Sardinia, Italy by Dore et al. (2018), the number of women detected with constipation was higher than in men and it was related with their malnutrition risk. The nutritional status was better in men ($p<0.0001$) than in women. This showed that the nutritional status may affect the constipation.

This findings also can be supported by another cross-sectional study about the prevalence of malnutrition and malnutrition risk among free-living elderly in the community of an urban municipality of Attica and to identify socio-economic, health and dietary factors that may increase malnutrition risk where it founds that in the total of 151 people, 25.8% were at risk of malnutrition and constipation is one of the factor that correlated significantly with Malnutrition Nutritional Assessment (MNA) score (Vassilakou et al., 2017). However, this study limited by its study design where the ability to draw valid conclusion about association and possible causality was limited because the presence of risk factors and outcomes are measured simultaneously.

2.3.4 Dietary Intake

Inadequate fibre intake and water intake were commonly associated with constipation problem among elderly whereas, the other nutrients such as fat also may affecting this constipation problem. In previous study, a data from National Health and

Nutrition Examination Surveys (NHANES) found that the saturated fat intake highly correlated with constipation in both below and above 65 years in the United States (Taba Taba Vakili et al., 2015). However, the study indicates that the unsaturated fat intake was not associated with constipation.

In other study by Markland, Palsson, & Goode (2013) to assess the prevalence and associations of dietary fibre and water intake to constipation found that both men and women who reported constipation did not have higher levels of dietary fibre intake than those without constipation with statistically significance for both in men and women. Same for the result for water intake. It was statistically significance with constipation for both in men and women.

This claim may supported by a study of consumption of fruit and vegetables among elderly from Iran where the result showed the mean consumption of fruit and vegetables per day was 1.76 ± 1.15 serving among the total of 400 elderly individuals (Salehi et al., 2010). In another study by International Medical University (IMU), out of 50 elderly participated in this study, about 70.0% of them consumed less than 20 g of dietary fibre per day with mean score (14.36 ± 7.41) (Ng et al., 2016). Thus, the consumption of fibre among elderly was low and this may contribute to the constipation problem.

In addition, a study conducted by Robson, Kiely, & Lembo (2000) about the water intake founds that the decreased in water intake significant with development of constipation in nursing home ($p<0.001$). Poor consumption of water may cause reducing output of the stool and increase absorption of water by colon. This may give a proof that low intake of fibre and water may associated with constipation among elderly.

2.3.5 Physical Activity

Physical activity may classified into three classes which is low, moderate and vigorous physical activity. As for older people, the often physical activity they did were walking and this is the most available for them (Frank, Kerr, Rosenberg, & King, 2016).

Physical activity may associated with constipation. A previous study among 14 626 adolescents grades 7-12 in Taiwan show that there were a significant association of sedentary awake time during school day and high level physical activity with constipation with value $p=0.002$ and $p<0.001$ respectively (Chien, 2011). This study used Physical Activity Questionnaire-Youth Show Card Version to measure a physical activity and the constipation was defined as defecation less than 3 times per week and was assessed by a single question.

Another study by Moezi et al. (2018) found that out of 750 people with chronic constipation, the frequency and percentage of low physical activity among constipated people was 339 (45.1%) and high level physical activity was only 174 (23.1%) with statistical significance $p<0.001$ and the rest was medium level. The value of Metabolic Equivalent of Task (MET) score of all participants was calculated to measure their physical activity. The MET score was calculated applying the standard method International Physical Activity questionnaire (IPAQ) and it is categorized the score into three classification which are low, medium and high. The prevalence of chronic constipation participants with low level physical activity was 10.1% and the participants with high level physical activity was 5.6% (Moezi et al., 2018).

2.3.6 Depression and Stress Level

In previous year, there were several studies investigated the association between depression and stress level with constipation among elderly. According to study by Dore et al. (2018) the out patients aged 70 years and above that attended to Geriatric unit at Department of Internal Medicine, University of Sassari were evaluated to investigated the associated factors of constipation among elderly and the finding showed that the depression was statistically significant with constipation ($p=0.006$). The strength of this study was consisted of large sample size and an oldest population.

Another study focused on the Asian population to investigate whether there was an association between depression and constipation. In that study, 3 282 patients was made by a telephone survey and the tools used to measure depression among them was a Hospital Anxiety and Depression Scale (HADS). In the findings part, the researcher was made a comparison between constipated and non-constipated where the patients with functional constipation were more anxious ($p<0.0001$) and depressed ($p<0.001$) than the patients with non-constipated (Chan et al., 2005).

Table 2.2 Factors associated with constipation

Factors	Author (s), year	Objective	Methodology	Finding (s)
Socio-demographic characteristics	Wang & Lin (2017)	To investigate the prevalence and risk factors of constipation in Shanghai.	Study design: Cross-sectional study Subjects: Women aged 50 years and older	Prevalence increase with advancing age.
	Lamas et al. (2017)	To investigate the prevalence of constipation and identify resident's characteristics related to CC in Sweden.	Study design: Cross-sectional study Subjects: Residents at geriatric care.	The mean age was higher among constipated residents than non-constipated.
	Moezi et al. (2018)	To estimate the prevalence of CC and its associated factors in pars cohort study (PCS).	Study design: Cross-sectional study Subjects: Subjects aged between 40 and 75 years	About 62.0% and 38.0% of women and men constipated respectively with significance difference $p<0.001$.
	Dore et al. (2018)	Investigate the major risk factors associated with constipation in elderly.	Study design: Prospective observational single-centre study. Subjects: Outpatient attending Geriatric Unit between 2001 and 2014.	The constipated women was 35.4% while for men was 28.3%.

Table 2.2 Factors associated with constipation (cont.)

Body weight status	Moghimi-Dehkordi et al. (2009)	To assess the association between BMI and functional constipation in the Iranian community.	Study design: Cross-sectional study Subjects: Adults.	No significance association between BMI and constipation.
	Koppen, Velasco-ben, Benninga, Lorenzo & Saps (2016)	To determine the prevalence of FC, overweight and obesity and to examine the association between FC and excessive body weight.	Study design: Cross-sectional study Subjects: Children in Colombia aged between 8 to 18 years.	No statistical significance associated with constipation.
	Song (2012)	To measure the prevalence of constipation in community-dwelling elders.	Study design: Cross-sectional study Subjects: Elders from 5 senior citizen centers in Jeju-si.	BMI >25 kg/m^2 was a significantly associated with constipation.
Risk of malnutrition	Dore et al. (2018)	Investigate the major risk factors associated with constipation in elderly.	Study design: Prospective observational single-centre study Subjects: Outpatients attending Geriatric Unit between 2001 and 2014.	The nutritional status was better in constipated man than constipated women ($p<0.001$).
	Vassilakou et al. (2017)	To determine the prevalence of malnutrition and malnutrition risk among free-living elderly in the community.	Study design: Cross-sectional study Subjects: Elderly living people aged over 65 years	Constipation was significantly associated with the risk factors of malnutrition ($p<0.002$).

Table 2.2 Factors associated with constipation (cont.)

Dietary intake	Taba Vakili et al. (2015)	To assess if increased intake of dietary saturated fat in humans is also associated with higher risk of constipation and reduced stool frequency.	Study design: Analyse data from NHANES (2005-2008). Subjects: Adults aged 20 years and above.	The saturated fat intake highly correlated with constipation ($p<0.05$).
	Markland, Palsson & Goode (2013)	To assess the prevalence and associations of dietary fibre and liquid intake to constipation.	Study design: Analyse data from NHANES (2005-2008). Subjects: Adults aged 20 years and above.	The dietary fibre level and water intake were both significantly associated with constipation.
	Salehi et al. (2010)	To assess fruit and vegetable consumption and the variables that influence it.	Study design: Cross-sectional study Subjects: Adults aged 20 years and above.	The fruit and vegetable intake was lower than the recommendation among subjects.
	Ng et al. (2016)	To investigate the associations of dietary fibre and fluid intake with constipation.	Study design: Cross-sectional study Subjects: Mixed aged	About 70.0% of the elderly consumed <20 g/day of fruit and vegetables.

Table 2.2 Factors associated with constipation (cont.)

Physical activity	Chien, Liou & Chang (2011)	To estimate the prevalence of constipation and to examine its association with the intake of vegetables, fruits and fluids and time spent for sedentary, moderate and vigorous behaviour.	Study design: Questionnaire survey Subjects: Taiwanese adolescents	There were significant association of sedentary awake time during school ($p=0.002$) and high level physical activity ($p<0.001$) with constipation.
	Moezi et al. (2018)	To estimate the prevalence of CC and its associated factors in Pars Cohort Study (PCS).	Study design: Cross-sectional study Subjects: Subjects aged between 40 and 75 years old	The percentage of constipated people with low level physical activity was higher (45.1%) than high level physical activity (23.1%) with statistical significance $p<0.001$.
Depression and stress	Dore et al. (2018)	Investigate the major risk factors associated with constipation in elderly.	Study design: Prospective observational single-centre study. Subjects: Outpatient attending Geriatric Unit between 2001 and 2014.	The depression among elderly was statistically significance with constipation ($p=0.006$).
	Chan et al. (2005)	To investigate coping mechanism, constipation symptoms and anorectal physiology in 80 constipated subjects and 18 controls.	Study design: Survey Subjects: Patients	The patients with functional constipation were more depressed ($p<0.001$).

CHAPTER 3

METHODOLOGY

3.1 Study Design

A cross sectional study was conducted to determine the prevalence of constipation and its associated factors among elderly at selected private care homes in Selangor.

3.2 Study location

This study was conducted in the state of Selangor. Selangor is the most populous state in Malaysia with estimated 6.47 million people in the year 2018 covering an area 7 931 km^2 (Department of Statistics Malaysia, 2018). It was located in the right and west of Peninsular Malaysia and is bordered by Perak to the north, Pahang to the east, Negeri Sembilan to the south and the Straits of Malacca to the west (Figure 1.0). There were three major ethnic groups in Selangor which is Malay, Chinese and Indian. Based on data on Department of Statistics Malaysia (2018), the estimated number of male and female in Selangor was 3.36 and 3.11 million people in the year of 2018 respectively. The

socioeconomic status in Selangor was better than the other state and most of people in Selangor employed at government or private sector.

3.3 Subjects

The subjects of this study were elderly with aged 60 years and above at selected private care homes in Selangor. The elderly who met the study criteria were invited to participate in this study.

The inclusion criteria for subjects in this study was Malaysian, and residents who were able to give consent. Whereas, for exclusion criteria were residents who were unable to communicate and diagnosed with mental illness or critically ill.

3.4 Sample Size Determination

The sample size for the study was calculated using the following equation which are correlation formula by Hulley, Cummings, Browner, Grady & Newman (2013):

$$N = [(Z\alpha+Z\beta)/C]^2+ 3$$

$$C = 0.5 * \ln [(1+r)/(1-r)]$$

Where;

The standard normal deviate for $\alpha = Z\alpha = 1.96$

The standard normal deviate for $\beta = Z\beta = 0.84$ (80%)

r = the expected correlation coefficient (**-0.34**, Towers et al., 1994)

Thus, $N = [(1.96+0.84)/-0.347]^2 + 3$

$N = 68.1$

$N \approx 68$

By taking into account a 20% non-response of the subjects, the minimum sample size was increased to **82 subjects.**

3.5 Sampling Design

A purposive sampling method was used in this study. Firstly, all of eighty seven private care homes in Selangor those registered under the Department Social Welfare were listed out. The care homes who had a large population size was purposely selected. However, only ten care homes gave their permission to do a research. The chart below show the process of purposive sampling.

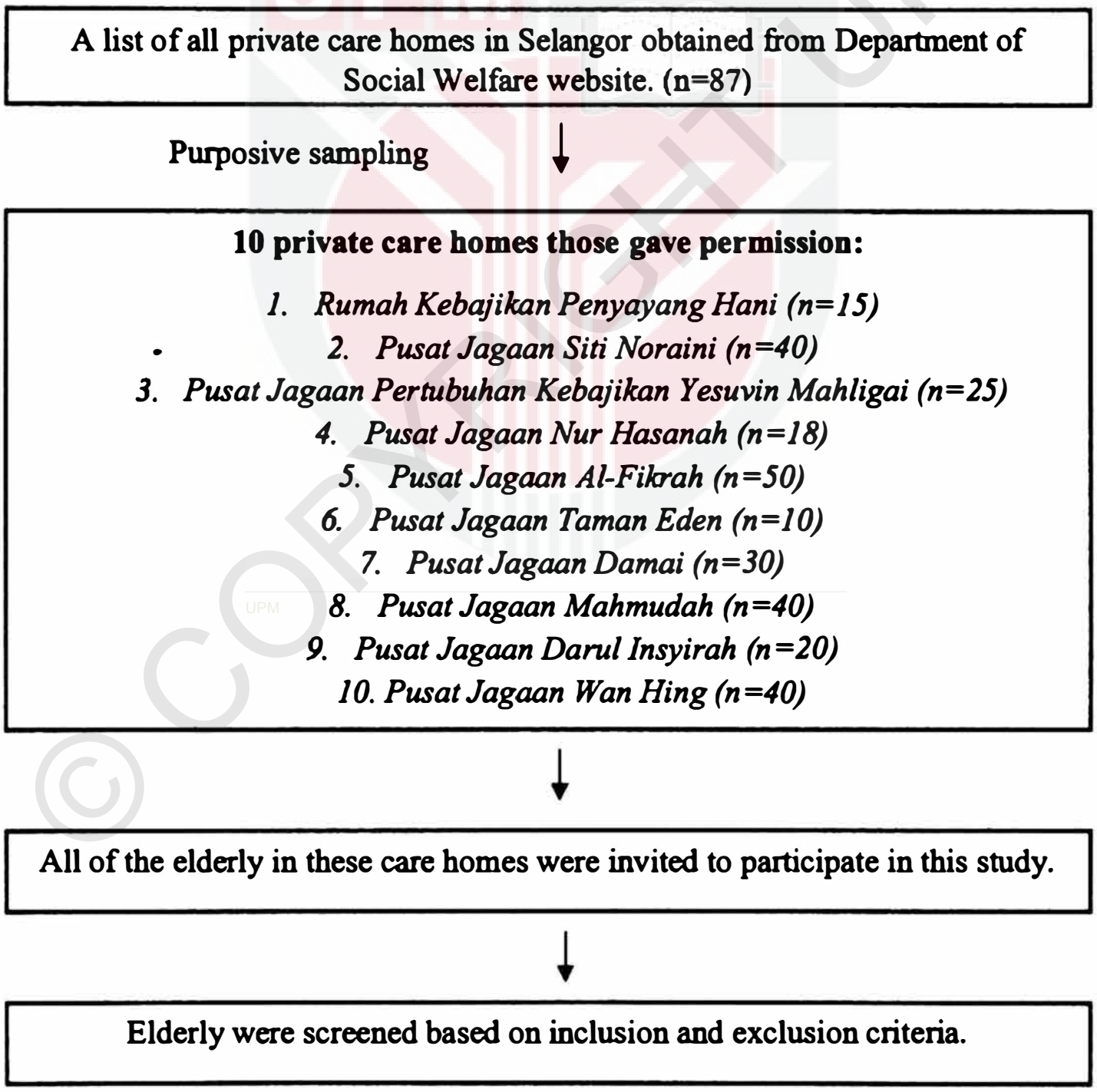

Figure 3.1: Flow chart of sampling procedure

3.6 Study Instruments

3.6.1 Socio-demographic Characteristics

The socio-demographic characteristics of the subjects were measured by self-developed questionnaire which include age, sex, ethnicity, marital status, education level, previous occupation and current monthly expenses. This part was done by face-to-face interview.

3.6.2 Body Weight Status

Body weight and height were measured to determine the Body Mass Index (BMI) of the subjects. The body weight was measured by using a TANITA Digital Weight Scale HD319 (TANITA Corporation, Japan) to the nearest 0.1 kg. While the height was measured by using a SECA Body Tape Measure SE206 (SECA, Germany) to the nearest 0.1 cm.

For weight measurement, the subjects were asked to leave all the heavy stuff that they had. Then, for height measurement the subjects was asked to stand on the flat floor and facing forward as straight as possible. The head must in the "Frankfort plane" which eye and ear in midline position (NIHR Southampton Biomedical Research Centre Procedure for Measuring, 2016).

After getting the weight and height of the subjects, the BMI was calculated as weight (kilograms) divided by the square of height (metre^2). The classification of BMI as shown in table 3.1.

Table 3.1: Standard classification of BMI

BMI	Classifications
<18.5 kg/m^2	Underweight
18.5-24.9 kg/m^2	Normal
25.0-29.9 kg/m^2	Overweight
>30. kg/m^2	Obesity

(Source: WHO, 2000)

3.6.3 Risk of Malnutrition

Risk of malnutrition among subjects were measured by using a Mini Nutritional Assessment Short Form (MNA-SF) tools that belongs to Nestle Nutrition Institute (NNI) (Ghazi et al., 2015). MNA-SF questionnaire detected elderly with malnourished or at risk of malnutrition. This questionnaire include six parts which were consist of part A for decreasing in food intake, part B for weight loss, part C for mobility status, part D for psychological stress, part E for neuropsychological problem, part F1 for Body Mass Index (BMI) and part F2 for calf circumference (CC). For scoring purpose, total score of the points from part A until part F were total up and classified into three classification which

were well-nourished with score 12 to 14 points, at risk of malnutrition with score 8 to 11 points and malnourished with MNA score less than 7 points. The validity of MNA-SF tool to measure malnutrition risk among the elderly was Cronbach alpha 0.72 (Mathew, Jose, Athira, & Vijayakumar, 2015).

3.6.4 Dietary Intake

The adequacy of calorie, carbohydrate, protein, fat and water intake among subjects were measured by using 24 hours dietary recall. The form consist of date, time, food or drinks consumed by the subjects, cooking method and quantity. Respondents were interviewed to assess their dietary intake in the last 24 hours. The total energy and nutrients intake were analyzed by using Nutritionist Pro (First Data Bank, 2011). The estimated consumed was convert into grams by using a food database such as Malaysian Food Composition Tables (Tee et al., 1997). Mean value of macronutrient intake were compared with the Recommended Nutrient Intake (RNI) for Malaysian (NCCCFN, 2005) to determine the adequacy. In addition, each of the macronutrients contribute energy. The proportion of energy from carbohydrate was 55%-60%, protein was 10%-15% and fat was 20%-30%. Table 3.2 shows the recommendation of energy and macronutrients intake for elderly based on RNI 2017.

Table 3.2: Recommendation of energy, protein and fat intake

	Male	Female
Energy (kcal/day)	2030	1770
Protein (g/day)	58	50
Fat (g/day)	56-68	49-59

(Source: RNI 2017)

Plain water intake in between meals also were assessed and compared with recommendation from MANS (2003) and RNI which is eight and above glasses per day. Total servings of fruit and vegetables per day also was obtained and compared with Malaysian Dietary Guideline (MDG) 2010 (MOH, 2010). According to MDG, the servings of fruit and vegetables should we consumed was 5 servings per day consisted of two servings of fruit and three servings of vegetable.

3.6.5 Physical Activity

Physical activity of the subjects were measured by using an International Physical Activity Questionnaire for Elderly (IPAQ-E). This questionnaire was modified from the short version of the International Physical Activity Questionnaire (IPAQ) and was validated by a study among the retired person with ranged age 66 to 91 years and live independently in the Sweden (Hurtig-wennlo, Hagstro, & Olsson, 2010). This questionnaire consisted of four parts of physical activity which are sitting during a day, walking, moderate intensity and vigorous intensity. Each of the activity had a MET level.

For walking=3.3 METs, moderate intensity=4.0 METs and vigorous intensity=8.0 METs. The METs value of each physical activity were multiply with time taken during doing an activity. For scoring purpose, the total of physical activity MET-minutes/week were sum up and was categorized into low, moderate and high level physical activity. Table below shows the classification of physical activity level.

Table 3.3: Classification of physical activity level

Total MET-min/week	Classification
<600	Low
600-3000	Moderate
>3000	High

3.6.6 Depression and Stress Level

Depression and stress level were measured used Depression, Anxiety and Stress Scale 21 (DASS-21). DASS-21 was divided into 3 sub-sections of 7 questions related to depression, anxiety and stress. However, only the depression and stress subscales were measured. The depression sub-scales consisted of item 1 (I found it hard to wind down), item 2 (I was aware of dryness of my mouth), item 4 (I experienced breathing difficulty), item 6 (I tended to over-react to situations), item 7 (I experienced trembling), item 8 (I felt that I was using a lot of nervous energy), item 9 (I was worried about situations in which I might panic and make a fool of myself), item 11 (I found myself getting agitated), item 12 (I found it difficult to relax), item 14 (I was intolerant of anything that kept me from

getting on with what I was doing), item 15 (I felt I was close to panic), item 18 (I felt that I was rather touchy), item 19 (I was aware of the action of my heart in the absence of physical exertion) and item 20 (I felt scared without any good reason). For the stress sub-scales, it consisted of item 2, item 3, item 4, item 5, item 7, item 9, item 10, item 13, item 15, item 16, item 17, item 19, item 20 and item 21. The ordinal responses ranked from 0 (Never) to 3 (Almost Always). The minimum and maximum score for both depression and stress subscale were 0 and 42 respectively. This questionnaire was validated by Wood, Nicholas, Blyth, Asghari, & Gibson (2010) where the values of Cronbach alpha for depression and stress scales were 0.90 and 0.88 respectively for the elderly. After answered all the subscales required, total score of depression and stress subscales were total up differently and classified as below:

Table 3.4: Classification of DASS-21 severity rating

	Depression	Stress
Normal	0-4	0-7
Mild	5-6	8-9
Moderate	7-10	10-12
Severe	11-13	13-16
Extremely severe	14+	17+

(Lovibond,1995)

3.6.7 Assessment of Constipation

The assessment of constipation among elderly at selected private care homes were measured by using a Constipation scoring system (Agachan, Chen, Pfeifer, Reissman & Wexner, 1996). There were eight item scales which consisted of frequency of bowel movements; difficult or painful evacuation; completeness of evacuation; abdominal pain; time per attempt; type of assistance including laxatives; digital assistance or enemas; number of unsuccessful attempts at evacuation in a 24-hours period and duration of constipation. Each of the item consisted of 5 liked scale range from 0= none of the time to 4= all of the time except for item number 6 that range from 0-2. The score ranged from 0 to 30 with 0 indicating normal and 30 indicating severe constipation. For its classification, a score more than 15 was defined as having a constipation problem. The higher score indicates the severity of constipation (Agachan et al., 1996).

3.7 Pre testing

A pre-test were conducted among 10 subjects to test the instruments used in this study. The subjects who were refused to participate and diagnosed with mental illness or critically ill during the study period did not included in this pre-testing. The purpose of this pre-testing was to evaluate the validity and the appropriateness of the questionnaire. Besides, pre-testing was done to evaluate the understanding of subjects on the questions that are asked in the questionnaire. The duration of time required for the subjects to complete the questionnaire can be estimated and any error in the questionnaire which was

needed to be amended can also be determined. After conducting the pre-test, the content was slightly modified and adjusted to fit the understanding of the subjects.

3.8 Data Collection and Study Approval

Data collection was conducted from February 2019 to April 2019. Prior to the commencement of the study, ethical clearance were obtained from the *Jawatankuasa Etika Universiti untuk Penyelidikan Melibatkan Manusia, (JKEUPM)* with reference no; JKEUPM-2018-398 (Appendix A) and also from the manager of each selected private care homes in Selangor (Appendix B). For subject recruitment, health screening were conducted at selected care home and subjects who meet the study criteria were selected to participate in this study.

During data collection, subjects were given an information sheet which explains the purpose of this study. The first measurement was based on the anthropometric measurement which consisted of height and weight. The next was measurement for socio-demographic characteristics, risk of malnutrition, dietary intake, physical activity and depression and stress level.

3.9 Statistical Analysis

All the statistical analysis were performed by using IBM SPSS Statistic 23. In this study, the univariate analysis was used to analyse descriptive data. The results were presented as frequencies and percentages for categorical data. Meanwhile, for normally distributed continuous data was reported as mean and standard deviations and for not normally distributed as median and Interquartile range (IQR).

The Pearson's product moment correlation was used to test the correlation between continuous variable if the data normally distributed and Spearman product moment correlation if the data not normally distributed. While, the Fisher's exact test was used to test the relationship between categorical variable. The level of significance was set at $p<0.05$. 24 hours dietary recall was analysed by using the Nutritionist Pro Software Programme to determine the total of energy and macronutrient from food before analysed using IBM SPSS statistic 23.

CHAPTER 4

RESULTS

4.1 Recruitment of Subjects

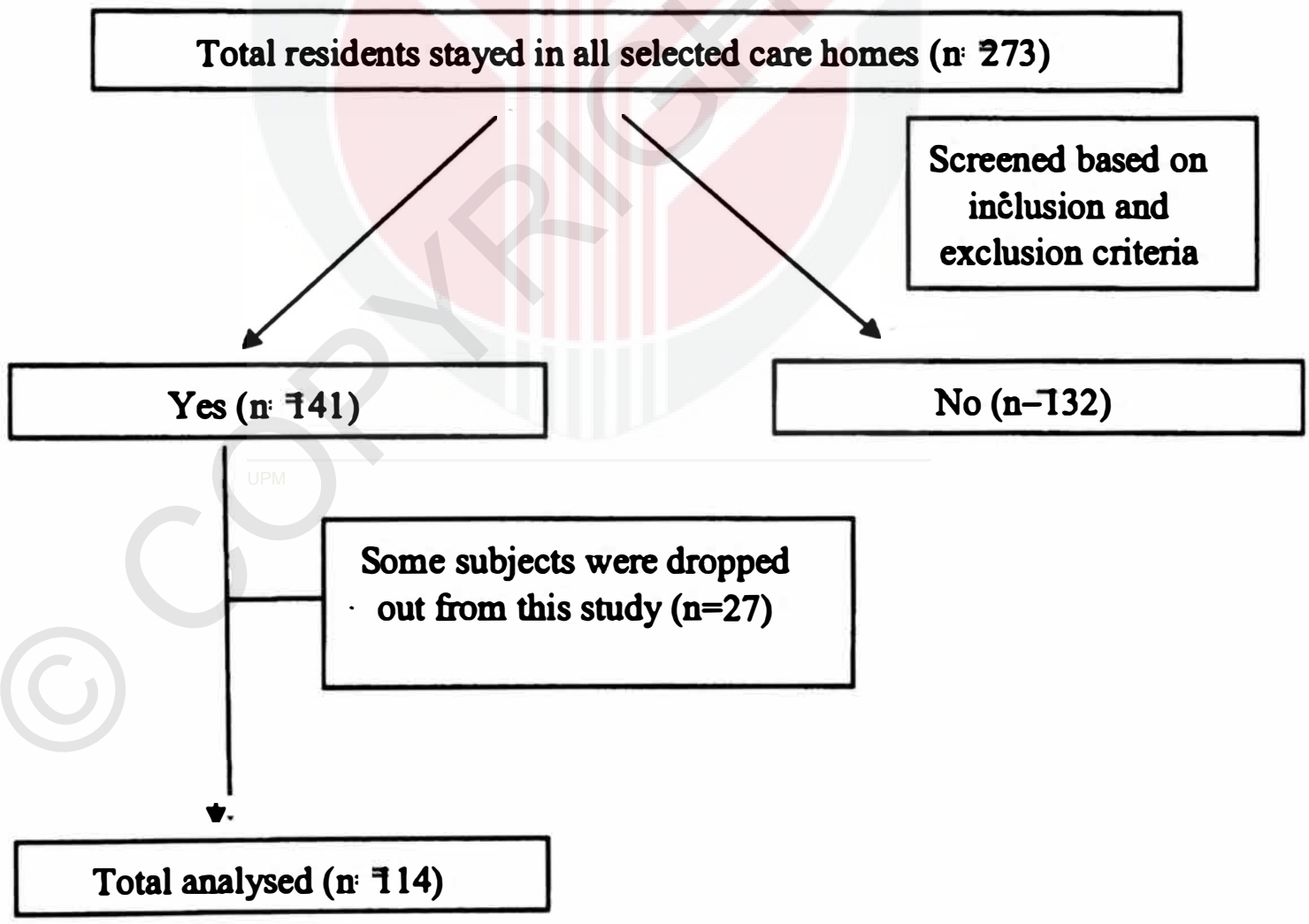

Figure 4.1: Recruitment process of subjects

The total of all residents stayed in selected care homes were 273. However, after screened based on inclusion and exclusion criteria, only 141 residents were meet the criteria and was chosen as subjects in this study. Since 27 of the subjects were dropped out from this study, only 114 subjects were analysed. Figure 4.1 shows the flow of the subject's recruitment. The response rate of this study was 80.9% and it was considered as in acceptable range.

4.2 Socio-demographic Characteristics

This study was carried out among the elderly aged 60 years and above stayed in private care homes (n= 10) in Selangor. In this study, a total of 114 subjects who fulfilled the inclusion and exclusion criteria were recruited. The proportion of the subjects from each care home was presented in Figure 4.2. The highest number of subjects were recruited from *Siti Noraini's* care home (18.4%). Whereas, the lowest number of subjects were recruited from *Penyayang Hani's* care home (3.5%). The different in number of subject recruitment due to different total residents in each care home.

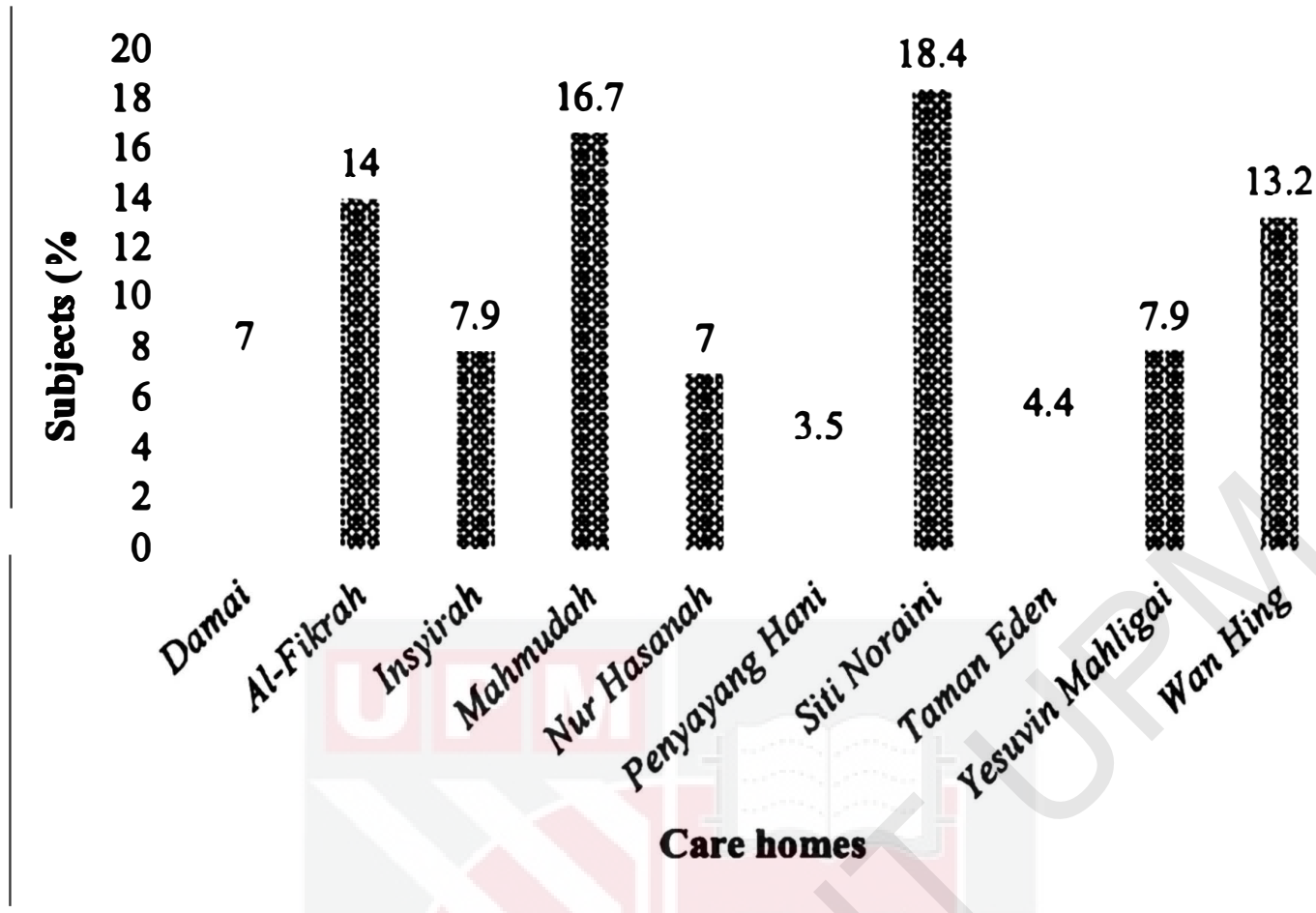

Figure 4.2: Proportion of subjects from each care homes

The socio-demographic characteristics were described in Table 4.1. The mean age for the subjects was 70 ± 8 years (60-99 years) and more than half of the subjects was male (64.0%). The proportion of Malay, Chinese and Indian subjects were 58.8%, 19.3% and 21.9% respectively. In addition, the highest proportion of the subjects were married (39.5%) and have a secondary education level (50.9%). Previously, most of the subjects had their occupation in different sectors (87.7%) and only 12.3% of the subjects did not have the previous occupation. Majority of the subjects having their current monthly expenses below than RM100 (66.7%).

Table 4.1: Socio-demographic characteristics of the subjects

Variables	n (%)	Mean ± SD	Min-Max
Age (years)		70 ± 8	60-99
Sex			
Male	73 (64.0)		
Female	41 (36.0)		
Ethnicity			
Malay	67 (58.8)		
Chinese	22 (19.3)		
Indian	25 (21.9)		
Marital status			
Single	32 (28.1)		
Married	45 (39.5)		
Divorced	12 (10.5)		
Widowed	25 (21.9)		
Education level			
None	17 (14.9)		
Primary	31 (27.2)		
Secondary	58 (50.9)		
Diploma	5 (4.4)		
Bachelor's	3 (2.6)		
Previous occupation			
None	14 (12.3)		
Government sector	24 (21.1)		
Non-government sector	30 (26.3)		
Self-employed sector	34 (29.8)		
Others	12 (10.5)		
Current monthly expenses			
<RM 100	76 (66.7)		
RM101-RM300	5 (4.4)		
RM301-RM500	5 (4.4)		
RM501-RM700	3 (2.6)		
RM701-RM900	6 (5.3)		
>RM900	19 (16.7)		

4.3 Body Weight Status

Body weight status of the subjects was tabulated in Table 4.2. The mean weight and height of the subjects were 58.3 ± 14.0 kg and 1.6 ± 0.1 m respectively. Meanwhile, the mean BMI was 23.6 ± 5.8 kg/m^2 indicating normal BMI.

Table 4.2: Body weight status of the subjects

Variables	Mean ± SD	Min-Max value
Weight (kg)	58.3 ± 14.0	25.3-98.0
Height (m)	1.6 ± 0.1	1.3-1.8
BMI (kg/m^2)	23.6 ± 5.8	10.3-45.4

The BMI classification of the subjects was shown in Figure 4.3. The highest proportion was normal BMI (46.5%) and the lowest proportion was obesity (11.4%). Meanwhile, the percentage of underweight and overweight were 17.5% and 24.6% respectively.

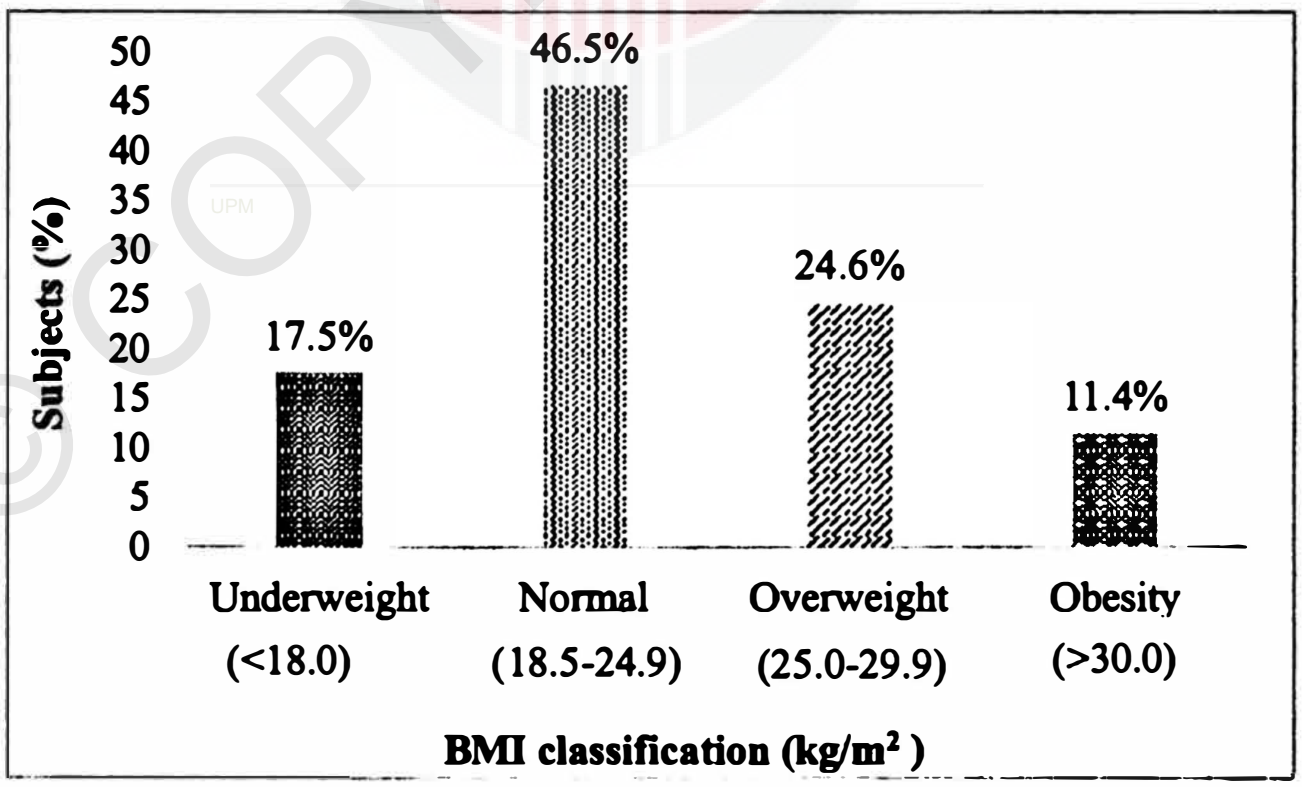

Figure 4.3: Distribution of subjects according to BMI classification

4.4 Risk of Malnutrition

Risk of malnutrition was assessed and the results were tabulated in Table 4.3. The mean score of the total MNA-SF score was 9.89 ± 2.61. About 31.6% of the subjects were well-nourished, meanwhile 50.9% and 17.5% of the subjects were at risk of malnutrition and malnourished respectively.

Table 4.3: Risk of malnutrition score among subjects

Variables	n (%)	Mean ± SD	Min-Max value
Total MNA-SF score		9.89 ± 2.61	4-14
Well-nourished	36 (31.6)		
At risk of malnutrition	58 (50.9)		
Malnourished	20 (17.5)		

4.5 Dietary Intake

Energy, macronutrients, water intake, fruit and vegetables were assessed. The mean total energy intake among subjects was 951.6 ± 435.9 kcal/day. The energy intake was then compared with Malaysian Recommended Nutrient Intake (RNI) 2017.

Table 4.4 shows that most of the subjects (97.4%) were consumed below the recommendation of RNI 2017. Only 2.6% had adequate total energy intake. Then, the mean carbohydrate intake among subjects was 135.7 ± 56.8 g/day. Whereas, the mean for the protein intake was 39.2 ± 20.5 g/day. About 80.7% of the subjects did not consume

protein based on the recommendation and the rest of 19.3% had an adequate intake of protein per day.

In addition, the mean of fat intake among subjects was 28.3 ± 20.3 g/day. The proportion of inadequate fat intake (84.2%) was higher than the proportion of adequate fat intake (15.8%) same as energy and protein intake. The serving of fruit and vegetable intake per day among subjects also was assessed and the mean was 1.5 ± 1.1 servings/day. Majority (96.5%) of the subjects did not consume adequate amount of fruit and vegetables. Other than the energy and macronutrients intake, water intake also was assessed. The mean of total water intake among subjects was 5.5 ± 2.9 glasses per day. Most of the subjects were consumed water less than eight glasses per day (65.8%).

Table 4.4: Energy, macronutrients, fruit and vegetables and water intake of the subjects

	n (%)	Mean ± SD
Energy (kcal/day)		951.6 ± 435.9
<RNI	111 (97.4)	
≥RNI	3 (2.6)	
Carbohydrate (g/day)		135.7 ± 56.8
Percentage energy from Carbohydrate		58.9 ± 12.5
<55%	39 (34.2)	
55-60%	25 (21.9)	
>60%	50 (43.9)	
Protein (g/day)		39.2 ± 20.5
<RNI	92 (80.7)	
≥RNI	22 (19.3)	
Percentage energy from Protein		16.4 ± 4.6
<10%	11 (9.6)	
10-15%	27 (23.7)	
>15%	76 (66.7)	
Fat		28.3 ± 20.3
<RNI	96 (84.2)	
≥RNI	18 (15.8)	
percentage energy from Fat		24.6 ± 9.9
<20%	40 (35.1)	
20-30%	35 (30.7)	
>30%	39 (34.2)	
Fruit & vegetable (servings/day)		1.5 ± 1.1
<5 servings	110 (96.5)	
≥5 servings	4 (3.5)	
Water intake (glass per day)		5.5 ± 2.9
<8 glasses	75 (65.8)	
>8glasses	39 (34.2)	

4.6 Physical Activity

Table 4.5 shows the total MET-min/week, walking, moderate and vigorous score spent by the subjects. The median for total MET-min/week was 346.50 MET-min/week (IQR: 0.00-891.00), walking score 288.75 MET-min/week (IQR: 0.00-693.00), moderate score 0.00 MET-min/week (IQR: 0.00-45.00) and vigorous score 0.00 MET-min/week (IQR: 0.00-0.00).

Table 4.5: Total MET-min/week, walking, moderate and vigorous score of subjects

Characteristics	Median	IQR
Total MET-min/week	346.50	0.00-891.00
Walking score	288.75	0.00-693.00
Moderate score	0.00	0.00-45.00
Vigorous score	0.00	0.00-0.00

Figure 4.4 shows the physical activity level achieved by the subjects at care homes. More than half of the subjects were in low physical activity. While 30.7% and 9.6% of the subjects were in moderate and high physical activity.

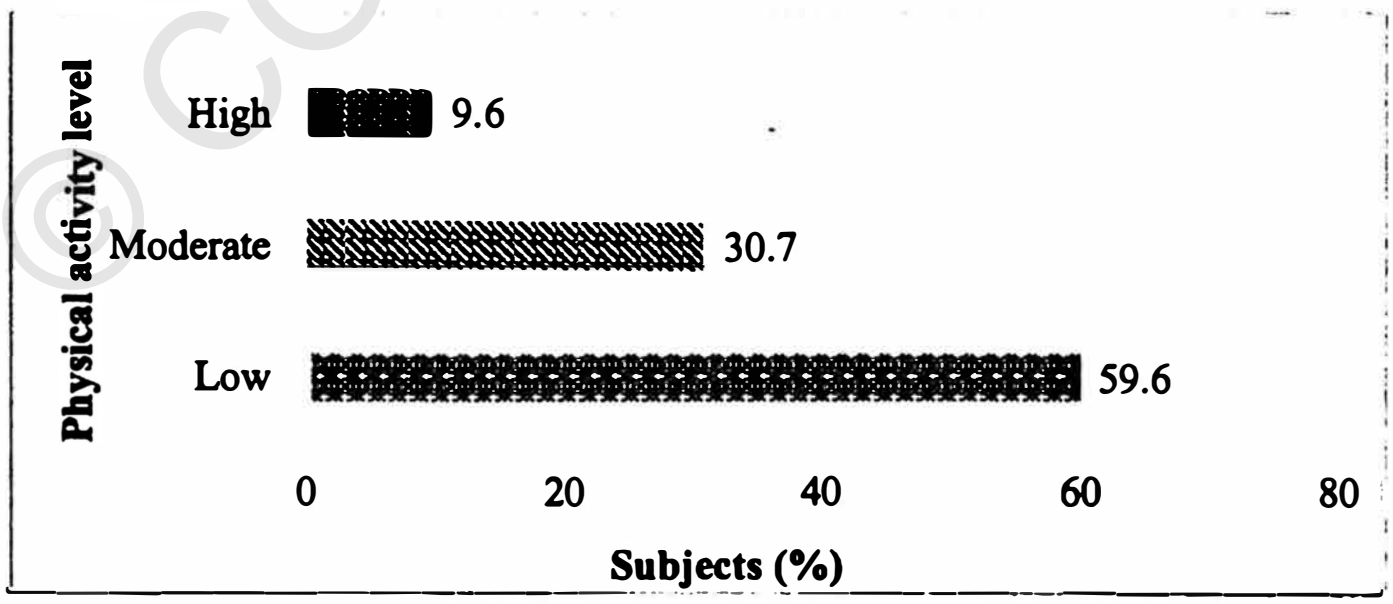

Figure 4.4: Distribution of subjects according to physical activity level

4.7 Depression and Stress Level

Depression and stress level result were tabulated in Table 4.6. The median score for depression was 4.00 (IQR: 1.75-7.00) and stress was 4.00 (IQR: 2.00-7.25). Based on this result, most of the subjects were in their normal condition where 54.4% and 75.4% was free from diagnosed having the depression and stress problem. However, the percentage of subjects having extremely severe depression was quite high which is 12.3%.

Table 4.6: Depression and stress level among subjects

Variables	n (%)	Median	IQR
Depression level		4.00	1.75-7.00
Normal	62 (54.4)		
Mild	17 (14.9)		
Moderate	17 (14.9)		
Severe	4 (3.5)		
Extremely severe	14(12.3)		
Stress level		4.00	2.00-7.25
Normal	86 (75.4)		
Mild	10 (8.8)		
Moderate	5 (4.4)		
Severe	6 (5.3)		
Extremely severe	7 (6.1)		

4.8 Prevalence of Constipation

The prevalence of constipation and its severity was measured by constipation scoring system. For those subjects had score more than 15, it was indicate having a constipation problem. The mean score of constipation was 5.93 ± 3.99 indicating less constipation severity.

Table 4.7: Mean and Standard deviation of constipation score

	Mean ± SD	Min-Max value
Constipation score	5.93 ± 3.99	0-19

The pie chart below shows the prevalence of constipation among the elderly at selected care homes in Selangor. Only 7.0% of the subjects having a constipation problem while 93.0% of subjects did not have a constipation problem.

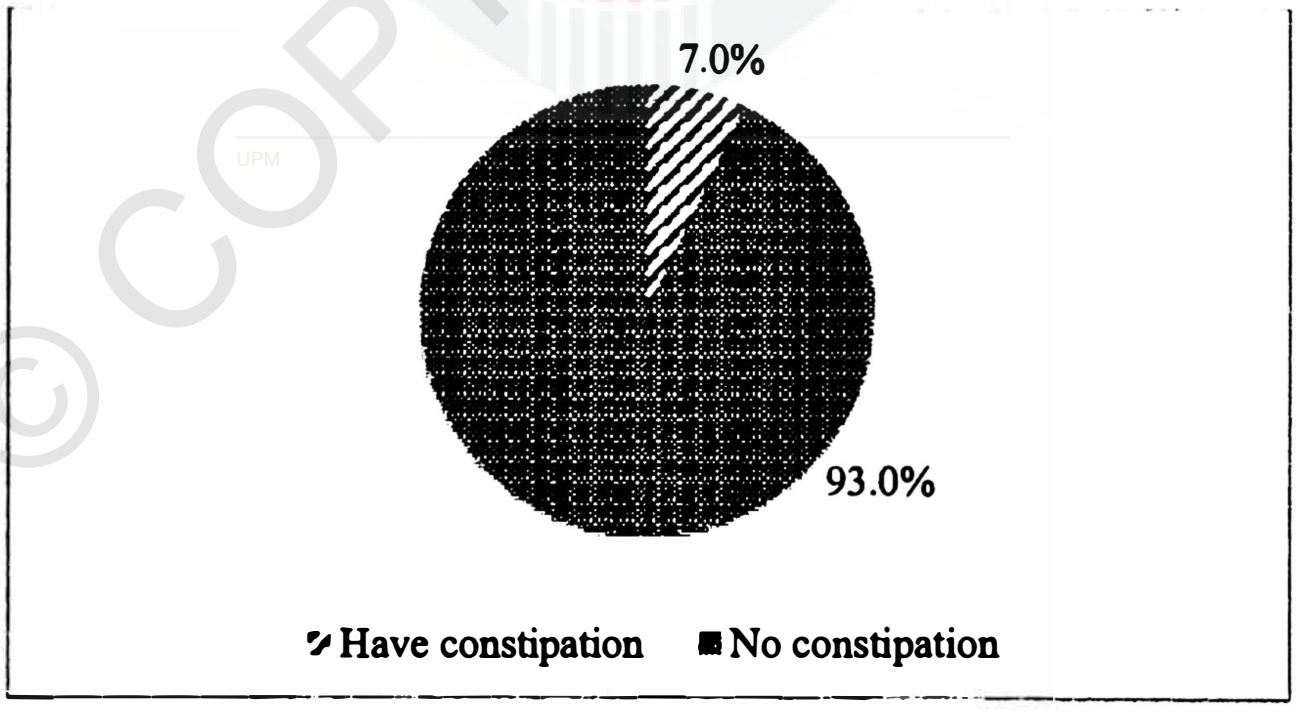

Figure 4.5: Prevalence of constipation among elderly at selected private care homes in Selangor

Table 4.8: Constipation score among subjects by items

Variables	n (%)
1.Frequency of bowel movement	
1-2 times per 1-2 days	80 (70.2)
2 times per week	23 (20.2)
Once per week	7 (6.1)
Less than once per week	3 (2.6)
Less than once per month	1 (0.9)
2.Difficulty: Painful evacuation effort	
Never	58 (50.9)
Rarely	30 (26.3)
Sometimes	18 (15.8)
Usually	5 (4.4)
Always	3 (2.6)
3.Completeness: Feeling incomplete evacuation	
Never	51 (44.7)
Rarely	26 (22.8)
Sometimes	27 (23.7)
Usually	5 (4.4)
Always	5 (4.4)
4.Pain: Abdominal pain	
Never	57 (50.0)
Rarely	30 (26.3)
Sometimes	19 (16.7)
Usually always	6 (5.3)
Always	2 (1.8)
5.Time: Minute in lavatory per attempts	
Less than 5	15 (13.2)
5-10	60 (52.6)
10-20	21 (18.4)
20-30	11 (9.6)
More than 30	7 (6.1)
6.Assistance: Type of assistance	
Without assistance	102 (89.5)
Stimulative laxatives	12 (10.5)
7. Failure: Unsuccessful attempts for evacuation per 24 hours	
Never	62 (54.4)
1-3	38 (33.3)
3-6	12 (10.5)
6-9	2 (1.8)
8.History: Duration of constipation	
0	55 (48.2)
1-5	44 (38.6)
5-10	10 (8.8)
10-20	3 (2.6)
More than 20	2 (1.8)

Table 4.8 shows all eight items question used in assessing constipation severity. Overall, the data shows most of the subjects were having a frequency of bowel movement 1-2 times per 1-2 days (70.2%). Then, 20.2% and 6.1% of the subjects having frequency bowel movement 2 times per week and once per week respectively. In addition, 50.9% and 26.3% of the subjects reported never and rarely feeling painful evacuation effort while only 15.8% felt sometimes painful. The rest of the subjects which is 4.4% and 2.6% reported usually and always feeling painful evacuation.

For feeling incomplete evacuation, there was a minimal number of subjects reported having it. Only 4.4% of subjects felt both usually and always incomplete evacuation. Moreover, half (50.0%) of the subjects reported never had an abdominal pain and also mostly took 5 to 10 minutes in lavatory per attempts. About 89.5% of the subjects did not use any assistance. However, 10.5% of the subjects used stimulative laxative to solving their constipation problem.

Based on the result in the Table 4.8, most of the subjects never having unsuccessful attempts for evacuation per 24 hours and did not have any of constipation's history. Only 38.6% of them having 1-5 times of history having constipation.

4.9 Factors Associated with Constipation

4.9.1: Socio demographic Characteristics and Constipation

Pearson correlation coefficient test was used to test the association between age and constipation among elderly. Table 4.9 shows there was no significant association between age and constipation among elderly (r=-0.092, p=0.331). Hence, the alternative hypothesis was rejected.

Table 4.9: Association test between age and constipation

Variables	r	[a] p-value
Age	-0.092	0.331

[a] Pearson Correlation Coefficient Test

Table 4.10 shows the association of sex, ethnicity, marital status, education level, previous occupation and current monthly expenses and constipation. The test was used Fisher's exact test. The result shows that only sex have significant association with constipation among elderly (p=0.025). Hence, the alternative hypothesis was failed to reject for association between sex and constipation.

However, there was no significant association between ethnicity (p=1.000), marital status (p=0.476), education level (p=1.000), previous occupation (p=0.255) and current monthly expenses (p=1.000) with constipation. Therefore, the alternative

hypothesis was rejected for association between ethnicity, marital status, education level, previous occupation and monthly expenses with constipation.

Table 4.10: Association test between sex, ethnicity, marital status, education level, previous occupation and current monthly expenses and constipation

Variables	n (%)		x^2	[b] p-value
	No constipation	Have constipation		
Sex			-	0.025*
Male	71 (67.0)	2 (25.0)		
Female	35 (33.0)	6 (75.0)		
Ethnicity			-	
Malay	62 (58.5)	5 (62.5)		1.000
Chinese	21 (19.8)	1 (12.5)		
Indian	23 (21.7)	2 (25.0)		
Marital status			-	0.476
Married	43 (40.6)	2 (25.0)		
Unmarried	63 (59.4)	6 (75.0)		
Education level			-	1.000
No education	16 (15.1)	1 (12.5)		
Have education	90 (84.9)	7 (87.5)		
Previous occupation			-	0.255
No occupation	12 (11.3)	2 (25.0)		
Have occupation	94 (88.7)	6 (75.0)		
Current monthly expenses			-	1.000
<RM 500	80 (75.5)	6 (75.0)		
>RM 500	26 (24.5)	2 (25.0)		

*p<0.05

[b] Fisher's Exact Test

4.9.2 Body Weight Status and Constipation

Fisher's exact test was used to test the association between BMI and constipation. Table 4.11 shows that there was no significant association between BMI and constipation (p=0.887). Hence, the alternative hypothesis was rejected.

Table 4.11: Association test between BMI and constipation

Variables	n (%)		x^2	[b] p-value
	No constipation	Have constipation		
BMI			-	0.887
Underweight	19 (17.9)	1 (12.5)		
Normal	50 (47.2)	3 (37.5)		
Overweight & obesity	37 (34.9)	4 (50.0)		

[b]Fisher's Exact Test

4.9.3 Risk of Malnutrition Status and Constipation

Fisher's exact test was used to test the association between risk of malnutrition and constipation among elderly. Table 4.12 shows there was no significant association between MNA classification and constipation among elderly (p=0.052). Hence, the alternative hypothesis was rejected.

Table 4.12: Association test between risk of malnutrition and constipation

Variables	n (%)		x^2	[b] p-value
	No constipation	Have constipation		
MNA classification			-	0.052
Well-nourished	34 (32.1)	2 (25.0)		
At risk of malnutrition	56 (52.8)	2 (25.0)		
Malnourished	16 (15.1)	4 (50.0)		

[b]Fisher's Exact Test

4.9.4 Dietary Intake and Constipation

Pearson correlation coefficient test was used to test the association between energy, carbohydrate, protein, fat and water intake with constipation among elderly. Table 4.13 shows there was no significant association between energy, carbohydrate, protein, fat, fruit and vegetables and water intake with constipation. Hence, the alternative hypothesis was rejected.

Table 4.13: Association test between energy, carbohydrate, protein, fat, fruit and vegetables servings and water intake and constipation

Variables	r	[a] p-value
Energy (kcal/day)	-0.077	0.208
Carbohydrate (g/day)	-0.044	0.322
Protein (g/day)	-0.067	0.240
Fat (g/day)	-0.166	0.109
Fruit & vegetable intake (servings/day)	-0.054	0.285
Water intake (glass per day)	-0.047	0.311

[a] Pearson Correlation Coefficient Test

4.9.5 Physical Activity and Constipation

Spearman's correlation was used to test the association between physical activity and constipation among elderly. Table 4.14 shows there was no significant association physical activity and constipation among elderly (r=0.026, p=0.391). Hence, the alternative hypothesis was rejected.

Table 4.14: Association test between physical activity and constipation

Variables	r	[c] p-value
Total MET-min/week	0.026	0.391

[c] Spearman's Correlation Coefficient Test

4.9.6: Depression and Stress Level and Constipation

Spearman's correlation coefficient test was used to test the association between depression and stress level with constipation among elderly. Table 4.15 shows there was a significant association between depression (r=0.315, p=0.001) and stress (r=0.295, p=0.001) level with constipation among elderly. Hence, the alternative hypothesis was failed to reject.

Table 4.15: Association test between depression and stress score and constipation

Variables	r	[c] p-value
Depression score	0.315	0.001**
Stress score	0.295	0.001**

[c] Spearman's Correlation Coefficient Test
**Correlation is significant at the 0.01 level (2-tailed)

CHAPTER 5

DISCUSSION

5.1 Prevalence of Constipation

Results from this study showed the prevalence of constipation among elderly at selected private care homes in Selangor was 7.0% out of 114 subjects. To compare with the other studies, this prevalence might consistent and inconsistent with the previous prevalence of constipation.

This prevalence was considered consistent with the prevalence of constipation among older women lived in Yangpu district, Shanghai China which is 4.9% (Wang & Lin, 2017). Both of these studies show the lower prevalence of constipation among elderly. However, the other studies showed the higher prevalence of constipation. For example, a study by Falcon et al. (2017) shows that the prevalence of constipation among elderly Spanish population was 18.1%. Another study in Australia population within different aged group (young women, middle-aged and older women) show that the prevalence of constipation was 14.1%, 26.6% and 27.0% respectively (Chiarell, Brown & McElduff, 2000). Different setting may contribute to the different findings. Overall, the

prevalence of constipation among elderly at selected private care homes in Selangor relatively lower compared to the worldwide.

5.2 Factors Associated with Constipation

5.2.1 Socio-demographic Characteristics

This study found that there was no significant association between age and constipation which is contradict with study by Wang & Lin (2017). In that study, it was reported the rate of constipation increase with age from 4.5% at 50-59 years to 60.0% at 80 years and above among women in Shanghai, China. Another cross-sectional study by Lamas et al. (2017) among the residents in institutional geriatric care reported that the mean age was higher among constipated residents rather than the non-constipated residents. The increasing age may cause changes in lower gastrointestinal tract and this may contribute to delayed transit time and decreased stool water content (McCrea, Miaskowski, Stotts, Macera, & Varma, 2008). However, this different result could be explained that the increasing in age not necessarily cause constipation problem among elderly because it was not a physiological consequences of normal aging (Gallagher & O'Mahony, 2009).

In addition, there was a significant association between sex and constipation in this study. The finding was consistent with the previous study as being a female would increase the risk of constipation problem among elderly. A study by Moezi et al. (2018) among 9 264 participants in Iran showed that the constipation rate among women was higher than men which is 62.0% and 38.0% respectively with significant difference at $p<0.001$. Another study by Dore et al. (2018) about the constipation among elderly at Northern Sardinia also shows the same findings. The constipation rate more commonly in women with percentage 35.4% and only 28.3% in men. The possible reason was a women having a high chances getting Irritable Bowel Symptoms (IBS) after menopause. According to Heitkemper & Chang (2009), during menses or early menopause, the ovarian hormones declines and this suggesting that the estrogen or progesterone withdrawal may contribute directly or indirectly the increasing of gastrointestinal symptoms. As women getting older, they tend to have a low level of vitamin D and constipation grew up in concordance with the worsening of vitamin D levels induced by intestinal motility disorder (Panarese et al., 2019).

5.2.2 Body Weight Status

In this study, there was no significant association between BMI and constipation. This result supported by a study conducted by Moghimi-Dehkordi et al. (2009) to assess the association between being obese and constipation among adult at Tehran province, Iran where it founds that there was no statistical significance between BMI and constipation (p=0.72). Another study by Koppen et al. (2016) also showed the similar findings where there was no statistical significance association between BMI and constipation (p=0.73).

However, this present study was inconsistent with the previous study conducted by Song (2012). In that study, it revealed that the BMI ≥25 kg/m^2 which is overweight were the only factors associated with an increased likelihood constipation with statistically significance (p=0.047). This inconsistent finding could be explain by the imbalance proportion of subjects according to their BMI. Most of the subject in this study were had normal BMI and the percentage of obese subjects was low. Therefore no association of being obese with constipation (Karabudak, Koksal & Macit, 2019).

5.2.3 Risk of Malnutrition

In this study, there was no significant association between risk of malnutrition and constipation. This finding was inconsistent with the study by Dore et al. (2018) where the women with constipated have a low nutritional status compared to men. The nutritional status was better in men compared to women ($p<0.0001$). Another cross-sectional study among free-living elderly in the community of Attica showed that the risk of malnutrition and constipation was correlated significantly ($p<0.002$) and about 25.8% of the elderly were at risk of malnutrition (Vassilakou et al., 2017). The possible reasons of this different findings because of different setting of the older people population.

5.2.4 Dietary Intake

Based on the result, there were no significant association between energy, carbohydrate, protein, fat, fruit and vegetable servings and water intake with constipation. This finding was inconsistent with the previous study conducted by Murakami et al. (2007) among female students from 53 institutions in Japan. The finding showed that the low intake of carbohydrate food group such as rice and bread contribute to the constipation problem and it was associated significantly with p value of $p<0.0001$ and $p=0.01$ respectively.

In addition, another study by Markland, Palsson & Goode (2013) stated that the men who was constipated consumed low fibre and it was statistically significance, p=0.008. Fibre was one of the important micronutrients, especially the insoluble fibre as it was better known for the beneficial impacts on the health of digestive system by promoting bowel movement and accelerating transit time through colon (Whitney & Rolfes, 2005).

In terms of fat intake, a data from National Health and Nutrition Examination Surveys (NHANES) found that high saturated fats intake among the subjects was correlated with constipation and it was significantly associated ($p<0.05$) (Taba Vakili et al., 2015). However, there was no significant association between unsaturated fats intake and constipation. This present study was not specifically mentioned about the type of fat intake consumed by the subjects. Therefore, this might be a reason why the finding was inconsistent with the previous study.

For fruit and vegetable servings, this study was consistent with the previous study by Salehi et al. (2010) where it showed that most of the subjects were consumed fruit and vegetables less than 5 servings as the recommendation. Previously, there was also no signifiant association between fruit and vegetable intake with constipation.

Last but not least, this study also inconsistent to the previous study by Markland, Palsson & Goode (2013) where it shows that the low water intake was significantly

associated with constipation for both men ($p<0.001$) and women ($p=0.008$). The low water intake among residents in nursing home was supported by Robson, Kiely & Lembo (2000), where it found the decreased in water intake was associated significantly with development of constipation ($p<0.001$).

5.2.5 Physical Activity

Based on the result, there was no significant association between physical activity and constipation. This study was inconsistent with the study by previous study. A study by Chien (2011) among 14 626 of adolescents grades 7-12 in Taiwan show that there were a significant association between sedentary awake time during school day ($p=0.002$) and high level of physical activity ($p<0.001$) with constipation. In addition, another study by Moezi et al. (2018) also shows the significant association between physical activity and constipation. The frequency of constipated people with low physical activity was quiet high which is 45.1% with statistical significance $p<0.001$. This is because the physical activity can increase the propulsive movement in the large intestine (Schryver et al. 2005). Therefore, it can be prevented a constipation problem among the elderly.

The possible reason could be an imbalance distribution of proportion physical activity level among subjects. Most of the subjects commonly did a walking as their physical activity, thus no moderate and vigorous activities were reported.

5.2.6 Depression and stress level

This study found that there was a significant association between depression and stress level with constipation. It was consistent with the study conducted by Dore et al. (2018) among out patients attended to Geriatric unit at Department of Internal Medicine, University of Sassari where the findings shows the association between depression and constipation was statistically significance ($p=0.006$). Another study conducted by Chan et al. (2005) also showed the statistical significance association between depression and constipation ($p<0.001$). This previous study conducted among Asian population. The possible reason could be living apart from family might be cause a depression or stress to the elderly. Therefore, it would contribute to the occurrence of health problem among them.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The prevalence of constipation among elderly at selected private care homes in Selangor was 7.0%. Sex, depression and stress level in this study were significantly associated with constipation among elderly. The present study revealed that being a female was associated with constipation and increase risk of constipation problem. Meanwhile, high level of depression and stress also contribute to the constipation problem.

However, there were no significant association between socio-demographics (age, ethnicity, education level, marital status, previous occupation and current monthly expenses), body weight status, risk of malnutrition, dietary intake and physical activity with constipation among elderly at selected private care homes. Overall, the prevalence of constipation in selected private care homes in Selangor is quite low compared to the other countries.

6.2 Limitations of Study

This study was a cross-sectional design which did not indicate the cause and effect associations regarding constipation among elderly. In addition, the findings of this study may not be representative of the whole elderly population staying in care homes Selangor since the study only involved elderly from the selected private care homes in Selangor. Another limitation of this study is the dietary intake were relied on subject's memory this may cause bias. Last but not least, some of the subjects complaint they need to spend long time to answer the questionnaire by interview face-to-face.

6.3 Recommendations

There are some recommendations that could be suggested for future research implementation. Firstly, the study design of case-control study could be done to ensure a detail results on cause and effect on the associated factors with constipation among elderly at selected private care homes. Then, all of the care homes in Selangor should be included in this study to obtain a better finding among an elderly population in Selangor. Next, it was more appropriate if the dietary intake part was referred to the care taker and the actual intake of the subjects. Lastly, make a simple and brief interview with the subjects to avoid an inappropriateness answer from them.

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Appendix A: Approval letter from Ethics Committee Research Involving Human Subjects (JKEUPM)

Appendix B: Approval letter for care home

Lampiran:
s.k,

1. Rumah Kebajikan Penyayang Hani
   No 38, Jalan Bangi Villa 3,
   Taman Bangi Villa Kajang,
   43000, Hulu Langat Selangor.

2. Pusat Jagaan Siti Noraini
   No 23, Jalan Maju 2,
   Taman Maju Klang,
   Jalan Semenyih Kajang
   43000 Hulu Langat, Selangor.

3. Pusat Jagaan Pertubuhan Yesuvin Mahligai (YM)
   No 66, Jalan Maju 7,
   Taman Maju 2,
   Off Jalan Semenyih
   43000 Kajang, Selangor.

4. Pusat Jagaan Nur Hasanah
   Lot 842, Lorong Dato' Dagang Hj. Tahir
   Kg. Sesapan Kelubi
   43700 Beranang Hulu Langat
   Selangor.

5 Pusat Jagaan Al-Fikrah
   Kampung Sungai Sekamat
   43000 Kajang, Selangor.

6. Pusat Jagaan Taman Eden
   Lot 2286, Jalan 5
   Kajang, Selangor

7. Pusat Jagaan Damai
   No.24, Jalan Damai Perdana 2/6F
   Bandar Damai Perdana
   56000 Cheras
   Kuala Lumpur, Hulu Langat
   Selangor

8. Pusat jagaan Mahmudah
   Lot 459/5, Jalan 1 Off
   Jalan Bangi Lama
   Kampung Sungai Purun
   43500 Semenyih, Selangor

9. Pusat Jagaan & Pendidikan Warga Emas Darul Insyirah
   No 72, Jalan Melati
   Bangi Golf Resort
   43650 Bangi
   Selangor.

10. Pusat Jagaan Wan Hing
    68, Jalan Raya 5
    Taman Sri Andalas
    43300 Seri Kembangan
    Selangor

BORANG PERSETUJUAN BAGI PERMOHONAN MENJALANKAN KAJIAN DI PUSAT JAGAAN WARGA EMAS

Tajuk penyelidikan: *Prevalence of Constipation and Dehydration and its Associated Factors Among Elderly at Selected Private Care Homes in Hulu Langat, Selangor*

Butiran penyelidik.

Nama 1) Dr Norazda Omar (Ketua Penyelidik/Pensyarah Kanan)
2) Cik Malisa binti Enuil
3) En Nabil bin Mazri

Jabatan. Jabatan Pemakanan dan Dietetik. Fakulti Perubatan dan Sains Kesihatan. UPM.

..... dengan ini membuat keputusan seperti berikut
(Nama Pusat Jagaan Warga Emas)

Membenarkan projek penyelidikan dijalankan

☐ Tidak membenarkan projek penyelidikan dijalankan

Sila kembalikan borang persetujuan ini kepada Cik Malisa binti Enuil di talian 014-6508161 atau emelkan kepada malisa_enuil@yahoo.com.

Saya yang menurut perintah.

(Pusat Jagaan Warga Emas/yang berkenaan)

Appendix C: Questionnaire (English version)

Reference no:

FACULTY OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF NUTRITION AND DIETETICS

QUESTIONNAIRE FORM

Title:

Prevalence of Constipation and its Associated Factors among Elderly at Selected Private Care Homes in Selangor.

Researcher:

No	Name	Matric no	Program
01	Malisa Binti Enuil	182820	B.Sc. Nutrition and Community Health

Supervisor:

Dr. Noraida Binti Omar

Date of data collection: / /

This questionnaire is intended only for academic purpose. All the information collected in the questionnaire form is secured by confidentially. Your participation and cooperation are greatly appreciated.

Instructions: This questionnaire consists of 7 parts. Please fill in all part A, B, C, D, E, F and G. please read the instructions carefully.

PART A: PERSONAL INFORMATION

Please fill in the following details and mark "√" on the relevant column.

Age	_____ years old
Sex	☐ Male ☐ Female
Ethnicity	☐ Malay ☐ Chinese ☐ Indian ☐ Others (please specify):.....
Marital status	☐ Single ☐ Married ☐ Divorced ☐ Widowed
Education level	☐ None ☐ Primary ☐ Secondary ☐ Diploma ☐ Bachelor's ☐ Master's ☐ PhD
Past occupation	☐ None ☐ Government ☐ Non-government ☐ Self-employed ☐ Others (please specify):.....
Current monthly expenses	☐ <RM 100 ☐ RM 101- RM 300 ☐ RM 301- RM 500 ☐ RM 501- RM 700 ☐ RM 701- RM 900 ☐ >RM900

PART B: ANTHROPOMETRIC MEASUREMENT

Please fill in the following details. Assessment will be conducted by the researcher upon you receiving this questionnaire.

Weight	_____ kg
Height (m)	_____ m
Body Mass Index (BMI) _____ Kg/m^2	☐ Underweight ☐ Normal ☐ Overweight ☐ Obesity

PART C: RISK OF MALNUTRITION

Please fill in the following details and mark "√" on the relevant column.

A. Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?	☐ 0. severe decrease in food intake ☐ 1. moderate decrease in food intake ☐ 2. no decrease in food intake	☐
B. Weight loss during the last 3 months	☐ 0. weight loss greater than 3 kg ☐ 1. does not know ☐ 2. weight loss between 1 and 3 kg ☐ 3. No weight loss	☐
C. Mobility	☐ 0. bed or chair bound ☐ 1. able to get out of bed/chair but does not goes out ☐ 2. goes out	☐
D. Has suffered psychological stress or acute disease in the past 3 months?	☐ 0. yes ☐ 2 No	☐
E. Neuropsychological problems	☐ 0. severe dementia or depression ☐ 1. mild dementia ☐ 2. no psychological problems	☐
F1. Body Mass Index (BMI) = weight in kg / (height in m)2	☐ 0. BMI less than 19 ☐ 1. BMI 19 to less than 21 ☐ 2. BMI 21 to less than 23 ☐ 3. BMI 23 or greater	☐
F2. Calf Circumference (CC) in cm	☐ 0. CC less than 31 ☐ 3. CC 31 or greater	☐

Total assessment:.....

MNA category:.....

PART D: 24 HOURS DIETARY RECALL

Please state your foods/drinks over the past 24 hours include water intake between meals (per glasses).

Date:……..(Mon/Tues/Wed/Thurs/Fri/Sat/Sun)

Time	Food/Drinks	Cooking method	Amount(s)

PART E: DEPRESSION AND STRESS LEVEL

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers.

The rating scale is as follows:

0 Did not applied to me at all
1 applied to me some degree, or some of the time
2 applied to me to a considerable degree, or a good part of time
3 applied to me very much, or most of the time

[redacted]	I found it hard to wind down	0	1	2	3
[redacted]	I was aware of dryness of my mouth	0	1	2	3
3	couldn't seem to experience any positive feeling at all	0	1	2	3
[redacted]	experienced breathing difficulty (eg: excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react the situations	0	1	2	3
7	I experienced trembling (eg: in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situation in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was tolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg: sense of heart increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life I was meaningless	0	1	2	3

PART F: PHYSICAL ACTIVITY LEVEL

The question will ask about the kinds of physical activities that you do as part of everyday lives and the time you spent physically active in the last 7 days.

1. The first question is about the time you spent sitting during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

   During the last 7 days, how much time did you spend sitting during a day?

   ___ hours ___ minutes

2. Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

   During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

   _____ Days ⇒ How much time did you usually spend walking on one of those days?

   or

   ☐ No day

   ____ hours ___ minutes

3. During the last 7 days, on how many days did you do moderate physical activities like gardening, cleaning, bicycling at a regular pace, swimming or othef fitness activities.

   Think *only* about those physical activities that you did for at least 10 minutes at a time. Do not include walking.

   _____ Days ⇒ How much time did you usually spend doing moderate physical activities on one of those days?

   or

   ☐ No day

   ____ hours ___ minutes

4. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, heavier garden or construction work, chopping woods, aerobics, jogging/running or fast bicycling?

   Think *only* about those physical activities that you did for at least 10 minutes at a time.

   _____ Days ⇒ How much time did you usually spend doing vigorous physical activities on one of those days?

   or

   ☐ No day

   ____ hours ___ minutes

PART G: CONSTIPATION INDICATOR

Please read each statement and tick a number 0, 1, 2, 3 or 4 which indicates how much the statement applied to you. There are no right or wrong answers.

1. Frequency of bowel movement	☐ 0. 1-2 times per 1-2 days ☐ 1. 2 times per week ☐ 2. Once per week ☐ 3. less than once per week ☐ 4. less than once per months
2. Difficulty : painful evacuation effort	☐ 0. never ☐ 1. rarely ☐ 2. sometimes ☐ 3. usually ☐ 4. always
3. Completeness : feeling incomplete evacuation	☐ 0. never ☐ 1. rarely ☐ 2. sometimes ☐ 3. usually ☐ 4. always
4. Pain : abdominal pain	☐ 0. never ☐ 1. rarely ☐ 2. sometimes ☐ 3. usually ☐ 4. always
5. Time : minute in lavatory per attempts	☐ 0. less than 5 ☐ 1. 5-10 ☐ 2. 10-20 ☐ 3. 20-30 ☐ 4. More than 30
6. Assistance : type of assistance	☐ 0. without assistance ☐ 1. stimulative laxatives ☐ 2. Digital assistance or enema
7. Failure : unsuccessful attempts for evacuation per 24 hours	☐ 0. Never ☐ 1. 1-3 ☐ 2. 3-6 ☐ 3. 6-9 ☐ 4. more than 9
8. History : duration of constipation (year)	☐ 0. 0 ☐ 1. 1-5 ☐ 2. 5-10 ☐ 3. 10-20 ☐ 4. More than 20

Total score:.....

Appendix D: Questionnaire (Malay version)

No rujukan:

FAKULTI PERUBATAN DAN SAINS KESIHATAN

JABATAN PEMAKANAN DAN DIETETIK

BORANG SOAL SELIDIK

Tajuk:

KELAZIMAN SEMBELIT DAN FAKTOR-FAKTOR YANG BERKAITAN DENGANNYA DALAM KALANGAN WARGA TUA DI PUSAT JAGAAN SWASTA TERPILIH DI SELANGOR

Penyelidik:

No	Nama	No matrik	Program
01	Malisa Binti Enuil	182820	B.Sc. Pemakanan dan Kesihatan Komuniti

Penyelia:

Dr. Noraida Binti Omar

Tarikh pengumpulan maklumat: / /

Soal selidik ini hanya bertujuan untuk penyelidikan. Segala maklumat yang yang dikumpulkan dalam borang soal selidik ini akan dirahsiakan dan tidak didedahkan kepada sesiapa. Penyertaan dan kerjasama anda amatlah dihargai.

Arahan: Soalan ini mengndungi 7 bahagian. Lengkapkan semua soalan di bahagian A, B, C, D, E, F, dan G. Sila baca arahan dengan teliti.

BAHAGIAN A: MAKLUMAT PERIBADI

Sila isikan maklumat di bawah dan tandakan "√" pada kotak yang berkaitan.

Umur	_____ tahun
Jantina	☐ Lelaki ☐ Perempuan
Kaum	☐ Melayu ☐ Cina ☐ India ☐ Lain-lain (Nyatakan): ……
Status perkahwinan	☐ Bujang ☐ Berkahwin ☐ Bercerai ☐ Kematian suami/isteri
Taraf pendidikan	☐ Tiada ☐ Sekolah rendah ☐ Sekolah menengah ☐ Diploma ☐ Ijazah ☐ Ijazah sarjana ☐ PhD
Pekerjaan dahulu	☐ Tiada ☐ Kakitangan kerajaan ☐ Kakitangan swasta ☐ Bekerja sendiri ☐ Lain-lain (Nyatakan): ……
Perbelanjaan bulanan semasa	☐ <RM 100 ☐ RM 101- RM 300 ☐ RM 301- RM 500 ☐ RM 501- RM 700 ☐ RM 701- RM 900 ☐ >RM900

BAHAGIAN B: PENGUKURAN ANTROPOMETRI

Sila isikan maklumat di bawah. Pengukuran akan dilakukan oleh penyelidik.

Berat	_____ kg
Tinggi (m)	_____ m
Indeks Jisim Tubuh (*BMI*) _____ Kg/m^2	☐ Kurang berat badan ☐ Normal ☐ Berat badan berlebihan ☐ Obesiti

BAHAGIAN C: RISIKO MALNUTRISI

Sila isikan maklumat di bawah dan tanda "√" pada kotak yang berkaitan.

A. Adakah pengambilan makanan berkurangan disebabkan masalah kurang selera makan, penghadaman, mengunyah atau menelan semenjak 3 bulan lepas?	☐ 3. berkurangan secara teruk ☐ 4. berkurangan secara sederhana ☐ 5. tidak berkurang	☐
B. Kehilangan berat badan sejak 3 bulan yang lepas	☐ 4. berat badan turun melebihi 3 kg ☐ 5. tidak tahu ☐ 6. berat badan turun di antara 1-3 kg ☐ 7. tiada penurunan	☐
C. Mobiliti	☐ 3. di atas katil atau berkerusi ☐ 4. mampu untuk berdiri daripada katil/kerusi tetapi tidak keluar ☐ 5. mampu keluar	☐
D. Adakah anda mengalami tekanan psikologi atau penyakit akut semenjak 3 bulan lepas?	☐ 2. ya ☐ 2 tidak	☐
E. Masalah neuropsikologi	☐ 3. nyanyuk atau kemurungan teruk ☐ 4. nyanyuk ringan ☐ 5. tiada masalah psikologi	☐
F1. Indeks Jisim Tubuh (*BMI*) = berat dalam kg / (tinggi dalam m)2	☐ 4. BMI kurang daripada 19 ☐ 5. BMI antara 19 hingga <21 ☐ 6. BMI antara 21hingga <23 ☐ 7. BMI 23 atau lebih	☐
F2. Ukur lilit betis (CC) dalam cm	☐ 5. CC kurang daripada 31 ☐ 3. CC 31 atau lebih	☐

Skor penyaringan:.....

Kategori MNA:.....

BAHAGIAN D: BORANG INGATAN DIET 24 JAM

Sila nyatakan makanan/minuman anda 24 jam yang lepas termasuk pengambilan minuman air kosong (per cawan) di antara makanan utama.

Tarikh:.....(Isnin/Selasa/Rabu/Khamis/Jumaat/Sabtu/Ahad)

Masa	Makanan / Minuman	Cara masakan	Kuantiti

BAHAGIAN E: KEMURUNGAN DAN TAHAP STRESS

Sila baca pernyataan dibawah dan bulatkan pada nombor 0, 1, 2 atau 3 bagi menggambarkan keadaan anda sepanjang minggu yang lalu. Tiada jawapan yang betul atau salah.

Skala pemarkahan adalah seperti berikut

4 Tidak langsung menggambarkan diri saya
5 Sedikit atau jarang-jarang menggambarkan keadaan saya
6 Banyak atau kerapkali menggambarkan keadaan saya
7 Sangat banyak atau sangat kerap menggambarkan keadaan saya

1	Saya dapati diri saya sukar ditenteramkan	0	1	2	3
2	Saya sedar mulut saya terasa kering	0	1	2	3
3	Saya tidak dapat mengalami perasaan positif sama sekali	0	1	2	3
4	Saya mengalami kesukaran bernafas (cth: pernafasan yang laju, tercungap cungap walaupun tidak melakukan senaman fizikal)	0	1	2	3
5	Saya sukar mendapatkan semangat bagi melakukan sesuuatu perkara	0	1	2	3
6	Saya cenderung untuk bertindak keterlaluan dalam sesuatu perkara	0	1	2	3
7	Saya rasa menggeletar (contohnya pada tangan)	0	1	2	3
8	Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas	0	1	2	3
9	Saya bimbang keadaan di mana saya mungkin menjadi panik dan melakukan perkara yang membodohkan diri sendiri	0	1	2	3
10	Saya rasa saya tidak mempunyai apa-apa untuk diharapkan	0	1	2	3
11	Saya dapati diri saya semakin gelisah	0	1	2	3
12	Saya rasa saya sukar untuk relaks	0	1	2	3
13	Saya rasa sedih dan murung	0	1	2	3
14	Saya tidak dapat menahan sabar dengan perkara yang menghalang saya untuk meneruskan apa yang saya lakukan	0	1	2	3
15	Saya rasa hampir-hampir menjadi panic/cemas	0	1	2	3
16	Saya tidak bersemangat dengan apa jua yang saya lakukan	0	1	2	3
17	Saya tidak begitu berharga sebagai seorang individu	0	1	2	3
18	Saya rasa yang saya mudah tersentuh	0	1	2	3
19	Saya sedar tindakbalas jantung saya walaupun tidak melakukan aktiviti fizikal (contohnya kadar denyutan jantung bertambah, atau denyutan jantung berkurangan)	0	1	2	3
20	Saya berasa takut tanpa sebab yang munasabah	0	1	2	3
21	Saya rasa hidup ini tidak bermakna	0	1	2	3

BAHAGIAN F: TAHAP AKTIVITI FIZIKAL

Bahagian ini akan bertanyakan tentang jenis aktiviti fizikal yang anda lakukan dan masa yang diambil untuk melakukan aktiviti tersebut dalam tempoh 7 hari yang lalu.

6. **Soalan pertama adalah berkaitan dengan masa yang diambil untuk duduk dalam tempoh 7 hari yang lepas termasuk di tempat kerja, di rumah dan semasa melakukan kerja pada masa lapang. Ini termasuklah duduk di atas meja, melawat kawan, membaca, a atau berbaring semasa menonton televisyen.**

   Dalam 7 hari yang lepas, berapa banyak masa yang diambil untuk duduk?

   ___ jam ___ minit

7. **Fikirkan masa yang diambil untuk berjalan dalam tempoh 7 hari yang lepas. Ini termasuklah semasa bekerja di rumah, berjalan dari satu tempat ke satu tempat, dan mana-mana perjalanan semasa berekreasi, bersukan, bersenam atau pada waktu lapang.**

   Dalam 7 hari yang lepas, berapa harikah anda berjalan selama sekurang-kurangnya 10 minit dalam satu masa?

   _____ hari

   atau

   ☐ tiada hari

   ⇒ **Berapa banyak masa yang anda habiskan untuk berjalan pada salah satu daripada hari tersebut?**

   ____ jam ___ minit

8. **Dalam 7 hari yang lepas, berapa banyak hari anda melakukan aktiviti fizikal tahap sedrhana seperti berkebun, membuat kerja pembersihan, berbasikal, berenang ataupun aktiviti kecergasan.**

   Fikirkan aktiviti yang anda lakukan sekuang-kurangnya 10 minit pada satu masa. Berjalan tidak termasuk dalam aktiviti ini.

   _____ hari

   atau

   ☐ tiada hari

   ⇒ **Berapa banyak masa yang anda habiskan untuk melakuan aktiviti fizikal tahap sederhana pada salah satu daripada hari tersebut?**

   ____ jam ___ minit

9. **Dalam 7 hari yang lepas, berapa banyak hari anda melakukan aktiviti fizikal seperti mengangkat benda berat, aktiviti berkebun yang lebih berat atau kerja pembinaan, memotong kayu, senamrobik, jogging/berlari ataupun mengayuh secara laju?**

   Fikirkan aktiviti yang anda lakukan sekuang-kurangnya 10 minit pada satu masa.

   _____ hari

   atau

   ☐ tiada hari

   ⇒ **Berapa banyak masa yang anda habiskan untuk melakuan aktiviti fizikal tahap tinggi pada salah satu daripada hari tersebut?**

   ____ jam ___ minit

BAHAGIAN G: PENILAIAN SEMBELIT

Sila baca pernyataan di bawah dan tandakan nombor 0, 1, 2, 3 atau 4 bagi menggambarkan keadaan anda. Tiada jawapan yang betul atau salah.

1. Kekerapan membuang air besar	☐ 5. 1-2 kali dalam 1-2 hari ☐ 6. 2 kali dalam seminggu ☐ 7. Sekali dalam seminggu ☐ 8. Kurang daripada sekali dalam seminggu ☐ 9. Kurang daripada sekali dalam sebulan
2. Kesukaran : sakit kerana berusaha untuk membuang air besar	☐ 5. tidak pernah ☐ 6. jarang sekali ☐ 7. kadang-kadang ☐ 8. kerapkali ☐ 9. sangat kerap
3. Kesempurnaan : perasaan tidak sempurna semasa membuang air besar	☐ 5. tidak pernah ☐ 6. jarang sekali ☐ 7. kadang-kadang ☐ 8. kerapkali ☐ 9. sangat kerap
4. Kesakitan : sakit pada perut	☐ 5. tidak pernah ☐ 6. jarang sekali ☐ 7. kadang-kadang ☐ 8. kerapkali ☐ 9. sangat kerap
5. Masa : minit dalam tandas semasa percubaan untuk membuang	☐ 5. kurang daripada 5 ☐ 6. 5-10 ☐ 7. 10-20 ☐ 8. 20-30 ☐ 9. Lebih daripada 30
6. Bantuan : jenis bantuan	☐ 3. tanpa bantuan ☐ 4. bantuan stimulatif ☐ 5. bantuan digital atau enema
7. Kegagalan : kegagalan percubaan untuk membuang dalam masa 24 jam	☐ 5. tidak pernah ☐ 6. 1-3 ☐ 7. 3-6 ☐ 8. 6-9 ☐ 9. lebih dari 9
8. Sejarah : tempoh sembelit (tahun)	☐ 5. 0 ☐ 6. 1-5 ☐ 7. 5-10 ☐ 8. 10-20 ☐ 9. Lebih dari 20

Jumlah skor :.....

Appendix E: Information sheet and consent form

(English version)

JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG, SELANGOR, MALAYSIA

FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE :

Prevalence of constipation and its associated factors among elderly at selected care homes in Selangor.

2. INTRODUCTION:

I am a final year student of Bachelor Science (Nutrition and Community Health) from Faculty of Medicine and Health Sciences University Putra Malaysia (UPM). Currently, I'm conducting a study about the prevalence and associated factors of constipation among elderly at selected care homes in Selangor. You are invited to participate in this study. The details of the research as described in this document. Please take your time to read through and consider this information carefully before you decide if you are willing to participate. Please ask if anything is unclear or if you like more information. If you are happy to participate, you need to sign this informed consent form.

Your participation in this study is voluntary. You may also refuse to answer any questions if you do not want to answer. You may withdraw from this study at any time. If you withdraw, any data collected from you up to your withdrawal will still be used for the study. Your refusal to participate or withdrawal will not affect any medical or health benefits to which you are otherwise entitled.

This study has been approved by the Ethics Committee UPM.

3. WHAT WILL YOU HAVE TO DO?

You need to fill in the questionnaire or answer all related questions to the study including demographic and socio economic, physical activity, dietary intake and stress level factors regarding the constipation. We will measure your height, weight, calf circumference and mid-upper arm circumference to determine the nutritional status.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

Individuals who are unable to communicate Malay or English and diagnosed with mental illness or critically ill.

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

You as the subject will find out your constipation status. However, you would not determine overall your health status because this research is only a questionnaire based. Thus, it cannot determine the health status of respondents exactly. The information obtained from this study will determine the prevalence of constipation among elderly at selected care homes in Selangor. Perhaps, this study may improve the health status of elderly in the care homes.

(b) TO THE INVESTIGATOR?

This study will be beneficial to the investigator as it will increase our understanding regarding constipation. All of this information will be beneficial to evaluate effectiveness of our study.

6. WHAT ARE THE POSSIBLE RISKS?

There are no possible risk if you are participating in this study because there are no dangerous techniques or tests involved.

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

All information provided by the participants will be private and confidential. The researcher would not reveal particpants' name or any other private information. This information will not be released to third parties. By signing the consent document for this study, you are giving the permission for the uses and disclosures of your information. The results of this study may be published in a scientific journal. However, you will not be identified by name in any resulting publication or presentation that utilized your information.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

Supervisor	Dr. Noraida Omar	Investigator	Malisa binti Enuil
	03-89472463		014-6508101
	noraidaomar@upm.edu.my		malisa_enuil@yahoo.com

***Please initial here if you have read and understood the contents of this page*_____**

9. CONSENT

I ..... Identity Card No. .....
address.....
... .hereby voluntarily agree to take part in the research stated above.

I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me be used in any form of publication or presentation (if applicable)

* delete where necessary

Signature .....
(Respondent)

Signature .....
(Witness)

Date :.....

Name :.....

I/C No. :.....

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned research.

Date .....

Signature .....
(Researcher)

Appendix F: Information sheet and consent form

(Malay version)

JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA

BORANG 2.4: PENERANGAN DAN PERSETUJUAN RESPONDEN

Sila baca maklumat berikut dengan teliti. Sekiranya anda mempunyai sebarang pertanyaan, sila kemukakan kepada penyelidik.

1.TAJUK KAJIAN

Kelaziman dan faktor penyebab sembellt dalam kalangan warga tua di rumah jagaaan terpilih negeri selangor.

2. PENGENALAN

Saya adalah pelajar tahun akhir Sarjana Muda Sains (Pemakanan dan Kesihatan Komuniti) dari Fakulti Perubatan dan Sains Kesihatan Universiti Putra Malaysia (UPM). Pada masa ini, saya sedang menjalankan kajian tentang kelaziman dan faktor penyebab sembelit dalam kalangan warga tua di rumah jagaan terpilih negeri Selangor. Anda dijemput untuk mengambil bahagian dalam kajian ini. Butir-butir penyelidikan seperti yang dinyatakan dalam dokumen ini. Sila luangkan masa untuk membaca dan pertimbangkan maklumat ini dengan teliti sebelum anda membuat keputusan untuk mengambil bahagian dalam kajian ini. Sila tanya jika terdapat bahagian yang tidak jelas atau sekiranya anda mempunyai pertanyaan dengan lebih lanjut. Sekiranya anda berminat untuk mengambil bahagian, anda perlu menandatangani borang persetujuan ini.

Penyertaan anda dalam kajian ini adalah secara sukarela. Anda juga boleh menolak untuk menjawab sebarang soalan jika anda tidak mahu menjawab. Anda boleh menarik diri dari kajian ini pada bila-bila masa. Sekiranya anda menarik diri, sebarang data daripada anda masih digunakan untuk kajian ini. Keengganan anda untuk mengambil bahagian atau pengeluaran tidak akan menjejaskan apa-apa manfaat perubatan atau kesihatan diri anda.

Kajian ini telah diluluskan oleh Jawatankuasa Etika Universiti Putra Malaysia.

3. APAKAH YANG PERLU ANDA LAKUKAN?

Anda hanya perlu mengisi soal selidik atau menjawab semua soalan yang berkaitan dengan kajian termasuk demografi dan sosio ekonomi, aktiviti fizikal, pengambilan makanan dan faktor tekanan yang berkaitan dengan sembelit. Ketinggian, berat badan, ukur lilit betis dan ukur lilit lengan atas pertengahan untuk menentukan status pemakanan anda.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Individu yang tidak dapat berkomunikasi dalam Bahasa Melayu atau Inggeris dan didiagnosis dengan penyakit mental atau sakit kritikal.

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANDA SEBAGAI PESERTA?

Mungkin ada atau tidak ada manfaat kepada anda. Maklumat yang diperoleh daripada kajian ini akan menentukan kelaziman sembelit dalam kalangan warga tua di rumah jagaan terpilih negeri Selangor. Kemungkinan kajian ini boleh meningkatkan status kesihatan warga tua di rumah jagaan.

b) KEPADA PENYELIDIK?

Kajian ini akan memberi manfaat kepada penyelidik kerana ia akan meningkatkan pemahaman penyelidik mengenai masalah sembelit. Semua maklumat ini bermanfaat untuk menilai keberkesanan terhadap kajian kami.

6. ADAKAH IA BERISIKO?

Tiada risiko yang mungkin akan berlaku jika anda mengambil bahagian dalam kajian ini kerana tiada sebarang teknik berbahaya atau ujian yang terlibat.

7. ADAKAH MAKLUMAT DAN IDENTITI SAYA KEKAL RAHSIA?

Semua maklumat yang diberikan oleh para peserta akan bersifat peribadi dan sulit. Penyelidik tidak akan mendedahkan nama peserta atau maklumat peribadi lain. Maklumat ini tidak akan dikeluarkan kepada pihak ketiga. Dengan menandatangani dokumen persetujuan untuk kajian ini, anda memberi kebenaran untuk kegunaan dan pendedahan maklumat anda. Hasil kajian ini boleh diterbitkan dalam jurnal saintifik. Bagaimanapun, anda tidak akan dikenalpasti dengan nama dalam mana-mana penerbitan atau persembahan yang dihasilkan yang menggunakan maklumat anda

8. SIAPA YANG SAYA PERLU HUBUNGI SEKIRANYA SAYA MEMPUNYAI SOALAN TAMBAHAN SEMASA MENGIKUTI PENYELIDIKAN INI?

Penyelia penyelidik	Dr. Noraida Omar	Penyelidik	Malisa binti Enuil
	03-89472463		014-6508101

Sila tandatangan di sini sekiranya anda telah membaca dan memahami kandungan halaman ini _____

9. PERSETUJUAN

Saya..... No Kad Pengenalan. .....
beralamat.....
.....dengan ini bersetuju untuk mengambil bahagian secara sukarela dalam penyelidikan yang tersebut di atas.

Saya telah diberi penjelasan secara menyeluruh mengenai penyelidikan ini dari segi metodologi, risiko dan komplikasi (seperti tertulis pada Helaian Penerangan Responden). Saya memahami bahawa saya berhak menarik diri dari penyelidikan ini pada bila-bila masa tanpa memberi sebarang alasan.Saya juga memahami bahawa sebarang maklumat yang berkaitan identiti saya akan dirahsiakan.

Saya* berminat / tidak berminat untuk mengetahui keputusan kajian yang melibatkan saya.

Saya setuju/tidak bersetuju untuk imei/gambar/rakaman video/ rakaman suara digunakan dalam apa jua bentuk penerbitan atau pembentangan. (sekiranya berkaitan).

*potong yang tidak berkenaan

Tandatangan .....
(*Responden*)

Tarikh :.....

Tandatangan .....
(*Saksi*)

Nama :.....

No. K/P: .....

Saya mengesahkan bahawa saya telah menerangkan kepada responden ini sifat dan tujuan penyelidikan yang tersebut di atas.

Tarikh .....

Tandatangan .....
(*Penyelidik*)

Appendix G: Poster presentation

Event: 34th Scientific Conference (Nutrition Society Malaysia)

Date: 03rd - 04th July 2019

Venue: Hotel Istana, Kuala Lumpur

PREVALENCE OF CONSTIPATION AND ITS ASSOCIATED FACTORS AMONG ELDERLY AT SELECTED PRIVATE CARE HOMES IN SELANGOR

Malisa Enuil and Noraida Omar
Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia
Email: malisaenuil96@gmail.com

INTRODUCTION

Constipation was practically defined by a patient as reduced frequency or straining on their own perception[1].

- According to Rome III criteria, the people was defined have a constipation if experienced 2 or more symptoms below at least 25% of defecation[1]:
  - Straining
  - Lumpy or hard stools
  - Sensation of incomplete evacuation
  - Sensation of anorectal obstruction or blockage
  - Manual manoeuvres to facilitate
  - Less than 3 defecations per week
- Study about constipation among elderly in Malaysia was limited.

OBJECTIVE

determine the prevalence and factors associated with constipation among elderly at selected private care homes in Selangor.

METHODOLOGY

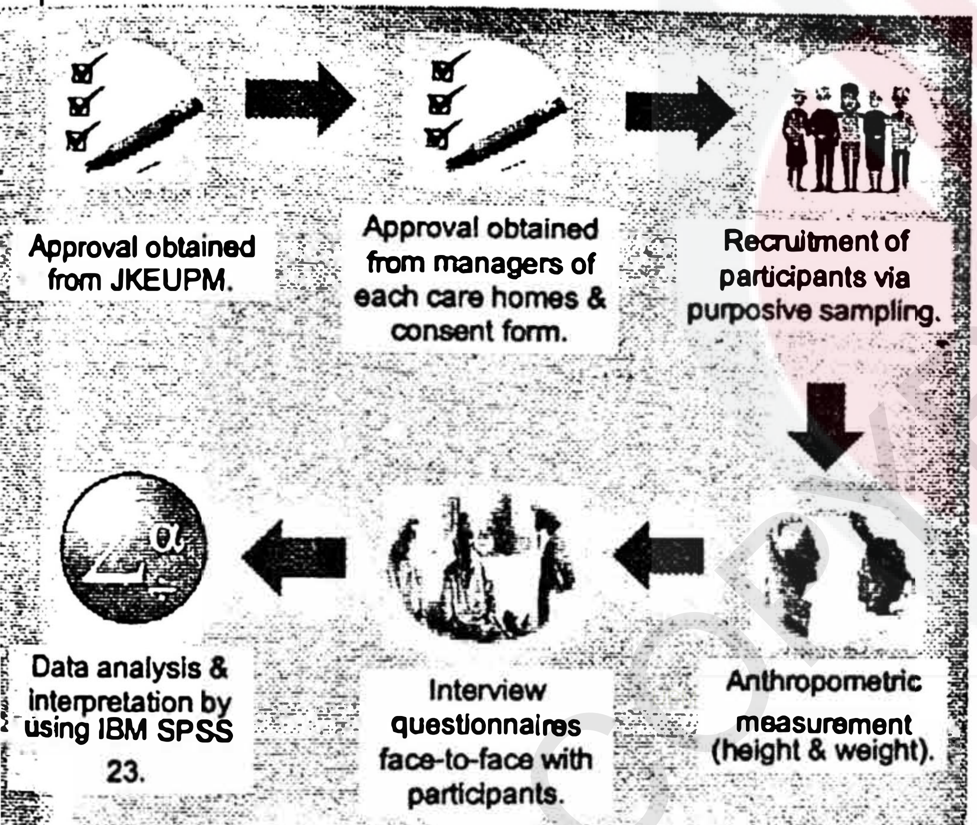

Figure 1: Data collection procedures

STUDY DESIGN Cross sectional study

STUDY LOCATION Private care homes in Selangor

INSTRUMENTS

Face-to-face interview questionnaire:
Socio-demographic background (self-developed questionnaire), risk of malnutrition (MNA-SF), dietary intake (24-hours dietary recall), physical activity level (IPAQ-E), depression & stress level (DASS-21).

Anthropometry measurements:
Weight (TANITA corporation Japan) & height (SECA body tape measure).

REFERENCES

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3. [illegible] M. P., [illegible] G. M., Bibbò, S., Tedde, P., & Bassotti, G. (2018). Constipation in the elderly from Northern Sardinia is positively associated with depression, malnutrition and female gender. *Scandinavian Journal of Gastroenterology*, [illegible](7), 797–802.
4. [illegible] A. O. O., Cheng, C., Hui, W. M., Hu, W. H. C., Wong, N. Y. H., Lam, K. F., ... Wong, N. Y. H. (2005). *Differing coping mechanisms, stress level and anorectal physiology in patients with functional constipation.* 11(34), 5362–5[illegible]6

RESULTS AND DISCUSSION

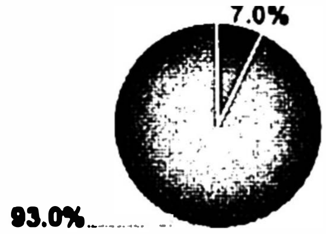

Figure 2: Prevalence of constipation among elderly in selected private care homes in Selangor

Table 1: Descriptive results & the association between socio-demographics, BMI, risk of malnutrition, physical activity level, dietary intake, depression and stress and constipation.

Variables	n (%)	Mean ± SD	P-value
Socio-demographic factors			
• Age		70 ± 8	0.331
• Sex			0.025
➤ Male	73 (64.0)		
➤ Female	41 (36.0)		
• Ethnicity			1.000
➤ Malay	67 (58.8)		
➤ Chinese	22 (19.3)		
➤ Indian	25 (21.9)		
• Marital status			0.476
➤ Married	45 (39.5)		
➤ Not married	69 (60.5)		
• Education level			1.000
➤ Had education	97 (85.1)		
➤ No education	17 (14.9)		
Body Mass Index (BMI)		23.62 ± 5.78	0.887
Risk of malnutrition		9.89 ± 2.61	0.052
Physical activity level			0.391
• Low level	11 (9.6)		
• Moderate	35 (30.7)		
• High	68 (59.6)		
Dietary intake			
• Energy (kcal/day)		951.65 ± 435.97	0.208
• Carbohydrate (g/day)		135.71 ± 56.88	0.322
• Protein (g/day)		39.25 ± 20.52	0.240
• Fat (g/day)		28.38 ± 20.35	0.109
• Fruit & vegetables (servings/day)		1.52 ± 1.07	0.285
• Water intake (glass/day)		5.58 ± 2.92	0.311
Depression			0.001
• Normal	62 (54.4)		
• Had depression	52 (45.6)		
Stress			0.001
• Normal	86 (75.4)		
• Had stress	28 (24.6)		

- Present study showed there was a significant association between sex and constipation and it was consistent with some previous studies[2][3]
  - Women tend to constipated than men because after menopause, they having a high chances of getting IBS.
- In addition, this present study showed there was a significant association between depression and stress level and constipation among elderly. This finding was consistent with the previous study by Chan et al. (2005)[4]. Living apart from family might be cause depression and stress and then contribute to the occurrence of health problem among elderly.
- In this present study, there was no significant association between socio-demographic factors except for sex, BMI, risk of malnutrition, physical activity level and dietary intake and constipation.

CONCLUSION & RECOMMENDATIONS

- The prevalence of constipation among elderly at selected private care homes in Selangor was 7.0%. The only factors that associated with constipation were sex, depression and stress.
- The study design of case-control study could be done to ensure a detail result on cause and effect on the associated factors with constipation.
- Health promotion program should be implemented among elderly to prevent a constipation problem and encourage them to be healthy.