UNIVERSITI PUTRA MALAYSIA

MALNUTRITION STATUS AND ITS ASSOCIATED FACTORS AMONG POST-DISCHARGE ELDERLY IN KLANG VALLEY

LIEW SHEK YEE

MALNUTRITION STATUS AND ITS ASSOCIATED FACTORS AMONG POST-DISCHARGE ELDERLY IN KLANG VALLEY

LIEW SHEK YEE

DEPARTMENT OF DIETETICS

FACULTY OF MEDICINE AND HEALTH SCIENCES

UNIVERSITI PUTRA MALAYSIA

2020/2021

MALNUTRITION STATUS AND ITS ASSOCIATED FACTORS AMONG POST-DISCHARGE ELDERLY IN KLANG VALLEY

BY

LIEW SHEK YEE

A project submitted as a partial fulfilment of the requirement for the degree of Bachelor of Science in Dietetics with Honours at the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

This project entitled "Malnutrition Status and Its Associated Factors among Post-discharge Elderly in Klang Valley" was prepared by Liew Shek Yee and submitted to the Faculty of Medicine and Health Sciences as a partial fulfilment of the requirement for the degree of Bachelor of Science in Dietetics with Honours from the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia.

Received and examined by:

_____

(Assoc. Prof. Dr. Siti Nur'Asyura Adznam)

Date: 2 OCTOBER 2021

ACKNOWLEDGEMENT

First and foremost, I would like to express my deepest gratitude to my supervisor, Assoc. Prof. Dr. Siti Nur'Asyura Adznam for providing invaluable guidance and continuous support throughout this research. It is not only her careful supervision but also her care and affection that has empowered me to keep up with the momentum to proceed with my work. The completion of this study could not have been possible without her knowledge and expertise in geriatrics.

In addition, I am extremely grateful to organisations including Pusat Aktiviti Warga Emas (PAWE) and the Malaysian Golden Age Welfare Association (USIAMAS) for permitting me to carry out data collection among their members. Not to forget all the respondents that were willing to take part in this study and their cooperative and honest responses to all the questions solicited in this research are much appreciated.

Besides, I would also like to thank my family and friends, especially Khoi Zi Yee, another student supervised by Assoc. Prof. Dr. Siti Nur'Asyura Adznam for always keeping each other accountable in terms of the progress, and others who helped a lot directly and indirectly.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

MALNUTRITION STATUS AND ITS ASSOCIATED FACTORS AMONG POST-DISCHARGE ELDERLY IN KLANG VALLEY

LIEW SHEK YEE

Malnutrition is a common but frequently unrecognised health issue among the elderly. The nutritional status of older persons can be exacerbated in the event of hospitalisation and transition from hospital to home. However, limited studies in Malaysia determine the malnutrition status and its associated factors among post-discharge elderly. Thus, the objective of this study was to determine the proportion of malnutrition and its associated factors among post-discharge elderly in Klang Valley. It also examined the needs of transitional nutrition care among post-discharge elderly during the transition period. A cross-sectional study that recruited 36 post-discharge elderly in Klang Valley was carried out from March until May 2021. The malnutrition status of the subjects was assessed using the DETERMINE Your Nutritional Health Checklist. The information about demographic characteristics, health status, functional status, depression status and need assessment for transitional nutrition care were obtained. The mean age of the respondents was 69.94 ± 7.48 years, with a range of 60 to 85 years old. A total of 97.2% of subjects were IADL dependent and 33.3% were at risk of depression. The proportion of malnutrition among post-discharge elderly was 97.2%, which included moderate and high nutritional risk. Furthermore, 66.7% of subjects did not consult a dietitian since discharge, 33.3% did not know how to manage their illness in terms of food and nutrition after discharge and 88.9% agreed that nutritional care is an integral part to improve health outcomes. No significant associations were found between demographic characteristics, health status except the number of chronic diseases (r = 0.449, p = 0.006), functional status and depression status with malnutrition status. In conclusion, a high proportion of post-discharge elderly was at risk of being malnourished, indicating that the nutritional status issue deserves closer attention by healthcare providers and the need to develop transitional nutrition care guidelines.

ABSTRAK

STATUS DAN FAKTOR BERKAITAN DENGAN MALPEMAKANAN DALAM KALANGAN WARGA EMAS DI LEMBAH KLANG SELEPAS KELUAR DARI HOSPITAL

LIEW SHEK YEE

Malpemakanan merupakan masalah kesihatan yang biasa tetapi sering tidak dikenali dalam kalangan warga emas. Status pemakanan warga emas boleh menjadi lebih teruk sekiranya dimasukkan ke hospital dan juga sekiranya berlaku peralihan dari hospital ke rumah. Namun demikian, kajian-kajian yang mengkaji status dan faktor berkaitan dengan malpemakanan dalam kalangan warga emas selepas mereka keluar dari hospital adalah terhad di Malaysia. Oleh itu, objektif kajian ini adalah untuk menentukan perkadaran dan faktor berkaitan dengan malpemakanan dalam kalangan warga emas di Lembah Klang selepas mereka keluar dari hospital. Kajian ini juga menilai keperluan penilaian bagi penjagaan pemakanan peralihan khusus bagi warga emas di Malaysia. Satu kajian rentas keratan yang melibatkan 36 warga emas di Lembah Klang yang keluar dari hospital telah dijalankan dari bulan Mac hingga Mei 2021. Status malpemakanan subjek telah dinilai dengan menggunakan DETERMINE Your Nutritional Health Checklist. Maklumat mengenai ciri-ciri demografi, status kesihatan, status fungsian, status kemurungan dan keperluan penilaian bagi penjagaan pemakanan peralihan telah diperoleh. Purata umur responden adalah 69.94 ± 7.48 tahun dengan lingkungan umur antara 60 hingga 85 tahun. Seramai 97.2% subjek memerlukan sokongan bagi IADL dan 33.3% berisiko mengalami kemurungan. Seramai 97.2% subjek mempunyai risiko yang sederhana dan tinggi untuk mengalami malpemakanan. Selain itu, 66.7% subjek tidak berunding dengan pegawai pemakanan sejak keluar dari hospital, 33.3% tidak tahu cara menguruskan penyakit mereka dari segi makanan dan pemakanan setelah keluar dari hospital dan 88.9% bersetuju bahawa penjagaan pemakanan adalah penting untuk memperbaiki tahap kesihatan mereka. Tiada hubungan yang signifikan dijumpai antara ciri demografi, status kesihatan kecuali jumlah penyakit kronik (r = 0.449, p = 0.006), status fungsian dan status kemurungan dengan status malpemakanan. Kesimpulannya, sebilangan besar warga emas berisiko untuk mengalami malpemakanan setelah keluar dari hospital, menunjukkan bahawa isu status pemakanan memerlukan perhatian daripada pegawai kesihatan dan keperluan untuk menyediakan garis panduan penjagaan pemakanan peralihan.

CHAPTER 1

INTRODUCTION

1.1 Background

Conventionally, elderly or older adults have been described as having a chronological age of 65 years old or more (Orimo et al., 2006). However, Malaysian policymakers adopted the "60 years and over" demarcation by the United Nations as the cut-off age for the elderly (Chen et al., 2012). The population aged 60 years or above worldwide numbered 382 million in 1980 and it had been increased more than double in 2017 when there were 962 million older persons globally (Department of Economic and Social Affairs, 2017). Based on the data published by the Department of Statistics Malaysia (2017), there were 9.3% or 3.0 million people aged 60 years and above living in Malaysia, which showed a growth of the older population as compared to 5.2% in 1970 and 7.9% in 2010.

Malnutrition refers to "a state resulting from lack of intake or uptake of nutrition that leads to altered body composition (decreased fat-free mass) and body cell mass leading to diminished physical and mental function and impaired clinical outcome from disease" (Cederholm et al., 2017, p. 51). The Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) classified malnutrition into three categories for diagnosis, namely starvation-related malnutrition, chronic disease-related malnutrition and acute disease or injury-related malnutrition (White et al., 2012).

Older persons are specifically susceptible to malnutrition, resulting in it become one of the persisting challenges for health care professionals. The prevalence of malnutrition was 22.8% and with substantial differences across the settings whereby 50.5% in rehabilitation, 38.7% in hospital, 13.8% in the nursing home and 5.8% in the

community (Kaiser et al., 2010). According to National Health and Morbidity Survey (NHMS) 2018, it was revealed that the prevalence of malnutrition among the elderly in Malaysia was 30.8% (Institute for Public Health, 2019).

However, the nutritional status of older persons can be exacerbated in the event of hospitalisation and transition from hospital to home. Transitional care refers to a process of care that was not defined by the starting and end points but included activities prior to hospital discharge and instantly follow up at post-discharge at the subsequent location of care (Holland & Harris, 2007; Naylor et al., 2011). According to the American Geriatrics Society, transitional care is several actions planned to ensure health care is coordinated and continued when the patient moves between different places including hospitals, nursing homes, the patient's home, primary and specialty care offices, and long-term care facilities (Coleman & Boult, 2003). Apart from primary care, nutrition service is also a pivotal element of transitional health care to ensure that older persons are well-nourished in their homes post discharge.

When admitted to the hospital, only 8.5% of the geriatric patients were classified as undernourished but at three and six months after discharge, 15.0% and 14.4% of the elderly remained undernourished, respectively (Chen et al., 2009). Determinants related to nutritional status over time among post-discharge older adults are multifaceted and include gender, age, widowhood, years of education, oral health, number of comorbidities and medication taken, cognitive status, functional status, presence of depressive symptoms and social support (Chen et al., 2009). The association between functional status and nutrition was found to be stronger at the post-discharge stage than at the hospitalisation stage. The elderly may undergo substantial changes in function over time, either improvement or deterioration, as a result of hospitalisation related to acute medical illness (Elisabeth et al., 2007).

Physical disabilities such as restricted mobility, chewing problems or dysphagia result in difficulties in grocery shopping, preparing meals and eating that may suppress food intake (Avelino-Silva & Jaluul, 2017).

1.2 Problem Statement

Today, people worldwide are living longer and this represents one of the triumphant achievements of the twenty-first century but also a significant challenge. According to the World Health Organisation (2018), the proportion of the global population aged over 60 years old was estimated to be doubled from 12.0% to 22.0% between 2015 and 2050. Meanwhile, approximately 11.0% of the total population in the Asia region were elderly aged 60 years and over in 2012, and it is expected to increase up to 24.0% by 2050 (Guzmán et al., 2012). Increased longevity due to improved health care facilities and services, decreased fecundity, declined mortality rates and the progression of the large proportion of the population to the older ages are the key drivers of the ageing population phenomenon.

However, there is an increasing concern over the health of older adults along with the growth of the ageing population. Malnutrition is a common but frequently unrecognised health issue among the elderly. Even though previous literature identified the proportion of malnutrition among community-dwelling, hospitalised and institutionalised older adults, there are limited studies that are specific on post-discharge elderly who have a higher likelihood of developing malnutrition during and post-hospitalisation (Chen et al., 2009; Moreira et al., 2016). A study reported that 63.0% of patients who were hospitalised for at least one week were discharged with the same nutritional state as they were admitted but approximately 20.0% deteriorated (Allard et al., 2015). Another research also found that 8.5% of the subjects were

classified as undernourished when admitted to the hospital, and it was observed that 15.0% and 14.4% remained undernourished after three and six months post-discharge (Chen et al., 2009).

A prospective cohort study in Taiwan had identified sex, age, widowhood, years of education, number of comorbidities and medication taken, cognitive status, functional status, oral health, presence of depressive symptoms and social support as the risk factors of nutritional health over time among post-discharge elderly. Nevertheless, the research pertaining to factors associated with malnutrition among older persons who were discharged from the hospital is scarce, which might be due to temporary decline and associations (Chen et al., 2009).

In Malaysia, patients that often receive transitional care including those with complex medical needs, patients with chronic diseases such as diabetes that can be followed up at the primary care setting, postpartum patients and patients who have recently undergone operation or invasive procedures (Yusof & Tan, 2020). However, the elderly are vulnerable to malnutrition due to multiple factors and transition across care settings can escalate the risk. In fact, it is critical to ensure the coordination of food and nutrition services between hospital and home as these services are often not coordinated during the transition (Mogensen et al., 2015). However, no known study has been conducted to date that focused on understanding the need for transitional nutrition care among the elderly in Malaysia.

To my knowledge, there is no known local study about malnutrition among post-discharge elderly; hence, it is necessary to understand the associated factors with malnutrition in order to develop a well-planned transitional nutrition care model for elderly patients while discharged from the hospital to home to reduce readmission rates and health care costs. In Malaysia, transitional health care may be clearly established

for primary care but not in malnutrition. Therefore, this study aimed to determine the malnutrition status and its associated factors among post-discharge elderly in Klang Valley.

Research Questions:

1. What is the proportion of malnutrition among post-discharge elderly in Klang Valley?
2. Are there any associations between demographic characteristics, health status, functional status and depression status with malnutrition among post-discharge elderly in Klang Valley?
3. What are the elderly's needs for transitional nutrition care during the transition period?

1.3 Significance of the Study

This study is significant for Malaysia which is currently moving to become an ageing society and malnutrition is one of the major health concerns among older adults. Hence, this study was conducted to determine the malnutrition status and its associated factors among post-discharge elderly in Klang Valley. This research can provide data pertinent to the proportion of malnutrition among post-discharge elderly in Malaysia as most of the local studies involved merely hospitalised, institutionalised and community-dwelling older adults. Furthermore, this research also evaluated the needs assessment for transitional nutrition care among post-discharge elderly. It can fill the gap in existing studies, especially in Malaysia as there is still no such known study in the country at present. Hence, this study may establish a better understanding of the importance of transitional nutrition care.

Apart from that, the findings of this study also can serve as baseline information for future research. It would be very useful as we had already identified the needs of the target population for transitional nutrition care. This study hopes to encourage more research to be done in the future on developing the transitional nutrition care model or practice to prevent or alleviate malnutrition and support the geriatric patient's recovery during the transition from hospital to home. This can assist the elderly to enhance their health outcomes and achieve a better quality of life after discharge from the hospital. Subsequently, it also helps to reduce hospital resource utilisation, whereby it can decrease the frequency of preventable readmission and health care costs.

1.4 Research Objectives

General Objective

To determine the malnutrition status and its associated factors among post-discharge elderly in Klang Valley.

Specific Objectives

1. To determine the proportion of malnutrition among post-discharge elderly in Klang Valley.
2. To determine the demographic characteristics, health status, functional status and depression status among post-discharge elderly in Klang Valley.
3. To examine the needs of transitional nutrition care during the transition period.
4. To determine the associations of demographic characteristics, health status, functional status and depression status with malnutrition among post-discharge elderly in Klang Valley.

1.5 Research Hypothesis

There are associations between demographic characteristics, health status, functional status and depression status with malnutrition among post-discharge elderly in Klang Valley.

1.6 Conceptual Framework

Figure 1.1 revealed the conceptual framework of the study with the title malnutrition status and its associated factors among post-discharge elderly in Klang Valley. Based on this framework, demographic characteristics, health status, functional status and depression status were the risk factors of malnutrition status (Chen et al., 2009). Meanwhile, the need assessment for transitional nutrition care was also measured in this study.

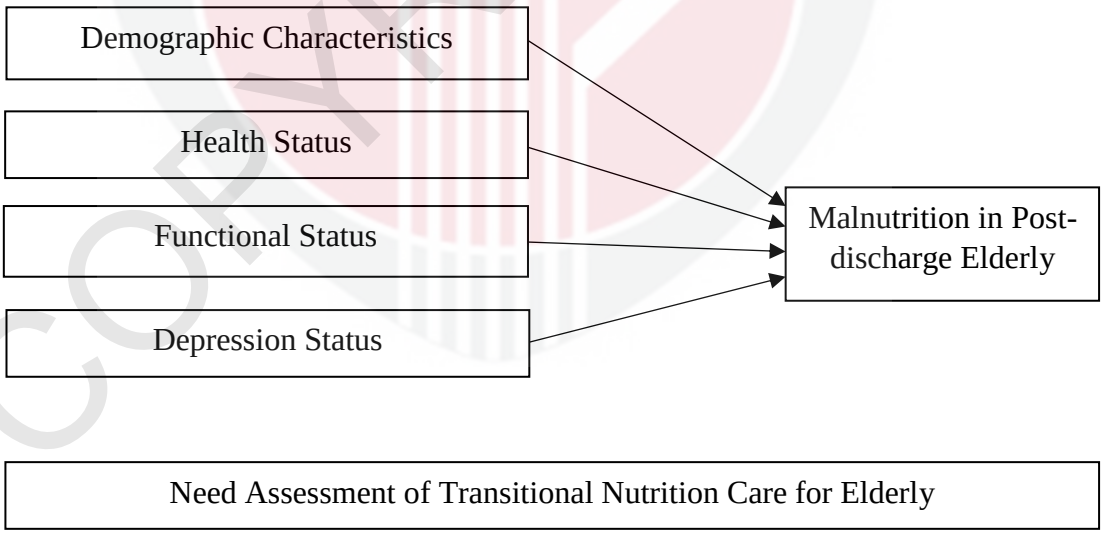

Figure 1.1 Conceptual framework

CHAPTER 2

LITERATURE REVIEW

2.1 Malnutrition in Post-discharge Elderly

Malnutrition is defined as a state of imbalanced nutrition whereby a combination of varying degrees of over- or undernutrition and inflammation has resulted in altered body composition, declined function and outcome (Soeters et al., 2016). Malnutrition in the elderly is also referred to as "faulty or inadequate nutritional status; undernourishment characterised by insufficient dietary intake, poor appetite, muscle wasting and weight loss" (Chen et al., 2001, p. 131).

There were extensive studies that examined the prevalence of malnutrition in different settings. According to a systematic review and meta-analysis by Leij-Halfwerk et al. (2019) on 24 European countries, 23.0% of the elderly were at high malnutrition risk and 48.4% were at a certain risk of malnutrition (a combination of moderate and high malnutrition risk). Substantial differences were found across settings whereby the pooled prevalence rates of high malnutrition risk were 28.0%, 17.5% and 8.5% for the hospital, residential care and community settings, respectively. Furthermore, the prevalence rates differed by the screening tool used, from 14.9% using the Mini Nutritional Assessment-Short Form (MNA-SF) to 40.6% using Nutritional Risk Screening (NRS-2002). Hence, the type of nutrition screening tool used significantly influences the reported proportion of malnutrition and the risk of the elderly being malnourished is highest in the hospital and the lowest in the community setting.

In the Asia region, a meta-analysis study showed that the proportion of malnourished or at risk of being malnourished geriatric patients spanned from 56.7% to 98.8% according to the Mini Nutritional Assessment (MNA). It was found that the

MNA was the most commonly used screening tool. Two studies were using MNA-SF to evaluate the nutritional status and the reported prevalence was estimated at 44.8% and 81.0% (Inciong et al., 2020). However, a local cross-sectional study reported a lower prevalence of malnutrition among geriatric patients, which was 34.7% based on the reference standard Subjective Global Assessment (Tan et al., 2016).

An India systematic review and meta-analysis revealed that 16.3% and 44.7% of older persons living in the community were being malnourished and at risk of malnutrition (Kushwaha et al., 2020). One cross-sectional study performed from July to August 2019 in Myanmar aimed to determine malnutrition prevalence and its associated factors among elderly individuals. Seven hundred and forty-seven elderly were recruited in this study and the prevalence of malnutrition was 21.7% whereas 59.4% were at risk of malnutrition (Noe et al., 2020). A local study conducted by Norazman et al. (2020) reported a lower prevalence of malnutrition as compared with other studies in the community settings, which could be due to the difference in the instrument used and study country. It was reported that 3.3% were malnourished and 29.6% of the subjects were at risk of malnutrition among 301 elderly living in the community.

Older patients are not only susceptible to malnutrition, but they may also likely cannot recuperate from malnutrition during discharge or even soon thereafter, especially in recent years whereby the patients are quickly being discharged from hospitals (Sahyoun et al., 2010). However, a limited amount of studies were conducted to focus on malnutrition status among post-discharge older persons. A prospective cohort study was performed on 306 geriatric patients aged 65 years and older in Taiwan that aimed to characterise the trajectory and to determine the risk factors of nutritional health over time. When admitted to the hospital, only 8.5% of the

participants were classified as undernourished and after an average of 15.7 days staying in the hospital, the prevalence of undernutrition was 4 times higher whereby 37.3% of the subjects were undernourished and 54.2% were at risk of undernutrition at discharge according to MNA. This research also found that 15.0% and 14.4% remained undernourished at three and six months of post-discharge (Chen et al., 2009).

2.2 Factors Associated with Malnutrition in Post-discharge Elderly

Nutritional status declines with biological, psychological and social changes related to ageing, which are then can be deteriorated in the event of hospitalisation, particularly due to acute disease and other comorbidities. A previous study stated that sex, age, widowhood, years of education, number of comorbidities and medication taken, oral health, cognitive status, functional status, presence of depressive symptoms and social support were determinants of nutritional health over time after discharge from the hospital (Chen et al., 2009). However, there is lacking data on the determinants of malnutrition over time among post-discharge older adults as most of the studies were focusing on community, long-term care homes and hospitals (Moreira et al., 2016).

2.2.1 Demographic Characteristics

Generally, malnutrition among older adults can be associated with demographic characteristics such as gender, age, ethnicity, educational level, marital status, monthly income and living arrangement.

It had been proven by several studies that being a female had been suggested as a risk factor for malnutrition among the older population. According to a study conducted among community-dwelling elderly in France, the female gender appeared to be the independent predictor of poor nutritional status (Torres et al., 2014). Similarly,

a systematic review and meta-analysis by Leij-Halfwerk et al. (2019) also reported that malnutrition risk was greater in female elderly than in male older adults, which was consistent with another systematic review and meta-analysis that included 27 studies (Crichton et al., 2019). These two studies revealed it was still inexplicit if reasons for higher risk in older women were due to frailty, socioeconomic status, older age, higher likelihood of becoming a widow, gender disparity and/or underlying differences in biology. However, there was one study that discovered that the risk of malnutrition was associated with the male sex (Katsas et al., 2019).

Most of the studies showed that increased age was positively associated with malnutrition (Damayanthi et al., 2018; Johansson et al., 2009; Torres et al., 2014). According to Damayanthi et al. (2018), the physiological changes of ageing affect nutrients metabolism and conditions such as osteoporosis and sarcopenia might gradually lead to mobility restrictions of older adults that further limit their capability in grocery shopping, food preparation and even food consumption. Research by Leij-Halfwerk et al. (2019) affirmed that people aged over 80 years old have a greater risk of being malnourished, which was supported by a local study carried out by Yap et al. (2019) in elderly residents of long-term care homes. This might be due to loss of appetite as Ahmed and Haboubi (2010) observed that a diminished sense of taste and smell was found in 80.0% of participants who aged above 80 years old.

Regarding ethnicity, there is very limited discussion on malnutrition among the elderly, but few local studies showed that ethnicity was significantly associated with malnutrition. A cross-sectional study conducted in long-term care homes in Klang Valley reported that Malay ethnicity was more likely to develop malnutrition as their cultural beliefs and practices in food intake may play a significant role (Yap et al., 2019). On the contrary, Chen et al. (2012) found that Indian older adults were more

vulnerable to being underweight. However, approximately 40.0% of the Malay elderly had overweight and obesity problems, which were the highest among the three ethnics. The study suggested that this might be due to an unhealthy lifestyle incorporated by Malays, such as including culturally high fat and cholesterol food which needed to be studied further.

Besides, low educational level was associated with malnutrition among older persons (Katsas et al., 2019; Noe et al., 2020; Torres et al., 2014). The elderly who received below the primary education level were having malnutrition doubled more often than those with at least a primary education level (Krzymińska-Siemaszko et al., 2015). Poor education results in older adult's lack of nutrition knowledge and they might make unsatisfactory dietary choices and behaviours. It will be even worse if they do not receive any nutrition counselling or education from a dietitian after discharge from the hospital.

In a harmonised meta-analysis based on findings from 6 longitudinal studies, marital status was identified as an independent risk factor of malnutrition in community-dwelling older persons (Streicher et al., 2018). Participants who were not married, divorced or separated were more likely to be malnourished than those who were married, whereas no association was found for widowed subjects. However, a France study by Torres et al. (2014) showed that being widowed was independently associated with malnutrition, whereas a cross-sectional observational study in Greece found that unmarried elderly was associated with risk for malnutrition (Katsas et al., 2019). Older adults who live without a partner often mean living alone; hence, they tend to prepare the meal and eat alone that could be resulted in inadequate energy intake. Their nutritional status can even be worsened by the event of hospitalisation. Nevertheless, a cross-sectional study by Rashid et al. (2020) demonstrated that marital

status was not significantly associated with nutritional status, which aligned with the results of Damayanthi et al. (2018) in Sri Lanka. Damayanthi and the other researchers stated that it might be caused by the effect of various unidentified confounding variables that contort or conceal the actual associations.

Further, existing studies had recognised low income as one of the risk factors associated with malnutrition among older persons. A local study by Muhamad et al. (2019) that involved community-dwelling older persons revealed that the participants were at risk of malnourishment ($p = 0.045$) when they had low income, as supported by the study by Torres et al. (2014). This is because low income among older persons restricted them from accessing various foods, resulting in decreased food intake (Donini et al., 2003).

Research on community-dwelling older adults in Sri Lanka indicated that the protective factor for those who were at risk of being malnourished was an increased number of people staying with the older people (Damayanthi et al., 2018). Besides, Katsas et al. (2019) reported that living without a partner, which is often referred to as living alone, was associated with an elevated risk of malnutrition. This was supported by a cross-sectional study that showed greater malnutrition risk was associated with being a male or female living alone (Westergren et al., 2014). Living alone after being discharged from the hospital can be dangerous, as there are no caregivers that can support older patients during their day-to-day health and nutrition management.

2.2.2 Health Status

The elderly who have comorbidities can lead to physiological changes that interfere with digestion, absorption and nutrient metabolism that result in malnutrition (Chen et al., 2019). According to Leij-Halfwerk et al. (2019) who analysed 223 study

samples from 24 European countries involving 583, 972 elderly, those with one or multiple comorbidities had a higher risk of malnutrition. Besides, local research also demonstrated that a higher number of chronic diseases was significantly associated with malnutrition risk among the elderly (Norazman et al., 2020). A cross-sectional study aimed to determine the different risk factors associated with malnutrition among geriatric patients showed that those having 3 or more comorbidities were classified as the somatic risk factor of malnutrition (Rashid et al., 2020). In contrast, local research involving 506 long-term care home residents revealed that the number of comorbidities was not a risk factor for malnutrition (Yap et al., 2019).

Certain diseases were revealed to be associated with malnutrition among the elderly. Noe et al. (2020) found that having cardiovascular disease was a strong determinant for malnutrition as cardiovascular disease was one of the non-communicable diseases affected by diet. On the contrary, a Belgian cross-sectional study conducted a univariate analysis that showed having chronic obstructive pulmonary disease, malignant neoplasm, lung and urinary infection were associated with a significantly higher prevalence of being malnourished among older adults (Vanderwee et al., 2010).

In a Belgium research, it was observed that a longer hospitalisation was associated with a significantly higher proportion of malnutrition but the effect of length of hospitalisation on malnutrition was quite small (Vanderwee et al., 2010). This study was carried out in elderly patients; hence, more studies should be conducted on post-discharge older adults to examine the association.

2.2.3 Functional Status

In general, functional status is an individual's capability to carry out usual daily activities required to fulfill the essential needs, perform typical roles and maintain health and well-being (Vanderwee et al., 2010). Functional status mainly encompasses two distinct elements, which are physical disability and functional limitation. Physical disability refers to incapable to perform daily self-care activities independently or without support, which is usually assessed through self-reported questionnaires such as Activities of Daily Living (ADL) or Instrumental Activities of Daily Living (IADL). In contrast, functional limitation refers to an individual's limited performance of certain action or task due to a health condition or injury and is usually assessed through performance-based such as mobility, flexibility, muscle strength, manual dexterity and psychomotor or cognitive functioning (Murat et al., 2017).

According to Chen et al. (2009), the functional status particularly in the post-discharge stage was associated with nutritional health. This study used Barthel Index (BI) to measure the functional status and it showed that the association of functional status and nutritional health was different in intensity over time, whereby the weakest association was found when the older patients were discharged from the hospital and the strongest at six-months post-discharge. In the elderly, hospitalisation as a result of an acute illness is frequently correlated with an increased decrement in functional status whereby approximately 35.0% of geriatric patients were discharged with deteriorated performance in activities of daily living than before hospitalisation (Urquiza et al., 2020). Furthermore, older persons discharge with new or additional disabilities in personal care ADL were having a poor prognosis as there were merely 30.0% reverting to their pre-admission level of personal care ADL functioning by one year (Boyd et al., 2008).

Research involving 331 community-dwelling Iranian elderly reported that multiple physical disabilities were independent risk factors of malnutrition. This study also found that ADL and IADL dysfunction had a significant association with nutritional risk whereby functional loss could cause an individual to cannot feed oneself sufficiently (Bakhtiari et al., 2020). The functional status of the subjects in this research was evaluated using the Katz Index of Independence in Activities of Daily Living and Lawton-Brody Instrumental Activities of Daily Living Scale. Another study in India that involved geriatric outpatients revealed that nutritional status was also statistically significantly positively correlated with functional capacity. It was observed that a low Barthel Index score and decreased handgrip strength were found in those who were malnourished or at risk of being malnourished, whereas the subjects with normal nutritional status tend to have a better functional status (Godbole et al., 2020).

Besides, a local study carried out by Suzana et al. (2013) demonstrated that poor appetite, diminished functional status and psychosocial problems among the elderly participants could be explained for approximately 20.0% of malnutrition risk. This research used IADL, Elderly Mobility Scale (EMS) and handgrip strength to determine the functional status of Malay older adults in an agricultural settlement. Functional dependency in food procurement, food preparation or food consumption not only influences the amount of food consumed but also the food variety that may lead to a monotonous diet and renders the elderly being susceptible to malnourishment (Suzana et al., 2013).

2.2.4 Depression Status

Depression refers to "a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration" (Dao et al., 2018, para. 1).

A Taiwan study by Chen et al. (2009) revealed that the presence of depressive symptoms was the predictor of nutritional health of post-discharge elderly over time. This study used the 15-item Geriatric Depression Scale Short Form (GDS-15) to evaluate the appearance of depressive symptoms due to its high sensitivity and specificity. Furthermore, another research involving Taiwanese geriatric outpatients reported that a high level of depressive symptoms was at elevated risk of being malnourished. This study also highlighted that geriatric patients with depression were conceivably to be malnourished due to lack of interest, pessimism or loss of pleasure in eating (Chen et al., 2019). Furthermore, another study carried out in Dutch geriatric outpatients reported that depression was an independent risk factor of elevated risk of malnutrition (Van Bokhorst-de van der Schueren et al., 2013).

According to Johansson et al. (2009), one predictor for developing malnutrition among older people living in the home was more depressive symptoms. Depression signs may impair the elderly's appetite and reduce their weight that leads to the development of malnutrition. This study also revealed that men with depressive symptoms were likely to develop malnutrition but no similar study was found pertaining to men's risk of malnutrition associated with depressive symptoms. This was supported by a Belgian cross-sectional study whereby the univariate analysis of this study demonstrated that depression was associated with a significantly higher malnutrition prevalence as it may be related to poor appetite (Vanderwee et al., 2010).

In Japan, Yoshimura et al. (2013) conducted a cross-sectional study that aimed to explore the relationship between nutritional status and depression among healthy young-old (aged 65 to 74) and old-old (aged 75 and older) elderly dwelling in the community. A total of 274 participants were evaluated using the Geriatric Depression Scale and this study found a correlation between depression status and nutritional status for young-old elderly but not for old-old elderly or the combination of both groups. Depressive symptoms in the elderly have distinct clinical manifestations along the age spectrum from young-old to old-old which may lead to these differences.

A local study involving Malay older adults concluded that malnutrition risk was explained by poor appetite, declined functional status and depression at approximately 20.0% among the elderly subjects whereby depression alone contributed to 10.7% of malnutrition risk which appeared as the highest contributor to malnutrition risk among these three significant predictors (Suzana et al., 2013). This study used GDS-15 to assess the depressive symptoms and the results showed that 25.6% of participants were depressed. However, this research was carried out in an agricultural settlement; thus, the results might differ from the urban area such as Klang Valley. Nevertheless, a cross-sectional study in community-dwelling older persons in Sri Lanka reported that depression was not associated with malnutrition as the actual associations might be distorted or masked by the effect of multiple unidentified confounders (Damayanthi et al., 2018).

2.3 Need Assessment of Transitional Nutrition Care for Elderly

The elderly experience more frequent care transitions as compared to the younger patients, especially if they have comorbidities, cognitive impairment, increased dependence and medication use (Vognar & Mujahid, 2014). A study from

Canada revealed that among all elderly patients, 19.6% deteriorated and 17.4% improved in the Subjective Global Assessment while staying more than 7 days at the hospital (Allard et al., 2015). Malnutrition that is not resolved or worsening at discharge has significant impacts and the transition from the hospital to the community is also deemed to contribute to the development of poor nutritional status due to inadequate nutritional care (Hestevik et al., 2020). Hence, it is essential to have continuity of care during the transition from hospital to home to ameliorate the nutritional status of older people.

A qualitative meta summary was carried out to have a better understanding of the older adults' experiences of adjusting to daily life at home after being discharged from the hospital (Hestevik et al., 2019). In this study, four dominant themes had emerged: experiencing an insecure and unsafe transition, adapting to a new circumstance at home, actions of the elderly if there is no informal caregiver and experience of a paternalistic medical model. The older persons reported they experienced the transition as insecure or unsafe due to deprivation of information regarding their health conditions, treatment or care and not being involved in their own life decisions. On the other hand, loss of independence, problems in performing daily activities and absence of care according to needs affected the experience of adjusting to a new situation at home. Following discharge, a lot of subjects reported they required assistance from others whereby they rely on informal caregivers such as family for medication and healthcare or to manage daily activities at home. Some participants also perceived healthcare personnel as authoritarian or distant and stressed.

It is essential to have the coordination of food and nutrition services for the elderly between hospital and home as these services are always not coordinated during the transition (Mogensen et al., 2015). Besides, older persons may have varying

degrees of unmet nutritional demands after discharge from the hospital. According to a qualitative study, four domains emerged from the unmet needs, including the need for a comprehensive approach to nutritional care, non-individualised home nutritional care, lack of mutual understanding and shared decision making and the role of family caregivers (Hestevik et al., 2020). This research also emphasised that older patients' needs and preferences will serve as a guide on how nutritional care is provided. Furthermore, Anyanwu et al. (2011) suggested that the elderly may meet further challenges to recover from disease as they might not be able to prepare meals, regardless of the home food environment that was faced by them following hospital discharge.

In Malaysia, transitional health care may be clearly established for primary care but not for malnutrition. Generally, patients that require transitional care include those with complex medical needs such as stroke with neurological deficits and multiple comorbidities, patients with chronic diseases that can be followed up at the primary care setting such as diabetes, post-natal patients and those who have recently undergone surgical or invasive procedures (Yusof & Tan, 2020). Usually, for post-discharge elderly who require continuity of care, they will look for Domiciliary Health Care Services (DHC), which is a government initiative to provide continuous health care to patients who are in need. Some will also opt for private care for post-hospitalisation such as Homage and CARE Concierge but the nutrition care of these services is limited as they only assist in tube feeding.

CHAPTER 3

METHODOLOGY

3.1 Study Design

This was a cross-sectional study that aimed to determine the malnutrition status and its associated factors among post-discharge elderly in Klang Valley. This study also examined the needs of transitional nutrition care among post-discharge elderly during the transition period.

3.2 Study Location

This study was conducted among older adults that live in Klang Valley. As of 2020, the senior citizens in this region were estimated to be approximately 22.4% of the elderly population in Malaysia (Hamid, 2018). Klang Valley or sometimes referred to as Greater Kuala Lumpur is an urban conglomeration of Malaysia that comprises the federal territory of Kuala Lumpur, Putrajaya and its suburban areas, and adjoining cities and towns in Selangor. Named after the Klang River, Klang Valley is the centre of Malaysia's industry and commercial development. There is no formal designation of the boundaries that constitute Klang Valley, but it is often assumed to encompass the following areas as shown in Table 3.1.

Table 3.1 Areas of Klang Valley, Malaysia

States	Districts
Federal Territory of Kuala Lumpur	Kuala Lumpur
Federal Territory of Putrajaya	Putrajaya
Selangor	Petaling, Klang, Gombak, Hulu Langat

3.3 Participants

The participants for this study were elderly who live in Klang Valley and have been discharged from any hospitals within the duration of at least one week ago to one year ago. The elderly who fulfilled the study criteria were recruited into the study. The inclusion and exclusion criteria were shown in Table 3.2.

Table 3.2 Inclusion and exclusion criteria of the participants

Inclusion Criteria	Exclusion Criteria
• Malaysian elderly aged 60 years and above • Male / Female • Home dwelling • Had been admitted to the hospital for more than 24 hours within the duration of at least one week ago to one year ago • Have smartphone and internet access	• Suffered from cognitive impairment such as dementia or Alzheimer's • Admitted for terminal illness with a limited life expectancy (<6 months) • Elderly who is not able to fill in the online questionnaire by himself / herself or family caregiver

3.4 Sample Size Determination

The sample size of this study was determined using the formula of sample size calculation for proportion study (Daniel, 1999).

Formula:

$$n = \frac{Z^2 P(1-P)}{d^2}$$

where
n = sample size
Z = Z statistic for a level of confidence (conventional Z value is 1.96)
P = expected prevalence or proportion
d = precision

In addition, the formula for determining sample size for correlation studies was shown below (Hulley et al., 2013).

Formula:

$$N = [(Z_\alpha + Z_\beta) \div C]^2 + 3$$

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

where
N = total number of subjects required
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

Table 3.3 Calculation of sample size

Studies	Proportion, *P*	Correlation, r	Sample Size, *n*
Preliminary findings of malnutrition risk factors among older adults in a care home, Malaysia (Siti Al-Baidakh et al., 2019)	0.13		44

Table 3.3 (Cont.) Calculation of sample size

Trajectory and determinants of nutritional health in older patients during and six-month post-hospitalisation (Chen et al., 2009)	0.144		48
Depressive symptoms (GDS-SF) and nutritional status (MNA-SF) in the frail older adults (Chen et al., 2019)		-0.368	56

The highest sample size obtained from the proportion of malnutrition among post-discharge elderly was 48 respondents.

Adjusted for the expected response rate (80%):

48 ÷ 0.8 = 60

The sample size obtained from the association between depression and malnutrition among elderly was 56 respondents.

Adjusted for the expected response rate (80%):

56 ÷ 0.8 = 70

Hence, the actual sample size required was 70 respondents after considering 20% of non-response rate.

3.5 Sampling Design

In this study, purposive sampling was employed to recruit the potential subjects from the government organisations such as Pusat Aktiviti Warga Emas (PAWE), a non-governmental organisation which is the Malaysian Golden Age Welfare Association (USIAMAS) and Facebook groups including Care for Older Persons in Malaysia, Caregivers Malaysia and Malaysia Caregiver Support Group as illustrated in Figure 3.2. Facebook and WhatsApp had been used as platforms to disseminate the information about this study to the elderly or their family caregivers. As depicted in Figure 3.1, the elderly living in Klang Valley who fulfilled the study criteria were included in the study.

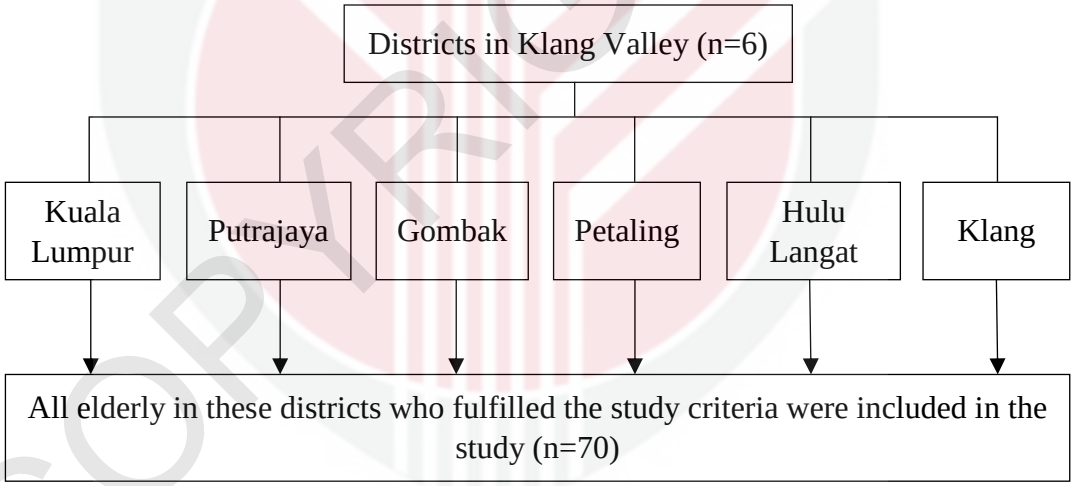

Figure 3.1 Flow chart of sampling design

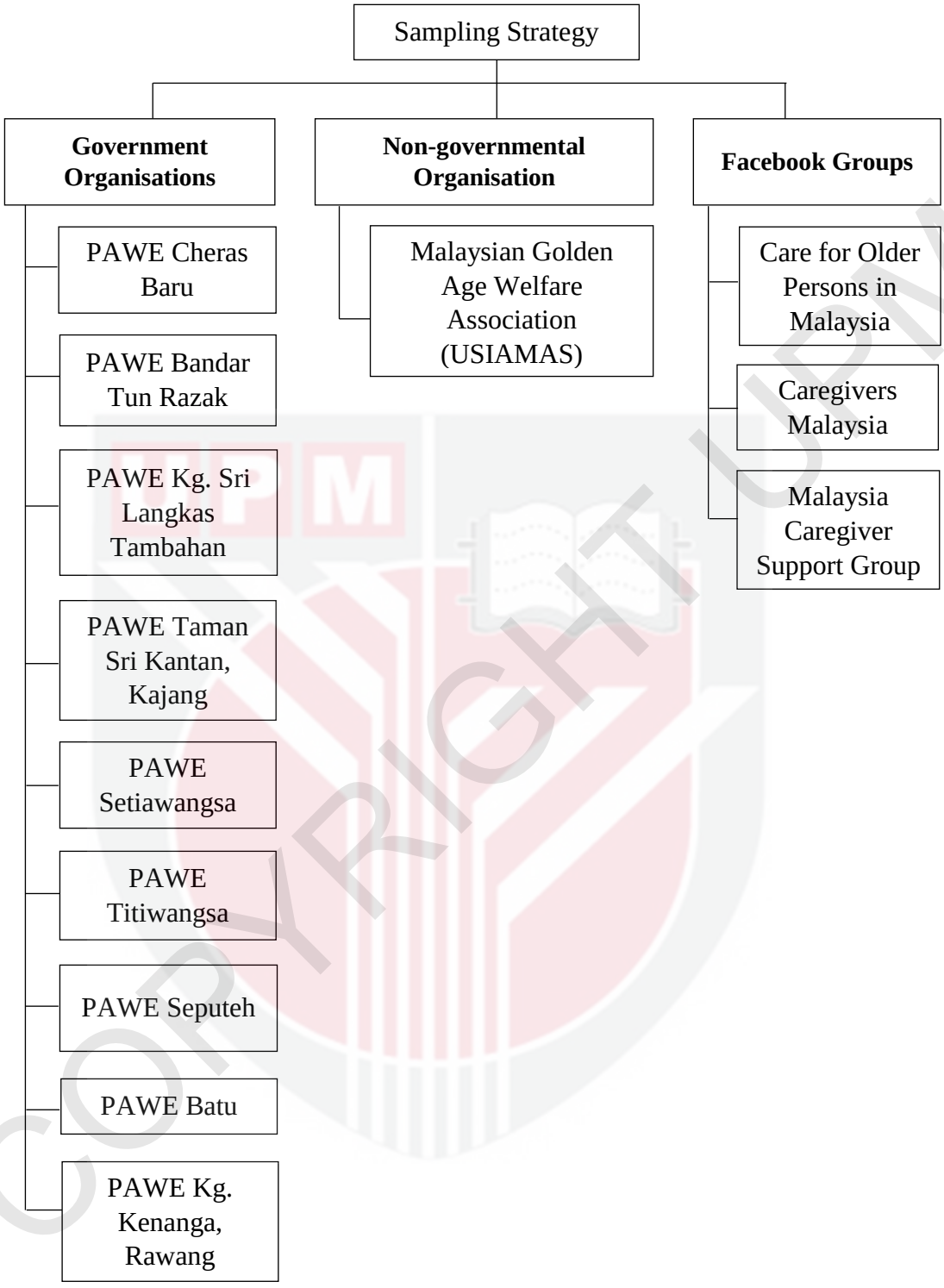

Figure 3.2 Sampling strategy

3.6 Study Instruments

This study used a self-administered online questionnaire via Google form due to the limitations in employing face-to-face data collection during the ongoing COVID-19 pandemic. Since the target population was elderly; hence, participants who could not access, see clearly or illiterate could be assisted by their family caregivers. Respondents were interviewed on demographic characteristics, health status, functional status, depression status, malnutrition status and need assessment for transitional nutrition care. The questionnaire included English and Malay versions because most Malaysians can literate in the Malay language. The translation from English to Malay was done by the Centre for the Advancement of Language Competence (CALC) from Universiti Putra Malaysia.

3.6.1 Demographic Characteristics

Demographic data of the respondent was collected through a self-developed questionnaire. The questions comprised date of birth, gender, ethnicity, marital status, educational level, financial resources for living, monthly household income and living arrangement. During the data analysis, the researcher calculated the age of the respondent from his or her date of birth using Microsoft Excel. For the monthly household income, it was categorised based on the national poverty line income of RM 2208 (Department of Statistics Malaysia, 2020).

3.6.2 Health Status

The health status section comprised several self-developed questions such as date or month of admission, length of stay, type of ward admitted, the reason for admission and the type of existing chronic diseases. During the analysis of data, the reason for admission was categorised according to the International Classification of Disease (ICD), Version 11 as ICD is the international standard for reporting diseases

and health conditions released by the World Health Organisation (WHO). On the other hand, the number of chronic diseases was obtained from the existing chronic diseases of the respondent. The diseases listed in the questionnaire were cardiovascular disease, chronic respiratory disease, diabetes mellitus, cancer, hypertension, kidney disease, gastrointestinal disease, gout or arthritis. However, the respondent was not limited to the above options as he could report any other existing chronic diseases.

3.6.3 Functional Status

Since an individual tends to be incapable of performing activities that are complex before losing the capability to carry out simple activities; hence, the functional status of the respondents in this research was measured using the Lawton Instrumental Activities of Daily Living Scale (Graf, 2008; Lawton & Brody, 1969). This instrument was appropriate to evaluate independent living skills and was designed for evaluating complex activities of daily living among older adults and it could be completed in 10 to 15 minutes by older persons or their caregivers that were well known of the elderly's capability (Kadar et al., 2018). There were eight function domains in the scale, namely ability to use the telephone; shopping; food preparation; housekeeping; laundry; mode of transportation; responsibility for own medication and ability to use finances. In this study, each activity was rated in a binary way (0 = less able; 1 = more able) and a subject was categorised as having normal functional status when he or she could perform all eight activities independently (Graf, 2008). Moreover, the validated Lawton Instrumental Activities of Daily Living – Malay version (IADL-MV) scale was also used in this study as the questionnaire was in a bilingual version. IADL-MV scale showed outstanding validity and reliability when used among the Malay-speaking elderly population in a local study. The Content Validity Index for four criteria was from 88.9% to 100.0%, whereas 0.838 was the Cronbach alpha

coefficient for internal consistency. The intra-class Correlation Coefficient of inter-rater reliability and test-retest reliability were 0.957 and 0.950, respectively (Kadar et al., 2018).

3.6.4 Depression Status

The validated 14-items Malay version of the Geriatric Depression Scale (M-GDS-14) was employed in this study to measure the depression level of the subjects over the preceding week (Teh & Hasanah, 2005). The M-GDS-14 was a newly formed scale that omitted item-9 from the Geriatric Depression Scale-15 (GDS-15) as it could not differentiate between cases and non-cases attributable to the cultural differences between the local and the Western. This scale had been validated among Malaysian older adults at satisfactory reliability of Cronbach's alpha coefficient of 0.84 and test-retest reliability of 0.84 and concurrent validity with the Montgomery-Asberg Depression Rating Scale (MADRS) at Spearman's rho of 0.68 (Teh & Hasanah, 2005). The GDS-15 was used as the English version of this questionnaire, but it was adapted according to M-GDS-14. M-GDS-14 comprised 14 items scored on a dichotomous (yes/no) scale with the score of depression level spanned from 0 to 14. The subjects who scored 0 until 5 indicating normal whereas those who scored over 5 were considered at risk of depression.

3.6.5 Malnutrition Status

The malnutrition status of the respondents was assessed through the DETERMINE Your Nutritional Health Checklist, which was designed by the United States Nutrition Screening Initiative (NSI) at the beginning of the 1990s (Posner et al., 1993). Although it was initially developed to screen for poor nutritional health in general, it scored the highest for the malnutrition risk identification in the community setting after considering the validation, parameters and practicability of the instrument

(Power et al., 2018). This checklist comprised ten, easily interpreted questions that the elderly could administer it personally as anthropometric measurements and clinical judgement were not needed. The 10 questions required yes or no answers evaluating changes related to age, comorbidity, polypharmacy, the quantity of food intake, tooth loss or mouth pain, economic hardship, social contacts, involuntary weight gain or loss and the need for assistance. These questions represented different common risk factors for being malnourished and were scored according to each question's relative importance (Posner et al., 1993). The total score of the DETERMINE spanned from 0 to 21, whereby scores 0 to 2 referring to good nutritional status, 3 to 5 at moderate nutritional risk and 6 or more indicating high nutritional risk.

Table 3.4 The scoring of DETERMINE Checklist

Questions	Score
I have an illness or condition that made me change the kind and/or amount of food I eat.	2
I eat fewer than 2 meals per day.	3
I eat few fruits or vegetables or milk products.	2
I have 3 or more drinks of beer, liquor or wine almost every day	2
I have tooth or mouth problems that make it hard for me to eat.	2
I don't always have enough money to buy the food I need.	4
I eat alone most of the time.	1
I take 3 or more different prescribed or over-the-counter drugs a day.	1
Without wanting to, I have lost or gained 10 pounds in the last 6 months.	2
I am not always physically able to shop, cook and/or feed myself.	2

(Posner et al., 1993)

3.6.6 Need Assessment for Transitional Nutrition Care

The needs of transitional nutrition care among older adults were evaluated using a self-developed questionnaire. There were two sections in the need assessment for transitional nutritional care whereby the first section assessed the food-related and nutrition-care activities post discharge that consisted of six questions whereas the second section assessed the unmet needs of the post-discharge older adults that comprised five questions (Hestevik et al., 2019; Laur et al., 2018). All the questions in this section were closed-ended.

3.7 Procedure

The data collection was conducted from March to May 2021, which was during the ongoing Conditional Movement Control Order (CMCO) in Klang Valley. Each participant spent around 20 minutes completing the participation. Prior to the study, ethical approval was gained from the Ethics Committee for Research Involving Human Subjects Universiti Putra Malaysia (JKEUPM) and approval from the Department of Social Welfare Malaysia was received via the MyResearch application.

First, the target organisations were approached and the data collection procedure and the details of the study were explained. After obtaining the consent from the respective person-in-charge, the details of the study including the study criteria and Google form were blasted on social media, either through Facebook or WhatsApp. The participants who met the study criteria were invited to participate and informed consent was obtained from the subjects who agreed to be involved in this study. Then, the subjects were required to answer a self-administered online questionnaire as shown in the Appendix. The questionnaire contained six sections, including demographic characteristics, health status, functional status, depression status, malnutrition status

and need assessment for transitional nutrition care. The participants needed to complete all the sections in the Google form and submitted the form upon completion. Lastly, the research data were stored safely and securely by the researcher and it would be maintained for a minimum of three years upon completion of the study.

3.8 Pre-testing

Before the study, pre-testing of the online questionnaire was performed on 10% of the actual sample size, which was seven elderly of different ethnicities from the researcher's social network who had fulfilled the required study criteria. However, these seven respondents were excluded from the sample size. Time taken to complete the online questionnaire was determined, whereby the respondents completed the questionnaire within the range of 15 to 30 minutes. The understanding of questions from the questionnaire was also assessed to avoid unclear questions, unfamiliar words and syntactic ambiguity. The feedback provided by the respondents was solicited and the online questionnaire was improvised to ensure the participants will not encounter any ambiguous questions or technical errors during the data collection later. For instance, one respondent was uncertain about the special diet in the last section; therefore, the description of the special diet was added.

3.9 Data Analysis

Statistical analyses were conducted using IBM SPSS Statistics version 25. The normality of the continuous data was determined using a skewness test whereby between +2 and -2 indicated that the data met the assumption of normality. For descriptive analyses, the results were displayed as frequencies and percentages for

categorical data, whereas means and standard deviations were presented for continuous data. If the data were not normally distributed, the results were presented as the median and interquartile range for continuous variables. For bivariate analyses, the Chi-square Test of Independence and Pearson's Product Moment Correlation or Spearman's Rank Order Correlation were used to measure the associations between two variables whereby a *p*-value of < 0.05 was considered statistically significant. Fisher's Exact was used in place of chi-square, particularly when the assumptions of chi-square were violated.

CHAPTER 4

RESULTS

4.1 Demographic Characteristics

Table 4.1 showed the demographic characteristics of the subjects. The age of the subjects spanned from 60 to 85 years old, with a mean age of 69.94 ± 7.48 years. A total of 72.2% of subjects were female, which was more than double as compared to male subjects (27.8%). In terms of ethnicity, Malays and Chinese shared the same proportion which was 47.2% and followed by Indians (5.6%). Regarding marital status, over 50% of the participants were married and still had their spouse, followed by widowed (44.4%) and single (2.8%). For educational level, the majority of the subjects had primary education as the highest level of education, followed by secondary education (30.6%), no formal education (25.0%) and another 8.3% with tertiary education. Based on Malaysia's poverty line income, most of the subjects (75.0%) were from the lower-income category of poverty (≤ RM2208), with a mean monthly household income of RM 2172.22 ± 2636.30. Regarding the living arrangement, almost all the subjects are living with their families (97.2%).

Table 4.1 Demographic characteristics of the subjects (n=36)

Characteristics	n (%)	Mean ± SD	Min-max
Age (years)		69.94 ± 7.48	60-85
60-74	27 (75.0)		
≥ 75	9 (25.0)		
Gender			
Male	10 (27.8)		
Female	26 (72.2)		
Ethnicity			
Malay	17 (47.2)		
Chinese	17 (47.2)		
Indian	2 (5.6)		

Table 4.1 (Cont.) Demographic characteristics of the subjects (n=36)

Marital Status			
Single	1 (2.8)		
Married	19 (52.8)		
Widowed	16 (44.4)		
Educational Level			
No formal education	9 (25.0)		
Primary education	13 (36.1)		
Secondary education	11 (30.6)		
Tertiary education	3 (8.3)		
Monthly Household Income		2172.22 ± 2636.30	0-10000
≤ RM 2208	27 (75.0)		
> RM 2208	9 (25.0)		
Living Arrangement			
Alone	1 (2.8)		
With spouse/child/grandchild	4 (11.1)		
With spouse and child	13 (36.1)		
With child and grandchild	17 (47.2)		
With brother	1 (2.8)		

4.2 Health Status

Table 4.2 showed the results of the health status of the subjects. The length of hospital stays of the subjects ranged from 1 day to 120 days with a median of 5 days, while the interquartile range was reported as 7.25. Most of the subjects were allotted to the medical ward (63.9%) during their hospital stay, followed by the surgical ward (22.2%), orthopaedic ward (8.3%) and Intensive Care Unit (5.6%). In terms of the reason for admission, it was predominated by circulatory system (22.2%), musculoskeletal system or connective tissue (19.4%), digestive system (13.9%) and infectious or parasitic disease (11.1%). The mean number of chronic diseases was 2.00 ± 1.29, with a range of 0 to 5 diseases. The two most common chronic diseases reported were hypertension (75.0%) and diabetes (41.7%).

Table 4.2 Health status of the subjects (n=36)

Characteristics	n (%)	Mean ± SD or Median (Interquartile range)	Min-max
Length of Hospital Stay (Days)		5.00 (9.25-2.00)	1-120
Type of Ward			
Medical	23 (63.9)		
Surgical	8 (22.2)		
Orthopaedic	3 (8.3)		
Intensive Care Unit	2 (5.6)		
Reason of Admission			
Circulatory system	8 (22.2)		
Digestive system	5 (13.9)		
Musculoskeletal system or connective tissue	7 (19.4)		
Infectious or parasitic disease	4 (11.1)		
Others	12 (33.3)		
Number of Chronic Diseases		2.00 ± 1.29	0-5
≤ 1	16 (44.4)		
> 1	20 (55.6)		

4.3 Functional Status

Table 4.3 presented the functional status of the subjects. The functional status of the subjects was indicated by the Lawton Instrumental Activities of Daily Living (IADL) score. Lawton IADL score of the subjects ranged from 0 to 8, with a mean of 5.28 ± 1.88, in which a higher score indicates the better functional status of the elderly. Only one subject was IADL independent, whereas the remaining (97.2%) was IADL dependent, revealing that they required assistance with one or more IADLs. This study showed that over 50% of the subjects were less able to do their shopping (77.8%) and go to places out of walking distance (52.8%), while half of the participants were having difficulties preparing their meals.

Table 4.3 Functional status of the subjects (n=36)

Characteristics	n (%)	Mean ± SD	Min-max
Ability to use telephone			
Less able	2 (5.6)		
Able	34 (94.4)		
Shopping			
Less able	28 (77.8)		
Able	8 (22.2)		
Food preparation			
Less able	18 (50.0)		
Able	18 (50.0)		
Housekeeping			
Less able	5 (13.9)		
Able	31 (86.1)		
Laundry			
Less able	10 (27.8)		
Able	26 (72.2)		
Mode of transportation			
Less able	19 (52.8)		
Able	17 (47.2)		
Responsibility for own medications			
Less able	9 (25.0)		
Able	27 (75.0)		
Ability to handle finances			
Less able	7 (19.4)		
Able	29 (80.6)		
Lawton IADL score		5.28 ± 1.88	0-8
IADL dependent (< 8 points)	35 (97.2)		
IADL independent (8 points)	1 (2.8)		

4.4 Depression Status

Table 4.4 revealed the depression status of the subjects. The depression status of the subjects was indicated by the M-GDS-14 score, which ranged from 0 to 13 with a mean of 4.69 ± 3.14. More than half of the subjects (66.7%) had no depression, whereas 33.3% of the participants were at risk of depression.

Table 4.4 Depression status of the subjects (n=36)

Characteristics	n (%)	Mean ± SD	Min-max
M-GDS-14 score		4.69 ± 3.14	0-13
Normal (0-5 points)	24 (66.7)		
At risk of depression (> 5 points)	12 (33.3)		

4.5 Malnutrition Status

Table 4.5 showed the malnutrition status of the subjects using the DETERMINE Your Nutritional Health Checklist. The mean score of the DETERMINE was 7.36 ± 3.80, which ranged from 2 to 15. Only one subject was in good nutritional status, while 36.1% of the participants were at moderate nutritional risk, whereas 61.1% were at high nutritional risk. When looking at the responses to individual questions, most of the subjects reported that they eat few fruits or vegetables or milk products (80.6%), followed by taking three or more different drugs a day (66.7%) and having an illness or condition that made them change the kind and/or amount of food they eat (63.9%).

Table 4.5 Malnutrition status of the subjects (n=36)

Characteristics	n (%)	Mean ± SD	Min-max
I have an illness or condition that made me change the kind and/or amount of food I eat.			
Yes	23 (63.9)		
No	13 (36.1)		
I eat fewer than 2 meals per day.			
Yes	10 (27.8)		
No	26 (72.2)		
I eat few fruits or vegetables or milk products.			
Yes	29 (80.6)		
No	7 (19.4)		

Table 4.5 (Cont.) Malnutrition status of the subjects (n=36)

I have 3 or more drinks of beer, liquor or wine almost every day.			
Yes	0 (0.0)		
No	36 (100.0)		
I have tooth or mouth problems that make it hard for me to eat.			
Yes	11 (30.6)		
No	25 (69.4)		
I don't always have enough money to buy the food I need.			
Yes	7 (19.4)		
No	29 (80.6)		
I eat alone most of the time.			
Yes	13 (36.1)		
No	23 (63.9)		
I take 3 or more different prescribed or over-the-counter drugs a day.			
Yes	24 (66.7)		
No	12 (33.3)		
Without wanting to, I have lost or gained 10 pounds (4.5kg) in the last 6 months.			
Yes	11 (30.6)		
No	25 (69.4)		
I am not always physically able to shop, cook and/or feed myself.			
Yes	11 (30.6)		
No	25 (69.4)		
DETERMINE score		7.36 ± 3.80	2-15
Good nutritional status (0-2 points)	1 (2.8)		
Moderate nutritional risk (3-5 points)	13 (36.1)		
High nutritional risk (≥ 6 points)	22 (61.1)		

4.6 Need Assessment for Transitional Nutrition Care

Table 4.6 showed the need assessment for transitional nutrition care that included the food-related and nutrition-care activities post discharge and the unmet needs of the post-discharge elderly. Only one-third of the subjects had consulted a dietitian since discharge, whereas 55.6% of the participants followed a special diet after discharge. A quarter of the subjects were reported to be on oral nutritional supplements (ONS) since discharge, while more than half of the subjects reported their diet was not different from before hospitalisation. Regarding the cooking activities at home, 61.1% of the respondents' meals were prepared by someone else. In terms of the frequency of eating with others, half of the respondents reported that they ate their meals with others every day.

One-third of the subjects did not know how to manage their illness in terms of food and nutrition after discharge. Only four subjects (11.1%) reported that they did not have family or social networks that can support them nutritionally after discharge. Most of the subjects (88.9%) agreed that nutritional care is an integral part to improve health outcomes. Approximately two-thirds of the subjects reported that they require nutrition information during the transition from hospital to home, but 25.0% were uncertain about this. Furthermore, 58.3% of the participants think they could adhere to nutritional treatment or advice from the dietitian but the remaining were not sure about it.

Table 4.6 Need assessment for transitional nutrition care of the subjects (n=36)

Characteristics	n (%)
Food-related and Nutrition-care Activities Post Discharge	
Consult a dietitian since discharge	
Yes	12 (33.3)
No	24 (66.7)
Follow special diet after discharge	
Yes	20 (55.6)
No	16 (44.4)
On oral nutritional supplements (ONS) since discharge	
Yes	9 (25.0)
No	27 (75.0)
Diet different than before hospitalisation	
Yes	17 (47.2)
No	19 (52.8)
Cooking at home	
By me	14 (38.9)
By someone else	22 (61.1)
Frequency eating with others	
Every day	18 (50.0)
4 - 6 days per week	7 (19.4)
2 - 3 days per week	5 (13.9)
Once a week	3 (8.3)
Seldom	2 (5.6)
Never	1 (2.8)
Unmet Needs of the Post-discharge Elderly	
Know how to manage illness in terms of food and nutrition after discharge	
Yes	24 (66.7)
No	12 (33.3)
Have family or social networks that are capable of providing nutrition support after discharge	
Yes	32 (88.9)
No	4 (11.1)
Nutritional care is an integral part to improve health outcomes	
Strongly agree	10 (27.8)
Agree	22 (61.1)
Neutral	3 (8.3)
Disagree	0 (0.0)
Strongly disagree	1 (2.8)

Table 4.6 (Cont.) Need assessment for transitional nutrition care of the subjects (n=36)

Require nutrition information during transition from hospital to home	
Yes	23 (63.9)
No	4 (11.1)
Not sure	9 (25.0)
Able to adhere to nutritional treatment or advices from the dietitian	
Yes	21 (58.3)
No	0 (0.0)
Not sure	15 (41.7)

4.7 Hypothesis Testing

Table 4.7 showed the associations between demographic characteristics and malnutrition status. There were no significant associations between age, gender, ethnicity, marital status, educational level, monthly household income and living arrangement with malnutrition status, indicating that the demographic characteristics did not associate the chance of post-discharge elderly for presenting malnutrition.

Table 4.7 Associations between demographic characteristics and malnutrition status of the subjects (n=36)

Characteristics	**Well-malnourished (n=1)**	**At risk of malnutrition (n=35)**	**$\chi 2$**	***r*-value**	***p*-value**
Age (years)				0.170	[a] 0.320
60-74	0 (0.0)	27 (77.1)			
≥ 75	1 (100.0)	8 (22.9)			
Gender			0.396		[b] 1.000
Male	0 (0.0)	10 (28.6)			
Female	1 (100.0)	25 (71.4)			
Ethnicity			0.920		[b] 1.000
Malay	0 (0.0)	17 (48.6)			
Non-Malay	1 (100.0)	18 (51.4)			

Table 4.7 (Cont.) Associations between demographic characteristics and malnutrition status of the subjects (n=36)

Marital Status			0.920		[b] 1.000
Single/Widowed	0 (0.0)	17 (48.6)			
Married	1 (100.0)	18 (51.4)			
Educational Level			3.086		[b] 0.250
No formal education	1 (100.0)	8 (22.9)			
Formal education	0 (0.0)	27 (77.1)			
Monthly Household Income				-0.168	[a] 0.328
≤ RM 2208	0 (0.0)	27 (77.1)			
> RM 2208	1 (100.0)	8 (22.9)			
Living Arrangement			0.029		[b] 1.000
Living alone	0 (0.0)	1 (2.9)			
Living with others	1 (100.0)	34 (97.1)			

[a] Pearson correlation test
[b] Fisher's exact test

Table 4.8 indicated the associations between health status and malnutrition. As depicted in the table below (Table 4.8), there was a significant association between the number of chronic diseases and malnutrition (r = 0.449, p = 0.006).

Table 4.8 Associations between health status and malnutrition status of the subjects (n=36)

Characteristics	**Well-malnourished (n=1)**	**At risk of malnutrition (n=35)**	**χ2**	***r*-value**	***p*-value**
Length of Hospital Stay (Days)				0.014	[c] 0.936
Type of Ward			0.581		[b] 1.000
Medical	1 (100.0)	22 (62.9)			
Other wards	0 (0.0)	13 (37.1)			
Reason of Admission					
Circulatory system			0.294		[b] 1.000
Yes	0 (0.0)	8 (22.9)			
No	1 (100.0)	27 (77.1)			

Table 4.8 (Cont.) Associations between health status and malnutrition status of the subjects (n=36)

Digestive system			0.166	[b] 1.000
Yes	0 (0.0)	5 (14.3)		
No	1 (100.0)	30 (85.7)		
Musculoskeletal system or connective tissue			0.248	[b] 1.000
Yes	0 (0.0)	7 (20.0)		
No	1 (100.0)	28 (80.0)		
Infectious or parasitic disease			0.129	[b] 1.000
Yes	0 (0.0)	4 (11.4)		
No	1 (100.0)	31 (88.6)		
Others			2.057	[b] 0.333
Yes	1 (100.0)	11 (31.4)		
No	0 (0.0)	24 (68.6)		
Number of Chronic Diseases			0.449	[a] 0.006**

**Correlation is significant at the 0.01 level (2-tailed)
[a] Pearson correlation test
[b] Fisher's exact test
[c] Spearman's rank-order test

Table 4.9 tabulated the association between functional status and malnutrition status. However, there was no statistically significant association observed between functional status and malnutrition.

Table 4.9 Association between functional status and malnutrition status of the subjects (n=36)

Characteristics	**Well-malnourished (n=1)**	**At risk of malnutrition (n=35)**	**$\chi 2$**	***p*-value**
Functional Status			0.029	[a] 1.000
IADL dependent	1 (100.0)	34 (97.1)		
IADL independent	0 (0.0)	1 (2.9)		

[a] Fisher's exact test

Table 4.10 depicted the association between depression status and malnutrition. As shown in the table below (Table 4.10), no significance was found between depression status and malnutrition status in the current finding.

Table 4.10 Association between depression status and malnutrition status of the subjects (n=36)

Characteristics	Well-malnourished (n=1)	At risk of malnutrition (n=35)	$\chi 2$	*p*-value
Depression Status			2.057	[a] 0.333
Normal	0 (0.0)	24 (68.6)		
At risk of depression	1 (100.0)	11 (31.4)		

[a] Fisher's exact test

CHAPTER 5

DISCUSSION

The main objective of this study was to determine the proportion of malnutrition and the associations between demographic characteristics, health status, functional status and depression status with malnutrition among post-discharge elderly in Klang Valley. At the end of the study, 36 respondents were recruited, which was 64% of the minimum sample size needed in this research. This was attributable to the limited number of elderly in the sampling channels who fulfilled the study criteria, specifically the criterion of post-discharge from any hospitals within the duration of at least one week ago to one year ago.

5.1 Demographic Characteristics

In this study, the mean age reported was similar to the data from the National Health and Morbidity Survey (NHMS) 2018, with a mean age of 68.30 ± 6.95 years (Institute for Public Health, 2019). Regarding ethnicity, both Malay and Chinese groups shared the same proportion, which may be due to the purposive selection of a few sampling channels that was predominated by Malays and Chinese. Other than that, a high percentage of the subjects were living with others. This finding was similar to the results proposed by Murat et al. (2019), whereby 96.5% of the community-dwelling older adults were living with others.

5.2 Health Status

The length of stay of the subjects in the hospital was shorter as compared to the study by Chen et al. (2009) in Taiwan, with a mean of 15.67 ± 9.70 days. The conflict of findings could be caused by different inclusion criteria on the length of stay

and the performance and efficiency in the health care system of different countries. In terms of the reason for admission, the circulatory system was revealed to be the highest prevalence among the diseases system in this study but lower than other local studies (Sakinah & Tan, 2012, Tan et al., 2016). The mean number of chronic diseases was slightly lower than a local study among community-dwelling elderly with a median of 3 (Lim et al., 2017). The three most common chronic health conditions reported were cardiovascular, endocrine and bone and joint disorders. The discrepancy in the findings might be due to the previous study included urologic and ophthalmic disorders as chronic health problems. However, these options were not listed in the present questionnaire.

5.3 Functional Status

In terms of instrumental activities of daily living, the respondents showed a mean value of 5.28 ± 1.88 using the Lawton IADL instrument. As compared to the findings from Murat et al. (2017), the mean score of community-dwelling elderly (*M* = 6.76, *SD* = 1.37) was higher than the mean value of Lawton IADL score among post-discharge elderly in this study. This contradiction of findings may be due to hospitalisation for acute medical illness often expedites disability in daily activities. Zisberg et al. (2016) found that approximately one-third of the functionally independent elderly at admission became IADL dependent one month after acute hospitalisation. Post-discharge older adults were troublesome to manage IADL activities and their ability to carry out many daily activities was declined (Elisabeth et al., 2007). This is because many elderly had prolonged periods of bed rest during hospitalisation that triggers the loss of muscle mass and strength due to inactivity (White et al., 2012). In a study that followed the elderly who remain independent in

self-care and mobility by the time of discharge, 27.0% experienced a new onset of IADL dependency by a month post-hospitalisation period. (Zisberg et al., 2016).

5.4 Depression Status

The results showed that 33.3% reported being at risk of depression. This finding was slightly higher than a local study conducted using the same instrument that reported a prevalence of 25.9% among the elderly residing in the People's Housing Project (PPR) in Kuala Lumpur (Norazman et al., 2020). These may be due to the demographic characteristics and functional status of the elderly in the current study, whereby 47.2% of the subjects were either single or widowed, 75.0% were below the national poverty line income and 97.2% of the participants were IADL dependent.

A Turkey study showed that depression was significantly associated with being single or divorced and perceived income inadequacy (Yaka et al., 2014). Older persons who perceived their income as low were more likely to have depressive symptoms than the others. According to Khan et al. (2010), older adults who were single or widowed tend to have depressive symptoms as they may feel loneliness and loss of interest due to lack of companionship. In contrast, married people are exposed to lesser stressful experiences throughout their marriage and thus, reduce the risk of being depressed. In addition, it was reported that the risk of depressive symptoms among the elderly increases if functional limitations are burdened with chronic diseases (Vanoh et al., 2016). Moreover, this study was conducted during the COVID-19 pandemic and a local study indicated that one of the individual variables significantly associated with depressive symptoms were those were assessed after the COVID-19 was declared as a global pandemic (Abdullah et al., 2021).

5.5 Malnutrition Status

Based on the results, the malnutrition status among the post-discharge elderly, which includes moderate nutritional risk and high nutritional risk was 97.2%. The finding of this study was much higher as compared to Norazman et al. (2020) and Suzana et al. (2012) that reported 32.9% and 42.5% of the malnutrition risk, respectively among community-dwelling older adults. The discrepancy of the findings may attributable to different instruments used to determine the malnutrition proportion among the elderly as both of the local studies used the MNA-SF. According to a local study conducted in publicly funded shelter homes, 58.7% of older adults were at nutritional risk using DETERMINE (Visvanathan et al., 2005). This could be due to older adults returning home from hospitalisation may compromise their nutritional status as they require nutrition for both recovery and the maintenance of good health (Vaudin et al., 2018). Also, unlike their younger counterparts, the elderly do not regain their appetite or carry on their previous food intake when they recuperate, which leads to continued weight loss (Pedersen et al., 2015).

5.6 Need Assessment for Transitional Nutrition Care

Based on the results, 33.3% of the subjects received nutrition care by consulting a dietitian since discharge. Generally, on admission, a nutritional screening will be conducted by the staff nurse to identify the patient who may be at nutritional risk, and the medical officer will make a referral to the dietitian. Upon discharge, if the patient requires any special nutritional needs, the medical team will involve dietetics services in the discharge plan to monitor the nutritional status and the potential need for nutritional supplementation. However, as nutritional screening is often not performed as the patient transition from hospital to home, hospitalised

geriatric patients may be at risk of malnutrition due to several factors such as delay of nutrition intervention, dissatisfaction towards hospital diet and disease or healing process that may increase nutrient requirements and limit food intake (Shahar et al., 2002). Furthermore, over one-third of the subjects followed a special diet since discharge and reported that their diet differed from before hospitalisation. This may be due to some nutrition advice was given by the physician instead of the dietitian before discharge.

Approximately 90.0% of the subjects agreed that nutritional care is an integral part to improve their health outcomes and more than half of them require nutrition-related information during the transition from hospital to home. However, one-third of the subjects did not know how to manage their illness in terms of food and nutrition after discharge. Hence, it is important to involve dietitians in the discharge process that facilitate the detection of nutritional risk and education of the geriatric patients and their family caregivers on appropriate action to address this issue (Vaudin et al., 2018). Most of the subjects have family or social networks that can provide nutrition support after discharge as most of them are living with family. According to Hestevik et al. (2020), family caregivers could support the patients' nutritional well-being such as accompanying them during meals; still, they were not involved or informed by the healthcare professionals regarding nutrition care, and some even do not have sufficient knowledge about the elderly's nutritional situations and needs. Therefore, it is significant to involve family caregivers in the nutrition care plan during discharge.

5.7 Hypothesis Testing

Ha1: There are significant associations between demographic characteristics and malnutrition status among post-discharge elderly in Klang Valley.

In terms of age, the result in this study showed no significant association between age and malnutrition status among post-discharge elderly, which was inconsistent with the previous study. A previous study found a significant association between malnutrition and age at or greater than 80 years old (Yap et al., 2019). The variations of the result may be affected by the age group of the elderly as the mean age of the participants in this study was 74.4 ± 8.7 years.

Gender had been found to have no association with malnutrition status among post-discharge older adults in this study, and it was consistent with other local studies (Muhamad et al., 2019; Yap et al., 2019). In terms of ethnicity, no significant association was found in the current study and it was congruent with a recent local study (Norazman et al., 2020). However, a local study indicated that ethnicity was significantly associated with malnutrition, which may be due to a better distribution of respondents between ethnicities (Chen et al., 2012). Furthermore, a local study revealed a statistically significant association between income level and malnutrition risk as the income level is a pivotal economic factor that can influence nutritional status among community-dwelling older adults as it limits the accessibility to various food (Muhamad et al., 2019). However, no significant association was found between household income and malnutrition status in the current study. Hence, there was no significant correlation between demographic characteristics and malnutrition status among post-discharge elderly.

Ha2: There are significant associations between health status and malnutrition status among post-discharge elderly in Klang Valley.

Regarding the health status, this study found that there was a significant positive correlation between the number of chronic diseases and malnutrition (r = 0.449, p = 0.006), which was consistent with other findings (Norazman et al., 2020; Visvanathan et al., 2005). One probable explanation is that the acute condition responsible for the hospital admission has weakened the patient's overall health, and it may compound this problem with the exacerbations of previously stable comorbidities that lead to increased nutritional requirements (Sharma et al., 2017). However, no significance was found between length of hospital stay and malnutrition status in the current finding, which may be due to the time point of data collection could be too long from their hospital admission. According to Holst and Rasmussen (2013), a short length of hospitalisation could be the reason for simply not always have sufficient time to come out with a detailed nutrition plan. Therefore, there were no significant associations between health status and malnutrition status except for the number of chronic diseases.

Ha3: There is significant association between functional status and malnutrition status among post-discharge elderly in Klang Valley.

For the functional status, this study failed to find any important relationship between instrumental activities of daily living and malnutrition status among post-discharge elderly. This finding was contradicted with other studies that reported that functional ability on IADL was inversely associated with malnutrition among community-dwelling older adults (Bakhtiari et al., 2020; Suzana et al., 2013). The disparity might be attributable to different instruments used in these studies to evaluate

the malnutrition status which were the full Mini Nutritional Assessment (MNA) and MNA-SF despite using the same tool for IADL. Functional dependency in daily activities such as food procurement and preparation may render the elderly being vulnerable to malnutrition. The hypothesis between IADL with DETERMINE score was rejected.

Ha4: There is significant association between depression status and malnutrition status among post-discharge elderly in Klang Valley.

There was no association between depression status and malnutrition; hence, the finding was similar to a France study that involved community-dwelling elderly in the urban area (Torres et al., 2014). However, there was a study that reported that depression and nutritional status were strongly correlated, particularly in the young-old elderly (age 65–74 years) (Yoshimura et al., 2013). Another local study that involved older adults in the rural area indicated that malnutrition risk was associated with depression, whereby having depressive symptoms could cause loss of appetite and reduced food intake that in turn led to ketosis, and further suppressed appetite contributing to malnutrition (Suzana et al., 2013). This may be caused by the differences in screening tools used for depressive risk assessment. Anyanwu et al. (2011) also found that older adults who are experiencing depressive symptoms may feel less driven to improve their wellness through compliance with the medical care regimen prescribed at discharge and may be less likely to consume adequate calories to fulfill energy and nutrient requirements. The alternate hypothesis was rejected.

CHAPTER 6

CONCLUSION

6.1 Conclusion

In the present study, the proportion of malnutrition among the post-discharge elderly assessed using the DETERMINE Your Nutritional Health Checklist was 97.2%. A significant association was found between the number of chronic diseases and malnutrition. However, no significant associations were found between demographic characteristics, length of hospital stay, type of ward, reason of admission, functional status and depression status with malnutrition status.

The current finding of this study showed that there was a high proportion of post-discharge elderly at risk of being malnourished, indicating the nutritional status issue deserves closer attention by healthcare providers. An additional nutritional screening prior to discharge should be conducted, including the evaluation of the elderly's ability to adequately and properly nourish themselves at home. Also, there is a need to develop transitional nutrition care guidelines or practices to address malnutrition among the elderly, including nutrition support after discharge as the elderly do not have sufficient information on how to ameliorate their nutritional status after hospitalisation. Affirmation of the findings by future research is significant to create a better understanding of the factors associated with malnutrition among post-discharge elderly and further plan for the transitional nutrition care guidelines. Hence, the frequency of preventable hospital readmission and health care costs can be reduced and the older adults will have a better quality of life.

6.2 Strengths

The present study had provided new information to local studies on the malnutrition status among post-discharge elderly. Even though this study involved a relatively small sample, it could provide some insights regarding the nutritional risk issue as there is a paucity of data available in this domain. Moreover, reliable and validated instruments in local studies were used in the data collection, such as the Lawton Instrumental Activities of Daily Living – Malay version (IADL-MV) and 14-items Malay version of the Geriatric Depression Scale (Kadar et al., 2018; Teh & Hasanah, 2005).

6.3 Limitations

Several limitations were noted in the present study. Firstly, it failed to ascribe a direct causal relationship between the examined variables and malnutrition status due to its cross-sectional design. Furthermore, this study did not achieve the minimum sample size calculated due to the difficulty of obtaining respondents through the selected sampling channels and the inconvenience of the elderly to use an online platform for data collection. Another limitation included purposive sampling, which is not the gold standard compared to random sampling. As a result, there is a possibility of bias and the inability to generalise research findings. Moreover, the DETERMINE Your Nutritional Health Checklist had not been validated for use in the local population. The logical reason for using the DETERMINE instead of other screening tools was due to its simplicity and practicability to be used in the online survey as it does not require biochemical and anthropometric measures.

6.4 Recommendations

There are a few recommendations that can be taken for future research to improve and expand on this study. It is suggested that future studies in this area can follow up the patients' nutritional health over time, including at discharge and post-discharge instead of making this evaluation only at the follow-up. This is because a clear picture of how nutrition changes is needed to examine the determinants of nutritional health during and post-hospitalisation. Moreover, further studies should recruit post-discharge elderly who will be followed up in the outpatient clinics to obtain more respondents. Thus, larger sample size can be acquired that enhances the study power. If possible, it is recommended to recruit respondents from every single state in Peninsular Malaysia or Malaysia to generalise the findings of malnutrition among post-discharge elderly. Physical data collection is also highly encouraged as a face-to-face interview increases data accuracy and reduces the possibility of bias compared to a self-reported questionnaire.

This study revealed that malnutrition risk was high among the post-discharge elderly. Therefore, policymakers and healthcare professionals should develop comprehensive guidelines and best practices to screen and address malnutrition in the hospital through discharge planning or follow-up appointment in outpatient clinics. Also, patient education should be emphasised to engage the elderly or their caregivers in nutrition care discussions and nutrition-related needs support.

REFERENCES

Abdullah, M. F. I. L., Yusof, H. A., Shariff, N. M., Hami, R., Nisman, N. F., & Law, K. S. (2021). Depression and anxiety in the Malaysian urban population and their association with demographic characteristics, quality of life, and the emergence of the COVID-19 pandemic. *Current Psychology*. https://doi.org/10.1007/s12144-021-01492-2

Ahmed, T., & Haboubi, N. (2010). Assessment and management of nutrition in older people and its importance to health. *Clinical Interventions in Aging*, *5*, 207–216. https://doi.org/10.2147/cia.s9664

Allard, J. P., Keller, H., Teterina, A., Jeejeebhoy, K. N., Laporte, M., Duerksen, D. R., Gramlich, L., Payette, H., Bernier, P., Davidson, B., & Lou, W. (2015). Factors associated with nutritional decline in hospitalised medical and surgical patients admitted for 7 d or more: A prospective cohort study. *British Journal of Nutrition*, *114*(10), 1612–1622. https://doi.org/10.1017/S0007114515003244

Anyanwu, U. O., Sharkey, J. R., Jackson, R. T., & Sahyoun, N. R. (2011). Home food environment of older adults transitioning from hospital to home. *Journal of Nutrition in Gerontology and Geriatrics*, *30*(2), 105–121. https://doi.org/10.1080/21551197.2011.566525

Avelino-Silva, T. J., & Jaluul, O. (2017). Malnutrition in hospitalized older patients: Management strategies to improve patient care and clinical outcomes. *International Journal of Gerontology*, *11*(2), 56–61. https://doi.org/10.1016/j.ijge.2016.11.002

Bakhtiari, A., Pourali, M., & Omidvar, S. (2020). Nutrition assessment and geriatric associated conditions among community dwelling Iranian elderly people. *BMC Geriatrics*, *20*(1), 1–10. https://doi.org/10.1186/s12877-020-01668-8

Boyd, C. M., Landefeld, C. S., Counsell, S. R., Palmer, R. M., Fortinsky, R. H., Kresevic, D., Burant, C., & Covinsky, K. E. (2008). Recovery of activities of daily living in older adults after hospitalization for acute medical illness. *Journal of the American Geriatrics Society*, *56*(12), 2171–2179. https://doi.org/10.1111/j.1532-5415.2008.02023.x

Cederholm, T., Barazzoni, R., Austin, P., Ballmer, P., Biolo, G., Bischoff, S. C., Compher, C., Correia, I., Higashiguchi, T., Holst, M., Jensen, G. L., Malone, A., Muscaritoli, M., Nyulasi, I., Pirlich, M., Rothenberg, E., Schindler, K., Schneider, S. M., de van der Schueren, M. A. E., … Singer, P. (2017). ESPEN guidelines on definitions and terminology of clinical nutrition. *Clinical Nutrition*, *36*(1), 49–64. https://doi.org/10.1016/j.clnu.2016.09.004

Chen, C. C. H., Schilling, L. S., & Lyder, C. H. (2001). A concept analysis of malnutrition in the elderly. *Journal of Advanced Nursing*, *36*(1), 131–142. https://doi.org/10.1046/j.1365-2648.2001.01950.x

Chen, C. C. H., Tang, S. T., Wang, C., & Huang, G. H. (2009). Trajectory and determinants of nutritional health in older patients during and six-month post-hospitalisation. *Journal of Clinical Nursing*, *18*(23), 3299–3307. https://doi.org/10.1111/j.1365-2702.2009.02932.x

Chen, C. T., Tung, H. H., Chen, Y. C., Lee, H. F., Wang, C. J., & Lin, W. H. (2019). Depressive symptoms and nutritional status in the frail older adults. *Archives of Gerontology and Geriatrics*, *83*, 96–100. https://doi.org/10.1016/j.archger.2019.03.023

Chen, S. T., Ngoh, H. J., & Harith, S. (2012). Prevalence of malnutrition among institutionalized elderly people in Northern Peninsular Malaysia: Gender, ethnicity and age-specific. *Sains Malaysiana*, *41*(1), 141–148.

Coleman, E. A., & Boult, C. (2003). Improving the quality of transitional care for persons with complex care needs. *Journal of the American Geriatrics Society*, *51*(4), 556-7. https://10.1046/j.1532-5415.2003.51186.x

Crichton, M., Craven, D., Mackay, H., Marx, W., De Van Der Schueren, M., & Marshall, S. (2019). A systematic review, meta-analysis and meta-regression of the prevalence of protein-energy malnutrition: Associations with geographical region and sex. *Age and Ageing*, *48*(1), 38–48. https://doi.org/10.1093/ageing/afy144

Damayanthi, H. D. W. T., Moy, F. M., Abdullah, K. L., & Dharmaratne, S. D. (2018). Prevalence of malnutrition and associated factors among community-dwelling older persons in Sri Lanka: A cross-sectional study. *BMC Geriatrics*, *18*(1), 1–10. https://doi.org/10.1186/s12877-018-0892-2

Daniel, W. W. (1999). *Biostatistics: A foundation for analysis in the health sciences* (7th ed.). John Wiley & Sons.

Dao, A. T. M., Nguyen, V. T., Nguyen, H. V., & Nguyen, L. T. K. (2018). Factors associated with depression among the elderly living in urban Vietnam. *BioMed Research International*. https://doi.org/10.1155/2018/2370284

Department of Economic and Social Affairs. (2017). *World population ageing 2017 - highlights*. United Nations.

Department of Statistics Malaysia. (2017). *Abridged life tables Malaysia 2015-2017*.

Department of Statistics Malaysia. (2020). *Abridged life tables Malaysia 2018-2020.*

Department of Statistics Malaysia. (2020). *Household Income and Basic Amenities Survey Report 2019*. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=120&bul_id=TU00TmRhQ1N5TUxHVWN0T2VjbXJYZz09&menu_id=amVoWU54UTl0a21NWmdhMjFMMWcyZz09

Donini, L. M., Savina, C., & Cannella, C. (2003). Eating habits and appetite control in the elderly: The anorexia of aging. *International Psychogeriatrics*, *15*(1), 73–87. https://doi.org/10.1017/S1041610203008779

Elisabeth, J., Gunnar, L., Palmi V., J., & Bucht, G. (2007). Functional status in elderly people after acute care and quality of life at one-year follow-up. *Health Science Journal*, *1*, 1–14.

Godbole, V. Y., Shah, M. R., Mehta, K. G., & Shah, D. N. (2020). Assessment of nutritional and functional status of patients attending the geriatric clinic of a tertiary care hospital in Gujarat, India. *Singapore Medical Journal*, *61*(9), 492–496. https://doi.org/10.11622/smedj.2020131

Graf, C. (2008). The Lawton Instrumental Activities of Daily Living Scale. *American Journal of Nursing*, *108*(4), 52–62. https://doi.org/10.1097/01.naj.0000314810.46029.74

Guzmán, J. M., Pawliczko, A., Beales, S., Till, C., & Voelcker, I. (2012). *Ageing in the twenty-first century: A celebration and a challenge*. United Nations Population Fund.

Hamid, T. A. (2018, December 4-5). *Demography & population ageing in Malaysia: Interstate comparisons and analysis* [Presentation]. South-south Conference on Demography & Population Ageing, Kuala Lumpur, Malaysia. https://sscdpa2018.files.wordpress.com/2018/10/malaysia.pdf

Hestevik, C. H., Molin, M., Debesay, J., Bergland, A., & Bye, A. (2019). Older persons' experiences of adapting to daily life at home after hospital discharge: A qualitative metasummary. *BMC Health Services Research*, *19*(1), 1–13. https://doi.org/10.1186/s12913-019-4035-z

Hestevik, C. H., Molin, M., Debesay, J., Bergland, A., & Bye, A. (2020). Older patients' and their family caregivers' perceptions of food, meals and nutritional care in the transition between hospital and home care: A qualitative study. *BMC Nutrition*, *6*(1), 1–13. https://doi.org/10.1186/s40795-020-00335-w

Holland, D. E., & Harris, M. R. (2007). Discharge planning, transitional care, coordination of care, and continuity of care: Clarifying concepts and terms from the hospital perspective. *Home Health Care Services Quarterly*, *26*(4), 3–19. https://doi.org/10.1300/J027v26n04_02

Holst, M., & Rasmussen, H. H. (2013). Nutrition therapy in the transition between hospital and home: An investigation of barriers. *Journal of Nutrition and Metabolism*, *2013*, 3299–3307. https://doi.org/10.1155/2013/463751

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2013). *Designing clinical research: An epidemiologic approach* (4th ed.). Lippincott, Williams & Wilkins.

Inciong, J. F. B., Chaudhary, A., Hsu, H. S., Joshi, R., Seo, J. M., Trung, L. V., Ungpinitpong, W., & Usman, N. (2020). Hospital malnutrition in northeast and southeast Asia: A systematic literature review. *Clinical Nutrition ESPEN, 39*, 30–45. https://doi.org/10.1016/j.clnesp.2020.06.001

Institute for Public Health. (2019). *National Health and Morbidity Survey (NHMS) 2018: Elderly Health. Vol. I: Methodology and General Findings.* National Institutes of Health, Ministry of Health Malaysia.

Institute for Public Health. (2019). *National Health and Morbidity Survey (NHMS) 2018: Elderly Health. Vol. 2: Elderly Health Findings.* National Institutes of Health, Ministry of Health Malaysia.

Johansson, Y., Bachrach-Lindström, M., Carstensen, J., & Ek, A. C. (2009). Malnutrition in a home-living older population: Prevalence, incidence and risk factors. A prospective study. *Journal of Clinical Nursing, 18*(9), 1354–1364. https://doi.org/10.1111/j.1365-2702.2008.02552.x

Kadar, M., Ibrahim, S., Razaob, N. A., Chai, S. C., & Harun, D. (2018). Validity and reliability of a Malay version of the Lawton Instrumental Activities of Daily Living scale among the Malay speaking elderly in Malaysia. *Australian Occupational Therapy Journal, 65*(1), 63-68. https://doi.org/10.1111/1440-1630.12441

Kaiser, M. J., Bauer, J. M., Rämsch, C., Uter, W., Guigoz, Y., Cederholm, T., Thomas, D. R., Anthony, P. S., Charlton, K. E., Maggio, M., Tsai, A. C., Vellas, B., & Sieber, C. C. (2010). Frequency of malnutrition in older adults: A multinational perspective using the Mini Nutritional Assessment. *Journal of the American Geriatrics Society, 58*(9), 1734–1738. https://doi.org/10.1111/j.1532-5415.2010.03016.x

Katsas, K., Mamalaki, E., Kontogianni, M. D., Anastasiou, C. A., Kosmidis, M. H., Varlamis, I., Hadjigeorgiou, G. M., Dardiotis, E., Sakka, P., Scarmeas, N., & Yannakoulia, M. (2019). Malnutrition in older adults: Correlations with social, diet-related, and neuropsychological factors. *Nutrition, 71*, 110640. https://doi.org/10.1016/j.nut.2019.110640

Khan, A. R., Manan, A. A., & Rohana, S. (2010). Depression among the elderly Malays living in rural Malaysia. *The Internet Journal of Public Health, 1*(2). https://doi.org/10.5580/6e6

Krzymińska-Siemaszko, R., Mossakowska, M., Skalska, A., Klich-Rączka, A., Tobis, S., Szybalska, A., Cylkowska-Nowak, M., Olszanecka-Glinianowicz, M., Chudek, J., & Wieczorowska-Tobis, K. (2015). Social and economic correlates of malnutrition in Polish elderly population: The results of PolSenior study. *Journal of Nutrition, Health and Aging, 19*(4), 397–402. https://doi.org/10.1007/s12603-014-0572-7

Kushwaha, S., Khanna, P., Srivastava, R., Jain, R., Singh, T., & Kiran, T. (2020). Estimates of malnutrition and risk of malnutrition among the elderly (≥60

years) in India: A systematic review and meta-analysis. *Ageing Research Reviews*, *63*, 101137. https://doi.org/10.1016/j.arr.2020.101137

Laur, C., Curtis, L., Dubin, J., McNicholl, T., Valaitis, R., Douglas, P., Bell, J., Bernier, P., & Keller, H. (2018). Nutrition care after discharge from hospital: An exploratory analysis from the More-2-Eat Study. *Healthcare*, *6*(1), 9. https://doi.org/10.3390/healthcare6010009

Lawton, M. P., & Brody, E. M. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. *The Gerontologist*, *9*(3), 179–186. https://doi.org/10.1093/geront/9.3_Part_1.179

Leij-Halfwerk, S., Verwijs, M. H., van Houdt, S., Borkent, J. W., Guaitoli, P. R., Pelgrim, T., Heymans, M. W., Power, L., Visser, M., Corish, C. A., & de van der Schueren, M. A. E. (2019). Prevalence of protein-energy malnutrition risk in European older adults in community, residential and hospital settings, according to 22 malnutrition screening tools validated for use in adults ≥65 years: A systematic review and meta-analysis. *Maturitas*, *126*, 80–89. https://doi.org/10.1016/j.maturitas.2019.05.006

Lim, L. M., McStea, M., Chung, W. W., Azmi, N. N., Aziz, S. A. A., Alwi, S., Kamarulzaman, A., Kamaruzzaman, S. B., Chua, S. S., & Rajasuriar, R. (2017). Prevalence, risk factors and health outcomes associated with polypharmacy among urban community-dwelling older adults in multiethnic Malaysia. *PLoS ONE*, *12*(3), 1–18. https://doi.org/10.1371/journal.pone.0173466

Mogensen, K. M., & DiMaria-Ghalili, R. A. (2015). Malnutrition vigilance during care transitions. *Today's Geriatric Medicine*, *8*(4),12.

Moreira, N. C. F., Krausch-Hofmann, S., Matthys, C., Vereecken, C., Vanhauwaert, E., Declercq, A., Bekkering, G. E., & Duyck, J. (2016). Risk factors for malnutrition in older adults: A systematic review of the literature based on longitudinal data. *Advances in Nutrition*, *7*(3), 507–522. https://doi.org/10.3945/an.115.011254

Muhamad, A. R., Hamirudin, A. H., Zainudin, N., Sidek, S., & Rahman, N. A. A. (2019). Nutritional risk according to Mini Nutritional Assessment-Short Form among community dwelling elderly in Kuantan, Pahang: A pilot study. *International Journal of Allied Health Sciences*, *3*(2), 658–667.

Murat, F., Ibrahim, Z., Chan, Y. M., & Adznam, S. N. A. (2017). Assessment of functional status through self-reported physical disability and performance-based functional limitations among elderly. *International Journal of Humanities and Social Science Invention*, *6*(3), 12–16.

Murat, M. F., Ibrahim, Z., Adznam, S. N. A., & Chan, Y. M. (2019). Prevalence and determinants of Instrumental Activities of Daily Living (IADL) disability among community dwelling elderly in a semi-urban setting in Peninsular

Malaysia. *Malaysian Journal of Nutrition*, *25*(1), 13–26. https://doi.org/10.31246/mjn-2018-0142

Naylor, M. D., Aiken, L. H., Kurtzman, E. T., Olds, D. M., & Hirschman, K. B. (2011). The care span: The importance of transitional care in achieving health reform. *Health Affairs*, *30*(4), 746–754. https://doi.org/10.1377/hlthaff.2011.0041

Noe, M. T. N., Saw, Y. M., Saw, T. N., Kyaw, Y. P., Zin, P. E., Cho, S. M., Kariya, T., Yamamoto, E., Win, H. H., Wann, T., & Hamajima, N. (2020). Assessment of nutritional status and risk factors for malnutrition among the elderly in Loikaw, Myanmar. *Nutrition*, *79–80*, 110933. https://doi.org/10.1016/j.nut.2020.110933

Norazman, C. W., Adznam, S. N., & Jamaluddin, R. (2020). Malnutrition as key predictor of physical frailty among Malaysian older adults. *Nutrients*, *12*(6), 1713. https://doi.org/10.3390/nu12061713

Orimo, H., Ito, H., Suzuki, T., Araki, A., Hosoi, T., & Sawabe, M. (2006). Reviewing the definition of "elderly." *Geriatrics and Gerontology International*, *6*(3), 149–158. https://doi.org/10.1111/j.1447-0594.2006.00341.x

Pedersen, J. L., Pedersen, P. U., & Damsgaard, E. M. (2015). *Nutritional follow-up after discharge of malnourished geriatric patients - Design of a randomized clinical study*. *4*(2), 92–101. http://www.jarcp.com/1020-nutritional-follow-up-after-discharge-of-malnourished-geriatric-patients-design-of-a-randomized-clinical-study.html

Posner, B. M., Jette, A. M., Smith, K. W., & Miller, D. R. (1993). Nutrition and health risks in the elderly: The Nutrition Screening Initiative. *American Journal of Public Health*, *83*(7), 972–978. https://doi.org/10.2105/AJPH.83.7.972

Power, L., de van der Schueren, M. A. E., Leij-Halfwerk, S., Bauer, J., Clarke, M., Visser, M., Volkert, D., Bardon, L., Gibney, E., & Corish, C. A. (2018). Development and application of a scoring system to rate malnutrition screening tools used in older adults in community and healthcare settings – A MaNuEL study. *Clinical Nutrition*, *38*(4), 1807–1819. https://doi.org/10.1016/j.clnu.2018.07.022

Rashid, I., Tiwari, P., & Lehl, S. S. (2020). Malnutrition among elderly a multifactorial condition to flourish: Evidence from a cross-sectional study. *Clinical Epidemiology and Global Health*, *8*(1), 91–95. https://doi.org/10.1016/j.cegh.2019.05.001

Sahyoun, N. R., Anyanwu, U. O., Sharkey, J. R., & Netterville, L. (2010). Recently hospital-discharged older adults are vulnerable and may be underserved by the Older Americans Act Nutrition Program. *Journal of Nutrition for the Elderly*, *29*(2), 227–240. https://doi.org/10.1080/01639361003772608

Sakinah, H., & Tan, S. L. (2012). Validity of a local nutritional screening tool in hospitalized Malaysian elderly patients. *Health and Environmental Journal*, *3*(3), 59–65. http://www.hej.kk.usm.my/pdf/HEJVol.3No.3/Article09.pdf

Shahar, S., Fun, W. S., & Chik, W. C. P. W. (2002). A prospective study on malnutrition and duration of hospitalisation among hospitalised geriatric patients admitted to surgical and medical wards of Hospital Universiti Kebangsaan Malaysia. *Malaysian Journal of Nutrition*, *8*(1), 55–62.

Sharma, Y., Miller, M., Kaambwa, B., Shahi, R., Hakendorf, P., Horwood, C., & Thompson, C. (2017). Malnutrition and its association with readmission and death within 7 days and 8-180 days postdischarge in older patients: A prospective observational study. *BMJ Open*, *7*(11), 1–8. https://doi.org/10.1136/bmjopen-2017-018443

Siti Al-Baidakh, A. A., Barakatun-Nisak, M. Y., & Noraida, O. (2019). Preliminary findings of malnutrition risk factors among older adults in a care home. *International Journal of Public Health and Clinical Sciences*, *6*(1), 209–221. https://doi.org/https://doi.org/10.32827/ijphcs.6.1.209

Soeters, P., Bozzetti, F., Cynober, L., Forbes, A., Shenkin, A., & Sobotka, L. (2016). Defining malnutrition: A plea to rethink. *Clinical Nutrition*, *36*(3), 896–901. https://doi.org/10.1016/j.clnu.2016.09.032

Streicher, M., van Zwienen-Pot, J., Bardon, L., Nagel, G., The, R., Meisinger, C., Colombo, M., Torbahn, G., Kiesswetter, E., Flechtner-Mors, M., Denkinger, M., Rothenbacher, D., Thorand, B., Ladwig, K. H., Corish, C. A., Clarke, M., Kerse, N., Muru-Lanning, M., Gibney, E. R., … Volkert, D. (2018). Determinants of incident malnutrition in community-dwelling older adults: A MaNuEL multicohort meta-analysis. *Journal of the American Geriatrics Society*, *66*(12), 2335–2343. https://doi.org/10.1111/jgs.15553

Suzana, S., Boon, P. C., Chan, P. P., & Normah, C. D. (2013). Malnutrition risk and its association with appetite, functional and psychosocial status among elderly Malays in an agricultural settlement. *Malaysian Journal of Nutrition*, *19*(1), 65–76.

Tan, S. L., Harith, S., Abdullah, H., & Wan Yusuf, W. N. (2016). Re-evaluation of Malnutrition Risk Screening Tool-Hospital (MRST-H) for geriatric patients : A multicentre study in Peninsular Malaysia. *Sains Malaysiana*, *45*(9), 1311–1317.

Teh, E. E., & Hasanah, C. I. (2005). Validation of Malay version of Geriatric Depression Scale among elderly inpatients. *Universiti Sains Malaysia*.

Torres, M. J., Dorigny, B., Kuhn, M., Berr, C., Barberger-Gateau, P., & Letenneur, L. (2014). Nutritional status in community-dwelling elderly in France in urban and rural areas. *PLoS ONE*, *9*(8), 1–8. https://doi.org/10.1371/journal.pone.0105137

Urquiza, M., Fernandez, N., Arrinda, I., Sierra, I., Irazusta, J., & Larrad, A. R. (2020). Nutritional status is associated with function, physical performance and falls in older adults admitted to geriatric rehabilitation: A retrospective cohort study. *Nutrients*, *12*(9), 1–14. https://doi.org/10.3390/nu12092855

Van Bokhorst-de van der Schueren, M. A. E., Lonterman-Monasch, S., de Vries, O. J., Danner, S. A., Kramer, M. H. H., & Muller, M. (2013). Prevalence and determinants for malnutrition in geriatric outpatients. *Clinical Nutrition*, *32*(6), 1007–1011. https://doi.org/10.1016/j.clnu.2013.05.007

Vanderwee, K., Clays, E., Bocquaert, I., Gobert, M., Folens, B., & Defloor, T. (2010). Malnutrition and associated factors in elderly hospital patients: A Belgian cross-sectional, multi-centre study. *Clinical Nutrition*, *29*(4), 469–476. https://doi.org/10.1016/j.clnu.2009.12.013

Vanoh, D., Shahar, S., Yahya, H. M., & Hamid, T. A. (2016). Prevalence and determinants of depressive disorders among community-dwelling older adults: Findings from the towards useful aging study. *International Journal of Gerontology*, *10*(2), 81–85. https://doi.org/10.1016/j.ijge.2016.02.001

Vaudin, A., Song, H. J., Mehta, M., & Sahyoun, N. (2018). Measuring Nutrition-Related Unmet Needs in Recently Hospital-Discharged Homebound Older Adults. *Journal of Nutrition in Gerontology and Geriatrics*, *37*(1), 30–48. https://doi.org/10.1080/21551197.2018.1431587

Visvanathan, R., Zaiton, A., Sherina, M. S., & Muhamad, Y. A. (2005). The nutritional status of 1081 elderly people residing in publicly funded shelter homes in Peninsular Malaysia. *European Journal of Clinical Nutrition*, *59*(3), 318–324. https://doi.org/10.1038/sj.ejcn.1602075

Vognar, L., & Mujahid, N. (2014). Healthcare transitions of older adults: An overview for the general practitioner. *Rhode Island Medical Journal*, *98*(4), 15-8.

Westergren, A., Hagell, P., & Sjödahl Hammarlund, C. (2014). Malnutrition and risk of falling among elderly without home-help service — A cross sectional study. *Journal of Nutrition, Health and Aging*, *18*(10), 905–911. https://doi.org/10.1007/s12603-014-0469-5

White, J. V., Guenter, P., Jensen, G., Malone, A., & Schofield, M. (2012). Consensus statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). *Journal of the Academy of Nutrition and Dietetics*, *112*(5), 730–738. https://doi.org/10.1016/j.jand.2012.03.012

World Health Organisation. (2018, February 5). *Ageing and health*. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health#:~:text=People%20worldwide%20are%20living%20longer,aged%2080%20years%20or%20older.

Yaka, E., Keskinoglu, P., Ucku, R., Yener, G. G., & Tunca, Z. (2014). Prevalence and risk factors of depression among community dwelling elderly. *Archives of Gerontology and Geriatrics*, *59*(1), 150–154. https://doi.org/10.1016/j.archger.2014.03.014

Yap, S. F., Boo, N. Y., Shenoy, P. D., Liew, S. F., Woo, L. F., Choo, P. Y., Leong, P. P., & Hatta, N. M. (2019). Nutritional status of elderly residents of long-term care homes in Klang Valley, Malaysia: A cross-sectional study. *Asian Journal of Gerontology and Geriatrics*, *14*(2), 89–95. https://doi.org/10.12809/ajgg-2018-321-oa

Yoshimura, K., Yamada, M., Kajiwara, Y., Nishiguchi, S., & Aoyama, T. (2013). Relationship between depression and risk of malnutrition among community-dwelling young-old and old-old elderly people. *Aging and Mental Health*, *17*(4), 456–460. https://doi.org/10.1080/13607863.2012.743961

Yusof, F. M., & Tan, C. E. (2020). Perceived quality of transitional care between public hospital and public health care clinic in Negeri Sembilan, Malaysia: A pilot study. *Malaysian Journal of Public Health Medicine*, *20*(1), 90–101. https://doi.org/10.37268/mjphm/vol.20/no.1/art.555

Zisberg, A., Sinoff, G., Agmon, M., Tonkikh, O., Gur-Yaish, N., & Shadmi, E. (2016). Even a small change can make a big difference: The case of in-hospital cognitive decline and new IADL dependency. *Age and Ageing*, *45*(4), 500–504. https://doi.org/10.1093/ageing/afw063

Appendix B: Approval Letter from JKM MyResearch

JABATAN KEBAJIKAN MASYARAKAT
Department of Social Welfare
Aras 6, 9-18, No. 55 Persiaran Perdana,
Presint 4,
62100 PUTRAJAYA.

Tel : 603 - 8323 1000
Faks *(Fax)* : 603 - 8323 2045
Laman Web *(Website)* : www.jkm.gov.my

JKMM 100/12/5/2 : 2021 / 122
06 April 2021

LIEW SHEK YEE
JALAN UNIVERSITI 1
SERDANG
SERI KEMBANGAN
43400
SELANGOR

Tuan/Puan,

KELULUSAN MENJALANKAN KAJIAN/PENYELIDIKAN DI JABATAN KEBAJIKAN MASYARAKAT

Dengan hormatnya saya merujuk kepada perkara di atas.

2. Sukacita dimaklumkan permohonan tuan/puan untuk menjalankan kajian/penyelidikan bertajuk **Malnutrition Status and its Associated Factors among Post-discharge Elderly in Klang Valley** dan tempat kajian/penyelidikan **seperti di Lampiran** telah **DILULUSKAN**. Tempoh kelulusan bagi melaksanakan kajian /penyelidikan di tempat yang dipilih adalah selama **TIGA (3) bulan** mulai **26 Mac 2021** hingga **26 Jun 2021**.

3. Sehubungan itu, tuan/puan diminta untuk menyerahkan **DUA (2) salinan tesis/laporan/penerbitan dan berjilid kepada Jabatan setelah kajian tuan/puan selewatnya pada 01 Disember 2022**. Tuan/puan tidak boleh menggunakan/menerbitkan secara bersendirian atau berkumpulan apa-apa maklumat, artikel, gambar atau ilustrasi lain yang berhubungan selain daripada tujuan kajian/penyelidikan ini melainkan dengan persetujuan bertulis daripada pihak JKM terlebih dahulu.

4. Tuan/puan juga dikehendaki melaporkan diri ke **Jabatan Kebajikan Masyarakat Negeri** bagi tujuan pemakluman kajian di setiap lokasi yang diluluskan. Sebarang maklumat lanjut, tuan/puan boleh menghubungi Bahagian Perancangan dan Pembangunan, Jabatan Kebajikan Masyarakat di talian 03-8323 1935 atau emel m_kamil@jkm.gov.my.

Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"
"BERKAT BERJASA"

Saya yang menjalankan amanah,

WAN NORAIDAH BINTI WAN MOHD ZAIN
Bahagian Perancangan dan Pembangunan
b.p. Ketua Pengarah Kebajikan Masyarakat
Malaysia

s.kKetua Pengarah Kebajikan Masyarakat

Timbalan Ketua Pengarah (Strategik)

Pengarah Negeri

Jabatan Kebajikan Masyarakat Negeri Selangor
Jabatan Kebajikan Masyarakat Wilayah Persekutuan Kuala Lumpur

Agensi Kajian

Pawe Cheras Baru
Pawe Bandar Tun Razak
Pawe Taman Sri Kantan, Kajang
Pawe Setiawangsa
Pawe Seputeh
Pawe Titiwangsa
Pawe Batu
Pawe Kg. Kenanga, Rawang
Pawe Kg. Sri Langkas Tambahan

Surat ini adalah janaan komputer, tandatangan tidak diperlukan.

LAMPIRAN

Rujukan Surat	:	JKMM 100/12/5/2 : 2021 / 122
Tarikh	:	06 April 2021
Tajuk Kajian	:	Malnutrition Status and its Associated Factors among Post-discharge Elderly in Klang Valley

Alamat Tempat Kajian :

1) PAWE Cheras Baru
2) PAWE Bandar Tun Razak
3) PAWE Taman Sri Kantan, Kajang
4) PAWE Setiawangsa
5) PAWE Seputeh
6) PAWE Titiwangsa
7) PAWE Batu
8) PAWE Kg. Kenanga, Rawang
9) PAWE Kg. Sri Langkas Tambahan

Appendix C: Respondent's Information Sheet and Informed Consent Form

Respondent's Information Sheet and Informed Consent Form

1. **Study Title**: Malnutrition Status and Its Associated Factors among Post-discharge Elderly in Klang Valley

2. **Introduction:**

   Malnutrition is a common but frequently unrecognised health issue among the elderly. Furthermore, the nutritional status of the elderly can be worsened in the event of hospitalisation and transition from hospital to home. Thus, this study aims to explore the malnutrition status and its associated factors among post-discharge elderly in Klang Valley. A total of 70 elderly aged 60 years and above reside at Klang Valley will be involved in this study.

   This study is part of the graduation requirement for Bachelor of Science (Dietetics) from the Faculty of Medicine and Health Sciences, UPM and is expected to be completed within one year of study. This study has been approved by the Ethics Committee for Research Involving Human Subjects, Universiti Putra Malaysia.

3. **What will you have to do?**

   Please take your time to read through the details of the survey as described in this Respondent's Information Sheet and consider this information carefully before you decide to participate. If you agree to participate, you are required to tick "Yes" on the consent form below. Your participation in this study is voluntary. You have the right to withdraw from this study anytime and no penalty will be applied upon your withdrawal.

   You will need to answer a set of questionnaires consisted of:

   a) Demographic Characteristics
   b) Health Status
   c) Functional Status
   d) Depression Status
   e) Malnutrition Status
   f) Needs Assessment of Transitional Nutrition Care

   It is estimated that this survey will take approximately 20 minutes. It is important that you answer all of the questions listed in the survey honestly and completely.

4. **Who should not participate in the study?**

   Respondents who are suffered from cognitive impairment (e.g. dementia or Alzheimer's) or are admitted for terminal illness with a limited life expectancy (<6 months) will be excluded from this study.

5. What will be the benefits of the study:

(a) To you as the subject?

You will obtain the results of your functional status, depression status and nutritional risk as requested. Your contact details (email address or phone number) will be collected if you wish to receive the results stated above.

(b) To the investigator?

This study will fill the gap in existing studies, especially in Malaysia as there is still no such known study in the country at present. Besides, the findings of this study may establish a better understanding of the importance of transitional nutrition care. This study hopes to encourage more research to be done on developing the transitional nutrition care model or practice to prevent or improve malnutrition and support the patient's recovery during the transition from hospital to home.

6. What are the possible risks?

This study has no possible risk as it only involves filling up a questionnaire.

7. Will the information that you provide and your identity remain confidential?

All your information obtained in this study will be handled confidentially, in accordance with applicable laws and/or regulations. It will be used for academic purposes only. When publishing or presenting the study results, your identity will not be revealed without your expressed consent.

8. Who should you contact if you have additional questions during the course of the research?

Researcher:
Name: Liew Shek Yee
Contact Number: 011-26001525
Email: syliew0825@gmail.com

Supervisor:
Name: Assoc. Prof. Dr. Siti Nur'Asyura Adznam
Contact Number: 012-3612644
Email: asyura@upm.edu.my

I hereby voluntarily agree to take part in the survey 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 study at any time without giving any reason. I also understand that this survey is confidential and all information provided with regard to my identity will remain private and confidential.

( ) Yes

( ) No

Penerangan dan Persetujuan Responden

1. **Tajuk Kajian:** Status dan Faktor Berkaitan dengan Malpemakanan dalam kalangan Warga Emas di Lembah Klang Selepas Keluar dari Hospital

2. **Pengenalan:**

   Malpemakanan ialah masalah kesihatan yang biasa tetapi sering tidak dikenali dalam kalangan warga emas. Tambahan pula, status pemakanan warga emas boleh bertambah buruk sekiranya dimasukkan ke hospital dan peralihan dari hospital ke rumah. Oleh itu, kajian ini bertujuan untuk mengkaji status dan faktor berkaitan dengan malpemakanan dalam kalangan warga emas di Lembah Klang selepas mereka keluar dari hospital. Seramai 70 orang warga emas yang berumur 60 tahun dan ke atas dan tinggal di Lembah Klang akan terlibat dalam tinjauan ini.

   Kajian ini adalah sebahagian daripada syarat lulus untuk Sarjana Muda Sains (Dietetik) dari Fakulti Perubatan dan Sains Kesihatan, UPM dan dijangkakan dapat diselesaikan dalam satu tahun pengajian. Kajian ini telah diluluskan oleh Jawatankuasa Etika Universiti Penyelidikan Melibatkan Manusia, Universiti Putra Malaysia (JKEUPM).

3. **Apakah yang perlu anda lakukan?**

   Sila ambil masa untuk membaca perincian tinjauan seperti yang dijelaskan di Helaian Penerangan Responden tersebut dan mempertimbangkan dengan teliti penerangan yang diberi sebelum anda bersetuju untuk menyertai penyelidikan ini. Jika anda bersetuju untuk mengambil bahagian, anda dikehendaki untuk menanda "Ya" pada borang persetujuan di bawah. Penyertaan anda dalam penyelidikan ini adalah secara sukarela. Anda juga boleh menarik diri daripada penyelidikan ini pada bila-bila masa sahaja dan tidak ada penalti yang akan dikenakan semasa penarikan diri anda.

   Anda perlu menjawab satu set soal selidik yang terdiri daripada:

   a) Ciri-ciri Demografi
   b) Status Kesihatan
   c) Status Fungsian
   d) Status Kemurungan
   e) Status Malpemakanan
   f) Keperluan Penilaian bagi Penjagaan Pemakanan Peralihan

   Dianggarkan bahawa tinjauan ini akan mengambil masa lebih kurang 20 minit. Amat penting anda menjawab kesemua soalan yang disenaraikan dalam soal selidik dengan jujur dan lengkap.

4. Siapa yang tidak boleh menyertai kajian ini?

Responden yang mengalami gangguan kognitif (misalnya demensia atau Alzheimer's) atau dimasukkan ke hospital sebab penyakit terminal dengan jangka hayat yang terhad (<6 bulan) akan dikeluarkan dari kajian ini.

5. Apakah faedah menyertai kajian ini?

(a) Kepada anda sebagai peserta?

Anda akan mendapat hasil penemuan dari status fungsian, status kemurungan dan penilaian status pemakanan anda seperti yang diminta. Butiran peribadi anda (alamat e-mel atau nombor telefon) akan dikumpulkan sekiranya anda ingin menerima hasil yang dinyatakan atas.

(b) Kepada penyelidik?

Kajian ini akan mengisi jurang dalam kajian yang sedia ada, terutamanya di Malaysia kerana masih belum ada kajian seperti ini di negara ini. Selain itu, penemuan kajian ini bermungkinan dapat memberikan pemahaman yang lebih baik mengenai kepentingan penjagaan pemakanan peralihan. Kajian ini diharapkan dapat mendorong lebih banyak penyelidikan yang dilakukan untuk mengembangkan model atau amalan penjagaan pemakanan peralihan untuk mencegah atau mengurangkan malpemakanan dan menyokong pemulihan pesakit semasa peralihan dari hospital ke rumah.

6. Adakah ia berisiko?

Kajian ini tidak mempunyai risiko kerana hanya melibatkan mengisi soal selidik.

7. Adakah maklumat dan identiti saya kekal rahsia?

Segala maklumat anda yang diperolehi dalam penyelidikan ini akan dikendalikan secara sulit, bersesuaian dengan peraturan-peraturan dan/atau undang-undang yang berkenaan. Ia akan digunakan untuk tujuan akademik sahaja. Sekiranya hasil penyelidikan ini diterbitkan atau dibentangkan kepada orang ramai, identiti anda tidak akan didedahkan tanpa kebenaran anda terlebih dahulu.

8. Siapa yang saya perlu hubungi sekiranya saya mempunyai soalan tambahan semasa mengikuti penyelidikan ini?

Penyelidik:
Nama: Liew Shek Yee
Nombor Telefon: 011-26001525
Emel: syliew0825@gmail.com

Penyelia:
Nama: Prof. Madya Dr. Siti Nur'Asyura Adznam
Nombor Telefon: 012-3612644
Emel: asyura@upm.edu.my

Dengan ini, saya secara sukarela bersetuju untuk mengambil bahagian dalam tinjauan yang dinyatakan di atas. Saya telah diberi penjelasan secara menyeluruh mengenai penyelidikan ini dari segi metodologi, risiko dan komplikasi (seperti tertulis pada Helaian Penerangan Responden). Saya faham bahawa saya berhak menarik diri dari kajian ini pada bila-bila masa tanpa memberikan sebarang alasan. Saya juga memahami bahawa tinjauan ini adalah rahsia dan sebarang maklumat yang diberikan berkaitan dengan identiti saya adalah sulit dan dirahsiakan.

( ) Ya
( ) Tidak

Appendix D: Questionnaire

Faculty of Medicine and Health Sciences
Department of Dietetics

Questionnaire / *Soal Selidik*

"Confidential" / *"Sulit"*

Research Title / *Tajuk Penyelidikan*:

Malnutrition Status and Its Associated Factors among Post-Discharge Elderly in Klang Valley

Status dan Faktor Berkaitan dengan Malpemakanan dalam kalangan Warga Emas di Lembah Klang Selepas Keluar dari Hospital

Researcher's Name / *Nama Penyelidik*: Liew Shek Yee

Supervisor's Name / *Nama Penyelia*: Assoc. Prof. Dr. Siti Nur'Asyura Adznam

---

Instruction / *Arahan*:

This study is conducted for academic purpose. All information will be kept private and confidential. Thank you for your cooperation in answering this questionnaire.

Penyelidikan ini hanya untuk kegunaan akademik sahaja. Sebarang maklumat akan disimpan secara sulit. Terima kasih atas kerjasama anda dalam menjawab soal selidik.

Part A: Demographic Characteristics
Bahagian A: Ciri-ciri Demografi

1. Date of Birth / *Tarikh Lahir* : _____ (dd/mm/yyyy)

2. Gender / *Jantina* :
- ☐ Male / *Lelaki*
- ☐ Female / *Perempuan*

3. Ethnicity / *Etnik* :
- ☐ Malay / *Melayu*
- ☐ Chinese / *Cina*
- ☐ Indian / *India*
- ☐ Other / *Lain-lain*

Please specify / *Sila nyatakan*: _____

4. Marital Status / *Status Perkahwinan* :
- ☐ Single / *Bujang*
- ☐ Married / *Berkahwin*
- ☐ Divorced / *Bercerai*
- ☐ Widowed / *Janda/Balu/Duda*

4a. How long have you been widowed? / *Sudah berapa lama menjadi janda/balu/duda?*
_____ years / *tahun*

5. Educational Level / *Tahap Pendidikan* :
- ☐ No formal education / *Tiada pendidikan formal*
- ☐ Primary education / *Sekolah rendah*
- ☐ Secondary education / *Sekolah menengah*
- ☐ Tertiary education / *Pengajian tinggi*

6. Financial resources for living / *Sumber kewangan untuk sara hidup* :
(*Can choose MORE THAN one option / *Boleh tanda LEBIH DARI 1 pilihan*)

- ☐ Salary / *Gaji*
- ☐ Pension / *Pencen*
- ☐ Savings / *Simpanan*
- ☐ Husband/Wife/Spouse / *Suami/Isteri/Pasangan*
- ☐ Welfare / *Kebajikan*
- ☐ Children / *Anak-anak*
- ☐ Other / *Lain-lain*

Please specify / *Sila nyatakan*: _____

7. Total household income / *Jumlah pendapatan isi rumah* : RM_____

8. Living at home / *Tinggal dirumah bersama* :
- ☐ Alone / *Sendirian*
- ☐ With husband/wife / *Dengan suami/isteri*
- ☐ With husband/wife and child / *Dengan suami/isteri dan anak*
- ☐ With child and grandchild / *Dengan anak dan cucu*
- ☐ Other / *Lain-lain*

  Please specify / *Sila nyatakan*: _____

Part B: Health Status
Bahagian B: Status Kesihatan

1. Date or Month of admission / *Tarikh atau Bulan masuk wad* :
   _____ (dd/mm/yyyy or / *atau* mm/yyyy)

2. Length of stay / *Tempoh kemasukan hospital*:
   Example: 30 hours OR 2 days / *Contoh: 30 jam ATAU dua hari*
   _____

3. Type of ward / *Jenis wad*:
- ☐ Surgical ward / *Wad pembedahan*
- ☐ Medical ward / *Wad perubatan*
- ☐ Intensive Care Unit (ICU) / *Unit rawatan rapi*
- ☐ Other / *Lain-lain*

  Please specify / *Sila nyatakan*: _____

4. Reason for admission / *Sebab kemasukan hospital*: _____

5. Existing chronic disease / *Penyakit kronik* :
   (*Can choose MORE THAN one option / *Boleh tanda LEBIH DARI 1 pilihan*)
- ☐ Cardiovascular disease (including heart disease and stroke) / *Penyakit kardiovaskular (termasuk penyakit jantung dan strok)*
- ☐ Chronic respiratory disease (including COPD and asthma) / *Penyakit kronik pernafasan (termasuk COPD dan asma)*
- ☐ Diabetes / *Kencing manis*
- ☐ Cancer / *Kanser*
- ☐ High blood pressure / *Tekanan darah tinggi*
- ☐ Kidney disease / *Penyakit buah pinggang*
- ☐ Gastrointestinal disease / *Penyakit usus*
- ☐ Gout/Arthritis / *Gout/Arthritis*
- ☐ Other / *Lain-lain*

  Please specify / *Sila nyatakan*: _____

Part C: Functional Status
Bahagian C: Status Fungsian

For each activity, please choose the item description that MOST CLOSELY resemble your highest functional level.
Bagi setiap aktiviti, sila pilih keterangan item yang PALING SESUAI dengan tahap fungsi tertinggi anda.

1. Ability to Use Telephone: / *Adakah anda boleh menggunakan telefon?*

- ☐ Operates telephone on own initiative; looks up and dials numbers / *Menggunakan telefon atas inisiatif sendiri; cari dan dail*
- ☐ Dials a few well-known numbers / *Mendail beberapa nombor yang dikenali*
- ☐ Answers telephone, but does not dial / *Menjawab telefon tetapi tidak mendail*
- ☐ Does not use telephone at all / *Tidak menggunakan telefon langsung*

2. Shopping (if you have transportation): / *Adakah anda boleh keluar membeli barang keperluan harian (sekiranya anda ada kemudahan pengangkutan)?*

- ☐ Takes care of all shopping needs independently / *Membeli-belah sendiri*
- ☐ Shops independently for small purchases / *Membeli sendiri bagi pembelian kecil*
- ☐ Needs to be accompanied on any shopping trip / *Perlukan teman untuk membeli-belah*
- ☐ Completely unable to shop / *Tidak mampu langsung untuk membeli-belah*

3. Food Preparation: / *Adakah anda boleh menyediakan makanan sendiri?*

- ☐ Plans, prepares and serves adequate meals independently / *Merancang, menyedia, dan menghidang makanan yang mencukupi sendiri*
- ☐ Prepares adequate meals if supplied with ingredients / *Menyediakan makanan mencukupi jika bahan diberi*
- ☐ Heats and serves prepared meals or prepares meals but does not maintain adequate diet / *Memanaskan dan menghidangkan makanan atau menyediakan makanan tetapi tidak mengikut diet mencukupi*
- ☐ Needs to have meals prepared and served / *Makanan perlu disediakan dan dihidangkan*

4. Housekeeping: / *Adakah anda boleh melakukan kerja-kerja rumah?*

- ☐ Maintains house alone or with occasional assistance (e.g. heavy work) / *Mengurus rumah sendiri dengan dibantu sesekali (kerja berat)*
- ☐ Performs light daily tasks such as dish washing, bed making / *Melakukan tugas harian ringan seperti membasuh pinggan, mengemas tempat tidur*
- ☐ Performs light daily tasks, but cannot maintain acceptable level of cleanliness / *Melakukan tugas harian ringan, tetapi tidak mengikut tahap kebersihan yang dapat diterima*
- ☐ Needs help with all home maintenance tasks / *Perlukan bantuan dalam kerja-kerja mengurus rumah*
- ☐ Does not participate in any housekeeping tasks / *Tidak mengambil bahagian dalam kerja-*

kerja mengurus rumah

5. Laundry: / *Adakah anda boleh membasuh pakaian sendiri?*

- ☐ Does personal laundry completely / *Membasuh sendiri baju*
- ☐ Launders small items, rinses stockings, etc. / *Membasuh sendiri pakaian yang kecil, membilas stoking, dll*
- ☐ All laundry must be done by others / *Semua pakaian kotor dibasuh oleh orang lain*

6. Mode of Transportation: / *Bagaimanakah anda pergi ke suatu tempat?*

- ☐ Travels independently on public transportation or drives own car / *Bergerak sendiri menggunakan pengangkutan awam atau memandu kereta sendiri*
- ☐ Arranges own travel via taxi, but does not otherwise use public transportation / *Bergerak sendiri menggunakan teksi, tetapi bukan pengangkutan awam lain*
- ☐ Travels on public transportation when assisted or accompanied by another / *Bergerak menggunakan pengangkutan awam jika dibantu orang lain*
- ☐ Travel limited to taxi or automobile with assistance of another / *Bergerak menggunakan teksi atau kereta dengan dibantu orang lain*
- ☐ Does not travel at all / *Tidak bergerak sama sekali*

7. Responsibility for Own Medications: / *Adakah anda boleh mengambil ubat sendiri?*

- ☐ Is responsible for taking medication in correct dosages at correct time / *Boleh mengambil ubat mengikut dos/sukatan yang betul pada masa yang betul*
- ☐ Takes responsibility if medication is prepared in advance in separate dosage / *Bertanggungjawab jika ubat disediakan terlebih dahulu dalam dos berasingan*
- ☐ Is not capable of dispensing own medication / *Tidak mampu untuk memakan ubat sendiri*

8. Ability to Handle Finances: / *Adakah anda boleh menguruskan wang?*

- ☐ Manages financial matters independently (budgets, writes checks, pays rent, bills, goes to bank); collects and keeps track of income / *Mampu menguruskan wang sendiri (termasuk belanjawan, menulis cek, urusan pembayaran bil, pergi ke bank); mengumpul dan mengesan pendapatan*
- ☐ Manages day-to-day purchases, but needs help with banking, major purchases, etc. / *Mengurus pembelian harian, tetapi perlukan bantuan parbankan, belian besar*
- ☐ Incapable of handling money / *Tidak berkemampuan untuk menguruskan wang sendiri*

Part D: Depression Status
Bahagian D: Status Kemurungan

Choose the BEST answer for how you have felt over the past week:
Pilih jawapan TERBAIK untuk apa yang anda rasakan selama seminggu yang lalu:

Question / *Soalan*	Yes / *Ya*	No / *Tidak*
1. Are you basically satisfied with your life? *Adakah anda pada asasnya berpuas hati dengan kehidupan anda?*		
2. Have you dropped many of your activities and interests? *Adakah anda telah meninggalkan banyak kegiatan dan minat anda?*		
3. Do you feel that your life is empty? *Adakah anda berasa hidup anda kekosongan?*		
4. Do you often get bored? *Adakah anda sering bosan?*		
5. Are you in good spirits most of the time? *Adakah anda bersemangat dalam kebanyakan masa?*		
6. Are you afraid that something bad is going to happen to you? *Adakah anda bimbang sesuatu yang buruk akan terjadi pada anda?*		
7. Do you feel happy most of the time? *Adakah anda berasa gembira dalam kebanyakan masa?*		
8. Do you often feel helpless? *Adakah anda sering berasa tidak terdaya?*		
9. Do you feel you have more problems with memory than most? *Adakah anda berasa bahawa anda mempunyai lebih banyak masalah daya ingatan daripada orang lain?*		
10. Do you think it is wonderful to be alive now? *Adakah anda fikir alangkah baiknya untuk hidup sekarang?*		
11. Do you feel pretty worthless the way you are now? *Adakah anda berasa keadaan anda sekarang kurang berguna?*		
12. Do you feel full of energy? *Adakah anda berasa penuh bertenaga?*		

13. Do you feel that your situation is hopeless? *Adakah anda berasa keadaan anda tidak ada harapan?*		
14. Do you think that most people are better off than you are? *Adakah anda fikir bahawa kebanyakan orang adalah lebih baik daripada anda?*		

Part E: Malnutrition Status
Bahagian E: Status Malpemakanan

Please choose YES or NO for each statement below.
Sila jawab YA atau TIDAK bagi setiap pernyataan di bawah.

Question / *Soalan*	Yes / *Ya*	No / *Tidak*
1. I have an illness or condition that made me change the kind and/or amount of food I eat. *Saya mengidap sejenis penyakit atau keadaan yang menyebabkan saya mengubah cara pemakanan dan/atau kuantiti makanan yang saya ambil.*		
2. I eat fewer than 2 meals per day. *Saya makan kurang daripada 2 hidangan dalam sehari.*		
3. I eat few fruits or vegetables or milk products. *Saya makan sebilangan buah-buahan atau sayur-sayuran atau produk tenusu.*		
4. I have 3 or more drinks of beer, liquor or wine almost every day. *Saya minum bir, arak atau wain 3 kali atau lebih hampir setiap hari.*		
5. I have tooth or mouth problems that make it hard for me to eat. *Saya mengalami masalah gigi atau mulut yang menyukarkan saya untuk makan.*		
6. I don't always have enough money to buy the food I need. *Saya tidak selalunya ada wang yang mencukupi untuk membeli makanan yang saya perlukan.*		
7. I eat alone most of the time. *Saya makan bersendirian pada kebanyakan masa.*		

8. I take 3 or more different prescribed or over-the-counter drugs a day. *Saya mengambil 3 atau lebih jenis ubat sehari yang dipreskripsi oleh doktor atau dibeli sendiri di farmasi.*		
9. Without wanting to, I have lost or gained 10 pounds (4.5kg) in the last 6 months. *Tanpa saya mahu, saya telah kehilangan atau bertambah 10 paun (4.5 kg) sepanjang 6 bulan yang lepas.*		
10. I am not always physically able to shop, cook and/or feed myself. *Saya tidak selalu dapat membeli barang, memasak dan/atau menyuap makanan kepada diri sendiri secara fizikal.*		

Part F: Need Assessment for Transitional Nutrition Care
Bahagian F: Keperluan Penilaian Bagi Penjagaan Pemakanan Peralihan

Section 1: Food-related and Nutrition-care Activities Post Discharge / *Aktiviti berkaitan makanan dan penjagaan pemakanan setelah dibenarkan keluar dari hospital*

1. Did you consult a dietitian since discharge?
   Adakah anda pernah berunding dengan pakar diet/pemakanan sejak dibenarkan keluar dari hospital?
   ☐ Yes / *ya* ☐ No / *tidak*

2. Are you following any special diet after discharge?
   Adakah anda mengikuti diet/pemakanan khas setelah dibenarkan keluar dari hospital?
   ☐ Yes / *ya* ☐ No / *tidak*

3. Are you on oral nutritional supplements (ONS) since discharge?
   Adakah anda mengambil suplemen pemakanan secara oral (ONS) setelah dibenarkan keluar dari hospital?
   ☐ Yes / *ya* ☐ No / *tidak*

4. Is your diet different than before hospitalisation?
   Adakah diet/pemakanan anda berbeza berbanding sebelum dimasukkan ke hospital?
   ☐ Yes / *ya* ☐ No / *tidak*

5. Who usually does the cooking at home? *Siapakah yang selalunya memasak di rumah?*
☐ Me / *saya* ☐ Someone else / *Orang lain*

6. How often do you eat with others? *Berapa kerapkah anda makan bersama orang lain?*
☐ Every day / *Setiap hari*
☐ 4 - 6 days per week / *4 - 6 hari seminggu*
☐ 2 - 3 days per week / *2 - 3 hari seminggu*
☐ Once a week / *Sekali seminggu*
☐ Seldom / *Jarang*
☐ Never / *Tidak pernah*

Section 2: Unmet Needs of the Post-discharge Elderly / *Keperluan yang tidak dipenuhi oleh warga emas setelah dibenarkan keluar dari hospital*

1. Do you know how to manage your illness in terms of food and nutrition after discharge?
Adakah anda tahu cara mengurus penyakit anda dari segi makanan dan pemakanan setelah dibenarkan keluar dari hospital?
☐ Yes / *ya* ☐ No / *tidak*

2. Do you have family or social networks that are capable of providing nutrition support after discharge?
Adakah anda mempunyai keluarga atau rangkaian sosial yang dapat memberikan sokongan penjagaan pemakanan setelah dibenarkan keluar dari hospital?
☐ Yes / *ya* ☐ No / *tidak*

3. Do you agree that nutritional care is an integral part to improve your health outcomes?
Adakah anda bersetuju bahawa penjagaan pemakanan adalah perkara penting yang dapat memperbaiki tahap kesihatan anda?
☐ Strongly agree / *sangat setuju* ☐ Agree / *setuju* ☐ Neutral / *neutral*
☐ Disagree / *tidak bersetuju* ☐ Strongly Disagree / *sangat tidak bersetuju*

4. Do you think you require nutrition information during transition from hospital to home?
Adakah anda memerlukan maklumat pemakanan semasa proses peralihan dari hospital ke kediaman anda?
☐ Yes / *ya* ☐ Not sure / *tidak pasti* ☐ No / *tidak*

5. Are you able to adhere to nutritional treatment or advices from the dietitian?
Adakah anda boleh mematuhi nasihat atau rawatan pemakanan daripada pakar diet/pemakanan?

☐ Yes / *ya* ☐ Not sure / *tidak pasti* ☐ No / *tidak*

---------- End of questionnaire / *Soalan Tamat*----------

Appendix E: Turnitin Originality Report