UNIVERSITI PUTRA MALAYSIA

TRANSITION IN FRAILTY STATUS AFTER 1 YEAR FOLLOW-UP AMONG COMMUNITY-DWELLING ELDERLY RESIDENTS IN PPR KUALA LUMPUR

NUR NAJATUL MUNIRAH BINTI MUHAMAD BOKERY

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This project entitled "Transition in Frailty Status after 1 Year Follow-Up among Community-Dwelling Elderly Residents in PPR Kuala Lumpur" was prepared by Nur Najatul Munirah binti Muhamad Bokery and submitted to the Faculty of Medicine and Health Sciences as a partial fulfillment of the requirement for the degree of Bachelor of Science (Nutrition and Community Health) from the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

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Received and examined by:

____

(Prof. Madya Dr. Siti Nur'Asyura binti Adznam)

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LIST OF ABBREVIATION

WHO	World Health Organization
BMI	Body Mass Index
BMR	Basal Metabolic Rate
B40	Bottom 40%
CC	Calf Circumference
CHS	Cardiovascular Health Studies
CPG	Clinical Practice Guidelines
COPD	Chronic Obstructive Pulmonary Disease
DBKL	Dewan Bandaraya Kuala Lumpur
DS	Demi-span
IADL-MV	Instrumental Activity of Daily Living-Malay Version
M-GDS-14	Malay-Geriatric Depression Scale-14
M-MMSE-S	Malay-Mini Mental State Examination-S
MNA-SF	Mini-Nutritional Assessment-Short Form
MUAC	Mid-Upper Arm Circumference
PASE-M	Physical Activity Scale for the Elderly-Malay
PPR	Projek Perumahan Rakyat
RNI	Recommended Nutrient Intake
WC	Waist Circumference

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ABSTRACT

TRANSITION IN FRAILTY STATUS AFTER 1 YEAR FOLLOW-UP AMONG COMMUNITY DWELLING ELDERLY RESIDENTS IN PPR KUALA LUMPUR

Nur Najatul Munirah Muhamad Bokery, Siti Nur'Asyura Adznam

Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Frailty syndrome is a dynamic process due to its reversibility. Transition in frailty status was common among elderly. This cross-sectional study aimed to compare the frailty status and its transition after 1 year follow up among community-dwelling elderly residents in PPR Kuala Lumpur. A total of 113 out of 301 respondents were listed out by using purposive sampling and managed to be reached before Movement Control Order (MCO) due to the pandemic COVID-19. Only 87 out of 113 were selected to participate in this study after screened based on inclusion and exclusion criteria. Respondent's anthropometry which were height, weight, body mass index (BMI), skeletal muscle mass, percentage body fat, waist circumference, calf circumference, mid-upper arm circumference were measured. Face-to-face interview was done between the researcher and the respondent which based on 8 components in the questionnaire which were socio-demographic characteristics, presence of chronic disease, psychological status (depression), functional status (functional ability, cognitive status), risk of malnutrition, frailty syndrome and physical activity. Majority of respondents were Malay (76.0%), married (56.0%), primary school (lower form)(42.0%), staying with husband/wife and children (38.0%), not working/housewife (57.0%), financial source from children (32.0%), household income below than RM2500. Their mean age was 68.3 ± 5.7 years old. The most 3 prevalent chronic disease were hypertension (56.3%), diabetes mellitus (50.6%) and high cholesterol (44.8%). Most of them were normal in functional ability (57.0%), normal cognitive status (91.0%), normal depression (86.0%), normal risk of malnutrition (69.0%), overweight (42.5%), too high in percentage body fat (male 78.9%; female; 92.6%), low in skeletal mass (male 100%; female 95.6%), normal in MUAC (male 94.7%; female 98.5%), normal in CC (male 89.5%; female 93.5%), high WC (male 89.5%; female 93.5%). Weakness was the most prevalent Fried Phenotypic Criteria (88.5%). Most of them are pre-frail (79.3%), followed by frail (18.4%) and robust (2.3%). There was a significant different in the presence of cardiovascular disease ($p=0.005$), chronic respiratory disease ($p=0.002$), diabetes mellitus ($p<0.001$), hypertension ($p=<0.001$), weakness ($p=0.004$), slowness ($p=0.003$), depression ($p<0.001$), skeletal muscle mass ($p<0.001$), calf circumference ($p=0.007$) and frailty status ($p=0.005$) among respondents between 2019 and 2020. Most of them were remained in frailty status (65.5%), followed by worsening (21.8%) and improving 12.6%. In conclusion, a future studies need to be done to determine factors associated with worsening and improving in frailty status.

ABSTRAK

PERUBAHAN STATUS SINDROM KEUZURAN SELEPAS SETAHUN KAJIAN SUSULAN DALAM KALANGAN PENDUDUK WARGA EMAS DI RUMAH KEDIAMAN PPR KUALA LUMPUR

Nur Najatul Munirah Muhamad Bokery, Siti Nur'Asyura Adznam

Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan,

Universiti Putra Malaysia

Sindrom keuzuran adalah proses dinamik oleh kerana kebolehbalikannya. Perubahan status keuzuran adalah lazim dalam kalangan warga emas. Kajian keratan rentas ini bertujuan untuk membandingkan status keuzuran and perubahannya selepas setahun kajian susulan dalam kalangan penduduk warga emas di rumah kediaman PPR Kuala Lumpur. Sejumlah 113 daripada 301 responden telah disenaraikan dengan menggunakan kaedah persampelan bertujuan dan telah berjaya dicapai sebelum Perintah Kawalan Pergerakan (PKP) disebabkan oleh Pandemik COVID-19. Hanya 87 daripada 113 responden telah dipilih untuk menyertai kajian ini selepas disaring berdasarkan kriteria kemasuk dan pengecualian. Pengukuran antropometri responden telah diambil iaitu tinggi, berat, indeks jisim tubuh, jisim otot kerangka, peratusan lemak badan, lilitan pinggang, lilitan betis dan lilitan lengan atas pertengahan. Temubual secara bersemuka telah dijalankan antara penyelidik dan responden yang berdasarkan kepada 8 komponen dalam borang soal selidik iaitu ciri sosiodemografi, kelaziman penyakit kronik, status psikologi (depresi), status kefungsian (keupayaan kefungsian, status kognitif), risiko malnutrisi, sindrom keuzuran dan aktiviti fizikal. Kebanyakkan responden adalah bangsa Melayu (76.0%), berkahwin (56.0%), bersekolah rendah (42.0%), tinggal bersama suami/isteri dan anak-anak (38.0%), tidak bekerja/suri rumah (57.0%), sumber kewangan dari anak-anak (32.0%), pendapatan isi rumah bawah RM2500. Purata umur mereka adalah 68.3 ± 5.7 tahun. 3 kelaziman penyakit kronik adalah hipertensi, (56.3%), diabetes mellitus (50.6%) dan kolesterol tinggi (44.8%). Kebanyakkan mereka adalah normal dalam keupayaan kefungsian (57.0%), normal status kognitif (91.0%), normal depresi (86.0%), normal risiko malnutrisi (69.0%), berat badan berlebihan (42.5%), terlalu tinggi peratusan lemak dalam badan (lelaki 78.9%; wanita 92.6%), rendah jisim otot kerangka (lelaki 100.0%; wanita 95.6%), normal lilitan lengan atas permukaan (male 94.7%; female 98.5%), normal lilitan betis (lelaki 89.5%; wanita 93.5%), tinggi lilitan pinggang (lelaki 89.5%; perempuan 93.5%). Kriteria kelemahan adalah paling lazim dalam Kriteria Fenotip Fried (88.5%). Kebanyakkan mereka adalah berstatus pra-keuzuran (79.3%), diikuti status keuzuran (18.4%) dan status ketiadaan keuzuran (2.3%). Terdapat perubahan signifikan dalam kelaziman penyakit kardiovaskular ($p=0.005$), penyakit pernafasan kronik ($p=0.002$), diabetes mellitus ($p<0.001$), hipertensi ($p=<0.001$), kelemahan ($p=0.004$), kelambatan ($p=0.003$), depresi ($p<0.001$), jisim otot kerangka ($p<0.001$), lilitan betis ($p=0.007$) dan status keuzuran ($p=0.005$) dalam kalangan responden antara tahun 2019 dan 2020. Kebanyakkan mereka kekal dalam status keuzuran (65.5%), diikuti status keuxuran semakin merosot (21.8%) dan status keuzuran semakin pulih (12.6%). Kesimpulannya, kajian di masa hadapan perlu dijalankan untuk menentukan faktor yang berkaitan dengan kemerosotan dan kepulihan status keuzuran.

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CHAPTER 1

INTRODUCTION

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1.1 Background

In recent years, the world's population is towards aging in which every country in the world is experiencing growth in the number of elderly people in their populations which give impact to all sectors of society, family and inter – generational ties (United Nations, Department of Economic and Social Affairs, 2017). Population ageing is defined as a certain increase in elderly population resulted from the declining in fertility rate and increasing life expectancy that characterize the demographic transition that is happening around the world (United Nations, Department of Economic and Social Affairs, 2017). It is agreed by United Nations that the cut off age for elderly people is 60 years old (WHO, 2018). In fact, Malaysia also use the same definition of aging. According to (Country Reports Malaysia, 2012), elderly people at age 60 years old and above are defined as older people. In contrast, most of developed countries defined elderly at age of 65 years old and above (WHO, 2019).

The global elderly population at age 60 years old and above is more than twice in 2017 compared in 1980 with the elderly population 962 million and 382 million respectively and it will projected to 2.1 billion of elderly population in 2050 which is doubled than in 2017 (United Nations, Department of Economic and Social Affairs, 2017). A similar pattern also can be seen in Malaysia. According to Department of Statistics Malaysia (2016), it is estimated that the percentage of elderly population in 2020 is 7.2% and will be projected until 14.5% in 2040. On top of that, according to The World Bank (2018), the population of elderly in Malaysia at age 65 years old and above is increasing by year nearly 6.7 % of total population in 2018 compared to 6.4% of total population in 2017.

Population aging may lead to burden of disease, social and health care system. Elderly people may suffer different syndromes, including frailty, due to the aging (Partezani-rodrigues et al., 2017). Frailty is a condition where the elderly is at state of vulnerable which increases the risk of having an adverse health outcomes and/or dying when stressor is exposed (Walston et al., 2006). In absence of gold standard in defining frailty, Fried et al. (2001) proposed an operational definition of frailty in Cardiovascular Health Studies (CHS) which oriented mainly to the physical domain of frailty. Physical frailty is a medical syndrome that have many causes and contributors that is characterized by declining in strength, endurance and reduced in physiologic function that make the individual's vulnerability become increases that lead to the increasing in the development of dependency and/or death (Morley et al., 2014). The definition stated that there are 5 items of frailty phenotypic criteria which are shrinking (unintentional weight loss), weakness, exhaustion, slowness and low physical activity (Fried et al., 2001).

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Frailty syndrome is a dynamic process because it has the potential of reversibility (Ahmad et al., 2018) either from a lesser frailty state to a greater frailty state or from a greater frailty state to a lesser frailty state over time (Morley at al., 2014). The first study that reported about the transition in frailty status was Gill et al., (2006) which they categorized it into 3 categories which are worsening, improving and remain unchanged categories . Most of studies show the consistency of the finding that the progression from lesser frailty to greater frailty much more prevalent than regression from greater frailty to lesser frailty among community-dwelling elderly residents (Pollack et al., 2017; Thompson et al., 2018; Lorenzo-lópez et al., 2019). However, the evidence of transition in frailty status in Malaysia is scarce and limited. Hence, a study of the transition in frailty status after 1 year follow-up among community-dwelling elderly residents in PPR Kuala Lumpur need to be conducted.

Recently, there was a study conducted by Camilla Wahida et al. (2019) showed the prevalence of frailty syndrome and its factors associated among community-dwelling elderly residents in PPR Kuala Lumpur, Malaysia which include a total of 301 respondents. The finding showed that pre-frail is the most prevalent (72.8%), followed by frail (18.9%) and robust (11.3%). On top of that, weakness item was reported the most prevalent frailty criteria among the elderly. However, due to the pandemic Covid-19, only 113 out of 301 respondents were managed to be reached. After screening based on inclusion and exclusion criteria, only 87 out of 113 respondents were selected to participate this study. After reanalyze the data of 87 respondents, the prevalence of frailty syndrome were 10.3% (frail) and 83.9% (pre-frail). On top of that, Fried Phenotypic Criteria also being reanalyzed. Weakness item was reported as the most prevalent frailty criteria among elderly

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with proportion 79.3%, followed by exhaustion (20.7%), unintentional weight loss (18.4%), slowness (16.1%) and low physical activity (8.0%).

1.2 Problem Statement

The number of elderly population aged 60 years and above is increasing globally (United Nations, Department of Economic and Social Affairs, 2017). Consequently, it will bring a huge impact on the planning and delivering of health and social care (Clegg, 2014). Clegg (2014) also reported that frailty is the most problematic health issue among the elderly. The incidence and prevalence of frailty are different according to geographical area, socioeconomic factors and the incidence and prevalence are higher among elderly at age 80 years old and over (Fried et al., 2001; Zheng, Guan, Ding, & Wang, 2016; Lourenço et al., 2019; Mohd Hamidin et al., 2018).

Frailty syndrome is a dynamic process where frequent transition between frailty status occurs over time (Investigation, 2006). In fact, many follow-up studies revealed the prevalence of the transition in frailty status where the findings show the similar result pattern regardless the follow-up intervals. Studies reported by Thompson et al. (2018) from Australia which the follow-up interval within 4.5 years and Jiang (2018) from China which the follow-up interval within 3 years show that the transition to the worsening category was more prevalent compared to improving category. The results from both of the studies show that the transition from robust to

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pre-frail status was the most prevalent in the worsening category with prevalence 33.9% and 46.0% respectively. Similar pattern also can be seen in studies reported by Lorenzo-lópez et al. (2019) from Brazil and Ahmad et al. (2018) from Malaysia within 1 year follow up interval. Plus, these 4 studies also show the same trend in the prevalence of those who remained unchanged from baseline. It showed that those who remain pre-frail from baseline was the most prevalent followed by frail and robust. On top of that, those who are frail from the baseline was the most prevalent in the outcome of death, followed by pre-frail and robust. However, the evidence of the transition in frailty status in Malaysia is limited. Thus, the transition of frailty status after one-year follow-up is a need and drive the health practitioner to conduct an intervention studies and also plan a health promotion programs.

In a nutshell, frailty syndrome leads to have an adverse health outcomes such as falls, worsening of mobility or activities of daily life, disability, hospitalization and death (Eyigor et al., 2015). Consequently, this will burden health care system. Hence, the transition of frailty status after one-year follow-up need to be determined. This study will use Fried Phenotypic Criteria since it provides an opportunity to standardize frailty studies and to implement the preventive and therapeutic measures to minimize frailty and its avoidable outcomes (Eyigor et al., 2015).

1.3 Research Questions

1) What is the characteristics (socio-demographic characteristics, presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive

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status), risk of malnutrition, anthropometry measurement, Frailty Phenotypic Criteria) and frailty status in 2020?

2) Do the characteristics (socio-demographic characteristics, presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive status), risk of malnutrition, anthropometry measurement, Frailty Phenotypic Criteria) of community-dwelling elderly residents in PPR Kuala Lumpur in 2019 is changing in 2020?

3) What is the transition in frailty status after 1 year follow-up among community-dwelling elderly residents in PPR Kuala Lumpur?

1.4 Significance of the Study

This study will contribute to the transition of frailty status after 1 year follow up among the community-dwelling elderly residents in PPR Kuala Lumpur. This study would help other researchers to plan a health promotion programs or an intervention studies for the elderly. The outcome of the program or the intervention studies would have a positive outcome since frailty syndrome is a dynamic process which is reversible either from a greater frailty to a lesser frailty or from lesser frailty to greater frailty (Ahmad et al., 2018). Thus, this will improve the health care support system and social life of the elderly in Malaysia in the future.

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1.5 Objectives

1.5.1 General Objectives

To compare the frailty status and its transition after 1 year follow up among community-dwelling elderly residents in PPR Kuala Lumpur.

1.5.2 Specific Objectives

1) To assess the socio-demographic characteristics, presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive status), risk of malnutrition, anthropometric measurement, Fried Phenotypic Criteria and frailty status among respondents.

2) To compare the characteristics (presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive status), risk of malnutrition, anthropometric measurement, Fried Phenotypic Criteria, frailty status) of the respondents between previous data in 2019 and after 1 year follow up in 2020.

3) To explore the transition in frailty status after 1 year follow up.

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1.6 Research Hypotheses

1) There is a significant difference in the presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive status), risk of malnutrition, anthropometry measurement and Fried Phenotypic Criteria between 2019 and 2020.

2) There is a significant difference in frailty status among the respondents between 2019 and 2020.

1.7 Conceptual Framework

The conceptual framework, as shown in Figure 1.1 demonstrates the transition of frailty status after 1 year follow up among community-dwelling elderly residents in PPR Kuala Lumpur. The conceptual framework explained that the changes in presence of chronic disease, psychological status (depression), functional status (functional ability, cognitive status), risk of malnutrition, anthropometry measurement, Fried Phenotypic Criteria and frailty status can be observed after one year follow up. Socio-demographics characteristics in 2020 were not being assessed as the data in 2019 was still can be used.

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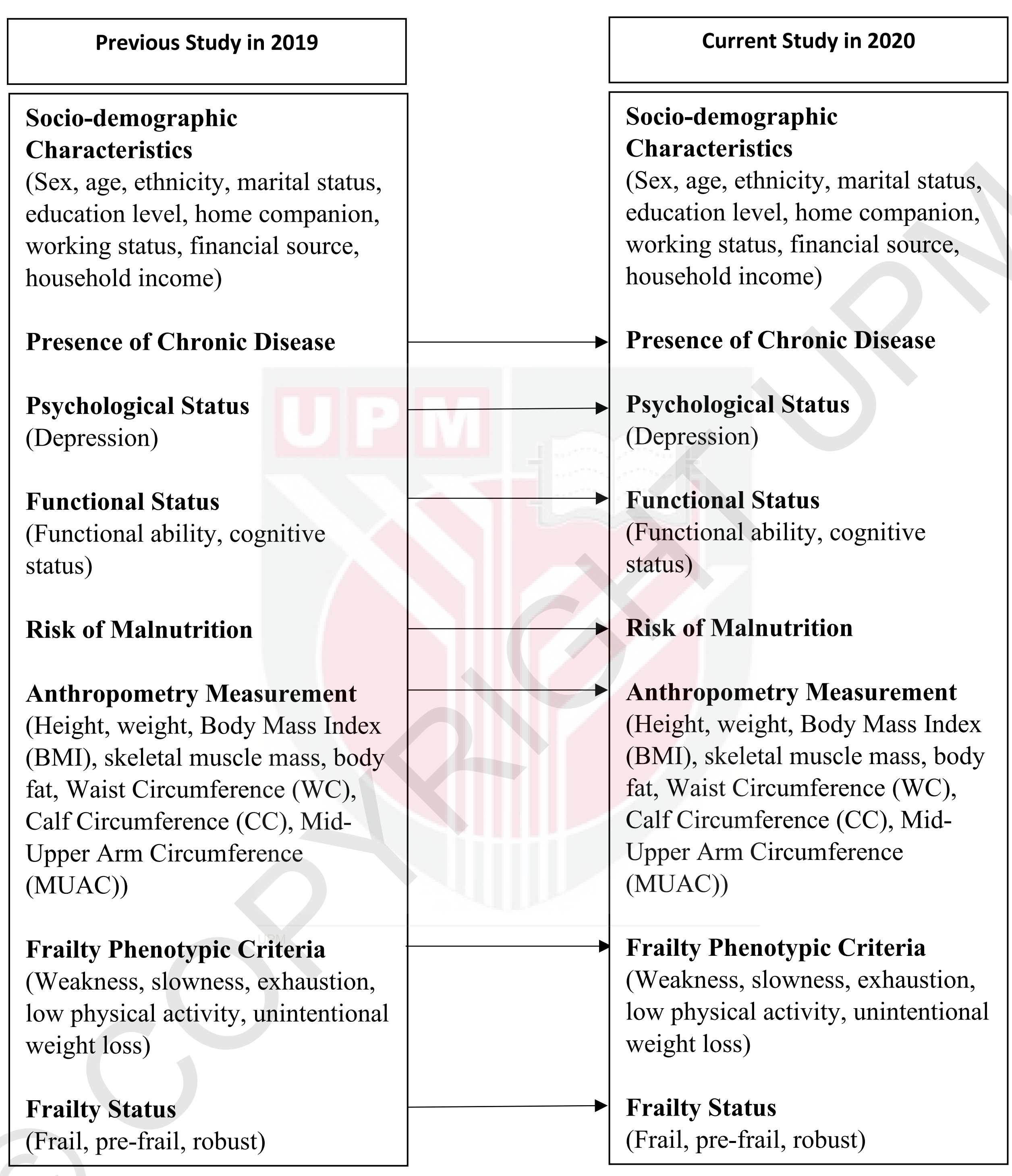

Figure 1.1 : Conceptual Framework

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CHAPTER 2

LITERATURE REVIEW

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2.1 An overview of frailty syndrome

Frailty is defined as a condition where the elderly is at state of vulnerable which increases the risk of having an adverse health outcomes and/or dying when stressor is exposed (J. Walston et al., 2006). Walston et al. (2006) also added that the term "frailty" is often used by the medical practitioners to describe the weakest and most vulnerable subset for elderly adults. In fact, frailty is the most problematic health issue among the elderly as it develops a consequence of accumulated age-related defects in multiple physiological systems (Clegg, 2014). From economic perspectives, as frail elderly are high user of the community resources, hospitalization and nursing homes, hence, the European Union has placed specific importance on defining frailty (Morley et al., 2014). Furthermore, from a clinical perspectives, frailty is very important because it lead to a higher risk of adverse health outcomes such as falls, hospitalization, disability and death (Linda P Fried et al., 2001). Moreover, frailty is crucial from a societal perspectives because it identifies those elderly that need an extra medical attention and at high risk of dependency (Buckinx et al., 2015).

Therefore, theoretically, frailty is defined as clinically the state of vulnerable is increasing which resulting from age-associated decrease in reserve and function across different physiologic systems when the stressor is comprised (Xue, 2012).

2.2 Assessment tools for frailty syndrome

The conceptualization and definition of frailty is evolving over time and the understanding in molecular and physiological declines in multiple systems, that may worsen the vulnerability in frail elderly is improving as the researchers from many disciplines are put more effort to contribute to this emerging field of research (J. Walston et al., 2006). In absence of gold standard in defining frailty, several tools in assessing frailty have been proposed by researchers which applied different conceptual approaches in describing frailty (Buckinx et al., 2015).

The two major definitions of frailty have become popular which are Frailty Index (FI) and Fried Phenotypic Criteria (Morley et al., 2014). Frailty Index (FI) is a deficits model that combine together elderly's number of impairments and conditions which was used in Canadian Study on Health and Aging (Rockwood & Mitnitski, 2011) while Fried Phenotypic Criteria is used in Cardiovascular Health Study (CHS) which specifically for physical frailty which consist of 5 items phenotypic criteria which are unintentional weight loss, exhaustion, weakness, slowness and low physical activity (Linda P Fried et al., 2001). According to Gill et al. (2006), the other operationalized definition of frailty can be considered based on these two approaches. The other assessment tools to measure frailty are Strawbridge Questionnaire, Edmonton Frail Scale (EFS), Clinical Frailty Scale (CFS), FRAIL Scale, Groningen Frailty Indicator (GgugFI), Share Frailty

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Instrument (Share-FI), Tilburg Frailty Indicator (TFI) and The Gérontopôle Frailty Screening Tool. In conclusion, need to keep in mind that different assessment tools has a different purposes (Esari et al., 2014).

2.3 Fried Phenotypic Criteria

Fried Phenotypic Criteria was used in this study as the previous study that conducted by Camilla et al. (2019) was used the same instrument in their study. Plus, this instrument was widely used in most of the frailty studies among community-dwelling elderly and the findings of the studies can be compared to one and another. Fried et al., (2001) proposed Fried Phenotypic Criteria in Cardiovascular Health Study (CHS) which specific on physical frailty that consist of 5 items of phenotypic criteria which are unintentional weight loss, exhaustion, weakness, slowness and low physical activity. This study provides a definition of frailty which is those who has 3 or more items of phenotypic criteria is categorized as frail, 1 or 2 items of phenotypic criteria is categorized as pre-frail, and those who have none of these items is categorized as robust.

Importantly, frailty is distinct from either disability or comorbidity (Linda P Fried et al., 2001) and all of these three conditions which are frailty, disability and comorbidity have a certain level of overlapping to one and another in Cardiovascular Health Study (CHS) (Figure 2.1). Disability indicates chronic limitation in movement or dependence in mobility and/or Activities of Daily Living (ADL) (Chen et al., 2014). Frail elderly could be disabled, however not all disabled elderly are frail (Morley et al., 2014). Clearly, Fried et al. (2001) reported that disability is an outcome of frailty. On the other hand, comorbidity is defined as a presence of two or more out of

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these following chronic diseases which are diabetes, hypertension, Chronic Obstructive Pulmonary Disease (COPD), arthritis, cancer, claudication, myocardial infarction, angina and congestive heart failure (Linda P Fried et al., 2001). They highlighted that comorbidity is an etiologic risk factor of frailty. Therefore, frailty, disability and comorbidity can be differentiate easily since the main components of frailty are clearly described as declining in functional reserve, dysregulation or impairment in many physiological systems and the ability to regain homeostasis is declining after exposed to stressor (Chen et al., 2014).

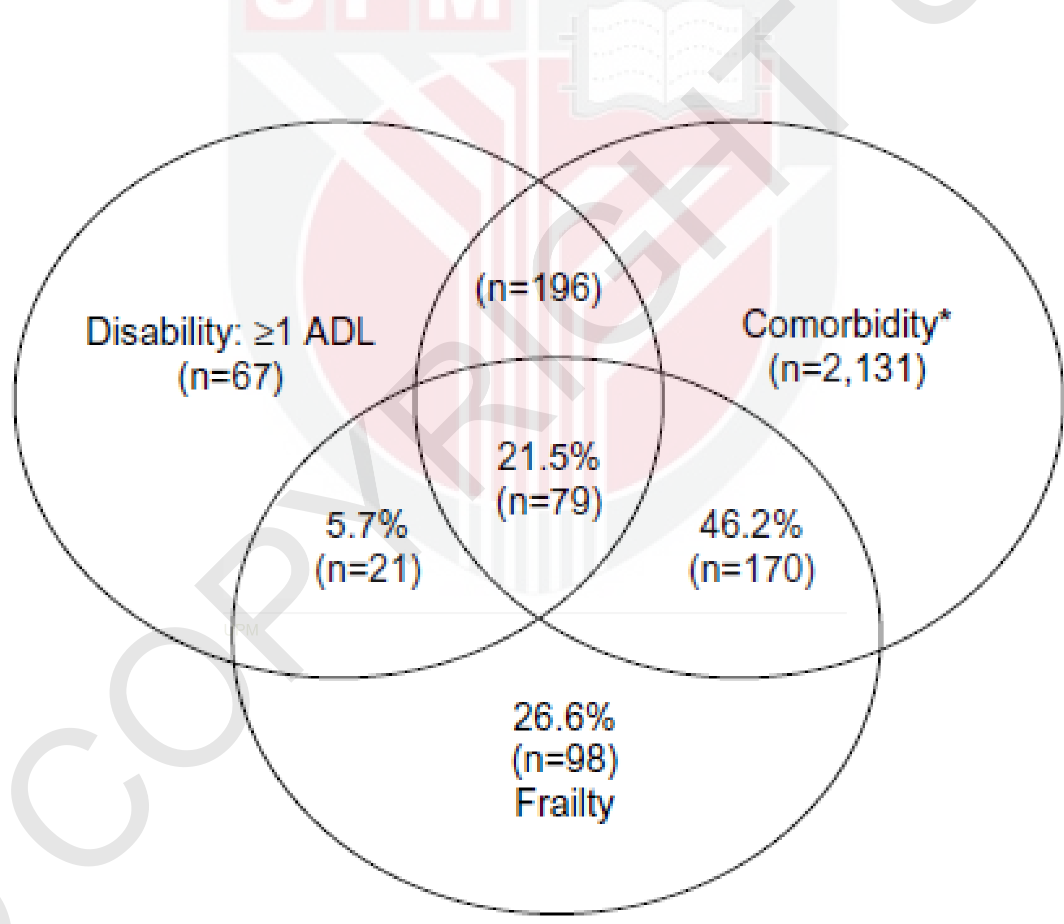

Figure 2.1 : Venn diagram of frailty syndrome, disability and comorbidity in Cardiovascular Health Study (CHS), establish that frailty syndrome is overlap with disability and comorbidity

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2.4 Transition in frailty status

Frailty syndrome is a dynamic process because it has a potential of reversibility either it can improve or worsen over time (Morley et al., 2014). Gill et al.,(2006) was the first study reported about the transition in frailty status which then they categorized it into 3 categories which were worsening, remain unchanged and improving categories. Worsening category is defined as a transition from lesser frailty status to greater frailty status, remain unchanged category is defined as a state of frailty that remain unchanged from baseline data and improving category is defined as a transition from greater frailty status to lesser frailty status. Some of the studies, for example a study conducted by Lorenzo-lópez et al. (2019) use term progressed and regressed in defining the transition states. Progressed is defined as a transition from lesser frailty status to greater frailty status while regressed is defined as a transition from greater frailty status to lesser frailty status. Ideally, the transition refers to the changing in physiological reserve and functioning, well describing the transition in frailty status may provide an anchor in order to determine these underlying changes and identify their etiology (Bandeen-roche et al., 2018).

Remain unchanged category is the most common reported by most of the studies followed by worsening category and improving category. A study reported by Lorenzo-lópez et al. (2019) that mainly pre-frail respondents are remain unchanged at their baseline. A similar finding also was found in Ahmad et al. (2018). In contrast, a studies from Gill et al., (2006) and Herr et al, (2019) stated that robust and pre-frail often remain at the baseline and did not change over time. In addition, worsening category is the next most common especially the transition from robust to pre-frail reported by Herr et al. (2019); Lorenzo-lópez et al. (2019) and Pollack et al. (2017). Meanwhile, the transition from greater frailty status to lesser frailty status also can be seen in a

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studies reported by Herr et al. (2019), Lorenzo-lópez et al. (2019), Pollack et al. (2017) and Ahmad et al. (2018). According to Alencar et al. (2015), the transition states is more common between adjacent states of frailty which is one step transition. A similar finding also was found in a study conducted by Thompson et al. (2018). However, the direct transition from robust to frail is very rare (Herr et al., 2019) and not observed (Lorenzo-lópez et al., 2019), plus there was a little reversion from frail to robust (Doi et al., 2018).

Gill et al. (2006) reported that the probability of frail elderly regressed to pre-frail reduced over time while the probability of death outcome increased and the probability of dying among frail elderly was 3 to 5 times greater than those were either non-frail or pre-frail. On top of that, a study that conducted by Trevisan et al. (2017) highlighted that the risk of mortality among frail elderly was 2.4 times high and 1.8 times as high in pre-frail. The transition from frail to death is the most frequent after the transition from robust to pre-frail was reported in study that conducted by Pollack et al. (2017). In conclusion, many of the studies show the similar findings that mortality was higher in frail elderly, followed by pre-frail and robust elderly.

2.5 Prevalence of the transition in frailty status worldwide

The prevalence of the transition in frailty status is varying in each country. However, the pattern of the transition in frailty status is almost similar to one and another regardless follow-up interval. A study conducted by Pollack et al. (2017) reported about the prevalence of progressed in frailty status or died was 35%, robust or pre-frail men progressed was 26%, all men died was 11%, remain unchanged in frailty status was 56% and pre-frail or frail participants were improved

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in frailty status. The study was a prospective cohort study involving 5086 of ≥65 years old elderly which aimed to describe the natural history of frailty transitions in a large cohort of community-dwelling older men and identify predictors associated with progression to or improvement from states of greater frailty and Fried Phenotypic Criteria was used to define frailty. The follow-up duration was 4.6 years. This study do not reported about the prevalence in transition in frailty status between adjacent states and only men were involved in this study.

In Australia, the remain unchanged category was the most prevalent which was 44.4%, followed by the death of frail elderly which was 41.4%, total worsening category which was 40.1% and total improving category 15.5% (Thompson et al., 2018). The transition from robust to pre-frail was the most prevalent in worsening category which was 33.9%, followed by pre-frail to frail which was 15.4% and robust to frail which was 6.9%. Meanwhile, the transition from pre-frail to robust was the most prevalent in improving category which was 23.1%, followed by the transition from frail to pre-frail which was 19.8% and frail to robust which was 1.8%. The study was a longitudinal study which aimed to measure frailty state transitions and factors associated with improvement or worsening frailty status and Fried Phenotypic Criteria was used to define frailty. The follow-up duration was 4.5 years.

In Italy, Trevisan et al. (2017) reported that the transition from robust to pre-frail was the most prevalent in worsening category which was 26.7%, followed by pre-frail to frail which was 20.7% and robust to frail which was 6.3%. On the other hand, the transition from frail to pre-frail was the most prevalent among improving category which was 26.5%, followed by pre-frail to

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robust which was 12.3% and frail to robust which was 0.2%. Remain robust at baseline was the most prevalent among remained unchanged category which was 50.0%, followed by pre-frail which was 36.4% and frail which was 31.8%. Clearly, the death outcome in frail elderly was the most prevalent which was 39.9%. The study was a longitudinal study with 4.4 follow-up duration which aimed to investigate frailty state transitions in a cohort of older Italian adults to identify factors exacerbating or improving frailty condition and Fried Phenotypic Criteria was used to define frailty.

Moreover, the transition from robust to pre-frail was the most prevalent in worsening category in a studies conducted by Doi et al. (2018) from Japan and Alencar et al. (2015) from Brazil which were 36.9% and 32.6% respectively. Meanwhile, in the improving category, the transition from frail to pre-frail was the most prevalent in both countries which were 35.9% and 23.3% respectively. It can be seen that remain robust at baseline was most prevalent, followed by pre-frail and frail in both countries. The death outcome in frail elderly in Japan and Brazil were 15.3% and 18.6% respectively.

In Malaysia, Ahmad et al. (2018) used Fried Phenotypic Criteria to defined frailty. The aim of the study were to describe the prevalence of physical frailty and its transition states and to determine the factors associated with different states of frailty transitions. The design of the study was prospective longitudinal study with 12 months of follow up duration. Remain unchanged category was the most prevalent, followed by worsening category and improving category. The transition from robust to pre-frail was the most prevalent in worsening category which was 49.6%,

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followed by pre-frail to frail which was 8.9% and robust to frail which was 2.9%. In improving category, the transition from frail to pre-frail was the most prevalent, followed by pre-frail to robust and frail to robust. However, this study do not investigate the mortality risk in each categories.

Other study that use different assessment tools for frailty syndrome such as Frailty Index, Edmonton Frailty Scale and Vulnerable Elders Survery (VES-13) also reported the same result pattern as Fried Phenotypic Criteria. Table 2.1 below show the prevalence of the transition in frailty status worldwide:

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Author(s), Year, Country	Follow up	Objectives, Methodology	Tool	Worsening	Improving	Remain	Outcome of Death
Pollack et al. (2017)	4.6 years	Objectives: To describe the natural history of frailty transitions in a large cohort of community-dwelling older men and identify predictors associated with progression to or improvement from states of greater frailty Study design: Prospective cohort study Respondents: ≥65 years old men only (n=5086)	Fried Phenotypic Criteria	Progressed in frailty status or died = 35.0% Robust or pre-frail progressed =26.0%	Total improving for 3 transition state =15.0%	Total remain =56.0%	Total death =11.0%
Thompson et al. (2018), Australia	4.5 years	Objectives: To measure frailty state transitions and factors associated with improvement or worsening frailty status Study Design: Longitudinal study	Fried Phenotypic Criteria	Total worsening for 3 transition state =40.1% Robust to pre-frail =33.9% Pre-frail to frail =15.4%	Total improving for 3 transition state =15.5% Frail to pre-frail =19.8% Pre-frail to robust =23.1%	Total remain =44.4% Frail =36.9% Pre-frail =44.7%	Frail =41.4% Pre-frail =16.8% Robust =11.5%

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		Respondents: ≥65 years old (n=696 at baseline)		Robust to frail =6.9%	Frail to robust =1.8%	Robust =47.7%	
Trevisan et al. (2017), Italy	4.4 years	Objectives: To investigate frailty state transitions in a cohort of older Italian adults to identify factors exacerbating or improving frailty condition. Study design: Longitudinal study Respondents: ≥65 years old (n=3099 at baseline, n=2925 at follow up)	Fried Phenotypic Criteria	Total worsening for 3 transition states =NA Robust to pre-frail =26.7% Pre-frail to frail =20.7% Robust to frail =6.3%	Total improving for 3 transition state =NA Frail to pre-frail =26.5% Pre-frail to robust =12.3% Frail to robust =0.2%	Total remain =41.9% Frail =31.8% Pre-frail =36.4% Robust =50.0%	Frail =39.9% Pre-frail =30.7% Robust =17.0%
Doi et al. (2018), Japan	4 years	Objectives: To identify risk factors for physical frailty and to understand the transitional status of frailty Study design: Prospective study Respondents:	Fried Phenotypic Criteria	Total worsening for 3 transition state =NA Robust to pre-frail =36.9% Pre-frail to frail =12.0% Robust to frail	Total improving for 3 transition state =NA Frail to pre-frail =35.9% Pre-frail to robust =29.9% Frail to robust	Total remain =NA Frail =44.9% Pre-frail =53.3% Robust	Frail =15.3% Pre-frail =4.8% Robust =2.3%

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		≥65 years old (n=5104 at baseline, n=4676 at follow up)		=2.6%	=4.0%	=58.1%	
Alencar et al. (2015), Brazil	12 months	Objectives: To examine transition rates between states of frailty over a 12-month period and evaluates the risk factors involved in such transitions Study design: Respondents: ≥65 years old (n=207)	Fried Phenotypic Criteria	Total worsening for 3 transition states =NA Robust to pre-frail =32.6% Pre-frail to frail =27.8% Robust to frail =0.0%	Total improving for 3 transition states =NA Frail to pre-frail =23.3% Pre-frail to robust =11.1% Frail to robust =2.3%	Total remainin g =NA Frail =55.8% Pre-frail =57.4% Robust =67.4%	Frail =18.6% Pre-frail =3.7% Robust =0.0%
Ahmad et al. (2018), Malaysia	12 months	Objectives: To describe the prevalence of physical frailty and its transition states and to determine the factors associated with different states of frailty transitions. Study design: Prospective longitudinal study Respondents:	Fried Phenotypic Criteria	Total worsening for 3 transition states =22.9% Robust to pre-frail =49.6% Pre-frail to frail =8.9% Robust to frail =2.9%	Total improving for 3 transition states =19.9% Frail to pre-frail =44.9% Pre-frail to robust =28.1% Frail to robust =6.1%	Total remainin g =57.2% Frail =48.9% Pre-frail =62.9% Robust =47.5%	Frail =NA Pre-frail =NA Robust =NA

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		≥60 years old (n=2324 at baseline, n=1855 at follow up)					
Lorenzo-lópez et al. (2019), Spain	1 year	Objectives: To explore natural frailty transition rates at 1-year follow-up and to identify the main determinants of such transitions. Study Design: Prospective longitudinal study Respondents: ≥65 years old (n=749 at baseline, n=537 at follow up)	Fried Phenotypic Criteria	Total worsening for 3 transition states =16.7% Robust to pre-frail =42.9% Pre-frail to frail =7.9% Robust to frail =0%	Total improving for 3 transition states =7.3% Frail to pre-frail =33.3% Pre-frail to robust =8.7% Frail to robust =0%	Total remain =76% Frail =66.7% Pre-frail =83.4% Robust =57.1%	Frail =10.7% Pre-frail =1.1% Robust =0%
Wei et al. (2018), Singapore	5 years	Objectives: To investigate the association between changes in nutritional states and frailty state transitions in a population-based older adult cohort Study design: Prospective cohort study Respondents:	Fried Frailty Criteria	Total worsening for 3 transition state =NA Robust to pre-frail =43.4% Pre-frail to frail =10.9% Robust to frail =3.4%	Total improving for 3 transition state =NA Frail to pre-frail =53.1% Pre-frail to robust =33.9% Frail to robust =18.8%	Total remain =NA Frail =28.1% Pre-frail =55.2% Robust =53.2%	Frail =NA Pre-frail =NA Robust =NA

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		≥55 years old					
Setiati et al. (2019), Indonesia	12 months	Objectives: To obtain data on prevalence of frailty, its risk factors, frailty state transition and its prognostic factors, as well as to develop prognostic score for frailty state transition. Study design: Multicenter cross-sectional study and 12 months prospective cohort Respondents: ≥60 years old outpatient (n=448 at cross sectional study, n=162 at follow up)	Frailty Index	Total worsening for 3 transition state =27.2% Robust to pre-frail =NA Pre-frail to frail =NA Robust to frail =NA	Total improving for 3 transition state =14.8% Frail to pre-frail =NA Pre-frail to robust =NA Frail to robust =NA	Total remain =58.0% Frail =NA Pre-frail =NA Robust =NA	Frail =NA Pre-frail =NA Robust =NA
Ikeda, Tsuboya, Aida, & Matsuyama (2019), Japan	3 years	Objectives: To determine the association between the socio-economic status (SES) and changes across pre-frailty, frailty, disability and all-cause mortality.	Frailty Index 'Kihon Checklist List'	Total worsening for 3 transition state =NA Robust to pre-frail =17.6% Pre-frail to frail	Total improving for 3 transition state =NA Frail to pre-frail =22.9% Pre-frail to robust	Total remain =NA Frail =34.4% Pre-frail	Frail =11.1% Pre-frail =4.8% Robust =2.7%

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		Study design: Prospective cohort study Respondents: ≥65 years old (n=65952 at follow up)		=12.2% Robust to frail =2.2%	=33.7% Frail to robust =6.5%	=40.1% Robust =74.2%	
Jiang, (2018), China	3 years	Objectives: To characterize the transitions between frailty states and examine their associations with the type of death among older adults in China Study design: Longitudinal Study Respondents: ≥65 years old (n=11165 at baseline, n=7378 at follow up)	Frailty Index	Total worsening for 3 transition state =NA Robust to pre-frail =46.0% Pre-frail to frail =20.8% Robust to frail =10.0%	Total improving for 3 transition state =NA Frail to pre-frail =10.1% Pre-frail to robust =11.6% Frail to robust =1.3%	Total remain =NA Frail =29.7% Pre-frail =42.3% Robust =29.4%	Frail =58.9% Pre-frail =25.4% Robust =14.7%
Bentur, Sternberg, & Ma, (2016), Jerusalem	6 years	Objectives: To examine frailty transitions and their relationship to utilization of health services Study design: Longitudinal study	Vulnerable Elders Survey (VES-13) Did not examine pre-frail	Total worsening for 3 transition state =NA Robust to pre-frail =NA Pre-frail to frail	Total improving for 3 transition state =NA Frail to pre-frail =NA Pre-frail to robust	Total remain =30.0% Frail =37.0% Pre-frail	Frail =36.0% Pre-frail =NA Robust =14.0%

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		Respondents: ≥65 years old (n=608 at baseline, 281 at follow up)		=NA Robust to frail =39.0%	=NA Frail to robust =1.0%	=NA Robust =30.0%	
Diniz et al.(2018), Brazil	5.6 years	Objectives: To analyze the relationship between frailty and mortality in a population of older people living in a Brazilian community Study design: Prospective cohort study Respondents: ≥65 years old (n=515 at baseline, n=262 at follow up)	Edmonton Frail Scale	Total worsening for 3 transition state =NA Robust to pre-frail =23.1% Pre-frail to frail =66.7% Robust to frail =32.7%	Total improving for 3 transition state =NA Frail to pre-frail =10.9% Pre-frail to robust =10.0% Frail to robust =0.0%	Total remain =NA Frail =89.1% Pre-frail =23.3% Robust =44.2%	Frail =NA Pre-frail =NA Robust =NA

Table 2.1 : Prevalence of Transition in Frailty Status Worldwide

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CHAPTER 3

METHODOLOGY

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3.1 Study Design

A 1 year follow-up study which uses a cross – sectional study design which was conducted to determine the transition in frailty status after 1 year follow-up among community-dwelling elderly residents in PPR Kuala Lumpur.

3.2 Study Location

This study was conducted in Kuala Lumpur which is the capital city of Malaysia. It is known as the fastest growing metropolitan area of the country which ranked as an alpha world city. It is located at elevation of 56 meters above sea level and it is situated 3.14 latitude and 101.69 longitude (World Atlas, 2015). It covers an area 243 km2 which located in the right and west Peninsular Malaysia and surrounded by Selangor, bounded by Perak in the north, Pahang in the east, Negeri Sembilan in the south and Straits of Malacca in the west. The estimated population in

Kuala Lumpur in 2019 is around 7.8 million which considered has a very high of population density of 17, 310 people per square mile or 6, 890 per square kilometers (Department of Statistics Malaysia, 2020).There are three major ethnic groups in Kuala Lumpur such as Malay, Chinese and Indian. According to Department of Statistics of Malaysia, life expectancy at birth for women in Kuala Lumpur in 2019 is the highest in among other states in Malaysia which is at 79.2 years old whereas the life expectancy at birth for men in Kuala Lumpur in 2019 is at 74.4 years old. On top of that, men at 65 years old is expected to have an additional 14.8 years of life which means the life expectancy for men at age of 65 years old is 79.8 years old while for women at age of 65 years old, it is expected to have an extra 17.1 years of life which means the life expectancy for women at age of 65 years old is 82.1 years old. This study was focused on elderly that stay in Program Perumahan Rakyat (PPR) in Kuala Lumpur under supervision of Dewan Bandaraya Kuala Lumpur (DBKL). According to Ministry of Housing and Local Government (2019), PPR is a program that initiated by government to relocate squatter and to meet the needs of having a house for those who are having low income (B40). The characteristics of PPR are an apartment that consist of 5 to 18 levels and each house covers an area less than 700 square feet which include 3 bed rooms, 1 living room, 1 kitchen and 2 toilets.

3.3 Respondents

Due to the pandemic outbreak Covid-19, only 7 out of 10 PPR in Kuala Lumpur were participated in this study which consist of 113 out of 301 respondents. However, after screened based on inclusion and exclusion criteria, only 87 out of 113 was selected to participate in this study. The inclusion and exclusion criteria of this study was not the same as the previous study. The inclusion criteria were 87 out of 301 of selected respondents from the previous study (Camilla Wahida et al.

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(2019), resides in PPR Kuala Lumpur and able to ambulate without assistance. The exclusion criteria were the presence of sensory deficits for locomotion, communication, drawing and writing, presence of Alzheimer Disease and Dementia, presence of terminal disease, move out from PPR Kuala Lumpur and cannot be reached by phone call with maximum of three further call, a day apart. Terminal disease is characterized by an advanced stage of a disease with unfavorable prognosis and no known cure. The inclusion and exclusion criteria in this study were shown as below:

Table 3.1 : Inclusion and Exclusion Criteria

INCLUSION CRITERIA	EXCLUSION CRITERIA
87 out of 301 selected respondents from the previous study.	Presence of severe sensory deficits for locomotion, communication, drawing and writing.
Resides in PPR Kuala Lumpur.	Presence of Alzheimer Disease and Dementia.
Able to ambulate without assistance.	Presence of terminal disease.
	Move out from PPR Kuala Lumpur.
	Cannot be reached by phone call with maximum of three further call, a day apart.

3.4 Sample Size Determination

113 out of 301 of selected respondents from previous study in 2019 that conducted by Camilla Wahida et al. (2019) were managed to be reached. After screened based on inclusion and exclusion criteria, only 87 out of 113 were selected to participate in this study.

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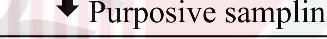
3.5 Sampling Design

A purposive sampling design was used for this study. Firstly, all 301 respondents from the previous study were listed out according to their PPR. However, due to the pandemic outbreak Covid-19, only 113 respondents which consist of 7 out of 10 PPR Kuala Lumpur were purposely selected to participate in this study. The selected PPR were Batu Muda, Pekan Batu, Kampung Muhibbah, Taman Mulia, Seri Semarak, Seri Alam and Kampung Limau while PPR in Ampang Hilir, Taman Wahyu and Raya Permai were excluded from this study. However, after screened based on inclusion and exclusion criteria, only 87 out of 113 respondents were selected in this study. The chart below show the process of purposive sampling.

A list of all PPR in Kuala Lumpur from the previous study conducted by Camilla et al. (n=10)



7 out of 10 PPR Kuala Lumpur:

1. PPR Kampung Limau (n=13)

2. PPR Batu Muda (n=26)

3. PPR Seri Alam (n=8)

4. PPR Kampung Muhibbah (n=29)

5. PPR Seri Semarak (n=14)

6. PPR Pekan Batu (n=11)

7. PPR Taman Mulia (n=12)

Respondents were screened based on inclusion and exclusion criteria

Only 87 out of 113 respondents were participated in this study

Figure 3.1: Flow chart of the sampling design

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3.6 Research Instrument

All research instruments in this study follow the same research instruments as the previous study that conducted by Camilla Wahida et al. (2019). The research instruments were also validated. These research instruments filled by researchers. All instruments in the questionnaire were in Malay Language version and consist of 9 parts which are Part A (Socio-demographic characteristics), Part B (Presence of Chronic Disease, Part C (Depression), Part D (Functional ability), Part E (Frailty Status), Part F (Physical Activity Level), Part G (Risk of Malnutrition), Part H (Cognitive Status) and Part I for anthropometry measurement, the measurement measured were height, weight, Body Mass Index (BMI), skeletal muscle mass, body fat, visceral fat, Basal Metabolic Rate (BMR),Waist Circumference (WC), Calf Circumference (CC) and Mid-Upper Arm Circumference (MUAC).

3.6.1 Socio-demographic Characteristics

The socio-demographics and socio – economic characteristics of the respondents were measured by self-developed questionnaires which include sex, age, ethnicity, marital status, educational level, home companion, working status, financial source and house hold income. Respondents were required to show their identity card to researchers in order to trace them back from the data of the previous study.

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3.6.2 Presence of Chronic Disease

The respondents need to inform their diseases that had been diagnosed by their doctors if they have any such as cardiovascular disease (including heart disease and stroke), obstructive respiratory (including COPD and asthma), diabetes mellitus, cancer, hypertension, kidney disease, intestine disease, gout/arthritis and others (which require respondents to specify the disease) to the researcher.

3.6.3 Psychological Status

Malay Geriatric Depression Scale-14-S (GDS-14-S) was used to measure depression among elderly which consist of 14 questions that only have 2 option of answers which are “YES” or “NO”. Each question had the depressive answer (error) either in “YES” or “NO”. Each depressive answer (error) was counted as 1. The total score was range from 0 to 14. The value of Cronbach α and test-retest reliability is 0.84 while the concurrent validity with MADRS (Spearman’s rho 0.68) (Teh & Hasanah, 2005). The score and classification of Malay- GDS-14 was shown as below:

Table 3.2: Classification of M-GDS-14 score

Classification	Scale
Normal	0 – 5
At risk of depression	>5

(Teh & Hasanah, 2005)

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3.6.4 Functional Status

Functional Status consists of functional ability and cognitive status among respondents.

3.6.4.1 Functional Ability

The Lawton Instrumental Activity of Daily Living-Malay Version (IADL-MV) was used to measure the independent living skills or functional ability of the respondents. These skills were considered more complex than the basic activities of daily living as measured the Kartz Index of ADLs. IADL-MV consists of 8 domains which are the ability to use telephone, shopping, food preparation, housekeeping, laundry, mode of transportation, responsibilities for own medications and ability to handle finances. For the ability to use telephone, score 0 was given for elderly that does not use phone at all while score 1 was for either answer phone but does not dial or dials a few well-known numbers or operates telephone on own initiative-looks up and dials numbers. For shopping, score 0 was given for elderly who completely unable to shop or shops independently for small purchases or needs to be accompanied on any shopping trip while score 1 was given to elderly that takes care of all shopping needs independently. For food preparation, score 0 was given for those elderly either who prepares adequate meals if supplied with ingredients or heats, serves and prepares meals, or prepares meals, or prepares meals but does not maintain adequate diet or needs to have meals prepared and served respectively while score 1 was given for elderly that can plans, prepares and serves adequate meals independently. For housekeeping, score 0 was given for elderly that does not participate in any housekeeping tasks while score 1 was given for elderly that maintains house alone or with occasional assistance (e.g. "heavy work domestic help") or performs light daily tasks such as dish washing, bed making; performs light daily tasks but cannot maintain acceptable level of cleanliness or needs help with all home maintenance tasks. For laundry, score 0 was given for elderly for all laundry must be done by others while score 1 was given for elderly

that either does personal laundry completely or launders small items-rinses stockings, others. For mode of transportation, score 0 was given for elderly that either travel limited to taxi or automobile with assistance of another or does not travel at all while score 1 was given for elderly either travels independently on public transportation or drives own car; or arranges own travel via taxi, but does not otherwise use public transportation; or travels on public transportation when accompanied by another. For responsibility for own medications, score 0 was given for elderly that either takes responsibility if medication is prepared in advance in separate dosage; or not capable of dispensing own medication respectively while score 1 was given for elderly who responsible for taking medication in correct dosages at correct time. For the ability to handle finances, score 0 was given for elderly that incapable of handling money while score 1 was given to elderly that either manages financial matters independently (budgets, writes checks, pays rent, bills, goes to bank), collects and keeps track of income; or manages day-to-day purchases, but needs help with banking, major purchases, etc respectively. The Cronbach's α coefficient for internal consistency of IADL-Malay Version was 0.838 while the intra-class correlation coefficient of inter-rater reliability and test-retest reliability were 0.957 and 0.950 respectively (Kadar et al., 2018). The score of IADL-MV and its classification was shown as below:

Table 3.3 : Classification of IADL-MV score

Classification	Scale
Functional disability	0-7
Normal	8

(M. Powell Lawton & Brody, 1969)

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3.6.4.2 Cognitive Status

Malay Version Mini-Mental State Examination-S (M-MMSE-S) was used to measure the cognitive status of elderly. It consists of 7 components which were time orientation, place orientation, memory administered, attention and calculation, memorizing, language and drawing. For time orientation component, there are 5 questions which were what day is today, what date is today, what month is now, what years is now, what time is now. Score 0 was given if the respondents answer each of the questions wrongly while score 1 was given if the respondents answer each of the questions correctly. For place orientation component, there were 5 questions which were which country are you live in, which state are you live in, which city are you live in, which building are you live in and which floor are you live in. Score 0 was given if the respondents answer each of the questions wrongly while score 1 was given if the respondents answer each of the questions correctly. For memory administration component, the respondents need to listen these 3 words carefully which are "EPAL, KUCING, MEJA". The respondents were required to say that 3 words after the researchers said the words. The respondents also required to memorize the words because a few minutes later, the researchers will ask what is the 3 words just now. For attention and calculation component, the respondents were required to spell "DUNIA" backward which was A.I.N.U.D. For memorizing component, the researchers asked back the words "EPAL, KUCING, MEJA" to the respondents. For language component, the researchers asked 2 questions and gave 4 instructions. The 2 questions were what is the object that I'm holding now (pen) and what is the object that I'm wearing now (watch). Score 0 was given if the respondents answer each of the questions wrongly while score 1 was given if the respondents answer each of the questions correctly. Next, the researcher say *"TIDAK MUNGKIN DAN CUKUP MUSTAHIL"* and the respondents need to say it back. Score 0 was given if the respondents say it wrongly while score 1

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was given if the respondents say it correctly. Then, researcher asked the respondents to take the paper with the right-hand and fold it into two and put it on the table. Score 0 was given if the respondents cannot do the task, score 1was given if the respondents took the paper with hand, score 2 was given if the respondents took the paper with the right-hand and fold it into two whereas score 3 was given if the respondents can do the task completely from take the paper with right-hand until put the paper on the table. The respondents read and do the instructions *"TUTUP MATA ANDA"* and *"TULISKAN SEPOTONG AYAT:"*. Score 0 was given if the respondents read each statement and do each instructions wrongly while score 1 was given if the respondents can read each statement and do each instructions correctly. For drawing component, the respondents were required to draw the shape that already stated on the paper. Score 0 was given if the respondents' drawing do not have 10 edges and do not overlapping while score 1 was given if the respondents draw exactly as the example with the 10 edges and overlapping. So, the total score of Malay-MMSE-S is 30. The Cronbach α for this instrument if > 0.70 (Ibrahim et al., 2009). The score of Malay-MMSE-S and its classification was shown as below:

Table 3.4 : Classification of M-MMSE-S score

Classification	Scale
Cognitive problem	≤17
Normal	≥18

(Folstein, Folstein, & McHugh, 1975; Ibrahim et al., 2009)

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3.6.5 Risk of Malnutrition

Risk of malnutrition among elderly was measured by using Mini –Nutritional Assessment Short – Form (MNA-SF) which was developed by Rubenstein et al. (2001) for Nestle Nutrition Institute. MNA-SF was used to detect malnutrition among elderly. The questionnaire consists of 6 parts which were of part A for decreasing in food intake, part B for weight loss, part C for mobility status, part D for psychological stress, part E for neuropsychological problem, part F1 for Body Mass Index (BMI) and part F2 for calf circumference (CC). Part F2 need to be skipped if part F1 is completed. The specificity, sensitivity and Youden Index are at least 0.70 (Mathew et al., 2015). Below was the MNA-SF score and its classifications:

Table 3.5 : Classification of MNA-SF score

Classification	Scale
Normal nutritional status	12 – 14
At risk of malnutrition	8 – 11
Malnourished	0 – 7

(Rubenstein et al., 2001)

3.6.6 Anthropometry Measurement

Height, weight, Body Mass Index (BMI), skeletal muscle mass, body fat, visceral fat, Basal Metabolic Rate (BMR), waist circumference, calf circumference (CC), mid upper arm circumference (MUAC) of elderly were measured.

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3.6.6.1 Body Mass Index (BMI)

Body weight and height were measured to determine Body Mass Index (BMI) of the respondents. The body weight was measured by using a TANITA Digital Weight Scale HD319 (TANITA Corporation, Japan) to the nearest 0.1 kg while height are measured by using a SECA Body Tape Measure SE206 (SECA, Germany) to the nearest 0.1 cm. For weight measurement, the respondent need to leave all heavy stuff they had. For height measurement, the respondents need to take off shoes or heels and stand up straight with feet together and with feet, buttock and shoulder are against on the flat floor and facing forward. The head must be in "Frankfort plane" which eye and ear in midline position.

After getting weight and height, Body Mass Index (BMI) of the respondent were determined. BMI was calculated as weight (kilograms) divided by the square of height ($metre^2$). The formula was shown as below:

$$\text{Body Mass Index (BMI)} = \frac{Weight\ (kg)}{Height\ (cm \times cm)}$$

Table 3.6 : Classification of Body Mass Index (BMI)

BMI (kg/m²)	Classification
< 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
≥ 30.0	Obesity

(World Health Organication, 2000)

Since the elderly cannot stand straightly due to kyphosis, other alternatives was used to determine the height of elderly :

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Table 3.7 : Other alternatives to measure height of elderly by using formula

Gender	Formula
Male	67.51 + (1.29 x DS) – (0.12 x age) + 4.13
Female	67.51 + (1.29 x DS) – (0.12 x age)

(Ngoh, Sakinah & Harsa, 2012)

3.6.6.2 Skeletal Muscle Mass

Skeletal Muscle Mass was determined by using TANITA Digital Weight Scale HD319 (TANITA Corporation, Japan) and the cut off point of skeletal muscle mass was shown as below:

Table 3.8 : Classification of Skeletal Muscle Mass

Classification	Men (%)	Women (%)
Low	<32.9	<23.9
Normal	32.9 – 38.9	23.9 – 29.9
High	39.0 – 43.6	30.0 – 34.9
Very High	≥43.7	≥ 35.0

3.6.6.3 Percentage of Body Fat

Body fat percentage was determined by using TANITA Digital Weight Scale HD319 (TANITA Corporation, Japan) and the cut of point of body fat percentage was shown as below:

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Table 3.9: Cut off point body fat percentage

	Men (%)	Women (%)
Unhealthy range (too low)	≤5.0	≤8.0
Acceptable range (lower end)	6.0 - 15.0	9.0 - 23.0
Acceptable range (upper end)	16.0 - 24.0	24.0 - 31.0
Unhealthy range (too high)	≥25.0	≥32.0

(Lee & Nieman, 2003)

3.6.6.4 Mid Upper Arm Circumference (MUAC)

Mid – Upper Arm Circumference (MUAC) measurement was taken on the right side of respondents. The measuring tape was placed around the arm without compressing the soft tissue and the measurement was taken at the mid-point marked. The reading was taken twice and the average of the reading can be determined. The cut off point MUAC measurement was shown as below:

Table 3.10 : Cut off point Mid-Upper Arm Circumference (MUAC)

	Men	Women
Normal (cm)	≥23.0	≥22.0
Muscle wasting (cm)	<23.0	<22.0

(Sakinah et al., 2010)

3.6.6.5 Calf Circumference (CC)

Calf circumference (CC) measurement was taken on the right side of the respondents. If the respondents cannot sit up straight, the calf circumference of respondents need to take in supine position with 90 degree of knee bent. The respondents were asked to sit on the bed with their left

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leg hanging loosely. The measuring tape was placed around the widest calf without compressing the tissue area. The reading was taken twice and the average of the reading can be determined. The cut off point of Calf circumference was shown as below:

Table 3.11 : Cut off point Calf Circumference (CC)

	Men	Women
Normal (cm)	≥30.1	≥27.3
Muscle wasting (cm)	<30.1	<27.3

(Sakinah et al., 2010)

3.6.6.6.Waist Circumference (WC)

High waist circumference is associated with the risk of having abdominal fat (*MOH.pdf*, n.d.). According to Centers for Disease Control and Prevention (CDC)(n.d.), an excessive abdominal fat lead to a greater risk of having obesity-related conditions such as Diabetes Mellitus Type 2, high blood pressure and coronary artery disease. The cut off point waist circumference was shown as below: for men should not exceed ≥90 cm (35 inches) while for women should not exceed ≥80 cm.

Table 3.12 : Cut off point Waist Circumference (WC)

	Men	Women
Normal (cm)	<90	<80
High waist circumference (cm)	≥90	≥80

(*MOH.pdf*, n.d.)

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3.6.7 Assessment of Frailty Syndrome

The assessment of frailty syndrome was measured by using Fried's Criteria Phenotype. Fried's Criteria Phenotype is a popular instrument that use to define physical frailty among elderly (Linda P Fried et al., 2001). It consists of 5 components which are unintentional weight loss, exhaustion, low physical activity, slowness and weakness. Those who are met 3 or more of 5 phenotypic criteria are classified as frail. Those who have 1 or 2 phenotypic criteria are classified as pre – frail. Elderly individuals that have none of these criteria are classified as robust.

3.6.7.1 Unintentional Weight Loss

Researchers asked 2 questions to respondent which are does you BMI less than 18.5kg/m^2 for the past 6 months ago and do you experienced in unintentional weight loss more than 4.5kg for the past 6 months ago. Score 0 was for "YES" answer while Score 1 was for "NO" answer. If the respondents answer "YES" in any of these 2 questions, the respondents have the frailty criteria.

3.6.7.2 Exhaustion

Researchers asked 2 questions to the respondents which are how frequent do you have difficulties to do work and how frequent do you have problem to continue your life. Score 0 was for rarely (1 day), Score 1 was for seldom (1-2 days), Score 2 (3-4 days) was for sometimes and Score 3 (5-7 days) was for always. If the respondents answer 3-4 days or 5-7 days in any of these questions, the respondents have the frailty criteria.

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3.6.7.3 Weakness

Jamar Hand Dynamometer was used to determine weakness in elderly. The respondents use their dominant hand to perform hand grip strength test. Score 0 was given if the hand grip strength of male respondents is ≤ 26kg while for female respondents, below than ≤ 18kg. Score 1 was given if the hand grip strength of male respondents is ≥ 27kg while for female respondents is ≥ 19kg. If the respondents answer Score 0, the respondents have the frailty criteria.

3.6.7.4 Slowness

The respondents need to walk for 4 meters while the researchers record the time taken of walking by using stopwatch. If the respondents exceed 5 seconds to walk for 4 meters, the respondents have the frailty criteria.

3.6.7.5 Low Physical Activity

This was based on PASE-M score. It contain 3 components which were leisure time activities, housework activities and work-related activities. For leisure time activities component, there were 6 questions that ask about leisure time activities about the past 7 days ago with Score 0, 1, 2 and 3 for each questions. For housework activities, there were 6 questions that ask about housework activities about the past 7 days ago with score 0 (NO), and 1 (YES). For work-related activities, there are a few questions asking about occupation or volunteer work.

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Hence, all items in Fried Phenotypic Criteria were summed up. The classification of frailty syndrome was shown as below:

Table 3.13 : Classification of frailty syndrome

Score	Classifications
≥ 3	Frail
1 – 2	Pre –frail
0	Robust

(Linda P Fried et al., 2001)

3.7 Data Collection Procedure

Prior data collection, ethical clearance was obtained from *Jawatankuasa Etika Universiti untuk Penyelidikan Melibatkan Manusia Universiti Putra Malaysia (JKEUPM)* with reference no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM). The ethical clearance was shown in APPENDIX A .Approval from Dewan Bandaraya Kuala Lumpur (DBKL) also was obtained with reference no: (23)DBKL/JPKKB/PTD/1/7-11.1. The approval letter from DBKL was shown in APPENDIX B. On top of that, the approval from each chairman of Projek Perumahan Rakyat (PPR) Kuala Lumpur also were obtained in APPENDIX C, D, E, F, G, H and I. All of 113 out of 301 selected respondents from the previous study were listed out and were followed – up through phone call for home visit appointment and reminder for the health program purpose. If the respondents cannot be reached by the first phone call, a maximum of three further call were made, a day apart. About 87 out of 113 respondents were selected to participate in this study after screened based on inclusion and exclusion criteria. Prior home visit and health program, second

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phone call were made for reminder purpose. Home visit was done in PPR Batu Muda, PPR Pekan Batu, PPR Taman Mulia and PPR Kampung Limau while the health program was done in PPR Seri Alam Fasa 2, PPR Kampung Muhibbah and PPR Seri Semarak. The follow-up spanned a period of 2 months from February 2020 until March 2020.

During the home visit and health program for data collection purpose, the respondents were given a brief explanation and information sheet about the purpose of the study. Consent from the respondents were obtained which indicate that the respondents agree to participate in the study. Researchers asked respondent's identity card. All of the questionnaire were done by face-to-face interview. Anthropometric measurement that were measured are height, weight, Body Mass Index (BMI), skeletal muscle mass, body fat, waist circumference, calf circumference (CC) and mid upper arm circumference (MUAC). During home visit, one researcher interviewed the respondent while the other one researcher was setting up the anthropometry equipment whereas, during health program, the respondent were registered themselves at registration counter, then they can proceed to any counter available. After all questionnaires of the respondent was completed, a set of token was given to the respondents. The flow of the data procedure was shown in Figure 3.2.

All of 113 out of 301 selected respondents from the previous study were listed out

↓

They were followed up through phone call for home visit and health program appointment purpose. Maximum 3 phone calls, a day apart

↓

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Prior home visit and health program, second phone call were made for reminder purpose

↓

Home visit:PPR Batu Muda, PPR Pekan Batu, PPR Taman Mulia and PPR Kampung Limau

Health program:PPR Seri Alam Fasa 2, PPR Kampung Muhibbah and PPR Seri Semarak

↓

During the home visit and health program for data collection purpose, the respondents were given a brief explanation and information sheet about the purpose of the study

↓

Consent from the respondents were obtained which indicate that the respondents agree to participate in the study

↓

Researchers asked respondent's identity card

↓

All of the questionnaire were done by face-to-face interview

↓

Anthropometric measurement that were measured are height, weight, Body Mass Index (BMI), skeletal muscle mass, body fat, waist circumference, calf circumference (CC) and mid upper arm circumference (MUAC).

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During home visit, one researcher interviewed the respondent while the other one researcher was setting up the anthropometry equipment

During health program, the respondent were registered themselves at registration counter, then they can proceed to any counter available.

↓

After all questionnaires of the respondent was completed, a set of token was given to the respondents

Figure 3.2 : Flow of data procedure

3.8 Statistical Analysis

All the statistical analysis were performed by using IBM SPSS Statistic 25. In this study, the univariate analysis was used to analyse descriptive data. The results of the socio-demographic characteristics, presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive status), risk of malnutrition, anthropometric measurement, Fried Phenotypic Criteria and frailty status were presented as frequencies and percentages for categorical data meanwhile, for normally distributed continuous data was reported as mean and standard deviations while for not normally distributed, the data was expressed in log10 in order to get the normally distributed data.

Moreover, in order to compare the characteristics the characteristics (presence of chronic disease, psychological status, functional status, risk of malnutrition, anthropometric measurement, Fried

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Phenotypic Criteria, frailty status) of the respondents between previous data in 2019 and after 1 year follow up in 2020, Fischer Exact Test was used for categorical data (presence of chronic disease and Fried Phenotypic Criteria) while for continuous data (functional ability, cognitive status, depression, risk of malnutrition, anthropometric measurement, frailty status), paired sample T-test was used. Furthermore, in order to explore the transition in frailty status after 1 year follow up, descriptive statistics was used which was presented as mean and percentage for categorical data.

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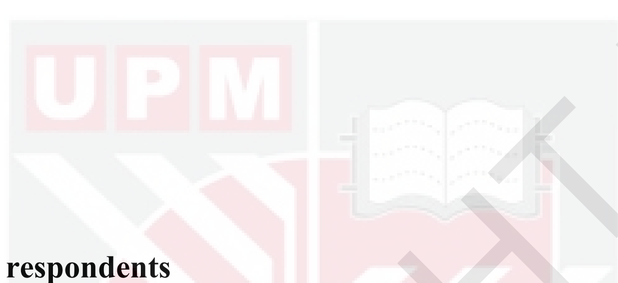
CHAPTER 4

RESULTS



4.1 Recruitment of the respondents

Total respondents from 10 PPR in Kuala Lumpur from previous study (n=301)

↓

Due to the pandemic COVID-19, only 113 respondents that consist of 7 out of 10 PPR in Kuala Lumpur were managed to be reached to participate in this study

Included in this study:

Participate in this study (n=87)

Excluded from this study:

Refuse to join (n=3)

Moving out from Kuala Lumpur (n=4)

Cannot be reached by phone call (n=10)

Stroke (n=2)

Not able to walk (n= 5)

Dead (n=2)

Figure 4.1: Recruitment process of the respondents

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The total of respondents that have been recruited from previous study was 301 respondents which reside in 10 PPR in Kuala Lumpur which were PPR Kampung Limau, PPR Batu Muda, PPR Seri Alam Fasa 2, PPR Kampung Muhibbah, PPR Seri Semarak, PPR Pekan Batu, PPR Taman Mulia, PPR Hiliran Ampang, PPR Taman Wahyu and PPR Raya Permai. However, due to the pandemic COVID-19, only 113 respondents from 7 PPR were managed to be reached to participate in this study. However, after screened based on the inclusion and exclusion criteria, only 87 were meet the criteria and were chosen as respondents in this study. Another 26 respondents were excluded from this study due refuse to join with total of 3 respondents, moving out from Kuala Lumpur with total of 4 respondents, cannot be reached by phone call with total of 10 respondents, having stroke with total of 2 respondents, not able to walk with total of 5 respondents and death with total of 2 respondents. Figure 4.1 shows the flow of the recruitments of the respondents.

4.2 Socio-demographic Characteristics

The study was carried out among the elderly residents that resides in 7 PPR in Kuala Lumpur which were PPR Batu Muda, PPR Seri Alam Fasa 2, PPR Kampung Muhibbah, PPR Seri Semarak, PPR Pekan Batu and PPR Taman Mulia. A total of 87 respondents who fulfilled the inclusion and exclusion criteria were recruited in this study. The proportion of respondents from each PPR in Kuala Lumpur was presented in Figure 4.2. PPR Batu Muda and PPR Kampung Muhibbah were the highest number of respondents that had been recruited which was 24% whereas the lowest number respondents that has been recruited was from PPR Pekan Batu which was 9%.

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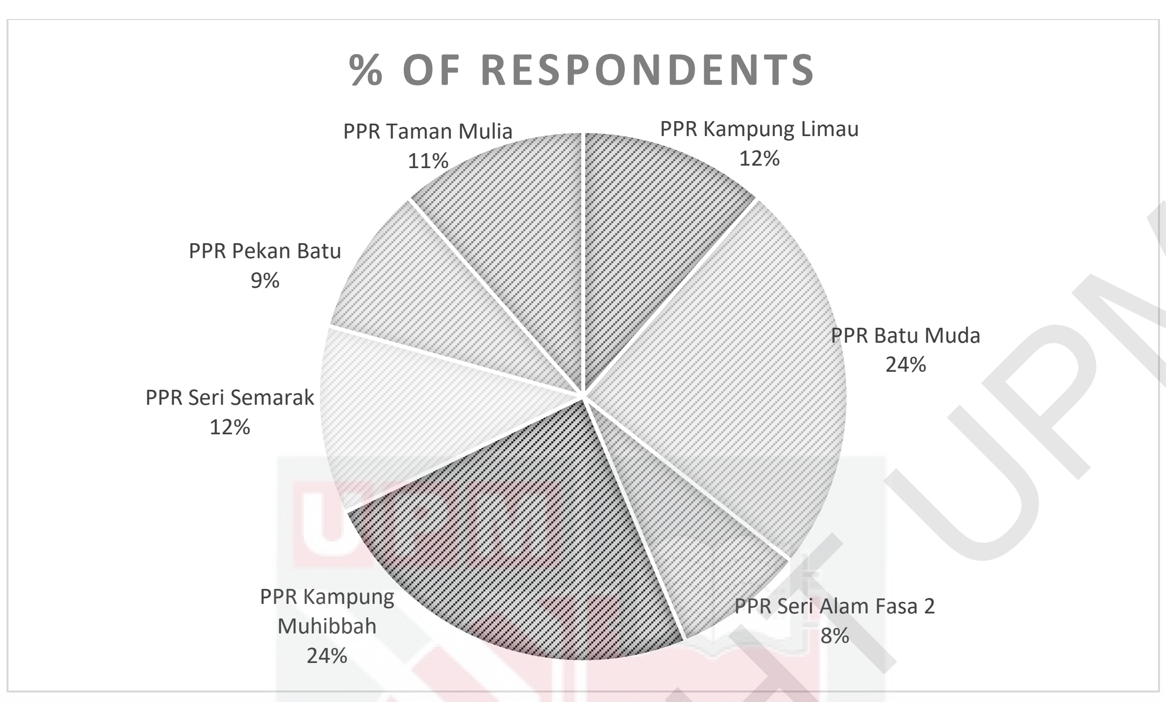

Figure 4.2: Proportion of respondents from each PPR in Kuala Lumpur

The socio-demographic characteristics were described in Table 4.1. The mean age for the respondents was 68.26 ± 5.74 years old (60-84 years old) and majority of the respondents was female (78.0%) while male (22.0%). The proportion of Malay, Chinese, Indian and other ethnicity were 76.0%, 6.0%, 17.0% and 1.0% respectively. Furthermore, for marital status, those who were married had the highest proportion (56.0%), followed by being widowed (42.0%), divorced (1.0%) and single (1.0%). On top of that, the mean age for those who were being widowed was 5.32 ± 9.73 years. In addition, most of them had educational status only at primary school with proportion 42%. The proportion of those who had no formal education, secondary school (lower form) and secondary school (upper form) were the same which were 16.0%. Only small proportion of respondents had educational status at religious school (5.0%) and had Diploma/Degree/Master/PhD (5.0%). Moreover, those who were living with husband/wife and children was the highest proportion (38.0%) among all living status followed by living with

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children (36.0%), living with husband/wife (13.0%), living alone (10.0%) and others (3.0%). More than half of them were not working or being a housewife (57.0%), then followed by those who were retired (28.0%), working (9.0%) and retired but still working (6.0%). 32.0% of elderly's financial source was came from their children, followed by pension (27.0%), welfare (25.0%), salary (10.0%), husband/wife/partner (4.0%) and saving (2.0%). The mean of household income was RM943.2 $\pm$ 802.0 with minimum household income which was RM100 and maximum household income which was RM4000. All of the respondents were categorized in B40 category. There were 4 categories of B40 which were B1 category for those who had household income below than RM2500, B2 category for those who had household income between RM2501 to RM3170, B3 category for those who had household income between RM3171 to RM 3970 and B4 category for those who had household income between RM3971 to RM4850 (*Jabatan Perangkaan Malaysia, 2020*). Most of the respondents were categorized in B4 category with proportion 95.4%, followed by B2 category (2.3%), B3 category (1.1%) and B4 category (1.1%).

Table 4.1 : Socio-demographic Characteristics of the Respondents

Characteristics	Mean $\pm$ SD	Min-Max	n (%)
Age	68.3 $\pm$ 5.7	60-84	
Sex			
Male			19 (22.0)
Female			68 (78.0)
Ethnicity			
Malay			66 (76.0)
Chinese			5 (6.0)
Indian			15 (17.0)
Others			1 (1.0)
Marital Status			
Single			1 (1.0)

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Married			49 (56.0)
Divorced			1 (1.0)
Widow / Widower			36 (42.0)
Years of being widowed	*5.3 ± 9.7	0-60	
Educational Status			
No Formal Education			14 (16.0)
Religious School			4 (5.0)
Primary School (Lower Form)			37 (42.0)
Secondary School (Lower Form)			14 (16.0)
Secondary School (Upper Form)			14 (16.0)
Diploma/Degree/Master/PHD			4 (5.0)
Living Status			
Living Alone			9 (10.0)
With Husband/Wife			11 (13.0)
With Husband/Wife & Children			33 (38.0)
With Children			31 (36.0)
Others			3 (3.0)
Occupational Status			
Not Working/Housewife			50 (57.0)
Retired			24 (28.0)
Retired but still working			5 (6.0)
Working			8 (9.0)
Financial Source			
Salary			9 (10.0)
Pension			23 (27.0)
Saving			2 (2.0)
Husband/Wife/Partner			3 (4.0)
Welfare			22 (25.0)
Children			28 (32.0)
Household income	943.2 ± 802.0	100~4000	
Income Category			
B1			83 (95.4)
B2			2 (2.3)
B3			1 (1.1)
B4			1 (1.1)

**Data set is not normally distributed*

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4.3 Presence of Chronic Disease in 2020

The presence of chronic disease in 2020 was shown in Table 4.2. The highest proportion of chronic disease was hypertension (56.3%), followed by diabetes mellitus (50.6%), high cholesterol (44.8%), cardiovascular disease (23.0%), arthritis (9.2%), bowel disease (8.0%), chronic respiratory disease (4.6%), chronic kidney disease (3.4%) and cancer (1.1%).

Table 4.2 : The Presence of Chronic Disease in 2020

Chronic Disease	n (%)
Cardiovascular Disease	20 (23.0)
Chronic Respiratory Disease	4 (4.6)
Diabetes Mellitus	44 (50.6)
Cancer	1 (1.1)
Hypertension	49 (56.3)
Chronic Kidney Disease	3 (3.4)
Bowel Disease	7 (8.0)
Arthritis	8 (9.2)
High cholesterol	39 (44.8)

4.4 Psychological Status in 2020

The psychological status of the respondents in 2020 was tabulated in Table 4.3. The mean score of the total of depression scale in MGDS-14 was 2.47 $\pm$ 2.84. About 86.0% of the respondents were normal with score below than 5 while 14.0% of the respondents were at risk of depression with score more than 5.

Table 4.3 Psychological Status in 2020

Characteristics	Mean $\pm$ SD	Min-max	n (%)

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Psychological Status	2.47 ± 2.84	0-14	
Normal			75 (86.0)
At risk of depression			12 (14.0)

4.5 Functional Status in 2020

4.5.1 Functional Ability in 2020

The functional status of the respondents in 2020 was shown in Table 4.4. The mean score of the total IADL was 7.00 ± 1.23. 57.0% of the respondents were normal with score 7 and below, whereas another 43.0% of the respondents had functional disability with score 8.

Table 4.4 : Functional Status in 2020

Characteristics	Mean ± SD	Min-max	n (%)
Instrumental Activities Daily of Living (IADL)	7.00 ± 1.23	2.00-8.00	
Normal			50 (57.0)
Functional disability			37 (43.0)

4.5.2 Cognitive Status in 2020

The cognitive status of the respondents in 2020 was described in Table 4.5. The mean score of the total M-MMSE-S was 23.37 ± 5.08. Most of them were normal in cognitive status with proportion 91.0% with score 18 and above while 9.0% of the respondents were having cognitive problem with score 17 and below.

Table 4.5 : Cognitive Status in 2020

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Characteristics	Mean ± SD	Min-max	n (%)
Cognitive Status	23.37 ± 5.08	2.00-30.00	
Normal			79 (91.0)
Cognitive Problem			8 (9.0)

4.6 Risk of Malnutrition in 2020

The risk of malnutrition in 2020 was tabulated in Table 4.6. The mean score of the total MNA-SF was 11.98 ± 1.82. More than half of them were normal in nutritional status with proportion 69.0% with score between 12 and 14. About 28.0% of the respondents were at risk of malnutrition with score between 8 and 11 while 3.0% of the respondents were malnourished with score 7 and below.

Table 4.6 : Risk of Malnutrition in 2020

Characteristics	Mean ± SD	Min-max	n (%)
Nutritional Status	11.98 ± 1.82	6.00-14.00	
Normal			60 (69.0)
Risk of malnutrition			24 (28.0)
Malnourished			3 (3.0)

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4.7 Anthropometry measurement in 2020

The result of anthropometry measurement in 2020 was shown in Table 4.7. The mean height of the respondents was 1.53 ± 0.08 meter (m) with minimum value which was 1.36 meter (m) and the maximum value which was 1.74 meter (m). In addition, the mean weight of the respondents was 63.69 ± 12.79 kilogram (kg). Thus, the mean body mass index (BMI) of the

respondents was 27.05 $\pm$ 4.75 kg/m^2 with minimum value was 18 kg/m^2 and the maximum value was 42.6 kg/m^2. For Body Mass Index (BMI), majority of the respondents were overweight with proportion 42.5%, followed by normal with proportion 33.3%, obese with proportion 23.1% and underweight with proportion 1.1%. Furthermore, the mean of body fat percentage was 37.09 $\pm$ 6.05 % with minimum value which was 22.0% and maximum value which was 48.6%. None of male and female respondents were in unhealthy range (too low) ad acceptable range (lower end) category. Most of male and female respondents were in unhealthy range (too high) with proportion 78.9% and 83.8% respectively. Moreover, the mean of skeletal muscle mass was 21.99 $\pm$ 3.02 % with minimum value 15.5% and maximum value 30.1%. All men respondents were low in skeletal muscle mass while for female respondents, about 95.6% of them were having low skeletal muscle mass. Only 4.4% of female respondents were normal in skeletal muscle mass. Besides, the mean of mid-upper arm circumference (MUAC) was 29.14 $\pm$ 4.02 cm with minimum value 21.0 cm and maximum value 40.5 cm. Most of male and female respondents had normal mid-upper arm circumference (MUAC) which were 94.7% and 98.5% respectively. Only 5.3% of male respondents and 1.5% female respondents were having muscle wasting in mid-upper arm circumference. For calf circumference (CC), the mean was 35.1 $\pm$ 4.0 cm with minimum value 26.0 cm and maximum value 48.5 cm. Most of male and female respondents had normal calf circumference which were 89.5% and 98.5% respectively. Only 10.5% of male respondents and 1.5% female respondents were having muscle wasting in calf circumference. The mean of waist circumference was 89.7 $\pm$ 12.2 cm with minimum value 62.0 cm and maximum value 149.0 cm.

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Table 4.7 : Anthropometry measurement in 2020

Measurement	Mean ± SD	Min-max	n (%)
Height (m)	1.53 ± 0.08	1.36-1.74	
Weight (kg)	63.69 ± 12.79	38.0-103.0	
Body Mass Index (BMI)	27.05 ± 4.75	18.0-42.6	
Underweight			1 (1.1)
Normal			29 (33.3)
Overweight			37 (42.5)
Obese			20 (23.1)
Body Fat Percentage	37.09 ± 6.05	22.0-48.6	
Male			
Unhealthy range (too low)			0 (0.0)
Acceptable range (lower end)			0 (0.0)
Acceptable range (upper end)			4 (21.1)
Unhealthy range (too high)			15 (78.9)
Female			
Unhealthy range (too low)			0 (0.0)
Acceptable range (lower end)			0 (0.0)
Acceptable range (upper end)			5 (7.4)
Unhealthy range (too high)			63 (92.6)
Skeletal Muscle Mass (%)	21.99 ± 3.02	15.5-30.1	
Male			
Low			19 (100.0)
Normal			0 (0.0)
High			0 (0.0)
Very high			0 (0.0)
Female			
Low			65 (95.6)
Normal			3 (4.4)
High			0 (0.0)
Very high			0 (0.0)

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Mid Upper Arm Circumference (MUAC)	29.14 ± 4.02	21.0-40.5	
Male			
Normal			18 (94.7)
Muscle wasting			1 (5.3)
Female			
Normal			67 (98.5)
Muscle wasting			1 (1.5)
Calf Circumference (CC)	35.1 ± 4.0	26.0-48.5	
Male			
Normal			17 (89.5)
Muscle wasting			2 (10.5)
Female			
Normal			67 (98.5)
Muscle wasting			1 (1.5)
Waist Circumference (WC)	89.7 ± 12.2	62.0-149.0	
Male			
Normal			6 (31.6)
High			13 (68.4)
Female			
Normal			11 (16.2)
High			57 (83.8)

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4.8 Prevalence of Fried Phenotypic Criteria in 2020

The prevalence of Fried Phenotypic Criteria among elderly residents in PPR Kuala Lumpur in 2020 was tabulated in Table 4.8. Fried Phenotypic Criteria consist 5 items which were unintentional weight loss, exhaustion, slowness, low handgrip strength, low physical activity. The most prevalent criteria was weakness with proportion 88.5%, followed by slowness with

proportion 36.8%, unintentional weight loss with proportion 19.5%, low physical activity with proportion 18.4% and exhaustion with proportion 14.9%.

Table 4.8 : Prevalence of Fried Phenotypic Criteria in 2020

Fried Phenotypic Criteria	n (%)
Unintentional weight loss	17 (19.5)
Exhaustion	13 (14.9)
Weakness	77 (88.5)
Slowness	32 (36.8)
Low physical activity	16 (18.4)

4.9 Prevalence of Frailty Syndrome in 2020

The prevalence of frailty syndrome among elderly residents in PPR Kuala Lumpur in 2020 was shown in Table 4.9. Those who had 3 or more Fried phenotypic criteria was categorized as frail, those who had 1 or 2 phenotypic criteria was categorized as pre-frail and those who had none of these criteria was categorized as robust. The mean score of Fried Phenotypic Criteria was 1.78 ± 0.88 with minimum score 0 and the maximum score 4. Majority of the respondents were in pre-frail category with proportion 79.3%, followed by frail (18.4%) and robust (2.3%).

Table 4.9 : Prevalence of Frailty Syndrome in 2020

Frailty States	Mean ± SD	Min-max	n (%)
Frailty Status	**1.78 ± 0.88**	0.00-4.00	
Robust			2 (2.3)
Pre-frail			69 (79.3)
Frail			16 (18.4)

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4.10 The Changes of the Characteristics among Respondents between 2019 and 2020

Fischer's Exact Test was used to compare categorical data in order to compare the presence of chronic disease and Fried Phenotypic Criteria between 2019 and 2020. On the other hand, paired sample t-test was used to compare continuous data in order to compare the characteristics which were psychological status, functional status, cognitive status, nutritional status, anthropometry measurement and frailty status of the respondents between 2019 and 2020.

4.10.1 The Changes of the Presence of Chronic Disease between 2019 and 2020

The changes of the presence of chronic disease among respondents between 2019 and 2020 was shown in Table 4.10 below. Fischer's Exact Test was used to compare the presence of cardiovascular disease, chronic respiratory disease, diabetes mellitus, chronic kidney disease, bowel disease, arthritis and high cholesterol between 2019 and 2020, however, for the presence of hypertension, Pearson Chi Square test was used. The differences of the presence of cancer between 2019 and 2020 cannot be determined since the proportion of having cancer in 2019 was 0%. The level of significance was set at $p<0.05$. There were a significant differences in the presence of cardiovascular disease ($p=0.005$), chronic respiratory disease ($p=0.002$), diabetes mellitus ($p=0.000$), hypertension ($p=0.000$) and arthritis ($p=0.023$) between 2019 and 2020. Hence, the research hypothesis is supported.

Table 4.10 : The Changes of the Presence of Chronic Disease between 2019 and 2020

Chronic Disease	n (%)		p-value
	2019	2020	
Cardiovascular Disease	12 (13.8)	20 (23.0)	0.005

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Chronic Respiratory Disease	8 (9.2)	4 (4.6)	0.002
Diabetes Mellitus	43 (49.4)	44 (50.6)	0.000
Cancer	0 (0.0)	1 (1.1)	-
Hypertension	46 (52.9)	49 (56.3)	0.000*
Chronic Kidney Disease	2 (2.3)	3 (3.4)	1.000
Bowel Disease	7 (8.0)	7 (8.0)	0.096
Arthritis	8 (9.2)	8 (9.2)	0.023
High Cholesterol	10 (11.5)	39 (44.8)	0.105

**Pearson Chi-square (p<0.05)*

4.10.2 The Changes in Psychological Status between 2019 and 2020

The changes in psychological status (depression) among respondents between 2019 and 2020 was shown in Table 4.11 below. There was a decreasing in mean psychological status from year 2019 to 2020 which was from 3.77 ± 2.79 to 2.47 ± 2.84, which indicate that there was an improvement in psychological status (depression) among respondents. On top of that, there was a significant difference in psychological status (depression) (p=0.000) among respondents between 2019 and 2020. Hence, the research hypothesis is supported.

Table 4.11 : The Changes in Psychological Status between 2019 and 2020

Characteristics	Mean ± SD		t-value	p-value
	2019	2020		
Psychological status (depression)	3.77 ± 2.79	2.47 ± 2.84	4.497	0.000

4.10.3 The Changes in Functional Status between 2019 and 2020

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Functional status consists of two variable which were functional ability and cognitive status.

4.10.3.1 The Changes in Functional Ability between 2019 and 2020

The changes in functional ability among respondents between 2019 and 2020 was tabulated in Table 4.12. There was a decreasing in mean functional ability from year 2019 to 2020 which was from 7.14 $\pm$ 1.17 to 7.00 $\pm$ 1.23, which indicates functional ability among respondents was worsened. However, there is no significant different in functional ability (p=0.255) among respondents between 2019 and 2020. Hence, the research hypothesis is not supported.

Table 4.12 : The Changes in Functional Ability between 2019 and 2020

Characteristics	Mean $\pm$ SD		t-value	p-value
	2019	2020		
Instrumental Activities Daily of Living (IADL)	7.14 $\pm$ 1.17	7.00 $\pm$ 1.23	1.146	0.255

4.10.3.2 The Changes in Cognitive Status between 2019 and 2020

The changes in cognitive status among respondents between 2019 and 2020 was shown in Table 4.13. There was a decreasing in mean cognitive status from year 2019 to 2020 which was from 23.54 $\pm$ 5.19 to 23.37 $\pm$ 5.08, which indicates the cognitive status among respondents between 2019 and 2020 is worsened. However, there is no significant different in cognitive status (p=0.656) among respondents between 2019 and 2020. Hence, the research hypothesis is not supported.

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Table 4.13 : The Changes in Cognitive Status between 2019 and 2020

Characteristics	Mean ± SD		t-value	p-value
	2019	2020		
Cognitive status	23.54 ± 5.19	23.37 ± 5.08	0.448	0.656

4.10.4 The Changes in Risk in Malnutrition between 2019 and 2020

The changes in risk of malnutrition among respondents between 2019 and 2020 was shown in Table 4.14 below. There was an increasing in mean risk of malnutrition from year 2019 to 2020 which was from 11.72 ± 2.02 to 12.0 ± 1.82, which indicate an improvement in risk in malnutrition among respondents between 2019 and 2020. However, there is no significant difference in risk of malnutrition (p=0.277) among respondents between 2019 and 2020. Hence, the research hypothesis is not supported.

Table 4.14 : The Changes in Risk of Malnutrition between 2019 and 2020

Characteristics	Mean ± SD		t-value	p-value
	2019	2020		
Risk of malnutrition	11.72 ± 2.02	12.0 ± 1.82	-1.094	0.277

4.10.5 The Changes in Anthropometry Measurement between 2019 and 2020

Anthropometry measurements that involved in this study were height, weight, Body Mass Index (BMI), skeletal muscle mass, body fat, waist circumference, calf circumference (CC), mid upper arm circumference (MUAC).

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4.10.5.1 The Changes in Weight between 2019 and 2020

The changes in weight among respondents between 2019 and 2020 was tabulated in Table 4.15 below. There was an increasing in mean weight from year 2019 to 2020 which was from 63.22 ± 12.29 kg to 63.69 ± 12.79 kg, which indicate the weight among respondents between 2019 and 2020 is worsened. However, there is no significant different in weight (p=0.469) among respondents between 2019 and 2020. Hence, the research hypothesis is not supported

Table 4.15 : The Changes in Weight between 2019 and 2020

Anthropometry measurement	Mean ± SD		t-value	p-value
	2019	2020		
Weight (kg)	63.22 ± 12.29	63.69 ± 12.79	-0.728	0.469

4.10.5.2 The Changes in Body Mass Index (BMI) between 2019 and 2020

The changes in Body Mass Index (BMI) among respondents between 2019 and 2020 was shown in Table 4.16 below. There was an increasing in mean body mass index (BMI) from year 2019 to 2020, which was from 26.85 ± 4.58 kg/m^2 to 27.05 ± 4.75 kg/m^2, which indicate that the body mass index (BMI) among respondents between 2019 and 2020 is worsened. However, there is no significant different in body mass index (BMI) (p=0.371) among respondents between 2019 and 2020. Therefore, the research hypothesis is not supported.

Table 4.16 : The Changes in Body Mass Index (BMI) between 2019 and 2020

Anthropometry measurement	Mean ± SD		t-value	p-value
	2019	2020		

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Body Mass Index (BMI) (kg/m^2)	26.85 ± 4.58	27.05 ± 4.75	-0.899	0.371

4.10.5.3 The Changes in Skeletal Muscle Mass between 2019 and 2020

The changes in skeletal muscle mass among respondents between 2019 and 2020 was tabulated in Table 4.17 below. There was a decreasing in mean skeletal muscle mass from year 2019 to 2020 which was from 28.64 ± 7.31 % to 21.99 ± 3.02 %, which indicate that the skeletal muscle mass among respondents between 2019 and 2020 is worsened. On top of that, there is a significant different in skeletal muscle mass (p=0.000) among respondents between 2019 and 2020. Therefore, the research hypothesis is supported.

Table 4.17 : The Changes in Skeletal Muscle Mass between 2019 and 2020

Anthropometry measurement	Mean ± SD		t-value	p-value
	2019	2020		
Skeletal Muscle Mass (%)	28.64 ± 7.31	21.99 ± 3.02	7.429	0.000

4.10.5.4 The Changes in Percentage of Body Fat between 2019 and 2020

The changes in percentage of body fat among respondents between 2019 and 2020 was tabulated in Table 4.18 below. There was an increasing in mean percentage of body fat from year 2019 to 2020 which was from 36.83 ± 6.0 % to 37.09 ± 6.05 %, which indicate that the percentage of body fat among respondents between 2019 and 2020 is worsened. However, there is no

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significant different in percentage of body fat (p=0.408) among respondents between 2019 and 2020. Therefore, the research hypothesis is not supported.

Table 4.18 : The Changes in Percentage of Body Fat between 2019 and 2020

Anthropometry measurement	Mean ± SD		t-value	p-value
	2019	2020		
Percentage of Body Fat (%)	36.83 ± 6.0	37.09 ± 6.05	-0.831	0.408

4.10.5.5 The Changes in Waist Circumference (WC) between 2019 and 2020

The changes in waist circumference among respondents between 2019 and 2020 was shown in Table 4.19 below. There was an increasing in mean waist circumference from year 2019 to 2020 which was from 89.73 ± 12.21 cm to 89.95 ± 10.01 cm, which indicate that the waist circumference among respondents between 2019 and 2020 is worsened. However, there is no significant difference in waist circumference (p=0.824) among respondents between 2019 and 2020. Therefore, the research hypothesis is not supported.

Table 4.19 : The Changes in Waist Circumference (WC) between 2019 and 2020

Anthropometry measurement	Mean ± SD		t-value	p-value
	2019	2020		
Waist circumference (cm)	89.73 ± 12.21	89.95 ± 10.01	-0.223	0.824

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4.10.5.6 The Changes in Calf Circumference (CC) between 2019 and 2020

The changes in calf circumference among respondents between 2019 and 2020 was tabulated in Table 4.20 below. There was an increasing in mean calf circumference from year 2019 to 2020 which was from 33.76 ± 4.09 cm to 35.14 ± 4.0 cm, which indicate that the calf circumference among respondents between 2019 and 2020 is worsened. On top of that, there is a significant different in calf circumference (p=0.000) among respondents between 2019 and 2020. Therefore, the research hypothesis is supported.

Table 4.20 : The Changes in Calf Circumference (CC) between 2019 and 2020

Anthropometry measurement	Mean ± SD		t-value	p-value
	2019	2020		
Calf circumference (cm)	33.76 ± 4.09	35.14 ± 4.0	-4.072	0.000

4.10.5.7 The Changes in Mid-Upper Arm Circumference between 2019 and 2020

The changes in mid-upper arm circumference (MUAC) among respondents between 2019 and 2020 was shown in Table 4.21 below. There was an increasing in mean mid-upper arm circumference (MUAC) from year 2019 to 2020 which was from 28.83 ± 3.53 cm to 29.14 ± 4.02 cm, which indicate that the mid-upper arm circumference among respondents between 2019 and 2020 is worsened. However, there is no significant different in mid-upper arm circumference (p=0.418) among respondents between 2019 and 2020. Therefore, the research hypothesis is not supported.

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Table 4.21 : The Changes in Mid-Upper Arm Circumference between 2019 and 2020

Anthropometry measurement	Mean ± SD 2019	Mean ± SD 2020	t-value	p-value
Mid-upper arm circumference (cm)	28.83 ± 3.53	29.14 ± 4.02	-0.814	0.418

4.10.6 The Changes in Fried Phenotypic Criteria between 2019 and 2020

The changes in Fried Phenotypic Criteria among respondents between 2019 and 2020 was tabulated as Table 4.22 below. There were an increasing in proportion from 2019 and 2020 in unintentional weight loss, weakness, slowness and low physical activity criteria while decreasing proportion can be observed in exhaustion criteria. However, there were only a significant difference in weakness (p=0.004) and slowness (p=0.003) among respondents between 2019 and 2020. Therefore, the research hypothesis is supported.

Table 4.22 : The Changes in Fried Phenotypic Criteria between 2019 and 2020

Fried Phenotypic Criteria	n (%) 2019	n (%) 2020	p-value
Unintentional weight loss	16 (18.4)	17 (19.5)	0.506
Exhaustion	18 (20.7)	13 (14.9)	0.727
Weakness	69 (79.3)	77 (88.5)	0.004
Slowness	14 (16.1)	32 (36.8)	0.003*
Low physical activity	7 (8.0)	16 (18.4)	1.000

**Pearson Chi Square (p<0.05)*

4.10.7 The Changes in Frailty Status between 2019 and 2020

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The changes in frailty status among respondents between 2019 and 2020 was shown in Table 4.23 below. There was an increasing in mean frailty status from year 2019 to 2020 which was from 1.45 ± 0.76 to 1.78 ± 0.88, which indicate that the frailty status among respondents between 2019 and 2020 is worsened. On top of that, there is a significant different in frailty status (p=0.005) among respondents between 2019 and 2020. Therefore, the research hypothesis is supported.

Table 4.23 : The Changes in Frailty Status between 2019 and 2020

Characteristics	**Mean ± SD**		**t-value**	**p-value**
	2019	**2020**		
Frailty Status	1.45 ± 0.76	1.78 ± 0.88	-2.913	0.005

4.11 Transition in Frailty Status after One Year Follow-up

The transition in frailty status after one year follow up was shown in Table 4.24. 5 respondents were identified as robust in 2019, the 2020 follow up revealed that none of the respondents was remained robust, 80.0% (n=4) became pre-frail and 20.0% (n=1) became frail. 73 respondents were identified as pre-frail in 2019, about 4.1% (n=3) regressed to robust in 2020, 76.7% (n=56) remained pre-frail and 19.2% (n=14) progressed to frail. 9 respondents were identified as frail in 2019, after one-year follow up revealed that none of them were regressed to robust, 88.9% (n=8) regressed to pre-frail and only 11.1% (n=1) remained frail.

Table 4.24 : Transition in Frailty Status after One Year Follow Up

Frailty Status in 2019 (n)	**Frailty Status in 2020**		
	Robust	**Pre-frail**	**Frail**
Robust (5)	0 (0.0)	4 (80.0)	1 (20.0)

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Pre-frail (73)	3 (4.1)	56 (76.7)	14 (19.2)
Frail (9)	0 (0.0)	8 (88.9)	1 (11.1)

Frailty status category was tabulated in Table 4.25. There were 3 categories to categories frailty status which were remained, worsening and improving categories. About 65.5% (n=57) of the respondents were in remained category, 21.8% (n=19) were in worsening category and 12.6% (n=11) were in improving category.

Table 4.25 : Frailty Status Category

Frailty Status Category	Total n	Total %
Remained	57	65.5
Worsening	19	21.8
Improving	11	12.6

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CHAPTER 5
DISCUSSION

5.1 Prevalence of Frailty Syndrome

According to Fried Phenotypic Criteria used in this study, 18.4% of the respondents were considered as frail, 79.3% pre-frail and 2.3% robust. This prevalence might be consistent and inconsistent with the previous prevalence of frailty syndrome. According to Mohd Hamidin et al., (2018), different geographical area and socioeconomic factors lead to a different incidence and prevalence of frailty syndrome and the prevalence are higher among elderly at age over than 80 years old. On top of that, different tools to assess frailty syndrome also lead to a different prevalence of frailty syndrome (Setiati et al., 2019).

The prevalence frailty syndrome of this study showed a bit higher compared to a study that conducted in East Coast of Peninsular Malaysia by Mohd Hamidin et al. (2018) which was 18.3%. Furthermore, this study showed that pre-frail was the most prevalent, followed by frail and robust. A similar findings was found revealed that pre-frail (57.9%) was the most prevalent among frailty

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status category (Ahmad et al., 2018). However, the study reported that robust (32.7%) was the second most prevalent frailty status and then followed by frail (9.4%).

A study from Turkey that conducted by Eyigor et al. (2015) also reported that pre-frail (43.3%) was the most prevalent frailty status and then followed by frail (39.2%). However, a study from Brazil revealed a different findings (Partezani-rodrigues et al., 2017). It stated that the prevalence of those who were frail was the same with those who were robust which was 37.9% meanwhile the prevalence of pre-frail was 24.2%. Therefore, it was cleared that the prevalence of frailty syndrome may be consistent and inconsistent for each frailty studies.

5.2 The Changes of the Characteristics of the Respondents between 2019 and 2020

The characteristics were the presence of chronic disease, psychological status (depression), functional status (functional ability and cognitive status), risk of malnutrition, anthropometry measurement, Fried Phenotypic Criteria and frailty status. The characteristics in 2019 were compared in 2020.

5.2.1 The Changes of the Presence of Chronic Disease between 2019 and 2020

The study in 2019 showed that the top 3 of chronic disease that suffered by the respondents were hypertension (52.9%), diabetes mellitus (49.6%) and cardiovascular disease (13.8%) while in 2020, the most 3 prevalent chronic disease were hypertension (56.3%), diabetes mellitus (50.6%) and high cholesterol (44.8%). In just one year period of time, there were a significant

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difference in cardiovascular disease ($p=0.005$), chronic respiratory ($p=0.002$), diabetes mellitus ($p<0.001$) and hypertension ($p<0.001$) which showing an increasing pattern. According to National Health and Morbidity Survey 2019 (NHMS 2019) reported that high blood pressure, high blood sugar and high cholesterol were the major risk factors of cardiovascular disease. On the other hand, from this follow up study, hypertension was the most prevalent chronic disease in 2019 and 2020. This findings was in line with NHMS 2019 as hypertension increases with age. Another studies also reported that hypertension was the most reported disease (Mohd Hamidin et al., 2018; Li et al. 2020). This was due to the vascular ageing which cause the arterial wall loss its elasticity and declined in arterial compliance (Jani & Rajkumar, 2006). Therefore, the probability of having chronic diseases was high with increased in age and higher in body mass index (BMI) (Saquib et al., 2017).

5.2.2 The Changes in Psychological Status between 2019 and 2020

This study showed that there was an improvement in psychological status (depression). On top of that, there was a significant different in psychological status ($p<0.001$) among the respondents between 2019 and 2020. The declining in mean of the depression due to the increasing number of social event that were organized by their community which make them were able to meet each other in their community, so that they would not felt left behind. On top of that, most of them were always expressed gratitude to God for what they have since they always attend religious event that organized by their community.

5.2.3 The Changes in Functional Status between 2019 and 2020

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The variables that involve in functional status were functional ability and cognitive status.

5.2.3.1 The Changes in Functional Ability between 2019 and 2020

The finding from this study showed that in 2020, most of the respondents had normal functional ability (57.0%). Another study was found that conducted by Li et al. (2020) reported that about 92.2% had no functional disability during follow up study. On the other hand, this study revealed that functional ability among the respondents was worsening after one year follow up, however, there was no significant different in functional ability (p=0.255) among respondents between 2019 and 2020. This findings was in line with theory stated that functional declining among elderly was common (Emeric et al., 2013). Another study also showed that functional ability was worsening after 2 years follow up (Lucelia et al., 2016). The study reported that the risk factor of functional declining were increase in age, being female, hypertension, arthritis and depression.

5.2.3.2 The Changes in Cognitive Status between 2019 and 2020

Cognitive status among respondents in 2020 was normal (91.0%,), however, after one year follow up, there was a declining in cognitive status among the respondents, but no significant difference (p=0.656) between 2019 and 2020 was observed. A consistent findings was found in a study conducted by Gills et al. (2006) reported that the decreasing in mean score also was observed. Another study from Malaysia also revealed that about 14.6% of respondents were developed mild cognitive impairment (MCI) after 1.5 year follow up. This occur because as the age increases, the

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neurotransmitter level in brain was declined (Harada et al., 2013). Therefore, this is in line with the theory that cognitive declines as the age increases.

5.2.4 The Changes in Risk of Malnutrition between 2019 and 2020

The finding from this study revealed that in 2020, most of the respondents have normal nutritional status (69.0%). This is because they always had appetite and enjoyed their meal, plus, they had no problem in chewing or swallowing food. In fact, their risk of malnutrition was getting improved from year 2019 to 2020, however, there was no significant different in risk of malnutrition (p=0.277) among respondents between 2019 and 2020. A consistent study that conducted by Lorenzo-lópez et al. (2019) also reported same findings which was the proportion of those who were normal in risk of malnutrition were increasing while those who were at risk at malnutrition were decreasing. It was noted that elderly population tend to have nutritional deficiencies due to aging process, however, in this study, there was an improvement in their appetite since most of them were always involved in their community events in which at the end of the events, foods were provided which already like a part of Malaysian culture.

5.3.5 The Changes in Anthropometry Measurement between 2019 and 2020

The changes weight, body mass index (BMI), skeletal muscle mass, percentage of body fat, waist circumference (WC), calf circumference (CC) and mid-upper arm circumference (MUAC) were observed between 2019 and 2020.

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5.3.5.1 The Changes in Weight between 2019 and 2020

The mean weight was increasing after one year follow up, however, there was no significant difference in weight (p=0.469) between 2019 and 2020. This findings was in line with National Health and Morbidity Survey 2019 (NHMS 2019). From this follow up study, the mean weight in 2019 and 2020 were classified as overweight. About 1 in 2 Malaysian adults were overweight of obese (NHMS 2019). Overall, the increase in weight lead to the increase in body mass index (BMI).

5.2.5.2 The Changes in Body Mass Index (BMI) between 2019 and 2020

The mean Body Mass Index (BMI) was increasing after one year follow, however there was no significant different in BMI (p=0.371) among respondents between 2019 and 2020. The increasing in mean of BMI was in line with the findings that found in NHMS 2019. It was stated that diabetes, hypertension and heart disease were associated with overweight or obesity and abdominal obesity. On top of that, a study that conducted by Herr et al. (2019) reported that the probability of recovering from frail or pre-frail was low, if the individual were overweight. However, an interesting findings was found in a study that conducted by Trevisan et al. (2017), revealed that those who were pre-frail gained benefit from being an overweight whereas those who were robust, being obesity and overweight raised the risk of worsening frailty.

5.2.5.3 The Changes in Skeletal Muscle Mass between 2019 and 2020

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Skeletal muscle mass among respondents was declining after one year follow up. On top of that, there was a significant different in skeletal muscle mass ($p<0.001$) between 2019 and 2020. This findings was in line with the theory that revealed that by the time of the individuals reach nearly to 80 years old, the skeletal muscle mass and function were declining (Sciences, n.d.). This may due many factors, with declining in neurological, hormonal changes, activation of inflammatory pathway, declining in activities, chronic illness, fatty infiltration and poor in nutrition (Walston, 2014).

5.2.5.4 The Changes in Percentage Body Fat between 2019 and 2020

Percentage of body fat among respondents was increasing after one year follow up, however, there was no significant different in percentage body fat ($p=0.408$) between 2019 and 2020. As age increases, it was reported that fat free mass (FFM) was declining progressively meanwhile fat mass was increase (Article, 2005). Moreover, the increasing of accumulation of fat infiltration in organs such as liver and muscles was revealed meanwhile the subcutaneous fat mass tends to decline (Ponti et al., 2020).

5.2.5.5 The Changes in Waist Circumference (WC) between 2019 and 2020

Increasing in waist circumference among elderly can be observed after one year follow up, however, there was no significant different in waist circumference among respondents between 2019 and 2020. NHMS 2019 reported that about 71.5% of elderly age 60-64 years old were having abdominal obesity. Abdominal (central) obesity occurs when the main deposits of body fat

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(adipose tissue) are localised around the abdomen (intra-abdominal or visceral fat) and the upper body region (Suzana et al., 2012).

5.2.5.6 The Changes in Calf Circumference (CC) and Mid-Upper Arm Circumference (MUAC) between 2019 and 2020

Increasing in calf-circumference and mid-upper arm circumference can be observed after one year follow up, however, only calf circumference had significant different (p=0.007) while mid-upper arm circumference had no significant different (p=0.418) among respondents between 2019 and 2020. The increase in circumference might be due to the increase in fat under the skin. Increase in total fat mass that occurs with aging must be attributable to an increase in energy intake, a decreases in energy expenditure, or both (Tzankoff, 1997).

5.2.5.7 The Changes in Fried Phenotypic Criteria between 2019 and 2020

Among 5 items of Fried Phenotypic Criteria, only weakness (p=0.004) and slowness (p=0.003) showed a significant different between 2019 and 2020. Weakness was the most prevalent Fried Phenotypic Criteria in 2019 and 2020. This item was linked to the low hand grip strength. This might be due to lack of performing resistance training. A study reported by Arazi & Izadi (2017), resistance training can influence the physiological and physical capacities of elderly people, that include training by using body weight, weighted vests and belts, elastic bands, dumbbells or any portable implements. In 2019, the most 3 prevalent Fried Phenotypic Criteria were weakness, exhaustion and shrinking while the least Fried Phenotypic Criteria that had being

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reported was low physical activity. In 2020, the most 3 prevalent Fried Phenotypic Criteria were weakness, slowness and shrinking while the least Fried Phenotypic Criteria that had being reported was exhaustion. The findings in 2020 was consistent with a study that conducted by Alencar et al. (2015). However, a study that conducted by Mohd Hamidin et al. (2018) revealed a different findings where the study reported that low physical activity was the most prevalent Fried Phenotypic Criteria after one year follow up. On the other hand, a study from Indonesia found that slowness item lead to an increase in the risk of progression in frailty status towards worsening category in just 12 months (Setiati et al., 2019). The study justify that, the coordination of various organ systems and consumption of energy were needed in walking, thus, declining in organ function and increased in energy consumption for walking might be represented through slow in gait speed. These differences findings might be due to the ethnic differences and had a different measure to define the frailty criteria (Manuscript, 2013).

5.3 Transition in Frailty Status after 1 Year Follow Up

This study showed that about 65.5% of respondents were remained in frailty status, 21.8% progressed to worsening category and 12.6% regressed to improving category. The same trends can be seen in other studies reported that the most prevalent frailty transition category was remained in frailty status, and then followed by worsening category and improving category (Alencar et al., 2015; Herr et al., 2019; Setiati et al., 2019). None of the respondents were remained robust. This could be an eye-opener for the researchers to find out what cause of it and how to delay the progression. This must be taken seriously because the transition was happened in just short period of time. On top of that, even though the progression from robust to frail or regression

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from frail to robust was very rare (Alencar et al., 2015 ;Herr et al., 2019) however, in this study, there was one respondent who progressed in 2 frailty status in just 12 months while none of frail respondents were regressed to robust. Importantly, an interesting finding was found in this study, about 88.9% were regressed from frail to pre-frail. This could be due to the involvement in community events and performing physical activity such as brisk walking and climbing up stairs. However, the involvement in resistance training was quite rare in this study. According to Espinoza et al., (2013), the progression or regression in frailty status among community dwelling elderly over time was due to the psychological determinants of transition or the clinical/medical characteristics of the individuals. Another study revealed that being overweight, low moderate alcohol consumption, high education level and living alone were associated to the improvement in frailty status while cognitive status declining, poor functional and physical status were link to the progression towards worsening category (Trevisan et al., 2017). Therefore, all of these findings were in line with the theory that frailty syndrome is a reversible process.

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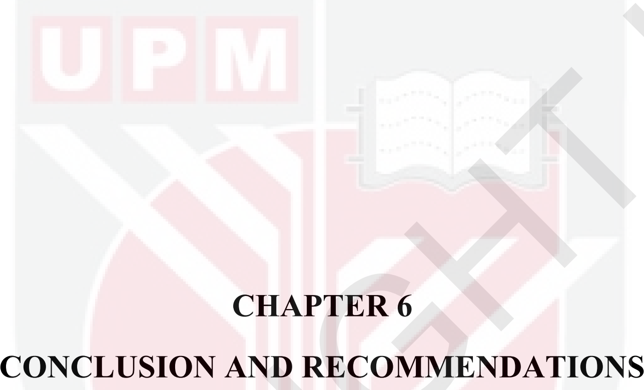

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CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The prevalence of frailty syndrome among community-dwelling elderly residents in PPR Kuala Lumpur in 2020 was 18.4% which was increases from 10.3% in 2019, while the prevalence of pre-frail in 2019 was declining from 83.9% to 79.3% in 2020. About 65.5% of the respondents were remained in frailty status, 21.8% were progressed to worsening category and only 12.6% of

the respondents were regressed to improving category. Weakness was the most prevalent Fried Phenotypic Criteria in 2019 (79.3%) and 2020 (88.5%) while the least prevalent Fried Phenotypic Criteria in 2019 and 2020 was low physical activity.

There are a significant difference in cardiovascular disease ($p=0.005$), chronic respiratory disease ($p=0.002$), diabetes mellitus ($p<0.001$), hypertension ($p<0.001$), arthritis ($p=0.023$), weakness ($p=0.004$) and slowness ($p=0.003$) item of Fried Phenotypic Criteria, depression ($p<0.001$), skeletal muscle mass ($p<0.001$), calf circumference ($p=0.007$) and frailty status ($p=0.005$) among respondents in PPR Kuala Lumpur between 2019 and 2020. Overall, the findings of this study regarding to the transition in frailty status was in line with the theory.

6.2 Limitations of the Study

This study was a cross-sectional study which the causal and effect of transition in frailty status cannot be determined. Plus, this study do not differ across gender. However, not all 301 respondents from the previous study were being reached due to the pandemic Covid-19 and Movement Control Order (MCO), only 113 respondents were managed to be reached. On top of that, the data collection cannot be done through online platform due to the limitation of taking anthropometry measurement. Furthermore, this study only involved community dwelling elderly residents in PPR Kuala Lumpur (urban), hence the findings cannot be generalize to all community dwelling elderly residents in Malaysia. Lastly, most of the respondents cannot wait for too long since the questionnaire was quite lengthy.

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6.3 Recommendations

There are some recommendations that could be suggested for future research study and implementation. First of all, future studies may include the factors of determining the worsening or improvement in frailty status for follow up study. Furthermore, dietary intake should include in follow up study as well in order to acknowledge more about the nutritional status and the transition in frailty status among elderly. Last but not least, health professionals and nutritionist need to develop an appropriate nutrition education program to delay the progression in frailty status.

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KOD RESPONDEN:

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

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Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)
Date: 12 February 2020

Dear Prof./Dr./Mr./Ms.,

APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled **'Nutrition education and exercise intervention in preventing frailty among pre-frail Malaysian elderly in PPR flats Kuala Lumpur'** has been approved.

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (http://www.tncpi.upm.edu.my/faildokumen).

If you have any enquiries, please contact Ms. Nurulhasanah Ishak (03-97691605) or Ms. Nor Ellia Abd Ajis (03-97691244).

Note: Please use this reference number for any transaction:- **JKEUPM-2019-335**

Thank you.

Yours faithfully,

Prof. Dr. Zamberi Sekawi
Chair
Ethics Committee for Research Involving Human Subjects
Universiti Putra Malaysia

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Appendix B : Approval letter from Dewan Bandaraya Kuala Lumpur (DBKL)

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Appendix C : Approval letter for chairman of PPR Batu Muda

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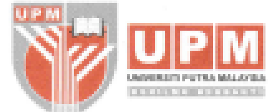

FAKULTI PERUBATAN DAN SAINS KESIHATAN
Faculty of Medicine and Health Sciences

Tarikh : 14 Feb 2020

Pengerusi
PPR Batu Muda,
51200 Kuala Lumpur,
W.P. Kuala Lumpur.

(UP: Encik Redzuan bin Hanafi)

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR BATU MUDA

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Batu Muda yang berusia 60 tahun ke atas sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar :
i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

i. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
ii. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Batu Muda.

4. Untuk makluman tuan/puan, program tersebut akan diadakan pada:

Tempoh Tarikh : 1 Mac 2020
Masa : 8.00 pagi - 12.30 tengahari

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Appendix D : Approval letter for Chairman of PPR Seri Alam Fasa 2

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Tarikh : 20 Feb 2020

Pengerusi
Persatuan Penduduk PPR Seri Alam 2,
Jalan Istana / Jalan Sg. Besi,
57100 Kuala Lumpur,
W.P. Kuala Lumpur.

(UP: Encik Hisham bin Ghazali)

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR SERI ALAM

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Seri Alam yang berusia 60 tahun ke atas sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar : i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

i. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
ii. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Seri Alam.

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4. Untuk makluman tuan/puan, program tersebut akan diadakan pada:

Tempoh Tarikh : 7 Mac 2020
Masa : 8.00 pagi - 12.30 tengahari

5. Sehubungan itu, saya ingin memohon kebenaran dan kerjasama pihak Tuan/Puan agar pelajar tersebut dapat menjalankan kajian mereka seperti dinyatakan di atas. Bersama-sama surat ini, dilampirkan senarai ahli jawatankuasa program (Lampiran 1) dan atur cara program (Lampiran 2) untuk rujukan pihak tuan. Sebarang pertanyaan boleh menghubungi pelajar di talian **018-3187874 (Najatul) / 013-3959237 (Hyssna)** atau di alamat emel najatulnurmunirah@gmail.com / syina29@gmail.com
Segala kerjasama daripada pihak Tuan/Puan didahului dengan ucapan terima kasih.

"BERILMU BERBAKTI"

Yang menjalankan tugas,

PROF. MADYA DR. SITI NUR'ASYURA BINTI ADZNAM
Penyelia Projek Tahun Akhir
Kursus Projek Ilmiah Tahun Akhir (PKK 4999)
Tel: 012-3612644
Emel: asyura@upm.edu.my

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Appendix E : Approval letter for Chairman of PPR Seri Semarak

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FAKULTI PERUBATAN DAN SAINS KESIHATAN
Faculty of Medicine and Health Sciences

Tarikh : 20 Feb 2020

Pengerusi
Persatuan Penduduk PPR Seri Semarak,
53300 Kuala Lumpur,
W.P. Kuala Lumpur.

(UP: ENCIK HAFIZ)

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR SERI SEMARAK

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Seri Semarak yang berusia 60 tahun ke atas sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar :
i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

i. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
ii. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Seri Semarak.

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Appendix F : Approval letter for Chairman of PPR KG Limau

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FAKULTI PERUBATAN DAN SAINS KESIHATAN
Faculty of Medicine and Health Sciences

Tarikh : 20 Feb 2020

Pengerusi
Persatuan Penduduk PPR Kampung Limau,
59200 Kuala Lumpur,
W.P. Kuala Lumpur.

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR KAMPUNG LIMAU DARI RUMAH KE RUMAH

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Kampung Limau yang berusia 60 tahun ke atas dari rumah ke rumah sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar : i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

i. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
ii. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Kampung Limau.

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Appendix G : Approval letter for Chairman of PPR Taman Mulia

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Tarikh :20 Feb 2020

Pengerusi
Persatuan Penduduk PPR Taman Mulia,
56000 Kuala Lumpur,
W.P. Kuala Lumpur.

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR TAMAN MULIA DARI RUMAH KE RUMAH

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Taman Mulia yang berusia 60 tahun ke atas dari rumah ke rumah sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar : i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

i. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
ii. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Taman Mulia.

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Appendix H : Approval letter for Chairman of PPR KG Muhibbah

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Tarikh : 14 Feb 2020

Pengerusi
PPR Kampung Muhibbah,
58200 Kuala Lumpur,
W.P. Kuala Lumpur.

(UP: Ybhg Dato' Hj Nik Mohd Kamil bin Hj Nik Daud)

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR KAMPUNG MUHIBBAH.

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Kampung Muhibbah yang berusia 60 tahun ke atas sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar : i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

I. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
II. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Kampung Muhibbah.

4. Untuk makluman tuan/puan, program tersebut akan diadakan pada:

Tempoh Tarikh : 22 Mac 2020
Masa : 8.00 pagi - 12.30 tengahari

5. Sehubungan itu, saya ingin memohon kebenaran dan kerjasama pihak Tuan/Puan agar pelajar tersebut dapat menjalankan kajian mereka seperti dinyatakan di atas. Bersama-sama

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surat ini, dilampirkan senarai ahli jawatankuasa program (Lampiran 1) dan atur cara program (Lampiran 2) untuk rujukan pihak tuan. Sebarang pertanyaan boleh menghubungi pelajar di talian **013-3959237 (Hyssna) / 018-3187874 (Najatul)** atau di alamat emel syina29@gmail.com / najatulnurmunirah@gmail.com

Segala kerjasama daripada pihak Tuan/Puan didahului dengan ucapan terima kasih.

"BERILMU BERBAKTI"

Yang menjalankan tugas,

PROF. MADYA DR. SITI NUR'ASYURA BINTI ADZNAM
Penyelia Projek Tahun Akhir
Kursus Projek Ilmiah Tahun Akhir (PKK 4999)
Tel: 012-3612644
Emel: asyura@upm.edu.my

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Appendix I : Approval letter for Chairman of PPR Pekan Batu

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FAKULTI PERUBATAN DAN SAINS KESIHATAN
Faculty of Medicine and Health Sciences

Tarikh : 20 Feb 2020

Pengerusi
Persatuan Penduduk PPR Pekan Batu,
51200 Kuala Lumpur,
W.P. Kuala Lumpur.

Tuan/Puan,

MEMOHON KEBENARAN MENJALANKAN PENYELIDIKAN PROJEK ILMIAH TAHUN AKHIR (PKK4999) DALAM KALANGAN WARGA EMAS DI PPR PEKAN BATU DARI RUMAH KE RUMAH

Dengan segala hormatnya perkara di atas di rujuk.

2. Dua orang pelajar tahun akhir Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, UPM bercadang untuk menjalankan kajian dalam penduduk PPR Pekan Batu yang berusia 60 tahun ke atas dari rumah ke rumah sebagai syarat untuk lulus dalam kursus ini. Berikut ialah nama pelajar dan tajuk kajian yang dicadangkan:

Nama pelajar :
i) Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)
ii) Wan Hyssna binti Wan Omar (No Matrik: 190505)

Tajuk Kajian : Perubahan status keuzuran selepas setahun kajian susulan & faktor-faktor berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

3. Program ini diadakan bertujuan untuk:

i. Mengadakan kajian susulan selepas setahun berkenaan dengan tahap kesihatan dan kualiti hidup terhadap responden tahun lalu.
ii. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk PPR Pekan Batu.

Fakulti Perubatan dan Sains Kesihatan, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor Darul Ehsan, Malaysia.
603-9769 2300 603-9769 2585 http://www.medic.upm.edu.my

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4. Untuk makluman tuan/puan, program tersebut akan diadakan pada:

Tempoh Tarikh : 2 Mac sehingga 6 Mac 2020
Masa : 8.00 pagi - 12.30 tengahari

5. Sehubungan itu, saya ingin memohon kebenaran dan kerjasama pihak Tuan/Puan agar pelajar tersebut dapat menjalankan kajian mereka seperti dinyatakan di atas. Sebarang pertanyaan boleh menghubungi pelajar di talian **013-3959237 (Hyssna) / 018-3187874 (Najatul)** atau di alamat emel syina29@gmail.com / najatulnurmunirah@gmail.com

Segala kerjasama daripada pihak Tuan/Puan didahului dengan ucapan terima kasih.

"BERILMU BERBAKTI"

Yang menjalankan tugas,

PROF. MADYA DR. SITI NUR'ASYURA BINTI ADZNAM
Penyelia Projek Tahun Akhir
Kursus Projek Ilmiah Tahun Akhir (PKK 4999)
Tel: 012-3612644
Emel: asyura@upm.edu.my

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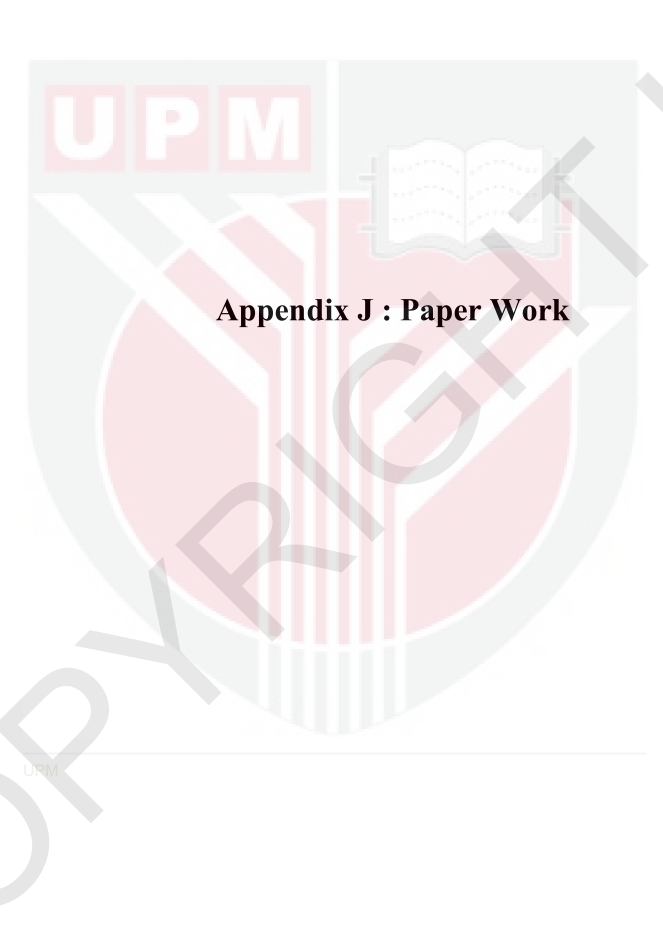

Appendix J : Paper Work

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KERTAS KERJA

PROJEK KAJIAN ILMIAH TAHUN AKHIR

PERUBAHAN STATUS KEUZURAN SELEPAS SETAHUN KAJIAN SUSULAN & FAKTOR-FAKTOR BERKAITAN DENGAN SARKOPENIA DALAM KALANGAN WARGA EMAS DI KUALA LUMPUR

TARIKH

7 MAC 2020

TEMPAT

PPR SERI ALAM 2

ANJURAN

PELAJAR TAHUN AKHIR

BACELOR SAINS (PEMAKANAN DAN KESIHATAN KOMUNITI)

Nur Najatul Munirah binti Muhamad Bokery (No Matrik: 187525)

Wan Hyesna binti Wan Omar (No Matrik: 190505)

DENGAN KERJASAMA

JABATAN PEMAKANAN DAN DIETETIK, FAKULTI PERUBATAN DAN SAINS KESIHATAN (FPSK), UNIVERSITI PUTRA MALAYSIA

1

1.0 PENGENALAN

Keuzuran dan sarkopenia (kehilangan jisim otot) adalah perkara lazim yang akan dihadapi dalam kalangan warga emas. Kajian terdahulu menyatakan bahawa dua faktor ini mempengaruhi dan memberi impak yang negatif terhadap kesihatan dalam kalangan warga emas. Perkara ini juga semakin meningkat dalam kalangan komuniti warga emas tidak kira di bandar mahupun di luar bandar. Pada program kesihatan tahun lalu juga, dapat dilihat status keuzuran dalam kalangan warga emas boleh dikatakan tinggi (Lampiran 2). Oleh yang demikian, kajian ini bertujuan untuk melihat perubahan status keuzuran selepas setahun kajian susulan. Program ini juga melihat faktor-faktor yang berkaitan dengan sarkopenia dari segi sosio-demografi, komposisi badan, sejarah pemakanan, aktiviti fizikal dan status fungsian bagi penduduk warga emas yang berumur 60 tahun ke atas di PPR Kuala Lumpur.

Kajian ini adalah sebahagian daripada keperluan untuk bergraduat bagi pelajar tahun akhir program Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Fakulti Perubatan dan Sains Kesihatan, Universiti Putra Malaysia (UPM). Kajian ini telah mendapat kelulusan daripada pihak Jawatan Kuasa Etika Penyelidikan UPM.

Sarapan dan hadiah akan diberikan kepada setiap peserta sebagai tanda penghargaan kami terhadap mereka atas penglibatan mereka secara langsung dalam kaji selidik ini.

2

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2.0 OBJEKTIF

i. Mendapatkan kelulusan dan sokongan daripada Encik Hisham bin Ghazali, Pengerusi Persatuan Penduduk PPR Seri Alam 2 dan staf-staf pengurusan Ahli Jawatan Kuasa (AJK) Persatuan Penduduk PPR Seri Alam 2 untuk mengadakan Program Kesihatan Komuniti anjuran pelajar Projek Ilmiah Tahun Akhir (PKK4999), Ijazah Sarjana Muda (Sains) Pemakanan dan Kesihatan Komuniti, Universiti Putra Malaysia.

ii. Menganalisa perubahan status keuzuran selepas setahun kajian susulan dan faktor - faktor yang berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur terutama PPR Seri Alam 2.

iii. Mengadakan kajian susulan terhadap peserta yang terlibat dalam program kesihatan komuniti anjuran Universiti Putra Malaysia pada tahun lalu (rujuk Lampiran 1) dalam usaha untuk menganalisa perubahan status keuzuran selepas setahun kajian susulan.

iv. Menggalakkan lebih ramai peserta baru yang berusia 60 tahun dan ke atas untuk menyertai dan terlibat dalam kaji selidik ini.

v. Meningkatkan pengetahuan dan kesedaran tentang kepentingan gaya hidup sihat melalui pemakanan dan aktiviti fizikal dalam kalangan penduduk warga emas PPR Seri Alam 2.

vi. Memantapkan hubungan dua hala antara Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan Universiti Putra Malaysia dan PPR Seri Alam 2.

3.0 HASIL PEMBELAJARAN

i. Memberi keputusan akhir mengenai status kesihatan warga emas di PPR Seri Alam 2.

ii. Mewujudkan dan menanam nilai kepimpinan dalam kalangan pelajar Tahun Akhir Ijazah Sarjana Muda (Sains) Pemakanan dan Kesihatan Komuniti, Universiti Putra Malaysia terutama untuk melaksanakan kursus Projek Ilmiah Tahun Akhir (PKK4999).

3

iii. Melatih pelajar Projek Ilmiah Tahun Akhir untuk berkomunikasi dengan penuh yakin, jelas melontarkan pandangan dan bijak dalam bekerjasama dengan pihak luar.

iv. Peserta dapat mengetahui status kesihatan mereka.

v. Hadiah akan diberikan kepada setiap peserta yang hadir melibatkan diri dalam kaji selidik ini.

4.0 IMPAK PROGRAM

i. Para pelajar Projek Ilmiah Tahun Akhir (PKK4999) dapat mempertingkatkan nilai kepimpinan dalam diri terutamanya semasa mengendalikan program dan bekerjasama dengan pihak pengurusan.

ii. Dapat membentuk pelajar Projek Ilmiah Tahun Akhir (PKK4999) yang holistik bukan sahaja pintar dari segi akademik malah berbakat dalam pelbagai bidang.

iii. Dapat mengekalkan hubungan dua hala antara Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan Universiti Putra Malaysia dan PPR Seri Alam 2.

5.0 TARIKH

Program ini akan dijalankan pada 7 Mac 2020.

6.0 TEMPAT

PPR Seri Alam 2, Kuala Lumpur.

7.0 ANJURAN

Pelajar Tahun Akhir, Bacelor Sains (Pemakanan dan Kesihatan Komuniti) Universiti Putra Malaysia dengan kerjasama Jabatan Pemakanan dan Dietetik, Fakulti Perubatan dan Sains Kesihatan, Universiti Putra Malaysia.

4

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LAMPIRAN 1

SENARAI PESERTA YANG TERLIBAT DENGAN PROGRAM KESIHATAN DI PPR SERI ALAM 2 PADA TAHUN LALU

Yap hoi yin 0163233488

Tanagavellu a/l samykannu 0102928904

Nagalingam a/l karuppiah 0173281491

Rajapathee a/l alagapan 0162398637

Chandarakanni a/p rakiah 0162398637

Janaky a/p ramasamy 0102412960

Zaharah bt muhammad sarif 0173080676

Suseela a/p lechumanan 0176662044

Md yasin bin ibrahim 0126038587

Selvamany a/p muthukamachee 03-92210252

Litchchumee a/p muthukamachee 03-92210252

Kandasamy a/l doraisamy 0163418440

Devahey a/p muthukamachee 0122444666

Tajudin bin salleh 0193309441

7

LAMPIRAN 2

KEPUTUSAN KESELURUHAN STATUS KESIHATAN WARGA EMAS PPR KUALA LUMPUR PADA TAHUN LALU

i. Kelaziman sindrom keuzuran mengikut jantina :

Status Sindrom Keuzuran	Jumlah (n = 301)	Lelaki (n = 92)	Perempuan (n = 209)
Normal	34 (11.3%)	15 (16.3%)	19 (9.1%)
Pra - keuzuran	219 (72.8%)	66 (71.7%)	153 (73.2%)
Uzur	48 (15.9%)	11 (12.0%)	37 (17.7%)

(Camilla Wahida et al., 2019)

ii. Pembahagian sindrom keuzuran mengikut ciri-ciri fenotip :

Ciri - ciri fenotip	Jumlah	Lelaki	Perempuan
Penyusutan berat badan	37 (12.3%)	17 (45.9%)	20 (54.1%)
Kelemahan	239 (79.4%)	63 (26.4%)	176 (73.6%)
Keletihan	61 (20.3%)	10 (16.4%)	51 (83.6%)
Kelambatan	81 (26.9%)	21 (25.9%)	60 (74.1%)
Kekurangan aktiviti fizikal	58 (19.3%)	19 (32.8%)	39 (67.2%)

(Camilla Wahida et al., 2019)

8

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LAMPIRAN 3

AHLI JAWATAN KUASA PELAKSANA PROGRAM KESIHATAN KOMUNITI

JAWATAN	NAMA	NO. TELEFON
PERSON IN CHARGE (siapa yg pgg ppr tu sy/nama/ja)	Nur Najatul Munirah binti Muhamad Bokery	018-3187874
AHLI JAWATAN KUASA	Wan Hyssna binti Wan Omar	013-3959237
	Camillia Wahida binti Norazman	018-7713642
	Nurul Izzati	017-3821050
	Siti Nur Amirah binti Mohd Adnan	019-9395319
	Mohamad Aiman bin Kamarol Azizi	017-6974927

9

LAMPIRAN 4

TENTATIF PROGRAM

7.00 AM	Set up tempat
7.30 AM	Ketibaan peserta
8.00 AM	Perasmian majlis oleh Wakil Penduduk
8.15 AM	Taklimat ringkas akan diberikan oleh pihak UPM
8.20 AM	Sarapan untuk wakil penduduk dan peserta
8.30 AM – 12 PM	• Peserta mendaftar di meja pendaftaran (STESEN 1) dan perlu menunjukkan kad pengenalan kepada PIC • PIC mencatat nombor kad pengenalan dan nombor badan peserta • Bahagian A, B, C, D dan Ujian Jamar Handgrip akan dibacakan oleh PIC kepada responden di STESEN 1 • Setelah selesai, PIC akan menanda tangan di "Checklist Checkpoint". • PIC akan mengarahkan peserta untuk pergi ke stesen-stesen yang kosong. • PIC stesen tersebut akan menandatangani "Checklist Checkpoint" apabila tamat mengambil data. • Apabila peserta telah selesai disemua stesen, peserta perlu memberi borang kaji selidik di STESEN 1 dan cenderahati akan diberikan.
12 PM	Ucapan penutupan oleh wakil penduduk
12.15 PM	Makan tengahari

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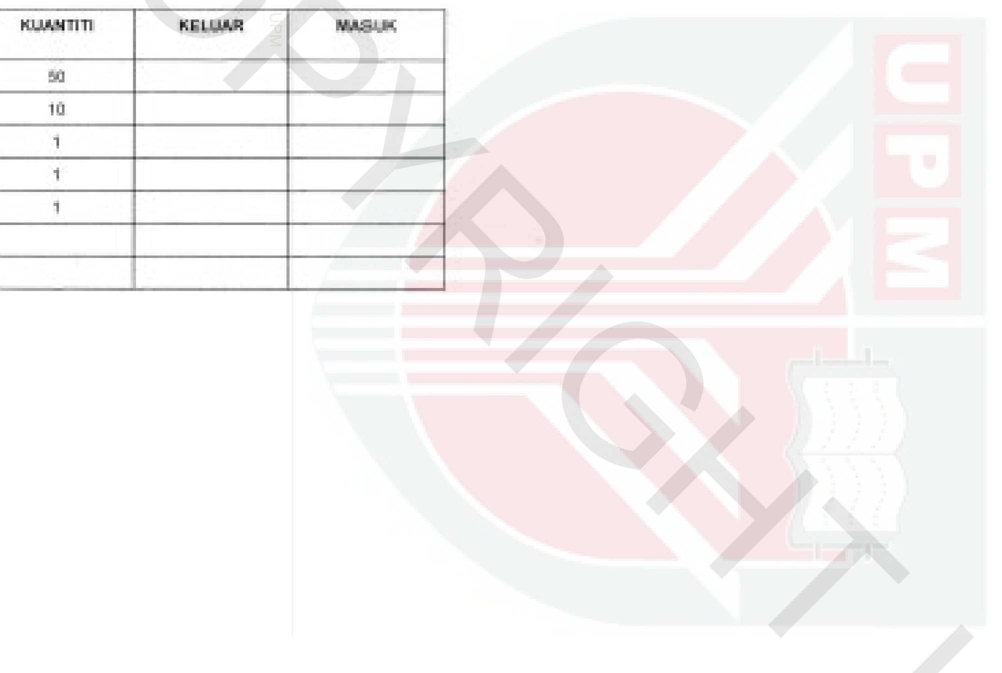
LAMPIRAN 5

LOGISTIK YANG DIPERLUKAN

BARANG - BARANG PPR	KUANTITI	KELUAR	MASUK
Kerusi	50		
Meja	10		
Mikrofon	1		
Speaker	1		
Plug	1		

11



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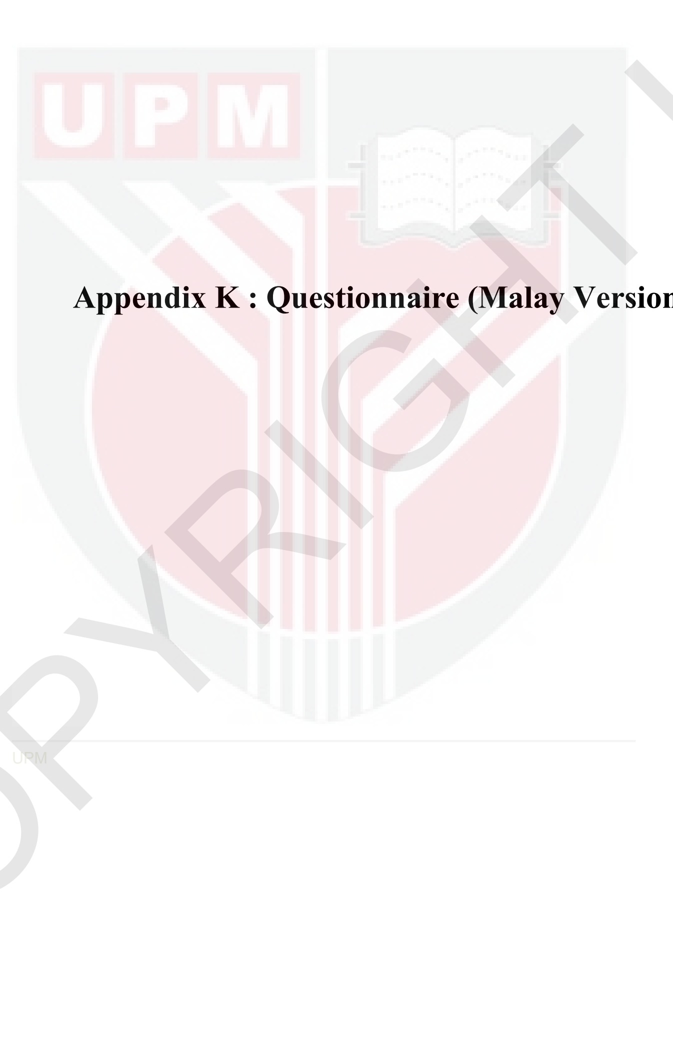
LAMPIRAN 6

12



Appendix K : Questionnaire (Malay Version)

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CP	Details	Sign
1	A + B + C + D + Jamar	
2	E + F + G	
3	H + I + J	
4	K	
5	L	

FAKULTI PERUBATAN DAN SAINS KESIHATAN
JABATAN PEMAKANAN DAN DIETETIK

BORANG SOAL SELIDIK KAJIAN

TAJUK KAJIAN:

PERUBAHAN STATUS PENUAAN SELEPAS SETAHUN KAJIAN SUSULAN & FAKTOR-FRAKTOR BERKAITAN DENGAN SARKOPENIA DALAM KALANGAN WARGA TUA DI PPR KUALA LUMPUR

PENYELIDIK:

NUR NAJATUL MUNIRAH BINTI MUHAMAD BOKERY (187525)

&

WAN HYSSNA BINTI WAN OMAR (190505)

PENYELIA PROJEK:

PROFFESOR MADYA DR. SITI NUR 'ASYURA BINTI ADZNAM

NO. KAD PENGENALAN: | | | | | | | - | | | - | | | | |

NOMBOR TELEFON: | | | | - | | | | | | | |

Borang soal selidik ini mengandungi **DUA BELAS** bahagian iaitu bahagian A (latar belakang responden), bahagian B (laporan kendiri penyakit kronik), bahagian C (penilaian tahap kemurungan), bahagian D (ujian status fungsian), bahagian E (penilaian status keuzuran), bahagian F (penilaian aktiviti fizikal), bahagian G (penilaian sindrom keuzuran), bahagian H (penilain risiko malpemakanan), bahagian I (penilaian status kognitif), bahagian J (penilaian tahap pemahaman, sikap dan amalan terhadap sindrom keuzuran, senaman dan pemakanan) dan bahagian K (sejarah pemakanan berstruktur dan bahagian L (pengukuran anthropometri).

BAHAGIAN A: LATAR BELAKANG RESPONDEN

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ARAHAN: Sila tandakan (/) pada jawapan yang berkenaan

		Catatan
1.	**JANTINA:** 1. ☐ Lelaki 2. ☐ Perempuan	
2.	**UMUR:** **TARIKH LAHIR:**	
3.	**BANGSA:** 1.☐ Melayu 2. ☐ Cina 3. ☐ India 4. ☐ Lain-Lain : ___________	
4.	**STATUS PERKAHWINAN:** 1. ☐ Bujang 2. ☐ Berkahwin 3. ☐ Bercerai 4. ☐ Janda/Balu/Duda Sudah berapa lama menjadi balu/janda/duda: ______________tahun	
5.	**TAHAP PENDIDIKAN:** 1. ☐ Tidak bersekolah 2. ☐ Sekolah agama/pondok 3. ☐ Sekolah rendah 4. Sekolah menengah rendah 5. ☐ Sekolah menengah atas 6. ☐ Sijil/ diploma/ijazah	
6.	**TINGGAL DIRUMAH BERSAMA:** 1. ☐ Sendirian 2. ☐ Dengan suami/ isteri 3. ☐ Dengan suami/isteri dan anak 4. ☐ Dengan anak dan cucu 5. ☐ Lain-lain (sila nyatakan: ____________________) **ALAMAT :** ____ ____	
7.	**STATUS PEKERJAAN:** 1. ☐ Tidak bekerja/suri rumah 2. ☐ Pesara (nyatakan pekerjaan dahulu ______________) 3. ☐ Pesara tetapi masih bekerja (nyatakan pekerjaan sekarang __________) 4. ☐ Bekerja (nyatakan ____________________________)	
8.	**SUMBER KEWANGAN UNTUK SARA HIDUP** (Boleh tanda lebih dari 1) 1. ☐ Gaji (Jumlah : RM __________) 2. ☐ Pencen (Jumlah : RM __________) 3. ☐ Kebajikan (Jumlah : RM __________) 4. ☐ Anak-anak / Ahli keluarga (Jumlah : RM __________) 5. ☐ Lain-lain. Nyatakan___________________	
9.	**ANGGARAN JUMLAH PENDAPATAN ISI RUMAH** RM:_________________________	

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KOD RESPONDEN:

BAHAGIAN B: LAPORAN KENDIRI PENYAKIT KRONIK

ARAHAN: Sila tandakan (/) pada jawapan yang berkenaan. Sila tandakan (/) sekiranya responden di bawah preskripsi ubat**.**

Bil	Penyakit Kronik	1.Ya	2.Tidak	Di bawah preskripsi ubat
1	Tekanan darah tinggi / hipertensi			
2	Kencing Manis			
3	Kolesterol tinggi			
4	Kanser			
5	Penyakit paru-paru kronik			
6	Serangan jantung			
7	Kegagalan jantung kongestif (CHF)			
8	Sakit dada (Angina)			
9	Asma			
10	Gout / artritis			
11	Penyakit kardiovaskular (penyakit jantung dan strok)			
12	Penyakit buah pinggang			
13	Penyakit saluran penghadaman (Gastrik / ulser)			
14	Lain-lain. Nyatakan: ________________________ *Others (please specify)*			

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BAHAGIAN C: KEMURUNGAN

Malay Geriatic Depression Scale-15 (Teh & Hasanah, 2004)

ARAHAN: Sila tandakan (/) pada jawapan yang berkenaan

Pilih jawapan terbaik sekiranya anda mengalami simtom dibawah **sejak seminggu lalu**.

Soalan	1. Ya	2.Tidak	Catatan
1. Adakah anda berpuas hati dengan kehidupan anda?			
2. Adakah kegiatan harian anda semakin berkurangan?			
3. Adakah anda berasa kehidupan anda tidak bermakna?			
4. Adakah anda selalu berasa jemu atau bosan?			
5. Adakah anda selalu dalam keadaan ceria?			
6. Adakah anda berasa bimbang sesuatu yang tidak baik akan berlaku pada diri anda?			
7. Adakah anda berasa gembira selalu?			
8. Adakah anda selalu berasa tidak berupaya?			
9. Adakah anda rasa bermasalah dari segi ingatan berbanding dengan orang lain?			
10. Adakah anda berasa bertuah dengan kehidupan sekarang?			
11. Adakah anda ka dang-kadang merasa diri anda sudah tidak berguna?			
12. Adakah anda rasa penuh bertenaga?			
13. Adakah anda merasa tiada harapan dengan keadaan sekarang?			
14. Adakah anda rasa keadaan orang lain lebih baik daripada anda?			
Jumlah skor :			

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KOD RESPONDEN:

BAHAGIAN D: UJIAN STATUS KEFUNGSIAN

Instrumental Activity Daily Living –Malay Version (IADL-MV), (M P Lawton & Brody, 1969)

ARAHAN: Sila tandakan (/) pada jawapan yang berkenaan

Soalan		Skor
1. Adakah anda boleh menggunakan telefon?		
a) ☐ Tidak menggunakan telefon langsung	0	
b) ☐ Menjawab telefon tetapi tidak mendail	1	
c) ☐ Mendail beberapa nombor yang dikenali	1	
d) ☐ Menggunakan telefon atas inisiatif sendiri; cari dan dail	1	
2. Adakah anda boleh keluar membeli barang keperluan harian (sekiranya anda ada kemudahan pengangkutan)?		
a) ☐ Tidak mampu langsung untuk membeli-belah	0	
b) ☐ Perlukan teman untuk membeli-belah	0	
c) ☐ Membeli sendiri bagi pembelian kecil	0	
d) ☐ Membeli-belah sendiri	1	
3. Adakah anda boleh menyediakan makanan sendiri?		
a) ☐ Makanan perlu disediakan dan dihidangkan	0	
b) ☐ Memanaskan dan menghidangkan makanan atau menyediakan makanan tetapi tidak mengikut diet mencukupi	0	
c) ☐ Menyediakan makanan mencukupi jika bahan diberi	0	
d) ☐ Merancang, menyedia, dan menghidang makanan yang mencukupi sendiri	1	
4. Adakah anda boleh melakukan kerja-kerja rumah?		
a) ☐ Tidak mengambil bahagian dalam kerja-kerja mengurus rumah	0	
b) ☐ Perlukan bantuan dalam kerja-kerja mengurus rumah	1	
c) ☐ Melakukan tugas harian ringan, tetapi tidak mengikut tahap kebersihan yang dapat diterima	1	
d) ☐ Melakukan tugas harian ringan seperti membasuh pinggan, mengemas tempat tidur	1	
e) ☐ Mengurus rumah sendiri dengan dibantu sesekali (kerja berat)	1	
5. Adakah anda boleh membasuh pakaian sendiri?		
a) ☐ Semua pakaian kotor dibasuh oleh orang lain	0	
b) ☐ Membasuh sendiri pakaian yang kecil, membilas stoking, dll	1	
c) ☐ Membasuh sendiri baju	1	
6. Bolehkah anda pergi ke suatu tempat yang jauh (lebih 100 m) contohnya jarak 5 buah rumah teres?		
a) ☐ Tidak bergerak sama sekali	0	
b) ☐ Bergerak menggunakan teksi atau kereta dengan dibantu orang lain	0	
c) ☐ Bergerak menggunakan pengangkutan awam jika dibantu orang lain	1	
d) ☐ Bergerak sendiri menggunakan teksi, tetapi bukan pengangkutan awam lain	1	
e) ☐ Bergerak sendiri menggunakan pengangkutan awam atau memandu kereta sendiri	1	
7. Adakah anda boleh mengambil ubat sendiri?		
a) ☐ Tidak mampu untuk memakan ubat sendiri	0	
b) ☐ Bertanggungjawab jika ubat disediakan terlebih dahulu dalam dos berasingan	0	

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c) ☐ Boleh mengambil ubat mengikut dos/sukatan yang betul pada masa yang betul	1	
8. Di dalam menguruskan wang, adakah anda …. a) ☐ Tidak berkemampuan untuk menguruskan wang sendiri b) ☐ Mengurus pembelian harian, tetapi perlukan bantuan parbankan, belian besar c) ☐ Mampu menguruskan wang sendiri termasuk urusan pembayaran bil	 0 1 1	
Jumlah Skor :		

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BAHAGIAN E: STATUS KEUZURAN

Frailty phenotype, (L. P. Fried et al., 2001)
ARAHAN: Sila tandakan [/] pada ruang jawapan yang disediakan

Soalan	**Kriteria *Frailty***
1. Kehilangan / penyusutan berat badan: a) Sepanjang 6 bulan yang lepas, adakah BMI pakcik/makcik kurang daripada 18.5 kg/m^2? 0. ☐ Ya 1. ☐ Tidak b) Sepanjang 6 bulan yang lepas, adakah pakcik/makcik telah mengalami kesusutan berat badan secara tidak dirancang (bukan disebabkan oleh diet atau senaman) lebih daripada 10 paun (4.5kg)? 0. ☐ Ya 1. ☐ Tidak Subjek yang memilih **jawapan "0"** untuk salah satu daripada **soalan (a) atau (b)**, mempunyai kriteria *frailty.* Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah. *(Ng et al., 2015).*	
2. Keletihan: Sepanjang minggu lepas, berapa kerapkah pakcik/makcik merasakan keadaan berikut? a) Rasa kesukaran apabila ingin melakukan sesuatu 0. ☐ Jarang/ tiada (1 hari) 1. ☐ Kadang-kadang (1-2 hari) 2. ☐ Kerapkali (3-4 hari) 3. ☐ Pada setiap masa (5-7 hari) b) Menghadapi masalah untuk meneruskan kehidupan 0. ☐ Jarang/ tiada (1 hari) 1. ☐ Kadang-kadang (1-2 hari) 2. ☐ Kerapkali (3-4 hari) 3. ☐ Pada setiap masa (5-7 hari) Subjek yang memilih **jawapan "2" atau "3"** untuk salah satu daripada **soalan (a) atau (b)**, mempunyai kriteria *frailty (Fairhall et al., 2008; Radloff, 1977).* Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah.	
3. Kelemahan otot: *****SILA TINGGALKAN SOALAN INI***** Kekuatan genggaman tangan (kg) pada tangan dominan menggunakan ***Jamar Hand Dynamometer*** Penentu untuk kekuatan genggaman (kg): **Lelaki** — **Perempuan** 0.☐ ≤ 26kg — 0.☐ ≤ 18kg	

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1.□ ≥ 27kg 1.□ ≥ 19kg Subjek lelaki atau perempuan yang mempunyai **jawapan "0"**, mempunyai kriteria *frailty* (Fairhall et al., 2008; L. P. Fried et al., 2001). Jika ada, tandakan / pada ruang kriteria *frailty* di sebelah.	
4. Kepantasan berjalan: *****SILA TINGGALKAN SOALAN INI***** Tempoh masa (saat) yang diambil ***menggunakan jam randik*** untuk berjalan sepanjang 4 meter (13.12 kaki): __________ saat Subjek yang mempunyai tempoh masa **≥6 saat** untuk berjalan sepanjang 4 meter, mempunyai kriteria *frailty (Fairhall et al., 2008).* Jika ada, tandakan / pada ruang kriteria *frailty* di sebelah.	
5. Kurang aktiviti fizikal: *****SILA TINGGALKAN SOALAN INI***** *Berdasarkan PASE-M skor*	
Jumlah skor kriteria *frailty*	**/5**

BAHAGIAN F : TAHAP AKTIVITI FIZIKAL

Physical Activity Scale for the Elderly-Malay version (PASE-M), (Ismail et al., 2015)

ARAHAN: Sila tandakan / pada jawapan yang berkenaan

AKTIVITI MASA LAPANG

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1	Dalam tempoh <u>7 hari yang lepas</u>, berapa kerapkah anda melakukan aktiviti dalam keadaan duduk (cth: membaca, menonton TV atau melakukan kraftangan)? 0. □ Tidak pernah **(Terus ke soalan 2)** 1. □ Jarang (1-2 hari) 2. □ kadang-kadang (3-4 hari) 3. □ Selalu (5-7 hari) Apakah aktiviti-aktiviti ini? Senaraikan: ____ ____ Secara purata, berapa <u>jam dalam sehari</u> anda terlibat dalam aktiviti keadaan duduk tersebut? 1. □ < 1 jam 2. □ 1- < 2 jam 3. □ 2- < 4 jam 4. □ ≥ 4 jam
2	Dalam tempoh <u>7 hari yang lepas</u>, berapa kerapkah anda <u>berjalan di luar rumah atau halaman rumah</u> atas apa jua sebab (cth: untuk bersenang-senang atau sebagai senaman, berjalan ke tempat kerja, membeli-belah, berjalan bersama cucu atau berjalan bersama binatang peliharaan seperti anjing)? 0. □ Tidak pernah (**Terus ke soalan 3)** 1. □ Jarang (1-2 hari) 2. □ kadang-kadang (3-4 hari) 3. □ Selalu (5-7 hari) Apakah aktiviti-aktiviti ini? Senaraikan: ____ ____ Secara purata, berapa <u>jam dalam sehari</u> anda terlibat dalam aktiviti keadaan tersebut? 1. □ < 1 jam 2. □ 1- < 2 jam 3. □ 2- < 4 jam 4. □ ≥ 4 jam
3	Dalam tempoh <u>7 hari yang lepas</u>, berapa kerapkah anda melibatkan diri dalam aktiviti sukan intensiti ringan dan rekreasi (cth: boling, bermain golf menggunakan kereta golf, senaman rengangan, tai chi, memancing, menyanyi, bermain alat-alat muzik atau seumpamanya)? 0. □ Tidak pernah **(Terus ke soalan 4)** 1. □ Jarang (1-2 hari) 2. □ kadang-kadang (3-4 hari) 3. □ Selalu (5-7 hari) Apakah aktiviti-aktiviti ini? Senaraikan: ____ ____ Secara purata, berapa <u>jam dalam sehari</u> anda terlibat dalam aktiviti keadaan tersebut? 1. □ < 1 jam 2. □ 1- < 2 jam 3. □ 2- < 4 jam 4. □ ≥ 4 jam
4	Dalam tempoh <u>7 hari yang lepas</u>, berapa kerapkah anda melibatkan diri dalam aktiviti sukan intensiti sederhana atau rekreasi yang kurang lasak (cth: tenis secara beregu, bermain golf tanpa memandu kereta golf, menari, bermain bola lisut atau seumpamanya)? 0. □ Tidak pernah **(Terus ke soalan 5)**

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	1. □ Jarang (1-2 hari) 2. □ kadang-kadang (3-4 hari) 3. □ Selalu (5-7 hari) Apakah aktiviti-aktiviti ini? Senaraikan: ____ ____ Secara purata, berapa <u>jam dalam sehari</u> anda terlibat dalam aktiviti keadaan tersebut? 1. □ < 1 jam 2. □ 1- < 2 jam 3. □ 2- < 4 jam 4. □ ≥ 4 jam
5	Dalam tempoh <u>7 hari yang lepas</u>, berapa kerapkah anda melibatkan diri dalam aktiviti sukan lasak atau riadah (cth: berjoging, mendaki bukit, bermain bola sepak, tenis perseorangan, menaiki tangga, tarian aerobik, berenang, berbasikal atau seumpamanya)? 0. □ Tidak pernah **(Terus ke soalan 6)** 1. □ Jarang (1-2 hari) 2. □ kadang-kadang (3-4 hari) 3. □ Selalu (5-7 hari) Apakah aktiviti-aktiviti ini? Senaraikan: ____ ____ Secara purata, berapa <u>jam dalam sehari</u> anda terlibat dalam aktiviti keadaan tersebut? 1. □ < 1 jam 2. □ 1- < 2 jam 3. □ 2- < 4 jam 4. □ ≥ 4 jam
6	Dalam tempoh <u>7 hari yang lepas</u>, berapa kerapkah anda melakukan senaman khusus untuk meningkatkan kekuatan otot dan daya tahan (cth: mengangkat berat, melakukan tekan tubi dan seumpamanya)? 0. □ Tidak pernah **(Terus ke soalan 7)** 1. □ Jarang (1-2 hari) 2. □ kadang-kadang (3-4 hari) 3. □ Selalu (5-7 hari) Apakah aktiviti-aktiviti ini? Senaraikan: ____ ____ Secara purata, berapa <u>jam dalam sehari</u> anda terlibat dalam aktiviti keadaan tersebut? 1. □ < 1 jam 2. □ 1- < 2 jam 3. □ 2- < 4 jam 4. □ ≥ 4 jam

AKTIVITI KERJA RUMAH		
7	Dalam tempoh **7 hari yang lepas**, adakah anda melakukan sebarang kerja rumah yang ringan (cth: mencuci pinggan mangkuk, menyapu lantai atau membersihkan debu)?	0. □ Tidak 1. □ Ya
8	Dalam tempoh **7 hari yang lepas**, adakah anda melakukan sebarang kerja rumah yang berat (cth: menyental lantai, mengelap tingkap, memvakum)?	0. □ Tidak 1. □ Ya

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9a	Dalam tempoh **7 hari yang lepas,** adakah anda terlibat dalam aktiviti membaik pulih rumah (cth: mengecat rumah, memasang kertas dinding, kerja-kerja membaiki elektrik dan seumpamanya)?	0. □ Tidak 1. □ Ya
9b	Dalam tempoh **7 hari yang lepas**, adakah anda terlibat dalam aktiviti penjagaan halaman rumah (cth: memotong rumput, membersihkan dedaun, memotong kayu, menanam bunga dan sebagainya)?	0. □ Tidak 1. □ Ya
9c	Dalam tempoh **7 hari yang lepas**, adakah anda terlibat dalam aktiviti berkebun di luar rumah?	0. □ Tidak 1. □ Ya
9d	Dalam tempoh **7 hari yang lepas**, adakah anda terlibat dalam penjagaan orang lain (cth: menjaga pasangan sendiri, kanak-kanak, atau orang dewasa lain)?	0. □ Tidak 1. □ Ya
AKTIVITI BERKAITAN PEKERJAAN		
10	Dalam tempoh 7 hari yang lepas, adakah anda bekerja secara bergaji atau sukarelawan? 0. □ Tidak **(Soalan tamat)** 1. □ Ya Berapa jam dalam seminggu anda bekerja secara makan gaji atau sukarelawan? ________ jam Antara kategori berikut yang manakah menerangkan dengan tepat jumlah aktiviti fizikal yang diperlukan di tempat kerja anda dan/ atau kerja sukarela anda? 1. □ Kebanyakan waktu adalah duduk dengan melibatkan sedikit pergerakan tangan (pekerja pejabat, pembaiki jam, pekerja kilang yang bekerja sambal duduk, pemandu bas) 2. □ Duduk atau berdiri dengan sedikit pergerakan berjalan (juruwang, pekerja am pejabat, pekerja operasi jentera) 3. □ Berjalan dengan pengendalian bahan dengan berat kurang 23kg (posmen, pelayan restoran, pekerja binaan, pekerja operasi jentera dan alat berat) 4. □ Berjalan dan kerja manual yang berat sering memerlukan pengendalian bahan-bahan berat lebih 23kg (pembalak, tukang batu, pekerja lading, buruh am)	

BAHAGIAN G : SINDROM *FRAILTY*

FRAIL Scale (Morley et al., 2012)

Arahan: Sila tandakan [/] pada ruang jawapan yang disediakan

		KRITERIA *FRAILTY*
1.	**Keletihan:** Dalam tempoh 4 minggu yang lepas, berapa kerapkah anda merasa letih atau kurang bertenaga? 1 □ Pada setiap masa 2 □ Hampir setiap masa 3 □ Kadang - kadang 4 □ Sangat jarang 5 □ Tiada	□

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	Subjek yang mempunyai **jawapan "1" atau "2"**, mempunyai kriteria *frailty*. Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah.	
2.	**Berjalan** Adakah anda mempunyai masalah untuk berjalan sendiri tanpa apa-apa bantuan sebanyak 10 langkah tanpa rehat? 1 ☐ Ya 0 ☐ Tidak Subjek yang memilih **jawapan "1"**, mempunyai kriteria *frailty*. Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah.	☐
3.	**Penyakit kronik** (a) Pernahkah doktor menyatakan bahawa anda menghidap sebarang penyakit? 1 ☐ Ya (Terus ke soalan 3b) 0 ☐ Tidak (Terus ke soalan 4) (b) Berdasarkan soalan 3a, penyakit apakah yang anda hidapi? ☐ Darah tinggi ☐ Kencing manis ☐ Kanser (Selain dari kanser kulit minor) ☐ Penyakit paru - paru kronik ☐ Serangan jantung ☐ Kegagalan jantung kongestif (CHF) ☐ Sakit dada (Angina) ☐ Asma ☐ Artritis ☐ Strok ☐ Penyakit buah pinggang Subjek yang mempunyai 5 atau lebih ($\geq$5) penyakit di atas, mempunyai kriteria *frailty*. Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah.	☐
4.	**Berjalan** Adakah anda mempunyai masalah untuk berjalan beberapa ratus kaki bersendirian tanpa apa - apa bantuan?	

☐

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	1 ☐ Ya 0 ☐ Tidak Subjek lelaki atau perempuan yang mempunyai **jawapan “1”**, mempunyai kriteria *frailty*. Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah.	
5.	**Kehilangan / penyusutan berat badan:** (a) Berapakah berat anda sekarang (tanpa memakai kasut)? _________ kg [________ (bulan)/ ________ (tahun)] (b) Berapakah berat anda, setahun yang lepas? __________ kg (c) Peratusan penurunan berat badan, diberi $\frac{\text{Berat setahun yang lepas} - \text{berat sekarang}}{\text{berat setahun yang lepas}} \times 100 =$ 1 ≥ 5% penurunan berat badan 0 < 5% penurunan berat badan Subjek yang mempunyai **jawapan “1”**, mempunyai kriteria *frailty*. Jika ada, tandakan [/] pada ruang kriteria *frailty* di sebelah	☐
	Jumlah skor kriteria *frailty*	**/5**
Skala skor kriteria *frailty*: ≥ 3 kriteria *frailty* = *Frail* 1 – 2 kriteria *frailty* = *Pre-frail* 0 kriteria *frailty* = Normal		

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BAHAGIAN H : RISIKO MALPEMAKANAN

Mini Nutritional Assessment-Short Form (MNA-SF)

ARAHAN: Sila tandakan / pada jawapan yang berkenaan

	Soalan	Skor
1.	**Adakah pengambilan makanan anda berkurangan sejak 3 bulan lalu akibat kehilangan selera makan, masalah penghadaman makanan atau mempunyai kesukaran untuk mengunyah atau menelan?** 0 = Kehilangan selera yang teruk 1 = Kehilangan selera yang sederhana 2 = Tidak kehilangan selera	
2.	**Kehilangan berat badan sejak tiga bulan lalu** 0 = Lebih daripada 3 kg berat badan 1 = Kurang pasti 2 = Hilang 1-3 kg berat badan 3 = Tiada kehilangan berat badan	
3.	**Mobiliti** 0 = Terbatas di atas katil atau kerusi 1 = Mampu bangun dari tempat tidur atau kerusi tetapi mengalami kesukaran untuk keluar rumah 2 = Mampu untuk keluar rumah	
4.	**Mengalami tekanan psikologi ATAU penyakit akut dalam 3 bulan lalu** 0 = Ya 2 = Tidak	

5.	**Gangguan Neuropsikologi** 0 = Kemurungan atau demensia yang teruk 1 = Demensia yang ringan 2 = Tidak mengalami masalah psikologi	
6.	*****SILA TINGGALKAN SOALAN INI***** **Indeks Jisim Tubuh kg/m^2** 0 = BMI kurang daripada 19 kg/m^2 1 = BMI 19 – 21 kg/m^2 2 = BMI 21- 23 kg/m^2 3 = BMI melebihi 23 kg/m^2	
	Jumlah Skor :	**/14**

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KOD RESPONDEN:

BAHAGIAN I: STATUS KOGNITIF

Malay Version Mini-Mental State Examination-S (M-MMSE-S), (Folstein, Folstein, & McHugh, 1975; Ibrahim et al., 2009)

ARAHAN: Sila tandakan / pada ruang skor yang disediakan

1.	**Orientasi masa**		**Catatan**
a.	Hari ini hari apa?	0. □ Salah 1. □ Betul	
b.	Hari ini berapa hari bulan?	0. □ Salah 1. □ Betul	
c.	Bulan ini bulan apa?	0. □ Salah 1. □ Betul	
d.	Tahun berapakah tahun ini?	0. □ Salah 1. □ Betul	
e.	Sekarang lebih kurang pukul berapa?	0. □ Salah 1. □ Betul	
2.	**Orientasi tempat**		
a.	Di negara manakah anda berada sekarang?	0. □ Salah 1. □ Betul	
b.	Di negeri manakah anda berada sekarang?	0. □ Salah 1. □ Betul	
c.	Di bandar manakah anda berada sekarang?	0. □ Salah 1. □ Betul	
d.	Di bangunan manakah anda berada sekarang?	0. □ Salah 1. □ Betul	
e.	Di tingkat berapakah anda berada anda berada sekarang?	0. □ Salah 1. □ Betul	
3. Pendaftaran Ingatan			
Arahan: Sila dengar dengan teliti, saya akan sebutkan tiga (3) perkataan dan saya mahu anda menyebutnya kembali selepas saya selesai menyebutnya. **EPAL** **KUCING** **MEJA**			
Arahan: Sekarang sebutkan perkataan-perkataan itu □ EPAL □ KUCING □ MEJA **Arahan:** Sila ingat perkataan-perkataan ini, kerana saya akan tanya anda lagi dalam beberapa minit nanti.			
4. Tumpuan perhatian dan pengiraan:			

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Pilihan 2 **Arahan:** Cuba mengeja secara terbalik perkataan DUNIA ☐ A ☐ I ☐ N ☐ U ☐ D			
5. Mengingat:			
Arahan: Apakah yang saya minta anda ingatkan tadi? ☐ EPAL ☐ KUCING ☐ MEJA			
6. Bahasa			
a.	Apakah objek yang saya pegang ini (pen)?	0. ☐ Salah 1. ☐ Betul	
b.	Apakah objek yang saya pakai ini (jam tangan)?	0. ☐ Salah 1. ☐ Betul	
c.	Ulangi perkataan ini (Tidak mungkin dan cukup mustahil)	0. ☐ Salah 1. ☐ Betul	
d.	**Sila ikut arahan:** Ambil kertas ini dengan tangan kanan, kemudian lipatkan kepada dua dan kemudiannya letakkan di atas meja.	0. ☐ Tidak dapat membuat seperti arahan sepenuhnya 1. ☐ Ambil kertas dengan tangan kanan 2. ☐ Ambil kertas dengan tangan kanan dan melipat kertas 3. ☐ Dapat membuat seperti arahan sepenuhnya (Ambil kertas dengan tangan kanan, lipst kepada dua dan letakkan di atas meja)	
e.	**Baca** dan **lakukan arahan ini:** ***TUTUP MATA ANDA***	0. ☐ Salah 1. ☐ Betul	
f.	**Baca** dan **lakukan arahan ini:** ***TULISKAN SEPOTONG AYAT:***	0. ☐ Salah 1. ☐ Betul	

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	______________________________ ______________________________		
7	Sila lukis bentuk ini:		
	Sila lukis di ruangan ini:		
	Mempunyai sepuluh (10) sudut dan bertindih	0. □ Salah 1. □ Betul	
Jumlah Skor :		**/30**	

BAHAGIAN J : PENILAIAN TAHAP PEMAHAMAN, SIKAP DAN AMALAN TERHADAP SINDROM KEUZURAN, SENAMAN DAN PEMAKANAN

PEMAHAMAN

Arahan: Tandakan (/) pada jawapan yang paling sesuai bagi setiap kenyataan yang diberikan. Sila pilih satu jawapan sahaja.

4. Aktiviti seperti berjalan laju, berjogging dan mengayuh basikal merupakan contoh senaman yang boleh meningkatkan pernafasan dan menguatkan ketahanan jantung. Apakah jenis senaman yang berikut?

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1. Antara senarai yang berikut, yang manakah merupakan ciri – ciri sindrom keuzuran berdasarkan kriteria *Fried*?

- ☐ 1. Sentiasa rasa tidak bermaya
- ☐ 0. Tidak bekerja
- ☐ 0. Berat berlebihan
- ☐ 0. Tidak tahu

2. Antara senarai yang berikut, faktor yang manakah boleh meningkatkan risiko warga emas untuk mendapat sindrom keuzuran?

- ☐ 0. Lelaki
- ☐ 1. Tahap pendidikan yang rendah
- ☐ 0. Dah berkahwin
- ☐ 0. Tidak tahu

3. Yang manakah antara berikut, merupakan kesan terhadap tubuh badan sekiranya warga emas menghidap sindrom keuzuran?

- ☐ 0. Badan akan berbau
- ☐ 0. Kulit semakin kering
- ☐ 1. Otot semakin lemah
- ☐ 0. Tidak tahu

7. Apakah kesan kepada tubuh badan sekiranya warga emas mengalami kehilangan berat badan yang banyak secara mendadak?

- ☐ 1. Penglihatan semakin kabur
- ☐ 0. Jisim otot semakin merosot (sarkopenia)
- ☐ 0. Pendengaran semakin kurang
- ☐ 0 Tidak tahu

8. Protein adalah sejenis nutrien yang ada dalam makanan. Contoh makanan yang mempunyai tinggi kandungan protein ialah ayam, daging, ikan dan telur. Pada pendapat anda, apakah faedah pengambilan protein kepada badan?

- ☐ 0. Mencerdaskan minda
- ☐ 1. Membina otot

11. Warga emas yang memiliki Indeks Jisim Tubuh (IJT) yang rendah perlu menaikkan berat badan untuk memiliki IJT yang normal. Apakah cara yang boleh dilakukan untuk menaikkan berat badan?

- ☐ 0. Memilih untuk tidak makan sekiranya tidak mempunyai selera
- ☐ 1. Menambahkan kekerapan waktu mak
- ☐ 0. Mengurangkan jumlah kuantiti makan
- ☐ 0 Tidak tahu

12. Selain waktu makan utama, warga emas juga digalakkan untuk mengambil snek di antara waktu makan utama. Apakah contoh makanan yang bersesuaian diambil pada waktu makan sampingan?

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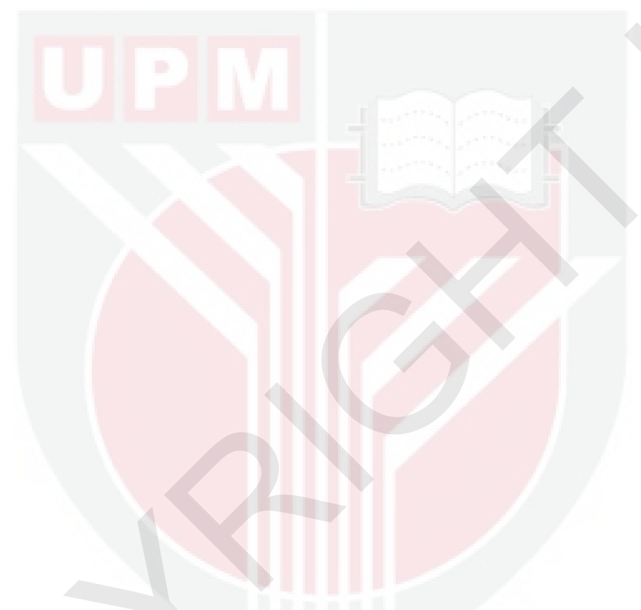

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SIKAP

Arahan: Tandakan (/) pada jawapan yang paling sesuai bagi setiap kenyataan yang diberikan.
Sila pilih satu jawapan sahaja

Bil.	Perkara	Sangat tidak setuju	Tidak setuju	Kadang kala setuju kadang kala tidak setuju	Setuju	Sangat setuju
1.	Saya berasa bahawa sindrom keuzuran penting untuk diketahui dan dipelajari	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2.	Saya berasa saya berisiko untuk mendapat sindrom keuzuran	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

3.	Saya percaya bahawa sindrom keuzuran berlaku disebabkan oleh penuaan	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
4.	Saya percaya amalan pemakanan yang sihat tidak membantu saya untuk mendapatkan tubuh badan yang sihat	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐
5.	Saya rasa dengan bersenam tidak dapat mengurangkan risiko mendapat sindrom keuzuran	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐
6.	Saya berasa aktiviti regangan penting untuk memanaskan badan sebelum melakukan senaman	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7.	Saya juga berasa penyejukan badan penting dilakukan selepas melakukan apa – apa senaman	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
8.	Saya boleh memilih jenis senaman yang bersesuaian dengan kemampuan dan keadaan fizikal serta kesihatan saya	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
9.	Saya percaya dengan mengikuti program pendidikan pemakanan ini dapat membantu saya untuk mengubah cara pemakanan saya.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
10.	Saya berpendapat bahawa penting bagi warga emas untuk meningkatkan kalori dan protein dalam makanan untuk menaikkan berat badan	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

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AMALAN

Arahan: Tandakan (√) pada jawapan yang paling sesuai bagi setiap kenyataan yang diberikan. Sila pilih satu jawapan sahaja

Bil.	Perkara	Tidak pernah	Jarang (sehari/ seminggu)	Kadang – kadang (1-2 hari/ seminggu)	Kerapkali (3-4 hari/ seminggu)	Selalu (5-7 hari/ seminggu)
1.	Berapa kerapkah anda melakukan kerja – kerja harian untuk memastikan badan anda sentiasa aktif?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2.	Adakah anda melakukan senaman fleksibiliti seperti senaman regangan?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3.	Adakah anda melakukan senaman kekuatan seperti mengangkat berangan berat, mencangkul atau menggali lubang dan menaiki tangga?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
4.	Adakah anda melakukan senaman aerobik seperti berjalan laju, berjogging atau bermain badminton?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
5.	Adakah anda melakukan senaman keseimbangan seperti berdiri dengan sebelah kaki atau melakukan Tai Chi?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
6.	Di antara waktu makan utama, adakah anda mengambil snek seperti biskut, buah atau roti?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7.	Adakah anda mengambil makanan yang tinggi sumber protein seperti ayam, ikan atau telur pada setiap waktu makan?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

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8.	Adakah anda minum susu (tepung, UHT, segar) atau mengambil produk tenusu (keju, yogurt)?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
9.	Adakah anda kerap mengambil makanan yang tinggi kandungan vitamin D seperti ikan tuna, sardine dan ikan kembung atau bijiran sarapan, yogurt dan telur?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
10.	Adakah anda memperbanyakkan aktiviti di luar rumah pada waktu pagi atau petang?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
Jumlah skor pemahaman						/ 12
Jumlah skor sikap						/ 50
Jumlah skor amalan						/ 50
Jumlah keseluruhan						/ 112

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KOD RESPONDEN:

BAHAGIAN K: SOAL-SELIDIK SEJARAH PEMAKANAN BERSTRUKTUR

Bolehkah Pakcik atau Makcik memberikan maklumat tentang apa yang biasa Pakcik atau Makcik makan atau minum dari bangun pagi hingga ke malam sebelum tidur

Kekerapan pengambilan: 1-setiap hari 2-hampir setiap hari (5-6 kali seminggu) 3-kadang-kadang 4-jarang (1-2kali seminggu) 5- jarang (kurang dari sekali seminggu) 6-tiada

Masa makan:________________________

Tempat makan: 1- Rumah 2- Kedai 3 - Tempat kerja 4 - Lain-lain (sila nyatakan__________________)

Bersama siapa makan: 1-Seorang diri 2- Keluarga 3 -Rakan-rakan 4 - Lain-lain (sila nyatakan________________)

Jenis hidangan	**Saiz porsi**	**Gambaran/ kaedah masakan**	**Saiz porsi**	**Komen**	**Kegunaan Pejabat**
	(ukuran rumahtangga dan model makanan)		(ukuran rumahtangga dan model makanan)	(Kekerapan pengambilan)	Kod Jumlah makanan (g)
<u>Nasi:</u> nasi lemak / nasi putih/nasi goreng /bubur /lain-lain ____________________	____ mangkuk (B/S/K) (b/p) ____ bungkus (___sen)	Kuah/sos/lauk: _________________ _________________	____ tsp/dsp (b/p) ____ mangkuk (B/S/K) (b/p)		
<u>Mee/Bihun/Laksa:</u> goreng/rebus/kari/ sup/lain-lain ____________________	_____ mangkuk (B/S/K) _____ bungkus (___sen)	Kuah/sos/lauk: _________________ _________________	____ dsp (b/p) ____ mangkuk (B/S/K) (b/p)		
<u>Roti:</u>	_____ keping (B/K)	Kuah/lauk/cecah _________________ _________________	____ dsp (b/p)		

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Jenis hidangan	Saiz porsi	Gambaran/ kaedah masakan	Saiz porsi	Komen	Kegunaan Pejabat
putih/serabut tinggi/roti canai/capati/tosei/ roti telur ____________________	_____ sen/keping		____ mangkuk (B/S/K)		
Kuih-muih/lempeng/ Cekodok/ lain-lain ____________________	_____ keping (B/S/K) _____ sen/keping	Kuah/sos: ________________ ________________	____ dsp (b/p) ____ mangkuk (B/S/K)		
Lain-lain: Ubikayu /keledek /keladi /sukun ____________________					
Minuman: kopi/teh/nescaffe/ koko/horliks/lain-lain ____________________ air kosong	_____ gelas/cawan	kopi/teh/koko/ horlicks/lain-lain gula susu (skim/rendah lemak/penuh krim/cair/pekat)	_____ tsp/dsp (b/p) _____ tsp/dsp (b/p) ____tsp/dsp (b/p)		

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KOD RESPONDEN:

MINUM PAGI

Kekerapan pengambilan: 1-setiap hari 2-hampir setiap hari (5-6kali seminggu) 3-kadang-kadang 4-jarang (1-2kali seminggu) 5- jarang (kurang dari sekali seminggu) 6-tiada

Masa makan:________________________

Tempat makan: 1- Rumah 2- Kedai 3 - Tempat kerja 4 - Lain-lain (sila nyatakan__________________)

Bersama siapa makan: 1-Seorang diri 2- Keluarga 3 -Rakan-rakan 4 - Lain-lain (sila nyatakan________________)

Jenis hidangan	**Saiz porsi**	**Gambaran/ kaedah masakan**	**Saiz porsi**	**Komen**	**Kegunaan Pejabat**
	(ukuran rumahtangga dan model makanan)		(ukuran rumahtangga dan model makanan)	(Kekerapan pengambilan)	Kod Jumlah makanan (g)
<u>Kuih-muih</u>/lempeng/ cekodok / lain-lain ; _________________	____ keping (B/S/K) ____ sen/keping	Kuah/sos: ________________________ ________________________	____ dsp (b/p) ____ mangkuk (B/S/K)		
<u>Lain-lain:</u> Ubikayu /keledek/keladi/ sukun _________________					
Minuman: kopi/teh/nescaffe/ koko/horliks/lain-lain _________________ air kosong	___gelas/cawan	kopi/teh/koko/ horlicks/lain-lain gula susu (skim/rendah lemak/penuh krim/cair/pekat)	____tsp/dsp (b/p) ____tsp/dsp (b/p) ____tsp/dsp (b/p)		

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KOD RESPONDEN:

MAKAN TENGAH HARI

Kekerapan pengambilan: 1-setiap hari 2-hampir setiap hari (5-6kali seminggu) 3-kadang-kadang 4-jarang (1-2kali seminggu) 5-jarang (kurang dari sekali seminggu) 6-tiada

Masa makan:_________________________

Tempat makan: 1- Rumah 2- Kedai 3 - Tempat kerja 4 - Lain-lain (sila nyatakan___________________)

Bersama siapa makan: 1-Seorang diri 2- Keluarga 3 -Rakan-rakan 4 - Lain-lain (sila nyatakan_________________)

Jenis hidangan	**Saiz porsi**	**Gambaran/ kaedah masakan**	**Saiz porsi**	**Komen**	**Kegunaan Pejabat**
	(ukuran rumahtangga dan model makanan)		(ukuran rumahtangga dan model makanan)	(Kekerapan pengambilan)	Kod jumlah makanan(g)
Nasi: putih/goreng/bubur lain-lain: ___________	____ mangkuk (B/S/K) (b/p)	Lauk/kuah/sos: __________________ __________________			
Lauk-pauk: a) Ikan (jenis:___________) b) Ayam (berkulit dan lemak/tidak) c) Daging (jenis:___________) (berlemak/tidak) d) Telur (jenis:__________) **Kekacang:** tempeh /tauhu / _____) **Makanan laut: _____)**	___keping (B/S/K) ___keping (B/S/K) ___keping (B/S/K) ___keping (B/S/K)	Kaedah masakan: __________________ __________________ __________________ __________________ __________________ __________________ __________________ __________________ __________________ __________________ __________________ __________________	Kuah: _____ dsp/tsp _____ mangkuk (B/S/K)		

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Jenis hidangan	**Saiz porsi**	**Gambaran/ kaedah masakan**	**Saiz porsi**	**Komen**	**Kegunaan Pejabat**
Lain- lain:____________					
Sayur-sayuran/ulam: Jenis: _______________ pecal sayuran (kacang panjang/ taugeh/ /pucuk ubi) _______________	_____ dsp _____ mangkuk (B/S/K)	Kaedah masakan: __________________ __________________ __________________ __________________	Kuah: ______ dsp/tsp		
Lauk-pauk tambahan: Ikan kering/jeruk/ pekasam/sambal belacan/tempoyak lain-lain: ____________	____keping ____tsp/dsp ____tsp/dsp				
Buah-buahan: Jenis: _______________ (makan bersama kulit/tidak)	____keping(B/S/K) ____biji (B/S/K)	Sos/cicah: __________________ __________________	_____ tsp/dsp		
Lain-lain:__________)					
Minuman: air kosong kordial (jenis:_______) lain-lain:___________)	__tsp/dsp __gelas/cawan				
Makanan/minuman ringan di antara waktu makan: ______________ ____________________					

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KOD RESPONDEN:

MINUM PETANG

Kekerapan pengambilan: 1-setiap hari 2-hampir setiap hari (5-6kali seminggu) 3-kadang-kadang 4-jarang (1-2kali seminggu) 5- jarang (kurang dari sekali seminggu) 6-tiada

Masa makan:_________________________

Tempat makan: 1- Rumah 2- Kedai 3 - Tempat kerja 4 - Lain-lain (sila nyatakan___________________)

Bersama siapa makan: 1-Seorang diri 2- Keluarga 3 -Rakan-rakan 4 - Lain-lain (sila nyatakan_________________)

Jenis hidangan	**Saiz porsi**	**Gambaran/ kaedah masakan**	**Saiz porsi**	**Komen**	**Kegunaan Pejabat**
	(ukuran rumahtangga dan model makanan)		(ukuran rumahtangga dan model makanan)	(Kekerapan pengambilan)	Kod jumlah makanan (g)
Kuih-muih/lempeng/ cekodok / lain-lain ; ___________________	____ keping (B/S/K) ____ sen/keping	Kuah/sos: __________________________ __________________________	____ dsp (b/p) ____ mangkuk (B/S/K)		
Lain-lain: Ubikayu /keledek/keladi/ sukun ___________________					
Minuman: kopi/teh/nescaffe/ koko/horliks/lain-lain ___________________ air kosong	___gelas/cawan	kopi/teh/koko/ horlicks/lain-lain gula susu (skim/rendah lemak/penuh krim/cair/pekat)	____tsp/dsp (b/p) ____tsp/dsp (b/p) ____tsp/dsp (b/p)		

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KOD RESPONDEN:

MAKAN MALAM

Kekerapan pengambilan: 1-setiap hari 2-hampir setiap hari (5-6kali seminggu) 3-kadang-kadang 4-jarang (1-2kali seminggu) 5- jarang (kurang dari sekali seminggu) 6-tiada

Masa makan:________________________

Tempat makan: 1- Rumah 2- Kedai 3 - Tempat kerja 4 - Lain-lain (sila nyatakan__________________)

Bersama siapa makan: 1-Seorang diri 2- Keluarga 3 -Rakan-rakan 4 - Lain-lain (sila nyatakan________________)

Jenis hidangan	**Saiz porsi**	**Gambaran/ kaedah masakan**	**Saiz porsi**	**Komen**	**Kegunaan Pejabat**
	(ukuran rumahtangga dan model makanan)		(ukuran rumahtangga dan model makanan)	(Kekerapan pengambilan)	Kod jumlah makanan(g)
Nasi: putih/goreng/bubur lain-lain: ___________	____ mangkuk (B/S/K) (b/p)	Lauk/kuah/sos: _________________ _________________			
Lauk-pauk: e) Ikan (jenis:___________) f) Ayam (berkulit dan lemak/tidak) g) Daging (jenis:___________) (berlemak/tidak) h) Telur (jenis:__________) **Kekacang:** tempeh /tauhu / _____)	___keping (B/S/K) ___keping (B/S/K) ___keping (B/S/K) ___keping (B/S/K)	Kaedah masakan: _________________ _________________ _________________ _________________ _________________ _________________ _________________ _________________ _________________ _________________ _________________ _________________	Kuah: _____ dsp/tsp _____ mangkuk (B/S/K)		

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Jenis hidangan	Saiz porsi	Gambaran/ kaedah masakan	Saiz porsi	Komen	Kegunaan Pejabat
Makanan laut: _____) Lain- lain:___________					
<u>Sayur-sayuran/ulam:</u> Jenis: _______________ pecal sayuran (kacang panjang/ taugeh/ /pucuk ubi) _______________	_____ dsp _____ mangkuk (B/S/K)	Kaedah masakan: __________________ __________________ __________________ __________________	Kuah: ______ dsp/tsp		
<u>Lauk-pauk tambahan:</u> Ikan kering/jeruk/ pekasam/sambal belacan/tempoyak lain-lain: ____________	____keping ____tsp/dsp ____tsp/dsp				
Buah-buahan: Jenis: _______________ (makan bersama kulit/tidak)	____keping(B/S/K) ____biji (B/S/K)	Sos/cicah: __________________ __________________	_____ tsp/dsp		
Lain-lain:___________)					
Minuman: air kosong kordial (jenis:_______) lain-lain:___________)	__tsp/dsp __gelas/cawan				
Makanan/minuman ringan di antara waktu makan: _____________					

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Kod panduan : **B: besar** **S: sederhana** **K: kecil** **b: bumbung** **p: paras** **tsp: sudu kecil** **dsp: sudu besar**

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BAHAGIAN L: PENGUKURAN ANTROPOMETRI

1. Lengkapkan penilaian di bawah

PARAMETER	ALAT	BACAAN 1	BACAAN 2	PURATA	CATATAN
Tinggi berdiri (cm)	*SECA Stadiometer 213*				
Berat badan (kg)	*Omron BIA (HBF-375)*				
BMI kg/m2					
Skeletal Muscle mass					
Lemak badan (%) Body Fat					
Visceral Fat					
Resting Metabolic rate					
Ukurlilit pinggang (cm)	*Lufkin measuring tape (W606PM -375)*				
Ukurlilit lengan atas, MUAC (cm)					
Ukurlilit betis, CC (cm)					
Kekuatan Genggaman Tangan	*Jamar Hand Dynamometer*				

Berjalan 4 meter: _____________________ saat

2. Adakah responden tidak dapat berdiri tegak atay mengalami khyposis (bongkok)?
Jika ya, panjang depa tangan (cm) perlu diambil. (** Ambil satu bacaan kepada 0.1 cm/kg terhampir**)

Khyposis	**1. ☐ Ya**	**2. ☐ Tidak (terus ke bahagian kedua)**			
	ALAT	**BACAAN 1**	**BACAAN 2**	**PURATA**	**CATATAN**
Panjang depa tangan (cm)	*Lufkin measuring tape W606PM*				

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Appendix L : Information sheet and consent form (Malay Version)

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

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BORANG 2.4: PENERANGAN DAN PERSETUJUAN RESPONDEN

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

1.TAJUK KAJIAN

Perubahan Status Keuzuran Selepas Setahun Kajian Susulan dan Faktor – Faktor yang Berkaitan Dengan Sarkopenia Dalam Kalangan Warga Emas di PPR Kuala Lumpur.

2. PENGENALAN

Keuzuran dan sarkopenia (kehilangan jisim otot) adalah perkara lazim yang akan dihadapi dalam kalangan warga emas. Kajian terdahulu menyatakan bahawa dua faktor ini mempengaruhi dan memberi impak yang negatif terhadap kesihatan dalam kalangan warga emas. Sekiranya tidak dikesan dengan lebih awal, kematian berkemungkinan boleh berlaku. Kelaziman warga emas mengalami sindrom keuzuran dan sarkopenia semakin meningkat dalam kalangan komuniti warga emas tidak kira di bandar mahupun di luar bandar. Keputusan akhir program kesihatan tahun lalu mengatakan bahawa kelaziman warga emas yang mendiami PPR Kuala Lumpur yang mengalami pra-keuzuran (72.8%) adalah yang tertinggi, yang kedua tertinggi adalah warga emas yang mengalami keuzuran (15.9%) dan peratusan warga emas yang normal adalah 11.3%. Oleh yang demikian, kajian ini bertujuan untuk melihat perubahan status keuzuran selepas setahun kajian susulan dan juga melihat faktor-faktor yang berkaitan dengan sarkopenia dari segi sosio-demografi; laporan kendiri penyakit kronik; kemurungan; ujian status kefungsian; status keuzuran; tahap aktiviti fizikal; risiko malpemakanan; status kognitif; penilaian tahap pemahaman, sikap dan amalan terhadap sindrom keuzuran, senaman dan pemakanan; komposisi badan dan sejarah pemakanan bagi penduduk warga emas yang berumur 60 tahun ke atas di PPR Kuala Lumpur.

Kajian ini adalah sebahagian daripada keperluan untuk bergraduat bagi pelajar tahun akhir program Bacelor Sains (Pemakanan dan Kesihatan Komuniti) dari Fakulti Perubatan dan Sains Kesihatan, Universiti Putra Malaysia (UPM). Kajian ini telah mendapat kelulusan daripada pihak Jawatan Kuasa Etika Penyelidikan UPM.

Sarapan dan hadiah akan diberikan kepada setiap peserta sebagai tanda penghargaan kami terhadap mereka atas penglibatan mereka secara langsung dalam kaji selidik ini.

3. APAKAH YANG PERLU ANDA LAKUKAN?

Sila ambil masa dengan secukupnya untuk membaca dan memahami dengan teliti terhadap penerangan yang diberikan sebelum anda bersetuju untuk menyertai kaji selidik ini. Jika terdapat sebarang kemusykilan atau memerlukan penerangan dengan lebih lanjut, anda boleh menghubungi atau bertanya dengan penyelidik-penyelidik yang terlibat dalam kaji selidik ini.

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

Setelah anda berpuas hati dengan maklumat yang diberi dan memahami penyelidikan ini, dan anda juga berminat untuk turut serta, anda dikehendaki untuk menandatangani Borang Persetujuan ini (muka surat 4).

Penyertaan anda dalam penyelidikan ini adalah secara sukarela. Anda tidak perlu menyertai penyelidikan ini jika anda tidak bersetuju. Anda juga mempunyai hak untuk tidak menjawab mana-mana soalan atau tidak menyertai mana-mana aktiviti. Anda juga boleh menarik diri daripada penyelidikan ini pada bila-bila masa sahaja ***tanpa dikenakan sebarang penalti*** atau apa – apa yang berkenaan dengannya.

Dalam kaji selidik ini, anda akan ditemu bual oleh penyelidik dan pembantu penyelidik terlatih menggunakan borang soal selidik. Ia terbahagi kepada (12) bahagian iaitu Bahagian A (latar belakang responden), bahagian B (laporan kendiri penyakit kronik), bahagian C (penilaian tahap kemurungan), bahagian D (ujian status fungsian), bahagian E (penilaian status keuzuran), bahagian F (penilaian aktiviti fizikal), bahagian G (penilaian sindrom keuzuran), bahagian H (penilain risiko malpemakanan), bahagian I (penilaian status kognitif), bahagian J (penilaian tahap pemahaman, sikap dan amalan terhadap sindrom keuzuran, senaman dan pemakanan) dan bahagian K (sejarah pemakanan berstruktur dan bahagian L (pengukuran anthropometri). Jangkaan masa yang diperlukan untuk temubual adalah ***kurang daripada 60 minit.***

Di akhir kajian ini, anda akan menerima sumbangan berbentuk peralatan dapur.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Berumur bawah 60 tahun, tidak mampu bergerak tanpa sokongan, tidak mampu bertutur, membaca serta menulis, mempunyai penyakit yang tidak boleh sembuh, berpindah ke luar kawasan PPR Kuala Lumpur dan mempunyai penyakit Alzheimer dan Dementia.

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANDA SEBAGAI PESERTA?

Hasil daripada kajian ini, anda berpeluang untuk mengetahui status kesihatan antaranya ialah Indeks Jisim Tubuh (BMI), jisim otot dan peratusan lemak viseral dan lemak dalam badan

b) KEPADA PENYELIDIK?

Berdasarkan kajian ini, penyelidik dapat mengetahui perubahan status keuzuran selepas setahun kajian susulan dan faktor – faktor yang berkaitan dengan sarkopenia dalam kalangan warga emas di PPR Kuala Lumpur.

6. ADAKAH IA BERISIKO?

Ada kemungkinan anda berisiko mendapat sakit sendi, pening kepala, kelesuan, degupan jantung yang laju, sesak nafas, pitam dan terjatuh sekiranya senaman tidak dilakukan dengan kaedah yang betul. Namun begitu, dalam kajian ini kami sangat mengutamakan keselamatan anda.

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

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7. ADAKAH MAKLUMAT DAN IDENTITI SAYA KEKAL RAHSIA?

Segala maklumat yang diberikan adalah sulit dan hanya akan digunakan untuk tujuan kajian sahaja. Anda akan diberikan ID unik dalam rekod kajian.

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

Jika anda mempunyai sebarang masalah atau soalan berkaitan dengan kajian ini, anda boleh terus menghubungi penyelidik:

Nur Najatul Munirah binti Muhamad Bokery (Pelajar Ijazah Sarjana Muda)
No. Tel : 018-3187874
Emel : najatulnurmunirah@gmail.com

Wan Hyssna binti Wan Omar (Pelajar Ijazah Sarjana Muda)
No. Tel : 013-3959237
Emel : syina29@gmail.com

Prof. Madya Dr. Siti Nur'Asyura Binti Adznam (Pensyarah/ Pengerusi Jawatankuasa Penyeliaan)
No. Tel : 03-89472481
Email : asyura@upm.edu.my

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

9. PERSETUJUAN

Saya…………………………………………… No Kad Pengenalan. …………………………… beralamat………………………………………………………………………………………………………
………………………..dengan ini bersetuju untuk mengambil bahagian secara sukarela dalam penyelidikan yang tersebut di atas *(kajian klinikal/percubaan ubat-ubatan/rakaman video/kumpulan sasaran/temuduga/ soal selidik).

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

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

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

*potong yang tidak berkenaan

Tandatangan …….………………………… (*Responden*)

Tarikh :……………………………………..…..

Tandatangan …….…………………………… (*Saksi*)

Nama :……………………………………..…..

No. K/P: …………………………………..…..

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

Tarikh ……..…………………………

Tandatangan …….………………………… (*Penyelidik*)

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Appendix M : Pictures

PPR Hiliran Ampang

Had a meeting with the committee of Pusat Aktiviti Warga Emas (PAWE) in PPR Hiliran Ampang and did some site visit.

PPR Seri Alam Fasa 2

A meeting was done with the committee of PPR Seri Alam Fasa 2, discussing about the date of the health promotion event.

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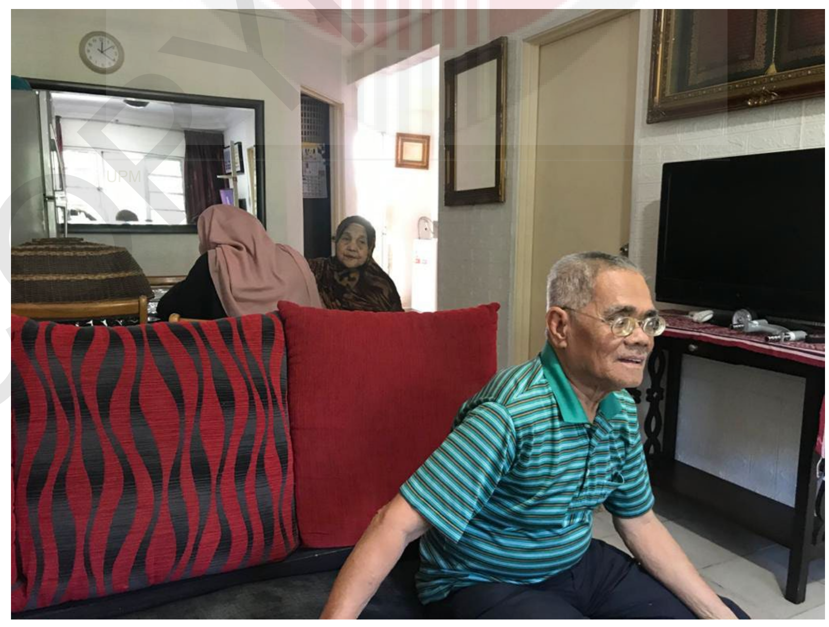
A picture of the respondents with their breakfast and token was taken.

A picture of our volunteers and the committee of PPR Seri Alam Fasa 2.

A gift was given to the head committee of PPR Seri Alam Fasa 2 by myself, Nur Najatul Munirah.

PPR Kampung Limau



Data collection process through door to door was done after the appointment date and time were set up a day before.

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A picture of my Final Year Project partner, Wan Hyssna giving a token to my respondent.

PPR Batu Muda

A briefing about consent form and the whole health promotion flow was done by me at registration station.

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Postgraduate students also involved in our data collection process, handling food history station.

Some of our volunteers were helping us out in interviewing respondents and taking respondents' anthropometry measurement.

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A gift was given to the head of committee of PPR Batu Muda by my Final Year Project partner, Wan Hyssna.

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PPR Seri Semarak

Face-to-face interview was done by my Final Year Project partner and volunteer.

A picture of our respondent with our banner.

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A gift was given to the head committee of PPR Seri Semarak by myself.

PPR Kampung Muhibbah

A picture of our volunteers with the committee of Pusat Aktitiviti Warga Emas (PAWE) Seputeh

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