

**DEPRESSION, ANXIETY, PERCEIVED SOCIAL SUPPORT AND  
ASSOCIATED FACTORS AMONG ELDERLY NURSING HOME  
RESIDENTS IN THE KLANG VALLEY**

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## ABSTRACT

### ABSTRACT:

*Introduction:* Depression and anxiety among the elderly brings about various adversities which affects the physical and psychological state of an individual and is a leading cause of disability worldwide and a primary contributor to the global burden of disease. Meanwhile, perceived social support from family members, relatives or friends, may improve an individual's conduct, coping, physical and psychological well-being.

*Objectives:* This study aims to determine the prevalence of depression and anxiety, perceived social support as well as the socio-demographic correlates among elderly residents residing in nursing homes in the Klang Valley.

*Study Design:* It is a cross-sectional study conducted among elderly residents residing in nursing homes in the Klang Valley. The instruments that were used in this study includes, socio-demographic questionnaire, Geriatric Depression Scale (GDS-30) was used to assess depression among elderly residents and Beck's Anxiety Inventory (BAI) was used to measure anxiety. Perceived social support was measured using Multidimensional Scale of Perceived Social Support (MSPSS). Cognition of all residents were screened at the beginning of the study using Elderly Cognitive Assessment Questionnaire (ECAQ).

*Results:* This study involved 224 elderly residents from thirty nursing homes around the Klang Valley. A majority of the geriatric population residing in nursing homes have both depressive symptoms (n =211, 94.2%) and symptoms of anxiety (n =182, 81.2%). Subjects with higher perceived social support were significantly less depressed as compared with older adults who perceived poor social support. However, lower perceived social support was not a significant contributor to symptoms of anxiety.

Conclusion: Depressive and anxiety symptoms are highly prevalent among elderly residents of nursing homes. Integrating social support to an individual in addition to their existing treatment plan, helps to improve their overall psychological well-being.

*Keywords: depression, anxiety, social support, nursing home, older adults*

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## ABSTRAK

Kemurungan dan kegelisahan di kalangan orang tua membawa pelbagai masalah yang mempengaruhi keadaan fizikal dan psikologi seseorang dan ia merupakan penyebab utama ketidakupayaan di seluruh dunia dan penyumbang utama kepada penyakit global. Sementara itu, sokongan sosial dari ahli keluarga, saudara-mara atau rakan-rakan, dapat menambah baik tingkah laku seseorang, menambah baik cara seseorang mengatasi masalah yang dihadapi dengan lebih positif dan juga menambah baik kesihatan fizikal dan psikologi seseorang. Oleh itu, kajian ini bertujuan untuk menentukan kadar kegelisahan dan kemurungan di kalangan warga tua yang tinggal di rumah jagaan dan jikalau sokongan sosial mempengaruhi kadar kemurungan dan kegelisahan.

Kajian ini bertujuan untuk menentukan prevalensi kemurungan dan kegelisahan, sokongan sosial yang dirasakan serta hubungannya dengan data sosio-demografi di kalangan warga tua yang tinggal di rumah jagaan di Lembah Klang.

Ini adalah kajian keratan rentas yang dilakukan di kalangan warga tua yang tinggal di rumah jagaan di Lembah Klang. Instrumen-instrumen yang digunakan adalah borang soal-selidik peribadi, skala Depresi Geriatrik (GDS-30) digunakan untuk menilai kemurungan di kalangan warga tua dan *Beck's Anxiety Inventory* (BAI) digunakan untuk mengukur kegelisahan. Sokongan sosial yang dirasakan diukur dengan menggunakan *Multidimensional Scale of Perceived Social Support* (MSPSS). Kognisi semua penduduk disaring pada permulaan kajian dengan menggunakan borang soal sidik *Elderly Cognitive Assessment Questionnaire* (ECAQ).

Kajian ini melibatkan 224 penduduk tua dari tiga puluh rumah jagaan di sekitar Lembah Klang. Sebilangan besar penduduk geriatrik yang tinggal di rumah jagaan mengalami gejala-gejala kemurungan (n=211, 94.2%) dan kegelisahan (n = 182, 81.2%). Warga tua dengan sokongan sosial yang kurang mempunyai kadar kemurungan yang lebih tinggi dan ketara berbanding dengan warga tua yang merasai lebih banyak sokongan sosial daripada keluarga, suami atau pasangan dan dari kawan-kawan. Walau bagaimanapun, warga tua yang mempunyai sokongan sosial yang kurang, tidak menyumbang kepada peningkatan gejala kegelisahan di kalangan golongan tua di pusat penjagaan orang tua.

Kemurungan dan kegelisahan sangat berleluasa di kalangan warga tua di rumah jagaan. Kajian yang lebih teliti dan besar perlu dibuat di kalangan warga tua untuk menentukan dengan lebih teliti faktor-faktor yang boleh menjejaskan kesihatan mental golongan warga tua. Mengintegrasikan sokongan sosial kepada rancangan rawatan yang sedia ada di golongan warga tua dapat membantu meningkatkan kesihatan mental warga tua secara keseluruhan. Selain itu, langkah-langkah perlu diambil untuk meningkatkan kualiti hidup dan kesihatan warga tua yang tinggal di rumah penjagaan kerana mereka adalah tulang belakang negara yang telah banyak memberi sumbangan kepada masyarakat pada tahun-tahun kegemilangan mereka.

*Kata kunci: kegelisahan, kemurungan, rumah jagaan, sokongan sosial, warga tua*

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## LIST OF ABBREVIATIONS

- I. GDS-30- Geriatric Depression Scale 30
- II. BAI- Beck's Anxiety Inventory
- III. MSPSS- Multidimensional scale of Perceived Social Support
- IV. ECAQ- Elderly Cognitive Assessment Questionnaire
- V. COVID-19- SARS-CoV-2 (2019-nCoV)
- VI. SPSS- Statistical Package for the Social Sciences
- VII. CDC – Centre for Disease Control

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# CHAPTER ONE

## INTRODUCTION

There are rising concerns towards the psychological wellbeing of the geriatric population in the world today, as there is an increase of mental health disorders especially depression and anxiety among older adults (World Health Organization, 2013). These mental health issues are proving to be a great burden on the aging population and can potentially lead to fatality. Multiple traditional and social media have recently highlighted in their article “Senior Citizen Committed Suicide in Hospital Serdang” (March 2020), the tragic plight of an elderly citizen who had committed suicide in the bathroom of the ward that he was admitted to due to an illness. These complex tragedies and multi-factorial origin of mental health issues among the geriatric population is of grave concern, as senior citizens are the backbone of our society and the mental health issues which are affecting them needs to be addressed.

Depression in older adults is common and is not a normal part of aging. According to the World Health Organization, about 7% of the older population suffer from depression (WHO, 2017). It is more than just feeling sad or blue and often causes debilitating symptoms that affects how an individual feels, thinks and disrupts their ability to function independently (National Institute of Aging, 2017). In the elderly population, depression and anxiety are the two commonest mental health adversities suffered by a large group of the elderly population after dementia (Cole et al, 1999).

It has been reported that the geriatric population residing in care homes and assisted living facilities undergo more severe psychological distress and problems than the elderly population who stays together with their family members due to the lack of social support and freedom of moving around freely (Karakaya et al, 2009). In Malaysia, it is reported that by the year 2020, the geriatric population will be about 10% of the entire general



population, which is an increase by 211% from the year 1990-2020 (Department of Statistics, Malaysia, 2010, Karim H.A, 1997). This raises considerable amount of concern regarding the physical and mental health status of elderly residents in nursing homes which may have an overwhelming impact on the national health care system and pose greater challenges to the nursing home personnel.

There is a 3-4-fold risk of depression among elderly residents staying in nursing homes as compared to older adults who are not institutionalized (Jongenelis et al, 2004). Depressive symptoms in the geriatric population may overlap with a major neurocognitive disorder and physical illness hence leading to under detection, missed diagnosis and ultimately being undertreated. The phenomenology of depression in older adults often differs from the younger population, further increasing the chances of depression being missed (Hegemen et al, 2012). Agitation, multiple somatic symptoms and hypochondriasis are often reported in elderly adults as reported by a meta-analysis of 11 observational studies conducted by Hegemen and colleagues (Hegemen et al, 2012). The geriatric population which suffers from depression, has a higher risk of functional impairment and higher incidences of suicide (Mehta et al, 2002, Wang et al, 2015).

There are many factors in the elderly population that contributes to depression. Older adults in assisted living facilities encounter many challenges in terms of their medical health, social and functional deficits such as experience a lot of loss and grief, isolation and declining health and mental capabilities (Choi et al, 2008). This study showed that the major contributors to depression in the elderly staying in nursing homes are feelings of isolation and loneliness, loss of social support, loss of autonomy and independence due to institutionalization's rules and regulations, lack of privacy due to sharing of rooms and bathrooms with other residents, continuous presence of death and grief and lack of meaningful activities and repetition of programmes in the nursing homes (Choi et al, 2008). The continuous

presence of “silent” depressive symptoms coupled with poor initiation of treatment may potentially give rise to higher rates of suicide among older adults living in care homes.

The National Institute of Mental Health (NIMH) has reported that yearly, 27.8 per 100,000 older adults aged 65 and above commits suicide (National Institute of Mental Health, 2020). This figure rises with increasing age and is the greatest for those above 75 years old with estimated 39.9 per 100,000. NIMH has also concluded that about 40% or more of suicides in the geriatric population is under reported and includes “silent suicides” such as overdosing on medications, self-induced emaciation and “accidents”.

Studies have shown that older adults residing in nursing homes often have suicidal thoughts although completed suicide is rare (Barak et al, 2019). The risk of suicide and the presence of multiple medical illness contributes to the increased rates of mortality in the elderly population (Wanget al, 2015). Additionally, the overall quality of life in older adults in nursing homes is significantly lower due to the loss of autonomy and independence due to institutional rules and regimes as well as social isolation and loneliness that is experienced (Choi et al, 2008).

The reported rates of anxiety disorders in the geriatric population are higher than the reported rates of depression. Anxiety in late-life can be as high as 38% which can consequently lead to years of suffering and increased burden on the national public health care system (Baekman et al, 1998, Schuurmans et al, 2005, Elias et al, 2018). Elderly residents in nursing homes were more likely to suffer from anxiety disorders, especially generalized anxiety disorder and specific phobias as compared to their community-dwelling counterparts (Creighton et al, 2015). The geriatric population may experience more severe and troublesome anxiety than their counterparts of other age groups as they frequently experience more losses, have multiple medical conditions that leads to chronicity including chronic pain and are on multiple medications that may potentially give rise to anxiety (Forsell et al, 1998).

Chronic anxiety can be detrimental and hazardous to the physical, physiological and cognitive health of an individual leading to illnesses such as neurocognitive disorders and cardiovascular diseases (Lenze et al, 2011). The same study by Lenze, suggested that while some of the anxiety that develops may be attributed to undiagnosed morbidity, a large proportion of anxiety disorders are caused by chronic and prolonged stress among the geriatric population. This prolonged and untreated stress may bring about a biological cascade that increases older adults to aging-related illnesses. A similar longitudinal study conducted by Wilson et al, concluded that individuals who completed self-reported questionnaires on neuroticism, in the following years then developed a diagnosis of neurocognitive disorders. This study further supports available evidence that increased levels of anxiety and predisposition to stress, prognosticate a higher risk for Alzheimer's disease and deteriorating global cognitive levels.

Perceived social support refers to an individual's perception of the overall support that is received, including material, social and psychological support that is given by family members, caregivers or friends (Siedlecki et al, 2014). A recent study by Seddigh and colleagues reported that the presence of positive and encouraging social support acts as a protective shield against anxiety and depression among the older adults living in nursing care homes (Seddigh et al, 2020). The same study concludes that frequent social gatherings and implementing productive activities such as having a hobby can empower an individual's leisure time resulting in significant reduction of depressive and anxiety symptoms.

A vast amount of literature has shown that there are many factors such as physical health, marital status, quality of sleep, social support, absence of leisure activity and exercise can all contribute to the development of depression and anxiety among the elderly population (Maral et al, 2001, Smalbrugge et al, 2003, Xie et al, 2010, Leblanc et al, 2015, Richardson et al, 2011). However, most of these studies were conducted among the geriatric population in

the community. In Malaysia, to date, no studies have been conducted regarding the association of depression and anxiety symptoms and perceived social support among the elderly residents in nursing homes. Thus, this study aims to investigate and explore the prevalence, risk factors and perceived social support among the geriatric population residing in nursing homes in the Klang Valley.

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## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 DEPRESSION AMONG ELDERLY RESIDENTS IN NURSING HOMES

Depression is one of the leading causes of disability encountered by all countries in the world and is recognized as a serious public health concern. It is a major contributor to the global burden of disease worldwide (Whiteford et al, 2016). An estimated 350 million individuals worldwide are reported to be suffering from depression, with a prevalence of 4.4% (World Health Organization, 2017). Depression in older adults most often leads to higher rates of morbidity and disability as compared to the younger adults suffering from depression (Rajkumar et al, 2009). In Asian countries, approximately 12-34% of the geriatric population suffers from depressive disorders (Vanoh et al, 2016). The same study, recruited 2264 older adults and concluded that the prevalence of depression in older adults living in the community in Malaysia is estimated to be 16.5% and is higher in women (56.6%) than in men (47.8%). Another study by Sherina et al showed that elderly in rural areas (7.6%) in Malaysia tends to be more depressed than older adults staying in urban areas (6.3%) (Sherina et al, 2004). Furthermore, there is a 3-4-fold risk of depression among elderly residents staying in nursing homes as compared to older adults who are not institutionalized (Jongenelis et al, 2004). Another study done by Lampert et al in 2015 reported that depression in the geriatric population ranges between 23-40% in community-dwelling individuals and in 25-80% of older adults living in nursing homes and are higher in women (Lampert et al, 2015). The authors postulated that this was because elderly women are more willing to seek for health services, higher vulnerability to stress and have a longer life span as compared to their counterpart. These findings are supported by a vast number of findings of published research that shows evidence of increased prevalence of

depression in nursing care homes (Ames D., 1990, Seitz et al, 2010, Snowden M. et al, 2003, Snowden J., 2010, Snowden J. and Purandare N., 2010).

Late life depression is most often underdiagnosed and missed by health care non-specialists in primary care, especially in men and ethnic minorities in the population (Unutzer J., 2007). A common misconception that is often encountered in clinical practice by many healthcare professionals is that depression is a normal part of aging, hence it is often dismissed (Sarkisian et al, 2003). Moreover, the stigma associated with depression further contributes to undertreatment of depression in older adults (Sirey et al, 2001). Chronic medical illnesses, pain, substance misuse, neurocognitive disorders may also further complicate the diagnosis (Unutzer J., 2007). The geriatric population who are staying in nursing homes, often have multiple medical co-morbidities including having pre-existing depression when they are sent to long-term care homes and facilities as family members lack the ability to care for them (Yael Harris, 2006). The phenomenology of depression in older adults are more complex and may be difficult to spot as compared to younger adults although the exact underlying cause is unknown (Harvard Health Publishing, Harvard Medical School, 2008). The authors postulated that pre-existing medical conditions, increasing disability, isolation from society and cognitive decline may all contribute the varying symptoms of depression seen in the geriatric population. The common reported symptoms are somatic symptoms such as headaches, body aches, followed by difficulties with cognition and irritability (Rodda et al, 2011). The geriatric population prefers to speak to their primary care physician rather than psychological services regarding their somatic complaints of depression (Mitchell A.J., 2011).

There are many factors that contribute to the risk of developing depression among elderly residents residing in nursing homes and it varies according to different populations and culture (Hoover et al, 2010). In Iran, some of the major themes that contributed to the development of depression in care homes are unhappy with their personal lives, unsatisfied with the quality of food offered and being less active (Almomani et al, 2017). Another study done in Norway, showed that unmarried older adults, short duration of stay in nursing homes, and individuals with pre-existing depression who were on medications, were at higher risk of developing depression in nursing homes (Haugan G., 2014). Studies have also shown that residents in nursing homes who have a concurrent medical condition and cognitive decline are also at greater risk of having depression. Another significant contributor to developing depression in care homes is the dissatisfaction of older adults towards the nursing home personnel (Nazemi et al, 2013). A study conducted in Singapore also demonstrated increased risk between pain, longer duration of stay in nursing home, as well as lack of social contact with depression in the geriatric population in care homes.

Prolonged and untreated duration of depression in elderly adults leads to more severe symptoms of depression which in turn worsens the quality of life among geriatric residents in aged care homes (Al-Amer et al, 2019, Sivertsen et al, 2015). The geriatric population which suffers from depression, has a higher risk of functional impairment and higher incidences of suicide (Mehta et al, 2002). According to a study conducted by Loebel and colleagues, the anticipation of being placed in a care home, serves as a precipitating factor of suicide in elderly adults (Loebel et al, 1991). The rate of suicide in adults aged 65 years and above is 30 per 100 000 as compared to their younger counterparts less than 25 years old whose rate is 7 per 100 000. Additionally, the CDC has also reported that the risk of suicide increases with age and is higher in male (Centre for Disease Control, 2012). The risk factors which potentially leads to suicide in older adults in care homes includes

depression, isolation from society and functional deterioration (Gaugler et al, 2007, Duberstein et al, 2004, Cornwell Y., 1994). The rate of completed suicides in nursing homes are comparable to those in the general population and no greater, however most studies indicate that suicidal thoughts are very common among elderly residents in nursing home (Mezuk et al, 2019). In Australia, around 140 nursing home residents were reported to end their lives between 2000 and 2013 (Jain et al, 2020). Although empirical data shows low rates of suicides in each year, these suicidal deaths represent only the “tip of the iceberg” of self-harming and suicidal behaviour in nursing homes. The same study by Jain and colleagues reported that one in seven residents exhibit self-harming behaviours weekly in the homes by cutting themselves and eating foreign objects.

Thus, it is evident that there is an urgent need of study into this vulnerable population, which are the geriatric residents living in nursing homes. These older adults in care homes are an interesting subpopulation, as they constantly face higher levels of stress, multiple medical co-morbidities, social isolation, death and uncertainty during the golden years of their adulthood

## **2.2 ANXIETY AMONG ELDERLY RESIDENTS IN NURSING HOMES**

Anxiety disorders include a vast spectrum of disorders such as generalized anxiety disorder, panic disorder, social phobia, and specific phobias. These disorders are highly prevalent and are associated with high health care costs and high disease burden. Large community- based studies have demonstrated prevalence of up to 33.7% of individuals are affected by an anxiety disorder throughout their lifetime (Bandelow et al, 2015). Anxiety disorders are common in late life and the prevalence of anxiety symptoms among the geriatric population in the community ranges from 15-52.3% and in clinical setting it can range from 15-56% (Bryant et al, 2008). In older adults, specific phobias and generalized



anxiety disorder has accounted for about 90% of late-life anxiety (Krasucki et al, 1999). More interestingly, a systematic review of 18 studies comparing prevalence rates between community- dwelling geriatric population compared to older adults in nursing home, revealed that the rates of anxiety were higher in older adults staying in nursing homes (Creighton et al, 2016). The same study showed that the prevalence rate was between 3.2-20% in older adults staying in nursing homes and 1.4-17% among elderly staying in the community.

Table 2.2.1 below presents the prevalence of anxiety among elderly in nursing home from various nations:

Table 2.2.1: The Prevalence of Anxiety Symptoms among Elderly in Nursing Homes from Other Nations

Study	Country	N	Design of sample	Measurement Tool	Prevalence of anxiety symptoms (%)
Drageset et al, 2013	Norway	227	Cross-sectional, convenient sampling of 30 nursing homes	HADS-A	14
Smith et al, 2008	United States of America	198	Cross-sectional, stratified random sample of 22 nursing homes	NPI CSDD	22.2
Sandberg et al, 1998	Sweden	202	Cross-sectional, 3 nursing homes	OBS Scale	58.4
Zuidema et al, 2007	Netherlands	1322	Cross-sectional, 59 nursing homes	NPI-NH	21
Nie et al, 2020	China	817	Cross-sectional, Multi-stage cluster random sampling, 24 nursing homes	GAD-7	14.2
Creighton et al, 2018	Australia	180	Cross-sectional, observational design, 12 nursing homes	MINI	31.1 (Threshold and subthreshold anxiety disorders)

HADS-A: Hospital Anxiety and Depression Scale—Anxiety Subscale; OBS Scale: Organic Brain Syndrome Scale; NPI: Neuropsychiatric Inventory; CSDD: Cornell Scale for Depression in Dementia; NPI-NH, Neuropsychiatric Inventory—Nursing Home version; GAD-7: Generalized Anxiety Disorder Scale-7; MINI- Mini International Neuropsychiatric Interview.

While generalized anxiety disorder and specific phobias account for a large part of anxiety symptoms in elderly, not much is known about the incidences of agoraphobia and social anxiety disorder among the geriatric population. Two studies that were done respectively by Junginger et al and Smallbrugge and colleagues suggested that agoraphobia occurs not infrequently and reported rates of 4% and 2.1% respectively. Social anxiety

disorder on the other hand is uncommon and reported rates were 0% and 0.6% respectively (Junginger et al, 1993, Smallbrugge et al, 2005). Residents in nursing homes generally have fewer obligations than their peers who live in the community and have a more restricted lifestyle as well, thus older adults residing in nursing homes may find it easier to steer clear of certain situations and activities that may give rise to social anxiety (De Bellis, 2010). Reduced physical capacity especially with ambulation and vision may contribute to healthcare professionals missing the symptoms of anxiety (Jeste et al, 2005).

As with depression in elderly, anxiety disorders are also often missed and underdiagnosed and often leads to a chronic course as it is left untreated. Symptoms which are suggestive of anxiety in elderly includes worrying excessively and expressing having fear, avoiding social situations and having a myriad of physical symptoms such as palpitations, sweating, hyperventilation, trembling, chest discomfort and gastrointestinal disturbances such as nausea and epigastric discomfort (National Council on Aging, 2012). In a study on anxiety disorders among elderly, Wolitzky and colleagues reported that about 14% of the population fulfils the diagnostic criteria for anxiety disorder (Wolitzky-Taylor et al, 2010). However, about 27% of older adults have clinically significant anxiety that albeit not fulfilling a disorder, can still be debilitating and result in significantly poorer quality of life and functional capabilities (Richardson et al, 2011). The same study by Richardson and colleagues concluded that the identification of late-life anxiety can be difficult and complex as it often overlaps with medical illnesses, life adversities and complicated further by cognitive deterioration.

The Substance Abuse and Mental Health Services Administration (SAMHSA) and Administration on Aging (AoA) reported in their article that there were several risk factors that were associated with the development in anxiety in the elderly which includes the presence of chronic medical conditions especially Chronic Obstructive Pulmonary

Disease (COPD), arrhythmias and anginas, thyroid disorders and diabetes. Apart from medical conditions, self-perceived deteriorating health, disruption in sleep pattern, functional limitations, adverse outcomes of medications such as inhalers and steroids could perpetuate anxiety. Additionally, stressful life events can also precipitate the development of anxiety (SAMHSA and AoA, 2013, Wolitzky-Taylor et al, 2010). Hans Selye, a Hungarian endocrinologist, explained the outcomes of biological stress based on his famous stress model, known as General Adaptation Syndrome (GAS). The Hypothalamic-Pituitary-Adrenal Axis (HPA axis) assembles the body's defence mechanism to cope with the ongoing stress. However, when there is chronic, ongoing stress which is beyond the capability of the physiological system, the individual's resources are exhausted and therefore more susceptible to various diseases that can ultimately be fatal (Selye H., 1976). The elderly population are already more vulnerable to develop multiple medical comorbidities due to advancing of age. The coupling of this internal vulnerability and chronic stress can be detrimental to not only the psychological well-being, but also to the physical and cognitive functioning of older adults.

Creighton and her colleagues in 2016, revealed in their systematic review that there were five main categories that contributed to the development of anxiety in older adults residing in nursing homes which includes pain, ongoing medical conditions, support, trauma and depression (Creighton et al, 2016). Pain is a common complaint among elderly residents in nursing homes, especially from bed sores or pressure ulcers. Inadequate pain management can lead to anxiety about performing activities of daily living and ultimately reduction in overall mobility (Asmundson et al, 2009, Zis et al, 2017, Santos et al, 2017). Frequent falls among the geriatric population due to frailty, side effects of medications or medical illness, further exacerbates symptoms of anxiety (Hallford et al, 2017). Apart from falls, other forms of traumas including various forms of abuse among the elderly including

physical, sexual, verbal and financial abuse may also precipitate the development of anxiety. The World Health Organization (WHO) has reported that rates of elder abuse are significantly higher in long-term care facilities and nursing homes with 64.2% of nursing home staff having committed some form of abuse towards the older adults residing in nursing homes (World Health Organization,2020). WHO has postulated that the actual figures are much higher and is under reported as a large proportion of older adults are afraid to disclose the abuse that they have been subjected upon. The geriatric population is also more at risk to have death anxiety and depression which is closely linked to the number of years spent in nursing homes and the lack of visitors who came to see them in the nursing homes (Bektas et al, 2017).

Hence, it is important that anxiety be studied among Malaysian geriatric population residing in nursing homes as it could be a factor that contributes to the poor mental health of the elderly in the country. Furthermore, by identifying the correlates and factors which are associated with anxiety, steps can be taken to identify risk factors and intervene to help our elderly residents to improve their quality of life.

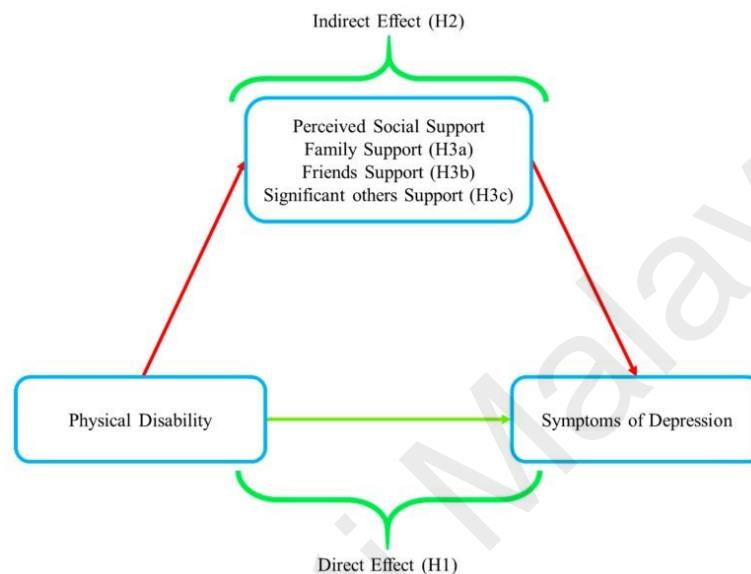
### **2.3 PERCEIVED SOCIAL SUPPORT AMONG ELDERLY RESIDENTS IN NURSING HOMES**

Social support is defined as the experience of being treasured, respected, cared and loved upon and self-sufficiency that is gained through the interaction with others (Gurung R.A.R., 2007). This support may come from vast sources such as family, relatives, caregivers, friends and from the community or from any other peer groups that an individual is associated with (Md Yasin et al, 2010). It may come in the form of reinforcement and assistance provided by other people or in the form of perceived social support which is the availability of adequate support when required as perceived by an individual (Roohafza et al, 2014). Several theories

have been postulated to explain the association between social support with health. Stress and coping social support theory explain that social support acts as a buffer and protects individuals from adverse health effects that is caused by stressful incidences (Barrera M., 1986, Cutrona C.E., 1990). Another theory that has been postulated is relational regulation theory (RRT) which hypothesizes that the association between perceived social support and psychological well-being, comes from emotional regulation through conversations and joined activities (Lakey et al, 2011). A vast number of studies have identified a biopsychosocial course that associates social support with health and has a positive reverberation on the cardiovascular, immune and endocrine system (Taylor S.E., 2007). Multiple prior empirical data shows that diminished social support is a predictor of mental health issues and has been linked to depression, anxiety, attentional difficulties, somatic affliction and poor self-esteem (Md Yasin et al, 2010).

Many studies have demonstrated the positive impacts of perceived social support on the physical, psychological and overall wellbeing in older adults (Guo et al, 2015, Ahmed-Mohamed et al, 2013). Perceived social support plays an invaluable role as a buffer in mediating the link between physical disability and depression (Taylor et al, 2004, Yang Y., 2006). A study conducted in Turkey among 102 older adults revealed that perceived social support is a significant predictor of depression among the elderly and the lower the perceived support, the higher the incidences of depression (Bozo et al, 2009). Additionally, the support that is perceived among the geriatric population, serves as a mediator between the depressive symptoms and activities of daily living (Xie et al, 2018). Perceived social support includes three major categories which includes support from family members, support from friends and support from a significant other who may be a spouse or partner (Väänänen et al, 2014). The stress-buffering hypothesis strongly demonstrated that high levels of perceived social support enable senior citizens to cope better with the daily stresses from physical disabilities and

improves the psychological well-being (Thoits et al, 1995). A recent study by Azam et al in 2020, demonstrated a hypothetical model of perceived social support and the interconnection between physical disability and depression as shown below:



This study reinforced the findings of multiple previous studies reporting the link between physical limitations and socio-psychological difficulties among senior citizens (Bowen et al, 2015, Xie et al, 2018).

A study that was conducted among elderly residents residing in a nursing home demonstrated that high levels of perceived social support is a mitigating factor for depression and strong family support especially from children. The same study showed that there is increased risk of depression seen among unmarried older adults living in nursing homes, whose family do not visit them at the care homes (Patra et al, 2017). Senior citizens in nursing homes also frequently reported loneliness that arose from reduced contact with nursing home personnel as well as visits from family members (Drageset et al, 2015). Additionally, negative cognition changes the perception of received social support that ultimately increases risk of depression. Older adults residing in nursing homes, generally are dependent on others for self-

care, thus have higher incidences of autonomy and freedom loss that leads to the development of feelings of emptiness that may be alleviated by the presence of support from family, friends and caregivers (Tambaga et al, 2019). Social support also promotes positive cognition, improves motivation and gives individuals the strength to overcome adversities, thus improving the overall quality of life in nursing homes (Sylvester et al, 2017). Drageset and colleagues also reported that reading, receiving phone calls and listening to the radio, helped residence feel calmer and at ease thus reducing the levels of anxiety experienced (Dragaset et al, 2015).

Hence, it would be imperative to review the association between perceived social support and psychological well-being among senior citizens living in nursing homes. This is because good mental health reduces the physical burden of the residents, improves functioning, reduces the challenges faced by nursing home personnel and ultimately leads to overall good quality of life although the older adults are staying in a care home. The psychological well-being of the geriatric population living in nursing homes in Malaysia is a valuable asset to the country, as it not only reduces the burden put upon on public health care systems, but also reflects the standard and quality of care that is provided by the country towards the aging population who have been significantly contributed to the development of the country during their years of glory.

## CHAPTER 3

### RATIONALE AND OBJECTIVES OF STUDY

#### 3.1 Rationale of the Study

As discussed above, there is limited studies into depression, anxiety and perceived social support among elderly residents staying in nursing homes and especially so in Malaysia. Furthermore, there is very limited studies done on elderly residents staying in nursing homes, which are an extremely vulnerable population to both depression and anxiety. Therefore, a study among senior citizens in nursing homes in a Malaysian population would be needed to determine the prevalence of depression and anxiety. Additionally, perceived social support among older adults in care homes is an area of interest, as this perception contributes to the psychological well-being of the geriatric population and a better understanding to the challenges faced by these senior citizens can ultimately improve overall well-being and quality of life.

#### 3.2 Objective of this study

- i) To determine the prevalence of depression among elderly citizens residing in nursing homes in the Klang Valley
- ii) To determine the prevalence of anxiety among elderly citizens residing in nursing homes in the Klang Valley
- iii) Determining the association between elderly resident's sociodemographic characteristics and depression
- iv) Determining the association between elderly resident's sociodemographic characteristics and anxiety
- v) Determining the association between perceived social support and depression
- vi) Determining the association between perceived social support and anxiety



### **3.3 Study Null Hypothesis**

1. There is no significant association between sociodemographic factors with depression among elderly nursing home residents.
2. There is no significant association between sociodemographic factors with anxiety among elderly nursing home residents.
3. There is no significant association between perceived social support with depression among elderly nursing home residents.
4. There is no significant association between perceived social support with anxiety among elderly nursing home residents.

Universiti Malaysia

## CHAPTER 4

### METHODOLOGY

#### 4.1 Study Setting

This study was done among elderly senior citizens residing in the Klang Valley. The Klang Valley consists of 9 districts from Selangor, Wilayah Persekutuan Kuala Lumpur and Putrajaya. There are more than 100 nursing homes in the Klang Valley that includes both free nursing homes (Government sponsored/ Non-governmental Organization supported) and paid nursing homes. Our study included thirty (30) nursing homes from various parts of the Klang Valley. As the study was conducted during the COVID-19 pandemic, many of the nursing homes did not allow external visitors to their homes to limit the interaction with senior citizens in the homes. For the nursing homes which allowed the study to be conducted, the interaction with all nursing home personnel and senior citizens were conducted with strict adherence to COVID-19 standard operating procedures which included the usage of mask, face-shield and protective gears at all nursing homes involved. Senior citizens residing in the nursing homes are from a multi-ethnic background, and comprise of mainly Chinese and Indians and a small proportion of Malay residents, and residents from other ethnic groups and foreigners.

#### 4.2 Study Design and Sampling Method

This was a cross-sectional study conducted among elderly residents residing in thirty (30) nursing homes around the Klang Valley in Malaysia.

Convenient sampling method was used in this study. All senior residents staying in nursing homes were approached through their respective person in charge of the home. An official letter was directed to the person in charge of the nursing home who agreed for the survey to be conducted at their nursing homes via telephone and they were then given a copy of the questionnaires that were going to be used for this study. Residents who are currently residing

in nursing homes in the Klang Valley were approached and the study was explained. Residents who agreed to participate in the study signed the informed consent forms. Consented patients were then screened for inclusion and exclusion criteria and cognitive screening was done prior to the survey to estimate level of cognition among the residents using the Elderly Cognitive Assessment Questionnaire.

#### **4.2.1 Inclusion Criteria**

- i) Residents staying in nursing homes in the Klang Valley
- ii) Age 65 years old and above

#### **4.2.2 Exclusion criteria**

- i) Residents of the nursing home who refuse to participate,
- ii) Residents below the designated age,
- iii) Residents who have a cognition score below 5 (0-4) according to the Elderly Cognition Assessment Questionnaire (ECAQ) and
- iv) subjects who were acutely psychotic or disturbed.

Sociodemographic information was collected via a questionnaire that was designed specifically for this study. Depressive symptoms were measured using the Geriatric Depression Scale 30 (GDS-30) while anxiety was measured using the Beck's Anxiety Inventory (BAI). Perceived Social Support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS). As both Malay and English Language may be used by the elderly residents of nursing homes, both the English and Malay versions were used. Ethical approval was obtained from the Ethical Committee of University Malaya Medical Centre (MECID No. 202043-8435).

### 4.3 Study duration

Samples were collected within a 3-month period, between June 2020 and August 2020.

### 4.4 Sample Size Calculation

For a cross-sectional prevalence study, the formula (Charan J. Biswas, 2013) that the author used to calculate the sample size was:

$$N = Z^2 \times p(1-p)/m^2$$

$$N = 1.96^2 \times 0.14(1-0.14)/0.05^2$$

$$N = 185$$

N = required sample size

Z= confidence level at 95% (standard value of 1.96)

p = estimated prevalence of anxiety in the population (the prevalence of anxiety among elderly population in nursing home was 14%) (Drageset et al, 2013)

m = margin of error at 5% (standard value of 0.05)

$$N = Z^2 \times p(1-p)/m^2$$

$$N = 1.96^2 \times 0.176(1-0.176)/0.05^2$$

$$N = 223$$

N = required sample size

Z= confidence level at 95% (standard value of 1.96)

p = estimated prevalence of depression in the population (the prevalence of depression among elderly population in nursing home was 17.6%) (Yeung et al, 2011)

m = margin of error at 5% (standard value of 0.05)

Based on the calculations above, total numbers of subjects required for this study are 223 patients with the confidence interval of 95% and margin of error of 5%.

#### **4.5 Study Procedure**

The study was done in a convenient sampling manner. First, the researcher approached the person in charge of the designated nursing homes via telephone to explain regarding the study and obtain permission to come to the nursing home and interview the elderly residents who fit the inclusion and exclusion criteria. Once permission is obtained, the researcher would attend to the nursing home on the designated date and time, to explain the study and its objectives, answer any queries that the residents may have and hand out the patient information sheet and the informed consent. Participation was emphasised to be voluntary and that privacy was maintained. After reading and signing the informed consent, the residents would then proceed to fill up the questionnaires given by the researcher in 10- 15 minutes.

#### **4.6 Study Instruments**

There were four (4) scales used in this study which were the socio-demographic questionnaire, Geriatric Depression Scale -30 (GDS-30), Beck's Anxiety Inventory (BAI), Multidimensional Scale of Perceived Social Support (MSPSS)

Prior to the survey, screening of cognition was done using Elderly Cognitive Assessment Questionnaire (ECAQ).

##### **4.6.1 Socio-Demographic Questionnaire (APPENDIX D)**

The socio-demographic questionnaire was constructed and divided into 2. Firstly, basic demographic details such as age, sex, marital status, ethnicity, religion, family background, household income, education level, number of children, medical history, psychiatric history and family history of psychiatric illness were included. The second part of the questionnaire covered the number of years the residents have been residing in the nursing home, number of friends and/or family who visits them in the nursing home in a month, presence of hobbies/ leisure activities and exercise a week and sleep duration in a day.

#### 4.6.2 Geriatric Depression Scale-30 (APPENDIX E)

Yesavage, Brink, Rose, Lum, Huang, Adey, and Leirer in 1982, first developed the Geriatric Depression Scale. It is a self-reported scale that measures depression and has been tested and used extensively in the elderly population. The original version consisted of 100 items, which was later on shortened to 30 Yes/No questions. The diagnostic accuracy of the GDS-30 after meta-analytic weighting was given by a sensitivity of 77.4% (95% CI=66.3% to 86.8%) and a specificity=65.4% (95% CI=44.2% to 83.8%) (Yesavage et al, 1982). Cut-off scores for different severities of depression are as follows: For the long form: Normal 0 – 9, Mild 10 – 19, Severe 20 – 30. Moreover, the GDS is available in Malay version, which is validated in Malaysia (Teh et al, 2004).

<i>GDS score</i>	<i>Depression Severity</i>
0-9	Normal
10-19	Mild
20-30	Severe

#### 4.6.3 Beck's Anxiety Inventory (BAI) (APPENDIX F)

Beck's Anxiety Inventory was developed by Aaron T. Beck and his colleagues in 1988. It is a self-reported 21 items questionnaire that measures the presence of anxiety in individuals. The internal consistency is 0.92 (Cronbach's alpha) and is highly reliable and the test-retest reliability is 0.75. Validity of the BAI is that it is mildly correlated with the Hamilton Depression rating Scale (Beck et al, 1988). The BAI has also been translated into Malay and was validated in 2011. The Cronbach alpha coefficients ( $\alpha$ ) ranged from 0.66 to 0.89 with satisfactory overall alpha value (.91). The concurrent validity of the BAI-Malay (ranges

between  $r=.22$  to  $r=.67$ ) (Mukhtar et al, 2011). The same validation study concluded that BAI-Malay was a reliable and valid instrument to measure symptoms of anxiety in the Malaysian population.

<i>BAI score</i>	<i>Anxiety Severity</i>
0-7	Minimal
8-15	Mild
16-25	Moderate
26- 63	Severe

#### **4.6.4 Multidimensional Scale of Perceived Social Support (MSPSS) (APPENDIX G)**

The Multidimensional Scale of Perceived Social Support (MSPSS) was created by Zimet et al. It is a brief, 12-items questionnaire that is rated on a seven-point Likert-type scale. This scale is divided into 3 subscales that measures the external social support that is received by an individual from family, friends and significant other. The internal reliability of the MSPSS shows a strong internal consistency for the measure's total score (0.93-0.98) and for the subscales (0.91-0.81) (Zimet et al, 1988, Zimet et al, 1990). The instrument has also been validated into Malay by Ng et al in 2010 and shows good internal consistency (Cronbach's  $\alpha=0.89$ ), parallel form reliability (0.94) and test-retest reliability (0.77) (Spearman's rho,  $p<0.01$ ). The validity of the scale was confirmed between the Malay version of GHQ and BDI by the negative correlation of the total and subscales of the instrument (Ng et al, 2010).

#### Scoring Information:

Significant Other	Sum across items 1,2,5 and 10, then divide by 4
Family	Sum across items 3,4,8, and 11, then divide by 4
Friends	Sum across items 6,7,9 and 12, then divide by 4
Total	Sum across all 12 items, then divide by 12

#### 4.6.5 Elderly Cognitive Assessment Questionnaire (ECAQ) (APPENDIX H)

The Elderly Cognitive Assessment Questionnaire (ECAQ) is an easy to measure, 10 items questionnaire that is classified into 3 categories which includes memory (3 items), orientation (6 items) and memory recall (1 item). The maximum possible score is 10 and a score below 5 indicates cognitive impairment with possibilities of dementia. It has a sensitivity of 85.3 % and specificity of 91.5%. The scale has been translated and validated into Malay version with good reliability and has been extensively used among the geriatric population in Malaysia (33).

<i>ECAQ score</i>	<i>Interpretation</i>
7 and >	Normal
5-6	Borderline cases
0-4	Probable cases



#### **4.7 Data Analyses**

Statistical Package for Social Science (SPSS) Version 20 was used for data entry, coding and analysis in this study. Data set was checked for missing values and outliers. Subsequently, a normality test was performed. Firstly, all the data including sociodemographic data, depression score, anxiety score and social support were analysed using descriptive analysis. Although a parametric test was determined based on the normality test, in order to achieve the objective of the study, a Pearson chi square test was performed to determine the association between depression and sociodemographic factors and association between anxiety with sociodemographic factors, while logistic regression was used to determine the association between social support and depression, social support and anxiety. The p-value  $<0.05$  indicated significance level. Variables with p-value of 0.25 or less at alpha level were extracted from the bivariate into the multivariate analysis. Binary logistic regression was performed to identify factors contributing to depression and anxiety. In this, a p-value less than 0.05 was considered to be statistically significant.

#### **4.8 Ethical Considerations**

Elderly residents in nursing homes would be considered a vulnerable population in the society, as they placed under the care of their caretakers and guardians in the nursing home. Hence, approval was firstly obtained from the Ethical Committee of University Malaya Medical Centre (MECID. No: 202043-8435). Once approval was obtained from the Ethical Committee, permission was sought from the person in charge of each respective nursing home around the Klang Valley prior to approaching their elderly residents who are residing there. Additionally, the person in charge of each respective nursing home, sought verbal consent from respective family members of the residents of the nursing home prior to the allowing the residents to be interviewed.

Confidentiality of the participants was maintained. During the process of explaining the study to the elderly residents of the nursing homes, the researcher also gave the participants the scores for the GDS-30 and BAI that would be of concern and a referral to the nearest psychiatry clinic to those who scored highly to seek for help. The researcher also encouraged the person in charge of the nursing home to bring the elderly residents to the psychiatry clinic, should any of the residents be willing to seek for help.

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## CHAPTER 5

### RESULTS

#### 5.1 Introduction

This chapter presents the findings of the data analysis. The first section describes the procedures and findings of data management and data distributions, followed by the background information of the respondents. The subsequent sections present the results according to the following study objectives:

1. Assessing the depression level, anxiety level and perceived social support of the elderly residents in the nursing homes.
2. Determining the association between elderly residents' sociodemographic characteristics and (i) depression level (ii) anxiety level;
3. Determining the association between perceived social support and (i) depression (ii) anxiety;
4. Determining the factors contributing to depression and anxiety

#### 5.2 Data screening and management

Descriptive analysis was performed to identify outliers, extreme values and entry errors, and checked for normality. The overall data set of this study had no outliers and extreme values. Thus, all the data entered were used in the analysis. Normality test was performed on the variables i.e. depression and anxiety. Results showed that the data was normally distributed for both the variables as displayed in Table 5.1.

Table 5.1: Normality test

Variables	Mean	Median	Skewness (SE)	Kurtosis (SE)	Histogram	Conclusion on normality
Depression	0.54 (0.90)	0.57	-1.15 (0.16)	3.46 (0.32)	Normal	Parametric test
Anxiety	0.71 (0.36)	0.71	0.71 (0.16)	1.20 (0.32)	Approximately normal	Parametric test

### 5.3 Response rate

A total of 224 elderly residents from 30 nursing homes participated in this study. The response rate of this study was 100%. There were no missing data was seen upon the data entry.

### 5.4 Sociodemographic characteristics of the nursing home residents

The mean age of the elderly residents who participated in this study was 80.50 (SD=7.86; range 65-103 years old) with almost half of them belonging to the age group of 81 to 90 years old (n=95, 42.4%). Approximately three-quarter of the elderly residents were females (n=164, 73.2%) and of Chinese ethnicity (n=168, 75 %). Thus, the largest religion recorded among the residents were Buddhism (n=97, 43.3%). About one-third of the residents received an education up to secondary level (n=87, 38.8%), while only a small number of residents studied up until tertiary education (n=23, 10.3%) and had no formal schooling (n=41, 18.3%). Almost half of the residents were widow or widower (n=109, 48.7%) and had three to four children (n=77, 34.4%). Three quarter of the nursing homes residents had medical illness (n=168, 75%) with almost one-third of them having at least three medical comorbid (n=66, 29.5%). Majority of them had no known case of psychiatric illness (n=190, 84.8%). The mean household income of the residents' family was RM 9005.36 (SD=4731.51; range RM1000-RM18000) with more than half of them having an income of RM 5000 and more (n=151, 67.4%). The majority of

the elderly residents were staying in the nursing homes for one to five years (n=132, 58.9%). More than half of them had friends or relatives visiting them one to five times on a monthly basis (n=142, 63.4%) and had no hobby (n=166, 74.1). Majority of the nursing home residents did not exercise (n=184, 82.1%) and were from urban areas (n=194, 86.6%). Three quarter of the residents sleeps for six to eight hours in a day (n=171, 76.3%). The sociodemographic characteristics of the nursing home residents are displayed in Table 5.2

Table 5.2: Sociodemographic characteristics of the nursing home residents (N=224)

Characteristics	n (%)	Range	Mean (SD)
<b>Age</b>		65-103	80.50 (7.86)
70 and less	27 (12.0)		
71-80	81 (36.2)		
81-90	95 (42.4)		
91 and above	21 (9.4)		
<b>Gender</b>			
Male	60 (26.8)		
Female	164 (73.2)		
<b>Ethnicity</b>			
Malay	3 (1.3)		
Chinese	168 (75.0)		
Indian	49 (21.9)		
Others	4 (1.8)		
<b>Religion</b>			
Muslim	3 (1.3)		
Buddhist	97 (43.3)		
Hindu	30 (13.4)		
Christian	82 (36.6)		
Others	12 (5.4)		
<b>Education level</b>			
None	41 (18.3)		
Primary	73 (32.6)		
Secondary	87 (38.8)		
Tertiary	23 (10.3)		
<b>Marital status</b>			
Single	52 (23.2)		
Married	56 (25.0)		
Divorced	7 (3.1)		
Widow/Widower	109 (48.7)		
<b>Number of children</b>			
None	61 (27.2)		
1 - 2	53 (23.7)		
3 - 4	77 (34.4)		
5 & more	33 (14.7)		

Table 5.2 continued

Characteristics	n (%)	Range	Mean (SD)
<b>Medical Illness</b>			
Yes	168 (75.0)		
No	56 (25.0)		
<b>Number of Comorbid</b>			
None	46 (20.5)		
1	45 (20.1)		
2	50 (22.3)		
3	66 (29.5)		
4 & more medical illness	17 (7.6)		
<b>Psychiatric Illness</b>			
Yes	34 (15.2)		
No	190 (84.8)		
<b>Household income (RM)</b>			
Less than 5000	73 (32.6)	RM1000-RM18000	9005.36 (4731.51)
5000 and more	151 (67.4)		
<b>No of years staying in nursing home</b>			
< 1 year	60 (26.8)		
≥ 1 – 5 years	132 (58.9)		
≥ 5 years and more	32 (14.3)		
<b>Frequency of friends/relatives visit/month</b>			
None	79 (35.3)		
1 – 5 times	142 (63.4)		
More than 5 times*	3 (1.3)		
<b>Hobby</b>			
No	166 (74.1)		
yes	58 (25.9)		
<b>Exercise</b>			
No	184 (82.1)		
Yes	40 (17.9)		
<b>Sleep</b>			
5 hours and less	45 (20.1)		
6 – 8 hours	171 (76.3)		
More than 8 hours*	8 (3.6)		
<b>Place of living</b>			
Rural	30 (13.4)		
Urban	194 (86.6)		

### **5.5 Prevalence of depression among the nursing home residents**

This section presents the result on the extent of elderly nursing home residents' depression level. Assessment of depression was made based on Geriatric Depression Scale – 30 (GDS-30) questionnaire. The questionnaire consisted of 30 items measured via a dichotomous scale. In this section, items 2, 3, 4, 6, 8, 10, 11, 12, 13, 14, 16, 17, 18, 20, 22, 23, 24, 25, 26 and 28 is scored as 'yes' and was given 1- point. On the contrary, items 1, 5, 7, 9, 15, 19, 21, 27, 29 and 30 is scored as 'no' and was given 1- point; the total points were then averaged. The overall mean score for depression in this study was 19.54 (SD = 6.24), indicating that the elderly nursing home residents were depressed. The finding is as displayed in Table 5.3.

All the scores for depression were then computed to sum and categorised into three groups to determine the summary of depression in line with the depression classification. According to Yesavage et al. (1983), the scores between 0 to 9 was interpreted as normal, scores between 10 to 19 was interpreted as mildly depressed and the scores between 20 to 30 was interpreted as severely depressed. The prevalence of depression is 94.2% with findings indicating that more than half of the respondents were severely depressed (n=114, 50.9%). The results are as shown in Table 5.4. Table 5.5 shows the comparison of mean of depressive symptoms amongst elderly in nursing homes in our study with identical studies from other nations. The mean depression score of this study, was significantly higher, when compared to all three studies in Australia ( $p < 0.0001$ ), Netherlands ( $p < 0.0001$ ) and Jordan ( $p = 0.0007$ ).

Table 5.3: Distribution of depression score among the nursing home residents (N=224)

Items	Scoring	
	No	Yes
1. Are you basically satisfied with your life?	93 (41.5)	131 (58.5)
2. Have you dropped many of your activities and interests?	11 (4.9)	213 (95.1)
3. Do you feel that your life is empty?	56 (25.0)	168 (75.0)
4. Do you often get bored?	30 (13.4)	194 (86.6)
5. Are you hopeful about the future?	164 (73.2)	60 (26.8)
6. Are you bothered by thoughts you can't get out of your head?	173 (77.2)	51 (22.8)
7. Are you in good spirits most of the time?	104 (46.4)	120 (53.6)
8. Are you afraid that something bad is going to happen to you?	111 (49.6)	113 (50.4)
9. Do you feel happy most of the time?	119 (53.1)	105 (46.9)
10. Do you often feel helpless?	28 (12.5)	196 (87.5)
11. Do you often get restless and fidgety?	38 (17.0)	186 (83.0)
12. Do you prefer to stay at home, rather than going out and doing new things?	33 (14.7)	191 (85.3)
13. Do you frequently worry about the future?	46 (20.5)	178 (79.5)
14. Do you feel you have more problems with memory than most?	167 (74.6)	57 (25.4)
15. Do you think it is wonderful to be alive now?	71 (31.7)	153 (68.3)
16. Do you often feel downhearted and blue?	111 (49.6)	113 (50.4)
17. Do you feel pretty worthless the way you are now?	98 (43.8)	126 (56.2)
18. Do you worry a lot about the past?	43 (19.2)	181 (80.8)
19. Do you find life very exciting?	205 (91.5)	19 (8.5)
20. Is it hard for you to get started on new projects?	17 (7.6)	207 (92.4)
21. Do you feel full of energy?	209 (93.3)	15 (6.7)
22. Do you feel that your situation is hopeless?	106 (47.3)	118 (52.7)
23. Do you think that most people are better off than you are?	147 (65.6)	77 (34.4)
24. Do you frequently get upset over little things?	158 (70.5)	66 (29.5)
25. Do you frequently feel like crying?	171 (76.3)	53 (23.7)
26. Do you have trouble concentrating?	24 (10.7)	200 (89.3)
27. Do you enjoy getting up in the morning?	119 (53.1)	105 (46.9)
28. Do you prefer to avoid social gatherings?	33 (14.7)	191 (85.3)
29. Is it easy for you to make decisions?	203 (90.6)	21 (9.4)
30. Is your mind as clear as it used to be?	210 (93.8)	14 (6.2)
<b>Overall Mean (SD)</b>	<b>19.54 (6.24)</b>	



Table 5.4: Summary of depression according to the groups (N=224)

<b>Groups</b>	<b>n (%)</b>
Normal	13 (5.8)
Mild	97 (43.3)
Severe	114 (50.9)

Table 5.5. Comparison of Depression amongst elderly in nursing homes in Malaysia with Identical Studies from Other Nations.

Previous Studies and Country of Origin	Instruments Used	Sample Size Estimated Mean (E.M)	Current Study's Sample Size with Estimated Mean (E.M)	Mean Difference (95% CI)	One Sample t-Test, p-value
Snowdon J. et al (1986) Australia	GDS-30	<i>n</i> = 206 elderly residents	<i>n</i> = 224 elderly residents	-9.48 (-10.31, -8.65)	< 0.0001
		10.06	19.54		
Smallbrugge et al (2006) Netherlands	GDS-30	<i>n</i> = 350 elderly residents	<i>n</i> = 224 elderly residents	-11.87 (-11.98, -11.76)	< 0.0001
		7.67	19.54		
Almomani et al (2017) Jordan	GDS-30	<i>n</i> = 221 elderly residents	<i>n</i> = 224 elderly residents	-2.240 (-3.53, -0.95)	0.0007

GDS-30: Geriatric Depression Scale-30 items; CI: Confidence Interval.

## 5.6 Prevalence of anxiety among the nursing home residents

This section presents the result on the extent of nursing home residents' anxiety level. The assessment of anxiety was made based on Beck's Anxiety Inventory (BAI) questionnaire. The questionnaire consisted of 21 symptoms experienced by the nursing home residents. The scoring in this section varied from minimal (0) to severe (3). The average for each symptom was obtained to determine the highest and the lowest symptoms experienced by the nursing home residents. Of all the 21 symptoms, hands trembling ( $M=1.43$ ,  $SD=0.77$ ), wobbliness in legs ( $M=1.43$ ,  $SD=0.83$ ) and shaky ( $M=1.40$ ,  $SD=0.81$ ) were the most experienced by the nursing home residents. Whereas, symptoms such as face flushed ( $M=0.12$ ,  $SD=0.33$ ), feeling of choking ( $M=0.15$ ,  $SD=0.46$ ), fear of losing control ( $M=0.17$ ,  $SD=0.45$ ) and hot or cold sweat ( $M=0.17$ ,  $SD=0.41$ ) were the least experienced. All the scores for anxiety were then computed to sum according to the four respective groups. The scores between 0 to 7 were interpreted as 'minimal' anxiety, the scores between 8 to 15 were interpreted as 'mild' anxiety, the scores between 16 to 25 were interpreted as 'moderate' anxiety and the scores between 26 to 63 were determined as 'severe' anxiety. In this section, the higher score indicated the greater anxiety. The results showed that one third of them reported the anxiety level between 'mild' ( $n=82$ , 36.6%) to 'moderate' ( $n=86$ , 38.4%). The scores were then averaged. The overall mean score for anxiety for nursing home residents in this study was 14.86 ( $SD=7.59$ ), which indicates that the elderly nursing home residents had anxiety. The findings are as displayed in Table 5.6.

Table 5.6: Distribution of anxiety score among elderly residents of nursing homes (N=224)

Items	Mean (SD)	Minimal 0 n (%)	Mild 1 n (%)	Moderate 2 n (%)	Severe 3 n (%)
1. Numbness/Tingling	0.93 (0.67)	57 (25.4)	126 (56.3)	40 (17.9)	1 (0.4)
2. Felling Hot	0.47 (0.56)	125 (55.8)	92 (41.1)	7 (3.1)	0
3. Wobbliness in legs	1.43 (0.83)	28 (12.5)	94 (42.0)	80 (35.7)	22 (9.8)
4. Unable to Relax	0.69 (0.68)	94 (41.9)	107 (47.8)	21 (9.4)	2 (0.9)
5. Fear of worst happening	0.62 (0.65)	104 (46.4)	105 (46.9)	12 (5.4)	3 (1.3)
6. Dizzy or lightheaded	0.76 (0.54)	64 (28.6)	150 (67.0)	9 (4.0)	1 (0.4)
7. Heart pounding/racing	0.58 (0.60)	106 (47.3)	105 (46.9)	13 (5.8)	0
8. Unsteady	1.26 (0.80)	36 (16.1)	108 (48.2)	66 (29.5)	14 (6.2)
9. Terrified or afraid	0.61 (0.64)	104 (46.4)	107 (47.8)	10 (4.5)	3 (1.3)
10. Nervous	0.97 (0.56)	37 (16.5)	157 (70.1)	29 (13.0)	1 (0.4)
11. Feeling of choking	0.15 (0.46)	200 (89.3)	16 (7.2)	7 (3.1)	1 (0.4)
12. Hands trembling	1.43 (0.77)	29 (12.9)	79 (35.3)	107 (47.8)	9 (4.0)
13. Shaky	1.40 (0.81)	34 (15.2)	78 (34.8)	100 (44.6)	12 (5.4)
14. Fear of losing control	0.17 (0.45)	192 (85.7)	29 (12.9)	1 (0.4)	2 (0.9)
15. Difficulty in breathing	0.24 (0.47)	175 (78.1)	45 (20.1)	4 (1.8)	0
16. Fear of dying	0.64 (0.77)	115 (51.3)	80 (35.7)	23 (10.3)	6 (2.7)
17. Scared	0.76 (0.73)	87 (38.8)	109 (48.7)	22 (9.8)	6 (2.7)
18. Indigestion	0.80 (0.57)	64 (28.6)	141 (62.9)	19 (8.5)	0
19. Faint/lightheaded	0.65 (0.62)	95 (42.4)	113 (50.5)	15 (6.7)	1 (0.4)
20. Face flushed	0.12 (0.33)	197 (87.9)	27 (12.1)	0	0
21. Hot/cold sweat	0.17 (0.41)	189 (84.4)	32 (14.3)	3 (1.3)	0
<b>Total Sum</b>		<b>42 (18.8)</b>	<b>82 (36.6)</b>	<b>86 (38.4)</b>	<b>14 (6.2)</b>
<b>Overall Mean (SD)</b>		<b>14.86 (7.59)</b>			

## 5.7 Perceived social support

This section presents the result on the extent of social support perceived by the elderly nursing home residents. The assessment on social support was made based on multi-dimensional scale of perceived social support (MSPSS) questionnaire which comprised of 12 items from three subdomains: significant other (item 1 to 4) family (item 5 to 8) and friends (item 9 to 12). A seven-point Likert scale ranging from 'very strongly disagree' (1) to 'very strongly agree' (7) was used to indicate the agreement of perceived social support. In this section, the higher score indicated the greater the perceived social support.

Among all the three subdomains, the nursing home residents reported receiving the most support from the significant other ( $M=3.86$ ,  $SD=0.76$ ), while the least support was received from the friends ( $M=2.14$ ,  $SD=1.34$ ). Support from family members on the other hand was intermediate between significant other and friends ( $M=3.61$ ,  $SD=1.43$ ). In order to determine the overall social support, the mean of 12 items were averaged. The finding showed that the overall mean for social support perceived by the nursing home residents was 3.21 ( $SD=0.89$ ), which falls in the group of 'mildly disagree'. The result is shown in Table 5.7.

Table 5.7: Perceived social support among the nursing home residents (N=224)

Items	Mean (SD)	1	2	3	4	5	6	7
<b>Significant Other</b>	<b>3.86 (0.76)</b>							
1. There is a special person who is around when I am in need.	3.88 (0.80)	4 (1.8)	9 (4.0)	27 (12.1)	162 (72.3)	15(6.7)	6 (2.7)	1 (0.4)
2. There is a special person with whom I can my joys and sorrows.	3.90 (0.82)	5 (2.2)	8 (3.6)	24 (10.7)	163 (72.8)	18 (8.0)	4 (1.8)	2 (0.9)
3. I have a special person who is a real source comfort to me.	3.81 (0.84)	9 (4.0)	6 (2.7)	27 (12.1)	163 (72.8)	14 (6.2)	5 (2.2)	0
4. There is a special person in my life who care about my feelings.	3.87 (0.76)	5 (2.2)	8 (3.6)	25 (11.2)	163 (72.8)	20 (8.9)	3 (1.3)	0
<b>Family</b>	<b>3.61 (1.43)</b>							
5. My family really tries to help me.	3.99 (1.62)	22 (9.8)	32 (14.3)	33 (14.7)	4 (1.8)	112 (50.0)	14 (6.3)	7 (3.1)
6. I get the emotional help and support I need from my family.	3.27 (1.56)	28 (12.5)	46 (20.5)	78 (34.8)	6 (2.7)	49 (21.9)	10 (4.5)	7 (3.1)
7. I can talk about my problems with my family	3.08 (1.50)	34 (15.2)	51 (22.8)	76 (33.9)	0	54 (24.1)	6 (2.7)	3 (1.3)
8. My family is willing to help me make decisions	4.13 (1.66)	25 (11.2)	28 (12.5)	19 (8.5)	7 (3.1)	115 (51.3)	25 (11.2)	5 (2.2)
<b>Friends</b>	<b>2.14(1.34)</b>							
9. My friends really try to help me.	2.17 (1.35)	90 (40.2)	70 (31.2)	32 (14.3)	7 (3.1)	19 (8.5)	6 (2.7)	0
10. I can count on my friends when things go wrong	2.08 (1.26)	90 (40.2)	71 (31.7)	41 (18.3)	6 (2.7)	9 (4.0)	6 (2.7)	1 (0.4)
11. I have friends with whom I can share my joys and sorrows.	2.13 (1.28)	85 (37.9)	75 (33.5)	40 (17.9)	3 (1.3)	15 (6.7)	6 (2.7)	0
12. I can talk about my problems with my friend	2.19 (1.28)	81 (36.2)	72 (32.1)	44 (19.7)	5 (2.2)	19 (8.5)	2 (0.9)	1 (0.4)
<b>Overall Mean (SD)</b>	<b>3.21 (0.89)</b>							

Notes. 1=very strongly disagree, 2=strongly disagree, 3=mildly disagree, 4=neutral, 5=mildly agree, 6=strongly agree, 7=very strongly agree

## **5.8 The association between sociodemographic characteristics and depression**

In order to determine the association between the sociodemographic characteristics and depression of the nursing home residents, and to report the odds ratio, a 2x2 table was created. The initial three groups in the dependent variable – depression, was categorised into two groups: negative and positive. The ‘normal’ group was interpreted as ‘negative’ to depression, while ‘mild’ and ‘severe’ groups were transformed into one group, and interpreted as ‘positive’ to depression. In this section, negative was referred to no depression, while, positive was referred to having depression.

Concerning to the sociodemographic characteristics, all the variables were transformed into two groups. The variable such as ‘age’, ‘number of comorbid’ and ‘household income’ were divided into two groups to ensure the samples are almost equally distributed in the group. The ethnicity was divided into (i) Chinese, and (ii) non-Chinese, as the Chinese ethnicity were the majority in the nursing home community. Therefore, the religion too was divided into (i) Buddhist, and (ii) non-Buddhist. The residents who were divorced, widow and widower status were identified as single, thus added to the ‘single’ group- for the ‘marital status’ variable. The variable ‘sleep’ was divided into (i) 5 hours and less, and (ii) more than 5 hours. The ‘more than 8 hours’ group had a smaller sample size (n=8), therefore it was added into the second group. The other variables such as education, number of children, medical illness, psychiatric illness, frequency of friends or relatives visit per month, hobby and exercise were divided into ‘no’ and ‘yes’ group to maintain the originality of the data, so it would not deviate the findings.

The chi-square test was used to analyse the association between the independent variables (sociodemographic characteristics) and dependent variable (depression score). In this section, the *p*-value from Fisher’s exact test was used when more than 20% of cells had less than 5

samples. The results of the analysis are displayed in Table 5.8. The findings showed that of all the independent variables, only hobby was significantly contributing to depression ( $p < 0.001$ ) with the odds of 0.088 to be depressed. Nursing home residents with no hobby reported higher occurrence of depression ( $n = 163, 98.2\%$ ).

Table 5.8: Association between sociodemographic characteristics and depression (N=224)

Characteristics	n	Depression		X <sup>2</sup>	OR	p-value	95% of CI
		Negative n (%)	Positive n (%)				
<b>Age</b>				0.981	1.776	0.322	0.563-5.607
80 and less	108	8 (7.4)	100 (92.6)				
More than 80	116	5 (4.3)	111 (95.7)				
<b>Gender</b>				2.566	0.215	0.193 <sup>f</sup>	0.027-1.688
Male	60	1 (1.7)	59 (98.3)				
Female	164	12 (7.3)	152 (92.7)				
<b>Ethnicity</b>				2.205	0.236	0.193 <sup>f</sup>	0.030-1.860
Chinese	168	12 (7.1)	156 (92.9)				
Non-Chinese	56	1 (1.8)	55 (98.2)				
<b>Religion</b>				3.779	0.318	0.081	0.095-1.065
Buddhist	97	9 (9.3)	88 (90.7)				
Non-Buddhist	127	4 (3.1)	123 (96.9)				
<b>Education</b>				1.039	0.365	0.471 <sup>f</sup>	0.045-2.820
None	41	1 (2.4)	40 (97.6)				
Educated	183	12 (6.6)	171 (93.4)				
<b>Marital status</b>				1.334	0.510	0.319 <sup>f</sup>	0.160-1.628
Single/ Divorced/ Widow/widower	168	8 (4.8)	160 (95.2)				
Married	56	5 (8.9)	51 (91.1)				
<b>Children</b>				0.120	0.791	1.000 <sup>f</sup>	0.210-2.978
None	61	3 (4.9)	58 (95.1)				
Yes	163	10 (6.1)	153 (93.9)				
<b>Medical Illness</b>				0.245	1.359	0.741 <sup>f</sup>	0.402-4.597
Yes	168	9 (5.4)	159 (94.6)				
No	56	4 (7.1)	52 (92.9)				
<b>Number of Comorbid</b>				2.778	3.427	0.139 <sup>f</sup>	0.741-15.857
Less than 3	141	11 (7.8)	130 (92.2)				
3 and more	83	2 (2.4)	81 (97.6)				
<b>Psychiatric Illness</b>				0.601	2.225	0.697 <sup>f</sup>	0.280-17.693
Yes	34	1 (2.9)	33 (97.1)				
No	190	12 (6.3)	178 (93.7)				

Note. <sup>f</sup> p-value based on fisher's exact test; \* $p < 0.05$ ; \*\* $p < 0.001$ ; OR=odd ratio; CI = confidence interval

Table 5.8 continued

Characteristics	Depression		X <sup>2</sup>	OR	p-value	95% of CI
	Negative n (%)	Positive n (%)				
<b>Household income (RM)</b>			0.021	0.915	1.000 <sup>f</sup>	0.272-3.075
Less than 5000	73	4 (5.5)				
5000 and more	151	9 (6.0)				
<b>No of years staying in nursing home</b>			2.566 <sup>f</sup>	0.215	0.193 <sup>f</sup>	0.027-1.688
< 1 year	60	1 (1.7)				
≥ 1 year	164	12 (7.3)				
<b>Frequency of friends/relatives visit/month</b>			2.390	0.316	0.146 <sup>f</sup>	0.068-1.465
None	79	2 (2.5)				
≥ 1	145	11 (7.6)				
<b>Hobby</b>			18.729	0.088	<0.001 <sup>f**</sup>	0.023-0.334
No	166	3 (1.8)				
yes	58	10 (17.2)				
<b>Exercise</b>			0.256	0.709	0.707 <sup>f</sup>	0.186-2.702
No	184	10 (5.4)				
Yes	40	3 (7.5)				
<b>Sleep</b>			0.190	0.710	1.000 <sup>f</sup>	0.152-3.325
5hrs/day and below	45	2 (4.4)				
More than 5hrs/day	179	11 (6.1)				
<b>Place of living</b>			0.047	1.188	0.688 <sup>f</sup>	0.250-5.645
Rural	30	2 (6.7)				
Urban	194	11 (5.7)				

Note. <sup>f</sup>p-value based on fisher's exact test; \*p<0.05; \*\*p<0.001; OR=oddratio; CI = confidence interval

### 5.9 The association between sociodemographic characteristics and anxiety

In order to determine the association between the sociodemographic characteristics and anxiety of the nursing home residents, and to report the odds ratio, a 2x2 table was created. The initial four groups in the dependent variable – anxiety, was categorised into two groups: negative and positive. The ‘minimal’ group was interpreted as ‘negative’ for anxiety, while ‘mild’, ‘moderate’ and ‘severe’ groups were transformed into one group, and interpreted as ‘positive’ for anxiety. In this section, negative was referred to as no anxiety, while positive was referred to as having anxiety.



The sociodemographic characteristics of the nursing home residents were divided into two groups, similar to the depression groups. Also, the chi-square test was performed to analyse the association between the independent variables - sociodemographic characteristics and dependent variable - anxiety score. The results of the analysis are shown in Table 5.9.

Finding showed that, number of comorbid ( $p=0.002$ ), psychiatric illness ( $p=0.034$ ) and hobby ( $p<0.001$ ) were significantly contributing to anxiety. This indicates that ‘number of comorbid’ increases the odds of having anxiety by 3.585. Similarly, ‘psychiatric illness’ inclines the odd by 0.408 to be anxious. Last but not least, ‘hobby’ contributes to odd of 0.131 to be anxious. The anxiety was reported higher among the nursing home residents with less than three comorbid ( $n=106$ , 75.2%), with no psychiatric illness ( $n=159$ , 83.7%) and those residents with no hobby ( $n=150$ , 90.4%).

Table 5.9: Association between sociodemographic characteristics and anxiety (N=224)

Characteristics	n	Anxiety		X <sup>2</sup>	OR	p-value	95% of CI
		Negative n (%)	Positive n (%)				
<b>Age</b>				3.880	1.982	0.060	0.996-3.942
80 and less	108	26 (24.1)	82 (75.9)				
More than 80	116	16 (13.8)	100 (86.2)				
<b>Gender</b>				0.756	0.701	0.444	0.313-1.567
Male	60	9 (15.0)	51 (85.0)				
Female	164	33 (20.1)	131 (79.9)				
<b>Ethnicity</b>				0.039	0.924	1.000	0.421-2.025
Chinese	168	32 (19.0)	136 (81.0)				
Non-Chinese	56	10 (17.9)	46 (82.1)				
<b>Religion</b>				0.392	0.807	0.605	0.411-1.581
Buddhist	97	20 (20.6)	77 (79.4)				
Non-Buddhist	127	22 (17.3)	105 (82.7)				

Note. \* $p<0.05$ ; \*\* $p<0.001$ ; OR=odd ratio; CI = confidence interval

Table 5.9 continued

Characteristics	Anxiety		X <sup>2</sup>	OR	p-value	95% of CI
	Negative n (%)	Positive n (%)				
<b>Education</b>			2.665	0.413	0.123	0.138-1.229
None	41	4 (9.8)				
Educated	183	38 (20.8)				
<b>Marital status</b>			1.915	0.600	0.172	0.290-1.243
Single/ Divorced/ Widow/widower	168	28 (16.7)				
Married	56	14 (25.0)				
<b>Children</b>			0.361	1.252	0.567	0.602-2.604
None	61	13 (21.3)				
Yes	163	29 (17.8)				
<b>Medical Illness</b>			3.165	1.911	0.112	0.929-3.928
Yes	168	27 (16.1)				
No	56	15 (26.8)				
<b>Number of Comorbid</b>			9.211	3.585	0.002*	1.512-8.500
Less than 3	141	35 (24.8)				
3 and more	83	7 (8.4)				
<b>Psychiatric Illness</b>			4.869	0.408	0.034*	0.18-0.921
Yes	34	11 (32.4)				
No	190	31 (16.3)				
<b>Household income (RM)</b>			2.931	0.503	0.102	0.227-1.116
Less than 5000	73	9 (12.3)				
5000 and more	151	33 (21.9)				
<b>No of years staying in nursing home</b>			1.578	0.588	0.249	0.255-1.355
< 1 year	60	8 (13.3)				
≥ 1 year	164	34 (20.7)				
<b>Frequency of friends/relatives visit/month</b>			0.085	0.900	0.859	0.443-1.830
None	79	14 (17.7)				
≥ 1	145	28 (19.3)				
<b>Hobby</b>			34.936	0.131	<0.001**	0.063-0.273
No	166	16 (9.6)				
yes	58	26 (44.8)				
<b>Exercise</b>			0.050	0.907	0.825	0.384-2.142
No	184	34 (18.5)				
Yes	40	8 (20.0)				
<b>Sleep</b>			1.199	1.545	0.289	0.706-3.377
5hrs/day and below	45	11 (24.4)				
More than 5hrs/day	179	31 (17.3)				
<b>Place of living</b>			2.878	2.091	0.128	0.879-4.971
Rural	30	9 (30.0)				
Urban	194	33 (17.0)				

Note. \* $p < 0.05$ ; \*\* $p < 0.001$ ; OR=odd ratio; CI = confidence interval

### 5.10 The association between perceived social support and depression

Further analysis with binomial logistic regression was carried out to determine the association between perceived social support and depression. Binomial logistic regression was chosen to predict the probability of the dichotomous dependent variables, and the continuous independent variable. Prior to the analysis, a preliminary analysis was carried out to test the assumptions. The linearity of the continuous variable (perceived social support) was assessed via the Box-Tidwell test (1962). A Bonferroni correction was applied using seven terms in the model resulting in statistical significance being accepted when  $p < 0.001$ . Based on this assessment, the continuous independent variable (perceived social support) was found to be linearly related to the logit of the dependent variable. There was no standardized residual detected. The Hosmer and Lemeshow test were not statistically significant ( $p = 0.814$ ), indicating that the model was not a poor fit, with the Nagelkerke R Square of 0.402. The finding of the binomial logistic regression showed that perceived social support was significantly contributing to the nursing home residents' depression,  $p < 0.001$ . The finding is shown in Table 5.10.

Table 5.10: The association between perceived social support and depression (N=224)

Variables	B	S.E.	Wald	<i>p</i> -value	OR	95% CI for Exp B
Social support	-1.940	0.399	23.589	<0.001**	0.144	0.066 - 0.314

### 5.11 The association between perceived social support and anxiety

Similar to the earlier section, further analysis with binomial logistic regression was carried out to determine the association between perceived social support and anxiety. Prior to the analysis, a preliminary analysis was carried out to test the assumptions. The linearity of the continuous variable (perceived social support) was assessed via the Box-Tidwell test (1962). A Bonferroni

correction was applied using seven terms in the model resulting in statistical significance being accepted when  $p < 0.001$ . Based on this assessment, the continuous independent variable (perceived social support) was found to be linearly related to the logit of the dependent variable. There was no standardized residual detected. The Hosmer and Lemeshow test were not statistically significant ( $p = 0.134$ ), indicating that the model was not a poor fit, with the Nagelkerke R Square of 0.035. The finding of the binomial logistic regression showed that perceived social support was significantly contributing to the nursing home residents' anxiety,  $p < 0.05$ . The finding is shown in Table 5.11.

Table 5.11: The association between social support and anxiety (N=224)

Variables	B	S.E.	Wald	<i>p</i> -value	OR	95% CI for Exp B
Social support	-0.418	0.187	4.970	0.026*	0.658	0.456 - 0.951

### 5.12 Factors contributing to depression among the nursing home residents

In order to determine the factors that are contributing to depression among the nursing home residents, a hierarchical binary logistic regression analysis was performed. The bivariate analysis identified seven residents' sociodemographic variables as potential covariates for the multivariate analysis at an alpha level of 0.25; they were gender, ethnicity, religion, number of comorbid, number of years staying in nursing home, frequency of friends or relatives visit per month, and hobby; these variables were all categorical. Thus, all of them were dummy coded. The references group for depression were male, non-Chinese, non-Buddhist, less than 3 comorbid, less than 1 year staying in nursing home, friends or relatives visit one or many times in a month, have hobby. The perceived social support score was added too in the multivariate analysis as it was significantly associating to depression,  $p < 0.001$ .

Table 5.12: Summary of variables predicting for depression (N=224)

	B	S.E.	Wald	Adjusted OR	p-value	95% CI	
						Lower	Upper
Gender [Male]	0.247	1.282	0.037	1.281	0.847	0.104	15.801
Ethnicity [Non-Chinese]	1.128	1.444	0.611	3.089	0.435	0.182	52.327
Religion [Non-Buddhist]	1.392	0.986	1.993	4.022	0.158	0.582	27.775
No of comorbid [Less than 3]	-1.480	1.099	1.814	0.228	0.178	0.026	1.962
No of years staying in nursing home [< 1 year]	3.434	1.605	4.576	30.998	0.032*	1.333	720.590
Frequency of friends/relatives visit/month [ $\geq 1$ ]	1.237	1.177	1.105	3.445	0.293	0.343	34.577
Hobby [Yes]	2.378	0.935	6.477	10.787	0.011*	1.728	67.353
Perceived social support	-2.433	0.653	13.875	0.088	<0.001**	0.024	0.316

Note:

1. \* $p < 0.05$ , \*\* $p < 0.001$

2. [reference category]

3. Dependent variable: Depression

4. Independent variables: gender, ethnicity, religion, number of comorbid, number of years staying in nursing home, frequency of friends or relatives visit per month, hobby and perceived social support

Prior to the analysis, a preliminary analysis was carried out to test the assumptions. In the first model, the seven sociodemographic characteristics mentioned above were inserted. There was no standardized residual detected. The omnibus tests of model coefficient were significant,  $p < 0.001$ . The Hosmer and Lemeshow test were not statistically significant ( $p = 0.374$ ), indicating that the model was not a poor fit. In the second model, the residents' perceived social support was inserted. Again, there was no standardized residual detected. The omnibus tests of model coefficient were significant,  $p < 0.001$ . The Hosmer and Lemeshow test were not

statistically significant ( $p= 0.997$ ), indicating that the model was not a poor fit. The summary of the final model is shown in Table 5.12.

Adding the sociodemographic factors to the first model explained 37.4% (Nagelkerke  $R^2$ ) of variance in depression, and the model was statistically significant,  $p<0.001$ . Adding the perceived social support to the second model explained 63.1% (Nagelkerke  $R^2$ ) of the variance in depression, and the model too was statistically significant,  $p<0.001$ . This shows that perceived social support alone was contributing to 25.7% of the variance for depression in this study. The factors contributing to depression in this study were nursing home residents staying more than a year, with no hobby and received minimal social support. Those residents staying in nursing homes more than a year were 31 times more likely to get depression compared to those staying less than a year in nursing homes. Those residents who does not have hobby were 10.8 times more likely to get depression compared to those with hobby. Last but not least, residents who received minimal social support was contributing to 0.1 times higher depression compared to those who received maximum support.

### **5.13 Factors contributing to anxiety among the nursing home residents**

In order to determine factors contributing to anxiety among the nursing home residents, a hierarchical binary logistic regression analysis was performed, in a similar manner to depression. The bivariate analysis identified ten residents' sociodemographic variables as potential covariates for the multivariate analysis at an alpha level of 0.25; they were age, education, marital status, medical illness, number of comorbid, psychiatric illness, household income, number of years staying in nursing home, hobby and place of living; these variables were all categorical. Thus, all of them were dummy coded. The references group for anxiety were age 80 and less, no education, single/ divorced/ widow/ widower, no medical illness, less

than three comorbid, no psychiatric illness, household income of less than RM 5000, less than 1 year staying in nursing home, have hobby and from rural area. The perceived social support score was added too in the multivariate analysis as it was significantly associating to anxiety,  $p < 0.001$ .

Prior to the analysis, a preliminary analysis was carried out to test the assumptions. In the first model, the ten sociodemographic characteristics mentioned above were inserted. There was no standardized residual detected. The omnibus tests of model coefficient were significant,  $p < 0.001$ . The Hosmer and Lemeshow test were not statistically significant ( $p = 0.088$ ), indicating that the model was not a poor fit. In the second model, the residents' perceived social support was inserted. Again, there was no standardized residual detected. The omnibus tests of model coefficient were significant,  $p < 0.001$ . The Hosmer and Lemeshow test were not statistically significant ( $p = 0.647$ ), indicating that the model was not a poor fit. The summary of the final model is shown in Table 5.13.

Adding the sociodemographic factors to the first model explained 39.1% (Nagelkerke R<sup>2</sup>) of variance in anxiety, and the model was statistically significant,  $p < 0.001$ . Adding the perceived social support to the second model explained 39.9% (Nagelkerke R<sup>2</sup>) of the variance in anxiety. The final model of hierarchical logistic regression showed that the model too was statistically significant,  $p < 0.001$ . This shows that perceived social support alone was only contributing to 0.8% of the variance for anxiety in this study. The factors contributing to anxiety in this study were nursing home residents with less than three comorbid, no psychiatric illness and those with no hobby. Those residents with less than three comorbid were 0.3 times more likely to be anxious compared to those with more than three comorbid. Having no psychiatric illness increased the anxiety 0.3 times higher compared to having a psychiatric illness. Last but not

least, having no hobby increased the anxiety 11.4 times greater to the nursing residents than those with hobby.

Table 5.13: Summary of variables predicting for anxiety (N=224)

	B	S.E.	Wald	Adjusted OR	p-value	95% CI	
						Lower	Upper
Age [80 and less]	0.994	0.470	4.470	2.703	0.034	1.075	6.795
Education [None]	-0.473	0.664	0.508	0.623	0.476	0.170	2.288
Marital status [Single/ Divorced/ Widow/widower]	-0.589	0.469	1.580	0.555	0.209	0.222	1.390
Medical illness [No]	1.211	0.672	3.248	3.358	0.071	0.899	12.537
No of Comorbid [Less than 3]	-1.162	0.528	4.837	0.313	0.028*	0.111	0.881
Psychiatric illness [No]	-1.212	0.565	4.600	0.298	0.032*	0.098	0.901
Household income [Less than 5000]	-0.868	0.507	2.927	0.420	0.087	0.155	1.135
No of years staying in nursing home [< 1 year]	0.647	0.537	1.454	1.910	0.228	0.667	5.471
Hobby [Yes]	2.434	0.464	27.529	11.402	<0.001**	4.593	28.302
Place of living [Rural]	-0.781	0.773	1.0202	0.458	0.312	0.101	2.084
Perceived social support	-0.269	0.230	1.366	0.764	0.242	0.486	1.200

Note:

1. \* $p < 0.05$ , \*\* $p < 0.001$

2. [reference category]

3. Dependent variable: Anxiety

4. Independent variables: age, education, marital status, medical illness, number of comorbid, psychiatric illness, household income, number of years staying in nursing home, hobby, place of living and perceived social support



#### 5.14 Summary

This chapter provided the results on depression and anxiety of 224 elderly nursing home residents. The bivariate analysis for depression revealed that only hobby and perceived social support were significantly contributing to depression ( $p < 0.001$ ). The depression level was higher among those nursing home residents with no hobby and who received minimal social support. Additionally, the bivariate analysis for anxiety showed that number of comorbid ( $p < 0.01$ ), psychiatric illness ( $p < 0.05$ ), hobby ( $p < 0.001$ ) and perceived social support were significantly contributing to anxiety. The anxiety level was greater among those nursing home residents with less than three comorbid, with no psychiatric illness, no hobby and those reported receiving minimal social support. The multivariate analysis for depression indicated that the factors contributing for depression were nursing home residents staying more than a year, with no hobby and those who received minimal social support. While, the multivariate analysis for anxiety showed that the factors contributing for anxiety were nursing home residents with less than three comorbid, no psychiatric illness and those with no hobby.

## CHAPTER SIX

### DISCUSSION

#### 6.1 DEPRESSION AMONG ELDERLY RESIDENTS IN NURSING HOMES

The World Health Organization has attributed depression to be a major cause of disability that affects an individual's mood, functioning and overall physical and psychological well-being (World Health Organization, 2020). Despite this, depression is known to be underdiagnosed and undertreated (Williams et al, 2017) and this holds particularly true for this vulnerable population, the geriatric population. In Malaysia, it is estimated that about 7% of the population are of geriatric age (64 years and older) by the year 2020, and this figure is estimated to increase to 15% by the year 2030 (Hirschmann R.,2020). Therefore, in the future, we can anticipate that this will contribute to the disease and healthcare burden of the country. While the prevalence of depression among older adults is reported to be approximately 7% worldwide by the World Health Organization, association studies have reported that the rates of depression among community-dwelling older adults to be between 14- 20% (Wiese B., 2011). Furthermore, Wiese also reported that the rates of depression is higher in older adults living in the hospital (12-45%). The prevalence rate of depression in older adults residing in nursing homes is said to be 3-4 folds higher than older adults living in the community with prevalence rates between 30-40% (National Advisory Council on Aging, Canada, 1999). Despite depression being more common in older adults than dementia, one of the prime reasons why it is underdiagnosed and undertreated is due to the atypical phenomenology of depressive symptoms among the older population (Allan et al, 2004). Additionally, older adults frequently seek for medical services for their somatic complaints and is more comfortable opening up to their primary healthcare doctor rather than speaking to a psychologist or psychiatrist regarding their difficulties (Kovess-Masfety et al, 2007, Mickus et al, 2000). Furthermore, the geriatric

population are more reluctant to express their struggles with mental health as compared to the younger population (Delano-Wood et al, 2005).

In our study, the prevalence of depressive symptoms was found to be 94.2 %, with 43.3% of the elderly residents in the nursing home having mild depressive symptoms and 50.9% of the elderly residents having severe depressive symptoms. The prevalence rates are much higher than the average prevalence of depression reported by the National Advisory Council on Aging in Canada. However, another study done in Iran, showed similar high prevalence rates to our study, in which they reported that the prevalence of depression among elderly residents in nursing homes were 90.2% (Mild: 50.0%, Moderate: 29.5% and Severe: 10.7%) (Nazemi et al, 2013), while another study in Greece, showed prevalence rates of depression as 58.5% (Kleisiaris et al, 2013). Furthermore, another study in Jordan, showed prevalence rates of 72.3% (Al-Amer et al, 2019). This is very much in contrast with another study done in Singapore, which showed prevalence rates of 21.1% among elderly residents of nursing homes (Tiong et al, 2013) and while another study in Western Canada showed prevalence rates of 27.1% (Hoben et al, 2019). With a wide range of figures, there could be multiple factors that could be influencing the study results. Firstly, there was not one standardized instrument used in all these studies as the study in Singapore used Structural Clinical Interview (SCID), while the study in Western Canada used Depression Rating Scale (DRS), the Iranian and Jordanian study used the 15-item Geriatric Depression Scale (GDS-15), and the Greek study used Zung Self-Rating Depression Scale (ZSDS), among others. Thus, it is difficult to make a comparison between the results as different sets of instruments have different measures of sensitivity that could contribute to the different rates of prevalence across different studies. Secondly, unlike the Montgomery-Asberg Depression Rating Scale (MADRS) or the Mini-International Neuropsychiatric Interview (MINI) which are diagnostic tools that can be used to diagnose depression, GDS-30 is a screening tool for depression in

elderly, therefore this may also have contributed to higher prevalence rates for depressive symptoms in our study. In the future, an interesting area of study that can be investigated is if the instrument were all standardized and confounders were eliminated, would be to study the factors which increase the prevalence of depression among nursing home residents, in countries with high prevalence of depression and also to investigate the protective factors in countries who have low prevalence of depression among elderly staying in nursing homes.

Additionally, a possible reason on why the prevalence of depression varies from country to country, could be due to the socio-cultural and ethnic backgrounds that is different around the world (Rangaswamy S.M.,2001). Our study findings also demonstrated that during the comparison of the mean of depressive symptoms among elderly in nursing homes between the study conducted in Australia, Netherlands and Jordan (all three studies which also used GDS-30 as their primary screening tool for depression), our study and the study conducted in Jordan, which is also an Asian country, had much higher levels of mean depression as compared to Australia and Netherlands. A possible reason for this is that, in Western countries such as in the United States of America, Canada, Western Europe and Australia, the elderly population are more willing and agreeable to spend their golden years in retirement homes and assisted living facilities as compared to Asian countries, including Malaysia who often time have expectations that during their old age, their children would support and take care of them (Zhang H., 2019). There is still a strong viewpoint of being unfilial among Asian culture that views sending their parents or family members to nursing homes as a “taboo” hence leading to feelings of abandonment by the elderly staying in nursing homes, which may also contribute to the development of depressive symptoms (Choi et al, 2008).

Unfortunately, there are not many studies exploring the prevalence of depression among older adults residing in nursing homes in Malaysia. However, there are a few studies done on more a specific sub-population of elderly Malays residing in residential home

(Normala et al, 2014). In a study involving five nursing homes in the city of Klang, Malaysia, Qamar and colleagues reported that the prevalence of depression in older adults is 52.5 % with no significant association between gender, age, ethnicity and marital status (Qamar et al, 2020). The same study showed that having heart disease, significantly increases the risk to develop depression among older adults who are staying in nursing homes.

In our study, there is evidence that a greater number of years that an older adult stay in a nursing home (1 year and more) has significant association with depression. A study by Hoover and colleagues, who measured the rates of depression during admission and after the first year of stay from 1999-2005 among elderly residents in nursing homes in the United States of America, showed that 54.4% of the residents were depressed as compared to 32.8% during admission (Hoover et al, 2010). Furthermore, a survey by Houser in 2007, reported that older adults that have been staying in nursing homes for longer periods of time (1-3 years), have higher care needs in which they require assistance for their daily functioning activities which can precipitate depression (Houser A., 2007). Another study in Singapore, also reported that staying 2 years and more in nursing homes, contributes to the development of depression among the geriatric population in nursing homes (Tiong et al, 2013). Moreover, another study by Choi and colleagues reported that one of the major contributors to depression among older adults in care homes is loss of liberty and independence as well as detachment from their previous life which is seen among the geriatric population with long stays in nursing homes (Choi et al, 2008). Additionally, the same study also concluded that losing one's freedom, also affects their autonomy due to their strict rules and regulations that are in place in majority of the nursing care homes. All these encounters by older adults staying in care homes for long duration of time, ultimately contributes to the increased risk of depression throughout the years.

On the other hand, some studies have reported that older adults may already have pre-existing depression prior to being sent to a nursing home (Webber et al, 2005, Fullerton et al,

2009) and that depression itself increases the likelihood of being sent to nursing homes among the geriatric population (Achterberg et al, 2006, Onder et al, 2007). Fullerton and her colleagues reported that in the past decade, the number of older adults being sent to nursing homes due to dementia has decreased and the admissions for other psychiatric illness, especially depression has increased (Fullerton et al, 2009). Moreover, the transition from moving from their own homes in the community to care homes, may give rise to the development of depressive symptoms (Rodstein et al, 1976). The sudden loss of control over their basic needs, the lack of privacy in nursing homes and having to abruptly live with strangers in a home, including sharing living space and bathroom with strangers may also precipitate depression among elderly (Choi et al, 2008). Hence, it is vital to be able to identify, diagnose and promptly treat these vulnerable population to prevent further downhill spiral in terms of their quality of life.

There are many factors that can be associated with the development of depression among older adults residing in nursing home. From our study, one of the significant factors that contributed to the development of depression, is having no hobbies. Multiple prior studies show that older adults living in institutions such as nursing homes and assisted-care facilities, live a mundane and sedentary lifestyle, with little to no hobbies, and seldom engage in recreational and leisure activities (Haslam L., 2008, O'Sullivan et al, 2006, Dahlan et al, 2014, Almeida et al, 2014). One study showed that social and recreational hobbies are often scheduled and structured in nursing homes, thus leaving individuals no freedom to choose their own hobbies and activities, further reducing their interest to partake in activities (Rosen et al, 1997). Choi and colleagues in another study also reported that the lack of freedom to make choices and decisions, such as choosing their activities, meal times, scheduling of their bath times, among others, which are also due to the pre-existing regulations in care homes may precipitate or further perpetuate depressive symptoms among older adults. Furthermore, the

study also showed that repetitive and insipid programmes and activities at nursing home, contributed to elderly residents showing diminished interest in taking part in activities in the homes (Choi et al, 2008). Moreover, the shortage of nursing home personnel and staffs, may also contribute to the lack of activities organized for residents in the nursing homes (Choi et al, 2008).

Hence, corrective measures should be taken to help this vulnerable but important population, who are the backbone of our society. A study done by Meeks et al in 2011, reported that when older adults residing in nursing homes received more direct and positive attention from nursing home personnel, especially during scheduled activities, can engage the older adults more in the activity, hence leading to a more pleasurable time (Meeks et al, 2011). Furthermore, the study also showed that engaging residents in informal group activities such as casual interactions with other residents staying in the same home as well as staff members, can also increase the gratification and contentment and indirectly serve as a protective factor towards the development of depression. Additionally, reinstating a sense of autonomy and freedom to choose and have degree of control over their choice of hobbies can have a beneficial and positive impact on the psychological well-being of these older adults (Rosen et al, 1997). In a randomized trial conducted among 82 older people living in institutions in Malaysia, Dahlan and Ibrahim, concluded that the Lively Later Life Programme (3LP), through engagement of the residents with various meaningful activities, showed an improvement of the psychological well-being of older adults after the programme was conducted and reinforces a sense of fulfilment and contentment with life and therefore improves the overall quality of life (Dahlan & Ibrahim, 2015). One study showed that older adults in nursing homes, preferred to engage in nursing home programmes rather than attending psychotherapy sessions, be it individual or group-based (Choi et al, 2008).

There are a multitude of risk factors across different cultures and populations that place older adults staying in nursing homes at risk for depression. This may include disrupted sleeping patterns, having pain and multiple medical illnesses that may lead to impaired physical activity, as well as not exercising (Nazemi et al, 2013). The National Sleep Foundation, recommends that the average number of hours of sleep for adults aged 65 years and older should be 7-8 hours/ day (Hirshkowitz et al, 2015). In our study, it was seen that a majority of residents in the nursing homes had 6-8 hours of sleep. This could be one of the possible reasons that the study yielded a negative association between sleep and the development of depression, as almost all (if not all) nursing homes have structured sleeping hours and ensures that residents are in bed by that time.

It is a well-known fact that with increasing age, there is a greater risk of disability that affects the older adults, usually contributed by deteriorating physical health and the presence of multiple medical illnesses that can precipitate depression (Fiske et al, 2009). In our study, a majority of the older adults had medical illnesses, with majority of the residents having 2 or more medical conditions. A possible reason that our study had negative association between medical illness and depression, could be due to the fact that albeit these older adults have medical illnesses, it is well controlled as their medications are served duly daily by the nursing home personnel as such homes usually have dedicated times for dispensing medications. Older adults staying in community dwelling settings, may have difficulties with medication compliance especially if they are staying alone, as it has been reported that forgetfulness is one of the major contributors to poor medication compliance (Salzman C., 1995). This in turn will cause their physical health to deteriorate gradually and can in the long run contribute to the development of depression (National Institute of Aging, 2017). Additionally, due to poor physical ailments, older adults may find it painful and difficult to move around, hence contribute to the lack of exercise as shown in our study that a majority of residents did not



exercise. Our study also showed a negative association between exercising and the development of depression among older adults in nursing homes. In a randomized controlled trial by Underwood and colleagues, who incorporated group exercise classes to residents of nursing homes over a period of 12 months, showed that exercising had no additional benefits in improving depressive symptoms regardless if they were depressed at baseline (Underwood et al, 2013).

In summary, depression among older adults residing in nursing home is a legitimate concern, with multiple significant risk factors that covers various aspects of their lives. Prompt and rapid measures need to be taken in order to improve their overall psychological well-being, as this would lead to a happier generation of older adults that would ultimately reduce disability rates and improve their quality of life.

## **6.2 ANXIETY AMONG ELDERLY RESIDENTS IN NURSING HOMES**

The American Psychological Association described anxiety as having feelings of stress, having worrisome thoughts and the presence of bodily changes in response to those overwhelming emotions (American Psychological Association). Anxiety disorders are common in late life, but often underdiagnosed and missed by healthcare professionals (Hellwig et al, 2019). Late-life anxiety is known as a “geriatric giant”, as it is two times more prevalent than dementia and 4-8 times more common than depression (Cassidy et al, 2008). It is particularly higher in older adults residing in nursing homes as compared to the geriatric population in the community (Creighton et al, 2018). The reported prevalence rates among community-dwelling older adults are estimated between 1.2-15% (Hellwig et al, 2019) as compared to rates reported from a systematic review by Elias S.M.S in 2018, with prevalence rates of anxiety among older adults in nursing care homes are 3.6- 38% (Elias S.M.S, 2018).

In comparison, the prevalence rates reported in another study in Australia, was much higher, with rates from 6.5% - 58.4% (Creighton et al, 2019). One possible reason why prevalence rate is higher in older adults living in nursing homes as compared to their counter parts in the community is because those in nursing homes tend to be older and have many chronic illness (Jongenelis et al, 2004, Seitz et al, 2010). Furthermore, the most common anxiety disorders reported among older adults in nursing homes are generalized anxiety disorder (11.1%) and specific phobias (6.1%), followed by agoraphobia (2.7%) and lastly panic disorder and social anxiety disorder (1.7%) (Creighton et al, 2016).

In our study, the prevalence of anxiety among the older adults in nursing home is 81.3%, with majority of the residents having mild and moderate anxiety (36.6% and 38.4% respectively) and the prevalence rate for severe anxiety is low (6.3%). With a wide range of figures, there could be multiple factors that could be influencing the study results. Firstly, there was not one standardized instrument used in all these studies that were included; one study used Hospital Anxiety and Depression Rating Scale (HADS), one study using Clinical Anxiety Scale (CAS), with one study using both CAS and Rating Anxiety in Dementia (RAID) and one study using Beck's Anxiety Inventory. On the other hand, the study from Australia used Geriatric Anxiety Inventory (GAI) as their main instrument to measure anxiety among the geriatric population in nursing care homes. Thus, it is difficult to make a comparison between the results as different sets of instruments have different measures of sensitivity that could contribute to the different rates of prevalence across different studies. Additionally, the differences between these prevalence rates may also be due to varying religion, ethnicity and sociocultural backgrounds between different nations. Furthermore, other factors such as differences in facilities (such as paid nursing homes versus free nursing homes provided by the government) and the quality of supervision and attentiveness provided by the nursing home, may all contribute to this variance.

There are many risk factors that can influence the development of anxiety among the older adults staying in nursing homes. One such risk factor from our study is the lack of hobby or meaningful activities that shows a positive association in the development of anxiety. Prior studies have shown that older adults living in nursing homes, often have little to no hobbies and seldom engage in pleasurable activities (Dahlan et al, 2014, Almeida et al, 2014). Additionally, most nursing homes have a structured group activity that is planned by the nursing home personnel without taking into account of individual preference of activities, hence older adults often find their freedom of choice limited not only because of their medical illnesses but also by the cultural prejudices imposed upon them by the strict rules and regulations in nursing home (Sherwin et al, 2011). Situations such as these, are often stressful for older adults, and can lead to dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, in addition to age-related vulnerabilities of the HPA axis leading to a rise in cortisol levels which can precipitate the development of symptoms of anxiety (Hellwig et al, 2019). The same study shows that higher levels of basal cortisol in saliva and raised peak levels of cortisol contributes to the development of generalized anxiety disorder in elderly. Re-enforcing the findings of this previous study, a randomized controlled trial among older adults who were identified to have generalized anxiety disorder, reported that after being treated with Escitalopram for 12 weeks, there was a reduction in salivary cortisol levels when compared to placebo (Lenze et al, 2012). There was also a positive correlation between the severity of the anxiety with the levels of cortisol as measured by two screening tools, which were the Generalized Anxiety Disorder Severity Scale (GADSS) and the Penn State Worry Questionnaire (PSWQ) (Mantella et al, 2008). Having hobbies such as singing among older adults, has shown to significantly reduce cortisol levels, hence indirectly may reduce symptoms of anxiety (Sakano et al, 2014).

Our study findings show that older adult residents in nursing homes that have no diagnosed psychiatric illness (pre-existing psychiatric illness), may precipitate the development of anxiety. This can be explained by the fact that anxiety disorders are often missed and under-recognized in older adults due to the methodological complexity and difficulties arising in obtaining accurate empirical data among this population. The phenomenology of anxiety among older adults tends to differ from their younger counterparts, in which evidence shows that in older adults, activity of the autonomic nervous system is reduced (Li et al, 2005), hence making it harder to elicit certain symptoms of anxiety such as in panic disorder (Flint et al, 1996). The detection of anxiety may be difficult because the symptoms frequently overlap with various medical conditions such as cardiac arrhythmias, thyroid disorders, among others (Fuentes et al, 1997). Moreover, the geriatric population tends to misinterpret symptoms of anxiety as medical illness or somatize their symptoms rather than thinking of it as psychological distress (Nazeem et al, 2011). Hence, rather than seeking treatment from a psychiatrist, they consult their primary care physicians who often have difficulties identifying psychiatric illnesses, leading to a misdiagnosis. Thus, the older adults who were in the category of “no psychiatric illness”, may actually have had an underlying anxiety disorder to begin with that was missed. Additionally, in older adults living in nursing homes, anxiety disorders may be more difficult to diagnose, as impairment in work, social and other areas of functioning, which is one of the criteria to diagnose most of the anxiety disorders, may not be easily identifiable especially if the individual is socially isolated and is able to steer clear of situations that may provoke anxiety (Bryant C., 2010). Furthermore, possibly, the older adults with pre-existing psychiatric illnesses are receiving psychotropic medications which may mask symptoms of anxiety (Moncrieff et al. 2013) and this group of population may be receiving more attention and care from the caregivers, hence contributing to lesser degrees of anxiety.

Multimorbidity is a term that has frequently been associated with older adults to characterize the presence of more than one chronic medical condition (Marengoni et al, 2011). The heterogeneity and complexity of multimorbidity, not only leads to poorer health outcome and higher levels of disability, but is also a great burden on healthcare systems (American Geriatric Society Expert Panel on the Care of Older Adults with Multimorbidity, 2012, Centre for Medicare and Medicaid Services, 2012). Studies have shown that the presence of multiple medical conditions in older adults contributes to the development of mental illnesses such as anxiety and depression, with higher chances of precipitating anxiety as compared to depression (Gould et al, 2016). When compared to older adults with multiple comorbidities to the geriatric population with no multimorbidity, there is a 2-fold risk in the population with multimorbidity to suffer from psychological distress (Scott et al, 2009).

Interestingly, our study found that having less than 3 medical comorbidities contributed to the development of anxiety as compared to having 3 or more comorbidities. A possible reason for this could be the older adult's viewpoint that their health was poor despite it being optimal or exceptional. Creighton and her colleagues concluded that the number of medical illnesses was not positively associated with anxiety, but rather the perception of the illness itself by the older adults, was what precipitated the development of anxiety (Creighton et al, 2019). Illness anxiety regarding health frequently arises in older adults after negative events in life such as finding out that a close family member was diagnosed with a serious illness, death of a close family member, frequent falls that results in bodily injuries and having physical illness (Asmundson et al, 2010, Hoffman et al, 1996). As majority of older adults' experience health related struggles with heightened physiological reactivity and diminished psychological flexibility causing emotional dysregulation, this increases the possibilities of exaggerated and disproportionate health preoccupations and may precipitate illness anxiety (El-Gabalawy et al, 2013). The same study reported that the geriatric population are more prone to illness anxiety

given the overlapping relationship between general health worries and somatization of their bodily symptoms. In nursing homes, older adults with lesser comorbidities, who are often deemed “healthier” compared to their peers with more medical illnesses, may have higher anxiety watching their peers struggle with their physical illness and may have also had to deal with the death of their peers. Repeated loss and grief experienced by these group of residents may contribute to higher levels of anxiety.

In summary, it is important to remember that anxiety disorders can occur at any point in an individual’s life. It is a common misconception, that with increasing age, the rate of anxiety reduces. Thus, it is vital to be able to identify the phenomenology of anxiety in older adults, and to start the appropriate treatment, be it medications or psychotherapy or other behavioural interventions, to improve both the physical and psychological health of these older adults. Moreover, it would also be important to recognize the strengths of the current nursing home and health care system in Malaysia, in terms of the supervision, available facilities and programmes for the older adults to further strengthen and improve the overall quality of the services provided, with the ultimate goal of improving the psychological well-being of the geriatric population residing in nursing homes.

### **6.3 PERCEIVED SOCIAL SUPPORT AMONG ELDERLY RESIDENTS IN NURSING HOMES**

Perceived social support is characterized by the way an individual subjectively evaluates how the people from their social circle such as family members, friends and others are able to support them in terms of physical and psychological means, rather than a true reflection of the care and support the individual receives (Eagle et al, 2019). It constitutes how much an individual feels secure and congenial in the company of others (Bozo, 2009). Moreover, perceived social support plays a major role as an insulator to stressful situations and

has been known to be a protective factor against depression (Taylor et al, 2004, Yang Y., 2006). The stress-buffering hypothesis, postulates that social support has a beneficial effect, not only on the psychological wellbeing, but on the physical health as well, because it serves as a protective factor against unwanted stressful and negative life events (Tariq et al, 2020). Additionally, a study that was conducted among the geriatric population in Turkey showed that perceived social support had a significant impact on depression, with the results reporting that the lower the perceived social support, the more prevalent the rates of depression seen in older adults (Bozo et al, 2009). Another similar study that was conducted among older adults in Tehran, also concluded that higher levels of perceived social support, is a safeguarding measure against the development of depression (Bakhtiyari et al, 2017). This also holds true among elderly nursing home residents, as the transition from leaving their own home with their family into nursing homes, is undoubtedly a stressful life event for this frail population. A study in Greece concluded that perceived social support has a positive association with depression among elderly nursing home residents (Patra et al, 2017). Furthermore, another study conducted among older adults in nursing homes in Iran, also yielded similar results as to the Greek study, that the lack of perceived social support contributes to the development of depression in late-life (Seddigh et al, 2020).

In our study, we used the Multidimensional Scale of Perceived Social Support (MSPSS) to measure perceived social support among older adults residing in nursing homes. This scale consists of 3 major subdomains, which are Significant Other, Family and Friends. The finding showed that the overall mean for social support perceived by the nursing home residents was 3.21 (SD=0.89), which falls in the group of 'mildly disagree', indicating that overall perceived social support was low, with the lowest perceived social support being from friends, and the highest among the 3 domains were from significant other. Our study also concluded that low perceived social support can contribute to the development of depression but had a negative

association with anxiety. Various studies have shown that friends and family play a key role to provide psychological support in older adults and are therefore considered the principal source of emotional support (Williams et al, 2007, Cheng et al, 2009, Deng et al, 2009). From our study, majority of the respondents were widowed and a substantial proportion of them had no visits from their family and friends while staying at the nursing home. Patra and colleagues reported from their study in Greece among elderly nursing home residents that perceived social support is strongly correlated to one's marital status, number of children, as well as the frequentness of visit by their family or friends (Patra et al, 2017). The same study also reported that the lack of visitations in nursing homes also contributed to increased rates of depression. Having a poor social network, can lead to feelings of loneliness and abandonment which can further precipitate depressive symptoms (Wilson et al, 2010, Cohen-Mansfield, 2007).

Our study shows that having low perceived social support did not contribute to the development of anxiety among the older adults living in nursing homes. This is supported by a similar study by Hosseini and colleagues who studied 210 older adults in Iran, and reported that there was no significant association between perceived social support and anxiety (Hosseini et al, 2020). On the other hand, a study by Creighton and her colleagues in Australia, showed that low rates of perceived social support can contribute to the development of anxiety among elderly residents in nursing homes (Creighton et al, 2016). The possible reasons for such conflicting reports are because there are many other factors that affects an individual's perceived social support which is subjective, including factors such as difference in standards of care in the nursing homes itself, the facilities and equipment available in these homes, as well as taking into account the difference ethnic and sociocultural differences around the globe.

In early February 2020, a team of investigators in Iran, developed a new scale for perceived social support to be used specifically among older adults (Nazari et al, 2020). This scale consists of 34 items with 5 domains encompassing emotional, practical, and spiritual



support, as well as negative interactions and satisfaction with received support, showing an internal consistency, Cronbach's  $\alpha$  of 0.92 for the whole scale. In the future, it would be interesting to replicate a similar study using a validated version of this scale in Malaysia as it was specifically designed for older adults, and may show more accurate empirical data for this group of population. We can also take a further step from our current study and to additionally investigate specific factors which may influence perceived social support in elderly patients residing in care homes. This is in order to come up with better preventative measures, and to further improve the current nursing home systems in Malaysia to be more feasible and convivial for the older adults, as well as to improve the overall healthcare policy that is currently in place for the geriatric population in Malaysia.

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## CHAPTER 7

### CONCLUSIONS

In conclusion, this study found that the prevalence of depressive symptoms among elderly residents in nursing homes was 94.2% with findings indicating that more than half of the respondents were severely depressed (n=114, 50.9%). The rates of depression were much higher than the previous studies done on among elderly nursing home residents and is also higher than the general population. The bivariate analysis for depression revealed that only hobby and perceived social support were significantly contributing to depression. The depression level was higher among those nursing home residents with no hobby and who received minimal perceived social support. Furthermore, the multivariate analysis for depression indicated that the factors contributing for depression were nursing home residents staying more than a year at nursing homes, older adults with no hobby and those who received minimal perceived social support.

The prevalence of anxiety symptoms among older adults living in nursing homes was 81.2% with the results showing that one third of them reported the anxiety level between 'mild' (n=82, 36.6%) to 'moderate' (n=86, 38.4%). This prevalence rate was slightly higher than that reported in previous studies, but significantly higher than the general population. Additionally, the bivariate analysis for anxiety showed that number of comorbid illnesses, psychiatric illness, hobby and perceived social support were significantly contributing to anxiety. The multivariate analysis for anxiety on the other hand, showed that the factors contributing for anxiety were nursing home residents with less than three comorbid, no psychiatric illness and those with no hobby. Additionally, from the multivariate analysis, perceived social support had a negative association with anxiety.

## 7.1 Recommendations

This study has shown that there are worrying levels of symptoms of depression and anxiety among older adults residing in nursing homes. There are also low levels of perceived social support among the residents which is contributing to the development of depression in this population. This is extremely concerning as the geriatric population are the backbone of our society, who have contributed greatly to the development of our nation, hence their welfare should be an utmost priority. Recognizing and treasuring their contributions, is vital to the long-term flourishing of any society. Furthermore, these psychological illness among the elderly not only contributes to their disability, but causes further disease burden that has a detrimental effect on the public health system of the country.

Firstly, the elderly residents need to be educated regarding the symptoms of depression and anxiety, as they may misinterpret their symptoms as a normal of aging or as a spectrum of their medical illness. Additionally, the stigma that arises among the geriatric population and the reluctance to seek for assistance, should also be addressed. Furthermore, these older adults need to have a better understanding of the possible factors that can improve their mental health, and aim to foster good coping mechanisms to improve their quality of life throughout these challenging years.

Secondly, family members and nursing home staffs should also be educated to identify symptoms of depression and anxiety among the older adults. Caregiver training can be implemented to improve the interpersonal relationships between them and the caregiver as well as to teach them ways to cope with the burden of caregiving the elderly. Additionally, this can also indirectly improve the perceived social support from the elderly, hence leading to improvement of their psychological well-being.

Last but not least, a brunt of the support should also come from policy makers. They should be aware of the plight and concerns raised by these older adults and make room for improvement of the existing public healthcare system. The existing policies should be updated to keep up with the times and newer policies should be implemented to better safeguard this vulnerable population. Additionally, more investigate research can be done, involving more nursing homes across the country to establish more accurate and concrete findings among this population, such as comparing the prevalence rates of depression and anxiety among private nursing homes and government nursing homes. Moreover, more extensive studies can be done to better identify various risk factors that can give rise to a multitude of psychiatric illness among the elderly

## **7.2 Limitations**

This study has multiple limitations. Firstly, as it is a cross sectional study, the study is unable to determine causality and only associations. Moreover, the study was conducted among elderly residents in nursing homes around the Klang Valley, thus reducing its generalizability, as other nursing homes around the country were not included. A multicentre study would be suitable in the future, encompassing all other nursing homes in Malaysia. Furthermore, as the survey was conducted during the peak period of the COVID-19 pandemic, it was not feasible to employ cluster sampling, which may have been a more heterogenous representation of the nursing home population. This was because a majority of the nursing homes were closed to visitors across the nation, as the homes wanted to curb the spread of COVID-19 among this vulnerable population and to protect the welfare of the elderly staying in these homes. Hence, convenient sampling was employed for our study.

Moreover, while all the residents were approached through the person in charge of the nursing home, in many of the homes, the patients who were bedridden were not keen to participate in the survey. This can indirectly lead to self-selection bias. There could also be reporting bias, as the elderly residents may be reluctant to disclose certain personal information such as past medical history, marital status, as well as information regarding their relationship with family and friends. Another possible setback of this study, is the use of screening tools, rather than diagnostic tools which are a more accurate representation of the prevalence of depression and anxiety.

### **7.3 Strengths**

This is the first study done regarding depression, anxiety and perceived social support among elderly residents of nursing home in Malaysia to the authors best knowledge. Furthermore, there is little to no data on the prevalence of depression, anxiety and perceived social support among the geriatric population in Malaysia generally. Being able to identify and summarize some of the potential risk factors such as having no hobby, having comorbidities and low perceived social support which contributed to the development of depression and anxiety in this vulnerable population, is of utmost value. This study not only serves as a point of reference for future more vast and in-depth study among this group of population but as a start to campaign for better mental health rights and policies among this impuissant population.

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