

**KNOWLEDGE AND ATTITUDE ON THE NUTRITION OF
HOSPITALISED ELDERLY PATIENTS AMONG NURSES
IN HOSPITAL UNIVERSITI SAINS MALAYSIA**

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by

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LIST OF ABBREVIATIONS

BMI	Body Mass Index
CCU	Coronary Care Unit
HDU	High Dependency Units
ICU	Intensive Care Units
IV	Intravenous
MNA	Mini Nutrition Assessment
NPO	Nothing by mouth
ORL	Otorhinolaryngology
USM	Universiti Sains Malaysia
SPSS	Statistical Package Social Sciences
TPB	Theory of Planned Behavior

Pengetahuan dan Sikap Terhadap Pemakanan Terhadap Pesakit Tua Yang Dirawat Dalam Kalangan Jururawat di Hospital Universiti Sains Malaysia

ABSTRAK

Sebilangan besar negara maju telah menetapkan bahawa orang yang berumur 65 tahun ke atas dianggap tua. Seiring bertambahnya pesakit tua, pengetahuan tinggi dan sikap positif sangat penting bagi semua jururawat kerana mereka memainkan peranan penting dalam memberikan perawatan holistik kepada pesakit tua semasa dimasukkan ke hospital. Kajian keratan rentas dilakukan untuk mengetahui pengetahuan dan sikap mengenai pemakanan pesakit tua yang dirawat dalam kalangan jururawat di Hospital USM. Soal selidik yang digunakan dalam kajian ini adalah pengetahuan dan sikap kakitangan jururawat mengenai pemakanan pesakit tua yang dimasukkan ke hospital yang diadaptasi dari kajian oleh Boaz et al. (2013). Sebanyak 232 jururawat di Hospital USM yang memenuhi kriteria kemasukan dan pengecualian dipilih secara rawak. Data yang dikumpulkan dianalisis secara statistik menggunakan perisian SPSS versi 26.0. Ujian statistik Pearson's Correlation dan Pearson's Chi-Square digunakan untuk analisis data. Bagi tahap pengetahuan dan sikap, hasilnya menunjukkan 33 (14.2%) untuk pengetahuan yang baik dan 230 (99.1%) untuk sikap positif masing-masing. Terdapat hubungan antara skor pengetahuan dan sikap ($p = 0.180$), hasilnya menunjukkan hanya 19 (8.2%) bagi responden yang mempunyai pengetahuan dan sikap positif. Akhir sekali, tidak ada kaitan antara usia dan pengalaman bekerja dengan skor pengetahuan mengenai pemakanan ($p = 0.929$) dan ($p = 0.184$) masing-masing. Kesimpulannya, pengetahuan jururawat harus ditingkatkan dan ditingkatkan agar mereka lebih berpengetahuan dan berketerampilan dalam memberikan perawatan pemakanan kepada pesakit tua yang dirawat di hospital.

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ABSTRACT

Most developed countries have determined that people aged 65 years and above are considered elderly. As the increasing of elderly patients, high knowledge and positive attitude were crucial to all nurses because they play an essential role in providing holistic care to the elderly during hospitalisation. A cross-sectional study was carried out to study the knowledge and attitude on the nutritional of hospitalized elderly patients among nurses in Hospital USM. The questionnaire used in this study was staff nurses' knowledge and attitude on the nutrition of hospitalised elderly patient's questionnaire adapted from study by Boaz et al. (2013). A total of 232 nurses in Hospital USM who fulfilled the inclusion and exclusion criteria were selected randomly. Data collected were statistically analysed using the SPSS software version 26.0. Pearson's Correlation dan Pearson's Chi-Square were used for data analysis. As for the knowledge and attitude score, the results show 33 (14.2%) for good knowledge and 230 (99.1%) for positive attitude respectively. There was an association between knowledge score and attitude score ($p = 0.180$), the results show only 19 (8.2%) for respondents who have good knowledge and positive attitude. Lastly, there is no association between age and working experience with the level of knowledge on nutrition ($p = 0.929$) and ($p = 0.184$) respectively. In conclusion, nurses' knowledge has to be enhanced and improved so that they are more knowledgeable and competent in providing nutritional care to hospitalized elderly patient.

CHAPTER 1 INTRODUCTION

1.1 Background of Study

Malnutrition refers to undernutrition and overnutrition (excess of nutrition), but in this study, we use this term to refer to undernutrition (lack of nutrition). In the aging population, malnutrition was the main problem that has been seen in the hospital and community. Malnutrition can be detected in the elderly when they were underweight and can cause poor diet or severe and repeated infections, decrease in taste acuity and smell, deterioration of dental health and decrease in physical activity (Agachew, 2017; Blössner & Onis, 2005).

It can be hard to meet the dietary requirements of hospitalised adults. Due to a range of physical or cognitive etiologies, patients can have feeding problems. Loss of appetite, confusion, trouble handling utensils, difficulty swallowing or chewing, depression, general functional deterioration, and insufficient feeding assistance can contribute to inadequate daily intake among hospitalised adults (Simmons & Schnelle, 2003).

The health care team's first members to recognize feeding issues in a given patient were always nurses (Lin et al., 2010). A study showed that despite medical/surgical staff claiming adequate awareness and ability to recognize patients at risk of malnutrition, only a much smaller number replied correctly to this identification (Swan et al., 2020). Other than that, based on six studies conducted, five studies stated that knowledge of nurses regarding nutritional care of the patient was poor (Hakonsen, Bjerrum, Bygholm, Kjelgaard, & Pedersen, 2018; Iqbal et al., 2015; Kobe, 2006; Swan et al., 2020; Zeldman & Andrade, 2020) while one study stated that nurses have median knowledge which is

51.9% (Boaz et al., 2013). Based on a study by Zeldman & Andrade (2020), nutrition knowledge was highest in the areas of nutrient functions and food sources/macronutrients, while knowledge in the field of giving medicinal nutrition therapy was lowest. Hence, their knowledge and attitudes regarding nutrition care play a critical role in patient nutrition assessment and intervention.

In summary, nurses were the key practitioners in health care that provide elderly adult patients with direct care (Boltz, Parke, Shuluk, Capezuti, & Galvin, 2013). The experience and attitudes of nurses seem to impact their ability to work with older people and the standard of treatment given to them. As an increase in the aging population associated with chronic disease, the need for nurses with a right and optimistic mindset, competent and professional is a must, reducing physical functionality and increasing dependency (Faronbi, Adebowale, Faronbi, Musa, & Ayamolowo, 2017).

1.2 Problem Statement

A previous study was done in various hospital in many countries such as Italy, Israel, Norway, and the Netherlands showed that nurses' attitude still low in nutritional of hospitalised patients (Boaz et al., 2013; Eide, Šaltytė Benth, Sortland, Halvorsen, & Almendingen, 2016; Henderikx, 2020). A study in Italy has discovered that documentation of nutritional treatment was insufficient, and often no interventions were implemented to prevent malnutrition (Bonetti et al., 2017).

Based on a few studies, nurses who had poor knowledge also showed a negative attitude towards the nutrition of hospitalised elderly patients (Boaz et al., 2013; Iqbal et al., 2015; Kobe, 2006). However, one study showed that nurses who had good knowledge showed a negative attitude toward the nutrition of geriatric patients (Zeldman & Andrade, 2020). Hence, nurses' attitude toward nutrition care and the elderly's feeding is critical to prevent any undesirable health consequences.

In terms of sociodemographic factors, age, level of education, and working experiences of nurses working in the hospital also play an essential role with knowledge regarding nutrition of geriatric patients (Endevelt, Werner, Goldman, & Karpati, 2009).

In Malaysia, two studies found that the prevalence of elderly hospitalised patients with malnutrition remains high based on a study that was conducted in Klang, Kuala Lumpur and Universiti Malaya Medical Centre, which are 55.2% and 67.1%, respectively (Harith, Shahar, Aini, Yusoff, & Bahyah, 2010; Nur Adilah Shuhada, Nur Islami, & Mazuin, 2019).

According to statistics of Hospital Universiti of Sains Malaysia (Hospital USM) 2019, there was approximately about 109,512 elderly as outpatient visited clinics such as “Klinik Rawatan Keluarga” and “Klinik Pakar” and emergency department (HUSM, 2019). Meanwhile, a study conducted in Hospital USM among geriatric inpatient showed that the prevalence of malnutrition was high (35.4%). Thus, elderly patients form a high-risk nutritional group including hospitalised elderly should always be screened for signs of malnutrition. Therefore, early and accurate identification of malnutrition is essential.

In view of the issues, high knowledge and positive attitude were crucial to all nurses because they play an essential role in providing holistic care to the elderly during hospitalisation. Therefore, this study aims to determine the knowledge and attitude on the nutrition of hospitalised elderly patients among nurses in Hospital Universiti Sains Malaysia.

1.3 Research Objective

1.3.1 General Objective

To determine the knowledge and attitude on the nutrition of hospitalised elderly patients among nurses in Hospital Universiti Sains Malaysia.

1.3.2 Specific Objectives

1. To identify the level of nurses' nutrition knowledge regarding hospitalised elderly patients in Hospital USM.
2. To identify the level of nurses' attitude regarding the role of nursing staff in the nutrition care and feeding of elderly hospitalised patients in Hospital USM.
3. To determine the association between nutrition knowledge score and attitude score about nutrition care and feeding among nurses in Hospital USM.
4. To determine the association between selected sociodemographic factors (age and working experience) and level of nutrition knowledge towards hospitalised elderly patients among nurses in Hospital USM.

1.4 Research Question

1. What is the level of nutrition knowledge regarding hospitalised elderly patients in Hospital USM?
2. What is the level of attitude regarding nurses' role in the nutrition care and feeding of elderly hospitalised patients in Hospital USM?
3. Is there any association between nutrition knowledge score and attitude score about nutrition care and feeding among nurses in Hospital USM?
4. Is there any association between selected sociodemographic factors (age and working experience) and level of nutrition knowledge towards hospitalised elderly patients among nurses in Hospital USM?

1.5 Research Hypothesis

Hypothesis 1

H₀1: There is no association between nutrition knowledge score and attitude score about nutrition care and feeding among nurses in Hospital USM.

H_A1: There is an association between nutrition knowledge score and attitude score about nutrition care and feeding among nurses in Hospital USM.

Hypothesis 2

H₀2: There is no association between selected sociodemographic factors (age and working experience) and level of nutrition knowledge towards hospitalised elderly patients among nurses in Hospital USM.

H_A2: There is an association between selected sociodemographic factors (age and working experience) and level of knowledge towards hospitalised elderly patients among nurses in Hospital USM.

1.6 Conceptual and Operational Definitions

Definitions for the operational terms used in this research proposal are as follows:

Table 1.1 Definitions for the operational terms used in this research proposal

Terms	Conceptual	Operational
Knowledge	The information and skills gained by experience or education (Oxford Dictionary, 2008).	In this study, knowledge refers to nurses' knowledge regarding nutrition of hospitalised elderly patients (Boaz et al., 2013).

Table 1.1, continued

<p>Attitude</p>	<p>A feeling or opinion about something or someone, or a way of behaving (Cambridge Dictionary, n.d).</p>	<p>In this study, an attitude refers to nurses' attitudes regarding the nurse's role in providing nutrition care and feeding assistance that indicate a positive or negative attitude (Boaz et al., 2013).</p>
<p>Nutrition</p>	<p>The process of taking in food and using it for growth, repair and metabolism (Shiel, 2018).</p>	<p>In this study, nutrition refers to a nourishing substance such as nutritional solutions administered through an IV, taking food by an oral or enteral route to hospitalised elderly patients.</p>
<p>Elderly</p>	<p>Most developed countries have determined that people aged 65 years and above are considered elderly (World Health Organization, 2002). Even so, people are considered elderly when they are 60 years and above in Malaysia (Country Reports Malaysia, 2012).</p>	<p>In this study, the researcher defined elderly as 60 years and above that was admitted to all 19 selected wards in Hospital USM.</p>

1.7 Significance of Study

This study was done because there were limited studies that assess nurses' knowledge and attitude on the nutritional of hospitalised elderly patients in multiple discipline departments in Hospital USM. The nurse can depend on intake and output chart to monitor their patients' nutritional status, but they still have to recognize signs of malnutrition and assessment to detect malnutrition among elderly patients. Hence, this study will provide a snapshot of the current prevalence of nurses' knowledge and attitude on the nutritional of hospitalised elderly patients in the multi-discipline department in Hospital USM.

Lastly, this study will also contribute to hospital management to give a prime concern on the nutritional status of hospitalised elderly individuals. There might be a need to further integrate advanced nutrition education into professional schools and graduate programs. Furthermore, continuing nutrition education should be mandatory for all health practitioners to ensure that the most recent nutrition guidelines are followed.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This literature review aims to understand the existing research and debates relevant to a particular topic study and present that knowledge in the form of a written report (Library, 2017). In this study, this literature review will summarize research that has been done on the subject. The aim was to gain an understanding of the level of knowledge and attitude on the nutrition of hospitalised elderly patients among nurses. This literature review will cover the nurse's knowledge toward nutrition care, attitude toward the role of nursing staff in the nutrition care and feeding of elderly, association between knowledge and attitude and factor influencing nurses' nutrition knowledge towards the elderly. Lastly, the conceptual framework for this study was presented.

2.2 Overview of Elderly

The overview of the elderly comprises of definition and prevalence and nurses' role in nutrition for the elderly.

2.2.1 Definition and Prevalence of Elderly

An individual's actual age is not just the number of years the person is lived. It also depends on several characteristics such as deterioration of health, cognitive functions and disability (International Institute for Applied Systems Analysis, 2013). However, most developed countries have determined that people aged 65 years and above are considered elderly (World Health Organization, 2002). Even so, people are considered elderly when they are 60 years and above in Malaysia (Country Reports Malaysia, 2012). The older age in Malaysia is much younger than in a developed country such as Singapore, Japan and Switzerland. This is due to

fertility decline and increased longevity contributing to the aging of the population (Country Reports Malaysia, 2012).

The aging population has increased year by year, globally. Until 2019, there were 703 million older persons aged 65 years and above worldwide (United Nations, Department of Economic and Social Affairs, 2019). The largest number of the world's older population is in Eastern and South-Eastern Asia, with 260 million elders. The second-largest number of the elderly population is over 200 million located in Europe and Southern America (United Nations, Department of Economic and Social Affairs, 2019). Furthermore, the global population growth of people aged 65 years is projected to rise by 442 million from 2010 to 2030, making it the fastest increasing age group (United Nations, Department of Economic and Social Affairs, Population Division, 2013). Meanwhile, in Malaysia, the aging population has reported increased gradually from 2015 to 2019 (Hirschmann, 2019). In 2015, the Malaysian population aged over 65 years stood at 5.8% and kept rising until 6.7% in 2019.

2.2.2 Nurses Role in Nutrition for Elderly Patient

Nutrition screening is used to instantly identify patients or patients at risk of malnutrition who are malnourished and to assess whether a more thorough examination is needed. This nutrition screening can be done by dietitians, nurses, doctors or other trained healthcare professionals. Nurses are front-line nurses who screen patients for nutritional risk at admission and play an important role in recognizing patients with malnutrition early on (Tah, Kee, & Majid, 2020).

In order to improve patient's nutrition, key nutrition experts represented by the Academy of Nutrition and Dietetics, the Academy of Medical-Surgical Nurses, the Society of Hospital Medicine, and Abbott Nutrition have established the

Alliance to Advance Patient Nutrition (Tappenden et al., 2013). The Alliance developed six main principles for advancing patient nutrition: establishing an institutional culture where nutrition is valued by all stakeholders, redefining the role of clinicians to include nutrition care, recognizing and diagnosing all malnourished and at-risk patients, rapidly implementing comprehensive nutrition intervention and ongoing surveillance, communicating nutrition care plans, and developing nutrition care plans (Tappenden et al., 2013). For the nurse, this includes screening every hospitalised patient for malnutrition upon admission, reporting nutrition screening results to the healthcare team through the use of the electronic health record (EHR), developing processes to ensure that nutrition screening and dietitian prescribed intervention takes place within the targeted time- frame and developing procedures to provide patients with meals, meal assistance, snacks and oral nutritional supplements (Tappenden et al., 2013).

The nurse has a crucial role in introducing practice improvement that can positively affect nutritional care for patients. For example, nurses familiar with current guidelines can influence efforts to reduce NPO times and maximize nutritional intake (Sauer, Alish, Strausbaugh, West, & Quatrara, 2016). Reducing NPO times improves patient results by improving food intake without affecting patient satisfaction at the same time.

Nurses can implement processes that ensure that patients have assistance with mealtime feeding. Ensuring that the metal tray is within reach, bottles are opened, and the table is clean are initiatives that nurses can own and implement to facilitate a pleasant meal environment. Nurses can also influence processes that help malnourished patients to eat by fostering reliable access to food and snacks across all shifts while encouraging required nutrition with alternatives such as oral

nutrition supplementation with medication administration. Nurses can also ensure that the percent of meal intake is documented so that patient intake is interpreted and communicated. The nurse's role in promoting and instilling healthy eating habits for patients is vital to the recovery of patients (Sauer et al., 2016).

The nurse's role in nutrition care planning is not solely focused on the admission but continues through discharge. Many nurses are using team huddles and discharge planning sessions to report key elements of the patient's nutritional status and update the team on the nutrition plan's success. These collaborative team meetings give decent opportunities to easily exchange patient progression details and make suggestions for changes to the nutrition plan while the discharge blueprint is under development. When the discharge plan is underway, by coordinating with the team to implement the nutrition plan into the discharge orders, nurses can ensure that the nutritional bridge is built into the transition from hospital to home (Quatrara, 2015). Discharge teaching containing detailed nutrition guidelines that can be easily integrated into the home environment promotes a smooth transition and can lessen the probability of readmission (Sauer et al., 2016).

2.3 Nutrition and Ageing

The prevalence of malnutrition has been reported to be about 25% to 40% among hospitalised adult patients worldwide, and most malnourished patients do not obtain any nutrition intervention during hospital admission (Giryas et al., 2012; Kelly et al., 2000; Kruizenga et al., 2005; Lim et al., 2012). According to a cross-sectional study at a large Norwegian University hospital, the findings indicate that the management of nutritional care in the participating hospital wards for elderly patients without dementia was insufficient (Eide et al., 2016). Recommended nutritional treatment has not been enforced in compliance with international and national recommendations,

implying that most elderly people undernourished or at risk of being undernourished are not detected or treated according to their needs. Based on the experiences of nurses, this study found that essential elements in nutritional treatment for the undernourished elderly seemed to be lacking in clinical practice.

Another issue that arises from the above study is that any nutritional risk screening method was virtually absent in the hospital, and there were no defined weight measurement routines. There was also a lack of sufficient measuring instruments, such as chair and bed weights, making it challenging to obtain the weight of elderly patients who are frequently bed-bound or in severe pain. There did not seem to be a system for the ward staff to regularly classify nutritional risk, indicating that many of the elderly undernourished or those at risk of becoming so are left unidentified. This finding of system failure is compatible with other European studies on hospitalised elderly patients (Bonetti, Bagnasco, Aleo, & Sasso, 2013; Tangvik, Guttormsen, Tell, & Ranhoff, 2012; Vanderwee et al., 2011).

Dietary changes, enteral nutrition, and parenteral nutrition provide nutritional measures. There is limited data about how often each of these measures is used in the hospital setting. A study by Rasheed and Woods (2013) have reported that 17 nutritional treatments were obtained during a six-week follow-up of 38 malnourished patients, with 12 of these patients being referred to the dietetic service (Rasheed & Woods, 2013). From 12 of these, five obtained modified diet and oral supplements, five received oral supplements only, four received modified diet only, two received enteral tube feeding and one received parenteral feeding. In comparison, recent evidence reported that 22% of patients received enteral feeding during their hospital stay in a study of 432 older adults admitted to a geriatric ward in Malaysia (Nordin,

Kamaruzzaman, Chin, Poi, & Tan, 2015). This shows a lack of nutritional measures among hospitalised elderly adults.

Another study has been carried out at one university hospital in Norway, and five nursing homes associated with the university hospital among nurses and undergraduate nurses have found that documentation of patient admission nutritional information was perceived to be insufficient and arbitrary (Halvorsen, Eide, Sortland, & Almendingen, 2016). A study by Sharma et al. (2016) in general medicine wards, Australia also has proved that merely 49.7% of geriatric patients and under the care of the hospital's general medicine department were screened for malnutrition at the time of admission, despite the hospital's guideline that all hospital patients be screened forward admission (Sharma, Miller, Shahi, Hakendorf, & Horwood, 2016). Other nutritional data reporting, such as weight, appetite and nutritional needs, occurred spontaneously and was viewed as incomplete by nurses due to difficulty to assessed elderly patients.

Other than that, despite the Norwegian Directorate of Health's guidelines to perform and document nutritional risk screening for all hospital admission patients, participants indicated that this was not performed when elderly patients were admitted to the hospital (Sharma et al., 2016). The participants, as nurses, experienced being significant contributors in documenting nutritional information for elderly patients. However, the results indicate that nutritional information has not been systematically and adequately documented. The documentation seemed somewhat superficial and lacked in-depth details on the patients' needs in terms of nutritional treatment and care. To summarize this issue, research has consistently shown that nutritional screening risk upon admission and along the hospitalization was not sufficient and incomplete.

In a study by Kelly et al. (2000) in a tertiary care hospital in the UK, 13 % of all hospitalised patients were malnourished, and malnutrition diagnosis was skipped in 75 % of patients in acute medical and surgical hospital patients over the age of 16 years. As one of the significant variables in missed diagnosis, the authors highlighted difficulties in achieving the correct weight and height (Kelly et al., 2000). Studies suggest that hospitalization is associated with a substantial decrease in nutritional status due to a variety of causes, including catabolic disorder symptoms, polypharmacy anorexia, dislike of hospital food, 'nothing by mouth' orders, and a missed diagnosis of malnutrition at this crucial stage frequently results in patients being discharged with a substantially worse nutritional status than they were at the time of hospital admission. This also underlines the fact that physicians should not risk losing this major yet hidden diagnosis (Akner & Cederholm, 2001).

In conclusion, malnutrition in hospitals is mostly unrecognized and impacts patient results. The issue that arises from this review are recommended nutritional treatment has not been enforced in compliance with international and national recommendations, insufficient nutritional screening during hospital admission, lack of sufficient measuring instruments, no system for the ward staff to regularly classify nutritional risk limited dietary changes, enteral nutrition, and parenteral nutrition provided.

2.3.1 Malnutrition in Elderly

Nutrition is a mechanism by which food is brought into the body and broken down, allowing energy production necessary for all living cells to sustain their structure and function. A diet consisting of carbohydrates, proteins, fats and dairy products comprises a healthy nutritional status. An excess, deficiency, or

imbalance of any of these basic components can lead to poor nutritional status and malnutrition in some cases (Fletcher & Carey, 2011).

Malnutrition is defined as the cellular imbalance between the supply of energy and nutrients and the body's demand to ensure growth, maintenance, and specific functions (Agachew, 2017). According to the National Institute of Health (2018), malnutrition and unintended weight loss contribute to reduced physical and cognitive functional status, progressive decline in health, increased utilization of health care services and increased mortality.

The prevalence of malnutrition in the elderly ranges from 1% to 24.6% in Europe (Crichton et al., 2019). Furthermore, 50% of the elderly are malnourished in rehabilitation, 20% in residential care and 40% in hospitals (Kaiser et al., 2010). The rate of malnutrition is growing due to population aging, which is projected to hit 29.1 percent by 2080 (Besora-Moreno et al., 2020). Another study conducted in Sri Lanka among community-dwelling older persons reported that the rate of malnutrition among older people living in the region was 12.5%, with more than half of the population at risk of malnutrition (Damayanthi et al. , 2018). Several studies conducted in South Africa and Portugal using MNA as a measurement method have identified the prevalence of malnutrition among older people living in the group as 10.4% and 5.6%, respectively (Naidoo et al., 2015; Santos et al., 2015).

Meanwhile, several studies have shown that the incidence of undernutrition remains excessively high in hospitalised elderly patients, reaching 30-55%, depending on the population and instruments used (Covinsky et al., 1999; Persson et al., 2002; Correia & Campos, 2003). Higher morbidity and higher mortality rates

have been correlated with malnutrition in hospitalised elderly patients, especially among undernourished subjects (Persson et al., 2002; Kyle et al., 2004).

For instance, a report analysing nationally representative data describing hospital discharges in the United States showed that when patients were malnourished, there was a three-fold rise in hospital costs (Corkins et al., 2014). Besides, malnourished patients are twice as likely to have pressure ulcers and are three times more likely to have infections. It is estimated that approximately half of the patients who collapse during hospitalization are malnourished (Banks, Bauer, Graves, & Ash, 2010). Inevitably, older people with malnutrition admitted to the hospital are more likely to have longer hospital stays and die prior to discharge (Rasheed & Woods, 2013).

National findings revealed that the prevalence of malnutrition among the elderly in Malaysia was 30.8% while 69.2% had normal nutritional status (National Institute of Health, 2018). Although more than half elderly have a normal nutritional status, the malnourished elderly also have a bigger percentage of concerns. Older adults in rural areas showed a higher prevalence of malnutrition, 40.2% compared to urban areas (27.4%) (National Institute of Health, 2018). Meanwhile, the previous study found that 55.2% of the 181 geriatric patients were listed as malnourished (Harith et al., 2010).

A very recent Malaysian study of many local publicly-funded shelter homes (Rumah Seri Kenangan) showed that with 14.3% of subjects recording a body mass index (BMI) $< 18.5 \text{ kg} / \text{m}^2$ and a further 18.2% recording a BMI between 18.5 and $20 \text{ kg} / \text{m}^2$ a significant proportion of elderly subjects were underweight (Visvanathan, Zaiton, Sherina, & Muhamad, 2005). In the meantime, another study

found that almost 38.5 % of elderly people living in rural areas of Malaysia were malnourished as characterized by undernutrition using a cut-off of 18.5 kg / m² BMI (Shahar, Wong, & Wan, 2002).

Shahar et al. (2002) presented data for hospitalised elderly patients to show a substantial decrease in body weight, biceps skinfold width, calf circumference (CC), mid-upper arm circumference (MUAC), body fat percentage and BMI in both elderly males and females during the hospital stay at the Universiti Kebangsaan Malaysia Medical Centre (PPUKM). To conclude, these studies highlight the prevalence and the need to address malnutrition in both community and hospital settings among the Malaysian elderly population.

2.4 Nurses' Nutrition Knowledge Toward Elderly

Based on six studies conducted, five studies stated that knowledge of nurses regarding nutritional care of the patient was poor (Hakonsen, Bjerrum, Bygholm, Kjelgaard, & Pedersen, 2018; Iqbal et al., 2015; Kobe, 2006; Swan et al., 2020; Zeldman & Andrade, 2020) while one study stated that nurses have median knowledge which is 51.9% (Boaz et al., 2013).

Earlier study by Kobe (2006) has analysed that questions on the energy content of foods, nutrient metabolism, feeding routes and choice of nutrient administration had the highest incorrect responses. The nurses had sufficient knowledge of food safety concerns, metabolic needs, energy requirements and nutritional sources, as well as the requirements for micronutrient supplementation in surgical patients. The food safety problem had the highest score (90 %), while the lowest score of 14 % was on the energy value of nutrients. This study has concluded that the results of the present study confirm that there is clearly a shortage of nutrition training at nursing schools, as it

was recorded that registered nurses received only between 4 hours and eight months of nutritional training, and very few have received further training in this area (Kobe, 2006).

According to Hakonsen et al., 2018, a cross-sectional study that was conducted among nursing staff in primary healthcare has found that the nurses showed huge differences in knowledge, thus complicating the transfer of reliable and appropriate nutritional data in the health record of patients and risking a lack of continuity of care and treatment as the standard of care decreases in Denmark (Hakonsen et al., 2018). However, this study does not emphasize the factor contributing to low levels of knowledge among nurses in primary healthcare.

Based on a study by Zeldman & Andrade (2020), nutrition knowledge was highest in the areas of nutrient functions and food sources/macronutrients, while knowledge in the field of giving medicinal nutrition therapy was lowest. To be more precise, nurses had more excellent knowledge about nutrition subjects for critical care patients, nutrition during the life span, the role of vitamins and minerals, and food sources/macronutrients and the effect on health. On the other hand, nutrition knowledge among nurses was lower in the subjects of nutrition management for chronic diseases/conditions, digestion and absorption and metabolism of foods, and macronutrient presence in foods. Meanwhile, Iqbal et al. (2015) has concluded that the lack of adequate guidance and insufficient knowledge could have resulted in improper nutrition treatment from healthcare providers. However, this study does not mention the factors contributing to the low nutrition knowledge level among nurses.

Lastly, Swan (2020) has conducted a study among clinical staff, including nurses in three hospital campuses in Australia (Swan et al., 2020). This study reported that a

much smaller number of questions related to that identification were correctly answered despite medical or surgical personnel claiming to have sufficient expertise and skills to identify patients at risk of malnutrition. The survey reveals that only a small number (10%) of respondents from nursing staff either do not have the expertise and information needed to recognize at-risk patients or are uncertain whether they do even though the dietary standards of the health service already outline the protocols for nursing staff to screen for malnutrition for all patients admitted to the hospital.

Hence, the study has concluded that the rate of malnutrition screening is evaluated and data made available on a quarterly basis to all wards; the survey data indicates that continuing education and enhancement of the screening process may be needed as well as ensuring staff involvement as a problem in the 'ownership' of malnutrition. Another study also concluded that nurses acknowledged that nutrition has a role in the prevention and recovery of diseases, but they did not acknowledge that the nurse was responsible for nutrition assessment or interventions (Boaz et al., 2013).

However, there is limited study on knowledge among nurses in Malaysia. This is one of the reasons why the present study focuses on nurses to determine the level of nutrition knowledge among nurses.

2.4.1 Factor Influencing Nurses' Nutrition Knowledge Towards the Elderly

2.4.1 (a) Age and Nurses' Knowledge

A number of researchers have reported that higher nutrition knowledge was associated with age (Alkhalidy, 2019; Alzahrani & Al-raddadi, 2009; Endevelt, Werner, Goldman, & Karpati, 2009; Hu et al., 2013; Martin, Leveritt, Desbrow, & Ball, 2014; Schaller & James, 2005). There were differences between ages since two studies found associations between nurses < 40 years of age (Endevelt et al., 2009; Hu

et al., 2013) and two studies showed associations between nurses > 50 years of age with higher nutritional knowledge (Martin et al., 2014; Schaller & James, 2005). The nurses' age and the association were not defined in one study (Alzahrani & Al-raddadi, 2009).

Earlier study has found that older nurses also had statistically significant higher scores than their younger counterparts (Schaller & James, 2005). Researchers stated that nurses might gain knowledge through experience and practice. Another study by Martin et al. (2014) also reported similar findings where a higher proportion of older nurses (> 50 years) perceived that they had enough information to provide dietary advice as compared to younger nurses.

In contrast, the study by Endevelt et al. (2009) has discovered that younger nurses were more knowledgeable than older nurses. The fact that most of the younger nurses in their study because they had an academic degree that introduced them to greater knowledge can explain this difference because it included nutrition education within its curriculum (Endevelt et al., 2009). Similarly, Hu et al. (2013) also found that younger nurses showed greater knowledge than older nurses. However, this study does not emphasize the reason for those results.

There is limited study on level of nutrition knowledge and age among nurses in Malaysia. This is one of the reasons why the present study focuses on nurses to determine the association between level of nutrition knowledge and age of nurses.

2.4.1 (b) Working Experience and Nurses' Knowledge

Earlier study by Lindseth (1997) has discovered that nurses over with more than ten years of health-related work experience scored highest when tested for nutritional knowledge in a survey of 129 mid-western graduating nurses. Nurses who worked for more than ten years had a higher mean score in the current study than those nurses who worked for ten years or less based on a study by Schaller & James (2005) among nurses in Australia. Similarly, a very recent study also has proved that nurses who were experts had more years of practice experience had higher nutrition knowledge than nurses who were not experts and had fewer years of practice experience (Zeldman & Andrade, 2020).

In contrast, another study by Crogan & Evans (2001) also revealed that less experienced nurses scored better on nutrition knowledge than more experienced nurses. Similarly, Lorchmann (2014) carried out in nursing homes, Austria found that nurses with fewer years of work experience have more knowledge than nursing workers with more years of work experience. This can be clarified in part by their more recent basic education and, therefore, more open and up-to-date information.

However, there is limited study on the level of nutrition knowledge and working experience among nurses in Malaysia. This is one of the reasons why the present study focuses on nurses to determine the association between level of nutrition knowledge and working experience of nurses.

2.5 Nurses' Attitude Toward Nutrition in Elderly

According to four studies, the nurse showed indecisive attitudes to patients' nutritional support (Boaz et al., 2013; Iqbal et al., 2015; Kobe, 2006; Zeldman & Andrade, 2020). Meanwhile, one study found that nurses demonstrated a relatively optimistic

attitude towards documentation and nutrition and found nutrition and documentation to be part of their responsibility area (Hakonsen et al., 2018). A study by Kobe (2006) showed that around 28 % confirmed the inclusion of nutritional problems in ward rounds. While 72% of registered nurses recorded the significance of weighing patients on admission, only 43% recorded weighing patients, of which 59% weighed patients for medicinal purposes, and only 18% weighed patients for evaluation of nutritional status (Kobe, 2006).

This is also supported by Boaz et al. (2013) that found the nurses reported conducting nutrition assessment on some but not all of their patients. Similarly, most nurses reported that they did not weigh all of their patients, but when they did, it was correlated to health assessment, in response to an apparent change in weight or appetite, or to medication dose. Most nurses disagreed that it is necessary to mention nutrition status during medical rounds (Boaz et al., 2013).

However, there is limited study on attitude among nurses in Malaysia. This is one of the reasons why the present study focuses on nurses to determine the level of nurses' attitude in the nutrition care and feeding of elderly hospitalised patients.

2.6 Association Between Nurses' Nutrition Knowledge and Attitude Toward the Elderly

Two studies have found a significant association between nutritional knowledge and attitudes (Hu et al., 2013; Cooper, 1981), while other studies have reported no such relationship (Krause & Fox, 1977). Other than that, the nurses showed a high level of interest in nutrition for the elderly in the present study and scored very high on both knowledge and attitudes (Endevelt et al., 2009). The findings are close to those of recent studies in the United States (Enrione & Chutkan, 2007), Sweden (Landström, Sidenvall,

Koivisto Hursti, & Magnusson, 2007) and Australia (Schaller & James, 2005) on attitudes. In addition, among nurses employed in community settings, those with advanced training had a more positive attitude about the role of nutrition in elderly patients and overall health care, indicating a correlation between nutrition awareness and attitudes (Boaz et al., 2013).

Unfortunately, there are limited studies that measure the association between nurses' knowledge and attitude toward the nutritional of elderly. In addition, there is also limited study on association between nurses' nutrition knowledge and attitude toward the nutritional of elderly among nurses in Malaysia. This is one of the reasons why the present study focuses on nurses to determine the association between nutrition knowledge and attitudes about nutrition care and feeding among nurses. Hence, the majority of studies have concluded that the higher the level of nurses' nutritional knowledge, the more positive attitude of nurses.

2.7 Conceptual Framework

Theory of Planned Behaviour (PTB) is a theory that intentions predict behaviour, and these intentions are predicted by attitudes towards the behaviour, subjective norms regarding the behaviour, and perceived behavioural control over the behaviour (Ajzen, 1991). Behavioural attitudes refer to how positive an assessment of the individual's behaviour is and depends on assumptions and perceptions about behavioural outcomes' personal influence (behavioural beliefs). Subjective norms refer to the social pressure felt to carry out the action. Such pressures derive from what significant individuals think about the specific actions in the person's life, and such personality traits, attitudes toward individuals or institutions, and demographic variables that may influence intentions or behaviour indirectly are known as "external variables" (Ajzen, 1988).

Perceived regulation of behaviour relates to the perceived ease or complexity of performing the behaviour. Real and perceived personal inadequacies and external barriers may interfere with the ability to conduct a particular activity and, ultimately, with the sense of influence over the activity's acts and effects. These control beliefs underpin behavioural control expectations and are assumed to reflect past experience as well as expected barriers (Ajzen, 1988). Figure 2.1 illustrates the theory of planned behaviour graphically.