



**UNIVERSITI PUTRA MALAYSIA**

***FACTORS ASSOCIATED WITH CURRENT PRACTICES RELATED TO  
DELIRIUM IN ACUTE STROKE PATIENTS AMONG HEALTH  
PERSONNEL AT HOSPITAL PENGAJAR UNIVERSITI PUTRA  
MALAYSIA***

**GROUP 14**

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**ABSTRACT**

Delirium affects more often in patients with serious medical illness. One of the critically ill conditions associated with delirium is stroke. In Malaysia, the incidence of delirium in stroke patients has increased from 10%-25% in 2012 to 13%-48% in 2017 . This study was conducted to understand the factors associated with current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia (HUPM). Good current practices involve all appropriate considerations and practices in handling delirium in stroke patients; including early preventative management, sufficient staff and screening tools, the perceptions of the practitioners and involvement of multidisciplinary team, adding delirium as basic training curriculum for health personnel and regular assessment for delirium are some crucial factors contributing to good practices (Malaysian Society of Geriatric Medicine Position : Delirium, 2017).

The study design chosen was a cross sectional study that was conducted among the health personnel at HUPM to look at the factors that are associated with current practices related to delirium in acute stroke patients. The participants for this study were chosen via simple random sampling. The research instrument used in this study was an online questionnaire and the data was analysed using SPSS v26.

There were 47 health personnel out of 209 selected health personnel from HPUPM that responded to this study, and approximately 25 health personnel were unreachable either due to

unavailable email addresses or invalid email addresses, while the rest were unresponding. The response rate was 22.49%. Overall, 30 (63.8%) respondents show a good level of current practices towards delirium in acute stroke patients. There was no significant association between current practices and sociodemographic factors (age, ethnicity, and gender), attitude, perceptions, and health service organization related to delirium in acute stroke patients. However, there is a significant association between knowledge and current practices related to delirium in acute stroke patients among health personnel at HPUPM.

The majority of the participants have good current practices regarding delirium in acute stroke patients among health personnel in HPUPM. These can help the health personnel in acknowledging and reducing the prevalence of delirium in acute stroke patients.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of study

The World Health Organization (2016) conveys that delirium is defined as an etiologically nonspecific organic cerebral syndrome characterized by concurrent disturbances of consciousness and attention, perception, thinking, memory, psychomotor behaviour, emotion, and sleep wake schedule and that the duration of delirium is variable and the degree of severity ranges from mild to very severe. Basically, delirium is classified into three categories which are hyperactive delirium, hypoactive delirium and mixed delirium. Xing et al. (2017), shows that the rarest type of delirium which is mixed type concerning a patient which shows both characteristics from hyperactive delirium and hypoactive delirium where the patient will easily switch mode from agitation to passive attitudes while the most commonest type is hyperactive delirium which prominently shows patient with mood fluctuations and anxiety. Hypoactive delirium patients will portray inactivity or sluggishness, abnormal drowsiness, difficulties to give attention, and reduced alertness to the surroundings resulting from their thoughts of ignoring everything that happens around them. Hyperactive delirium patients are the easiest recognizable type as they show performance of active state involving restlessness, increased anxiety, paranoia, agitation, tremor, fluctuations in moods, delusions and hallucinations with refusal to communicate with others while staying isolated. The American Psychiatric Association through Diagnostic and Statistical Manual 5th edition presents that an important point for delirium diagnosis involves the impairment cognitive skill, attention disruption, and abrupt change baseline in cognitive ability which has not been established and might probably not be caused by another medical condition in direct affection.

One of the critically ill conditions associated with delirium is stroke. Stroke is a medical condition that occurs as per obstruction of the blood supply to the brain resulting in disruptions of brain functions and reduced oxygen with nutrient supply to the brain tissues and cells or ischaemic tissue cells (Kooi et al. 2016). Since 2005, mortality related to stroke is from 6.6% to 8.4% in Malaysia which accounts for 5.5 crude death rates per 1000 people within the population

in Malaysia (Loo & Gan, 2012). Shi et al. (2012) states that in previous studies, higher incidence of delirium in stroke patients has increased from 10% - 25% to 13% - 48% among patients admitted to the general internal wards and Xing et al. (2017) shows that among 3 subtypes, mixed and hypoactive ICU delirium, there are 53% of hyperactive delirium, 36% of hypoactive delirium and 1% of mixed delirium accounted and that delirium affects up to 80% critically ill patients in the ICU setting. Based on the studies done by Xing et al. (2017) in China of Shandong province, the overall response rate was 86.18% (n=917) and the majority of respondents (88%) believed that delirium was associated with prolonged mechanical ventilation, and 79.72% thought delirium was associated with prolonged length of hospitalization. Based on Guenther et al. (2012), mortality rate of delirium patients are within 34% - 42% after ICU stay than in patients without delirium which is 15%.

Modifiable risk factors contributing to delirium in term of medication and combinations of drugs such as sedatives, antihistamines, asthma medication steroids, painkillers and ventilation environment could be a reason for brain impairment or dysfunction which leads to vulnerability of brain to carry out specific function in processing information and sending out signals for cells activities. In terms of prolonged hospitalization primarily involving intensive care units and surgery procedures are also factors resulting from having brain disorders or brain tumors or stroke, besides having previous episodes of delirium, visual and hearing abilities will be disturbed as well alongside with the presence of several medical problems.

## **1.2 Problem statement**

Nowadays, cases of people suffering from delirium increase within hospital settings in acute stroke patients resulting from prolonged hospitalizations or surgical procedures such as cardiac surgery, abdominal endoscopy or anesthetics (Shi et al., 2012). Even though delirium is usually impermanent or ephemeral but in cases associated with acute stroke, it tends to aggravate the phenomena because acute stroke portrays neurological disturbances which then contributes to higher risk of undergoing delirium which is a common neurological manifestation (Shi et al., 2012). Based on Hickin et al. (2017), the possible long term effects of delirium are compromised blood-brain-barrier, alteration neurotransmission process, stress response intolerance and

neurological inflammation whereas Mansutti et al. (2020) states that the common short term effects of delirium are memory impairment, reduction in alertness and cognitive functions such as alterations in speaking fluently which tends to fluctuate over times. Delirium in stroke patients tend to have prolonged hospitalizations or have a higher rate of dependency to hospital treatment after discharge (Shi et al., 2012).

Previous research has demonstrated that a higher risk of delirium in stroke is associated with older age, pre-existing dementia, stroke severity, left sided infarction, total anterior circulation stroke, cardio-embolic stroke, hemineglect and visual impairment (Shi et al., 2012). Post-stroke delirium results in higher mortality, prolonged hospital stay and increased institutionalisation rates (Ng et al., 2019). Besides, a higher incidence of delirium in stroke patients (13%– 48%) compared to 10% to 25% in patients admitted to general internal medicine wards. Patients admitted to general hospitals with delirium have increased rates of mortality and institutionalization, and longer hospitalization for delirium (Shi et al., 2012).

Current practices based on critical care nurses have been done by Elfeky & Ali (2013) in order to assess delirium for early detection of symptomatic discovery through continuously monitoring critically ill patients. Previous research related to current practices of delirium in hospital settings and association with stroke patients have only been done in several countries but in Asia-Pacific the best to our knowledge is in China, but there was only one study in Malaysia. Referring to Ng et al. (2019), post stroke delirium that has been detected was 12.9% among acute stroke patients, which means that it is only based on a single-centre prospective observational study that limits their generalizability of data. Currently more study should be done to represent percentages of delirium within hospital settings in Malaysia. Current practices related to delirium are somehow nearly complicated to be understood as Xing et al. (2017) states that considering the medical staff deficiency compared to the patients which are at risk, current practices related to delirium still need further research in order to overcome the imbalance.

Ng et al. (2019) states that common risk factors of delirium in stroke are severity of critical illness, pre-existing dementia, and older age. From any of the research, current practices of health personnel related to delirium have not even been covered yet in Malaysia. Besides,

there was only some research done with current practices to assess the incidence and risk factors of delirium in acute ischaemic stroke.

We identified that current practices of health personnel related to delirium is one of the gaps in the delirium topic, and this is one of the reasons why we undertake research regarding current practices among health personnel related to delirium in acute stroke patients. Hence our research gap is less studied on the associated factors and current practices related to delirium in acute stroke patients.

Other than that, associated factors of delirium are believed to mainly be related with patients that have critically ill diseases (Xing et al., 2017). Associated factors of delirium in stroke patients according to Mansutti et al. (2020), based on the nurses' experience, there are total up to 4 dependent predisposing factor, which classify based on their nature of aspects (a) at the individual level, (b) association with the previous or current clinical condition such as stroke, (c) association with nursing care distribution, and (d) association with the environment of the hospital.

Therefore, the purpose of this research is to determine the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.

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### **1.3 Research questions**

- I. What are the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia?
- II. What are the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia?

#### **1.4 Significance of study**

This study is related to the delirium in acute stroke patients which seems to increase in number and percentages day by day. Since there were only a few studies that have been done on this topic accounting on factors associated with the current practices related to delirium, therefore this study is made mainly to determine the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia. Hence, the outcomes could be used and applied in the future during a training session or working environment in order to manage patients with such conditions of delirium pinpointing to the critically ill patients and acute stroke patients. The purposes of needing good practices and management of delirium are to improve health personnel understanding of delirium (Hickin et al., 2017), allow early recognition of delirium within the ICU environment (Elfeky & Ali, 2013), improve screening tool utilization die earlier symptom mitigation (Hickin et al., 2017) improve treatment for delirium upon early detection (Xing et al., 2017) and decrease the duration and severity of delirium problem (Thom et al., 2019) .

Our study is significant for the health personnel involved with delirium in acute stroke patients so that they have knowledge in identifying patients with delirium and are able to manage and use the appropriate screening tools in order to diagnose the delirium patients. In our study, current practices are referring to the appropriate considerations in handling the patients, sufficient staff and screening tools, good perceptions of the patients, adequate basic training and ability in knowing the symptoms for diagnosis of the patients (Malaysian Society of Geriatric Medicine Position: Delirium, 2017). Relating to the meaning of current practices, this study is done so that it could enhance the knowledge contribution , attitude and perceptions of the respondents towards delirium in acute stroke patients. This study is also addressed to the stakeholders of the personnel in HPUPM who are directly or indirectly able to influence the current practices related to delirium in acute stroke patients among health personnel in HPUPM. This study also could help the medical practitioners or medical sections to improve policy markers related to delirium by appropriate selections of guidelines related to delirium, hence, helping the country to reduce the cases or be able to manage the delirium patients efficiently.

## 1.5 Research Objectives

### 1.5.1 General Objectives :

- I. To determine the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.

### 1.5.2 Specific Objectives :

- II. To determine the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.
- III. To determine the characteristic of the respondents according to :
  - A. Sociodemographic factors of age, ethnicity, and gender.
  - B. Attitude towards delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.
  - C. Perceptions on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.
  - D. Knowledge on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.
- IV. To determine the association between current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia and
  - A. Sociodemographic factors of age, ethnicity, and gender.
  - B. Attitude towards delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.
  - C. Perceptions on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.
  - D. Knowledge on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.

E. Health service organization in regards to delirium in Hospital Pengajar  
Universiti Putra Malaysia

**1.6 Research hypothesis**

**1.6.1 Alternative hypothesis**

There is a significant association between current practices and sociodemographic factors (age, ethnicity, and gender), attitude, perceptions, knowledge and health service organization related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.

## CHAPTER 2

### LITERATURE REVIEW

#### **2.1 Introduction**

Delirium or acute brain dysfunction is a potentially reversible organic brain syndrome. It is a common consequence of critical illness among critically ill patients. Elfeky & Ali (2013) states that delirium is prevalent across different treatment settings and is more frequent in critically ill patients, elderly, and patients with cognitive impairment. Besides, Elfeky & Ali (2013) states that delirium consists of 3 subtypes including hyperactive, hypoactive and mixed delirium. According to Xing et al. (2017) hyperactive delirium is probably the most easily recognized type, this may include restlessness, agitation, rapid mood changes or hallucinations, and refusal to cooperate with care. Hypoactive delirium may include inactivity or reduced motor activity, sluggishness, abnormal drowsiness, or seeming to be in a daze. While mixed delirium includes both hyperactive and hypoactive signs and symptoms. The person may quickly switch back and forth from hyperactive to hypoactive state.

In Hospital Pengajar Universiti Putra Malaysia (HPUPM), patients with delirium are taken care by the health personnels in the Anesthesia department, Regional Emergency Stroke Quick-response department (RESQ), Ear, Nose and Throat department (Speech therapy), Medical department, Neurology department, Dietician department, Psychiatry department and Rehabilitation department. The current practices concerning delirium are very important for the health personnel to provide treatments for the patients. Current practices are the standard procedure that would have been performed by the health personnels (Xing et al., 2017).

Delirium is associated with a three-fold increase in risk for 6-month mortality after adjusting for age, severity of illness, comorbidities, coma and exposure to psychoactive medication. It may be a predictor of long-term cognitive impairment in survivors of critical illness and it is associated with cognitive decline over 1 to 3 years after hospital discharge (Ely et al., 2004).

Signs and symptoms of delirium usually begin over a few hours or a few days. They often fluctuate throughout the day, and there may be no symptoms at all. Primary signs and symptoms include reduced awareness of the environment, poor thinking skills, behaviour changes and emotional disturbances.

Back to the topic, the health personnels are the one to screen for delirium secondary to stroke, usually nurses and doctors on duty. Nurses caring for ICU patients do not recognize delirium in up to two third of cases (Elfeky & Ali, 2013). So, health personnels are facing major problems of; absence of assessment tools, and subsequently delirium is misdiagnosed, treated inappropriately or even neglected.

As stated above, our study is about current practices concerning delirium in acute stroke patients among health personnel in Hospital Pengajar Universiti Putra Malaysia (HPUPM). The purpose of this study is to find out the current practices taken by health personnel in HPUPM on delirium patients, as there is none of the study regarding the current practices concerning delirium among the health personnels in Malaysia, even in other countries, there are only a few information about this topic. In the past, there have been some studies done before regarding the incidence and risk factors of delirium in patients with acute ischaemic stroke. As stated in the problem statement above (Ng et al., 2019). Besides, there were also studies about Nursing Understanding and Perceptions of Delirium: Assessing Current Knowledge, Attitudes, and Beliefs in a Burn ICU, which is a research project carried out by Powell, T. L. (2019). However, the study above is just on the nurses, but not all of the health personnels on the current practices concerning delirium in acute ischaemic stroke patients. Therefore, the aim for our study is to find out the current practices concerning delirium in acute stroke patients among health personnel in Hospital Pengajar Universiti Putra Malaysia.

## **2.2 Delirium in post-stroke patients**

The most common and serious complications of older patients develop after admittance to hospital is delirium. As we mention above, delirium is known as susceptible secondary to

stroke, however, the etiology of delirium associated with post-stroke is unknown (Mcmanus et al., 2007). A stroke occurs when the blood supply to part of the is obstructed, causing reduced or not enough oxygen of the brain cells, or ischaemic. It is a type of medical emergency, however, with early detection and actions taken, the complications and the effect of stroke can be reduced. Post-stroke is defined as an occurrence in or being in the period following a stroke. The signs and symptoms of a post-stroke patient depend on which part of the brain is getting damaged or ischaemic. Common signs and symptoms include, weakness, paralysis, and problems with balance and conditions; pain, numbness, or burning sensation; fatigue and others (Mcmanus et al., 2007).

Based on McManus et al. (2009), the mortality rate of stroke is almost half at 5 years. Based on Van Der Mast (1998), the common metabolic and neuronal final pathways in the brain may lead to the development of delirium causing many clinical problems. Also, Van Der Mast (1998) stated that the common final pathway of delirium is the reduction of cholinergic activity in the brain, because the central cholinergic system is particularly vulnerable to metabolic insults for example the reduced availability towards glucose and oxygen. In addition, in delirium patients, the main monoamine neurotransmitters in the brain such as catecholamines which function as control the sleep-wake cycle and arousal, are disrupted.

For the post-stroke delirium risk factors, Mansutti et al. (2020) set up a study based on the nurses' experience, there are total up to 4 dependent predisposing factor, which classify based on their nature of aspects (a) at the individual level, (b) association with the previous or current clinical condition such as stroke, (c) association with nursing care distribution, and (d) association with the environment of the hospital, all are interrelating to each others. In addition to these risk factors, Histamine H<sub>2</sub>-Antagonists, which is a drug often used for prevention of gastrointestinal bleeding, also reviewed to be one of the predisposing factors of delirium (Lees et al., 2013). Besides, a study which is carried out by Ojagbemi et al. (2017), out of 101 stroke survivors, 33% occurred in the first week after a stroke among survivors in acute stroke care setting. As a follow-up, those survivors who have severe strokes had a great relationship between delirium and dementia or death. Therefore, we strongly believe that dementia is also one of the risk factors which interrelates delirium with post-stroke patients.

## **2.3 Current practices**

### **2.3.3.1 Current practices regarding delirium**

Good current practices involve all appropriate considerations and practices in handling delirium in stroke patients; including early preventative management, sufficient staff and screening tools, the perceptions of the practitioners and involvement of multidisciplinary team, adding delirium as basic training curriculum for health personnel and regular assessment for delirium are some crucial factors contributing to good practices (Malaysian Society of Geriatric Medicine Position : Delirium, 2017). Current practices based on critical care nurses have been done by Elfeky & Ali (2013) in order to assess delirium for early detection of symptomatic discovery through continuously monitoring critically ill patients. Based on Elfeky & Ali (2013), delirium in critically ill patients has always been underestimated as a common reaction shown by them and sometimes has wrongly been thought as behavioural changes upon illness. Hence, that's the reason why we chose the medical department, as the latter study was related to current practices based on critical care nurses. Underdiagnosed perceived delirium is also believed to have resulted from barriers to screening for ICU delirium with reduced medical tools or support with time restraint (Karmonik et al., 2020). Even current practices researches from the previous studies of health personnel only cover on behalf of the nurses, they believe that the poor current practices were also due to the limited treatment options because available pharmacological treatment; as example, antipsychotic and sedatives with prolonged usage and prescriptions will increase recovery time (Zamoscik et al. 2017). Since this study from Zamoscik et al. (2017) pharmacological treatment of sedatives, the anesthesiology department is needed to know their contribution in current practices of delirium in acute stroke patients for the purpose of our study. Lacking current practices associated with poor knowledge among health personnel also often leads to misdiagnosis of delirium due to its similarities of symptoms to depressions; and, regular screening of delirium has only been practiced by some of the health personnel towards limited sample size (Elfeky & Ali, 2013). Based on Kooi et al. (2016), stroke patients need to undergo a rehabilitation process since the neurological improvement will decrease within 6 month. Hence, rehabilitation departments are needed to know their contribution toward current practices of delirium in acute stroke patients.

According to Ferro et al. (2002), decreasing cases and rate of delirium among stroke patients will depend mainly on changes by the way of health personnel taking care of the elderly, critically ill patients and reduced impaired cognitive function patients as a step for an early detection in order to give early treatment for better prognosis. As we know, delirium is a state of confusion which usually happens in critically ill patients with mental, mood and behaviour disturbances (Xing et al., 2017), so we will be needing experiences from the psychiatry department to help in inspection assessment of delirium in patients. Even with good screening tools for assessing delirium, current practices related to delirium are somehow nearly complicated to be understood; as, considering the medical staff deficiency compared to the patients which are at risk, current practices related to delirium still need further research in order to overcome the imbalance (Xing et al., 2017). Other than that, a high percentage of health personnel use specific tools for ICU delirium screening and this current practice helps medical staff to assess patients with delirium in the ICU (Xing et al., 2017) .

Based on study done in Malaysia, Regional Emergency Stroke Quick-response/ RESQ Network : A Proposed Paradigm of Malaysia Stroke Care Services done by Peck (2020), we include RESQ department in our study and target population because this department handles the needs for stroke patients, with regard to that, we ought to find the familiarity within the health personnel in this department related to delirium patients to help out with our study in order to know the current practices on delirium patients (Chia et al., 2020). Based on Koyuncu et al. (2016), a total of sixteen sessions of impairment-based speech and language therapy were applied to the patients, 30–60 minutes per day, 2 days a week, for 8 successive weeks; based on that, compared with before treatment, fluency of speech, listening comprehension, reading comprehension, oral motor evaluation, automatic speech, repetition and naming were improved after treatment. In reference to the latter study, we need an ENT department (speech therapist) for relations to our study which is current practices in order to determine the current practices of delirium patients in acute stroke patients.

Based on Wintermark et al. (2013), imaging plays a critical role in evaluating patients suspected of acute stroke and transient ischemic attack (TIA), especially prior to initiating

treatment. A wide variety of imaging techniques have become available to assess vascular lesions and brain tissue status in acute stroke patients. Therefore, radiologists are needed in our study as they perform CT scan, MRI and others for stroke patients, and we need them in order to determine the current practices related to delirium in acute stroke patients. Identification of delirium during an acute phase of stroke could lead to a better prognosis and management. Other than that, interventional radiologists are important in stroke patients on evidence for the effect of blocked cerebral artery and will be needing imaging to evaluate the complications (Wintermark et al., 2013). Radiologists are one of the vital contributors in handling acute stroke patients, thus their participation in our study is one of the key roles in determining the current practices of delirium in acute stroke patients since delirium in acute stroke patients has prevalence of 13%-48% . Thrombectomy done through interventional radiologists is essential to remove the presence of embolus or thrombus with blood clots and can be done in intracranial or extracranial vessels (Wintermark et al., 2013). Radiologists intervention in acute stroke patients generally involve 3 strategies which is firstly is to undergoes angiography suite as soon as possible after the initial NCCT (used for assessing signs of infarction) to assess vascular patency status that leads to therapeutic plan due to removal of blood clots and lysis process. Secondly, assess vascular patency state for determination and confirmation of the site of vascular occlusion as well as the position of the ischaemic tissues before providing the endovascular treatment to the stroke patient. The last strategy is by using MRI provided by any institutions or health centre which can be used immediately and this last strategy is to be implied based on the first and second strategies; it is mainly for better management and efficient treatment plannings (Wintermark et al., 2013). Because of the complexity and duration of the radiological interventionist's procedure, patients with delirium need to be identified accurately and referred to anaesthetist at an early stage for adequate sedation or temporary elective intubation prior to the procedure, especially if the patient is agitated or restless.

Based on Anastasian, (2014), on Anaesthetic management of the patient with acute ischaemic stroke, time is important to save the vulnerable penumbra. With their current evidence, the decision between general anaesthesia, monitored anaesthesia care, or local anaesthesia for endovascular procedures should be made with the individual risks and benefits of each patient considered. Arterial pressure should be monitored carefully upon induction of anaesthesia and

induction should be expedient to allow for timely endovascular intervention if possible. Therefore, we consider health personnels from the anesthetic department in our research.

Acute stroke patients and those that undergo rehabilitation will most likely be undernourished due to reduced functional improvement rate (Gariballa et al., 1998, as cited in Finestone & Greene-Finestone (1999). Severe swallowing conditions that do not allow adequate intake of oral food and are anticipated to remain for more than 1 week need early enteral nutrition through the feeding tube. It is stated that patients who began enteral feeding within 7 days of admission had a 5.8 percent decrease in mortality, which was not significant ( $p = 0.09$ ) (Wirth et al., 2013). It is found that stroke patients need diet modification in its texture and fluids thickening as it can prevent aspiration (Wirth et al., 2013). Thus, food modification should only be used after evaluation and must be monitored by specialized staff such as speech-language therapists and dieticians (Wirth et al., 2013). Patients with hypoactive delirium are at risk of malnutrition due to the increased drowsiness and poor oral intake. Therefore, post-stroke patients who have swallowing difficulty and delirium must be reviewed regularly to assess the adequacy of nutritional intake and the need to adjust the diet according to the situation and patient's need.

### **2.3.2 Screening tools**

There are some different types of screening tools that can be used to screen delirium patients, which are Intensive Care Delirium Screen Checklist (ICDSC), Confusion Assessment Method – Intensive Care Unit (CAM-ICU), Neelon and Champagne Confusion Scale (NEECHAM) and Delirium Observation Screening scale (DOS). The Intensive Care Delirium Screening Checklist (ICDSC) is an 8-item checklist of delirium symptoms evaluated over an 8–24 hour period. The eight symptoms are: level of consciousness, inattention, disorientation, hallucinations/delusions/psychosis, psychomotor agitation or retardation, inappropriate speech or mood, sleep/wake cycle disturbances, and symptom fluctuation. The CAM-ICU is a modified version of the CAM intended for use in intensive care units. CAM-ICU is a delirium assessment instrument for use by nurses and physicians, and comprises standardised non-verbal assessments for mechanically ventilated and non-ventilated ICU patients. It was developed by Ely et al. (2004) and its performance attributes have been assessed by its developers in two studies. The

NEECHAM Confusion Scale contains nine scaled items divided into three subscales. Each scaled item gives 3 descriptions. Subscale I, information processing (score range 0 – 14 points), evaluates components of cognitive status: attention and alertness, verbal and motor response, and memory and orientation. Subscale II, behaviour (score range 0 – 10 points), evaluates observed behaviour and performance ability: general appearance and posture, sensory-motor performance, and verbal responses. Subscale III, performance (score range 0 – 16 points), assesses vital function: vital signs, oxygen saturation level and urinary incontinence. The Delirium Observation Screening (DOS) scale, a 25-item scale, was developed to facilitate early recognition of delirium, according to the Diagnostic and Statistical Manual-IV criteria, based on nurses' observations during regular care. The scale was tested for content validity by a group of seven experts in the field of delirium.

Based on Xing et al. (2017), 81.79% of respondents used screening tools for screening ICU delirium, and 18.21% of the respondents did not use any screening tools. Based on their study, 18.51% of respondents utilized ICDSC for delirium screening, and another 15.81% utilized CAM- ICU. Besides 11.34% of respondents utilized DOS for delirium screening, and a smaller number of respondents (4.36%) utilized NEECHAM as their delirium screening tool. Most of the respondents (34.46%) stated that multiple screening tools were applied for delirium monitoring.

Other than that, the genuine and unmodified Confusion Assessment Method (CAM) was developed in 1990 as one of the screening tools for delirium which could be applied in order to assess delirium accurately (Inouye et al., 1990, as cited in McManus et al., 2009). CAM has high accuracy due to its specificity and reliability in assessing delirium besides high sensitivity and easy to handle during identification in assessing delirium as it involved operationalized criteria adapted from Diagnostic and Statistical Manual of Mental Disorder (DSM-III-R) with diagnostic value of acute onset, attention impairment, disrupted thinking skill, fluctuation behaviour and modified consciousness levels (Inouye et al., 1990); the interobserver reliability of CAM for delirium assessing tool is as high as ( $\kappa=0.81-1.0$ ). According to Inouye et al. (1990), CAM has sensitivity of 100% - 94%, positive predictive accuracy of 91% - 94%, negative predictive

accuracy of 90% - 100%, and specificity of 90% - 95% which proves that CAM algorithm values has the highest predictive accuracy regarding features of delirium.

Another assessing tool which is widely used for delirium courses is the 4-A Test (4AT) because it has 4-component assessment involving observations and direct assessment; the scoring of 4AT is used to differentiate cognitive impairment presence in delirium (Lees et al., 2013). 4AT had sensitivity of 1.00 and specificity of 0.82 for delirium with detection of cognitive impairment of specificity is 0.78 and sensitivity of 0.86 (Lees et al., 2013). The Clock Drawing Test (CDT) is a method used in stroke as it doesn't require verbal skills and anticipation of the patients with scores of 0-3 points rule. CDT present with sensitivity of 0.85-0.93, specificity of 0.66-0.77. At lower threshold setting for delirium screening, 4AT has better performance with reasonable properties for cognitive impairment screening whereas at lower threshold for delirium screening, CDT is more favourable within acute stroke setting due to its method with non-verbal anticipation (Lees et al., 2013).

## **2.4 Factor associated with current practices on delirium among health personnel**

### **2.4.1 Sociodemographic factors**

#### **2.4.1.1 Age**

There was a lack of study about the association between current practices on delirium among health personnel with their age. Nevertheless, in their study, Elfeky & Ali (2013) stated they found no relation between the healthcare's age and their frequency of accessing delirium. However, a latest study from A et al. (2017) stated that aging can broaden the experience of critical care nurses of how to deal with delirium patients.

#### **2.4.1.2 Ethnicity**

There was a lack of study that stated the association between current practices on delirium among health personnel with their ethnicity.

### **2.4.1.3 Gender**

There was a lack of study that stated the association between current practices on delirium among health personnel with their gender.

### **2.4.2 Knowledge**

A study from A et al. (2017) found that there is a relation between the knowledge about delirium and its attitude toward it. They found out that the attitude score increases with increasing knowledge. It is possible to cultivate a positive attitude towards a particular subject by developing adequate awareness and information that helps one to have a clearer understanding of the significance of the subject. They cannot achieve a detailed and systematic understanding of it if individuals lack adequate information and expertise about a certain subject. Critical care nurses had a modest degree of delirium knowledge, much of which was learned from academic courses. On the other hand, on-the-job preparation (delirium critical care courses) had a crucial effect on delirium familiarity and its prevention and therapy.

A study from Xing et al. (2017) found that about 45.4% of their respondents had never received any education or training on ICU delirium. Nevertheless, around 90% of them know the basic knowledge about delirium that include definition, classification and clinical symptoms. However, when involved with delirium main symptoms, 23.8% stated that “cognitive disorder” is the only main symptom. Similarly with the commonest type 51.7% believed that hyperactive is the common one and 12.4% responded that hypoactive is the prevalence one. They also found that 44.27% believed that delirium was rare or had less occurrence in the ICU setting. This suggests that the participants know ICU delirium but lack knowledge in the detailed information. They also stated that a low level of education may be the possible reason for lack of knowledge.

### **2.4.3 Perception**

Perception is defined as how the health personnels recognize and interpret the delirium patients associated with stroke. There is not much study about this, however, there are studies

who targeted the nurses' practices and perceptions of delirium. Based on Elfeky & Ali (2013) on the Nurses' Practices and Perceptions of Delirium in the Intensive Care Unit of selected university hospital in Egypt, their study reveals that although the nurses work many years of experiencing with critically ill patients, about 54.2% of nurses never assessed delirium, and all of the nurses never received training or education about the handling and assessing delirium patients. Furthermore, based on Hickin et al. (2017), they found out that Nurses' perceptions of the Intensive Care Delirium Screening Checklist (ICDSC) were assessed on four of the domains which is (a) Knowledge of delirium and the tool, (b) Confidence in using it, (c) Its utility, and (d) Physicians' value of the tool. Not only that, they also found that education has an important role in affecting the nurses' perception of delirium patients. Therefore, we can conclude that on the perception of health personnels on delirium among patients with stroke, education is a must not only for the knowledge of the health personnel, but also will increase the confidence level of the health personnels on assessing the delirium patients associated with stroke.

#### **2.4.4 Attitude**

Although not much study was done on this topic but according to A et al. (2017) it is concluded that attitude is a reaction that is influenced from a person's view towards other beings and objects. This could be described as having a variety of viewpoints on an individual or an item from positive to negative or else from loving to detesting perspective. In their study, A et al. (2017) found that their participants (nurses) had a positive attitude towards patients who had delirium and this finding is correlated with previous study from Dadgari et. al. (2008). They also stated that a positive attitude can help to enhance the quality of services in healthcare centres if it is becoming a crucial requirement for every service provision.

## **2.4.5 Other factors**

### **2.4.5.1 Experience in the field**

It is found that nurses with years of experience will require a minimum of additional instructions before they are prepared to deal with patients while nurses with years of experience in one clinical specialty may need a reasonable amount of guidance to be received through educational training (American Nursing Association, 2000 as cited in Elfeky & Ali 2013). Elfeky & Ali (2013) also stated that according to Ely et al. (2004) it showed that the experience of nurses, when classified by the frequency of evaluating delirium, offers some useful hints about the low frequency of their evaluation. Nurses that do not regularly treat patients for delirium do not know that delirium is an ICU issue under-diagnosed.

A study from A et al. (2017) stated that experience is a key factor in the acquisition of knowledge and awareness about delirium. A study from Xing et al. (2017) revealed that only around 25.62% of their respondents do routine screening of delirium in the ICU. While about 41.7% do screen ICU delirium but not routinely. However, about 17.78% of them were doing sedation evaluation instead of delirium screening and this indicates that they were confused between sedation and delirium. The best to our knowledge research regarding delirium in post stroke patient is non existent and we are justifying the ICU with our research of delirium in stroke patients because of the relations of ICU patient which is critically ill patients in hospitalizations

### **2.4.5.2 Barrier of screening**

Based on A et al. (2017) it should be noted that the lack of educational facilities, particularly in hospital settings, will decrease the efficacy of academic education, leaving graduates very unfamiliar with this condition and how to care for the patients affected and even their occupation.

Based on Elfeky & Ali (2013) it has been found that the ability to detect delirium in the ICU increases by using a validated and standardized tool for assessing delirium.

Based on Xing et al. (2017) they found that 49.18% believed that there were perceived barriers to delirium screening due to lack of appropriate screening tools for delirium and stated that 48.53% participants found that heavy workload resulted in lack of communication with the patients. While 47.33% responded that applying the delirium screening tools is time consuming and 46.01% stated that they have insufficient knowledge about ICU delirium.

#### **2.4.5.3 Health Service Organization**

Based on Australian Commission on Safety and Quality in Health Care Delirium (2018), best practice for preventing delirium is through a health service organization which targets at-risk groups of delirium patients; it has systems for risk recognition of delirium, preventions and managements for delirium. Based on clinical governance structures and quality improvement process, best practice for delirium includes all steps from screening, assessment and management of delirium. Health Service Organization (HSO) amend procedures which involve health personnel to be informed for any screening and assessment requirements based on their qualifications (Commission & Care, 2015). Besides, they require health personnel to identify the format for prevention procedures for at-risk patients and management plans for the confirmed patients with delirium. According to Australian Commission : Delirium (2018), they also convey requirements of training for health personnel in order to ensure good workforce proficiency, provide appropriate training for health personnel to handle delirium patients and to identify requirements for health personnel training. Basically, in Health Service Organization plannings, besides clinical governance structures and quality improvement processes, they also include care plans for patients' comprehensive development, delivering the comprehensive care planning for prevention and management, and ways to minimise harms and effects to patients (Commission & Care, 2015).

In sections for quality improvement activities by health service organizations, implementation and evaluation for early identification for patients who are at risk for delirium is important in order to reduce the duration and frequency of delirium (Commission & Care, 2015). Moreover, audits usage for patient clinical records are one improvement for improvising prevention and management of delirium patients, recognizing chances and gaps for prevention plans improvement, observing the effectiveness of the prevention plans, and evaluating compliance of delirium patients to the management (Commission & Care, 2015). Generally, the health service organizations basis is on the environment which allows efficiency for the quality improvement process for delirium patients.

## 2.5 Conceptual framework

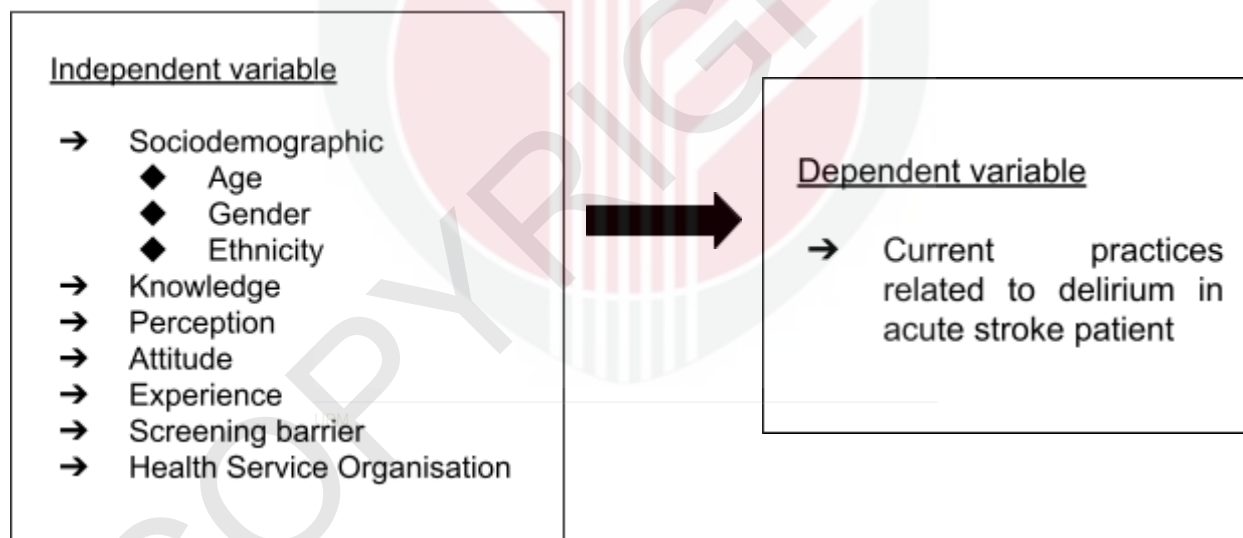


Figure 1 Factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti putra Malaysia

The main purpose of this research is to determine the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar

Universiti putra Malaysia. This study involved two types of variables which are independent variables and dependent variables. There is only one dependent variable which is the highlight of our end study which is the current practices related to delirium in acute stroke patients among health personnel in HPUPM. Whereas, there are several independent variables in this study which involve the sociodemographic factors (age, gender, ethnicity), knowledge, perception, attitude, experience, screening barrier and Health Service Organization. Throughout the study, we are going to determine if there's any correlations between the independent variables and the dependent variables. If the factors can correlate with the current practices in any way possible, it means that there is significant association between the sociodemographic factors (age, gender, ethnicity), knowledge, perception, attitude, experience, screening barrier and Health Service Organization with the current practices related to delirium in acute stroke patients among health personnel at HPUPM.

Elfeky & Ali (2013) stated there is no relationship between healthcare's age and current practices in terms of frequency in assessing delirium patients. Nonetheless, A et al (2017) conclude that aging can widen one's experience as critical care nurses on how to deal with delirium patients. Besides, A et al. (2017), stated that there is an association between attitude and current practices related to delirium in acute stroke patients among the health personnels while in the meantime, Hickin et al. (2017) found that the current practice towards delirium will improve with the perception of managing delirium. The relation between knowledge and attitude towards delirium can encourage a medical practitioner to be more alert in detecting patients with delirium so as to avoid underdiagnosed delirium, especially the hypoactive delirium patients and this has been supported by their studies as well (A et al., 2017). According to Australian Commission on Safety and Quality in Health Care Delirium (2018), the best practice for preventing delirium is through a health service organization which targets at-risk groups of delirium patients. Despite all this, the ability to detect delirium in the ICU is increased by using a validated and standardized tool for assessing delirium (Elfeky & Ali, 2013). Moreover, Ferro et al. (2002), said that there will be decreasing cases and rate of delirium among stroke patients if the way of health personnel taking care of the elderly, critically ill patients and reduced impaired cognitive function patients changes as a step for an early detection in order to give early treatment for better prognosis

Poor knowledge can leads to lacking current practices among health personnel which often resulting to misdiagnosis of delirium due to its similarities of symptoms to depressions; and, regular screening of delirium has only been practiced by some of the health personnel towards limited sample size (Elfeky & Ali, 2013).



## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter reviews the location, study design and the duration that this research might take. From the study location, the information regarding the study population and sampling population is then determined. Hence, a sampling frame and sampling unit will be formed so the estimated sample size can be calculated. Later on, the sampling method for this research is to be decided based on the estimated sample size. The research conducted according to the variables that had been decided earlier in the problem statement. All the questionnaires given to the participants will undergo quality control and ethical approval beforehand.

#### **3.2 Study location**

Location of this study is at the Hospital Pengajar Universiti Putra Malaysia (HPUPM), 43400 Serdang, Selangor Darul Ehsan. The 8 departments that we will study in HPUPM are Regional Emergency Stroke Quick-response department (RESQ), Dietetics department, Department of Rehabilitation Medicine, Psychiatry department, Anaesthesiology department, Department of Medical, Otorhinolaryngology, Head and Neck Surgery department, and Radiology department.

#### **3.3 Study design**

Study design applied is cross-sectional study via online questionnaire through online Google Form distribution. The reason why we choose cross-sectional study is because this design of study is cheaper in cost and management, faster in time consumption, easier to conduct and can be done straight away in order to obtain the data collection with the period that has been allocated. This pattern of study design can be applied during data collection from the favourable study population, health personnels from Hospital Pengajar Universiti Putra Malaysia within the

given period, which makes it appropriate for our research project. It can be used for generating and testing hypotheses based on the data being collected from the study population.

### **3.4 Study duration**

The duration of this study is around 17 weeks and is divided into two phases of semesters:

- I. Phase 1 : Preparation, submission and presentation of proposal paper
- II. Phase 2 : Data collection, analysis and final presentation

### **3.5 Study population**

Health personnel working in Hospital Pengajar Universiti Putra Malaysia with experience managing stroke patients.

### **3.6 Sampling population**

#### **3.6.1 Inclusion criteria**

Permanent staff including nurses, medical assistants, specialists, therapists, nutritionists, medical officers, and radiologists that are involved in handling stroke patients.

#### **3.6.2 Exclusion criteria**

Health personnels who are not involved in the intervention which are thrombectomy or intracranial stenting during or post-stroke event. We also exclude health personnel with no experience in managing patients with stroke, and health personnel who choose not to answer the questionnaire.

### 3.7 Sampling frame

List of health personnel working in the Anesthesia department, Regional Emergency Stroke Quick-response department (RESQ), Dietician department, Medical department, Otorhinolaryngology, Head and Neck Surgery department (Speech therapist), Clinical staff and neuro-interventionist from radiology department, Psychiatry department and Rehabilitation department and health personnel with experience in managing patients with stroke from the Hospital Pengajar Universiti Putra Malaysia in the year of 2021.

### 3.8 Sampling unit

A health personnel working in the Anesthesia department, Regional Emergency Stroke Quick-response department (RESQ), Dietician department, Medical department, Otorhinolaryngology, Head and Neck Surgery department (Speech therapist), Radiology department, Psychiatry department and Rehabilitation department and health personnel with experience in managing patients with stroke from the Hospital Pengajar Universiti Putra Malaysia.

### 3.9 Estimated sample size

**ESTIMATION SAMPLE SIZE :**

**a: To estimate a proportion (one group): Design - Cross sectional**

$$n = \left( \frac{z}{\Delta} \right)^2 p(1-p)$$

$z = 1.96$  at  $\alpha = 0.05$

$\Delta =$  Precision value =  $0.05 = 5\%$

$P =$  Report prevalence of study variable. This study uses 13% prevalence of delirium reported by previous study. From Asyraf et. al. (2019)

$$n = ( 1.96 / 0.05 ) ^2 ( 0.13)(1-0.13)$$

$$= 173.7940$$

$$\sim 174$$

Minimum sample size (n) = 174 participants. With an additional 20% non-response rate, the current study sample size is 209 participants.

OR

**b: To compare proportion between 2 independent groups.**

$$n = \frac{\{[z_{(1-\alpha/2)} * \sqrt{2P(1-P)}] + [z_{(1-\beta)} * \sqrt{P_1(1-P_1) + P_2(1-P_2)}]\}^2}{(P_1 - P_2)^2}$$

**Where:**

Where: n = sample size estimate

$z_{(1-\alpha/2)}$  = standard error associated with 95% confidence interval = 1.96

$z_{(1-\beta)}$  = standard error associated with 80%

power = 0.84

$P = (P_1 + P_2) \div 2$

$P_1$  = Proportion of 1-5 years of current practice related to delirium patients = 0.63

$P_2$  = Proportion of 5-10 years of current practice related to delirium patients = 0.23

\*From Xing et. al.(2017)

$P = 0.43$

$$n = \frac{\{[1.96 * \sqrt{2(0.43)(1 - 0.43)}] + [0.84 * \sqrt{0.63(1 - 0.63) + 0.23(1 - 0.23)}]\}^2}{(0.63 - 0.23)^2}$$

$$= 34.35$$

$$= 35 * 2 \text{ groups}$$

= 70

Minimum sampling population (n)= 70, with an additional 30% non-response rate, The current sampling population is 91.

**Table 1**  
**Demographic characteristics of respondents.**

Characteristic	Respondents, n (%)
Gender	
Male	301 (32.82)
Female	616 (67.18)
Types of healthcare professional	
Medical staff (doctors)	398 (43.4)
Nurses	519 (56.6)
Years of practice	
1–5	576 (62.81)
5–10	211 (23.01)
≥10	130 (14.18)
Type of ICU of primary practice	
General	730 (79.61)
Surgical	112 (12.21)
Medical	75 (8.18)
Category of hospital	
Class A tertiary hospital	699 (76.23)
Class B tertiary hospital	178 (19.41)
Secondary hospital	40 (4.36)

ICU=intensive care unit.

Based on the highest number of estimated sample sizes, N of 209 will be selected for this study; Xing et al. (2017).

### 3.10 Sampling method

Simple random sampling will be conducted to randomly select 209 respondents from a total of 211 eligible respondents. Below are the lists of number for the total participants :

DEPARTMENTS	PARTICIPANTS
Dietetics department	24 participants
Rehabilitation medicine department	25 participants
Psychiatry department	35 participants
Anaesthesiology department	31 participants
RESQ	33 participants
Medical department	56 participants
ENT department	1 participant
Radiology department	6 participants
<b>TOTAL PARTICIPANTS</b>	<b>211 PARTICIPANTS</b>

### 3.11 Operational definition of variables

#### 3.11.1 Dependent variables

- I. Good current practices involve all appropriate considerations and practices in handling delirium in stroke patients; including early preventative management, sufficient staff and screening tools, the perceptions of the practitioners and involvement of multidisciplinary team, adding delirium as basic training curriculum for health personnel and regular assessment for delirium are some crucial factors contributing to good practices (Malaysian Society of Geriatric Medicine Position : Delirium, 2017). Current practices towards delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia is classified into good practices and poor practices. Good practice is considered when the respondent chooses 3-4 answers correctly, and poor practice when they choose 1-2 answers only. We adapted the scoring method from a study done by A et al. (2017).

## **3.11.2 Independent variables**

### **3.11.2.1 Socio - demographic factors**

#### **3.11.2.1.1 Age**

Adjudicated by the respondent's Identification Card (ID) of birth dates until the day they are still alive.

#### **3.11.2.1.2 .Ethnicity**

Ethnicity or race of the participants will be divided into Malay, Chinese, Indian and others.

#### **3.11.2.1.3 Gender**

Gender of the respondents or also known as sex of the respondents that will be divided into male and female.

#### **3.11.2.2 Knowledge**

Knowledge is defined as the ability to assess delirium by using the assessment method indicating whether that they will be categorized into good, or high knowledge regarding delirium in stroke patients. Besides if their understanding includes most or all answers provided; it shows that they have high knowledge regarding delirium. Good knowledge is considered if they answer 3- 4 correct answers, and poor if only 2-0 correct answers (A et al., 2017).

### **3.11.2.3 Perception**

Perception is defined as how the health personnel recognize and interpret the findings of delirium with appropriate and suitable conditions and diagnosis and their perceptions are characterized as strongly agree, agree, to some extent, don't agree and don't know. Thus, these may lead to the categorization of poor perception (1-12 score), or good perception (13-25 score) (A et al., 2017).

### **3.11.2.4 Attitude**

Attitude is defined as the health personnels reaction towards acute stroke patients with delirium that was influenced from their view regarding selected issues and is divided into yes, no and not sure. These will furtherly categorize them into poor attitude (1-6 score), or good attitude (7-12 score), (A et al., 2017).

### **3.11.2.5 Experience**

Experience in the field where the respondents are grouped into how long they have been working as the selected health personnels career which are less than 10 years, 11 to 20 years, 21 to 30 years and 31 years and above.

### **3.11.2.6 Screening barriers**

Barriers that prevent health personnel from screening delirium in acute stroke patients based on their insufficient knowledge, heavy workload, lack screening tools, lack evaluation, lack cooperation, time consuming or others; to see within these factors, do they say yes, no or not sure, hence we know that they have good screening practice or poor screening practice. We can categorize the screening barriers into little screening barriers (1-6 score), or many screening barriers (7-12 score) based on our results. The scoring method was obtained and adapted from A et al., (2017).

### **3.11.2.7 Health Service Organizations**

Health Service Organization is defined as the degree of capability and environment of the hospital setting in contribution to the practices related to delirium in acute stroke patients. If both of their answers are 'yes' means they have a good health service organization of delirium, and if they answered only one 'yes' or both 'no' means poor health service organization related to delirium patients.

### **3.12 Study Instruments**

In our study, we designed an online questionnaire where some components of the study instruments were modified and adopted from studies done by Xing et al. (2017), A et al. (2017), Herrero et al. (2008) and Elfeky & Ali (2013). Nonetheless, the scoring method was adapted from A et al., (2017).

#### **3.12.1.1 Section A: Sociodemographic factors**

Socio demographic of participants will be asked based on the availability needed for our studies and is constructed primarily on our own according to the convenience sampling applied. In this section, we include the participant's name, age, gender, and ethnicity. This section also includes the department of where the respondents are working in and their specialities as the health personnel within Hospital Pengajar Universiti Putra Malaysia, and experience working as health personnel or medical career that deals with delirium patients.

#### **3.12.1.2 Section B: Knowledge**

Ordinal scale is used in this section, which knowledge of participants was related to their educational level in order to achieve their health personnel license whether from 1 of the 4 types of educational level which are diploma, degree, post graduate diploma/Master or PhD. This

section also covers the knowledge of the participant regarding the comprehension towards delirium issues with the hospital settings and what is the most probable onset of delirium that they think is associated with the delirium patients. Ability to assess delirium by using the assessing method based on their answers of screening method and screening tools of never, once, or more than once indicating whether they have good knowledge or poor knowledge regarding delirium in stroke patients, besides if their understanding includes most or all answers provided; it shows that they have good knowledge regarding delirium. Level of knowledge is divided into 2 categories, namely good knowledge if 3-4 correct, and poor if 2-0 answers are correct.

### **3.12.1.3 Section C: Current practices**

Good current practices involve all appropriate considerations and practices in handling delirium in stroke patients; including early preventative management, sufficient staff and screening tools, the perceptions of the practitioners and involvement of multidisciplinary team, adding delirium as basic training curriculum for health personnel and regular assessment for delirium are some crucial factors contributing to good practices (Malaysian Society of Geriatric Medicine Position : Delirium, 2017). In conclusion, good practice is considered when 3-4 answers are ticked, and poor practice is 2-1 answers ticked.

Based on Australian Commission on safety and quality in health care: Delirium, (2018), conduct cognitive and delirium risk screening with a best practice time frame and frequency and provide delirium prevention care are considered as the best practice for preventing delirium among clinicians (Commission & Care, 2015).

### **3.12.1.4 Section D: Perceptions**

Ordinal scale is used in this section, the selection is from strongly disagree to strongly agree, which the categories can be ranked according to the same criterion. Perceptions questionnaire is adopted from several sources which have been altered and combined. Some were altered from previous research done by China researchers which are Jinyan Xing MD, Yunbo Sun MD, Zhiyong Yuan MD, and Wenjuan Liu MD; Perceptions, attitudes and current practices

regards delirium in China that involves health personnel of critical care nurses and physicians in China. From Xing et al. (2017), the questionnaire regards the effects that the delirium patients might conceive in terms of long-term effect and short-term effect; this question is based on the perceptions that the participants think is related to the delirium patients. Some questions relating to the participants agreement is adopted from study done in Egypt by Hanaa Ali Elfeky and Fatma Shoeib Ali which relates delirium patient in Intensive Care Unit patients; Nurses Practices and perceptions of delirium in the Intensive Care Unit of Selected University Hospitals in Egypt (Elfeky & Ali, 2013). Categorize poor perception (1-12 score), and good perception (13-25 score).

#### **3.12.1.5 Section E: Attitudes**

Nominal scale is used in this section, in which the selections are also mutually exclusive. There is only one question in this section. Attitudes section is totally a question which is extracted from study done by Jinyan Xing MD, Yunbo Sun MD, Zhiyong Yuan MD, and Wenjuan Liu MD; Perceptions, attitudes and current practices regards delirium in China that involves health personnel of critical care nurses and physicians in China. In this study, they assess attitudes on selected issues towards ICU delirium. Based on the result, 59.98% (n=550) thought that delirium is a normal part of ICU hospitalization, 84.19% (n=772) thought that delirium should be monitored routinely, 27.37% (n=251) thought that screening is wasting time, 47.22% (n=434) agreed that screening tools are complicated and 88.00(n=807) thought that delirium impairs weaning from ventilators. So, the purpose of asking this question is to know the respondent's attitudes regarding the issues which could be related to delirium (Xing et al., 2017). Furtherly categorize them into poor attitude (1-6 score), and good attitude (7-12 score).

#### **3.12.1.6 Section F: Screening barriers**

Nominal scale is also used in this section as the categories are all mutually exclusive. There is only one question in this section. The screening barriers question was adopted from a previous study conducted by Xing et al. (2017). The research was on perception, attitudes, and current practises regarding delirium in China. This study also evaluated the healthcare opinion on

screening barriers regarding the delirium patient. From that study, they found out that 46.01% of their respondents believe that insufficient knowledge of ICU delirium contributes to screening barriers. However 48.53% stated that heavy workload caused lack of communication with patients, 49.18% for lack of appropriate assessment tools, 39.59% for lack of a structured evaluation procedure, 13.41% for insufficient cooperation between physicians and nurses, 47.33% for time consumed for applying delirium screening tools and 2.84% stated others (Xing et al., 2017). Categorize the screening barriers into little screening barriers (1-6 score), and many screening barriers (7-12 score) based on our results.

#### **3.12.1.7 Section G: Health Service Organisation.**

Nominal scale is also used in this section as the categories are all mutually exclusive. There are two questions in this section with options of yes or no. Health service organisation also have an important role of providing best practice for preventing delirium such as create multiple systems for delirium risk identification, prevention and management that are consistent with best-practice guidelines, and have to always ensure that the equipments such as low-rise beds, call beds and clocks, which can decrease the risk and effectively manage delirium. If both of their answers are yes means they have good practices of delirium, one yes or both no means poor practices related to delirium patients. The information for this question on Health Service Organization was taken from the Australian Commission on Safety and Quality in Health Care : Delirium (2018). If both of their answers are “yes” means they have good health service organization of delirium, one “yes” or no “yes” means poor health service organization related to delirium patients.

### **3. 13 Quality control**

The contents of the questionnaire was evaluated with face validation and content validity. Evaluation of the reliability for this study has also been done.

## Validation

- a) Face validity - the questionnaire draft was distributed to 6 health personnel in selected departments from HPUPM to assess the quality of our questionnaire components. Then we were asked to remove some components such as name and email addresses. We also added some components into our questionnaire such as “Job title / position” in the sociodemographic section in order to be able to know in detail regarding their contributions as a health personnel in HPUPM. We were also told to add instructions so that respondents are able to comprehend the actions that should be taken for every section. Apart from that, we were told that the contents are clear and relevant.
- b) Content validity - Content validity was assessed by our supervisor Dr. Hakimah Mohammad Sallehuddin and co-supervisor Prof. Madya Dr. Halimatus Sakdiah Minhat. Hence, we were permitted to write the contents and were guided to amend our mistakes and errors.

### **3.14 Data collection**

Data collection was done firstly by distributing the online questionnaire in a format of Google form through direct approach via email addresses. Hence, we were responsible for the data collection via sharing links and responses from respondents were automatically recorded and organized, thus, minimizing the error during data collection.

### **3.15 Data analysis**

Data analysis was done by using Statistical Package for the Social Sciences/ SPSS software version 26.0 and selected results with relation to our study were chosen to be put as the results. We started with descriptive analysis of frequency distribution because our main data was categorical data, hence we did not test the normality of distribution. So, we carried out the characteristics frequency distribution and participants frequency distribution. Next, we continue with the Chi square test to determine the association between our factors and current practices related to delirium in acute stroke patients among health personnel in HPUPM. Afterwards, we

proceed with Fisher exact test for the factors that did not meet Chi square assumptions. In our study, we fixed the level of significance at  $p < 0.05$ .

### **3.16 Ethical approval**

- I. The ethical clearance from the Ethics Committee for study involving human subjects of Universiti Putra Malaysia (JKEUPM) was obtained and the reference number is JKEUPM-2021-076.
- II. Each respondent was asked for written informed consent to participate in this study.
- III. All information obtained from the questionnaire was kept confidential.

## CHAPTER 4

### RESULTS

#### 4.1 Response Rate

Based on the result that we obtained from health personnel through Whatsapp and Emails, there are a total of 47 responses for this study. The response rate for our study are as below :-

$$\text{Response rate} = ( \text{Total response} / \text{Targeted response} ) \times 100$$

$$\text{Response rate} = ( 47 / 209 ) \times 100$$

$$\text{Response rate} = 22.49\%$$

Appraisal and justification for low response rate are as the followings :-

1. Due to the strict inclusion and exclusion criterias of the respondents
2. Due to target populations only for health personnel involved in stroke patients at HPUPM

Targeted response was taken based on the highest estimated sample size that we calculated, however we could not meet the expectation to obtain the estimated response due to some limitations below :-

1. Some emails are no longer available and used by the respondents.
2. HPUPM website is not updated resulting in expired email addresses being portrayed and new stuff information was not included.
3. We did not have personal contact information about the target population.
4. We could not have a face to face questionnaire distribution session due to lockdown.
5. Small sample size, even with supervisor help, the responses could not get higher due to unavailability of the targeted respondents.
6. Restricted research timeframe

Below showing our targeted respondents of health personnel in Hospital Pengajar Universiti Putra Malaysia and the specific number from each department.

Department	Number of Participants
Dietetics department	2
Rehabilitation Medicine department	6
Medical Department	24
Ear Nose Otolaryngology (ENT) Department	2
Psychiatry Department	2
Radiology Department	1
Regional Emergency Stroke Quick Response(RESQ) department	3
Anaesthesia Department	7
Total	47

**Table 1**

Table 1 above shows the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti putra Malaysia with our total number of 47 respondents (N=47) , which 24 participants are from medical department, 2 from Psychiatry department, 2 from Dietician department, 6 from Rehabilitation department, 7 from Anaesthesia department, 3 from Regional Emergency Stroke Quick Response(RESQ) department, 1 from radiology department and 2 speech therapist which are from Ear Nose Otorhinolaryngology (ENT) department.

#### 4.2. Frequency of Respondents for Each Factors

<b>Variables</b>	<b>N</b>	<b>%</b>
<b>Age Group</b>	47	100.0
30 and below	19	40.4
31-40	22	46.8
41-50	5	10.6
50 and above	1	2.1
<b>Ethnicity of participants</b>	47	100.0
Malay	38	80.9
Chinese	4	8.5
Indian	5	10.6
<b>Gender of participants</b>	47	100.0
Male	14	29.8
Female	33	70.2
<b>Knowledge of participants</b>	47	100.0
Good knowledge	22	46.8

Poor knowledge	25	53.2
<b>Perception of participants</b>	47	100.0
Good Perception	44	93.6
Poor Perception	3	6.4
<b>Attitude of Participants</b>	47	100.0
Good Attitude	46	97.9
Poor Attitude	1	2.1
<b>Clinical Experience of Participants</b>	47	100.0
Less than 10 years	27	57.4
11-20 years	18	38.3
20-30 years	2	4.3
<b>Screening Barriers Related to Delirium</b>	47	100.0
Little screening barrier	15	31.9
Many screening barrier	32	68.1
<b>Health Service Organization of Delirium</b>	47	100.0

Yes and Yes	9	19.1
Yes and No/ No and No	38	80.9
<b>Current Practices</b>	47	100.0
Good Practices	30	63.8
Poor Practices	17	36.2

**Table 2**

Based on Table 2 above, respondents who aged 30 years and below are 19 people (40.4%), 31-40 years old (N=22,46.8%), between 41-50 years old are 5 people (10.6%) and 50 years and above are 1 person (2.1%).

By looking at the ethnicity of the participants, 38 respondents are Malay (80.9%) meanwhile, the rest are Chinese (N=4, 8.5%) and Indians (N=5, 10.6%).

According to the gender of participants, 14 respondents out of 47 total participants are male (29.8%) and the rest are female (N=33,70.2%).

Besides, based on the knowledge of participants, out of 47 health personnels, 22 of the health personnels have good knowledge regarding delirium (46.8%), meanwhile 25 of them have poor knowledge (53.2%).

By looking at the perceptions of the participants, 44 out of 47 of the health personnels (93.6%), have good perception regarding delirium and 3 of the others (6.4%) have poor perception towards delirium in acute stroke patients.

According to the attitude of the participants, almost all of them which is 46 out of 47 of the health personnels (97.9%) have a good attitude regarding delirium in acute stroke patients except one who has a poor attitude (2.1%).

Based on the clinical experience of the participants, 27 of the health personnels (57.4%) have less than 10 years of the clinical experience while 18 of them (38.3%) have 11 to 20 years of experience and the remainings 2 (4.3%) have 21 years or above experience in dealing acute stroke patients with delirium.

Other than that, to be looking at the screening barriers related to the delirium, 15 participants thought that there are little screening barriers related to delirium in acute stroke patients (3.9%) and the remaining 32 respondents (68.1%) thought that there are many screening barriers related to delirium.

According to Health Service Organizations regarding delirium in HPUPM, there are only 9 respondents (19.1%) who know about the regulations while another 38 respondents (80.9%) either didn't know at all or only know some of the guidelines about delirium in HPUPM.

Based on current practices related to delirium in acute stroke patients, 30 respondents (63.8%) have good practices related to delirium, while 17 respondents (36.2%) have poor practices related to delirium.

#### **4.3 Current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia**

<b>Variables</b>	<b>N</b>	<b>Percentage (%)</b>
<b>Current practices</b>		
Good practices	30	63.8

Poor practices	17	36.2
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**Table 3**

Table 3 above shows the current practices related to delirium in acute stroke patients among health personnel at HUPM. Based on that 30 respondents (63.8%) have good current practices. However, 17 respondents (36.2%) have poor current practices related to delirium in acute stroke patients.

#### 4.4 Characteristics of Respondents

##### 4.4.1 Sociodemographic factors of age, ethnicity, and gender

Variables	N	Percentage
<b>Sociodemographic factors : Age</b>		
30 and below	19	40.4
31-40	22	46.8
41-50	5	10.6
50 and above	1	2.1
<b>Sociodemographic factors : Ethnicity</b>		
Malay	38	80.9
Chinese	4	8.5
Indian	5	10.6
<b>Sociodemographic factors : Gender</b>		
Male	14	29.8
Female	33	70.2

**Table 4**

Table 4 shows the distribution of frequency of the respondents based on the sociodemographic factors among health personnel in HPUPM. As per observation, the health personnel are between 31-40 years old (N=22,46.8%), respondents who aged 30 years and below are 19 people (40.4%), between 41-50 years old are 5 people (10.6%) and 50 years and above are 1 person (2.1%). By looking at the sociodemographic factor of ethnicity, respondents who are Malay (N=38,80.9%), Chinese (N=4.8.5%) and Indians (N=5, 10.6%). Lastly, according to the sociodemographic factor of gender, 14 respondents are male (29.8%) and the rest are female (N=33,70.2%).

#### 4.4.2 Attitude towards delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia

Variables	N	Percentage
<b>Attitude</b>		
Good attitude	46	97.9
Poor attitude	1	2.1

**Table 5**

Frequency of attitude towards delirium in acute stroke patients among health personnel at HPUPM is shown in Table 5 where all of the respondents (N=46, 97.9%) except a respondent (2.1%) have a good attitude towards delirium in acute stroke patients to be compared to the exceptional respondent (N=1, 2.1%) who has a poor attitude towards delirium in acute stroke patients.

Questions (Attitude)	Not Sure		No		Yes	
	N	%	N	%	N	%
<b>Q1 : Delirium is a normal part of acute stroke patients' hospitalisation.</b>	9	19.1	18	38.3	20	42.6
<b>Q2 : Delirium should be monitored routinely.</b>	3	6.4	1	2.1	43	91.5
<b>Q3 : Delirium screening is a waste of time.</b>	1	2.1	0	0.0	46	97.9
<b>Q4 : Screening tools are complicated.</b>	20	42.6	8	17.0	19	40.4

**Table 6**

To be exact, attitude towards delirium in acute stroke patients can be subdivided into specific questions as shown in Table 6. The majority of the respondents answered “Yes” for Q1 (N=20, 42.6%), Q2 (N=43, 91.5%), and, Q3 (N=46, 97.9%) whereas for Q4, majority chose “Not Sure” (N=20, 42.6%). Precise distribution of the minority of the respondents can be observed in Table 6.

#### **4.4.3 Perceptions on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.**

Variables	N	Percentage
<b>Perception</b>		
Good perception	44	93.6
Poor Perception	3	6.4

**Table 7**

From Table 7, 44 respondents who are among health personnel at HPUPM have a good perception of delirium in acute stroke patients with a percentage of 93.6% while, on the other hand, there are only 3 respondents who have a poor perception related to delirium in acute stroke patients with a percentage of 6.4%.

Questions (Perceptions)	Don't Know		Don't Agree		To Some Extent		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
<b>Q1 : Delirium is common in acute stroke patients.</b>	2	4.3	3	6.4	12	25.5	23	48.9	7	14.9
<b>Q2 : Delirium is an under diagnosed problem.</b>	3	6.4	0	0.0	18	38.3	19	40.4	7	14.9
<b>Q3 : Delirium is associated with high patient mortality.</b>	5	10.6	7	14.9	16	34.0	13	27.7	6	12.8
<b>Q4 : Delirium in stroke patients is rarely agitated.</b>	1	2.1	9	19.1	12	25.5	19	40.4	6	12.8
<b>Q5 : Delirium is challenging to assess in stroke patients.</b>	3	6.4	2	4.3	16	34.0	18	38.3	8	17.0

**Table 8**

Accurate distributions of respondents related to perception of delirium in acute stroke patients are as shown in Table 8. For Q1, the majority of the respondents (N=23, 48.9%) “Agree” that delirium is common in acute stroke patients in contrast to the minority (N=2, 4.3%) who chose “Don't Know”. Next, in Q2, most respondents (N=19, 40.4%) chose that delirium is an underdiagnosed problem while in Q3, most respondents (N=19, 40.4%) “Agree” that delirium is associated with high patient mortality. Lastly,

the majority of respondents also “Agree” that delirium in stroke patients is rarely agitated (N=19, 40.4%) for Q4 and delirium is challenging to assess in stroke patients (N=18, 38.3%) for Q5.

#### 4.4.4 Knowledge on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.

Variables	N	Percentage
<b>Knowledge</b>		
Good knowledge	22	46.8
Poor knowledge	25	53.2

**Table 9**

According to Table 9, there are 25 respondents (53.2%) and 22 respondents (46.8%) who have a poor knowledge and good knowledge on delirium in acute stroke patients among health personnel in HPUPM respectively.

#### 4.5 Association between current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia and :

##### 4.5.1 Sociodemographic factors of age, ethnicity, and gender.

Sosiodemographic factors	Current Practices		Value X <sup>2</sup>	P-value
	Good	Poor		
	N	N		
<b>Age</b>			0.487	0.485
30 and below	11	8		
30 and above	19	9		

<b>Ethnicity</b>			-	0.704
Malay	25	13		
Non-malay	5	4		
<b>Gender</b>			0.002	0.966
Male	9	5		
Female	21	12		

**Table 10**

Based on Table 10, the test used for age is Chi square test, which has a X<sup>2</sup> value of 0.487 and the P-value is 0.485. The result would be significant if this value is equal or less than the designated alpha level (0.05). In this case the P-value is 0.485 which is larger than the standard alpha value, so the null hypothesis is not rejected which means there is no significant association between age of respondent and current practices.

For ethnicity the test used is Fisher's Exact test, since the Chi square assumption is not met. The P-value is 0.704 which is larger than the standard alpha value (0.05), so the null hypothesis is not rejected which means there is no significant association between ethnicity of respondent and current practices.

Chi square test also used to test the association between gender of respondent and current practices. The X<sup>2</sup> value is 0.002 with P-value of 0.96. However, the P-value is 0.96 which is larger than the standard alpha value (0.05), so the null hypothesis is not rejected which means there is no significant association between gender of respondent and current practices.

**4.5.2 Attitude towards delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.**

Attitude	Current Practices		Value X2	P-value
	Good	Poor		
	N	N		
Good attitude	29	17	-	1.000
Poor attitude	1	0		

**Table 11**

From Table 11, the test used is Fisher's exact test since Chi square test assumptions are not met. The attitude P-value is 1.000. Hence, the null hypothesis is not rejected since the P-value is larger than the alpha value (0.05) which means there is no significant association between attitude of respondent and current practices.

**4.5.3 Perceptions on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.**

Perception	Current Practices		Value X2	P-value
	Good	Poor		
	N	N		
Good perception	28	16	-	1.000
Poor perception	2	1		

**Table 12**

Table 12 above used Fisher's exact test since the Chi square assumption is not met. It shows the P-value is 1.000. Hence, the null hypothesis is not rejected since the

P-value is larger than the alpha value (0.05) which means there is no significant association between perception of respondent and current practices.

#### 4.5.4 Knowledge on delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.

Knowledge	Current Practices		Value X <sup>2</sup>	P-value
	Good	Poor		
	N	N		
Good knowledge	18	4	5.797	0.016
Poor knowledge	12	13		

Table 13

The test used in Table 13 above is Chi square test since it met the assumption, the X<sup>2</sup> value is 5.79 and the P-value is 0.016. Hence, the null hypothesis is rejected since the P-value is smaller than the alpha value (0.05) which means there is significant association between knowledge of respondents and current practices.

#### 4.5.5 Health service organization in regards to delirium in Hospital Pengajar Universiti Putra Malaysia

Health Service Organization	Current Practices		Value X <sup>2</sup>	P-value
	Good	Poor		
	N	N		
Yes & Yes	6	3	-	1.000
Yes & No/ No & No	24	14		

Table 14

The test used on Table 14 above is Fisher's Exact test due to the Chi square assumption not met. The table shows the P-value is 1.000. This result would be significant if this value is equal or less than the designated alpha level (0.05). Since, the P-value is larger than the standard alpha value, the null hypothesis is not rejected which means there is no significant association between Health Service Organization and current practices.



## **CHAPTER 5**

### **DISCUSSIONS**

#### **5.1 Response rate**

Our targeted population of health personnel in HPUPM was 209 according to the calculation we made previously. Hence, we sent our questionnaire according to the target population we had which is based on the calculation of the 209 respondents. Upon completion of collecting the data from respondents, there were 47 health personnel in HPUPM who participated in our study out of 207 targeted respondents, giving us a response rate of 22.49%. All of our respondents are the health personnel in the departments involving or relating to acute stroke patients as we are doing a study in order to determine the factors associated with delirium in acute stroke patients among health personnel in HPUPM. Most of our respondents aged 40 and below made up 87.2% (N=41) of respondents for our study. There were also 20 respondents out of 47 respondents who have clinical experiences for 11 years and above with the percentage of 42.55%. Other than that, most of our respondents, 38 respondents are from Malay ethnicity (80.9%) and 33 respondents are female (70.2%). Exact distributions for sociodemographic frequency can be seen in the Chapter 4. Even though the health personnel working in Anesthesia department, Regional Emergency Stroke Quick-response department (RESQ), Dietician department, Medical department, Otorhinolaryngology, Head and Neck Surgery department (Speech therapist), Clinical staff and neuro-interventionist from radiology department, Psychiatry department and Rehabilitation department and health personnel with experience in managing patients with stroke from the Hospital Pengajar Universiti Putra Malaysia in the year of 2021 are more than 200 health personnel, however, most of the health personnel are related to the critical departments which involved frequent monitory or emergency patients which made them unable to participate in our study.

## **5.2 Association between current practices and sociodemographic factors (age, ethnicity, and gender), attitude, perceptions, knowledge and health service organization related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia.**

The results of our study shows that there is no association between sociodemographic factors of age and current practice related to delirium in acute stroke patients among health personnel in HPUPM. There was a lack of study done regarding age and the current practice related to delirium. However, based on the study done by A et al. (2017), age and clinical work experience has a significant association with the knowledge of nurses about delirium and this has increased with aging and work experience. Nevertheless, for the nurses' attitude related to delirium, there was no significant association between nurses' attitude with these variables, which is age and clinical work experience. Nonetheless, looking at the study done by Elfeky & Ali (2013), in relation to the nurses' age, frequency of assessing delirium in their study did not differ significantly, in addition to their study which are in agreement with that of the same author who found that there are no relationship between nurses' age and their knowledge about delirium. In our research study, we also found that no significant association between age with the current practice of health personnels in HPUPM related to delirium in acute stroke patients. The difference in result may be due to there being too few participants and the age of health personnels are not equally distributed which almost half of our respondents (46%) are in the age group in the range of 31 to 40 years old.

The results of our study shows that there is no association between sociodemographic factors of ethnicity and current practice related to delirium in acute stroke patients among health personnel in HPUPM. There was a lack of study done regarding ethnicity with current practice related to delirium in acute stroke patients. There is no previous study that can support our research as there is none of the study being done previously on the ethnicity of the health personnels regarding their current practice.

The results of our study shows that there is no association between sociodemographic factors of gender and current practice related to delirium in acute stroke patients among health

personnel in HPUPM. There was a lack of study done regarding socio demographic gender too. Based on the study done by Elfeky & Ali (2013), there is only data collection on gender of the respondents however there is none of the analysis and interpretation regarding the gender of their participants. Also, looking at the study done by Christensen. M. (2013), there is also only data collection on gender but none on the analysis and discussion. This may be due to in their study, the number of female respondents are dominant, which is 90.6% and so do with our research study, which is 70.2% of females. Therefore, based on our study, there is no significant association between gender and current practice related to delirium in acute stroke patients among the health personnels in HPUPM.

The results of our study shows that there is no association between attitude and the current practices related to delirium in acute stroke patients among health personnel in HPUPM. There was a lack of study done regarding attitude and the current practices related to delirium. However, a study done by A et al. (2017) states that there is an association between attitude and current practices related to delirium in acute stroke patients among health personnel. It is stated that a good attitude will improve the current practices provided to patients. However, our findings contraindicated with the previous study. This may be due to the different culture of our target population from the previous study.

Based on the results in our study, there is no significant association between perception and the current practices related to delirium in acute stroke patients among health personnel in HUPM. However, a study done by Hickin et al. (2017) found an association between perception of delirium and its current practices. It is found that when perception on managing delirium is improved, the current practices towards delirium will also improve. Another study done by Elfeky & Ali (2013) also found that the health personnel have a good perception towards delirium and it correlates with their current practices. They found that delirium is under-diagnosed in ICU and requires active intervention. Despite that, our findings contraindicate these previous studies. These different results may be due to few participants in our study.

Upon completing our study and by analysing the results, we found out that there was a significant association between knowledge and current practices related to delirium in acute stroke patients among health personnel in HPUPM. This association can be supported by a study done by A et al. (2017) as where by having a good knowledge it can lead to a better understanding about delirium features besides enhancing good attitude in handling patients with delirium. They also emphasize that the relation between knowledge and attitude towards delirium can encourage a medical practitioner to be more alert in detecting patients with delirium so as to avoid underdiagnosed delirium, especially the hypoactive delirium patients. Apart from that, A et al. (2017) also stated that a precise and accurate understanding and knowledge regarding delirium could help them to prepare adequate information in order to deal with delirium patients which will enable them to have a good practice of the delirium patients. Since studies regarding delirium in acute stroke patients were not much, we also widen up our reference to cases of delirium in ICU patients as the presentations of having susceptibility in developing delirium is high in ICU patients is almost the same as acute stroke patients because of the critical conditions as part of definition of delirium. Another study done by a group of researchers from China, Xing et al. (2017), found out that 45.4% participants never had an education regarding the ICU delirium training, but, however, there are 90% of the participants do have the basic knowledge regarding delirium including the symptoms and classifications. From the end result, they conclude that the participants do know about ICU delirium, however, they were lacking in knowledge and detailed information alongside with not having proper training on ICU delirium cases.

Based on the results in our study, there was no significant association between Health Service Organizations and current practices related to delirium in acute stroke patients among health personnel in HPUPM. There was a lack of study done regarding Health Service Organization and delirium in acute stroke patients or any critically ill patients. However, based on Australian Commission on Safety and Quality in Health Care Delirium (2018), best practice for preventing delirium is through a health service organization which targets at-risk groups of delirium patients. This is because it has systems for risk recognition of delirium, preventions and managements for delirium which help the medical practitioner to be able to detect delirium efficiently from being underdiagnosed and prevent further complications of delirium patients.

Moreover, Commission & Care, 2015 state that the Health Service Organization amends that screenings and assessment need to be done by the medical practitioner based on their qualifications. They also required that the medical or health practitioner be able to identify the structures of prevention and management plans for at-risk patients and definite delirium patients respectively. Generally, the Health Service Organizations basis is on the environment which allows efficiency for the quality improvement process for delirium patients. In contrast, our research found that there was no significant association which is incomparable to the basis of Health Service Organizations.



## **CHAPTER 6**

### **CONCLUSIONS**

#### **6.1 Conclusions**

In conclusion, our study was done by participation of 47 respondents from health personnel in Hospital Pengajar Universiti Putra Malaysia (HPUPM). From our research, we figured out that the health personnel in HPUPM with the frequency of 30 people, which is the majority of the participants do have good current practices regarding delirium in acute stroke patients among health personnel in HPUPM. Whereas for knowledge regarding delirium in acute stroke patients, nearly half of the participants (N=22) have a good knowledge among 47 respondents who participated in our study. Moreover, all of our respondents have a good attitude towards delirium in acute stroke patients except one who has the opposite result by having a poor attitude regarding delirium in acute stroke patients among health personnel in HPUPM. Quite similar with the factor of perception where 44 participants have a good perception towards delirium while only 3 participants have a poor perception related to delirium in acute stroke patients. After completing our study, we came out to find that there is no significant association between current practices and sociodemographic factors (age, ethnicity, and gender), attitude, perceptions, and health service organization related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia. However, we found out that there is a significant association between current practices and knowledge related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia (HPUPM) as it shows p-value less than 0.05 and to be exact, the p-value is 0.016.

#### **6.2 Limitations**

The main limitations are due to the small sample size and restricted research time. Our study has been done online due to the pandemic situation which is restricting our progress from going directly to the Hospital Pengajar Universiti Putra Malaysia to reach our target respondents. Following this current situation, we are only able to send our questionnaire through the emails. However, HPUPM website is not updated resulting in expired email addresses being portrayed

and new staff information was not included. Apart from that, Some emails are no longer available and used by the respondents. Moreover, we did not have personal contact information about the target population and we reached them through our supervisor. Even with supervisor help, the responses could not get higher due to unavailability of the targeted respondents. Besides, our study is focusing on the factors associated with the current practices related to delirium in acute stroke patients in Hospital Pengajar Universiti Putra Malaysia, hence, the validity of our study is limited to the departments in HPUPM which is related to the delirium in acute stroke patients. Next, there is also a non respondent bias because some of the health personnel in HPUPM were not participating due to unavailability to answer the questionnaire because of packed schedule, unavailability of the questionnaire due to the expired email addresses as well as viewing the online questionnaire as a hassle.

### **6.3 Recommendations**

Upon completion of our study, we would like to suggest some ways to have a better respondents rate as well as to have a better result. So firstly, we would like to recommend researchers to have a physical questionnaire rather than online questionnaire by walking in to HPUPM for direct response but this can only be done if there is no more movement restrictions applied in our country. This is to help both the respondents and researchers to have a better agreement and comprehension regarding the research being done. On the other hand, we would like to recommend a longer time frame for the questionnaire response session which could help in reaching the targeted sample size which has been set in the study. As we ought earlier, health personnel in HPUPM are dealing with patients in a large number which restrict the targeted respondents from answering the questionnaire on time, so giving them a longer time to respond might increase their interest in participating in the study being done.

Next, We would like to suggest the upgradation of the HPUPM websites so that the expired data and information regarding HPUPM staff can be gotten rid off, in order to avoid confusions which could prevent researchers or other people from other organizations from reaching one of the HPUPM staff.

Apart from all of the above, we would like to suggest an idea regarding having good practices related to delirium in acute stroke patients by having a training module for new staff or new medical practitioners so that they can enhance their skills besides improving their practices towards delirium in acute stroke patients. We can implement a requirement akin to what Australian Commission : Delirium (2018) had stated, in which, health personnel need to be trained properly and accordingly in order to handle delirium patients other than being able to identify delirium patients. Health personnel will also need to have adequate knowledge including all the information from screening, assessment, and management of delirium patients especially in acute stroke patients in order to be able to obtain the best practice or the good practice on it.

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**APPENDICES**

**1. Gantt Chart**

Activity	December	January	February	March	April	May	June	July
Meeting with Supervisor								
Proposal Preparation								
Submission of Proposal								
Proposal Presentation								
Preparation of Ethical Approval/Letter								
Data Collection and Analysis								
Report Writing								
Final Report Submission								
Final Report Presentation								
Submission of Poster and Scientific Article								
Poster Competition								
Submission of Logbook and Hard bound Copies of Final Report								

## 2. Questionnaire

### **FACTORS ASSOCIATED WITH CURRENT PRACTICES RELATED TO DELIRIUM IN ACUTE STROKE PATIENTS AMONG HEALTH PERSONNEL AT HOSPITAL PENGAJAR UNIVERSITI PUTRA MALAYSIA**

Dear participants, we are second year medical students in Universiti Putra Malaysia. Currently we are doing a research project for our medical course regarding Factors Associated with Current Practices Related to Delirium in Acute Stroke Patients among Health Personnel at Hospital Pengajar Universiti Putra Malaysia (HPUPM). Hereby, we sincerely invite you to participate in our research project through this online questionnaire.

This online questionnaire will consume approximately 3-5 minutes of your time.

Characteristics for individuals needed for our online questionnaire are :-

1. Health personnel in HPUPM.
2. Have experience dealing with stroke patients.
3. Belongs to one of these departments in HPUPM;
  - Anaesthesia Department
  - Regional Emergency Stroke Quick Response (RESQ) Department
  - Dietetic Department
  - Medical/Neurology Department
  - Otorhinolaryngology, Head and Neck Surgery (ENT) Department (only speech therapist)
  - Psychiatry Department
  - Rehabilitation Medicine Department
  - Radiology Department

If you decide to take part in this research, you need to fill in the Questionnaire in Google form provided. We need around 209 staff in HPUPM to participate. Please respond with respect to your knowledge, attitude and practice towards delirium. You need to fill up this questionnaire during this week only (26 April – 9 May 2021). Please also note that participation is voluntary, and that participant may withdraw anytime without penalty or loss of benefit. Respondents will not be paid for your participation in this study.

The benefit from this study for you as a subject is that you will be allowed to reflect on yourself about delirium among stroke patients, and be able to evaluate your knowledge and attitude towards this entity by choosing to receive the results of this study. This also may help you to identify the challenges in screening and managing delirium in your daily practice. Once the research is done, you may increase your awareness towards delirium in post-stroke patients.

This study has no risk and the information that you provide, and your identity will remain confidential.

We have 7 sections in this online questionnaire. Signing in to your UPM email is required to access

**this online questionnaire and participants only have one attempt at this questionnaire. Staff number is required for identification purposes but will remain confidential among researchers only.**

**Thank you for participating in our research.**

**Any inquiries can refer to us :-**

**HANIN NABILA MOHD YOSLI**

**[204136@student.upm.edu.my](mailto:204136@student.upm.edu.my)**

**HONG WEI**

**[202772@student.upm.edu.my](mailto:202772@student.upm.edu.my)**

**KAIRUNNISA BINTI KAZURA**

**[200675@student.upm.edu.my](mailto:200675@student.upm.edu.my)**

**Supervised by :-**

**Dr. HAKIMAH MOHAMMAD SALLEHUDDIN**

**Co-supervised by :-**

**Prof. Madya Dr. HALIMATUS SAKDIAH MINHAT**

**FACULTY OF MEDICINE AND HEALTH SCIENCES**

**UNIVERSITI PUTRA MALAYSIA**

<b>1.</b>	<input type="checkbox"/> <b>Yes, I agree to participate voluntarily.</b>
<b>2.</b>	<b>Staff number</b> _____

## **SECTION A : SOCIO-DEMOGRAPHIC BACKGROUND**

**This section will identify your age, ethnicity and gender. The results of this study will remain anonymous and no respondent identification will be revealed.**

1.	<b>Age</b> <ul style="list-style-type: none"><li><input type="checkbox"/> 30 and below</li><li><input type="checkbox"/> 31-40</li><li><input type="checkbox"/> 41-50</li><li><input type="checkbox"/> 50 and above</li></ul>
2.	<b>Ethnicity</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Malay</li><li><input type="checkbox"/> Chinese</li><li><input type="checkbox"/> Indian</li><li><input type="checkbox"/> Others: Please state</li></ul>
3.	<b>Gender</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Female</li><li><input type="checkbox"/> Male</li></ul>
4.	<b>Department in HPUPM</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Anaesthesia Department</li><li><input type="checkbox"/> Regional Emergency Stroke Quick Response (RESQ) Department</li><li><input type="checkbox"/> Dietician Department</li><li><input type="checkbox"/> Medical/Neurology Department</li><li><input type="checkbox"/> Otorhinolaryngology, Head and Neck Surgery (ENT) Department ( only speech therapist) Department</li><li><input type="checkbox"/> Psychiatry Department</li><li><input type="checkbox"/> Rehabilitation Medicine Department</li><li><input type="checkbox"/> Radiology Department</li></ul>
5.	<b>Please choose your job title/ position.</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Nurse</li><li><input type="checkbox"/> Assistant medical officer</li><li><input type="checkbox"/> Dietician</li></ul>

	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Speech Therapist</b></li> <li><input type="checkbox"/> <b>Physiotherapist</b></li> <li><input type="checkbox"/> <b>Occupational therapist</b></li> <li><input type="checkbox"/> <b>Medical Officer</b></li> <li><input type="checkbox"/> <b>Doctor - Specialist</b></li> <li><input type="checkbox"/> <b>Doctor - Consultant</b></li> </ul>
<p><b>6.</b></p>	<p><b>Clinical experience.</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>less than 10 years</b></li> <li><input type="checkbox"/> <b>11 to 20 years</b></li> <li><input type="checkbox"/> <b>21 to 30 years</b></li> <li><input type="checkbox"/> <b>31 years or above</b></li> </ul>
<p><b>7.</b></p>	<p><b>Knowledge / Educational level</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Diploma and below</b></li> <li><input type="checkbox"/> <b>Degree</b></li> <li><input type="checkbox"/> <b>Postgraduate diploma / Master</b></li> <li><input type="checkbox"/> <b>Phd and above</b></li> </ul>

**SECTION B : KNOWLEDGE ON DELIRIUM**

**This section will assess your knowledge on delirium. Please choose only one best answer.**

1.	<b>Have you received any training in delirium</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
2.	<b>Among risk factors of delirium include a history of dementia, older age and stroke.</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
3.	<b>I know how and when to do screening for delirium.</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
4.	<b>There is low prevalence of delirium among stroke patients in acute stroke units.</b> <input type="checkbox"/> Yes <input type="checkbox"/> No

**SECTION C: CURRENT PRACTICES**

**This section will assess your current practices in managing stroke patients with delirium. You are required to choose answer(s) based on your opinion and experience. You are allowed to choose more than 1 answer.**

**1.**

**In your opinion, what is the appropriate consideration and practice in handling delirium in stroke patients?**

- Early detection through a standardized screening tools on high risk patients with early management for delirium (management)**
- Availability of adequate health personnel in managing stroke patients in order to avoid underdiagnosed delirium patient in acute stroke patients (management)**
- Delirium care should be included as one of the basic training curriculum for the health personnel to familiarize and enhance knowledge. (management)**
- Proper structured evaluation procedure according to hospital policy on practice of delirium (Practice)**

**SECTION D : PerS**

**This section will assess your perceptions for delirium. Please choose only one best answer. It will be a scale from 1 ( don't know), 2(don't agree), 3(to some extent), 4(agree), or, 5(strongly agree).**

1

**Perception on Delirium**

**A. Delirium is common in acute stroke patients.**

- 1
- 2
- 3
- 4
- 5

**B. Delirium is an under diagnosed problem**

- 1
- 2
- 3
- 4
- 5

**C. Delirium is associated with high patient mortality**

- 1
- 2
- 3
- 4
- 5

**D. Delirium in stroke patients are rarely agitated**

- 1
- 2
- 3
- 4
- 5

**E. Delirium is challenging to assess in stroke patient**

- 1
- 2
- 3
- 4
- 5

**SECTION E : ATTITUDES**

**This section assesses your attitude towards delirium. Please choose only one best answer.**

**1**

**A. Delirium is a normal part of acute stroke patients hospitalisation**

- Yes
- No
- Not sure

**B. Delirium should be monitored routinely.**

- Yes
- No
- Not sure

**C. Delirium screening is a waste of time.**

- Yes
- No
- Not sure

**D. Screening tools are complicated.**

- Yes
- No
- Not sure

## **SECTION F : SCREENING BARRIERS**

**This section will assess the screening barriers towards delirium identification. Please choose only one best answer.**

1

**A. Insufficient knowledge and training of delirium in acute stroke patients**

- Yes
- No
- Not sure

**B. Heavy workload caused lack of communication with patients and family**

- Yes
- No
- Not sure

**C. Lack of appropriate assessment tools**

- Yes
- No
- Not sure

**D. Lack of a structured evaluation procedure**

- Yes
- No
- Not sure

**E. Insufficient cooperation between physicians and allied health professionals**

- Yes
- No
- Not sure

**F. Time consumed for applying delirium screening tools**

- Yes
- No
- Not sure

**SECTION G: HEALTH SERVICE ORGANISATION**

**This section will assess your organisation policy and guidelines on delirium. In terms of the health service organization you are currently working in, please choose one relevant answer.**

**1.**

**A. Do you know of any guidelines in HPUPM for delirium risk identification, prevention and management?**

- Yes
- No

**B. Are the equipment and devices sufficient? (such as low-rise beds, call bells and clocks)**

- Yes
- No

### 3. Consent form JKEUPM

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



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

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

#### 1. STUDY TITLE :

Factors Associated With Current Practices Related To Delirium In Acute Stroke Patients Among Health Personnel at Hospital Pengajar Universiti Putra Malaysia

#### 2. INTRODUCTION:

*This study is a cross-sectional study that will be conducted from March to April 2021, among health personnel in HPUPM who are already managing stroke patients. It is to inform the hospital administration about how the current practices in managing delirium are affected by certain factors, and how knowledgeable are our staffs in this entity which carries high mortality in our patients. This study can yield a fundamental information to drive quality improvement initiatives in the future, such as development of training sessions, sedation protocol and standard screening tool for delirium. Stroke patients are chosen because HPUPM aspires to be a regional high-volume stroke center, thus planning a high quality and excellent service must address the entity that significantly affect patient's outcome, such as delirium. The estimated time to complete the questionnaire is 3 to 5 minutes.*

#### 3. WHAT WILL YOU HAVE TO DO?

*If you decide to take part in this research, you need to fill in the Questionnaire in Google form that is provided. We need around 209 staffs in HPUPM to participate. Please respond with respect to your knowledge, attitude and practice towards delirium. You need to fill up this questionnaire during this week only (29 March – 18 April 2021). Please also note that participation is voluntary, and that participant may withdraw anytime without penalty or loss of benefit. Respondents will not be paid for your participation in this study.*

#### 4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

*Any staff who is not a permanent staff in HPUPM and has never been involved in caring for patients with stroke.*

**5. WHAT WILL BE THE BENEFITS OF THE STUDY:****(a) TO YOU AS THE SUBJECT?**

*You will be allowed to reflect on yourself about delirium among stroke patients, and be able to evaluate your knowledge and attitude towards this entity by choosing to receive the results of this study. This also may help you to identify the challenges in screening and managing delirium in your daily practice. Once the research is done, you may increase your awareness towards delirium in post-stroke patients*

**(b) TO THE INVESTIGATOR?**

Data collected from this research enables the researchers to study on factors associated with current practices related to delirium in acute stroke patient among the healthcare personnel.

**6. WHAT ARE THE POSSIBLE RISKS?**

There is no risk.

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

The information that you provide, and your identity will remain confidential.

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

NO.	Name	Dept. & Address	H.P./Office/Fax	E-mail
1.	DR. HAKIMAH MOHD SALEHUDDIN	DEPT. OF MEDICINE, FMHS UPM	017-2598323	drhakimah@upm.edu.my
2.	PROF MADYA DR. HALIMATUS SAKDIAH MINHAT	DEPT. OF COMMUNITY HEALTH, FMHS UPM	012-3438175	halimatus@upm.edu.my
3.	HONG WEI	BACHELOR DOCTOR OF MEDICINE, FMHS UPM	016-4475775	202772@student.upm.edu.my
4.	HANIN NABILA MOHD YOSLI	BACHELOR DOCTOR OF MEDICINE, FMHS UPM	011-39801261	204136@student.upm.edu.my
5.	KHAIRUNNISA KAZURA	BACHELOR DOCTOR OF MEDICINE, FMHS UPM	019-3300545	200675@student.upm.edu.my

Please initial here if you have read and understood the contents of this page \_\_\_\_\_

**9. CONSENT**

I ..... Identity Card No. ....  
address.....  
.....hereby voluntarily agree to take part in the research stated  
above (questionnaire-based).

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

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

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

\* delete where necessary

Signature ..... Signature .....  
(Respondent) (Witness)

Date : ..... Name : .....  
I/C No. : .....

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

Date ..... Signature .....  
(Researcher)

#### 4. Approval letter

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)

Date: 12 April 2021

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

##### **APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED**

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled '**Factors Associated with Current Practices Related to Delirium Acute Stroke Patients among Health Personnel at Hospital Pengajar Universiti Putra Malaysia**' has been approved.

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

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

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

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

Note: Please use this reference number for any transaction.

**- JKEUPM-2021-076**

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Thank you.

Yours faithfully,

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

## 5. Final report form



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

### FORM 3.2 STUDY FINAL REPORT

1.	JKEUPM Ref. No.	UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)
2.	Study Title	Factors associated with current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti Putra Malaysia
3.	i. Principal investigator  a. Name b. Address c. Tel.No d. Email  ii. List of co-investigators	i. Principal Investigator a. Dr Hakimah Mohd Salehuddin b. Faculty of Medicine and Health Sciences Universiti Putra Malaysia 43400 UPM Serdang, Selangor c. 017-2598323 d. <a href="mailto:drhakimah@upm.edu.my">drhakimah@upm.edu.my</a>  ii. List of co-investigators a. Prof Madya Dr. Halimatus Sakdiah Minhat b. Hong Wei (202772) c. Hanin Nabila Mohd Yosli (204136) d. Khairunnisa Kazura (200675)
4.	Name Of Funding Agency	-
5.	Study Site	Hospital Pengajar Universiti Putra Malaysia (HPUPM)
6.	Total number of eligible subjects in study site	209
7.	Recruitment of subjects in study site  i. Number of participants recruited:  ii. Number of participants completing trial/ study:  iii. Proposed in original application:  iv. Number of withdrawals from trial to date due to: a) withdrawal of consent b) no response from participants c) loss to follow-up d) death (not the primary outcome)  Total study withdrawals:  v. Number of treatment failures to date (Prior to reaching primary outcome) due to: a) adverse events b) lack of efficacy	i. 209 ii. 47 iii. 209 iv. a) 0 b) 162 c) 0 d) 0 v. not applicable



**FORM 3.2 STUDY FINAL REPORT**

	Total treatment failures:	
8.	Duration of study	6 months
9.	Protocol Violation or Deviation	-
10.	<p>Executive summary (<i>Summary of research background, objectives, methodology, findings and conclusion of the research project</i>) - maximum 500 words) *Committee may request additional information if required.</p>	<p><b>Summary of research background:</b> Delirium affects more often in patients with serious medical illness. One of the critically ill condition associated with delirium is stroke. In Malaysia, the incidence of delirium in stroke patients has increased from 10%-25% to 13%-48%. This study was conducted to understand the factors associated with current practices related to delirium in acute stroke patient among health personnel at Hospital Pengajar Universiti Putra Malaysia (HUPM).</p> <p><b>Objectives:</b> This study aimed to determine the factors associated with the current practices related to delirium in acute stroke patients among health personnel at Hospital Pengajar Universiti putra Malaysia (HUPM)</p> <p><b>Material and method:</b> The study design chosen was cross sectional study that was conducted among the health personnel at HUPM to look at the factors that associated with current practices related to delirium in acute stroke patients. The participants for this study were chosen via simple random sampling. The research instruments used in this study was an online questionnaire that consisted of 7 sections which consist of : (1) socio-demographic background; (2) knowledge on delirium; (3) current practices; (4) perceptions; (5) attitudes; (6) screening barriers (7) health service organizations. The data was analysed using Statistical Package for Sosial Science program (SPSS). The test conducted to identify the factors associated with delirium in acute stroke patient are Chi-square test and Fisher's exact test.</p> <p><b>Results:</b> In this study, there were 47 health personnel out of 209 selected health personnel from HPUPM that responded to this study. The response rate was 22.49%. The respondents age that are below 30 years old is 40.4% while 46.8% are 31-40 years old, 10.6% are 41-50 years old and 2.1% more than 50 years old. For ethnicity, 80.9% are Malay while 8.5% Chinese and 10.6% Indians. As for gender, the majority were female (70.2%) and the rest are male (29.8%). For knowledge 46.8% of the health personnel have good knowledge regarding delirium meanwhile 53.2% of them have poor knowledge. For perception majority of respondents (93.6%) have good perception regarding delirium and the others (6.4%) have poor perception towards delirium in acute stroke patients. Most of the respondents (97.9%) have a good attitude regarding delirium in acute stroke and only 2.1 has poor attitude. Among the respondents 57.4%</p>