# A COMPARISON STUDY OF AWARENESS ON RISK FACTORS AND WARNING SIGNS OF STROKE BETWEEN NURSING AND MEDICAL STUDENTS IN UNIVERSITI SAINS MALAYSIA

by

NURFATIHAH BINTI MOHD YAZID

Dissertation submitted in partial fulfilment of the requirements for the degree of

Bachelor of Health Sciences (Nursing)

June 2015

## ACKNOWLEDGE

First, I would like to say thank you to my supervisor, Madam NoorAini Hussin for her fully guidance, support, suggestion and encouragement throughout the completion of this dissertation. Besides that, I also would like to say thank you to Dr Dariah Mohd Yusoff, the course coordinator of Research Project GTJ312/6, who help and support me in finishing my study and her effort to validate the questionnaires. Furthermore, special thanks to Madam Nurun Najmee Hasenan, lecturer from *Pusat Bahasa dan Terjemahan, Universiti Sains Malaysia (USM)* for her guidance efforts in instrument translate the questionnaires. My warmest appreciation to all students nursing final years and medical students final year for their sincerely to participate in this study. I hope they will finish their study successfully besides can improve their level of awareness about the stroke. Furthermore, special thanks to original author of instrument awareness of risk factors and warning signs of stroke among Nigeria University, Dr Adebimpe Obembe.

Lastly, special thanks to my family for their given financial support as well as emotional support for me. Besides, I really want to say thank you to my best friends Muhammad Munir Chek Nasrudin and Siti Maisarah Zakaria who always to give emotional support and encourage me to complete my study. I really appreciate their helping hand in the success of this study. Without your love and help, I would never finish it successfully. Thank you and I love all of you.

## TABLE OF CONTENTS

## LIST OF TABLES

**Pages**

## LIST OF FIGURES

**Pages**



## LIST OF ABBREVATION

WHO - World Health Organization

HUSM - Hospital Universiti Sains Malaysia

PPSK - Pusat Pengajian Sains Kesihatan

PPSP - Pusat Pengajian Sains Perubatan

HBM - Health Belief Model

TIA - Transient Ischemic Attack

# A COMPARISON STUDY ON AWARENESS OF RISK FACTORS AND WARNING SIGNS OF STROKE BETWEEN NURSING AND MEDICAL STUDENTS IN UNIVERSITI SAINS MALAYSIA (USM)


## ABSTRACT

Stroke is a clinical syndrome characterized by rapidly developing signs of focal loss of cerebral function with symptoms lasting more than 24 hours or leading to death. There are some risk factors of stroke which were hypertension, high cholesterol, smoking, and lack of exercise, family history of stroke and poor diet. While the warning signs of stroke are slurred speeches, numbness, weakness, headache, vision problems and shortness of breath. Thus, this study is aimed to compare the awareness level on risk factors and warning signs of stroke between nursing and medical student in USM. Moreover, the researcher also wants to compare the actions taken when someone having a stroke nears them, to compare the sources of information of stroke and lastly to compare the association between selected socio-demographic data (gender and educational entry level) on awareness of risk factors and warning signs of stroke between nursing and medical student in USM. There were 184 respondents included in this study. There was a significant difference in mean level of awareness of risk factors of stroke between nursing and medical students in USM ($p<0.05$). The researcher concludes the level of awareness for both programs were good but still need to increase their awareness. Thus, educational program can be conducted to increase the level of awareness of risk factors and warning signs of stroke among nursing and medical students in USM.

# PERBANDINGAN KAJIAN TENTANG TAHAP KESEDARAN MENGENAI FAKTOR RISIKO DAN TANDA AMARAN STROK ANTARA PELAJAR KEJURURAWATAN DAN PELAJAR PERUABATAN DI UNIVERSITI SAINS MALAYSIA (USM).

## ABSTRAK

Strok adalah satu sindrom klinikal bercirikan tanda-tanda kehilangan fokus fungsi serebrum dengan cepat yang mana gejala yang memakan masa lebih daripada 24 jam atau membawa kepada kematian. Terdapat beberapa faktor risiko strok antaranya tekanan darah tinggi, kolesterol tinggi, merokok, dan kurang bersenam, sejarah keluarga strok dan pemakanan yang tidak sihat. Manakala, tanda amaran strok adalah ucapan tidak jelas, kebas, lemah, sakit kepala, masalah penglihatan dan sesak nafas. Oleh itu, kajian ini bertujuan untuk menilai tahap kesedaran tentang faktor risiko dan tanda amaran strok antara pelajar jururawat dan pelajar perubatan di USM. Selain itu, penyelidik juga mahu membandingkan tindakan yang diambil apabila seseorang mendapat strok berhampiran mereka, membandingkan sumber maklumat strok dan akhir sekali untuk membandingkan perkaitan antara data yang dipilih sosio-demografi (jantina dan tahap kemasukan pendidikan) mengenai kesedaran faktor risiko dan tanda amaran strok antara pelajar kejururawatan dan pelajar perubatan di USM. Terdapat 184 responden yang terlibat dalam kajian ini. Terdapat perbezaan yang signifikan pada tahap min kesedaran faktor risiko strok antara pelajar kejururawatan dan pelajar perubatan di USM ($p<0.05$). Penyelidik membuat kesimpulan tahap kesedaran untuk kedua-dua program memuasakan tetapi masih memerlukan kesedaran tentang strok. Oleh itu, program pendidikan hendaklah dijalankan untuk meningkatkan tahap kesedaran tentang faktor-faktor risiko dan tanda-tanda amaran strok dalam kalangan pelajar kejururawatan dan pelajar perubatan di USM.

# CHAPTER 1

# INTRODUCTION

## 1.1 Background of the study

Stroke is the leading cause to the permanent disability in adults (Miyamatsu et al., 2013). This disease is one of the major causes of morbidity and mortality in developing countries when the cardiovascular risk factors are increasing due to the adoption of a western lifestyle such as high consumption of caloric foods and also lack of physical activity (Cossi, Preux, & Chabriat, 2012). Stroke is caused by the interruption of the blood supply to the brain, usually because of a blood vessel bursts or it's blocked by a clot in blood artery (WHO, 2014). Stroke can be defined as a neurological disease that is preventable and many of the established risk factors for stroke like hypertension, high cholesterol, diabetes, heart disease and also smoking can be prevented through various ways such as healthy lifestyle and medication as well (Obembe, Olaogun, Bamikole, Komolafe, & Odetunde, 2014).

Stroke is a clinical syndrome characterized by rapidly developing signs of focal loss of cerebral function with symptoms lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin (Yadav et al., 2013). National Stroke Association (2014) claimed that the stroke or "brain attack" occurs when a blood clot blocks an artery that carries the blood from the heart to the body then it will breaks and interrupting blood flow to an area of the brain. Stroke is classically characterized as a neurological deficit attributed to an acute focal injury of the central nervous system (CNS) by a vascular cause (Sacco et al., 2013).

Stroke can be classified as ischemic and hemorrhagic stroke. An ischemic stroke is an episode of neurological dysfunction that caused by the focal cerebral, spinal and retina infarctions mean while hemorrhagic stroke is a weakened vessel that ruptures and bleeds into the surrounding brain. The blood accumulates and compresses the surrounding brain tissue and it is divided into two categories which are the hemorrhagic infarction and the parenchyma infarction (Sacco et al., 2013). There are two types of risk factors of stroke that is controllable risk and uncontrollable risk. Controllable risk factors can be divided into two categories which are lifestyle risk factors and medical

risk factors (NSA, 2014). The controllable risk factors can be prevented by the people whether treated by medicine or change the lifestyle as well as doing regular physical activities and take healthy diet. The examples of controllable lifestyle risk factors are tobacco use, cigarette smoking, heavy alcohol consumption, lack of physical activity as well as obesity while for controllable medical risk factors such as high blood pressure, atrial fibrillation, high cholesterol, diabetes mellitus, atherosclerosis and circulation problems (NSA, 2014).

Meanwhile, uncontrollable risk factors are the risk factors that cannot be change by treatment or lifestyles. It is the permanent risk factor. The examples of uncontrollable risk factors are age with more than 55 years old, gender, and race, having a family history of stroke, fibro-muscular dysplasia, and patent foramen ovule and having history of previous stroke (NSA, 2014). The most common warning signs of stroke are sudden weakness, numbness of the face, arm or leg and most often on one side of the body (WHO, 2014). The other warning signs are confusion, difficulty to speak, unable to understand speech, difficulty seeing with one or both eyes, cannot walking, dizziness, loss of balance, severe headache without unknown causes as well as fainting (WHO, 2014).

Most studies have found that knowledge and awareness about risk factors of stroke and warning signs in the general population to be relatively poor even among those who are aware that they have a risk factor for stroke (Obembe et al., 2014). While, there were significant differences in the awareness of some risk factors of stroke with the staff having better awareness than students (Obembe et al., 2014). The previous study about the risk factors of cardiovascular among school children in Delhi have found that knowledge of the school children regarding cardiovascular risk factors was assessed and it was found that 15.3% of the school children (3.2% in the government school and 27.2% in the private school) knew the meaning of coronary heart disease to be blockage of the artery (George, Sharma, Ramakrishnan, & Gupta, 2013). There are limited study have found among the university's student.

Studies in Nigeria University have found that there were significant differences in the awareness of some risk factors (age, hypertension, obesity, family history of stroke, alcohol use) and warning signs (slurred speech, dizziness, numbness, weakness) among students in different faculties with students in Clinical Sciences, Dentistry, Basic

Medical Sciences, and Pharmacy having better awareness (Obembe et al., 2014). Because of limited of study among the students, this study will be conducted with aim to assess the awareness of risk factors of stroke and awareness to recognize warning signs of stroke among final year students in Universiti Sains Malaysia (USM) which are final year nursing and final year medical students.

The purpose of this study to assess the awareness of health professional students about the risk factors of stroke even they are study and will work in health care area that stroke patients were admitted. The study from Yadav et al., (2013) found that effective stroke prevention programme should be focused to improve the public awareness about the early warning signs of stroke, modifiable risk factors with prompt medical referral and treatment. But, the community in India are less aware and have low knowledge about the warning signs and risk factors of stroke based on previous studies on hospital survey (Yadav et al., 2013). Thus, there is a need to study about the knowledge and awareness on warning signs and risk factors of stroke among health professional student in USM.

Not all people are aware about the risk factors and warning signs of the stroke either community, health care professional like nurses, dieticians, nutritionist, doctors, physiotherapies and many others. Stroke has symptoms that acts as warning signs, and most people are not recognize these warning signs (Obembe et al., 2014). A campaign of stroke which is World Stroke Day were organized on October 29, 2012 by World Health Organization with one main objective which is to put the fight against stroke front and centre on the global health agenda (World Health Organization, 2014). The one in six themes was selected to highlight the fact that in today's world where are one in six people worldwide will have a stroke in their lifetime (WHO, 2014).

## 1.2 Problem statement

In Malaysia, stroke is one of the top five leading causes of death (Loo & Gan, 2012). Life expectancies in Malaysia for males and females were 72 and 76 years old and it accounts for an average of 5.5 crude death rates per 100 populations (Loo & Gan, 2012). In Malaysia, there are limited numbers of prospective studies about stroke. In Kelantan, about 158 stroke patients were admitted to Hospital Universiti Sains Malaysia

(HUSM) of whom 86.1% were Malays and 13.1% were Chinese where it indicates that local population made up primarily of Malays (Loo & Gan, 2012). The study from Loo & Gan (2012) showed that the risk factors for stroke in Kelantan and Penang were smoking, diabetes, heart disease and hypercholesterolemia with hypertension being the highest risk factors.

Knowledge of risk factors and warning signs in the general population has been found to be relatively poor (Obembe et al., 2014). The study about awareness of risk factors and warning signs in a Nigeria University by Obembe et.al., (2014) showed that there were significant differences in awareness of some risk factors of stroke, with the staff having better awareness compared to the students. There were significant differences in awareness of risk factors like age, hypertension, obesity, family history of stroke and alcohol consumption and warning signs such as slurred speech, dizziness, numbness as well as weakness among students in different faculties (Obembe et al., 2014). In Malaysia, several studies have been done to assess the burden of stroke but not about the knowledge as well as the awareness. So that, there are limited of studies among future health care practitioner about the awareness of risk factors and warning signs of stroke in Malaysia especially in university's student. Thus, the study on a comparison on awareness about the risk factors and warning signs of stroke between undergraduate nursing and medical students in University Sains Malaysia (USM) was conducted.

## 1.3 Research Objectives

### 1.3.1 General Objectives

To assess the awareness on risk factors and warning signs of stroke between nursing and medical student in Universiti Sains Malaysia (USM).

### 1.3.2 Specific Objectives

**a)** To compare the level of awareness on risk factors and warning signs of stroke between nursing and medical student in USM.

**b)** To compare the actions taken by nursing and medical student in USM when someone having a stroke near them.

c) To compare the sources of information of stroke among nursing and medical students in USM.

d) To compare the association between selected socio-demographic data (gender and educational entry level) on awareness of risk factors and warning signs of stroke among nursing and medical student in USM.

## 1.4 Research questions

1. Is there any different between level of awareness on risk factors and warning signs of stroke between undergraduate nursing and medical student in USM?
2. What are the differences in actions taken by nursing and medical student in USM when someone having a stroke nears them?
3. What are the differences in sources of information of stroke among nursing and medical students in USM?
4. Is there any association between selected socio-demographic data (gender and educational entry level) on awareness of risk factors and warning signs of stroke among nursing and medical student in USM.

## 1.5 Hypothesis:

1. $H_O$ 1 = There is no significant difference in level of awareness on risk factors and warning signs of stroke among nursing and medical student in USM.
   $H_A$ 1 = There is a significant difference in level of awareness on risk factors and warning signs of stroke among nursing and medical student in USM.

2. $H_O$ 2 = There is no significant association between selected demographic data (gender) on awareness of risk factors and warning signs of stroke among undergraduate nursing and medical student in USM.
   $H_A$ 2 = There is a significant association between selected demographic data (gender) on awareness of risk factors and warning signs of stroke among undergraduate nursing and medical student in USM.

3. $H_O$ 3 = There is no significant association between selected demographic data (educational entry level) on awareness of risk factors and warning signs of stroke among undergraduate nursing and medical student in USM.

   $H_A$ 3 = There is a significant association between selected demographic data (educational entry level) on awareness of risk factors and warning signs of stroke among undergraduate nursing and medical student in USM.

## 1.6 Definition of terms

**Table 1.1 Definition of conceptual and operational**

| Terms | Conceptual definition | Operational definition |
|---|---|---|
| Stroke | Stroke is an interruption of the blood supply to the brain, usually because of a blood vessel bursts or it's blocked by a clot in blood artery (WHO, 2014) | Conditions where someone gets stroke due to blockage in blood artery to the brain based on WHO, 2014. |
| Awareness | Knowledge of perception of a situation or fact (Oxford Dictionary, 2014). | Perception and thought of nursing and medical students that may cause stroke. |
| Risk factors | Any attribute, exposure or characteristic of an individual that increases the likelihood of developing a disease of injury (WHO, 2014). | Nursing and medical students towards perception of risk factors to get stroke such as controllable and uncontrollable risk factors of stroke. |

| | | |
|---|---|---|
| Warning signs | An indication that something is wrong and a notice or indicator that gives a warning (Collins English Dictionary, 2014). | Nursing and medical students towards perception of warning signs of stroke such as numbness, difficult to understand speech as well as weakness of the body. |
| Nursing student | A student in a program leading to certification in a form of nursing; usually applied to students in an RN or practical nurse program (Medilexicon Dicitionary, 2014). | A person who is training as nurses in nursing school in Pusat Pengajian Sains Kesihatan. |
| Medical student | A person following a course of study leading to qualification as a doctor of medicine (Collins Dictionary, 2014) | A person who is training as doctors in medical school in Pusat Pengajian Sains Perubatan. |

## 1.7 Significance of the study

The study about the awareness towards risk factors and warning signs of stroke among university student is limited as compared to the study done among community especially in Malaysia. The study about risk factors and warning signs of stroke is more focus towards community as compared to medical students and nursing students. The study will examine the level of awareness about stroke even they are in health sciences field and learn about the stroke. This study also may improve the curriculum and ways the learning about the disease among nursing and medical students. It will prevent the student's lack of knowledge, awareness and misunderstanding about the stroke. Besides that, this study will increase the awareness of risk factors and warning signs of stroke individually plus they can take prevention from their awareness of stroke. This study also may help the students to further define the needs related to the awareness of risk factors and warnings sign of stroke. Thus, they can make an immediate action after getting known about the warning signs of factors. In addition, this study will serve as a foundation for interventions to improve the student's level of awareness and able to quickly access the emergency medical services during episodes of stroke signs and symptoms.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Introduction

The purpose of this study is to assess the level of awareness on risk factors and warning signs of stroke among nursing and medical students in USM. The literature review is to determine current research that contributing to the awareness of risk factors and warning signs of stroke. It is necessary for researcher to measure the level of awareness by concerning on research questions. Health Belief Model (HBM) is used as theoretical framework in this study.

## 2.2 Review of literature

### *2.2.1 Incidence and prevalence of stroke*

Stroke was killed more than 137, 000 people a year and about one of every 8 deaths can occur within four minutes someone dies because of stroke stated by American Heart Association or AHA (2014). An estimated 6.8 million Americans with age more than 20 years old have a stroke (AHA, 2014). According to the data from Centres for Disease Control and Prevention (CDC), 2.9% of men and 2.9% of women more than 18 years old had a history of stroke (AHA, 2014). Then, according to AHA, (2014), over the time period 2006 to 2010 showed that the overall self-reported stroke prevalence did not change while in older people with lower levels of education and people living in the south-eastern United States had higher stroke prevalence. Besides that, the crude incidence of stroke varies greatly between countries where the greatest crude stroke incidence rates were observed in Frederiskberg, Denmark and rural Portugal (Thrift et al., 2014). For the incidence of stroke in worldwide, each year, approximately 795 000 people experience a new or recurrent stroke and almost 610 000 of these are first attack, and 185 000 are recurrent attacks (AHA, 2014).

AHA (2014) was found that every 40 seconds, someone in the United States has a stroke. On average, every four minutes, someone dies of a stroke and accounted for almost one of every 19 deaths occurred in the United States in 2010 (AHA, 2014). The crude stroke mortality was greater in Kazhakstan in 2003 with 100 000 population per

year (Thrift et al., 2014). Then, the Russian Federation in 1998, Bulgaria in 2011, Greece in 2010 and Romania in 2010 were all countries with very high mortality of stroke (Thrift et al., 2014). While, the countries with lower mortality rates which are New Guinea in 1977, Bahrain in 2009, Nicaragua in 1978 and Kuwait in 2011 (Thrift et al., 2014). A study was conducted for patients that admitted to emergency department with possible stroke to determine their knowledge towards signs, symptoms and risk factors of stroke and of the 163 patients able to respond, 39% did not know a single signs and symptoms while patient with more than 65 years old were less likely than those who less 65 years old and overall of study almost 40% of patients did not know the signs, symptoms and risk factors of stroke (AHA, 2014). Due to ageing populations worldwide, it has been estimated that by 2020 stroke will be the leading cause of lost healthy life-years (Jones, Jenkinson, Leathley, & Watkins, 2010). The Global Burden of Disease Study estimated that there will 18 million new stroke cases and 6.5 million deaths in 2015, and that in 2030 there will be 23 million new cases and 7.8 million related to death (Cossi et al., 2012). Stroke is the third most common cause of death in Australian community and the single greatest cause of disability (Mosley, Nicol, Donnan, Thrift, & Dewey, 2014)

### *2.2.2 Risk factors and warning signs of stroke*

In the previous study shown that, the most commonly recognized risk factors of stroke were getting older (58.8%), previous stroke (56.6%), hypertension (56%), and smoking (47.5%) (Madae et al., 2013). There are two types of risk factors of stroke that is controllable risk and uncontrollable risk. The controllable risk factors are hypertension, stress, cholesterol, smoking habits, obesity, lack of exercise, diabetes, alcohol use as well as diet pattern (Obembe et al., 2014). All of these risk factors are can be controlled by using changes the lifestyle or through the medication. While the uncontrollable risk factors are including age, gender and family genetic (Wasay, Khatri, & Kaul, 2014). This type of risk factors is permanent and cannot be controllable through medication and changes the lifestyle.

For controllable risk factors, in previous study stated that smoking and hypertension were the two most commonly cited risk factors of stroke (Sundseth, Faiz, Rønning, & Thommessen, 2014). The other study claimed that risk factors commonly

identified without prompt of a question included stress, diet, alcohol excess, inactivity as causes of stroke (Jones et al., 2010). On the other hand, previous studies shows the result that patients who reported hypertension, hyperlipidemia, smoking, lack of regular physical activity, overweight, excessive alcohol consumption or ischaemic heart disease as their own risk factors (Sloma, Backlund, Strender, & Skånér, 2010). The results from the same studies shown that when asked to name other conditions or diseases that could increase the risk of having a new stroke, 27 patients (14.8%) mentioned stress. Other conditions mentioned occasionally included diet, family troubles, lifting heavy things, blood diseases (coagulation disorders), disturbed blood circulation in the legs, surgery, unhealthy lifestyle, sleep apnea syndrome, estrogens, caeliac disease (Sloma et al., 2010). In addition, in previous study found that "Lack of exercise" was the commonest risk factor cited by the respondents, and is probably because exercising is one of the major stroke rehabilitation methods, and thus it is commonly perceived that people who do not exercise are at risk of stroke (Donkor, Owolabi, Bampoh, Aspelund, & Gudnason, 2014).

For the uncontrollable risk factors, age is an important non-modifiable risk factor for stroke. The mean age of stroke onset in the South Asian region for example, 59 years in Pakistan and 63 years in India is lower than in Western countries for example, 68 years in the USA and 71 years in Italy (Wasay et al., 2014). Age is an independent predictor of cardiovascular diseases including stroke, hence the increased prevalence with increasing age while in term of gender, males recorded a higher crude prevalence rate of stroke as compared to females (Onwuchekwa, Tobin-West, & Babatunde, 2014). From the previous study that was done in Nigeria found that the reason is not clear but apart from the influences of the factors that bear on the differences in the geographical location such as ethnicity (Onwuchekwa et al., 2014). Others study shown that the previous stroke and family history of stroke as risk factors (Jones et al., 2010). It means that, the uncontrollable risk factors of stroke including the family genetic may cause stroke for other member in the family.

Based on warning signs established by the American Stroke Association, National Stroke Association and the National Institute of Neurological Disorders and Stroke, the following were listed as important warning signs of stroke: sudden numbness or weakness in the face, arm or leg, especially on one side of the body; sudden confusion or difficulty speaking or understanding speech; sudden trouble seeing in one or both

eyes; sudden difficulty in walking, dizziness or loss of balance/coordination; or sudden and severe headache with no known cause (Hickey et al., 2009). Stroke awareness among the public and general practitioners is directly proportional to improved care and outcome for example in India and Pakistan, level of awareness of the risk factors and the warning symptoms of stroke among the general population is very low (Wasay et al., 2014). Improved socioeconomic status and higher education have been found to raise awareness of the risk factors and warning symptoms of stroke in both rural and urban populations. Poor recognition of early stroke symptoms and low perception of threat leads to delayed arrival of patients at hospitals. Other influences include distance from the hospital, education, socioeconomic status, family history of stroke, and advice of friends and local doctors (Wasay et al., 2014).

### *2.2.3 Stroke Knowledge*

The research about the knowlegde of risk factors and warning signs of stroke among the students are very limited. The study about Obstructive Sleep Apneo (OSA) as a modified risk factors for stroke have found that the reveals dismal level of awareness about OSA being an established and modifiable risk factor for hypertension and ischemic stroke among health professionals and medical students in a tertiary care academic institute in South India. Poor awareness of OSA was found at all levels of healthcare providers, from undergraduate students to specialist doctors and nursing staff (Sharma & Srijithesh, 2013). Knowledge of the school children regarding cardiovascular risk factors was assessed and it was found that 15.3% of the school children knew the meaning of coronary heart disease to be blockage of the artery (George et al., 2013). Considering the total knowledge scores, 25.4% school children had adequate total knowledge scores while 54.4% of the school children had moderately adequate scores and 20.21% of the school children had inadequate scores respectively (George et al., 2013). Previous study that was done in Nigeria University have found that there were significant differences in the awareness of some risk factors (age, hypertension, obesity, family history of stroke, alcohol use) and warning signs (slurred speech, dizziness, numbness, weakness) among students in different faculties with students in Clinical Sciences, Dentistry, Basic Medical Sciences, and Pharmacy having

better awareness (Obembe et al., 2014). It means that, medical students have good awareness as compared to other students in the Nigeria University.

## 2.3 Theoretical/ Conceptual Framework

This research used the Health Belief Model (HBM) as a framework to understand how individuals' perceptions of benefits, threats, cues to action, and self-efficacy play a role in the likelihood of individuals becoming involved in individuals safety practices (Bishop, Baker, Boyle, & MacKinnon, 2014). In the 1950s, the HBM was developed by Houchbaum, Rosenstock, and Kegels (Jones, Smith, & Llewellyn, 2014). HBM was designed to predict health-promoting behaviours, such as uptake of screening programmes, for the US Public Health Services. Subsequently, the HBM has been used to examine sick role behaviours such as adherence to medical advice (Jones et al., 2014). The HBM has been used to explain the adoption of single preventative behaviours, such as vaccination and screening, broader healthy lifestyle adoption, illness prevention and sick-role behaviours (Bishop et al., 2014). The HBM provides an opportunity to explore how health-care provider behaviour can influence individual's perceptions of individuals safety and the likelihood of individual involvement in safety behaviours (Bishop et al., 2014).

According to this model, when an individual regards himself or herself as susceptible to a risk condition and believes that the available course of actions is beneficial to his or her illness condition, he or she is more likely to take actions to reduce the risks (Wang et al., 2014). The HBM has five core constructs. The HBM proposes that *perceived severity* where beliefs about how serious the condition is and the related consequences of the condition coupled with *perceived susceptibility* that extent to which the individual feels at risk of being exposed or suffering from the condition and cues to action, all contribute to the individual's perception of threat. Perceived threat may lead to the performance of an action to reduce threat, the choice of which action to take depends on the perceived benefit of performing it (Bishop et al., 2014). Theoretically individuals with a family history of stroke may perceive greater threat than those without a family history of stroke (Rollins, Ramakrishnan, & Perri, 2014).

Benefits are also weighed against perceptions of barriers that an action might be expensive, dangerous, unpleasant or inconvenient. The *cues to action* may be internal such as bodily state or symptom or external such as reminder about doctor's appointment. The individual's perception of threat to a condition plus the *perceived benefits* where the effectiveness and availability of taking a particular course of action and the *perceived barriers* where the negative aspects related to following the course of action contribute to the likelihood of the action being followed (Jones et al., 2014). Figure 2.1 shows the illustrates of Health Belief Model.

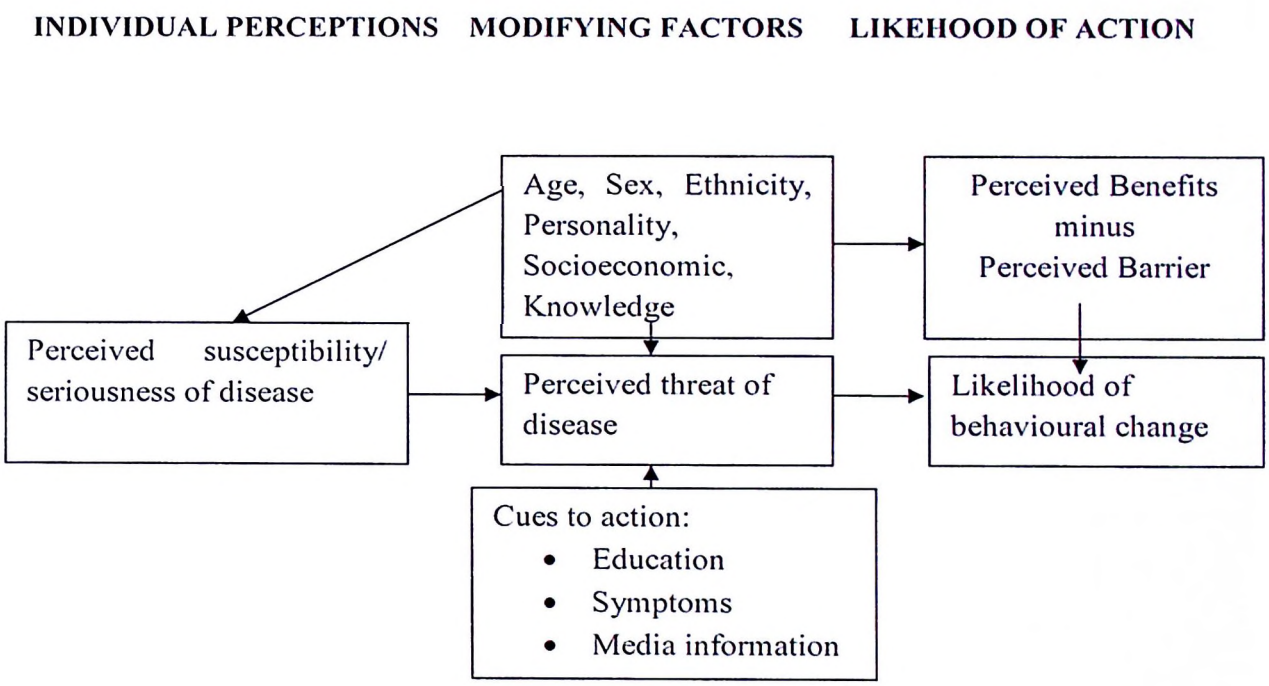


**Figure 2.1 Theoretical Framework Health Belief Model (Jones et al., 2014)**

For the conceptual framework, the modified from the model of HBM is used. Perceived susceptibility is the individual's opinion of chances of getting a stroke because of the variables that consist of age of person, sex, educational entry level to USM, the programme, risk factors and warning signs of the stroke. Perceived of seriousnes of the stroke is based on the level of awareness of risk factors and warning signs of stroke which is score as reporting two or less correct response was defined as lack of awareness. Cues to action may change the curriculum of the programme as well as change in educational syllabus on stroke. The process of practicum in hospital will

change due to score of student's awareness. The variables also may influnce the individual to likelihood of action when having stroke. The score also may based on questionnaire where the first reaction of individual when having stroke. The individual perceptions also may change the action of students towards the stroke. The figure 2.2 below illustrate the conceptual framework of HBM.

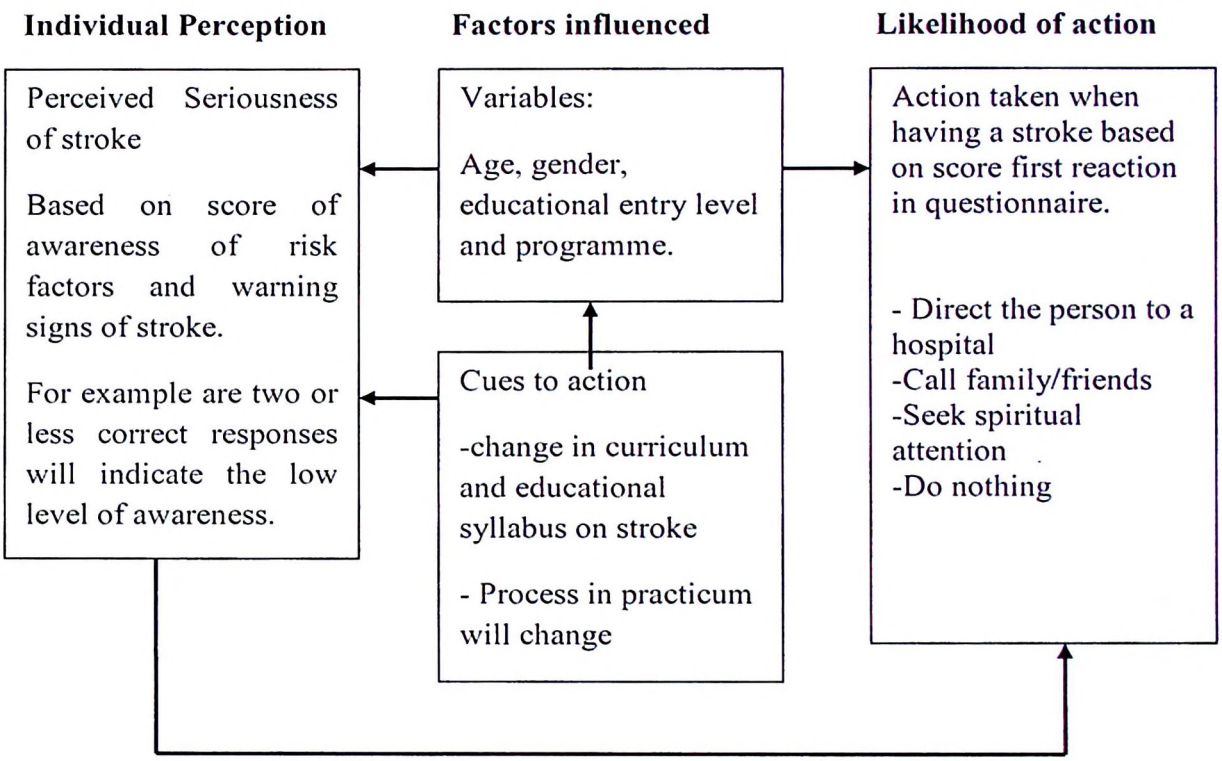


**Figure 2.2 Conceptual Framework: Health Belief Model**

# CHAPTER 3

# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter presented the research design, the population and setting of the study, the procedure used to conduct the study, the instrumentation and an explanation on how the data of the study were presented and analyzed. The study was focused on the final year nursing and medical students in Universiti Sains Malaysia (USM).

## 3.2 Research Design

This is a cross-sectional study and quantitative study. The objectives of the study are to explore information on the level of awareness on risk factors and warning signs of stroke among undergraduate nursing and medical students in USM. The data was collected from December 2014 until February 2015.

## 3.3 Population and Setting

The study was conducted on final year nursing students included diploma and degree of nursing and medical students in Universiti Sains Malaysia (USM), Health Campus, Kubang Kerian, Kelantan.

## 3.4 Sampling Plan

### 3.4.1 *Sample*

**Inclusion criteria**

1. Final year of diploma and degree of nursing students in USM
2. Final year of medical students in USM.

**Exclusion criteria**

1. Other health sciences students and dental students in USM.
2. First year and second year Diploma of Nursing students in USM
3. First year until third year Degree of Nursing students in USM.

4. First year until forth year Medical students in USM.
5. Not willing to participate in this study.

### 3.4.2 *Sampling Method*

This study was using a non probability and purposive sampling method. The final year undergraduates nursing students and medical students were selected based on inclusion and exclusion criteria. The study was used the sampling methods, in order to prevent from bias during the study was conducted. The sample size was calculated by using the Raosoft sample size software to ensure the accuracy of the data and with a confidence level at 95% and margin of error is 5%. Because of this is a comparison study, the population size was separated which is sample size for nursing students and sample size for medical students.

### 3.4.3 *Sample Size*

The recommended sample sizes for final year nursing students were 84 and for medical students were 121. Then, the drop out for this study was 10% of calculated sample size was determined. Therefore, the total students involved for this study were:

Nursing students = 84 + drop out 10%

= 84 + 8.4

= 92 nursing students

Medical students = 121 + drop out 10 %

= 121 + 12.1

= 133 medical students

Total students involved = 92 (nursing students) + 133 (medical students)

= 225 students

## 3.5 Variables

### *3.5.1 Independent Variables*

The independent variables were selected base on the demographic data including gender and educational entry level in USM.

### *3.5.2 Dependent Variables*

For dependent variables were the level of awareness on risk factors and warning signs of stroke among undergraduates nursing and medical students in USM.

### *3.5.3 Variables Measurement*

For measurement variables, in section A were filled with independent variables which is socio-demographic data (gender and educational entry level). It was measured according to self report, yes or no answer by descriptive data for frequency and percentage. Respondents were ticked in the box that suitable for them. In section B and C, yes and no answer were measured by descriptive data for frequency and percentage. The respondents were asked to indicate if they recognized any of the seven warning signs and any of the 11 risk factors of stroke (Obembe et al., 2014). Inadequate level of awareness were defined as reporting two or less correct response (Obembe et al., 2014). For warning signs of stroke, zero to four correct answers were indicated poor awareness in warning signs of stroke and more than five correct answers were indicated high awareness in warning signs of stroke. While for risk factors, zero to six correct answers were indicated as poor awareness and more than seven correct answers were indicated as high awareness in risk factors of stroke.

## 3.6 Instrumentation

### 3.6.1 *Instrument*

A self-administer questionnaire was used in this study. The questionnaire was categorized into three sections as follows:

**Section A:** The demographic data which comprise of 13 questions of personal profile respondent including name of school, programme, age, gender, educational entry level, last examination result, family socio-economic status, weight, height, body mass index (BMI) and blood pressure, year the stroke subject has been taught and the past history about the stroke.

**Section B:** For this section, respondents were given eight questions related to warning signs of stroke and 14 questions of risk factors of stroke. The respondents were ticked based on their knowledge about that question.

**Section C:** This section consists of questions about their action when someone having a stroke nears them as well as the questions about sources of information about stroke. Some correct answers were listed and choose the one they are most preferred.

### 3.6.2 *Translation of Instrument*

The questionnaire and consent form were prepared in dual language which are English and Malay language version for easy understanding by the respondents during filling of the form. The process of translation was still maintaining the original meaning of the questionnaire. By using forward and backward translation, the instruments were translated into the Malay version of questionnaire for this type of study. First of all, the instrument were translated into Malay language by researcher and nursing lectures. After that, the Malay version was sent to one English lecturer with certificate at the Pusat Pengajian Bahasa Literasi dan Terjemahan Universiti Sains Malaysia (USM). After that, the supervisor was rechecking to compare the meaning of the questionnaires are not change and correction was done.

### 3.6.3 *Validity and Reliability*

In order to check for validity of research instrument tool is to conduct the pilot study. The pilot study also important for this study to ensure the questionnaire given is easy to understand and answer by the respondents. It is also to improve the questionnaire. The pilot study was carried out on 20 respondents in USM which is other students in Pusat Pengajian Sains Perubatan (PPSP) and Pusat Pengajian Sains Kesihatan (PPSK).

## 3.7 Ethical Considerations

The study was getting ethical approval from the Human Research Committee (HREC) Universiti Sains Malaysia (USM). A written consent is a solid evidenced that verify the respondents agreement to participate in this study. The explanation of the purposes of study is also was given to the respondents. Participants also were informed about their right to decline the participation and the confidentiality and anonymity will be protected. The participants were informed about the purpose of the study that will be used only for academic and research purposes. Then, to adopt the original question, gaining approval from the author is essential.

## 3.8 Data Collection

After gaining approval from the Human Research Committee (HREC) Universiti Sains Malaysia (USM), and respondents were approached. The written consents are sought from respondents who fulfil the inclusion criteria. The respondents were informed that the questionnaire was take approximately 10 to 15 minutes and was collected after 30 minutes so that the respondents have enough time to complete the questionnaires. In order to avoid the error in the result, the researcher was assembled all respondents in lecture hall and the questionnaires are distributed. While waiting for respondents to complete the questionnaire, the researcher was stayed with them in lecture hall to ensure the respondents are not cheating in answering the questions. Then, after 30 minutes, the questionnaires were collected. The proposed study was carried out from December 2014 to January 2015. The data collection plan is showed in Figure 3.1

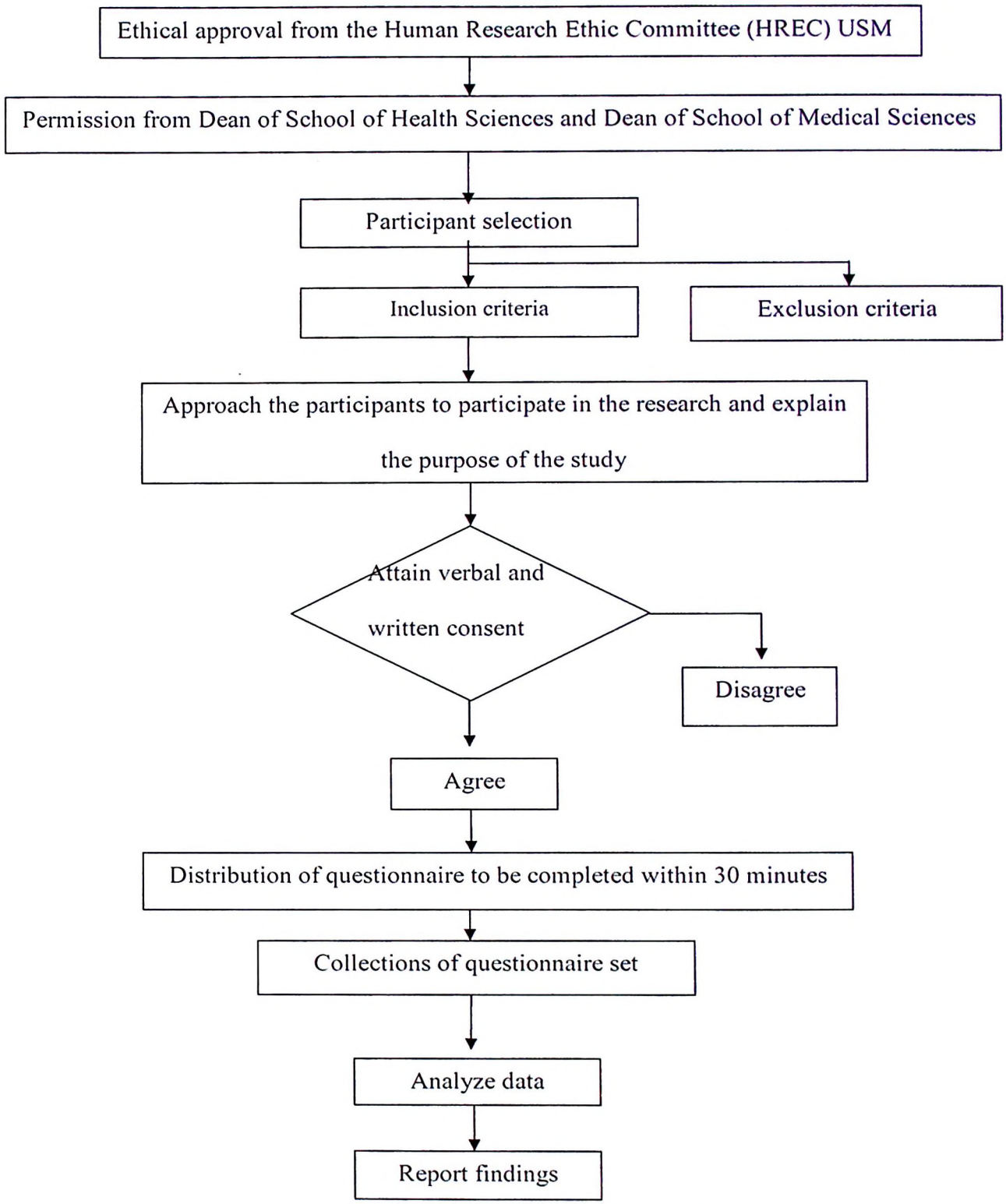


**Figure 3.1 Flow Chart of the Data Collection**

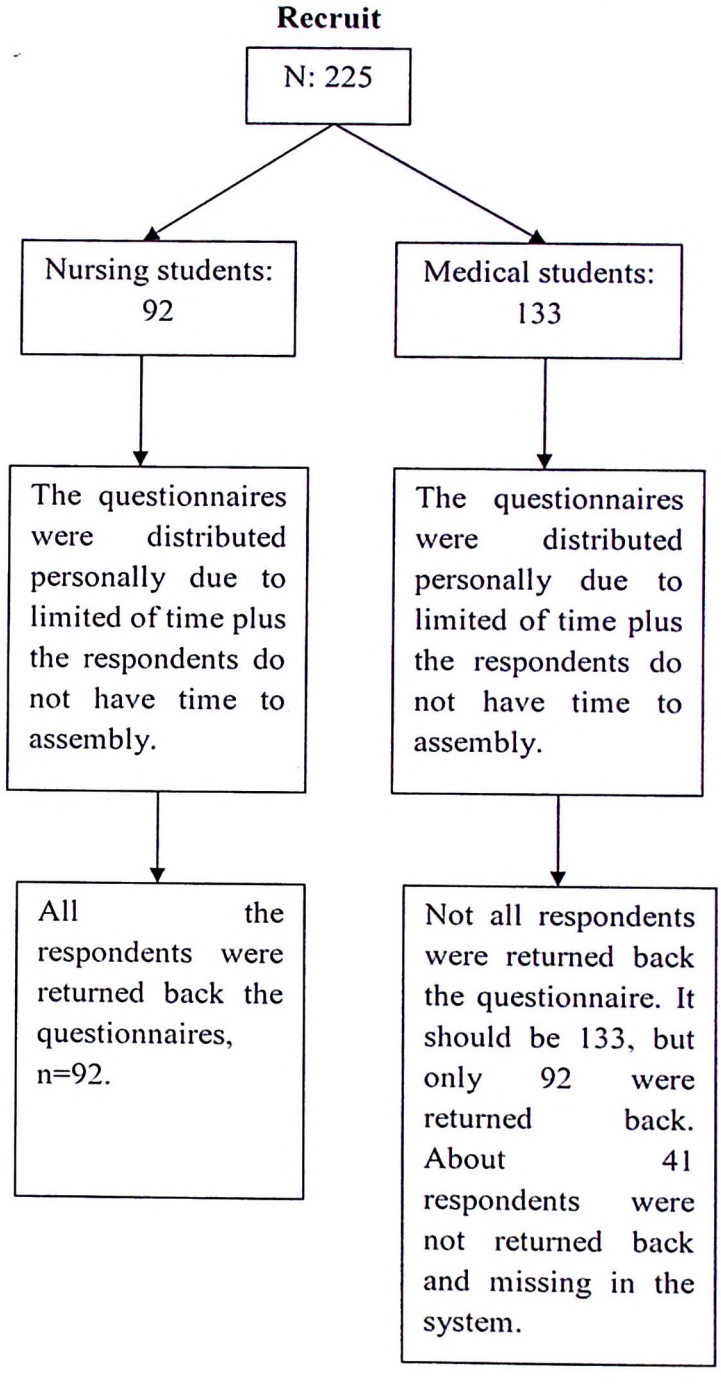


**Figure 3.2 Recruit of the respondents.**

## 3.9 Data Analysis

Data collected was gathering by using Statistical Package for Social Science (SPSS) software version 22.0. Prior to statistical test, the distribution normality was checked. At the 5% level of significant, all null hypothesis (Ho) will be rejected if $p<0.05$.

**Table 3.1 Measurement of Data Analysis**

| Research Objectives | Analysis |
|---|---|
| **1.** To compare the level of awareness on risk factors and warning signs of stroke between nursing and medical students in USM. | Independent t-test |
| **2.** To compare actions taken by nursing and medical students in USM when someone having a stroke near them. | Frequency and percentage |
| **3.** To compare the sources of information of stroke among nursing and medical students in USM. | Frequency and percentage |
| **4.** To compare the association between selected socio-demographic data (gender and educational entry level) on awareness of risk factors and warning signs of stroke among nursing and medical student in USM? | Chi-Square |

### 3.10 Expected Outcomes

At the end of this study, the researcher hopes that the study will achieve the objectives which is to assess and compare the awareness on risk factors and warning signs of stroke among undergraduate nursing and medical students in USM. The result of this study will be contributed to improve the curriculum of both programmes. From that, the academic administration will improve the curriculum as well as for faculties and students to plan the strategies to increase the knowledge and awareness about the stroke. It also will provide a platform for further research.