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**STROKE LITERACY AMONG PEOPLE ATTENDING
KLINIK RAWATAN KELUARGA (KRR) IN HOSPITAL
UNIVERSITI SAINS MALAYSIA (HUSM)**

BY

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**Dissertation submitted in partial fulfillment of the
requirements for the degree
of Bachelor of Health Sciences (Nursing)**

June 2012

ACKNOWLEDGEMENT

First of all, I would like to say Alhamdulillah, praise to Allah because with permission that I could finish my research as planned. Research project is very complex but interesting activity. Being able to start this project and finished the writing have taught me the meaning of patience, time management, courage and good value.

I would like to express my sincere gratitude and appreciation to my supervisor Dr. Che Rabiaah, senior lecturer from School of Health Science, Universiti Sains Malaysia, for her patience and guidance throughout the completion of this research. I am very grateful to have Dr. Che Rabiaah as my supervisor because she always gave me encouragement and moral support. She always there when I need guidance and also face difficulty, giving me idea and also stimulate my thinking to be more creative so that I can complete this thesis.

I also would like to express my thank you to the entire person that involved directly or indirectly in completing my study especially to sister and all respondents who attend Klinik Rawatan Keluarga (KRK), HUSM and statistician. Thanks also goes to Kim, E. M., Hwang, S. Y., & Kim, A. L the journal authors for their approval from which the study questionnaire was adopted.

I also would like to give my warmest appreciation to my beloved family for their understand, moral support and financial support that enable me to complete my project. Finally I would like to thank all my fellow friends here we share the cheers and tears until completion of this research for the encouragement, guide and moral support.

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ABBREVIATIONS

HUSM	Hospital Universiti Sains Malaysia
KRK	Klinik Rawatan Keluarga
NASAM	National Stroke Association of Malaysia
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

ABSTRACT

Stroke is the third most common cause of mortality in the developed world and is also the leading cause of adult neurological disability. Due to ageing populations worldwide, it has been estimated that by 2020 stroke will be the leading cause of lost healthy life-years. To combat the effects of stroke, the knowledge regarding sign and symptom and risk factor of stroke among people are very important in order to prevent from getting the stroke.

The aim of the study was to assess and evaluate the level of knowledge of stroke sign and symptom and risk factor among people attending Klinik Rawatan Keluarga (KRR), Hospital Universiti Sains Malaysia, (HUSM). The study was conducted between September 2011 to June 2012. Data was collected using self administered questionnaire. A total score of 10 and above indicate good knowledge regarding stroke. Descriptive studies were used to describe the characteristic of respondents. Chi square test were used to test the association between sociodemographic data and total score knowledge of stroke. The good total score knowledge of stroke in this study is 63%. The only sociodemographic data which having not association toward total score knowledge of stroke is gender and the ethnic, meanwhile others risk factor identified by respondents was hypertension, recurrent smoking and also the heart disease. While the sign and symptoms that highly know from the respondents were 'sudden numbness or weakness of the arm or leg, especially on one side of body' and 'sudden dizziness'. Therefore, the data obtained in this study may be serving guideline for early detection and prevention of the stroke in our community.

ABSTRAK

Strok merupakan penyebab ketiga kematian dalam dunia yang membangun dan juga merupakan penyebab hilang upaya neurologi. Berdasarkan peningkatan golongan warga emas, ianya dianggarkan pada tahun 2020, strok akan menjadi penyebab kepada kehidupan yang tidak sihat. Untuk menghalang kesan daripada strok, pengetahuan tentang tanda dan gejala dan juga faktor risiko strok amat penting dalam mencegah strok.

Tujuan kajian ini adalah untuk menilai tahap pengetahuan tentang gejala dan tanda dan juga faktor risiko strok dalam kalangan masyarakat yang hadir di Klinik Rawatan Keluarga (KRG), Hospital Universiti Sains Malaysia, HUSM. Kajian ini dijalankan antara September 2011 hingga Jun 2012. Soal selidik telah digunakan dalam kajian ini. Jumlah markah 10 dan ke atas menunjukkan pengetahuan yang baik mengenai strok. Kajian diskriptif telah digunakan untuk menggambarkan ciri-ciri peserta. Ujian Chi kuasa dua digunakan untuk uji perhubungan antara sosiodemografik data dan jumlah skor pengetahuan tentang strok. Jumlah skor pengetahuan strok yang baik dalam kajian ini adalah 63%. Data sosiodemografik yang tidak mempunyai hubungan dengan jumlah skor pengetahuan tentang strok adalah jantina dan etnik. Sementara itu faktor risiko yang diketahui peserta adalah tekanan darah tinggi, merokok, dan juga penyakit jantung. Manakala tanda dan gejala tentang strok yang diketahui oleh peserta adalah 'kebas secara tiba-tiba atau kelemahan lengan atau kaki, terutamanya pada sebelah badan' dan 'pening kepala secara tiba-tiba'. Oleh itu data yang diperolehi dalam kajian ini dapat memberi garis panduan bagi pengesanan awal dan pencegahan strok dalam masyarakat kita.

CHAPTER 1 INTRODUCTION

1.1 Background of the study.

Stroke has become Malaysia's number three killers after heart disease and cancer, with an average of 110 people dying of it every day (Fatimang, 2011). It is considered to be the single most common cause of severe disability, and every year, an estimated 40,000 people in Malaysia suffer from stroke. Anyone can have a stroke, including children, but the vast majority of the cases affect adult (NASAM, 2011).

**Table 1.1: Statistics stroke's patient in Hospital Universiti Sains
Malaysia (HUSM) year 2005-2007**

Year	Patient
2005	239
2006	244
2007	269
Total	752

Source: Record Unit of HUSM, 2011.

Table 1.1 shows that the number of stroke patients admitted in HUSM has been increasing from 239 in 2005 to 269 in 2007 (Record Unit of HUSM, 2011). Many estimates of stroke prevalence are based on white people in developed countries. And large studies among Asian populations are scant outside of Japan, China, Taiwan, and

India. The few inter-racial comparative studies were performed among black and white Americans. People from developing nations were at greater risk of suffering from stroke than those from developed nations like Japan who have better lifestyles and knowledge of health risks. Through this study show more needs to be known about stroke prevalence among the ethnically diverse populations of Asia (Venketasubramanian, Tan, Sahadevan, Chin, Krishnamoorthy, Hong et al., 2005).

And from Marwat et al, (2009) the stroke is rapidly developing loss of brain functions due to a disturbance in the blood vessels supplying blood to the brain. This can be due to ischemia caused by thrombosis or embolism or due to a hemorrhage. Then to increase public knowledge of stroke, a more widespread public education is required. Effective future community based education programs rely on an accurate assessment of the baseline knowledge of a population. However, few studies have specifically examined knowledge on stroke risk factors, symptoms and treatment in the community, so the study prove that the important of the knowledge of stroke (Yoon, Heller, Levi, Wiggers, & Fitzgerald, 2001). And from the Yoon et al, (2001) too, the results suggest that methods used by health care providers to inform patients about stroke risk factors and warning signs might be revised to ensure effective transmission and retention, along with appropriate responses. Furthermore, increasing public awareness of stroke prevention and warning signs and symptoms is desirable, particularly in the at risk population.

1.3 Rationale for the Study

Malaysia's total population in the year 1997 was 21,665,500 people with annual growth rate at 2.3 percent. Base on this figure, only 3.7 percent of the populations were those at the age of 65 years and above. Therefore, Malaysia's population as of today is not predominantly elderly. However, the real number of older persons have increased lately. It is estimated that the number of population who are aged 65 and over will rise to 2.7 million by the year 2025. While older persons aged 75 years and over would reached the number of 833,000 people in the same year. Hence, it is expected that simultaneously the demand for services for the elderly will rise as reported in the National Plan of Action for the Older Persons. As the increase of health problem include stroke nowadays, the awareness of sign and symptom and the risk factor of stroke are really important. Furthermore, this study is focus toward people age 40 years and above which toward the elderly age which are really high risk towards stroke. And of course if they are knowledgeable about the stroke sign and symptoms and the risk factor, it will prevent them from getting the stroke (Zaimi, 2007).

1.4 Problem statement

Stroke is the main cause of adult disability and the third largest cause of mortality in the world. With half of the world's population, stroke in Asia is important globally. With an aging population, there is an expected rise in numbers of stroke and a corresponding increase in the burden of stroke in Asia. Due to the limited economic and human resources available and the enormity of the problem, prioritization of research questions and directions for stroke investigators in Asia is of vital important (Tan, Wong, & Venketasubramanian, 2006).

The burden of stroke is likely to increase substantially in the future because of the aging population. Apart from implementing effective stroke prevention programs, identification of factors associated with more severe stroke may help to ease the burden of this coming epidemic (Wong, 1999). Lack of recognition of stroke signs or lack of sense of urgency to seek help by the population is a major barrier for adequate stroke treatment. Stroke awareness campaigns can increase symptom identification, thus resulting in a decrease in the time from symptom onset to hospital arrival and increase in the number of patients who may receive appropriate interventions (Lawrence, Hakim, Norrving, Prudhomme, Saarelma, Schwamm et al., 2010). Community stroke education is needed to improve early stroke recognition and reduce delays in the referral of stroke patients. In some regions, stroke support groups are important promoters of regional stroke education. However, there are no data about the level of stroke knowledge among people that support this promotional role. Majority the study of the knowledge of stroke were done in the western country (Stephanie et al, 2010).

In Malaysia, the study of Jaya, NyuntWin, Riduan, Rusli, & Jafri, (2002), it appears that in the study hemorrhagic stroke may be equally common among the Malays in Kelantan and the Chinese on the west coast. In this study, only 22.8% of the patients with stroke had a history of diabetes mellitus or were on diabetic treatment. The expected to see more stroke patients with diabetes, especially since the prevalence of diabetes mellitus is high in Kelantan. The possible explanation is that the percentage might not reflect the true figure because the patients might not have had a medical evaluation prior to the stroke event. The majority of northeast Malaysians, especially the elderly, rarely go for medical checkups, especially when they are symptom free. Some

prefer to seek alternative treatment (traditional treatment) first when they are unwell. All the diabetic patients in this study have type 2 diabetes mellitus, and the main type of stroke was cerebral infarct (29.2%). Therefore it is important to know the level of knowledge of stroke among the public as there were limited study of the knowledge of stroke in Malaysia.

Thus, this study was conducted in order to assess and evaluate the level of knowledge of stroke signs and symptoms and risk factor among people attending Klinik Rawatan Keluarga (KRK) in Hospital Universiti Sains Malaysia (HUSM).

1.5 Conceptual/ Theoretical

The Health Belief Model (HBM) theoretical framework is widely used in order to get better understanding regarding the health behavior of the human (Painter, Borba, Hynes, & Mays, 2008). This study had applied HBM to assess people knowledge regarding the knowledge toward signs and symptoms and risk factor of stroke. Thus, such attitudes will offer modifiable targets for future intervention studies attempting to increase awareness of stroke.

The HBM consists of concept of perceived likelihood (risk), perceived severity, perceived effectiveness as well as perceived barriers. In stroke context, concept of perceived likelihood has something more to do with belief of stroke are likely to happen. Perceived severity is beliefs of risk factor and symptom of stroke have a serious negative consequence for health. Perceived effectiveness refers to knowledge of stroke signs and symptoms and risk factor will likely to reduce the risk or severity of stroke.

1.6 Aims of the Study

To assess and evaluate the level of knowledge among people attending Klinik Rawatan Keluarga (KRK), HUSM towards the stroke including signs and symptoms and risk factor.

1.6.1 General objective

To assess the level of knowledge of stroke among people in KRK, HUSM.

1.6.2 Specific objective

- i. To assess the level of knowledge of stroke signs and symptoms among people in KRK, HUSM.
- ii. To assess the level of knowledge of risk factor among people in KRK, HUSM.
- iii. To determine the association between sociodemographic characteristic and the level of knowledge of stroke signs and symptoms and risk factor among people in KRK, HUSM

1.7 Research Questions

- i. What is the level of knowledge regarding stroke among people attending KRK, HUSM?
- ii. What is the association between sociodemographic data and knowledge regarding stroke?

1.8 Hypothesis

Hypothesis 1

H0: There is no association between sociodemographic data and level of knowledge regarding stroke among people attending KRK, HUSM.

HA: There is an association between sociodemographic data and level of knowledge regarding stroke among people attending KRK, HUSM.

1.9 Definition (Operational/Conceptual)

Literacy

The ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves continue of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society (UNESCO, 2004)

Understanding of or information about a subject which has been obtained by experience or study, and which is either in a person's mind or in possessed by people generally("Cambridge Advanced Learner's Dictionary," 2005)

Stroke

A stroke or "brain attack" occurs when a blood clot blocks an artery (a blood vessel that carries blood from the heart to the body) or a blood vessel (a tube through which the blood moves through the body) breaks, interrupting blood flow to an area of the brain. When either of these things happens, brain cells begin to die and brain damage occurs ("National Stroke Association Of Malaysia," 2011)

Stroke Literacy(Operational)

Knowledge or awareness of stroke sign and symptoms and risk factors

Risk factor

The possibility of something bad happen. Something that increases a person's chances of developing a disease, (WHO, 2010)

An element or condition involving certain hazard or danger. When referring to the heart and blood vessels, a positive risk factor is associated with an increased chance of developing cardiovascular disease including stroke (American Heart Association, 2002).

Signs and Symptoms

Any feeling of illness or physical or mental change which is caused by a particular disease (Medical News,2009)

1.9 Significance of the study

Malaysia is a country that is also keeping pace with other developed countries in achieving the ageing population status. It is not a conscious move, but rather an impact of improved health status and a better lifestyle and quality of life expectancy that enhances longevity (Doris, Norlaila, & Nor Aini, 2010). Early recognition of symptoms and prompt medical care are essential for providing appropriate treatment to prevent adverse clinical outcomes in patients with stroke or acute myocardial infarction (AMI) (Fatimang, 2011).

Then early presentation at a hospital and improved control of stroke risk factors will provide greater opportunity for effective stroke treatment and prevention.

Decreasing the time from stroke onset to hospital presentation and risk reduction depend on the knowledge of stroke of both patients and their family members and of the general population. However, many stroke patients present late at a hospital due to lack of knowledge about stroke (Yoon et al., 2001). And major reductions in the burden of stroke can be achieved by providing better public education. In many parts of the world, access to reliable medical information and even electricity is limited. The electronic means to disseminate health information (eg, healthier lifestyle, risk factors, stroke symptoms, and emergency response) are available in industrialized countries, but less so in developing countries (Lawrence et al., 2010). Therefore to do better public education about the stroke, there were necessary to assess the level knowledge of stroke among public as there were little information about the data level of knowledge of stroke.

Therefore, it is an important public health problem and a burden to health care providers and to the community at large because of the amount of effort that has to be invested in the planning and provision of health care. And with rapid increase the population of aging the special consideration is necessary to this group. Due to limit study of the knowledge of stroke in Malaysia and to reduce the risk of stroke among people and improving their quality of life understanding present people knowledge of stroke signs and symptoms are necessary.

This study also provides baseline data about the knowledge of stroke signs and symptoms and risk factors among adult people within the study setting. This information will serve as a foundation for development of educational program to increase public knowledge regarding stroke risk factor and the sign and symptom of stroke.

CHAPTER 2 LITERATURE REVIEW

2.1 Definition of Stroke

The World Health Organization definition of stroke is rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer leading to death, with no apparent cause other than that of vascular origin. (WHO, 2010). By applying this definition transient ischemic attack (TIA), which is defined to last less than 24 hours and patients with stroke symptoms caused by subdural hemorrhage, tumors, poisoning, or trauma are excluded (Truelsen, Begg, & Mathers, 2000). And in the study of stroke and its relationship to risk factor, stroke is a medical emergency and can cause permanent neurological damage, complications, and death (Marwat, Usman, & Hussain, 2009). Many physicians and other health care provider use the term cerebrovascular accident (CVA) to denote stroke. This usage is inappropriate because there is nothing that can be done to prevent stroke or to limit its neurological consequences, which in turn can lead to trouble in stroke care. However stroke can be prevented. Strokes are due to vascular disease of the brain, which can be prevented and treated. Acute stroke can be treated and patient's neurological outcomes can be improved.

2.2 Type of stroke

There are two types of stroke, ischemic stroke and hemorrhagic stroke. The most common type of stroke is ischemic accounting for 85 percent of all strokes, while hemorrhagic stroke accounts for the remaining 15 percent (American Heart Association, 2001). And Tan et al, (2010) conducted a study with the aim to compare the patterns, risk factors and etiologies of ischaemic stroke in younger patients between stroke registries in Malaysia and Australia. One of the findings revealed that in the Malaysian

series, small vessel occlusion (32.8%) was the most common subtype of stroke among young adults with cerebral infarction (Tan, Tan, Churilov, Mackay, & Donnan, 2010).

2.2.1 Ischaemic stroke

The blood clotting is beneficial. When bleeding occurs because of a wound, blood clots work to slow and eventually stop the bleeding. Ischemic stroke secondary to arterial occlusion accounts for approximately 80% of all cerebrovascular events. Most cases of arterial occlusion are secondary to thromboembolism. The term cerebral thrombosis encompasses those cases of occlusion that are secondary to initiated formation of a clot in an artery. In the case of stroke, however, blood clots are dangerous because they can block arteries and cut off blood flow, a process called ischemia. An ischemic stroke can occur in two ways: embolic and thrombotic strokes (National Stroke Association, 2012).

- **Embolic stroke**

In an embolic stroke, a blood clot forms somewhere in the body (usually the heart) and travels through the bloodstream to the brain. Once in the brain, the clot eventually travels to a blood vessel small enough to block its passage. The clot lodges there, blocking the blood vessel and causing a stroke. The medical word for this type of blood clot is embolus (National Stroke Association, 2012).

- **Thrombotic Stroke**

In the second type of blood-clot stroke, blood flow is impaired because of a blockage to one or more of the arteries supplying blood to the brain. The process

leading to this blockage is known as thrombosis. Strokes caused in this way are called thrombotic strokes. That's because the medical word for a clot that forms on a blood-vessel deposit is thrombus.

Blood-clot strokes can also happen as the result of unhealthy blood vessels clogged with a buildup of fatty deposits and cholesterol. The body regards these buildups as multiple, tiny and repeated injuries to the blood vessel wall. So the body reacts to these injuries just as it would if there were bleeding from a wound and it responds by forming clots. Two types of thrombosis can cause stroke: large vessel thrombosis and small vessel disease (or lacunar infarction) (National Stroke Association, 2012).

2.2.2 Haemorrhagic stroke

Strokes caused by the breakage or "blowout" of a blood vessel in the brain are called hemorrhagic strokes. And it is bleeding in the brain, spinal cord or adjacent structures accounts for the cases for hemorrhagic (Adams, 2007). Hemorrhages can be caused by a number of disorders which affect the blood vessels, including long-standing high blood pressure and cerebral aneurysms. An aneurysm is a weak or thin spot on a blood vessel wall. These weak spots are usually present at birth. Aneurysms develop over a number of years and usually don't cause detectable problems until they break. There are two types of hemorrhagic stroke subarachnoid and intracerebral.

In an intracerebral hemorrhage, bleeding occurs from vessels within the brain itself. Hypertension (high blood pressure) is the primary cause of this type of hemorrhage. In a subarachnoid hemorrhage (SAH), an aneurism bursts in a large artery on or near the thin, delicate membrane surrounding the brain. Blood spills into the area

around the brain which is filled with a protective fluid, causing the brain to be surrounded by blood-contaminated fluid (National Stroke Association, 2012).

2.3 Incidence of stroke

And stroke too as the leading cause of disability and the second most common cause of death worldwide (Hobbs, Roalfe, Lip, Fletcher, Fitzmaurice, & Mant, 2011). The accurate definition of the mechanism of stroke is crucial as this will guide the most effective care and therapy. In Asia it is more needs to be known about stroke prevalence among the ethnically diverse populations (Venketasubramanian et al., 2005). As in many other developing countries, the incidence of stroke and stroke mortality is high in Malaysia. Stroke ranks fifth among the top ten leading causes of deaths in Malaysian public hospitals. Approximately 52,000 people suffered strokes annually, with deaths from stroke in the public hospitals ranging between 8.19% to 9.27% each year since 2000 (Nor Azlin, Rizal, & Li, 2009).

Table 2.1: Types of stroke according to the ethnic.(Jaya et al., 2002)

Stroke	Malay n=136	Chinese n=22	Total
Cerebral infarct	75 (55%)	14(61.9%)	89
Hemorrhagic stroke	45 (33.1%)	7 (33.1%)	52
Subrachnoid hemorrhage	16 (11.8%)	1 (5.0%)	17
Total	136	21	158

According to the study of Jaya et al, 2002 there are 3 types of stroke which are cerebral infarct, hemorrhagic stroke and subrachnoid stroke. And for the ethnic in the

study was Malay (n=136) and Chinese (n=22). The ethnic of Malay (n=75, 55%) has higher percentage in cerebral infarct of stroke. While stroke is the second most common cause of death and major cause of disability worldwide. And again because of the ageing population, the burden will increase greatly during the next 20 years, especially in developing countries (Marwat et al., 2009). And study conducted by Ong and Raymond, (2002) found that stroke is the third most common cause of death in Malaysia and the number one killer in those aged >65 years in the Ministry of Health hospitals in 1995. Since the average lifespan of the population in Malaysia is increasing, stroke incidence is also expected to increase (Ong & Raymond, 2002)

2.4 Sign and symptom of stroke

Studies have suggested that poor recognition of the warning signs of stroke may be at least partially responsible for delays in seeking medical attention. A study conducted in greater Cincinnati found that 40% of the public was unable to name even one warning sign of stroke, with the elderly being among the least knowledgeable. Educational campaigns have been conducted to improve public awareness of stroke, three with at least one study, in King County, Washington demonstrating significant increases in stroke knowledge (Silver, Rubini, Black, & Hodgson, 2003). And according to this study too from the analysis by age showed that at baseline significantly more respondents 45 to 64 years of age were able to name two warning signs of stroke compared with those 65 years of age.

Stroke symptoms appear suddenly and include:

- Sudden enable seeing in one or both eyes
- Sudden trouble walking, dizziness or loss of balance or coordinate
- Sudden severe headache