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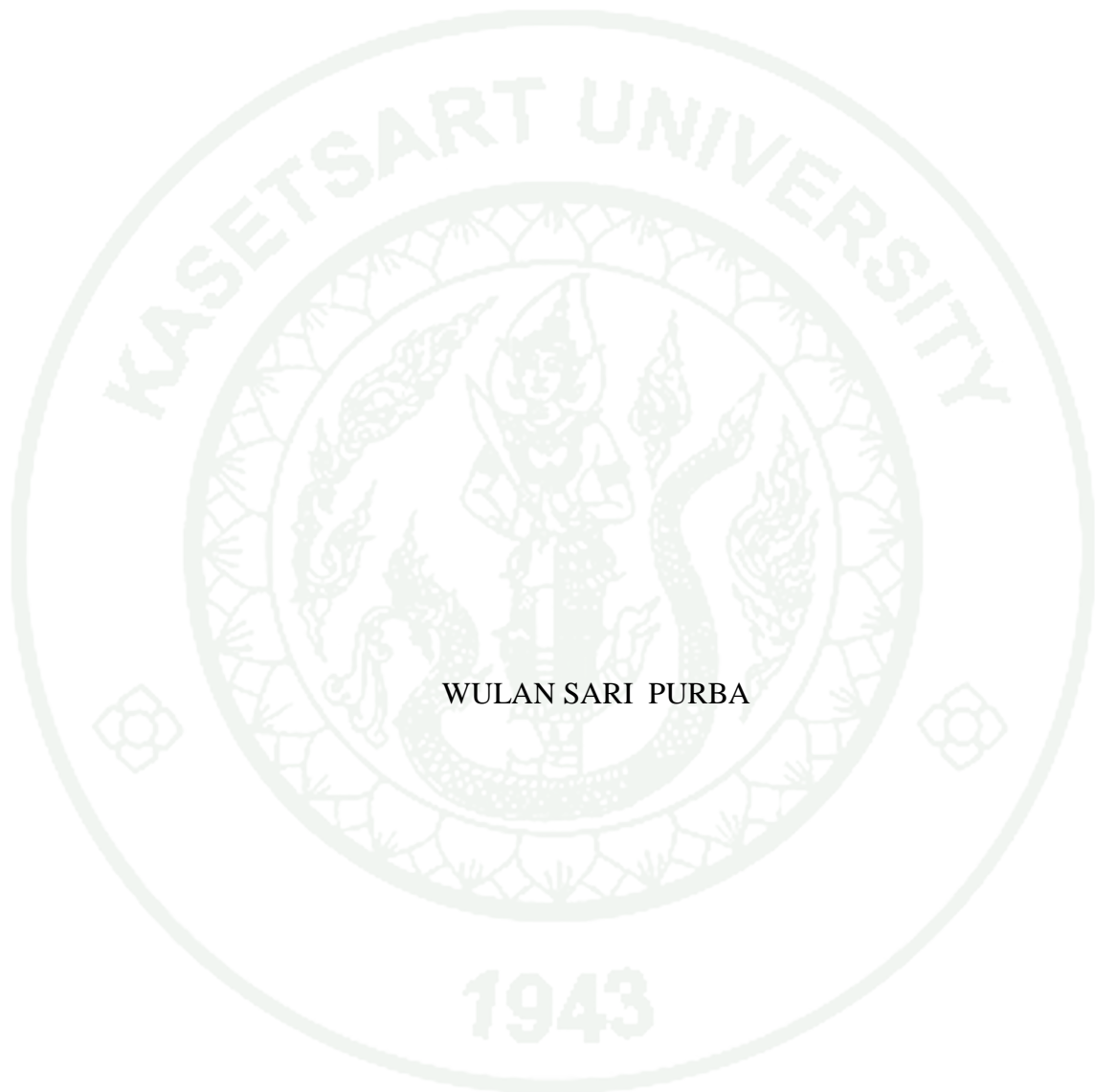
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THESIS

FACTORS RELATED TO QUALITY OF LIFE OF STROKE
SURVIVORS IN BUKITTINGGI, INDONESIA



WULAN SARI PURBA

A Thesis Submitted in Partial Fulfillment of
the Requirements for the Degree of
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Stroke is the leading cause of disability and psychological problem that have significant impact on quality of life in survivors. The purpose of this a descriptive correlational design was to identify the factors that related to quality of life of stroke survivors. The revised Wilson and Cleary Model for Health Related Quality of Life (HRQOL) was used to guide the study.

Participants were simple randomly selected and recruited 138 Indonesian from National Stroke Center Hospital who were firstly diagnosed with stroke in the past one month. The principal investigator had face to face interviewed with questionnaires of 100 items consisting of the demographic information, stroke specific quality of life (SS-QOL), depression (Center for Epidemiology Depression Survey), Barthel index, self-rate health, and medical outcomes social support survey. Pearson Product Moment, Spearman Rank Correlation Coefficient and point biserial correlation were used to identify the correlation between dependent and independent variables.

Main findings found that the stroke survivors reported a good quality of life (M=3.55), high perceived social support (Mdn=77.00), good perceived health status (Mdn=2.00) and 43.5% reported independence in functional ability. However, 38.4% had moderate depressive symptoms. Demographic characteristics, including age, gender, education, occupation and stroke duration were not correlated with the quality of life. However, depression, functional ability, general health perception, and social support were significantly associated with the quality of life. The study suggested that quality of life may be improved by increasing functional ability and reduce symptoms of post-stroke depression through the social support.

Student's signature

Thesis Advisor's signature

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I would like to acknowledge first to the Almighty that has given me the strength and courage to pursue finishing of this study. My successes are a reflection of His overwhelming and through Him I can do all things.

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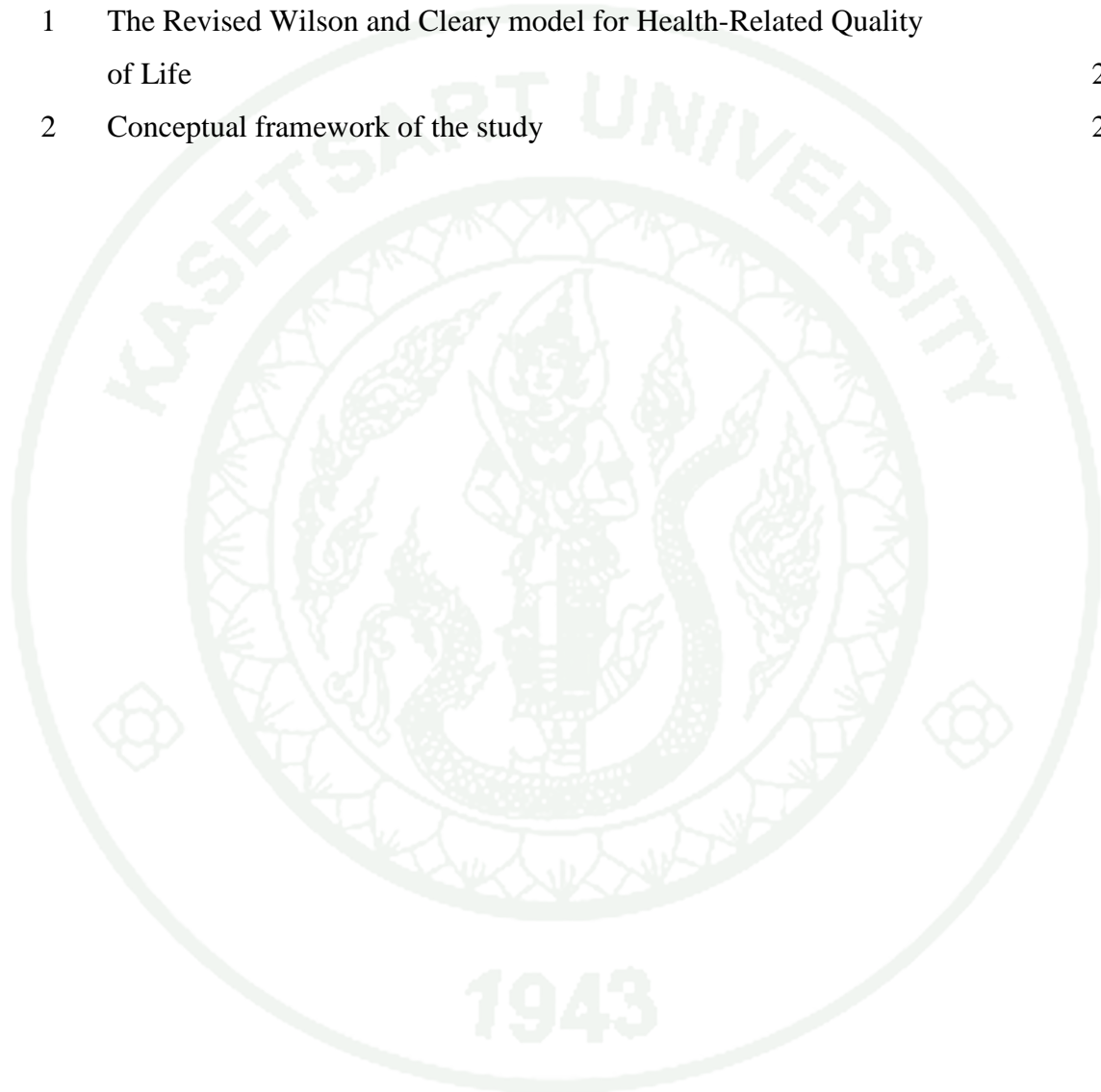
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LIST OF ABBREVIATIONS

ADL	=	Activities of Daily Living
ASA	=	American Stroke Association
AVM	=	Arterial Venous Malformation
BDI	=	Beck Depression Inventory
BI	=	Barthel Index
CED-S	=	Center for Epidemiology Depression Scale
CDC	=	Centers for Disease Control and Prevention
CI	=	Confidential Interval
CVI	=	Content Validity Index
DALYs	=	Disability-adjusted life years
ERB	=	Ethics Review Board
HADS	=	Hospital Anxiety and Depression Scale
HRQOL	=	Health Related Quality of Life
IADL	=	Instrumental Activities of Daily Living
I-CVIs	=	Item Content Validity Index
M	=	Mean
Mdn	=	Median
MOS-SSSI	=	Medical Outcomes Study Social Support Survey Instrument
N	=	Total Population
NIH	=	National Institutes of Health
NSA	=	National Stroke Association
OR	=	Odd Ratio
S-CVI/UA	=	Scale Content Validity Index Universal Agreement
SD	=	Standard Deviation
SIS	=	Stroke Impact Scale
SF 36	=	Short Form-36
SPSS	=	Statistical Package for the Social Sciences
SS-QOL	=	Stroke Specific Quality of life
TIA	=	Transient Ischemic Attack
WHO	=	World Health Organization

FACTORS RELATED TO QUALITY OF LIFE OF STROKE SURVIVORS IN BUKITTINGGI, INDONESIA

INTRODUCTION

Quality of life (QOL) is a wide multidimensional concept that includes subjective evaluations of both positive and negative aspects of life (Centers for Disease Control, 2011). Quality of life in the context of health and disease was known as Health Related Quality of Life (HRQOL) and is subjective well-being related to how happy or satisfied someone is with life as a whole (Wilson and Cleary, 1995). Previous studies reported that the people who survived a stroke had significantly lower quality of life (Delcourt *et al.*, 2011; Gbiri and Akinpelu, 2012; Naess *et al.*, 2012). Moreover, compared with apparently healthy adults (Owalabi, 2011) and myocardial infarction patients (Zalihic *et al.*, 2010), health related quality of life was worse in stroke patients.

Stroke is one of the main non-communicable diseases that cause the global burden disease. Prevalence of stroke was recorded 30.7 million worldwide. The highest prevalence of stroke was in Europe (9.6 million), followed by Western Pacific (9.1 million), America (4.8 million), and South-East Asia (4.5 million). And the prevalence of stroke was lowest in Africa (1.6 million) as well as Mediterranean (1.1 million) (Fisher and Norrving, 2011). Ferri *et al* (2011) reported that the highest prevalence of stroke was in Urban China (9.3%) and the lowest prevalence was found in rural India (1.1%), urban India (1.9%), rural China (1.6%) and rural Peru (2.7%). Thus, the prevalence of stroke were most suffering from stroke.

Stroke has been the leading cause of mortality, disability, psychological, and socioeconomic issues in the world. Mortality of stroke occurs in people above the age of 60 years and is the second leading cause of death and also in people aged 15 to 59 years, it is the fifth leading cause of death. Fifteen million people worldwide suffer a stroke every year and stroke kills a person every six seconds. Of these, five million die and another five million are left permanently disabled, placing a burden on families and communities (World Stroke Organization, 2012). Each year 795,000 people experience a new or recurrent stroke (Go *et al.*, 2013). Hence, growing population of the aged is at a

high risk of stroke attack and if untreated immediately will lead to disability and even the death.

Stroke leads to a loss of million disability-adjusted life years (DALYs) worldwide each year (WHO, 2006). Around 60% of stroke survivors are expected to recover independence with self-care, and 75% are expected to walk independently and there are estimates that 20% would require institutional care (WHO, 2006). Furthermore, the most common psychological effect was a depression in around half of those who survived a stroke within the first year (National Stroke Association [NSA], 2013). Socioeconomic status was another important factor in regards to stroke mortality, which has been shown increase with improvement from low to middle income countries (Wu *et al.*, 2013). In 2010, related to medical costs and disability Americans will pay about \$73.7 billion (American Stroke Association, 2014). Therefore, stroke not only affects physical, but psychological and socioeconomic conditions as well.

Across the world, the number of people who suffered from stroke has been on the rise. It is estimated that in Indonesia each year 500,000 people (approximately 2.5% of the population) had suffered from a stroke (Yastroki, 2012). Stroke was the number one killer in Indonesia (15.4%), followed by tuberculosis (7.5%), hypertension (6.8%), trauma (6.5%), and coronary heart diseases (5.1%) (Research and Development Bureau of Health Indonesia, 2007). Based on Research and Development Bureau of Health Indonesia (2013) in West Sumatera, stroke was the third leading non-communicable disease (12.2%), followed by Diabetes (1.8%), Coronary heart disease (1.2%), Kidney disease (0.4%) and Heart Failure (0.3%). In Bukittinggi especially at the National Stroke Center Hospital, the number of people who suffer a stroke fluctuated. Numbers were recorded as, 1974 people in 2009, 2821 people in 2010, 2852 people in 2011, 1816 people in 2012 and, 1939 people in 2013. Moreover, the majority of the population is Minangkabau ethnic in this area, where the tribe has a habit of fatty foods that the risk of stroke and recurrence is highest in this tribe (Yaslina, 2011). Thus, stroke was with the highest number of non-communicable incidence and one of the top killer diseases in Indonesia.

In Indonesia, stroke also has been the leading cause of mortality, disability, as well as it affects psychological, and socioeconomic factors. Stroke hemorrhage resulted in 20.3% deaths after 48 hours, and 18.3% deaths in less than 48 hours compared to stroke

ischemic showing 8.3% deaths after 48 hours, and 3.5% deaths in less than 48 hours (Yudianto *et al.*, 2013). Stroke prevalence increased 6.7% with age and was higher in people aged 75 years and more (Indonesian Basic Health Research, 2013). Approximately, 54.4% of stroke survivors reported that they experienced difficulty walking and suffered mild or severe disabilities (Yastroki, 2005). The effects of stroke are declining productivity and increasing economic burden on family, community, and the nation as well (Yastroki, 2005). Therefore, stroke is not only a cause of mortality, disability, and psychological, but also can have a socioeconomic effect. As a consequence, if the stroke is left untreated and not managed properly, the post-stroke can lead to delays in recovery and will decrease the quality of life of stroke survivors (NSA, 2013).

There were five major factors that correlated to the health related quality of life in stroke survivors from previous studies including; socio-demographic, depression, functional status, social support and general health perception (Owolabi, 2008; Artal *et al.*, 2009; Haghgoo *et al.*, 2013; Rangel *et al.*, 2013). First, demographic characteristics of being a stroke survivor, such as; age, gender, occupation, education, and duration of stroke was examined in relation to quality of life were found to be conversely related. Previous studies reported that the age was associated with poorer HRQOL at seven days after stroke onset ($p < .001$; 95% $CI = 1.03 - 1.12$) (Naess *et al.*, 2012) and women were associated with poorer HRQOL ($r^2 = -11.0$; $p < 0.051$) (Rangel *et al.*, 2013), while other studies observed no such association informed that age and women was not associated to HRQOL (Artal *et al.*, 2000; Artal *et al.*, 2009; Baumann *et al.*, 2012). Similarly, no significant association between the age and gender with the quality of life was reported in studies conducted in Indonesia (Rahmi, 2011).

Gbiri and Akinpelu (2012) reported that higher education and employment status was associated with better quality of life at stroke onset until twelve months post-stroke ($p < .001$). In contrast, lower educational level was not associated with quality of life (Artal *et al.*, 2000; Artal *et al.*, 2009) and unemployed patients had a better quality of life (Singhpoo *et al.*, 2012; Baumann *et al.*, 2012). Moreover, the research conducted in Indonesia showed that the education level was not significantly associated with quality of life (Rahmi, 2011). Furthermore, the duration of the stroke has been shown to be significantly associated with quality of life by Smith, (2007) ($r = .37$; $p = .01$) but no association was observed by others (Owolabi, 2008; Raju *et al.*, 2010). Thus, these

inconsistencies in findings regarding socio-demographic aspect of stroke need further investigation.

Second, depression was one of the factors that predicted quality of life in stroke survivors. Prior studies have reported 68% higher prevalence of depressive symptoms among community-dwelling post-stroke elders (Lam *et al.*, 2010). The prevalence of moderate to severe depression and anxiety were between 22.8% and 51% with co-morbidity in 12.3% of cases had co-morbidity (Barker-Collo, 2007) and similar findings were reported in studies in Indonesia and Darussalam (2011). Depression was a major determinant of the quality of life between 3 to 12 months post-stroke (Delcourt *et al.*, 2011; Gbiri and Akinpelu., 2012) and at 12 months with no significant improvement (Skanner *et al.*, 2007). However, other studies reported a significant increase in depression between 3 to 12 months (Kwok *et al.*, 2006) and up to 3 years following events (Jeong *et al.*, 2012). Depressive symptoms had a significant negative correlation with the quality of life post-stroke ($r = -.74$; $p < .001$) (Souza *et al.*, 2013; Haghgoo *et al.*, 2013). Patients with fewer depressive symptoms had higher functional abilities (Huang *et al.*, 2010).

Patients with fewer depressive symptoms had higher functional abilities (Huang *et al.*, 2010). Functional ability was the third factor that was related to quality of life in people with stroke. Functional ability is the degree in performing Activities of Daily Living (ADL) (Kim *et al.*, 1999). Approximately 24 to 70% stroke patients reported moderate to severe dependency for daily living activities (Chalermwannapong *et al.*, 2010; Gbiri and Akinpelu., 2012; Rachpukdee., *et al.*, 2013; Rangel *et al.*, 2013; Haghgoo *et al.*, 2013). The functional ability level was correlated with quality of life among stroke survivors ($r = .52$; $p < .0001$) (Smith, 2007; Almborg *et al.*, 2010). In contrast, previous studies found that independent level did not have any correlation with the quality of life in some of previous studies (Jeong *et al.*, 2012; Souza *et al.*, 2013).

The fourth factor related to the quality of life in stroke survivors is social support. Social support can be distinguished as received or perceived social support that was offered (Kruithof *et al.*, 2013). High level of perceived social support was maintained from 1 to 5 years after stroke and was from family and significant others (White, 2007). Perceived social support was a significant factor in predicting functional outcomes (Walker, 2012) and it is a protective factor for depressive symptoms after stroke and quality of life (Huang

et al., 2010; Lewin *et al.*, 2013). Social support was positively correlated with quality of life (adjusted odds ratio = .79; $p < .001$) (Gbiri and Akinpelu, 2012; Rachpukdee *et al.*, 2013). On the other hand, social support was not significantly associated with health related quality of life at 10 weeks and 6 months (Smith, 2007; Teoh *et al.*, 2009). In addition, prior studies did not find any association between social support and QoL of stroke survivors in Indonesia (Kariasa, 2009).

Furthermore, general health perception was the fifth factor related to quality of life. General health perception is a broader concept and determinant of health as well as it is subjective in nature (Kim *et al.*, 1999; Ferrans *et al.*, 2005). It has an influence on the QoL (Ferrans *et al.*, 2005) and is essential to assess aspects of health (Wilson and Cleary, 1995). Kim *et al.* (1999) reported that 42% of stroke survivors had good or excellent perceived health status, but more than half (58%) reported fair, poor, or very poor perceived health status. Similarly, other studies also observed that people who had a history of strokes reported poor self-rated health (56.5%) than people without stroke (29.1%) (Mavaddat *et al.*, 2013). Kim *et al.* (1999) found that perceived health status was associated with overall quality of life. However, the study of the general health perception of stroke survivors is not been accessed in Indonesia, especially in Bukittinggi.

Therefore, the demographic characteristics, depression, functional ability, social support and general health perception are factors that related to quality of life in stroke survivors. A multidimensional the quality of life in stroke survivors and variability in quality of life measurements, including generic and specific measurement were complex and difficult to analyze (Artal *et al.*, 2000; Artal *et al.*, 2009). Also, efforts to reduce psychological problems such as depression and improve functional ability through social support may increase quality of life of stroke survivors. Thus, it is of great importance to the nurse for considering an earlier screening for a timely treatment to improve post-stroke recovery and better quality of life. Based on the literature review, the researcher found few studies that general health perceptions and health related quality of life of stroke survivors, especially in Bukittinggi made it difficult to apply these findings to the wider population of Indonesia and needs further investigation.

Therefore, investigating the selected factors related to quality of life among stroke survivors would be essential for better post stroke recovery and quality of life among

stroke survivors. Thus, this descriptive correlational study used guidelines of the revised Wilson and Cleary model Health Related Quality of Life to identify the factors related to the quality of life of stroke survivors in Bukittinggi, Indonesia. This study provided basic information to understand the quality of life among stroke survivors in Indonesia.



OBJECTIVES

1. Overall objectives

The research objective of this study was to identify the factors related to quality of life of stroke survivors in Bukittinggi, Indonesia.

2. Specific objectives

2.1 To identify the relationships between demographic characteristics (age, gender, occupation, education and duration stroke) and the quality of life of stroke survivors in Bukittinggi, Indonesia.

2.2 To identify the relationships between depression and the quality of life of stroke survivor in Bukittinggi, Indonesia.

2.3 To identify the relationships between functional ability and the quality of life of stroke survivor in Bukittinggi, Indonesia.

2.4 To identify the relationships between general health perception and the quality of life of stroke survivor in Bukittinggi, Indonesia.

2.5 To identify the relationships between perceived social support and the quality of life of stroke survivor in Bukittinggi, Indonesia.

LITERATURE REVIEW

This section presents four parts of concepts of stroke, quality of life in stroke survivors, conceptual model and definitions of terms:

1. Concepts of Stroke

1.1 Definition of Stroke

A stroke is a brain attack that occurs when a blood clot blocks an artery or a blood vessel breaks, interrupting blood flow to an area of the brain (Centers for Disease Control, 2014).

World Health Organization (2006) defines a stroke as “the clinical syndrome of rapid onset of focal (or global, as in subarachnoid hemorrhage) cerebral deficit, lasting more than 24 hours (unless interrupted by surgery or death), with no apparent cause other than a vascular one”.

In summary stroke is a brain attack that occurs suddenly and is the cause of damage in cerebral blood vessel or interrupting blood vessel.

1.2 Types of Stroke

There are three main types of strokes: ischemic stroke, hemorrhagic stroke, transient ischemic attack (Stroke Foundation, 2013; WHO, 2013). First, an ischemic stroke is when the arteries are blocked and blood flow is cut off. Ischemic stroke has two types of stroke; embolic, and thrombotic strokes. The difference between both are embolic stroke occurs when blood clots that are usually formed in the heart and move through the bloodstream to the brain where the clot moves into a blood vessel and blocks the passage and causes a stroke (Stroke Foundation., 2013; WHO, 2013). Thrombotic stroke is impaired because of a blockage in one or more of the arteries supplying blood to the brain. Thrombotic stroke patients are also likely to have coronary artery disease, and heart attack is a frequent cause of death in the patients who have suffered this type of stroke.

Thrombotic stroke causes by large vessel thrombosis and small vessel disease (or lacunar

infarction). Large vessel thrombosis occurs most often in the large arteries, and is the most common and best understood type of thrombotic stroke. Large vessel thrombosis are mostly caused by a combination of long-term atherosclerosis followed by rapid blood clot formation. Small vessel disease occurs when blood flow is blocked to a very small arterial vessel. Little is known about the causes of small vessel disease, but it is closely linked to hypertension (high blood pressure) (Stroke Foundation, 2013).

Second, hemorrhagic stroke is caused by the rupture of a blood vessel in the brain (American Stroke Association [ASA], 2014). Hemorrhages can be caused by a number of disorders which affect the blood vessels such as an aneurysm, which is weak on a blood vessel wall present at birth and develops over the years until it breaks (Stroke Foundation, 2013). Another, an arterial venous malformation (AVM) is a cluster of abnormally formed blood vessels that can rupture and cause bleeding into the brain (ASA, 2014). Centers for Disease Control and Prevention [CDC] (2014), divided hemorrhagic strokes in two types: subarachnoid and intra-cerebral. Subarachnoid hemorrhage is an aneurysm burst 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 (CDC, 2014). In an intra-cerebral hemorrhage, bleeding occurs from vessels within the brain itself. Hypertension (high blood pressure) is the primary cause of this type of hemorrhage (Stroke Foundation, 2013).

Third, a transient ischemic attack (TIA) is the blockage of blood flow for a short time, no more than 5 minutes (ASA, 2014). Furie *et al* (2011) described TIA by conventional clinical definition as the presence of focal neurological symptoms or signs lasting less than 24 hours.

1.3 Effects of a Stroke

There are several factors that impact recovery and the effects of stroke. The factors are: type of stroke, location of the blocked or burst artery, part of the brain damaged, how much brain tissue was permanently damaged, general health before the stroke, and level of activity before the stroke (Stroke Foundation, 2013; CDC, 2014). The most common problems after stroke are movement, speech, thinking and memory, emotion, and pain (National Institutes of Health [NIH], 2011; ASA, 2014).

First, stroke can affect movements which can result from damage to the part of the brain that controls balance and coordination. Dysphagia is a swallowing problem that occurs in some stroke patients and one of the most common disabilities resulting from stroke is paralysis. It may affect only the face, an arm, or a leg, or it may affect one entire side of the body and face (NIH, 2011). Furthermore, walking, dressing, eating, and using the bathroom, all these activities of daily life may have been on affected post stroke (NIH, 2011; Stroke Foundation, 2013).

Second, a stroke may cause problems of speech called aphasia that usually occur along with similar problems in reading and writing (Stroke Foundation, 2013). In most people, language problems result from damage to the left side of the brain (Stroke Foundation, 2013). Global aphasia is the most common form of aphasia caused by general damage to the several areas of the brain involved in language function. It can cause to lose nearly all linguistic abilities and stroke survivors cannot understand the language or use it to convey their thoughts (NIH, 2011).

Stroke can cause damage to parts of the brain responsible for memory, learning, and awareness (NIH, 2011). Short term memory deficits or shortened attention span may occur in post stroke survivors and they may lose their ability to make plans, comprehend, learn new tasks, or engage in other complex mental activities (NIH, 2011). Also, vascular dementia (VaD) is a common post-stroke complication and is characterized by the loss of cognitive function or thinking abilities (Leys *et al.*, 2005; NSA, 2013).

Fourth, a stroke can also lead to emotional problem; these patients may have difficulty controlling their emotions or may express inappropriate emotions in certain situations (NSA, 2013). It has also been reported that one third of stroke survivors will suffer depression (NSA 2013). Many of them may experience feelings of anger, frustration, anxiety, sadness, fear and hopelessness that can impact on their quality of life. If depression is left untreated and unmanaged, it can aggravate post-stroke condition and delay recovery. Post-stroke depression can be treated with antidepressant medications and psychological counseling (NIH, 2011).

Pain is the last most common post stroke problem, which could be due to many factors, including damage to the sensory regions of the brain, stiff joints, or a disabled limb

(NSA, 2013). Headaches and shoulder pain are also the post stroke experiences (Stroke Foundation, 2012). Naess *et al* (2012) showed that approximately 49.3% of stroke patients reported feeling of pain and it may also include central post-stroke pain, which injury happens on the area of the brain and spinal cord that allows people to feel pain is injured.

In summary, stroke has not only physical impacts, but also does psychological impacts that may influence the daily life of survivors. As a consequence, a stroke may influence their quality of life in general and the relation between these factors and the quality of life will be described in detail later.

2. Quality of Life in Stroke Survivors

2.1 Definition of Quality of Life

Quality of life (QOL) is a wide multidimensional concept that includes subjective evaluations of both positive and negative aspects of life. Multidisciplinary groups or individuals have a different meaning for quality of life that makes it challenging to measure. There are several domains such as; jobs, housing, schools, and the neighborhood, which are important for the entire quality of life, however health is one of the most important domains. Additionally to complete this measurement, other key aspects of overall quality of life, such as culture, values, and spirituality should also be considered (CDC, 2014).

The World Health Organization defines Quality of life as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad range concept affected in a complex way by the person’s physical health, psychological state, personal beliefs, social relationships and an association to salient features of their environment”(WHO, 1997).

Quality of life as defined by Ferrans is "a person's sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her". Quality of life was measured in terms of satisfaction and the importance based on different aspects of life (Ferrans, 1996).

Quality of life in the context of health and disease is known as Health Related Quality of Life (HRQOL) to distinguish it from other aspects of quality of life (CDC, 2011). According to the social model of stroke, health related quality of life (HRQOL) has a dimensional relationship between stroke severity, social support and health promoting behaviors, also comprising secondary prevention of stroke (Artal and Egido, 2009). Post-stroke HRQOL can be considered as a measure of individual perception of physical, mental and social aspects as a whole (Artal, 2012).

In summary, quality of life is subjective and perceived as a personal satisfaction for health in all aspects of life, including physical, psychological, psychosocial, spiritual, and environmental based on their culture, values and beliefs. Moreover, health related quality of life in stroke survivors is based on a broad range of individual perception that consists of stroke severity, social support, physical, mental and social aspects of life.

There are contradictory reports on the quality of life of stroke survivors in prior studies. Gbiri and Akinpelu (2012) reported that over 12 months the quality of life of stroke survivors had significantly improved while according to Johnson (2008) the quality of life was stable between 4 months until 12 months. However, Kwok *et al* (2006) showed that HRQOL was decreased respectively at least 8 points in physical, psychological, social interaction and environmental domains at 12 months. Also, over 1 year HRQOL in stroke survivors had declined (Delcourt *et al*, 2011). Thus, it was important to examine the health related quality of life in stroke survivors for a length of time after their discharge.

2.2 Dimensions of Health Related Quality Of Life

There are varying dimensions of health related quality of life. Based on reports of WHO (2004), the main domains of quality of life are physical, psychological, social, and environmental. Ferrans (1996) presented the four domains of quality of life, including health and functioning, psychological/spiritual, social and economic, and family. The Revised Wilson and Cleary model by Ferrans *et al* (2005) described the five domains of health related quality of life; biological variables, symptom status, functional status, health perceptions and overall quality of life. Health related quality of life in stroke survivors is multidimensional, which include; physical (motor deficits, spasticity, ataxia, dysarthria, dysphagia, pain, sleep disturbances and fatigue), functional (mobility, care), mental (mood,

cognition, satisfaction, and self-perception) and social (work, social network and social role) aspects (Artal *et al.*, 2009).

2.3 Assessment of Health Related Quality of Life

There are many widely and varying ways to assess HRQOL outcome in stroke survivors that include generic or specific measures such as; the Medical Outcome Survey (MOS) 36-Item Short Form health survey (SF 36), Stroke Impact Scale (SIS), and Stroke Specific Quality of Life (SS-QOL). The SF-36 was one of the generic measurements of HRQOL of stroke survivors. It was undertaken with one goal being the advancement of the state of the art methods used to monitor patient outcomes in medical practice and clinical research. The SF-36 has since been adopted as a measure of health-related quality of life. It was designed for use in clinical practice and research, health policy evaluations, and general population surveys (Ware and Sherbourne, 1991). The SF-36 assesses the eight subscales of physical, emotional, social, and role functioning, mental health, general health perceptions, bodily pain, and vitality. The full-length MOS scale was used as a criterion for item selection. The items for the instrument were constructed from a subset of items that were shown to best reproduce the scores of the full-length and were well-validated. The definition of quality of life measured by the SF-36 was heavily influenced by the individual's functioning and health and did not take into account satisfaction with functional ability specifically or life in general (White *et al.*, 2007).

The Stroke Impact Scale (SIS) was one of the stroke-specific outcome measure. SIS was originally developed to assess chronic consequences of stroke in mild-to-moderate stroke patients. The SIS 2.0 contained eight domains and 64 items (Duncan *et al.*, 1999). The recent version, SIS 3.0, has 59 items and eight domains: strength; hand function; mobility; activities of daily living/ instrumental activities of daily living (ADL/IADL); memory and thinking; communication; emotion; and social participation (Duncan *et al.*, 2003). The strength items were rated in terms of strength; the memory, communication, ADL/IADL; mobility and hand function items were rated in terms of amount of difficulty; the emotion and social participation items were rated in terms of frequency. Four of the subscales (strength, hand function, ADL/IADL and mobility) can be combined into a composite physical domain (Duncan *et al.*, 2003).

Furthermore, another instrument was the Stroke-Specific Quality of Life Scale (SS-QOL). The SS-QOL was also developed by using standardized psychometric analysis of interviews with stroke survivors. It was validated in ischemic and hemorrhagic stroke patients. The original version contained 49 items and 12 domains: self-care; mobility; upper extremity function; language; vision; work; thinking; family role; social role; personality; mood and energy. The SS-QOL had an excellent internal reliability (Williams *et al.*, 1999). Cruz-cruz *et al.* (2013) in their study, “Evaluation of the Stroke Specific Quality of Life (SSQOL) in Mexico: A Preliminary Approach” showed that the overall internal consistency of the questionnaire was greater than .7 (Cronbach’s alpha).

Based on some of the descriptions of the above mentioned measurements, this study was specifically used Williams *et al.* (1999) model to measure the quality of life of stroke patients as this measurement was based on patient centered outcomes to evaluate health related quality of life particularly in post-stroke patients.

2.4 Factors Related to Quality of Life

The factors linked to health related quality of life of stroke survivors were varying in qualitative as well as quantitative studies. Moeller and Carpenter (2013) in their qualitative studies characterized nine themes of factors affecting the quality of life in stroke survivors such as: physical and cognitive changes, communication, sense of self and identity, activities and participation, dependency and support in relationships, uncertainty and level of control, adaptive and attitude, personality and interpretation, and new values and perspectives. Moreover, in quantitative studies, five major factors; socio-demographic, depression, functional status, social support and general health perception were identified and were associated with the health related quality of life in stroke survivors (Owolabi *et al.*, 2008; Artal *et al.*, 2009; Haghgoo *et al.*, 2013; Rangel *et al.*, 2013). The Revised Wilson and Cleary model explains that the biological factors, symptoms, functional status, general health perceptions are influenced by each other and quality of life as an outcome (Ferrans., 2005). Each factor related to health related quality of life will be further described.

2.4.1 Demographic Characteristics

Demographic Characteristics is one factor related to quality of life in stroke survivors that has many inconsistent findings, for example; age, gender, occupation, education, and duration of stroke.

Firstly, age was one factor that was linked to health related to quality of life following stroke. Naess *et al* (2012) reported that advanced age was associated with lower scores of health related quality of life ($p = .64$). Age showed statistical significance ($p = .001$; 95% CI 5.2-19.9) (Singphoo *et al.* 2012). On the other hand, age correlated only with psychological domain ($p = .043$, $r = -.215$) (Owolabi, 2008). Older people showed poor quality of life (Singphoo *et al.*, 2012; Rachpukdee *et al.*, 2013) which might have caused poorer neurological and functional recovery (Rachpukdee *et al.*, 2013). Younger age (20-39 years) was significantly associated with the better quality of life ($p < .001$) (Gbiri and Akinpelu, 2012). On the other hand, age was not associated with health related quality of life (Artal *et al.* 2000; Artal *et al.* 2009).

Secondly, gender was also one of the factors that was related to quality of life with contradictory findings. Women were associated with poorer HRQOL at 1 year (Artal *et al.*, 2000; Kwok *et al.*, 2006; Almborg *et al.*, 2010; Rangel *et al.*, 2013; Haghgoo *et al.*, 2013; Wu *et al.*, 2014). Artal, *et al.* (2000) explained in their studies that women had poorer HRQOL because the age of onset of stroke in women was 71 years, which is older than men and as well as the disability score using a modified Rankin scale in women was lower than those in men. Also, Kwok *et al* (2006) found lower HRQOL in Chinese women because of domestic duties. However, Baumann *et al* (2012) stated that women had higher life satisfaction because most of the participants lived with their spouses.

Education level was the third factor related to quality of life. Jeong *et al* (2012) reported that higher education was associated with higher scores on physical factors ($p < .01$), psychological factors, social relationship factors, and environmental context ($p < .001$). Also, Gbiri and Akinpelu (2012) reported that higher educational qualifications of stroke survivors ($p < .001$) had a better quality of life at stroke onset and until twelve months post-stroke. Furthermore, educational level ($p < .001$; 95% CI 9.0 - 22.0) was related to quality of life in terms of physical and mental health as well (Singhpoo *et al.*,

2012). However, previous studies showed that lower educational level was not associated with quality of life of stroke survivors (Artal *et al.*, 2000; Artal *et al.*, 2009).

Fourthly, employment status was also one of the factors that was related to quality of life. Jeong *et al.* (2012) found that employment status was significantly associated with higher scores on the physical domain ($p < .01$) and psychological domain ($p < .01$). Also, previous studies found that employment status was related to quality of life in all domains, physical and mental health ($p < .001$; 95% CI 6.9 - 19.2). Moreover, employment status played an important role and these stroke survivors had significantly higher quality of life ($p = .014$) at 3 until 12 months post-stroke (Gbiri and Akinpelu, 2012). In contrast, unemployed patients had better quality of life (Singhpoo *et al.*, 2012; and Baumann *et al.*, 2012). It was a significant predictor in unsatisfactory scores regarding the quality of life (Rachpukdee *et al.*, 2013).

Fifth, duration since stroke was one of the factors that were also linked to health related quality of life of stroke survivors (Smith, 2007; and Huang *et al.*, 2013). Several variables were related to good health related to quality of life two to three weeks post-discharge, particularly fewer depressive symptoms, participation in social activities and performance of interests (Almborg *et al.*, 2010). Patients with post stroke duration one month had reported unsatisfactory quality of life (Rachpukdee *et al.*, 2013). Moreover, patients with post stroke duration of more than 17 months had recovered maximally and their quality of life was improved as well (Huang *et al.*, 2013). Conversely, duration of stroke was not a significant influence on quality of life in physical, psychological, soul, spirit, and eco-social interaction domains. Only spiritual domain ($r = .358$, $p = .001$) and intellectual domain ($r = .224$, $p = .047$) was significantly associated with post-stroke (Owolabi, 2008). Raju *et al.* (2010) reported that 44.4% of patients who had completed more than year follow-up, no significant improvement was seen with regards to quality of life. Therefore, it is important to investigate quality of life in early post stroke and over time.

In summary, findings were controversial regarding demographic characteristics in post stroke patients. Prior studies in Indonesia showed that age, gender, and education level was not significantly associated with the quality of life (Rahmi, 2011). Therefore, age, gender, and education level were included in this study.

2.4.2 Depression

Depression is more than just sadness and people with depression may experience a lack of interest and pleasure in daily activities, significant weight loss or gain, insomnia or excessive sleeping, lack of energy, inability to concentrate, feeling of worthlessness or excessive guilt and recurrent thoughts of death or suicide (American Psychology Association, 2010). Many people also feel frightened, anxious, frustrated or angry about what has happened to them after stroke. These feelings are normal and usually decline over time, but in some people these develop into depression (NSA, 2012).

The number of post stroke depression cases was usually higher and it can develop in earlier months, depending on age, sex, background, or the severity of stroke. The National Stroke Association estimated that around half of those who survived a stroke suffered significant depression within the first year (NSA, 2012). Previous studies showed that slightly higher around 66% and above stroke survivors suffered significant depression (Glamcevski and Pierson, 2005; Jones *et al.*, 2012; Haghgoo *et al.*, 2013; Judith *et al.*, 2013). From 3 to 12 months following stroke there was a significant increase in depression (Kwok *et al.*, 2006). Lo *et al* (2008) reported that stroke survivors suffered more depression at 12 months. Stroke survivors were affected by depression in 2 to 5 years after discharge from hospital (Bergersen *et al.*, 2010). Higher depression scores correlated with lower physical health scores, psychological health and environment domain quality of life of stroke survivors (Jones *et al*, 2012).

Various methods are used to measure depression in stroke survivors such as; The Hospital Anxiety and Depression Scale (HADS), the Beck Depression Inventory (BDI), the Center for Epidemiologic Studies Depression (CES-D). First, the Hospital Anxiety and Depression Scale (HADS) is a self-administered measure with 14 items in total that ask the client to reflect on their mood in the past week and is used to screen for the presence of depression and anxiety. The HADS can be used in a variety of settings (e.g. Community, primary care, in-hospital, and psychiatry). The HADS was found to have a Cronbach's alpha of .85, and a sensitivity of 86.8 and specificity of 69.9, and was suggested to be used for evaluation of depression in stroke patients (Aben *et al.*, 2002).

Second, the Beck Depression Inventory (BDI) emphasizes on the patient's attitudes toward own self. The BDI evaluates 21 symptoms of depression, 15 of which cover emotions, four cover behavioral changes, and six somatic symptoms (McDowell, 2006). The BDI was found to be an acceptable screening instrument for post-stroke depression, with a sensitivity of 80.0 and a specificity of 61.4 (Aben *et al.*, 2002).

The Center for Epidemiologic Studies Depression (CES-D) scale is a short self-report scale designed to measure depressive symptomatology in the general population. The items of the scale are symptoms associated with depression, which have been used in previously validated longer scales. The new scale was tested in household interview surveys and in psychiatric settings. It was found to have a very high internal consistency and adequate test- retest repeatability. Validity was established by patterns of correlations with other self-report measures, by correlations with clinical ratings of depression, and by relationships with other variables which support its construct validity. Reliability, validity, and factor structure were similar across a wide variety of demographic characteristics in the general population samples tested. The scale was a useful tool for epidemiological studies of depression (Radloff, 1977).

The Center for Epidemiologic Studies Depression (CES-D) has been used in this study because its validity and reliability has been tested in the stroke population and the inter-rater reliability is high ($r = .76, p < .001$) (Shinar *et al*, 1986). Secrest and Zeller (2007) also was found the Cronbach's alpha of .884 in the stroke population. This instrument has been used in Indonesia among stroke patients as well (Darussalam, 2011).

2.4.3 Functional ability

Functional status is the ability to perform tasks in various domains such as physical function, social function, role function, and psychological function based on the multidimensional concept of Wilson and Cleary (1995). Functional ability is the activity of daily living or a specific movement to perform not more than one's ability (Smith, 2007). Green and King (2011), reported that the people who are discharged from the hospital had better functional ability and had a moderate association with the HRQOL.

Level of independence in post stroke patients varied over time. Previous studies reported that 27.3% of stroke survivors were totally dependent, 18.2% were able to ambulate without aid/support, 14.6% with aids/supports, 16.4% with mild assistance, and 23.6% needed moderate to maximum assistance for ambulation (Gbiri and Akinpelu, 2012). Also, patients were more severely disabled at the time of discharge from hospital (Delcourt *et al*, 2011). At 1 month post-stroke, the total dependence level was 15% and independence level was 16% among survivors. At 3 month post-stroke, 53.6% of stroke survivors were moderately dependent and 26.4% were independent (Rachpukdee *et al*, 2013). Lo *et al* (2008) reported that at 3 months 46% patients were independent in all basic activities of daily living. In contrast, 24% patients were very dependent for basic activities of daily living (Kwok *et al*, 2006).

At 1 to 3 years after stroke, 40% and 30% of subjects respectively, were independent and 26% of subjects were moderately or severely disabled (Patel *et al*, 2006). At 1 year follow up, 52% of patients were independent in their daily living activity, while only 32.2% of patients were independent at stroke onset. Level of dependency in women was significantly lower than men at 1 year follow-up and also at onset (Artal *et al.*, 2000; Wu *et al.*, 2014). At 1 year until 5 years after stroke 64% of participants were independent (White *et al.*, 2007). Moreover, level of independent score was not significantly modified by age (Artal *et al.*, 2000) but Raju *et al* (2010) showed that the older stroke patients were more likely to be functionally dependent. It had been reported that 30% to 40% of stroke survivors were living independently and 26% were moderately or severely disabled at 1 to 3 years after stroke (Patel *et al*, 2006). At 1 year follow up, 52% of stroke patients were independent in their daily living activity, while only 32.2% of patients were independent at stroke onset.

In summary, around 20% to 50 % of stroke survivors were dependent on others. It indicates long term care needs of caregivers. Level of independence varies among stroke survivors that depends on gender, age, education level, etc.

There are several measurements that have been used to determine functional ability in stroke survivors and one of them is the Barthel Index (BI). The BI was widely used as a measure of disability. It was designed to measure levels of independence in basic activities of daily living. The BI was used to create a weighted measure of self-care

activities of feeding, grooming, bathing, dressing, toileting, bowel/bladder continence, walking, climbing stairs, and chair/bed transfers. As noted by its developers, an advantage of the BI was its simplicity (Mahoney and Barthel, 1965). This study was used the Barthel Index to measure the functional ability developed by Collin *et al.* (1988). Functional categories may be scored from 0 to 1, 0 to 2, or 0 to 3, depending on the item. The total scores range from 0 to 20. In stroke population the Barthel Index is used and has been shown to have an excellent internal consistency within the BI after four days of stroke (alpha value range, .89 - .92) (Hsueh *et al.*, 2001). In Indonesia, the instrument had been test reliability and validity among elderly population (Agung, 2006) and stroke population as well (Pemila *et al.*, 2010; Darussalam, 2011).

2.4.4 Social Support

Social support is a transactional communicative process, including verbal and/or nonverbal communication that aims to improve an individual's feeling of coping, competence, belonging, and/or esteem (Mattson and Hall, 2011). Social support can be described from a qualitative point of view such as; satisfaction with social support and a quantitative point of view, such as the amount of social support, or network size. Another point of view of social support was from the partner, children, other relatives or friends. Moreover, social support was differentiated in recognition or perception of social support that had been offered (Kruithof *et al.*, 2013).

Emotional support, esteem support, network support, information support, and tangible support are components of social support systems (Schaefer, Coyne, and Lazarus, 1981 as cited Mattson and Hall, 2011). Emotional support is communication that met an individual's emotional or affective needs. Esteem support is communication that bolsters an individual's self-esteem or beliefs in their ability to handle a problem or perform a needed action and convince them that they have the ability to confront difficult problems. Contrasting with the first and second type of social support, network support can be defined as a communication that affirms an individual's belonging to a network or reminds them of support available from the network. In other words, network support was communication that reminded people that they are not alone in whatever situation they are facing. Providing an information that is useful or needed is an information support.

Tangible support is any physical assistance provided by others (Mattson and Hall, 2011).

Social support has led to improved health, including physical health, psychological health, and overall well-being. These are some of the many health outcomes of social support, including: psychological adjustment, improved efficacy, better coping with upsetting events, resistance to disease, recovery from disease, and reduced mortality (Mattson and Hall, 2011). Social support to stroke survivors has been recognized as an important determinant of their health-related quality of life, but this relationship has not yet been clarified. The relationship between perceived social support and health related quality of life seemed to be more often significant and stronger than when social support was divided into source and the type. The influence of social support and source needs further research to be clarified (Kruithof *et al.*, 2013).

Prior studies showed that stroke survivors' recounted high levels of perceived social support with over half the subjects reported receiving perceived social support from family and their friends (White, 2007; Smith, 2007). Perceived social support from 1 month to 3 months after stroke showed significant change. It increased for overall social support and individual categories (Rachpukdee *et al.*, 2013).

The instruments for measuring social support in stroke survivors vary widely such as; social support inventory, satisfaction with emotional support, and medical outcome studies social support survey. The current study used the Medical Outcomes Study Social Support Survey Instrument (MOS SSSI). The MOS SSSI was developed for use in a two-year study with chronic disease patients. It included 19 items measuring emotional/information support, tangible support, affectionate support, and positive social interaction. Shelbourne and Stewart examined the psychometric of the scale and subscales and it was adequate reliable (all Cronbach's alpha $\geq .91$) and several constructs validity hypotheses also support this scale (Shelbourne and Stewart, 1991).

2.4.5 General Health Perception

General health perception is an integration of all the health concepts and subjective ratings (Wilson and Cleary., 1995). Kim *et al* (1999) reported that 42% of stroke survivors had good or excellent on perceived health status, but more than half (58%) reported fair, poor or very poor health status. Mean perceived health status in their studies

showed 3.3 with a standard deviation of .86. Moreover, perceived health status was significantly associated with overall quality of life ($p < .001$).

People who had a history of strokes were more reported on poor self-rated health (56.5%), compared to people without strokes (29.1%). Diabetic people with strokes were most likely associated with poor self-rated health. Independently, poor self-rated health was significantly associated with depression, disability and lower social class. The association between disability and self-rated health was twice as strong in those without stroke ($OR = 3.9$; $95\% CI = 3.2 - 4.1$) and patients with stroke ($OR = 2.0$; $95\% CI = 1.2 - 3.4$) (Mavaddat *et al.*, 2013).

Dayapoglu and Mehtap (2010) found that people who were older, had a lower general health perception and lower mean scores with regard to the quality of life. Higher levels of education were associated with higher general health perception and higher mean scores with regard to the quality of life. Similarly, Mavaddat *et al* (2013) and Dayapoglu and Mehtap (2010) reported that the stroke patients with other comorbidities had a relationship in regards to health status.

General health perception was measured with a single global question that is to ask people to rate their health on a Likert scale ranging from poor to excellent (Ferrans *et al.*, 2005). In this study a self-rated health status, based on one single question was used by Idle and Yael (1997). It has also been used in stroke study by Oswald *et al* (2009).

2.4.6 Relationship between Demographic Characteristics, Depression, Functional Ability, Social Support, General Health Perception, and Quality of Life of Stroke Survivors

Demographic characteristics have reported contrary findings in regards to the health related quality of life of stroke survivors. Age, gender, level of education, and employment status all are related to quality of life (Almborg *et al.*, 2010; Naess *et al*, 2012; Rangel *et al.*, 2013; Haghgoo *et al.*, 2013; Wu *et al.*, 2014). People at a younger age have a better quality of life (Gbiri and Akinpelu, 2012). However, younger individuals with stroke rated significantly lower global health (Palmcrantz *et al.*, 2014) and older age was not correlated with low quality of life (Artal *et al.*, 2000). Female was associated with poorer

HRQOL post stroke (Almborg *et al.*, 2010; Rangel *et al.*, 2013; Haghgoo *et al.*, 2013; Wu *et al.*, 2014). In contrast, gender had no significant impact on HRQOL post stroke (Owolabi, 2008; Raju *et al.*, 2010; Haley *et al.*, 2010; Brandao *et al.*, 2010; Haley *et al.*, 2011; Delcourt *et al.*, 2011; Huang *et al.*, 2013). Also, lower educational level was not correlated with low quality of life (Artal *et al.*, 2000). Moreover, duration of stroke, and type of occupation were not significant influences on the quality of life (Pan *et al.*, 2008; Artal *et al.*, 2009; Raju *et al.*, 2010).

The physical functional ability, perceived social support, and depression was also significantly correlated with the quality of life (Smith, 2007; Almborg *et al.*, 2010). Functional independence and the quality of life increased over time, while depression decreased (Robinson-Smith *et al.*, 2000; Raju *et al.*, 2010). Previous studies showed that the functional independence was moderately correlated with the quality of life at 6 months after stroke, but not at 1 month after stroke (Robinson-Smith *et al.*, 2000; Haghgoo *et al.*, 2013). However, there was no correlation between independence level and quality of life (Jeong *et al.*, 2012; Souza *et al.*, 2013). Additionally, functional independence was not significantly correlated with depression at 6 months after stroke (Robinson-Smith *et al.*, 2000; Secrest and Zeller, 2007). The change in functional status, mood, and health related quality of life from 3 months to 12 months after stroke showed that there was no significant change, but there was a considerable increase in depression (Kwok *et al.*, 2006; Pan *et al.*, 2008). Higher prevalence of depression and anxiety disorder negatively affected the quality of life in a year after stroke (de Weerd *et al.*, 2011). HRQOL from 6 and 12 months showed a significant decrease in psychological and environmental aspects, as well as social interaction, and depression (Kwok *et al.*, 2006; Pan *et al.*, 2008).

Social support was a significant predictor of some specific dimensions of quality of life, including mental health at 3 months post-stroke (Owolabi, 2008; Gbiri and Akinpelu, 2012). Also, stroke survivors reported high levels of perceiving social support, although emotional well-being remained a significant concern (White, 2007). Moreover, social support and spousal support may have played an important role to improve the independence of individuals during the first 3 months (Rachpukdee *et al.*, 2013). Family was the primary source of social support and provided a satisfaction to stroke survivor (Mpembi *et al.*, 2013). Nevertheless, social support provided by family was not associated with the quality of life (Smith, 2007; Huang *et al.*, 2010). Furthermore, social support was

not significantly associated with health related quality of life at 10 weeks and 6 months (Teoh *et al.*, 2009).

Besides above mentioned explanations, the general health perception was an influence to the QoL as well. Kim *et al.* (1999) reported that 42% of stroke survivors had good or excellent, but more than half (58%) reported on fair, poor, or very poor perception of health status. Similarly, as mentioned in earlier studies, the people who had a history of strokes reported on poor self-rated health (56.5%) greater than people without strokes (29.1%) (Mavaddat *et al.*, 2013). Kim *et al.* (1999) found that perceived health status was significantly associated with overall quality of life ($p < .001$). However, currently the study of the general health perception of stroke survivors does not exist in Indonesia, especially in Bukittinggi.

In sum, the relationship between demographic characteristics, depression, functional ability, social support, general health perception, and health related quality of life of stroke survivors needs further investigation in Indonesia.

3. Theoretical Model

The current study used the Revised Wilson and Cleary model of health-related quality of life (HRQOL) as shown in Figure 1. The primary focus in this model was biological functions, symptoms, functional status, general health perceptions, and overall quality of life. Arrows indicate the dominant causal associations. Reciprocal relationships might exist, but are not characterized in the figure. Also, the arrows indicate that the biological functions are influenced by the characteristics of both individuals and environments. All nonmedical factors were categorized as characteristics of either individual or environment (Ferrans *et al.*, 2005).

First, biological function is viewed broadly and encompasses molecular, cellular, and whole organ level processes. It is described as a continuum of ideal function on one end and serious life-threatening pathological function on the other end. Alterations in biological functions directly or indirectly affected all components of health, including symptoms, functional status, perceptions of health, and overall quality of life. Optimizing biological functions were an integral part of holistic care. The revised model indicated the

effects of individual and environmental characteristics on biological functioning, which was not in the original model. The interaction of individual and environmental characteristics also influenced biological function.

Secondly, symptoms were defined as “a patient’s perception of an abnormal physical, emotional, or cognitive state,” which can be categorized as physical, psychological, or psychophysical (Ferrans *et al.*, 2005).

Third, functional status in the revised model was viewed by focusing on the optimization of the function that remained. In the revised HRQOL model, multiple factors can affect functional status. For example, functional capacity can be directly affected by biological functions and by symptoms, and functional performance can be affected by characteristics of the individual and the environment. However, symptoms alone do not fully account for the decrease in functional capacity. If symptoms are severe enough, they might affect the levels of daily activity, which could cause a patient to become sedentary and physically deconditioned (decline in functional status). But the extent of the decline in daily activities could also be influenced by individual characteristics, such as self-efficacy and motivation for physical activity, or by social environmental factors, such as social support for physical activity and community safety (Ferrans *et al.*, 2005).

Fourth, general health perceptions, referred to a subjective rating included all of the health concepts that preceded it. General health perception was different from others while it was influenced by the earlier components of the model. Thus, using measures of other components, such as functioning or symptoms, to assess general health perceptions was not appropriate (Ferrans *et al.*, 2005).

Fifth, overall quality of life was described as subjective well-being, which means how happy or satisfied someone is with life as a whole (Ferrans *et al.*, 2005).

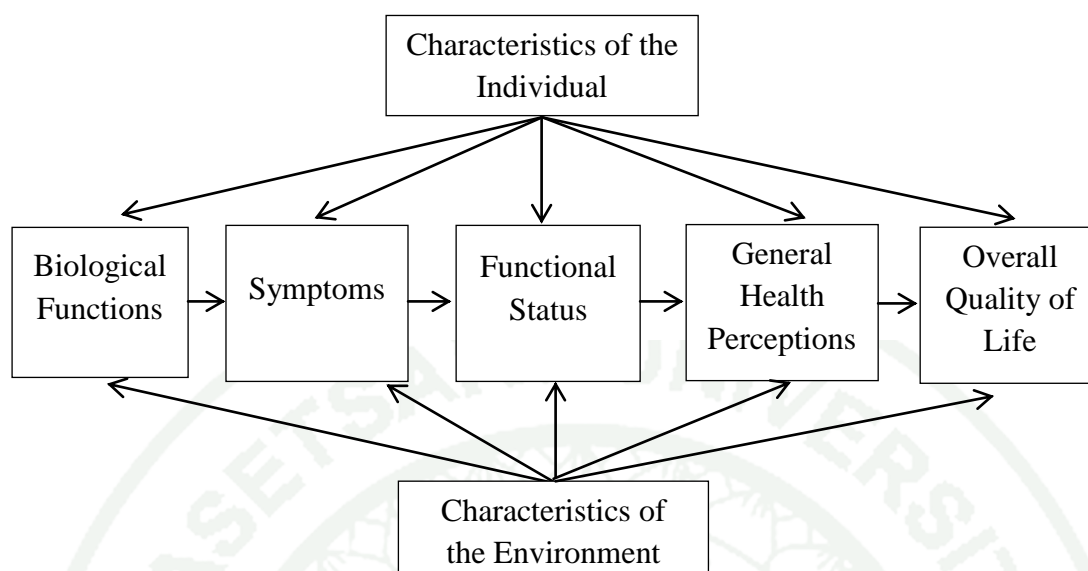


Figure 1 Revised Wilson and Cleary model of Health-related Quality of Life.

Source: Ferrans *et al.* (2005)

The Revised Wilson and Cleary model of health related quality of life has been widely used in many studies. McIntosh (2011) used these models as a conceptual framework in subarachnoid hemorrhage population to help delineate the factors that can affect HRQOL in aneurysmal and non-aneurysmal subjects. Bakas *et al* (2012) in a systematic literature on health-related quality of life (HRQOL) models, recommended to use the Ferrans and colleagues' model because they have added individual and environmental characteristics to the popular Wilson and Cleary model to better explain HRQOL. This model was well used with Indonesian hypertension patients by Kamaryati (2013).

Figure. 2 below shows the conceptual framework used in this study. This study assessed the factors that are related to the quality of life of stroke survivors in Bukittinggi, Indonesia. Based on the conceptual model above, it describes dependent and independent variables in this study. Each independent variable has relating. Independent variables included in this study are age, gender, occupation, education and duration of stroke as the characteristics of the individual. Depression was included in symptoms. Furthermore, functional ability was included in functional status. Social support was included in the characteristics of the environment and the general health perception was an independent.

Finally, the Quality of Life was represented as a health outcome and as one of the dependent variables of the results in this study.

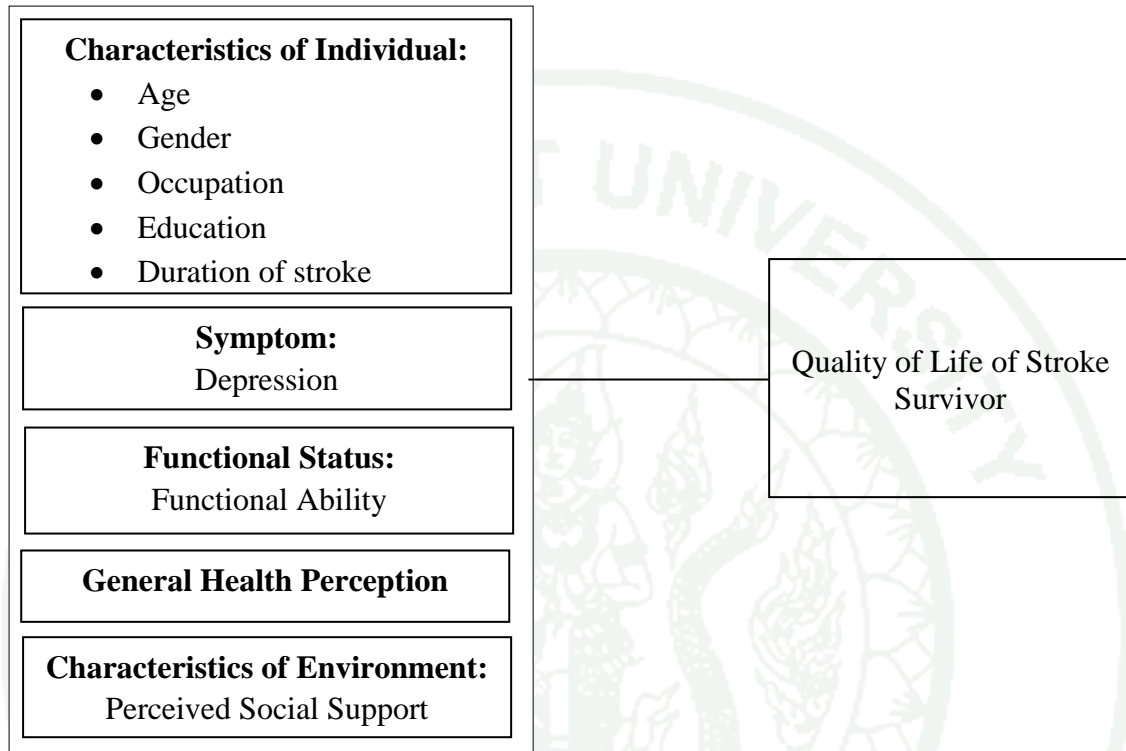


Figure 2 Conceptual Framework of the Study

4. Definition of Terms

4.1 Stroke Survivor was defined as someone who has suffered strokes. They have been diagnosed by physicians and lived in Bukittinggi, Indonesia.

4.2 Age was defined as a stroke survivor who had aged 45 years old or above that was calculated from birth until data collection day.

4.3 Gender was defined as a stroke survivor identity which divided into female and male.

4.4 Occupation was defined as prior to a stroke survivors, they work in career of an employee, seller, housewife, retired or non-working before they has suffered strokes.

4.5 Education was defined as the number of years in school of stroke survivors.

4.6 Duration of stroke has been defined as number of months since diagnosed with stroke at least one month after discharge until the data collection day.

4.7 Quality of Life in this study was defined as stroke surviving subjective well-being from all domains (energy, family roles, language, mobility, mood, personality, self-care, social roles, thinking, upper extremity function, vision, and work/productivity) of health related quality of life.

4.8 Depression was defined as the stroke survivor feel overwhelmed, frightened, anxious, frustrated or angry, and loss about what has happened to them.

4.9 Functional ability was defined as individual performance in daily activity including; bowel, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, stairs, and bathing.

4.10 General Health Perception was defined as a stroke survivor perceived overall their health status at the present time.

4.11 Perceived Social Support was defined as a perceived support of emotional/informational, tangible, affectionate, and positive social interaction.

MATERIALS AND METHODS

Materials

1. Measurements

Measurements in this study consisted of six parts; including, demographic characteristics, the Stroke-Specific Quality of Life Scale (SS-QOL), functional ability, medical outcomes studies social support survey (SF-36), Center for Epidemiologic Studies Depression (CED-S), and general health perception.

Part 1 : Demographic Characteristic Questionnaire: demographic characteristics were developed by researchers and consisted of age, gender, occupation, education, and duration of stroke (Appendix A).

Part 2 : The Stroke-specific Quality of Life Scale (SS-QOL). This instrument was obtained the permission from the author (Appendix B). The SS-QOL consists of twelve domains that contain 49 items: energy (3 items), family roles (3 items), language (5 items), mobility (6 items), mood (5 items), personality (3 items), self-care (5 items), social roles (5 items), thinking (3 items), upper extremity function (5 items), vision (3 items), and work/productivity (3 items). Item scores were rated on a 5-point Likert scales: amount of help required to do specific tasks, ranging from no help to total help, the amount of trouble experienced when attempting tasks, ranging from unable to do it to no trouble at all, degree of agreement with statements regarding their functioning, ranging from strongly agree to strongly disagree. Higher scores indicate better functioning. The SS-QOL yields both domain scores and an overall SS-QOL summary score. The domain scores are unweighted averages of the associated items while the summary score is an unweighted average of all twelve domain scores. The criteria for interpretation of this study was followed; very poor (1.00-1.50), poor (1.51-2.50), moderate (2.51-3.50), good (3.51-4.50), and excellence (4.51-5.00). The alpha coefficient for the domains was reported to range with from .73 to .89 (Williams *et al.*, 1999).

Part 3 : Functional Ability. The Barthel Index was used to measure the level of independence in basic activities of daily living (Appendix A). This was used to create a

weighted measure of self-care activities of feeding, grooming, bathing, dressing, toileting, bowel/bladder continence, walking, climbing stairs, and chair/bed transfers. A score of up to 4 points indicated as total dependence, the score of 5 to 9 points indicated severe dependence, the score 10 to 14 points represents moderated dependence, score 15 to 19 points is mild dependence and independent is assigned in reach of 20 points (Collin *et al.*, 1988). The Barthel Index was a reliable measurement of activity of daily living, which has been validated in stroke patients (Hsueh *et al.*, 2001). The Barthel Index questionnaire has been provided in Indonesian language (Agung, 2006) and it has been used among stroke population in Indonesia as well (Pemila *et al.*, 2010).

Part 4 : Social Support. The MOS Social Support Survey was used in this study (Appendix A). Permission was obtained from the author to use this instrument (Appendix B). The survey consists of four separate social support subscales and an overall functional social support index. It consisted of emotional/ informational, tangible, positive social interaction, and affectionate supports. It was a multidimensionality that contains 19 items consisting of emotional/informational (8 items), tangible (4 items), affectionate (3 items), positive social interaction (3 items), and an additional term. Item scores were rated on a 5-point Likert scale: 1 (none of the time), 2 (a little of the time), 3 (some of the time), 4 (Most of the time), and 5 (all of the time). Overall, it has strong largely psychometric properties. All of the items were in positive questions. Total scores were calculated from the summation of 19 items with the minimum scores of 19 and the maximum scores of 95. Higher scores indicated greater that was perceived. The internal consistency reliability of social support was .97 (Sherbourne and Stewart, 1991).

Part 5: Depression. Center for Epidemiologic Studies Depression (CES-D) scale was used to screen for post-stroke depression in this study (Appendix A). The CES-D, a 20-item scale, assesses perception of mood and level of functioning within the past seven days. It is comprising six scales, reflecting major dimensions of depression. Response categories indicate the frequency of occurrence of each item and are scored on a 4-point scale ranging from 0 (rarely or none of the time) to 3 (most or all the time). The possible score is ranged from 0 to 60. A score of 16 or higher is considered to indicate depression, and the higher score indicates increasing severity of depression (Radloff, 1977). In this study, total scores on depression was divided into four categories: no depression (range from 0 to 15), mild depression (range from 16 to 20), moderate depression (range from 21

to 30), and severe depression (range from 31-60) (Radloff, 1977). Evaluation was completed in approximately five to ten minutes. This instrument was provided in Indonesian language and permission was obtained for its use in this study (Appendix B). This instrument has also been used in the stroke population in Indonesia (Darussalam, 2011).

Part 6: General Health Perception. Self-rated Health Status was used to measure general health perception in this study (Appendix A) and it is 1 item question. A participant was asked to respond to the question “in general, would you say your health is”. It is 5-point Likert scale where 1 indicates excellent health and 5 indicates poor health. Lower scores indicate better perceived health status (Idle and Yael., 1997). The permission was obtained to use the question in this study (Appendix B).

2. Validity and Reliability

In this study, the permission was obtained to use the instrument for stroke specific quality of life and the self-rated health status (Appendix B). The back translation of the questionnaire was performed (Appendix C) by three bilingual nurses (English and Indonesia). Next, the back translation version was compared with the original version that there was no difference between the original and the translated version.

The content validity was confirmed by three experts who had experience in working with stroke victims in Bukittinggi, Indonesia (Appendix H). The first expert was a nurse who worked as a clinical instructor in Stroke Hospital, the second expert was a nurse who worked as a lecturer at Andalas University, and the third expert was a nurse who worked as a lecturer in Polytechnic Health. These experts examined the instrument to ensure the content validity and language appropriateness.

The experts rated a Content Validity Index (CVI) for the relevance or suitability of each item using following scale: 1 “not relevant”; 2 “somewhat relevant”; 3 “quite relevant”; and 4 “very relevant”. In this translation, for the stroke specific quality of life questionnaire, three experts rated on 3 to 4 of each item. Only question number three in domain self-care was not relevant because it repeated in other questions so the experts decided to delete this questionnaire. Next, the researchers revised and improved the

questionnaire based on their suggestions to get clarity and the relevance of the question number 24, 25, 26. The average of scale item content validity index (I-CVIs) was .96. Scale content validity index universal agreement (S-CVI/UA) was .90. It indicated the standard values for establishing excellence content validity (Polit and Back, 2012). Moreover, for the self-health rate questionnaire was relevance with the score of 4.

For reliability, the Stroke-specific Quality of Life Scale (SS-QOL), Barthel Index, the MOS Social Support Survey and depression questionnaire were examined in 30 stroke patients who had similar inclusion criteria with the respondent in this study. The reliability of questionnaire by utilizing the Cronbach's alpha coefficients was .94, .91, .82, and .82, respectively.

Methods

In this part of the study, the research methodology which consists of hypotheses, study design, population and sample, data collection, data analysis, and ethical considerations will be explained.

1. Hypotheses

1.1 Demographic characteristics including; age, gender, occupation, education and duration of stroke has significant relationships with the quality of life among stroke survivors

1.2 Depression has a significant negative relationship with the quality of life of stroke survivors

1.3 Functional ability has a positive significant relationship with the quality of life of stroke survivors

1.4 General health perception has a positive significant relationship with the quality of life of stroke survivors

1.5 Social support has a positive significant relationship with the quality of life of stroke survivors

2. Research design

This study used a descriptive correlational design, which aimed to identify the factors that are related to the quality of life of stroke survivors in Bukittinggi, Indonesia.

3. Population and sample

The population of the study was all stroke survivors after being discharged to their homes. In this study a total of 138 stroke survivors was included using simple random sampling techniques. Inclusion criteria in this study were stroke survivors who were discharged from the hospital, had an ischemic or hemorrhagic stroke, aged 45 years old or older, lived in Bukittinggi, able to be interviewed. Stroke survivors who had severe aphasia and illiteracy were excluded from this study.

To determine the minimum number of samples, the sample size was calculated by using G Power software, version 3.1.0 (Faul *et al.*, 2009). The researcher was set an alpha .05 as a significant level to control the risk of a Type I error (Polit and Back., 2012). Moreover, the researcher was set the power of .80. Large values of power desirable, at least .80, are desirable given the available resources (Suresh and Chandarashekara, 2012). The medium effect size (.3) used to estimate how strong the relationship between dependent and independent variable (Polit and Back., 2012). A medium effect size used in this study because of this was not new area to study about the stroke as noted by Cohen (1988). The researcher can estimate the stroke population in this study. Therefore; the researcher used the medium effect size. The total sample size was 115 stroke survivors as a result, and 20% was added to this result to avoid loss of data. Thus, the final result of sample size estimate was 138 stroke survivors.

4. Data collection

This study was conducted in Bukittinggi, West Sumatera, Indonesia. Data were collected from July until August 2014. Data were collected from the outpatient Stroke

National Centre Hospital in Bukittinggi since this hospital is a referral hospital not only this provinces but for other provinces as well. Data collection was conducted after obtaining permission from the Ethical Review Board (ERB) from Borromarajonani Collage of Nursing Nopparat Vajira (Appendix D). Next the researcher submitted an application for the permission to the Head of Stroke National Center Hospitals Bukittinggi (Appendix G). Subsequently, the researcher visited Polyclinic of Neurology to find the respondents whose referrals met the criteria and selected the subjects by simple random sampling. Next, the researcher obtained the list of names of accessibility patients from the nurse responsible in this Polyclinic. There were 30 patients who are met the criteria in a day. Then, the researcher was gave the number of the name list of accessibility patients and selected around 10 subjects in a day. Afterward, the subject were contacted by researcher individually to explain the purpose, benefits and risks of the study and were asked if they were willing to participate (Appendix E).

Once the stroke survivors agreed to participate in the study, the interview time with researcher was arranged and participants were asked to sign the consent form (Appendix F). Confidentiality of participants was maintained by writing only their initials and identity codes on the questionnaires. An interview time was organized for data collection using the 100 item questions which took approximately 45-60 minutes. During the interview, if the subjects felt uncomfortable, they can stop the interview at any point of time. Once the participants answered all the items of the questionnaire, the researcher verified the questionnaires. Additionally, all the answers in the questionnaires that have been answered by the participants were kept confidential and the results were not described for individual.

5. Data analysis

All data that were collected were checked and verified to ensure the accuracy of data entry and the missing data. The complete data were analyzed using the computer-based statistical program SPSS version 15.0 from Kasetsart University, Thailand. An alpha level of .05 was used to determine statistical significance. The researcher was testing for the normality of the dependent and independent variables. The normality of data was examined by histograms and the Kolmogorov-Smirnov (K-S) test with a significance level of $p < .05$. Stroke specific quality of life and age had normal distribution ($p < .06$; $p = .20$) and other variable was non-normal distribution.

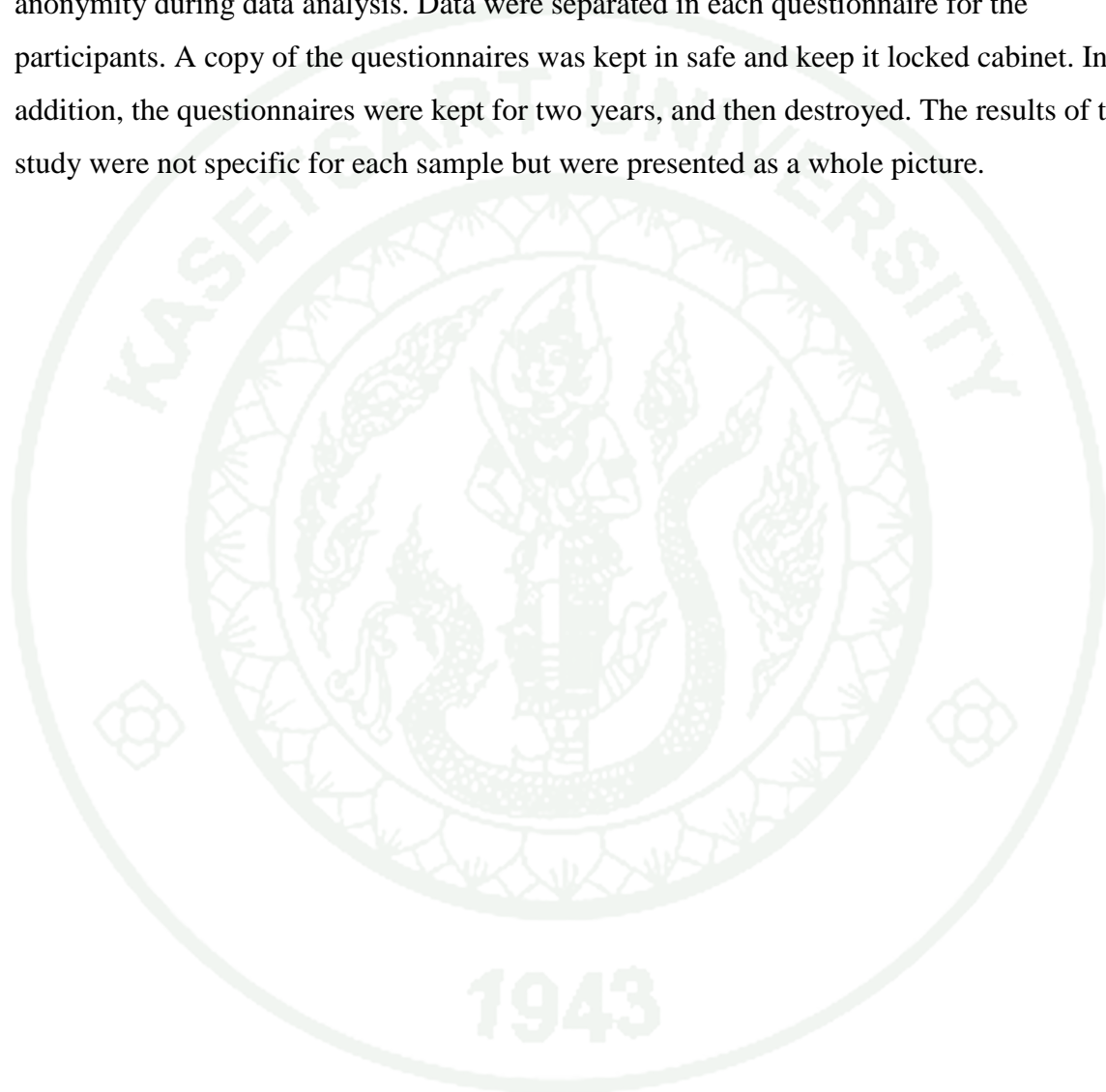
First, for descriptive data, the normal distribution such as age and quality of life was analyzed to find the means and standard deviation. Second, for variables that are of non-normal distribution such as education, and duration of stroke was analyzed to find the median and range. Third, gender and occupation were calculated in terms of frequencies, and percentages. Fourth, depression, functional ability, general health perception, and social support were analyzed using the frequencies, percentages, median, standard deviation, and range. Finally, the relationship between the variables was analyzed using Spearman Rank Correlation Coefficient to find the relationship between education and SS-QoL. For correlation between gender, occupation and SS-QoL point biserial correlation was used. To analyze the correlation between age, duration of stroke, functional status, general health perception, and social support with SS-QoL the Pearson Product-Moment Correlation was used.

6. Ethical consideration

Approval and permission to conduct the study was obtained from the Ethical Review Board (ERB) Boromarajonani College of Nursing NopparatVajira (BCNNV) (Appendix D). A letter was sent to the head of Stroke National Center Hospitals in Bukittinggi to get permission to collect the data (Appendix G) and the objectives of the study were explained. Subsequent to getting permission, the researcher went to the Polyclinic of Neurology to find the respondents whose referrals met the criteria. Nurse responsible for the study in the Polyclinic provided the list of names of accessibility of participants to the researcher and simple random sampling was used to select them.

Next, the researcher was given the patient information sheet that has been translated into Indonesian language by an official translator to ensure the accuracy of the translation (Appendix E). After that, the researcher asked the participant who is volunteering in this study to sign the consent form that was provided for each subject and two copies were made for the researcher and the participant (Appendix F). A copy of the informed consent form was kept each by the researcher and the subject, which explained the objective, method, procedure and the benefits of the study. Subjects were interviewed using a structured interview following all items in the questionnaires by the researcher for approximately 100 minutes. During the interview, if the subjects were uncomfortable, the researcher would stop the interview and make a new appointment for the convenient time.

After the interview, the forms were checked to ensure the completion of the information and the prevention of missing data. All data were put into the electronic program and kept in the program with the limited access. Only the researcher and the advisor had access to the data. A code number for each participant was used to protect their anonymity during data analysis. Data were separated in each questionnaire for the participants. A copy of the questionnaires was kept in safe and keep it locked cabinet. In addition, the questionnaires were kept for two years, and then destroyed. The results of the study were not specific for each sample but were presented as a whole picture.



RESULTS AND DISCUSSION

Results

This descriptive correlation study was used to investigate the factors related to the quality of life in the Indonesian sample of stroke survivors. This part provides the results that include two sections. The first section is descriptive information on the subjects that includes; demographic characteristics, stroke specific quality of life (SS-QoL), general health perception, functional status, depression and social support. The second section is data analyses for the five aims of the study.

1. Descriptive Information of the participants

1.1 Demographic characteristics

Demographic characteristics consisted of age, gender, occupation, education, duration of stroke. The descriptive data analyses were performed by using frequency, percentage, mean, median, range, and standard deviation. The data with normal distribution were described by using mean and non-normal data were described by using the median. In this study, age was used as normal distribution and gender, occupation, education, and duration of stroke were used as non-normal distribution.

Table 1 presents demographic characteristics of stroke survivors. Most of the participants were men (62%) and 38% were women. The average age of stroke survivors was 64.22 years (SD = 8.65). It indicated that the stroke survivors in this study were elderly (WHO, 2012). The median of duration of stroke was 21.00 months. The median educational level of stroke survivors was 15.00 years. It indicated that the stroke survivors had attended junior high school. Based on the Ministry of Education and Culture Indonesia (2003), the age range of junior high school is 12 to 15 years. The number of stroke survivors who were retired and employed was equal (29.0%).

Table 1 Frequency, percentage, mean, median, range, and standard deviation of demographic characteristics of stroke survivors (N=138)

Demographic characteristics	N	%
Age (in Years)	M=64.22 SD=8.56	
Education (in Years)	Mdn=15.00 Range=8-21	
Duration of Stroke (in Months)	Mdn=21.00 Range=1-96	
Gender		
Men	86	62.3
Women	52	37.7
Occupation		
Employee	40	29.0
Seller	18	13.0
Farmer	15	10.9
Housewife	25	18.1
Retired	40	29.0

1.2 Descriptive Information of the variables

Quality of life was a dependent variable that had a normal distribution. It was described by using the mean and standard deviation. General health perception, functional status, depression and social support were independent variables that had non-normal distribution. It was described by using frequency, percentage, median, and range.

Table 2 Mean and standard deviation of stroke specific quality of life of stroke survivors (N=138)

Variables	Mean	Standard Deviation
SS-QOL		
Overall QoL	3.55	.64
Self-care	4.58	1.59
Vision	4.34	.77
Language	4.30	.82
Mobility	4.05	.76
Work/Productivity	3.30	.74
Upper extremity function	4.29	.97
Social Roles	3.08	.97
Thinking	2.84	1.03
Personality	2.22	.98
Mood	3.14	.94
Family roles	2.98	1.01
Energy	2.10	.90

Descriptive data of the dependent variable are shown in Table 2. The mean score of overall stroke specific quality of life was 3.55 (SD = .64), it indicated that stroke survivors in this study had a high quality of life. Two domains of stroke specific quality of life stood out; subjects scored an average of 4.58 on the self-care domain, but only averaged 2.10 on the energy domain. It indicated that most of the stroke survivors were excellence in term of self-care domain. However, they were poor in energy domain.

Table 3 Frequency, percentage, median, and range of general health perception, functional status, depression, and social support of stroke survivors (N=138)

Variables	N	%
Functional Status		
Total dependence	1	.7
Severe dependence	1	.7
Moderate dependence	31	22.5
Mild dependence	45	32.6
Independence	60	43.5
	Mdn=18.00	Range=1-20
Depression		
No depression	27	19.6
Mildly depressed	42	30.4
Moderately depressed	53	38.4
Severely depressed	16	11.6
	Mdn=20.50	Range=0-49
General Health Perception	Mdn=2.00	Range=1-5
Perceived Social Support	Mdn=77.00	Range=48-95

Table 3 shows the descriptive data of independent variables. The median of the functional status score was 18.00; indicated that the most of the stroke survivors in this study were independence to moderate dependence. Meanwhile, the median score of depression was 20.50. It indicated that most of the subjects had symptoms of depression. Of these, the percentage of moderately depressed symptoms were 38.4% and mild depressed symptom was 30.4%. Most of the stroke survivors in this study were in a good condition and the median of general health perception was 2.00 (Range=1-5). Moreover, the stroke survivors had high perceived social support with the median score of 77.00.

1.3 Descriptive Information about Analysis of Questionnaire Items

Table 4 shows the analysis of stroke specific quality of life item questionnaire. When considering each item, the three high level quality of life items were “Did you need help in eating, for example, cutting food or swallowing?” (M=4.74; SD=.68), followed by “Did you have trouble in opening a jar?” (M=4.71; SD=.79), and “Did you have trouble seeing things off to one side?” (M=4.64; SD=.43). Thus, the stroke survivors in this study did not need help for eating. Also, they did not have trouble for opening a jar and seeing things off to one side. Moreover, there were three low level domain of quality of life. First, “I had to stop and rest often during the day” (M=2.10; SD=1.08), “I was irritable” (M=2.17;SD=1.22), “My personality has changed” (M=2.18; SD=1.08).

Table 4 Mean and standard deviation of item questionnaire stroke specific quality of life of stroke survivors (N=138)

	Statement	Mean	SD
Self-Care			
1	Did you need help preparing food?	4.53	.87
2	Did you need help eating, for example, cutting food or swallowing?	4.74	.68
3	Did you have trouble taking a bath or shower?	4.54	1.00
4	Did you have trouble using the toilet?	4.54	.96
Vision			
5	Did you have trouble seeing the television well enough to enjoy a show?	4.43	1.56
6	Did you have trouble reaching for things because of poor eyesight?	3.97	1.35
7	Did you have trouble seeing things off to one side?	4.64	.43
Language			
8	Did you have trouble speaking clearly enough to use the telephone?	4.25	.98
9	Did you have trouble speaking, for example, get stuck, stutter, stammer, or slur your words?	4.14	1.00

Table 4 (Continued)

	Statement	Mean	SD
10	Did other people have trouble understanding what you said?	4.38	.84
11	Did you have trouble finding the word you wanted to say?	4.34	.85
12	Did you have to repeat yourself so others could understand you?	4.42	.90
	Mobility		
13	Did you have trouble walking? (If client can't walk, circle 1 and go to 16)	3.93	.96
14	Did you lose your balance when bending over or reaching for something?	4.22	.85
15	Did you have trouble climbing stairs?	3.80	1.01
16	Did you have to stop and rest more than you would like when walking or using the wheelchair?	4.01	1.24
17	Did you have trouble with standing?	3.83	1.27
18	Did you have trouble getting out of a chair?	4.56	.98
	Work/ Productivity		
19	Did you have trouble doing daily work around the house?	3.29	1.64
20	Did you have trouble finishing jobs that you started?	3.35	1.60
21	Did you have trouble doing the work you used to do?	3.28	1.59
	Upper Extremity Function		
22	Did you have trouble writing or typing?	3.89	1.32
23	Did you have trouble putting on socks?	4.32	1.22
24	Did you have trouble buttoning buttons?	4.27	1.21
25	Did you have trouble zipping a zipper?	4.28	1.24
26	Did you have trouble opening a jar?	4.71	.79
	Social Roles		
27	I did my hobbies and recreation for shorter periods of time than I would like.	3.26	1.60
28	I didn't see as many of my friends as I would like	3.64	1.55

Table 4 (Continued)

	Statement	Mean	SD
	Thinking		
29	It was hard for me to concentrate	2.69	1.24
30	I had trouble remembering things.	2.67	1.23
31	I had to write things down to remember.	3.18	1.27
	Personality		
32	I was irritable.	2.17	1.22
33	I was impatient with others.	2.31	1.20
34	My personality has changed	2.18	1.08
	Mood		
35	I was discouraged about my future	3.30	1.24
36	I wasn't interested in other people or activities	2.89	1.32
37	I felt withdrawn from other people	3.12	1.25
38	I had little confidence in myself	3.15	1.24
39	I was not interested in food.	3.27	1.28
	Family Roles		
40	I didn't join in activities just for fun with my family	3.01	1.23
41	I felt I was a burden to my family	3.09	1.17
42	My physical condition interfered with my family life.	2.86	1.30
	Social Roles		
43	I didn't go out as often as I would like	2.55	1.34
44	I had sex less often than I would like	3.15	1.33
45	My physical condition interfered with my social life.	2.85	1.35
	Energy		
46	I felt tired most of the time.	1.96	1.03
47	I had to stop and rest often during the day	2.10	1.08
48	I was too tired to do what I wanted to do.	2.25	1.20

Table 5 below presented questionnaire item for depression in stroke survivors. The several highest median scores of the stroke survivors were feeling depressed that "I was

bothered by things that usually don't bother me” (Mdn=2.00; Range=0-3); “I talked less than usual” (Mdn=2.00; Range=0-3); and I felt sad (Mdn=1.00; Range=0-3). Although they were feeling depressed, the stroke survivors were also feeling that “I was happy” (Mdn=2.00; Range=0-3); “I enjoyed life” (Mdn=1.99; Range=0-3); and “I felt hopeful about the future” (Mdn=2.00; Range=0-3).

Table 5 Median and range of items of the CESD questionnaire for stroke survivors (N=138)

	During the past week:	Median	Range
1	I was bothered by things that usually don't bother me	2.00	0-3
2	I did not feel like eating; my appetite was poor	.50	0-3
3	I felt that I could not shake off the blues even with help from my family or friends.	.00	0-3
4	I felt I was just as good as other people.	2.00	0-3
5	I had trouble keeping my mind on what I was doing.	1.00	0-3
6	I felt depressed.	.00	0-3
7	I felt that everything I did was an effort.	.00	0-3
8	I felt hopeful about the future.	2.00	0-3
9	I thought my life had been a failure.	.00	0-3
10	I felt fearful.	.00	0-3
11	My sleep was restless.	1.00	0-3
12	I was happy.	2.00	0-3
13	I talked less than usual.	2.00	0-3
14	I felt lonely.	.00	0-3
15	People were unfriendly.	.00	0-3
16	I enjoyed life.	1.99	0-3
17	I had crying spells.	.05	0-3
18	I felt sad.	1.00	0-3
19	I felt that people disliked me	.00	0-3
20	I could not get going.	1.00	0-3

Table 6 presents that the stroke survivors had the highest median score on mobility (Mdn=3.00; Range=0-3), and transfer (Mdn=3.00; Range=0-3). It can be interpreted that stroke survivors were independent for mobility and transfer. Meanwhile, there were two lowest mean scores grooming and bathing (Mdn=1.00; Range=0-1; Mdn=1.00; Range=0-1). It means that the subjects in this study needed more help from other people with grooming and bathing.

Table 6 Median and range of items questionnaire functional ability of stroke survivors (N=138)

	Items	Median	Range
1	Bowels	2.00	0-2
2	Bladder	2.00	0-2
3	Grooming	1.00	0-1
4	Toilet use	2.00	0-2
5	Feeding	2.00	0-2
6	Transfer	3.00	0-3
7	Mobility	3.00	0-3
8	Dressing	2.00	0-2
9	Stairs	2.00	0-2
10	Bathing	1.00	0-1

Table 7 shows the high median scores of the subject were “Someone to prepare your meals if you were unable to do it yourself” (Mdn=5.00; Range=1-5); followed by “Someone to take you to the doctor if you needed it” (Mdn=5.00; Range=1-5); and “Someone to help you if you were confined to bed” (Mdn=5.00; Range=1-5). However, there were two items with the lowest scores on perceived social support. First, “Someone to get together with for relaxation” (Mdn=3.00; Range=1-5); second, “Someone to do something enjoyable with” (Mdn=3.00; Range=1-5).

Table 7 Median and range of items questionnaire perceived social support of stroke survivors (N=138)

No.	Statement	Median	Range
Emotional/Informational Support			
1.	Someone you can count on to listen to you when you want to talk	4.00	1-5
2.	Someone to give you information to help you understand the situation	4.00	1-5
3.	Someone to give you good advice about a crisis	4.00	1-5
4.	Someone to confide in or talk to about yourself or your problems	4.00	1-5
5.	Someone whose advice you really want	4.00	1-5
6.	Someone to share your most private worries and fears with	4.00	1-5
7.	Someone to turn to for suggestions about how to deal with a personal problem	4.00	1-5
8.	Someone who understands your problems	4.00	1-5
Tangible support			
9.	Someone to help you if you were confined to bed	5.00	1-5
10.	Someone to take you to the doctor if you needed it	5.00	1-5
11.	Someone to prepare your meals if you were unable to do it yourself	5.00	1-5
12.	Someone to help with daily chores if you were sick	5.00	1-5
Affectionate support			
13.	Someone who shows you love and affection	5.00	1-5
14.	Someone to love and make you feel wanted	5.00	1-5
15.	Someone who hugs you	4.00	1-5
Positive social interaction			
16.	Someone to have a good time with	5.00	1-5
17.	Someone to get together with for relaxation	3.00	1-5
18.	Someone to do something enjoyable with	3.00	1-5
Additional item			
19.	Someone to do things with to help you get your mind off things	4.00	1-5

2. Data analysis of the five aims.

Statistical analyses were presented based on the specific objectives of the study as follows:

- 2.1 To identify the relationship between demographic characteristics (age, gender, occupation, education and duration stroke) and quality of life of stroke survivors

Table 8 Bivariate correlation between age, gender, education, occupation, duration of stroke, and quality of life of stroke survivors (N=138)

Variables	SSQOL	
	Coefficient	<i>p</i> -value
Age	-.098	.251
Gender	.072	.399
Education	.163	.056
Occupation	.145	.090
Duration of Stroke	.108	.208

This study found that age, gender, occupation, education and duration of stroke were not statistically associated with stroke specific quality of life ($r = -.098, p = .251$; $R = .072, p = .399$; $r = .163, p = .056$; $r = .145, p = .090$; $r = .108, p = .208$, respectively) as shown in Table 8. It also indicates that there is no relationship between age, gender, occupation, education, duration of stroke, and the quality of life. This issue will be further discussed in the discussion section.

- 2.2 To identify the relationship between depression and quality of life of stroke survivors.

As shown in Table 9, depression was statistically negative associated with stroke specific quality of life, which meant that stroke survivors who reported high score of depression were more likely to have lower quality of life.

Table 9 Bivariate correlation between depression and quality of life of stroke survivors (N=138)

Variable	SSQOL	
	Coefficient	<i>p</i> -value
Depression	-.435	<.001

2.3 To identify the relationships between functional ability and quality of life of stroke survivors.

The functional status was a statistically positive significant correlation with the quality of life as shown in Table 10. In other words, stroke survivors who had high scores of functional status were more likely to have a better quality of life.

Table 10 Bivariate correlation between functional status and quality of life of stroke survivors (N=138)

Variable	SSQOL	
	Coefficient	<i>p</i> -value
Functional Status	.670	<.001

2.4 To identify the relationships between general health perception and quality of life of stroke survivors.

General health perception was positively associated with stroke specific quality of life ($r = .170, p < .05$), which meant that stroke survivors who have higher score general health perception were more likely to have a higher quality of life.

Table 11 Bivariate correlation between general health perception and quality of life of stroke survivors (N=138)

Variables	SSQOL	
	Coefficient	<i>p</i> -value
General Health Perception	.170	.046

2.5 To identify the relationship between perceived social support and quality of life of stroke survivors.

This study found that perceived social support was statistically positive significant associated with stroke specific quality of life as shown in Table 12. It can be construed as the high score for the perceived social support was an indication of good quality of life.

Table 12 Bivariate correlation between perceived social support and quality of life of stroke survivors (N=138)

Variable	SSQOL	
	Coefficient	<i>p</i> -value
Perceived Social Support	.337	<.001

Discussion

This section addresses the discussion of the findings and objectives as well as the strengths and limitations of the study. This study finding that most of the participants were men (62%) and 38% were women. The average age of stroke survivors was 64.22 years (SD = 8.65). The median of duration of stroke was 21.00 months. The median educational level of stroke survivors was 15.00 years. The number of stroke survivors who were retired and employed was equal (29.0%). The stroke survivors in this study had a high quality of life (M=3.55; SD=.64). The most of stroke survivors in this study were independence to moderate dependence (Mdn=18.00). Meanwhile, most of them had moderated (38.4%)

depressive symptom. Most of the stroke survivors in this study rated their health status was good (Mdn=2.00). Moreover, the stroke survivors had high perceived social support with the median score of 77.00.

1. Quality of Life

The correlation analysis showed that the independent variables, depression, functional ability, general health perception and also perceived social support were significantly correlated with the dependent variable, quality of life. This would be expected in the revised Wilson and Cleary Model for Health Related to Quality of Life, as these concepts were operationalized from this model. However, the characteristics of the individuals were not associated with the quality of life.

Stroke survivors reported a good quality of life in this study. This is likely because most of the stroke survivors rated their health as good and high perceived social support. Most of the subjects (43.5%) were independence in their daily life activities. Moreover, they suffered a stroke more than a year that would have adapted the coping strategy to deal with their condition. A Previous study has documented better coping skills and secure financial and social status associated with better quality of life (Dayapoglu and Tan, 2010). The stroke survivors were hopeful of future that may be explained why the stroke survivors in this study had a good in quality of life as well. The population in this area is Muslim people who beliefs that all their life event comes from God and God will give healing them. As suggested by Norris (2009) that conducted the research on stroke Muslim population in Aceh, Indonesia, if religion and religious frameworks are meaningful to the client and their caregivers, it seems sensible that they are incorporated in some form in the way to recovery.

This finding was supported by study of Smith (2007) who reported that people who living in the community, living with family members or significant others, the functional ability near normal and approximately suffered the stroke more than 3 years had higher quality of life. As well De Weerd *et al* (2011) who reported that high mean age of the stroke survivors tend to have higher the quality of life as found most of the subjects had high mean age (M=64.22) in this study. In contrast, most of the patients with stroke

reported poor quality of life (Delcourt *et al*, 2011; Gunaydin *et al*, 2011; Singhpoo *et al.*,2012; Haghgoo *et al*, 2013; Baumann *et al*, 2014).

Additionally, in terms of domain SSQOL showed the highest mean score of self-care domain in this study (4.58) as reported in a previous study (4.08) by Cruz-cruz *et al* (2013). Moreover, upper extremity function, mobility, work productivity and social role domains showed the high mean score as well which is related to the physical function. It can be explained that people who are able to perform their basic daily activities such as; preparing food, eating, bathing, using the toilet, transfer and mobility tend to have good quality of life because being dependent on others, people might feel embarrassed, low self-esteem, being guilty and they perceived burden to their families. As reported by Tariah *et al* (2006) stroke survivors who are being dependent were feeling guilty and perceived themselves as a burden to their families. Huang *et al* (2010) reported that high in functional ability tend to have a good quality of life. Language domain showed the high mean score (4.30) because of patients with severe aphasia was excluded from this study. High mean scores of vision (4.31), mood (3.14), and thinking (2.84) domains might also have fairly recovered from some of these co-morbid conditions because they had long suffered of stroke impact as reported by Olusanjo *et al* (2013).

Whereas, Gunaydin *et al* (2011) who measure the quality of life using the same instrument found most affected domains were work/productivity, mobility, self-care, and social roles in geriatric stroke patients. However, the lowest mean score in energy domain (2.10), it indicated that stroke survivors had limited to perform their activities. Perhaps, most of the stroke survivors feels tired in performing their activities in most of the time in this study. Other possible explained that most of the subjects were male that feeling worthless because their perception of masculinity was their role as provider and protector of the family. Thus, less in energy domain as a consequence reduced their quality of life.

According to Brandao *et al* (2010) quality of life is “a concept that is subject to multiple points of view and which has changed from age to age, country to country, culture to culture, social class to social class and even from person to person”. Thus, why the stroke survivors in this study had a good in quality of life.

2. Demographic characteristics including; age, gender, occupation, education and duration of stroke has significant relationships with the quality of life among stroke survivors

According to the revised Wilson and Cleary Model for Health Related to Quality of Life, characteristics of individuals are related to quality of life (Ferrans *et al.*, 2005). Based on the literature review, age, gender, occupation, education, and duration of stroke were the factors that were related to quality of life (Owolabi *et al.*, 2008; Haghgoo *et al.*, 2013).

The finding of this study shows that there was not a statistically significant associated between age and the quality of life. This could be explained that the older people in this study might have greater experiences of life that could extent to adapt to difficult conditions better than the younger age. The highest level of life satisfaction was associated with older people, as was reported by Ostwald *et al.* (2009). Younger age might have had other primary expectation and value such as returning to work as was reported by Alguren *et al.* (2012). Another explanation that older patient in this study had higher perceived social support and most of them independent in daily activities. As reported by Raju *et al.*, (2010) and Artal *et al.*, (2009) that age was not a significant association with the quality of life. In contrast, several studies found that elderly people were associated with poor quality of life (Naess *et al.*, 2012; Rachpukdee *et al.*, 2013).

Our finding showed that gender was not associated with the quality of life. This is consistent with previous studies (Olusanjo, 2013; Haley *et al.*, 2011; Delcourt *et al.*, 2011; Brandao *et al.*, 2010). This may be explained most of the subjects were male that had more support from their spouse to take care their activities in life. Thus, men who suffered a stroke had minimal change in their tasks or daily life. However, a prior study showed that Chinese woman has higher expectations of their physical function because of burden of domestic duties (Kwok *et al.*, 2006) as well as Dayapoglu and Tan (2010) reported that women could continue to shoulder responsibilities even with the presence and advancement of disease, and emotional reactions associated with the diseases. Moreover, Onabajo and Adamu (2014) reported that the gender was significantly associated with the health related quality of life of stroke survivors. Thus, it may be explained why this study did not find the relationship between gender and quality of life.

Occupational status was also found to be not associated with the quality of life. This can be explained the most of older patients in this study who had already retired and may not have been fully aware of the consequences of their future professional. As reported Baumann *et al* (2012) retired person had better life satisfaction and spare time to access the medical and rehabilitation activities than working people who were younger age. Moreover, unemployed patients had better quality of life than employed patients (Singhpoo *et al.*, 2012). This is possible that the unemployed patients with stroke might have greater chance to rehab their functional activity so that it could improve the quality of life.

Similar to earlier reports, no relationship between education and the quality of life of stroke survivors had found in this study (Rahmi, 2011; Abubakar and Isezuo, 2012). This might be because of the subject received the emotional/ informational support from the other, although their educational level was only in junior high school. Perhaps this study was conducted in an urban area that more easy to get the health information and access to the health center or rehabilitation center as well. People who are living in rural areas reported difficulty accessing health services when they needed compared to people who are living in urban areas (Allen *et al.*, 2013). In other populations, education plays roles on quality of life (Singhpoo *et al.*, 2012) that higher education was associated with better quality of life in stroke survivors (Jeong *et al.*, 2012) and stroke survivors who had college and university education reported better scores on quality of life than those with a lower level of education (Muli and Rhoda, 2013).

Most of the stroke survivors in this study were suffering of stroke more than for one year. Consistent with the previous findings (Raju *et al.*, 2010; Owolabi., 2008), the stroke survivors in this study had more than one year of stroke and the duration of stroke had no association with the quality of life. It is possible that the participants in this study who were most of older people and able to adapt with their conditions post stroke. This supported by the characteristics of the subject was independent in their daily life. The finding are in agreement with Huang *et al* (2013) who found that the quality of life was improved in post stroke duration of more than 17 months and survivors had recovered maximally as well. Moreover, as reported Alguren *et al* (2012) that the stroke survivors expectations of returning to a normal life grew more realistic. However, a number of previous studies reported that the duration since stroke was significantly associated with the quality of life

(Smith, 2007; Huang *et al.*, 2013). However, quality of life was declined every year up to 5 years after stroke (Dhamoon *et al.*, 2010).

As anticipated these results showed that the demographic characteristics such as; age, gender, occupation, education, and duration of stroke cannot be conclusively and consistently be associated with the quality of life in stroke survivors and showed disparity with the revised Wilson and Cleary Model for Health Related to Quality of Life.

3. Depression has a significant negative relationship with the quality of life of stroke survivors

Depression and quality of life showed a negative association as expected hypothesized. These findings indicate that the highest score of depression tend to have lower quality of life. These results are consistent with the prior study that depression was a significant negative correlation with the quality of life (Haghgoo *et al.*, 2013). Depression post-stroke correlates with increased disability, poor functional and cognitive outcomes, has a negative impact on the rehabilitation process, and may affect functional recovery, cognitive function and the health related to quality of life (Artal, 2012). Several explanations could be presented in this study. In this study, most of the stroke survivors have moderated (38.4%) depressive symptom which is the low prevalence rate comparable to previously reported studies 45% of stroke survivors have moderated depressive symptoms (Haghgoo *et al.*, 2013). Others argued that most of the stroke survivors felt negative thinking, sad and difficult to sleep. As reported by Broomfield *et al.* (2011) that negative thinking could effect for increasing depressive symptom. Another explanation is that most of the stroke survivors reported they could not get going. It seems like they were less interaction or social isolation as reported by Mavaddat *et al.* (2013) that social isolation was limited at one to two years after stroke, they were less contacts and less frequent with friends, neighbors and relatives than people without a stroke. Previous study also reported that social activities or participation in social life were related to higher health related quality of life (Almborg *et al.*, 2010). Therefore; could not get going may risk of developing depressive symptom and have a negative effect on the HRQOL (Artal *et al.*, 2000).

Moreover, another reason that the majority of stroke survivors were able to shake off the blues even with help from family or friends. The stroke survivors did not feel

depressed. The stroke survivors reported that they had an effort to do everything and did not feel a failure. Also, they did not feel fearful and lonely in their life. As well, they did not think that people were unfriendly and disliked them. Thus, all of this positive thinking may have contributed to reduce depression and enhance quality of life. According to the revised Wilson and Cleary Model, the symptom status, such as depression showed a relationship with the quality of life (Ferrans *et al.*, 2005). Higher depression scores are associated with lower scores quality of life of stroke survivors (de Weerd *et al.*, 2011). Depression and anxiety were the strongest and most consistent correlated to all domains of quality of life (Jeong *et al.*, 2012). Therefore; it is not surprising that depression was negatively associated with quality of life.

4. Functional ability has a significantly positive relationship with the quality of life of stroke survivors

In terms of functional status, the functional ability was significantly associated with the quality of life in this study as expected. In the revised model of health related quality of life, there were multiple factors that can affect functional status, including; biological function, symptoms, characteristics of individual and environment (Ferrans *et al.*, 2005). The level of daily living activities might decline the functional status if the symptoms are severe enough (Ferrans *et al.*, 2005). Also, it could be influenced by individual characteristics, for example; self-efficacy and motivation for physical activity, or by social environmental factors, including; social support for physical activity and community safety (Ferrans *et al.*, 2005).

The present findings are supported by other studies of stroke survivors that examined the quality of life (Patel *et al.*, 2006; Green and King, 2011; Rangel *et al.*, 2013). Higher score functional status, more likely higher in quality of life. This might be due to the fact that the subjects had a high functional score measured by Barthel Index, especially mobility and transfer (Mdn=3.00) which means that the stroke survivors required minimal assistance with activities of daily living. Mobility and transferring are necessary to carry out basic activities required for daily living including feeding, dressing, stairs, toilet use, bowel, and bladder. Thus, independent in daily living tend to have good quality of life. However, it is essential to note that stroke survivors in this study were poor in grooming and bathing which might lead to depressive symptom and tend to have lower quality of life.

Perhaps, unable to grooming and bathing independently might loss of privacy and a burden to their families, especially in male stroke survivors that personal identity was strongly associated with their perceptions of masculinity and to their role as provider and protector of the family (Moeller and Carpenter., 2013; Norris *et al.*, 2012).

Ellis *et al* (2013) reported that people who are dependent on activities of daily living and those who reported physical and social limitation tend to have lower quality of life. Functional dependence was linked with unsatisfactory and lower quality of life among stroke survivors (Rachpukdee *et al*, 2013; Raju *et al.*, 2010). Limited in daily activities were incompetence in mobility, not being able to use the upper extremities, incontinence and cognitive problems which are the results of stroke as reported by Unalan *et al* (2008). Au-Yeung (2003) suggested that subjects' physical capacity in mobility performance gives some information about their perceived physical function, which is a constituent of their overall health perception. However, previous studies found that no correlation between level of independence and quality of life (Souza *et al.*, 2013). Thus, functional ability has been inconsistently correlated with quality of life in previous studies.

5. General health perception has a significantly positive relationship with the quality of life of stroke survivors

In the current study, a significantly positive association between general health perception and quality of life was observed. Indicated that high score general health perception tend to have a high quality of life. This study supported by the revised Wilson and Cleary Model, the general health perception was associated with the quality of life (Ferrans *et al.*, 2005). Also, these findings are consistent with a report by Kim *et al* (1999) suggesting perceived health status was positively associated with the quality of life. This observation can be explained by the fact that the most of stroke survivors reported good perceived health status. Other explained that most of the stroke survivors were independence (40%) in activity daily life as reported by Skanner *et al* (2007) that perceived health status was strongly associated with ADL. Moreover, Skanner *et al* (2007) noted that stroke patients of mean age 73.3 years rated their health as very good or rather good. As well, Brandao *et al* (2010) reported that elderly stroke patients without dysphagia had better general health perception than with dysphagia as observed in this study most of the stroke survivors are elderly.

Another possible explained that the majority of the population in this area is a Muslim that belief their live event are controlled by God and God will give healing them. Thus, most of them still reported feeling hope about their future, although they suffered the stroke. As supported by Akinyemi *et al* (2012) some religious people who believe all their lives are controlled by God. Moreover, people who have strong satisfaction with self and believe they have greater control over their own recovery process have better HRQoL (Teoh *et al*, 2009). Conversely, Mavaddat *et al* (2013) found stroke survivors reporting poor self-rated health than people without a stroke because most of the subjects reported presence physical disability and depression. Therefore, it may be explained why general health perception was linked to the quality of life in this study.

6. Social support has a significantly positive relationship with the quality of life of stroke survivor

Concerning the environment, social support was positively related to quality of life in this study as hypothesized. This study found that the stroke survivors had high perceived social support. This finding was consistent with the previous study by White *et al* (2007) and consistent with the revised Wilson and Cleary Model explain that the environment, including a perceived social support was associated with the quality of life (Ferrans *et al.*, 2005). Moreover, our findings are similar with a study by Huang *et al* (2010), who found social support being positively associated with the quality of life. One could be possible explained that the majority of the Indonesian especially in Bukittinggi is Muslim that children have an obligation to take care of their parent and support of them, especially when they are ill. As well, this study supported that most of them were perceived tangible support highest median score (5.00). It indicated that the elderly stroke survivors were unable to prepare their meals and had someone to do that for them and to take them to the doctor if needed as well as someone to help them if they were confined to bed. The help or assistance with tangible needs or assistance in the form of time and services provides valuable social support and help to improve quality of life and post stroke depression in Taiwanese stroke patients (Huang *et al.*, 2010).

The recent findings also related to another study found perceived social support from family has a positive correlation with the quality of life (Dayapogly and Tan, 2010).

Mpembi *et al* (2013) reported that patients with a post stroke episode who received social

support from the family members was satisfied and decrease the psychological consequences of stroke. Higher perceived social support from family members, friends and health personnel resulted in better perceived quality of life (Rachpukdee *et al*, 2013). Additionally, Gbiri and Akinpelu (2012) reported spousal support was a significant influence on the quality of life. However, another study found social support was not correlated with the quality of life (Teoh *et al*, 2009).

7. Strengths and Limitation

There are several limitations in this study. First, these results could be specific to the population of Bukittinggi, and may not be able to generalize to other populations. Second, the researcher is only one interviewer and take long time for collecting data with the older people, this could be burden and fatigue on the interview. Finally, the clinical characteristics, including stroke severity, type of stroke, and co-morbidities that may affect on the quality of life of stroke survivors not included in this study.

Despite the above limitations, this study has several strengths. Firstly, data collection was based on questionnaire the stroke specific quality of life, CED-S, BI, SHR and MOS-SSSI that are valid and reliable. Second, this study used specific instrument quality of life of stroke survivors, which has high sensitivity towards this stroke condition. Third, this study was used the Revised and Cleary model of health-related quality of life that has many variables was assessed.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The descriptive correlational design was used in this study to identify the factors that related to the quality of life of stroke survivors in Bukittinggi, Indonesia. The study guided by the Revised Wilson and Cleary model of health related quality of life by Ferrans *et al* (2005). The study sample was 138 stroke survivors that was simple random sampling from the participate site. The researcher interviewed all subjects by using six questionnaires consisting of the demographic characteristics, the Stroke-specific Quality of Life Scale (SS-QOL), functional ability (Barthel Index), medical outcomes studies, social support survey (MOS-SSSI), Depression (CED-S), and general health perception (Self-rated Health Status).

Descriptive data analysis, including frequency, percentage, range, mean, median and standard deviation was used to describe demographic characteristics, depression, functional status, general health perception, social support and quality of life of participants. Spearman Rank Correlation Coefficient was used to find the correlations between education, and SS-QoL. The correlation between gender, occupation and SS-QOL was used point biserial correlation. The Pearson Product-Moment Correlation was used for correlation between age, duration of stroke, depression, functional status, general health perception, and social support with SS-QoL.

In this study, demographic characteristics such as age, gender, education, occupation and stroke duration were not correlated with the quality of life. However, depression, functional ability, general health perception, and social support were significantly associated with the quality of life. The stroke survivors reported a good quality of life and health condition. Most of the respondents had moderate depressive symptoms. Moreover, their functional ability was mild to moderate dependence.

Recommendations

1. Nursing Practice

This study found that most of the stroke survivors reported good quality of life suggests that nurse should promote and increase self-care performance of stroke survivors to maintain their quality of life. As well, nurses should assess the stroke survivor energy by dividing their activities as tolerated. It is essential to note that nurses should promote and maintain the stroke survivors' self-esteem and confidence in maximal functional ability recovery is focused on mobility and transferring to enhance their independence in activity daily living especially grooming and bathing. Moreover, the nurses should assess and prevent the stroke survivor depressive symptom. Also, screening the negative thinking and sadness continues throughout all phases of their recovery to reduce depressive symptom. As well, nurses should assess the ways for assisting the stroke survivors could not get going to reduce depressive symptom and enhance the QoL. For example, encourage them to involve in peer group activities to share their experiences, how to face the problems. Furthermore, nurses should maintain and monitor the tangible support to improve functionally dependent and reduce depressive symptom for a better quality of life of stroke survivors.

2. Future Research

Future research should aim to further investigation for developing the interventions designed to reduce depressive symptoms, especially negative feelings and sadness to enhance QOL for stroke survivors. Also, nursing intervention programs regarding functional ability such as; bathing and grooming are recommended to enhance QOL for stroke survivors. Another area of research could be taken into consideration other variables such as stroke severity, type of stroke, fatigue and co-morbidities that might relate to quality of life in stroke survivors.

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Appendix A
Questionnaires

Questionnaire

No: **Demographic Characteristics of Stroke Survivor**

Please read the demographic information and fill according to your description.

1. Age:Years

2. Gender: Male Female

3. Education Level (Years): 1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21

4. Previous Occupation

Employee Farming
 Seller Retired
 Housewife None

5. Duration Stroke.....Month

Self-Rated Health

Please choose the answer that appears most appropriate by circle one number in line.

In general, how would you rate your overall health at the present time?

A horizontal scale with five tick marks. Below the scale, the numbers 5, 4, 3, 2, and 1 are aligned with the tick marks. Below each number is a descriptive label: 5 Excellent, 4 Very good, 3 Good, 2 Fair, and 1 Poor.

5	4	3	2	1
Excellent	Very good	Good	Fair	Poor

Stroke Specific Quality of Life

Please read the instruction below, and circle one number on each line. The first part of the questions ask about how much you need help for a specific activity that can sometimes be affected by a stroke in the past week:

Total help: if you do not do the activities by yourself

A lot of help: if you need help 75 % from other to do the activities

Some help: if you need help 50 % from other to do the activities

A little help: if you need help 25 % from other to do the activities

No help needed: if you able to do the activities by yourself

No	Statement	Total help	A lot of help	Some help	A little help	No help needed
1.	Did you need help preparing food	1	2	3	4	5
2.	Did you need help eating, for example, cutting food or swallowing?	1	2	3	4	5
3.	Did you need help getting dressed, for example, putting on socks or shoes, buttoning buttons, or zipping?	1	2	3	4	5
4.	Did you have trouble taking a bath or shower?	1	2	3	4	5
5.	Did you have trouble using the toilet?	1	2	3	4	5

The next part of questions ask about how much trouble you have with a specific activity in the past week:

Couldn't do it at all: if you have trouble to do with all your activities

A lot of trouble: if you have 75 % trouble to do your activities

Some trouble: if you have 50 % trouble to do your activities

A little trouble: if you have 25 % trouble to do your activities

No trouble at all: if you able to do the activities

No	Statement	Couldn't do it at all	A lot of Trouble	Some trouble	A little trouble	No trouble at all
6.	Did you have trouble seeing the television well enough to enjoy a show?	1	2	3	4	5
7.	Did you have trouble reaching for things because of poor eyesight?	1	2	3	4	5
8.	Did you have trouble seeing things off to one side?	1	2	3	4	5
9.	Did you have trouble speaking clearly enough to use the telephone?	1	2	3	4	5
10.	Did you have trouble speaking, for example, get stuck, stutter, stammer, or slur your words?	1	2	3	4	5
11.	Did other people have trouble understanding what you said?	1	2	3	4	5
12.	Did you have trouble finding the word you wanted to say?	1	2	3	4	5

(Continue)

No	Statement	Couldn't do it at all	A lot of Trouble	Some trouble	A little trouble	No trouble at all
13.	Did you have to repeat yourself so others could understand you?	1	2	3	4	5
14.	Did you have trouble walking? (If client can't walk, circle 1 and go to 17)	1	2	3	4	5
15.	Did you lose your balance when bending over or reaching for something?	1	2	3	4	5
16.	Did you have trouble climbing stairs?	1	2	3	4	5
17.	Did you have to stop and rest more than you would like when walking or using the wheelchair?	1	2	3	4	5
18.	Did you have trouble with standing?	1	2	3	4	5
19.	Did you have trouble getting out of a chair?	1	2	3	4	5
20.	Did you have trouble doing daily work around the house?	1	2	3	4	5
21.	Did you have trouble finishing jobs that you started?	1	2	3	4	5
22.	Did you have trouble doing the work you used to do?	1	2	3	4	5
23.	Did you have trouble writing or typing?	1	2	3	4	5

(Continue)

No	Statement	Couldn't do it at all	A lot of Trouble	Some trouble	A little trouble	No trouble at all
24.	Did you have trouble putting on socks?	1	2	3	4	5
25.	Did you have trouble buttoning buttons?	1	2	3	4	5
26.	Did you have trouble zipping a zipper?	1	2	3	4	5
27.	Did you have trouble opening a jar?	1	2	3	4	5
28.	I did my hobbies and recreation for shorter periods of time than I would like.	1	2	3	4	5
29.	I didn't see as many of my friends as I would like	1	2	3	4	5

The next part of questions ask about how much you agree or disagree with each statement during the past week:

Strongly agree: if you agree 100 % with the statement

Moderately agree: if you agree 75 % with the statement

Neither agree nor disagree: if you agree 50 % with the statement

Moderately disagree: if you agree 25 % with the statement

Strongly disagree: if you do not agree all the statement

No.	Statement	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree
30.	It was hard for me to concentrate	1	2	3	4	5
31.	I had trouble remembering things.	1	2	3	4	5
32.	I had to write things down to remember.	1	2	3	4	5
33.	I was irritable.	1	2	3	4	5
34.	I was impatient with others.	1	2	3	4	5
35.	My personality has changed	1	2	3	4	5
36.	I was discouraged about my future	1	2	3	4	5
37.	I wasn't interested in other people or activities	1	2	3	4	5
38.	I felt withdrawn from other people	1	2	3	4	5
39.	I had little confidence in myself	1	2	3	4	5
40.	I was not interested in food.	1	2	3	4	5

(Continue)

No.	Statement	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree
41.	I didn't join in activities just for fun with my family	1	2	3	4	5
42.	I felt I was a burden to my family	1	2	3	4	5
43.	My physical condition interfered with my family life.	1	2	3	4	5
44.	I didn't go out as often as I would like	1	2	3	4	5
45.	I had sex less often than I would like	1	2	3	4	5
46.	My physical condition interfered with my social life.	1	2	3	4	5
47.	I felt tired most of the time.	1	2	3	4	5
48.	I had to stop and rest often during the day	1	2	3	4	5
49.	I was too tired to do what I wanted to do.	1	2	3	4	5

Center for Epidemiologic Studies Depression (CES-D)

Below is a list of some ways you may have felt or behaved. Please indicate how often you have felt this way during the last week by checklist the box. Please only provide one answer to each question.

Rarely or none of the time: if you felt the statement in less than 1 a day

Some or a little of the time: if you felt the statement in 1-2 days

Occasionally or a moderate amount of time: if you felt the statement in 3-4 days

Most or all of the time: if you felt the statement in 5-7 days

No	During the past week:	Rarely or none of the time	Some or a little of the time	Occasionally or a moderate amount of time	Most or all of the time
1.	I was bothered by things that usually don't bother me.	0	1	2	3
2.	I did not feel like eating; my appetite was poor.	0	1	2	3
3.	I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4.	I felt I was just as good as other people.	3	2	1	0
5.	I had trouble keeping my mind on what I was doing.	0	1	2	3
6.	I felt depressed.	0	1	2	3
7.	I felt that everything I did was an effort.	0	1	2	3

(Continue)

No	During the past week:	Rarely or none of the time	Some or a little of the time	Occasionally or a moderate amount of time	Most or all of the time
8.	I felt hopeful about the future.	3	2	1	0
9.	I thought my life had been a failure.	0	1	2	3
10.	I felt fearful.	0	1	2	3
11.	My sleep was restless.	0	1	2	3
12.	I was happy.	3	2	1	0
13.	I talked less than usual.	0	1	2	3
14.	I felt lonely.	0	1	2	3
15.	People were unfriendly.	0	1	2	3
16.	I enjoyed life.	3	2	1	0
17.	I had crying spells.	0	1	2	3
18.	I felt sad.	0	1	2	3
19.	I felt that people disliked me	0	1	2	3
20.	I could not get going.	0	1	2	3

The Barthel Index

Instructions: Choose the scoring point for the statement that closest to your current level of ability for each of the following 10 items by circle one number.

Bowels

0 = incontinent (or needs to be given enemata)

1 = occasional accident (once/week)

2 = continent

Patient's Score:

Bladder

0 = incontinent, or catheterized and unable to manage

1 = occasional accident (max. once per 24 hours)

2 = continent (for over 7 days)

Patient's Score:

Grooming

0 = needs help with personal care

1 = independent face/hair/teeth/shaving (implements provided)

Patient's Score:

Toilet use

0 = dependent

1 = needs some help, but can do something alone

2 = independent (on and off, dressing, wiping)

Patient's Score:

Feeding

0 = unable

1 = needs help cutting, spreading butter, etc.

2 = independent (food provided within reach)

Patient's Score:

Transfer

0 = unable – no sitting balance

1 = major help (one or two people, physical), can sit

2 = minor help (verbal or physical)

3 = independent

Patient's Score:

Mobility

0 = immobile

1 = wheelchair independent, including corners, etc.

2 = walks with help of one person (verbal or physical)

3 = independent (but may use any aid, e.g., stick)

Patient's Score:

Dressing

0 = dependent

1 = needs help, but can do about half unaided

2 = independent (including buttons, zips, laces, etc.)

Patient's Score:

Stairs

0 = unable

1 = needs help (verbal, physical, carrying aid)

2 = independent up and down

Patient's Score:

Bathing

0 = dependent

1 = independent (or in shower)

Patient's Score:

Total Score:

The MOS Social Support Survey

Please read the instruction below, and circle one number on each line.

None of the time : if you do not obtain support from anyone

A little of the time : if you get support above 25% or one fourth of the time
when you needed

Some of the time : if you get support 50% or a half of the time when you
needed

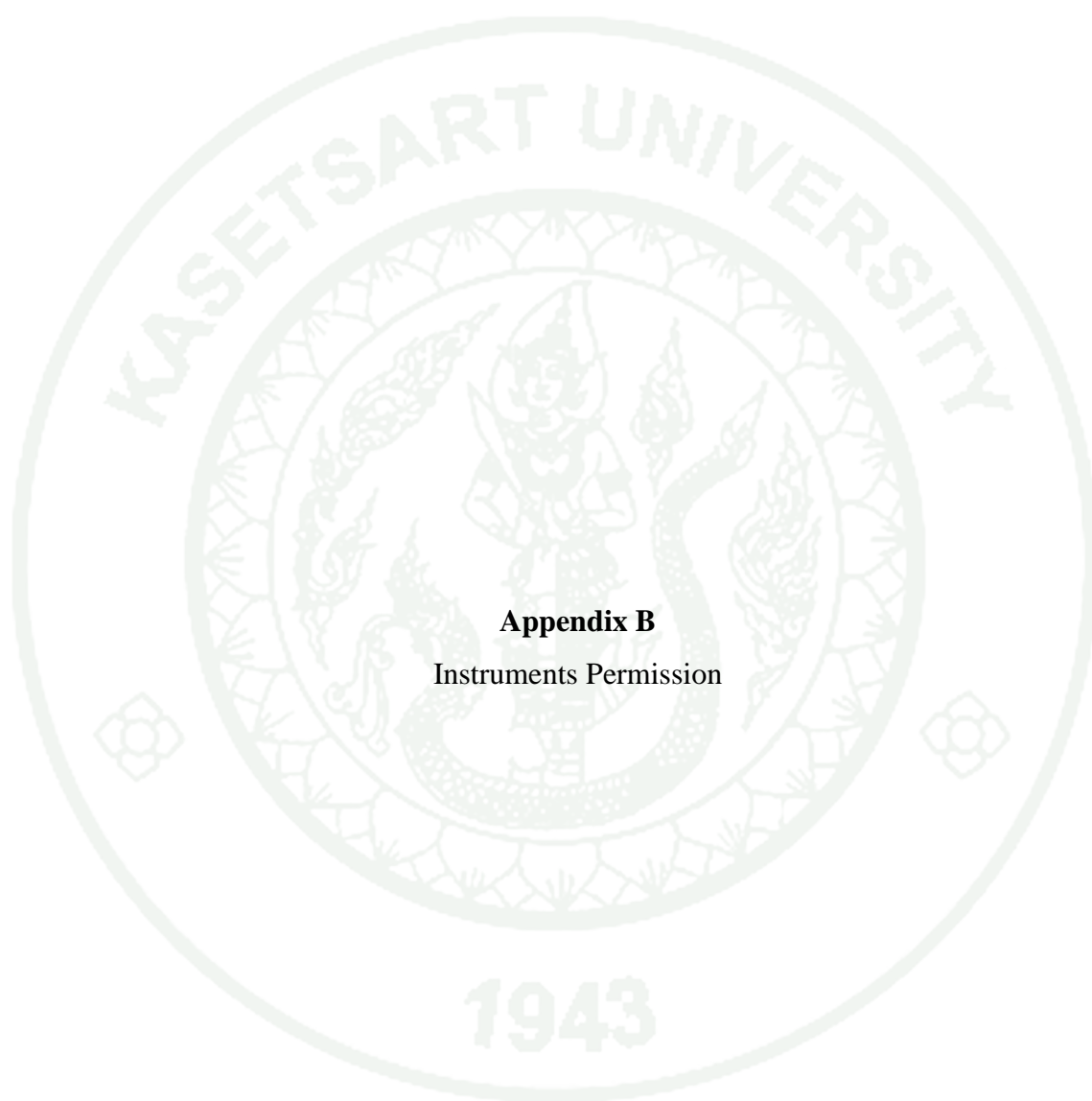
Most of the time : if you get support 75% or three fourth of the time when you
needed

All of the time : if you get support all the time that you needed

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional/Informational Support					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand the situation	1	2	3	4	5
Someone to give you good advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Someone whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5

(Continue)

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Tangible support					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
Affectionate support					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5
Positive social interaction					
Someone to have a good time with	1	2	3	4	5
Someone to get together with for relaxation	1	2	3	4	5
Someone to do something enjoyable with	1	2	3	4	5
Additional item					
Someone to do things with to help you get your mind off things	1	2	3	4	5



Appendix B
Instruments Permission

Instruments Permission

1. SSQOL

Hi Wulan. I am happy to give you permission to use the SS-QOL. That is great! I was not sure about the language so thought I would let you know. Good luck with the project.

Linda S. Williams, MD
 Director, VA HSR & D Stroke Quality Enhancement Research Initiative.
 Investigator, VA Center for Healthcare Information and Communication.
 Professor of Neurology, Indiana University School of Medicine.
 Research Scientist, Regenstrief Institute, Inc.
 317.988.4493

This message has been categorized by Williams, Linda on Tuesday, April 08, 2014 at 2:47:29 PM in accordance with VA Handbook 6500.

2. MOS Social Support Survey

On Thursday, March 27, 2014 1:57 AM, "Sherbourne, Cathy" <cathyd@rand.org> wrote:

Wulan,

You have my permission to use the MOS Social Support Survey in your research. No formal permission is required for its use. We just ask that you cite it appropriately in any published work.

Good luck, Cathy Sherbourne, PhD.
 Senior Health Policy Analyst
 The RAND Corporation

4. Depression

Reply-To: wulan sari purba <wulan_usny@yahoo.com>
 Date: Monday, April 07, 2014 9:33 PM
 To: Darus salam (d4ruz@yahoo.com)
 Subject: Permission to apply questionnaire the CED-S

Please use with kindness for research, but allow me to ask manuscript or journal (if already published) for my reference.

5. SRH

Reply-To: wulan sari purba <wulan_usny@yahoo.com>

Date: Thursday, April 10, 2014 at 10:31 AM

To: Ellen Idler <eidler@emory.edu>

Subject: Permission to apply questionnaire the self-rated health (SRH)

Dear Wulan Sari Purba,

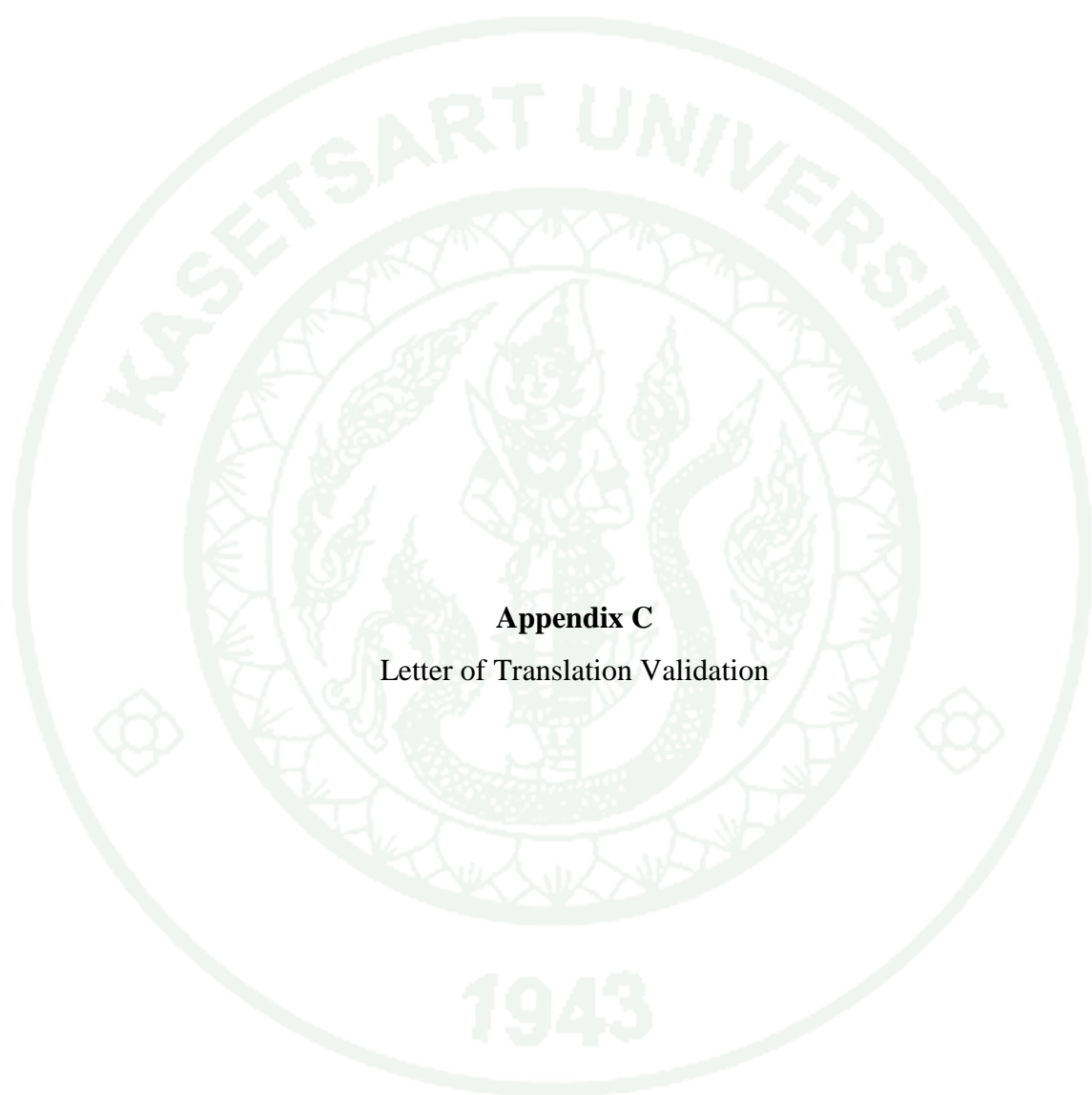
Thank you for letting me know of your interest in my work.

You do not need my permission to use the single item self-rated health question, it is in the public domain.

Best wishes and success in your research,
Ellen Idler

Ellen L. Idler, PhD
Samuel Candler Dobbs Professor of Sociology
Director, Religion and Public Health Collaborative
Department of Epidemiology, Rollins School of Public Health
Tarbuton Hall Room 209
1555 Dickey Drive
Atlanta, GA 30322
404 727-9148 (voice)
eidler@emory.edu

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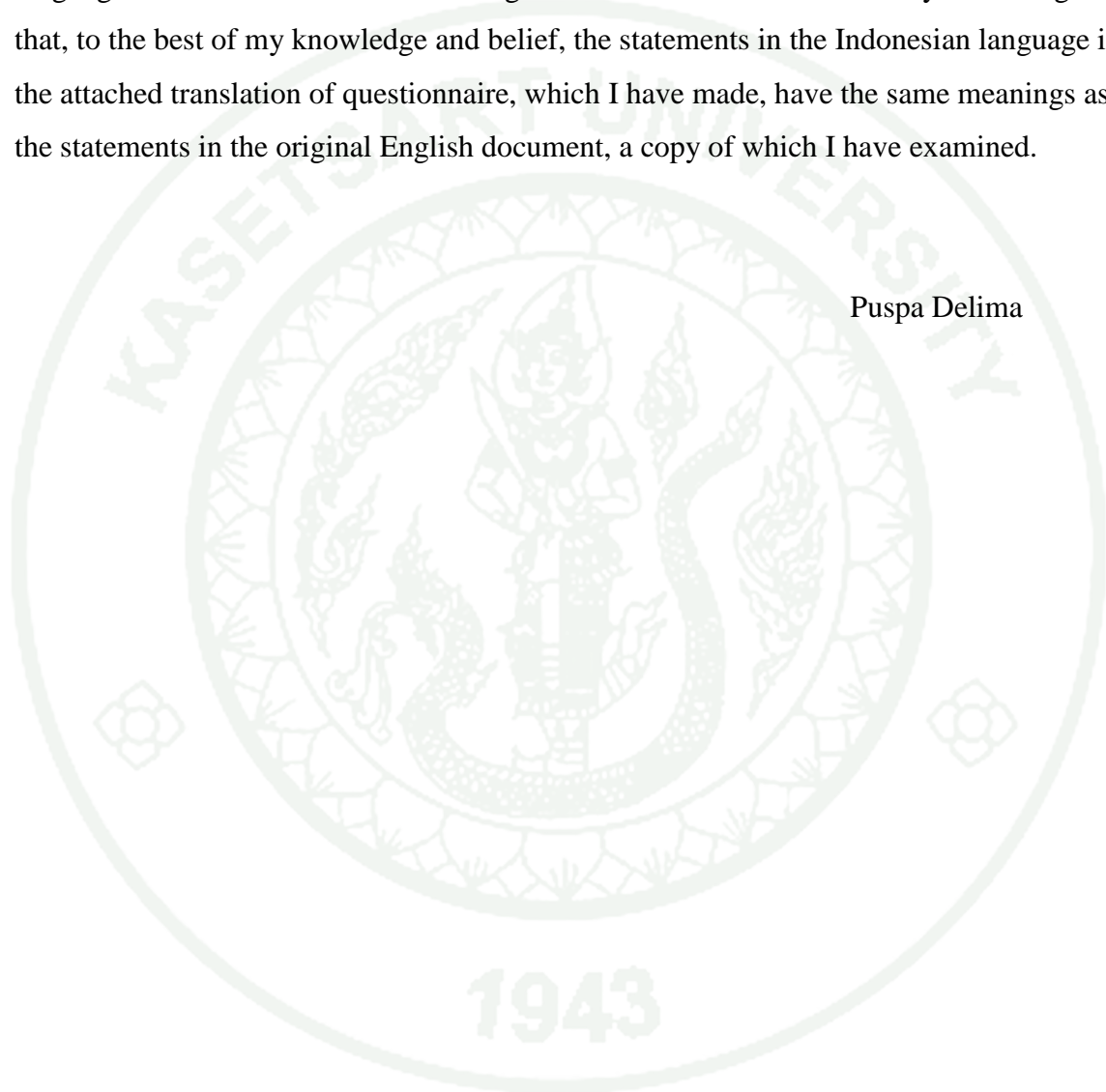
Appendix C

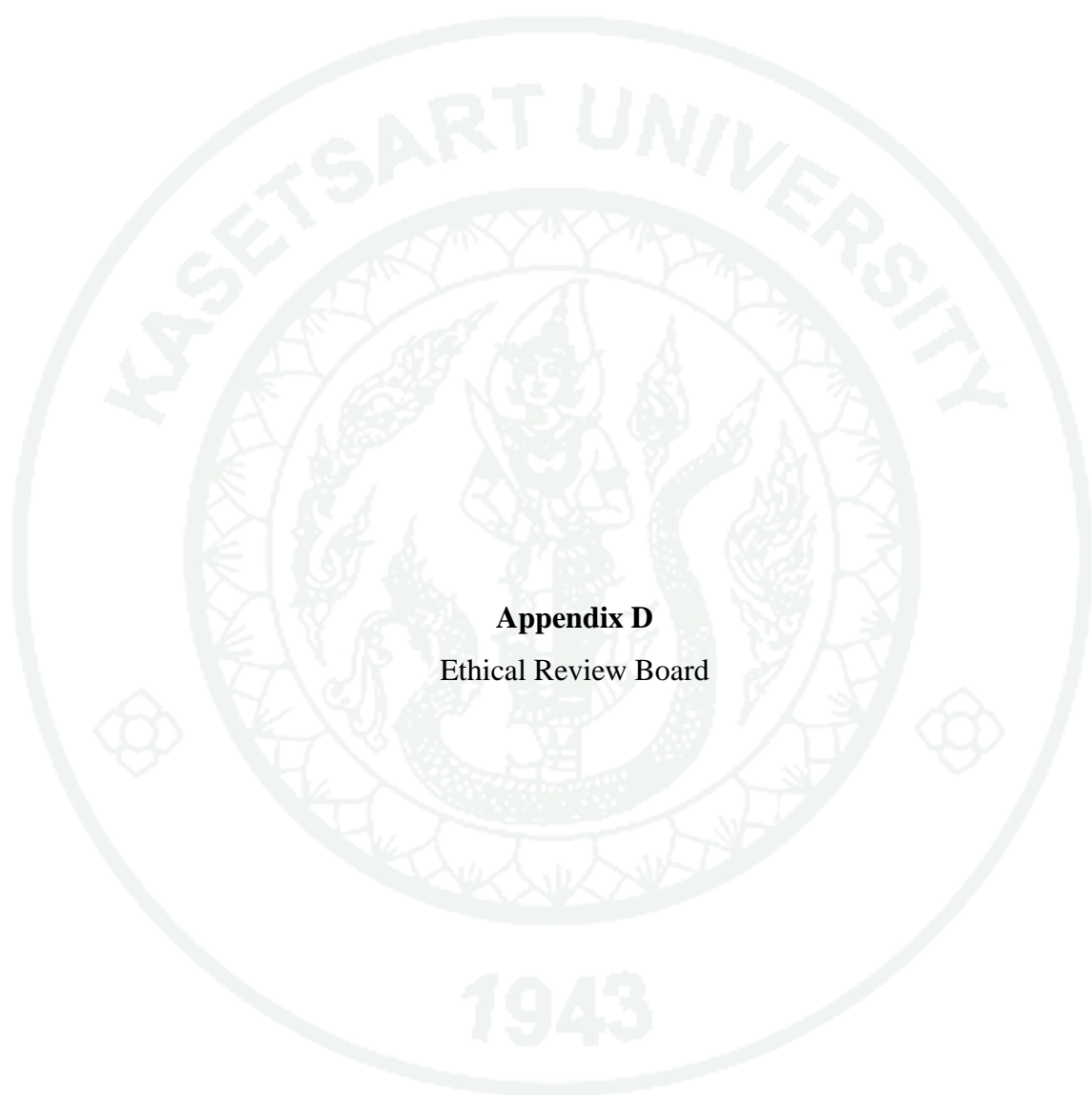
Letter of Translation Validation

TRANSLATOR'S DECLARATION

I, Puspa Delima, declare that I understand the English language and Indonesian language that I hold certificate as an English teacher from State University of Padang and that, to the best of my knowledge and belief, the statements in the Indonesian language in the attached translation of questionnaire, which I have made, have the same meanings as the statements in the original English document, a copy of which I have examined.

Puspa Delima





Appendix D
Ethical Review Board



ERB No. 40 / 2014

ETHICAL REVIEW BOARD

Baromarajonani College of Nursing Nopparat Vajira

681 Ramintra Road, Khannayao, Bangkok 10230, Thailand, Tel. 02-540-6500 ext 222

Certificate of Approval The Institutional Review Board of the Baromarajonani College of Nursing Nopparat Vajira 681 Ramintra Road, Khannayao, Bangkok Thailand, has approved the following

study which is to be carried out in compliance with the International guidelines for human Research protection as Declaration of Helsinki, The Belmont Report.

Study Title: Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia

Study Center: Indonesia

Principal Investigator: Ms. Wulan Sari Purba

Document Reviewed:

7. Principal Investigator (PI)

8. Proposal Version1

9. Patient Information Sheet Version2

Signature.....
(BENJAMAS SIRIKAMONSATHIAN)

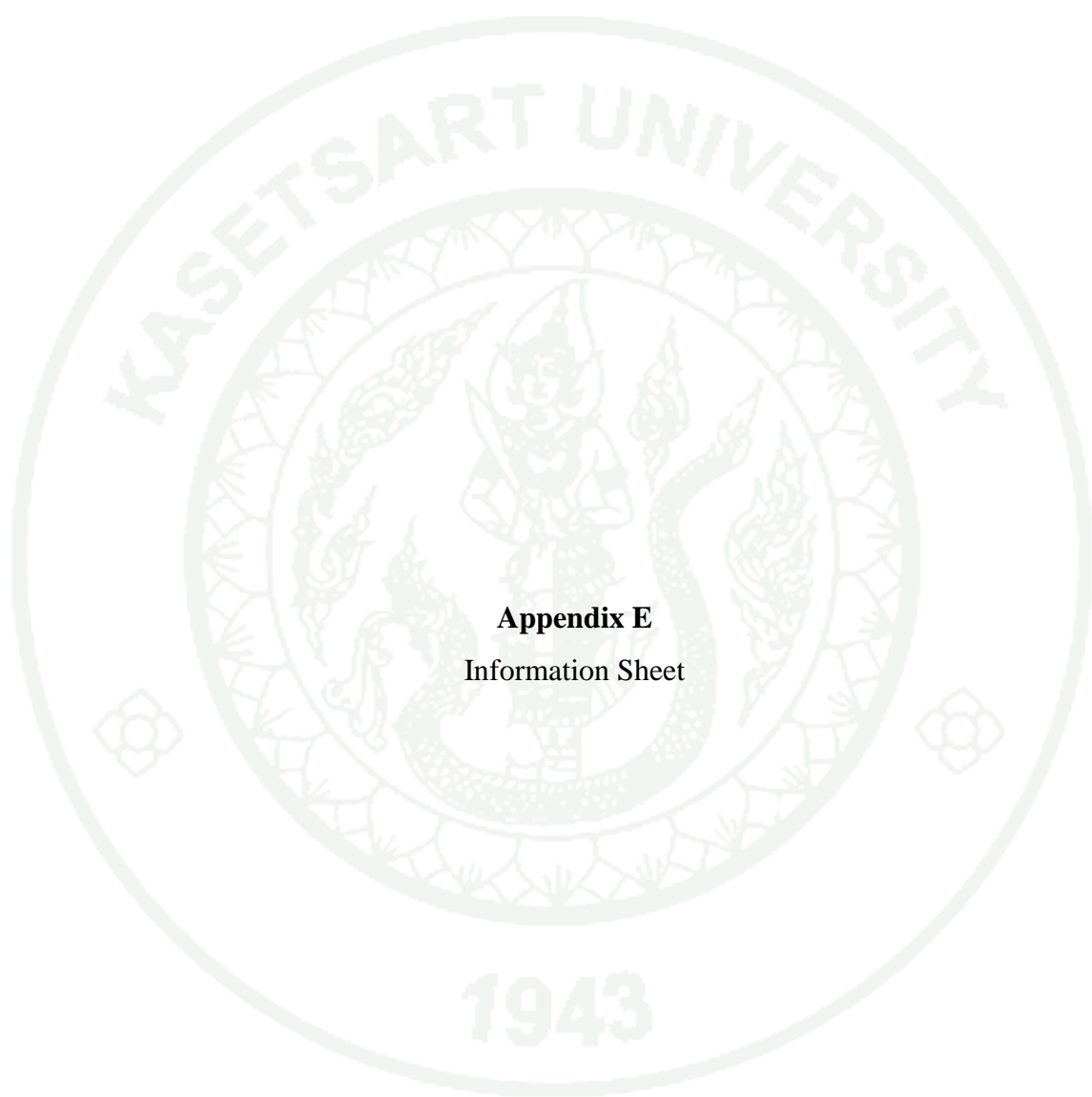
Signature.....
(SUSHEEWA WICHAIKULL)

Chairperson of Ethical Review Board


Secretary of Ethical Review Board

Date of Approval: 4 July 2014

Approval Expire Date: 3 July 2015



Appendix E
Information Sheet

	Boromarajonani College of Nursing Nopparat Vajira	Form of Patient/ Participant Information Sheet
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Title of research project : Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia

Principle researcher's name : Wulan Sari Purba **Position** Student Master of Nursing Science Boromarajonani Collage of Nursing affiliated to Kasetsart University, Bangkok, Thailand

Office address : Jl. Kejaksaan No. 12 Belakang Balok, Bukittinggi, West Sumatera, Indonesia

Home address : Jl. Kejaksaan No. 12 Belakang Balok, Bukittinggi, West Sumatera, Indonesia

Telephone (office) : +62 752 625 222


Cell phone: +66830007104/ +6281265183917 **E-mail :** wulan_usny@yahoo.com

1. You are being invited to take part in a research project. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and do not hesitate to ask if anything is unclear or if you would like more information. Take time to decide whether or not you wish to take part.
2. The purposes of the study are to identify the factors related to the demographic characteristics, depression, functional ability, social support, general health perception and quality of life of stroke survivors in Bukittinggi, Indonesia.
3. This research project involves 138 stroke survivors who are discharged from hospital, stroke ischemic or hemorrhagic, age 45 years or above, live in Bukittinggi, and able to be interviewed. However, stroke survivors who cannot speak and read will be excluded

from this study. This data will be collected after the researcher got permission from the head of Centre National Stroke Hospital Bukittinggi. After that the nurses who are responsible in the polyclinic stroke will be recruited the potential participants and ask for willingness to participate in this study. Then, the researcher will be asked to the nurses the name list of potential participants and then contact them individually. Next, the researcher will contact the potential participants to tell deeply about the study. You are invited in this study because you are the people who survive from a stroke and I believe that you can provide useful data for this study.

4. After you understand all information of the study and signed the informed consent form, I will give you self-administrated questionnaire or interview you. It will take times around 60 minutes. These questionnaires will ask you about your general information (e.g. age, occupation, educational level, and duration stroke) and ask you to rate your health, your feel about some symptoms related to post-stroke and support that you have gotten from family or friend. You are also allowed to ask questions during interviewing. Your data will put in personal electronic program. A code number will be used without any data that can link to you. Questionnaires will be stored in locked file cabinets that only researcher and major advisor can access. After the end of the study, the questionnaires will be destroyed in two years. The electronic data will be kept with password access for future study.
5. After you are recruited by the nurses who are responsible in polyclinic stroke as the potential participants, if you are willing to participate in the study, I will explain information about the study in detail such as objective, procedure, and benefits of the study to you. After you understand clearly and agree to take part in the study, I will ask you to sign in an informed consent form.
6. If you meet the criteria and agree to take part in the study, I will ask you to obtain the informed consent form and continue to interview you or you can fulfill the questionnaire by yourself. If you cannot meet the criteria, I will inform you. Also, I may need to look at some of your data in your medical record at the polyclinic to make sure about your diagnosis if needed with the permission of the nurses.

7. During interviewing, you may feel uncomfortable to answer some questions. You can select to not answer the questions that you do not want to answer. Also, you may be uncomfortable or inconvenient to answer all questions in one time. You can stop interviewing and make new meetings several times as your convenient until you finish answering all questions.
8. This study will be benefits for nurses and health care providers to better understand health satisfaction of stroke survivors. It will provide useful information to develop nursing services and intervention that appropriate for the stroke survivors. These interventions may be direct effect to your living with stroke for improving or maintaining your better quality of life.
9. It is up to you to decide whether or not to take part and you have the right to deny and/or withdraw from the study at any time, no need to give any reason, and there will be no bad impact upon that participant. If you decide to withdraw from the study, you will still receive the health care services at this hospital as usual.
10. If you have any question or would like to obtain more information, I can be reached at all time. You can also contact the nurses who responsible in this polyclinic. If I have new information regarding benefit or risk/harm, you will be informed as soon as possible.
11. Information related directly to you will be kept strictly confidential. Results of the study will be reported as total picture. Any information which could be able to identify you will not appear in the report.
12. At the end of interview, I will give you a small gift to thank for your time and responsibility.
13. If I do not perform upon participants as indicated in the information, you can report the incident to the Ethics Review Committee for Research Involving Human research Subjects, Boromarajonani College of Nursing Nopparat Vajira 681 Ramintra Road, Khanayao, Bangkok 10230, Thailand, Tel. +662-540-6500 ext 257, 246.

	Boromarajonani College of Nursing Nopparat Vajira	Lembar Informasi Responden
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Judul Penelitian: Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia (Faktor-faktor yang Berhubungan dengan Kualitas Hidup Pasien Paska Stroke di Bukittinggi, Indonesia)

Nama Peneliti: Wulan Sari Purba **Pendidikan:** Mahasiswa Magister Keperawatan Keluarga dan Kesehatan Masyarakat, Boromarajonani College of Nursing Nopparat Vajira (BCNNV) yang berafiliasi dengan Kasetsart University, Thailand.

Alamat Kantor: Univ. Muhammadiyah, Jalan Kejaksaan No.12 Belakang Balok, Bukittinggi

Alamat Rumah: Jalan Kejaksaan No.12 Belakang Balok, Bukittinggi

Telepon (Kantor): +62 752 625 222

Telepon Hp: +66830007104/ +6281265183917 **Email:** wulan_usny@yahoo.com

1. Anda diundang untuk berpartisipasi dalam penelitian ini. Sebelum Anda memutuskan untuk ikut, penting bagi Anda untuk memahami tentang penelitian ini dan apa yang akan Anda lakukan dalam penelitian ini. Silahkan luangkan waktu Anda untuk mendengarkan informasi berikut ini dengan seksama dan jangan ragu untuk menanyakan jika ada sesuatu yang kurang jelas atau jika Anda membutuhkan informasi lebih lanjut.
2. Penelitian ini bertujuan untuk mengidentifikasi faktor-faktor yang berhubungan dengan demografi karakteristik, depresi, kemampuan fungsional, dukungan sosial, persepsi kesehatan secara umum dan kualitas hidup pasien pasca stroke di Bukittinggi, Indonesia.
3. Penelitian ini melibatkan 138 penderita pasca stroke yang rawat jalan, stroke iskemik atau hemoragi, berusia 45 tahun atau lebih, tinggal di Bukittinggi, dan dapat

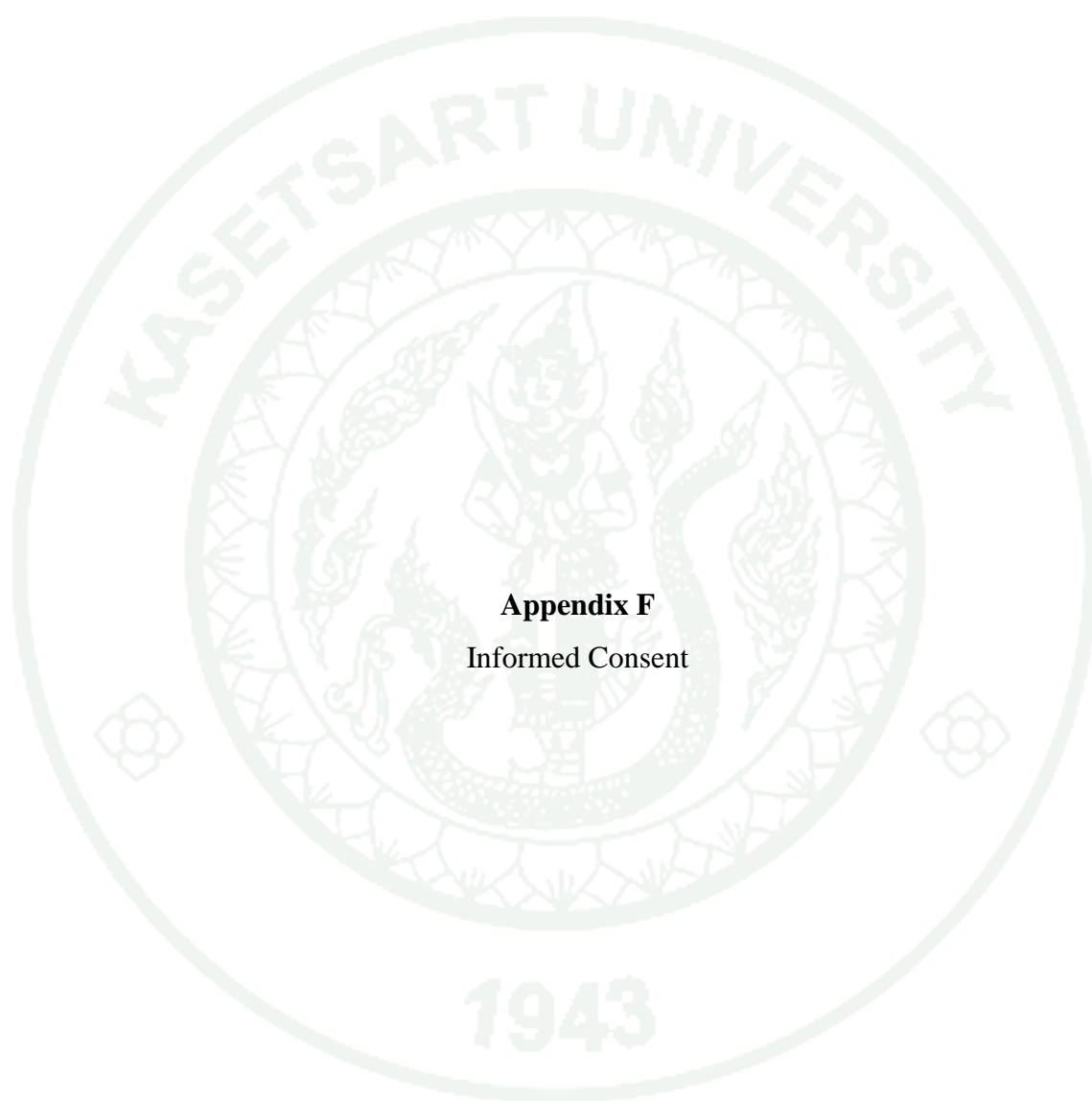
dilakukan tanya jawab. Namun penderita stroke yang tidak dapat berbicara dan tidak dapat membaca tidak termasuk dalam penelitian ini. Penelitian ini akan dilakukan setelah peneliti mendapatkan izin dari kepala Rumah Sakit Stroke Bukittinggi.

Selanjutnya perawat yang bertanggung jawab di poliklinik stroke akan membantu merekrut calon responden dan meminta kesediaan calon responden untuk berpartisipasi dalam penelitian ini. Kemudian peneliti akan meminta daftar nama calon responden yang selanjutnya akan saya gunakan untuk menghubungi calon responden. Setelah itu saya akan menghubungi calon responden untuk memberikan informasi secara mendalam tentang penelitian ini. Anda diundang dalam penelitian ini karena Anda adalah pasien pasca stroke dan saya percaya bahwa Anda dapat memberikan data yang berguna untuk penelitian ini.


4. Setelah Anda memahami semua informasi penelitian dan menandatangani formulir persetujuan menjadi responden, saya akan mewawancarai Anda dengan menggunakan beberapa kuesioner atau anda dapat mengisi kuesioner sendiri. Wawancara ini akan berlangsung sekitar 60 menit. Kuesioner ini akan menanyakan Anda tentang informasi umum Anda (misalnya umur, tingkat pendidikan, pekerjaan, dan lamanya menderita stroke) dan meminta Anda untuk menilai kesehatan Anda, perasaan tentang beberapa gejala yang berhubungan dengan stroke dan dukungan yang telah Anda dapatkan dari keluarga atau teman. Anda juga diperbolehkan untuk mengajukan pertanyaan selama wawancara. Data Anda akan dimasukkan ke dalam program elektronik pribadi. Nomor kode akan digunakan tanpa ada yang bisa mengakses ke data Anda. Kuesioner akan disimpan dalam lemari arsip dan dikunci dimana hanya peneliti dan pembimbing yang dapat mengaksesnya. Pada akhir penelitian, kuesioner akan dihancurkan dalam dua tahun. Data elektronik akan disimpan dengan menggunakan kata sandi untuk penelitian berikutnya.
5. Setelah Anda direkrut sebagai calon responden oleh perawat penanggung jawab di poliklinik stroke, jika Anda bersedia untuk berpartisipasi dalam penelitian ini, saya akan menjelaskan informasi tentang penelitian secara rinci seperti tujuan, prosedur, dan manfaat dari penelitian. Setelah Anda memahami dengan jelas dan setuju untuk mengambil bagian dalam penelitian ini, saya akan meminta Anda untuk menandatangani atau membubuhkan cap jempol pada formulir persetujuan menjadi responden.

6. Jika Anda memenuhi kriteria dan setuju untuk berpartisipasi dalam penelitian ini, saya akan meminta Anda untuk menandatangani lembar persetujuan menjadi responden dan selanjutnya mewawancarai Anda atau anda akan mengisi kuesioner ini sendiri. Jika anda tidak sesuai dengan kriteria saya akan memberikan informasi kepada Anda. Selain itu saya mungkin memerlukan beberapa data Anda dalam rekam medis di poliklinik untuk memastikan diagnosa Anda, jika diperlukan, dengan seizin dari perawat.
7. Selama wawancara, Anda mungkin merasa tidak nyaman untuk menjawab beberapa pertanyaan. Anda dapat memilih untuk tidak menjawab pertanyaan apabila Anda tidak ingin menjawabnya. Selain itu Anda mungkin tidak nyaman atau tidak sesuai dalam menjawab semua pertanyaan dalam satu waktu. Anda dapat menghentikan wawancara dan membuat pertemuan baru beberapa kali sampai Anda selesai menjawab semua pertanyaan.
8. Penelitian ini akan memberikan manfaat bagi perawat dan penyedia layanan kesehatan untuk lebih memahami tingkat kepuasan pasien stroke. Hal ini akan memberikan informasi yang berguna untuk mengembangkan pelayanan keperawatan dan tindakan yang sesuai untuk penderita stroke. Hal ini dapat berpengaruh langsung terhadap hidup Anda dalam meningkatkan atau mempertahankan kualitas hidup Anda secara lebih baik.
9. Partisipasi dalam penelitian ini bersifat sukarela dan Anda memiliki hak untuk menolak dan / atau menarik diri dari penelitian setiap saat tanpa memberikan alasan apapun, dan tidak akan ada dampak buruk pada Anda. Jika Anda memutuskan untuk mengundurkan diri dari penelitian, Anda akan tetap menerima layanan kesehatan di rumah sakit ini seperti biasa.
10. Jika Anda memiliki pertanyaan atau ingin mendapatkan informasi lebih lanjut, Anda bisa menghubungi saya setiap saat atau Anda bisa menghubungi perawat yang bertanggung jawab di poliklinik ini. Jika saya memiliki informasi baru mengenai manfaat atau risiko / bahaya, Anda akan diberitahu secepatnya.

11. Informasi yang berhubungan langsung kepada Anda akan dijaga kerahasiaannya. Hasil penelitian akan ditampilkan secara hasil keseluruhan. Setiap informasi yang bisa dapat mengidentifikasi Anda tidak akan ditampilkan dalam laporan.
12. Pada akhir wawancara, saya akan memberikan souvenir sebagai ucapan terima kasih untuk waktu dan usaha Anda.
13. Jika saya tidak memperlakukan Anda seperti yang ditunjukkan dalam lembar informasi, Anda dapat melaporkan kejadian tersebut kepada Komite Etik Penelitian, Boromarajonani College of Nursing Nopparat Vajira 681 Ramintra Road, Khanayao, Bangkok 10230, Thailand, Tel. +662-540-6500 Ext 257, 246.



Appendix F
Informed Consent

	<p align="center">Boromarajonani College of Nursing Nopparat Vajira</p>	<p align="center">Form of Informed Consent Form</p>
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Address

Date

Code number of participant

I who have signed here below agree to participate in this research project

Title : The Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia

Principle researcher's name : Wulan Sari Purba

Contact address : Jl. Kejaksaan No.12 Belakang Balok, Bukittinggi

Telephone : +66830007104/ +6281265183917

I have been informed about rationale and objective of the project, what I will be engaged with in details, risk/harm and benefit of this project. The researcher has explained to me and I **clearly understand with satisfaction.**

I willingly **agree** to participate in this project and consent the researcher to response to questionnaires about 100 items and take time 45-60 minutes. Then, I have the opportunity to ask the questions to the researcher. After the end of the study, the researcher will be destroyed the questionnaire.

I have **the right** to withdraw from this study at any time as I wish with no need to **give any reason.** This withdrawal **will not have any negative impact upon me and I still can receive the usual services from this hospital.**

The researcher has guaranteed that procedure acted upon me would be exactly the same as indicated in the information. Any of my personal information will be **kept**

confidential. Results of the study will be reported as total picture. Any of personal information which could be able to identify me will not appear in the report.

If I am not treated as indicated in the information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Baromarjonnani College of Nursing Nopparat Vajira 681 Ramintra Road, Khannayao, Bangkok 10230, Thailand, Tel. 02-540-6500 ext 257, 246

I also have received a copy of information sheet and informed consent form

Sign.....

(.....)

Researcher

Sign.....


(.....)

Participant

Sign.....

(.....)

Witness

	Boromarajonani College of Nursing Nopparat Vajira	Formulir Persetujuan Menjadi Responden
---	--	---

Alamat.....

Tanggal.....

Nomer Kode Responden.....

Saya yang bertandatangan dibawah ini menyatakan setuju untuk berpartisipasi dalam penelitian:

Judul: Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia (Faktor-faktor yang Berhubungan dengan Kualitas Hidup Pasien Stroke in Bukittinggi, Indonesia)

Nama Peneliti: Wulan Sari Purba

Alamat: Jalan Kejaksanaan No.12 Belakang Balok, Bukittinggi

Telepon: +66830007104/ +6281265183917

Saya telah diberikan informasi tentang alasan dan tujuan penelitian, resiko / bahaya, dan manfaat penelitian. Peneliti telah menjelaskan kepada saya dan saya mengerti dengan jelas dan merasa puas terhadap penjelasan yang telah diberikan.

Saya rela dan setuju untuk berpartisipasi dalam penelitian ini dengan memberikan respon terhadap kuesioner sebanyak 100 pernyataan yang diberikan peneliti selama 45-60 menit. Saya juga memiliki kesempatan untuk mengajukan pertanyaan kepada peneliti. Setelah akhir penelitian, kuesioner akan dihancurkan.

Saya memiliki hak untuk mengundurkan diri dari penelitian ini kapan saja seperti yang saya inginkan tanpa perlu memberikan alasan apapun. Penarikan ini tidak akan memiliki dampak negatif pada saya dan saya masih menerima pelayanan kesehatan di rumah sakit ini seperti biasa.

Peneliti telah menjamin bahwa prosedur yang dilakukan akan persis sama seperti yang ditunjukkan dalam lembar informasi. Setiap informasi pribadi saya akan dirahasiakan.

Hasil penelitian akan dilaporkan sebagai gambaran keseluruhan. Setiap informasi pribadi yang bisa dapat mengidentifikasi saya tidak akan ditampilkan dalam laporan.

Jika saya tidak diperlakukan seperti yang ditunjukkan dalam lembar informasi, saya dapat melaporkan kepada Komite Etik Penelitian, Boromarajonani College of Nursing Nopparat Vajira jalan Ramintra No. 681, Khannayao, Bangkok 10230, Thailand, Tel. +662-540-6500 Ext 257, 246.

Saya juga telah menerima salinan lembar informasi dan formulir persetujuan menjadi responden.

Ttd

(Wulan Sari Purba)

Peneliti

Ttd

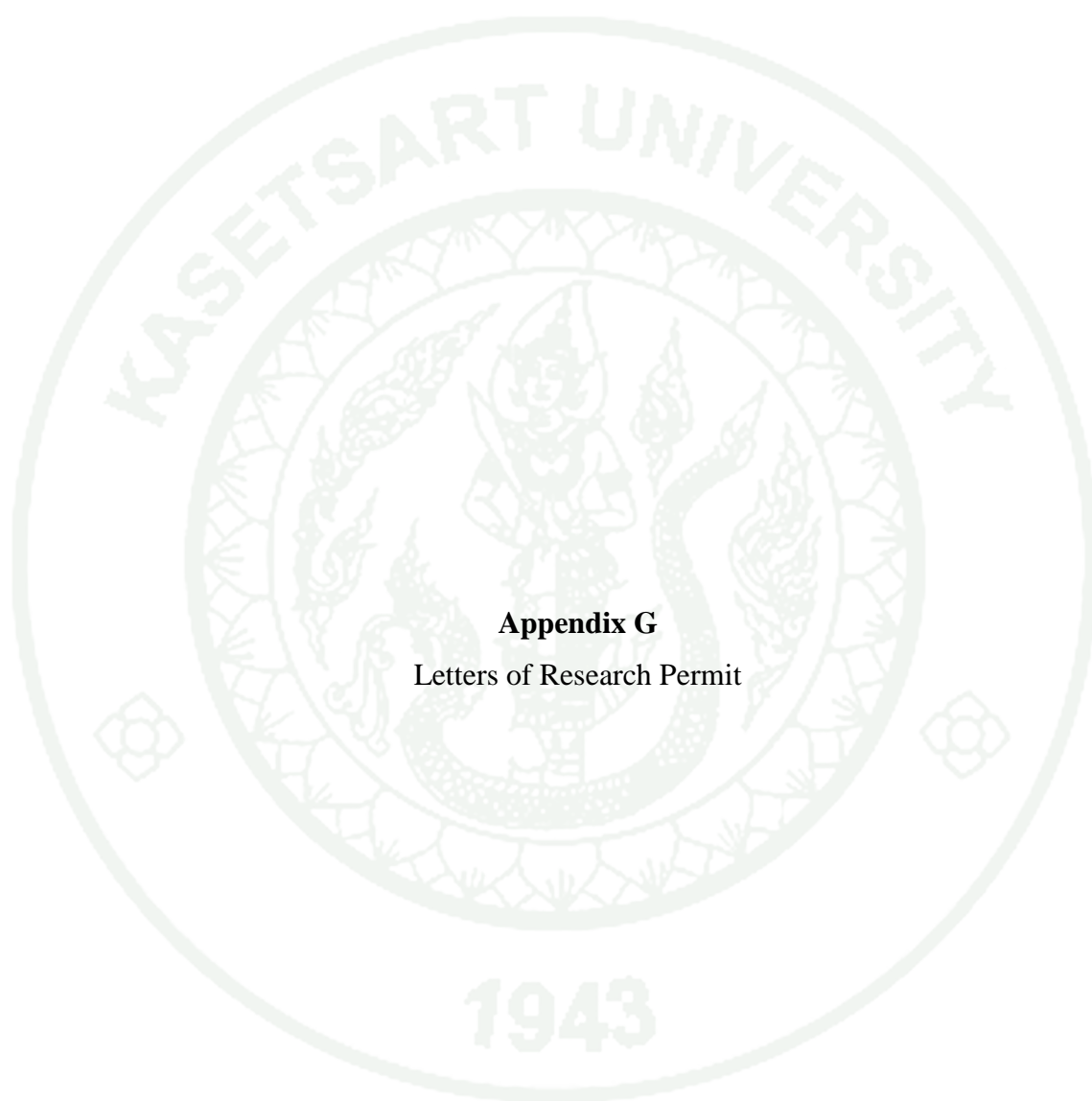
(.....)

Responden

Ttd

(.....)

Saksi



Appendix G

Letters of Research Permit



KEMENTERIAN KESEHATAN R.I.
DIREKTORAT JENDERAL BINA UPAYA KESEHATAN
RUMAH SAKIT STROKE NASIONAL BUKITTINGGI



Jl. Jenderal Sudirman PO BOX 1 Bukittinggi Telp. (0752) 21013 Fax. (0752) 23431

No : DM.01.01/ 6 / 2014

04 Juli 2014

Perihal : Konfirmasi Melakukan Penelitian

Kepada Yth
 Ka. Instalasi Rawat Jalan
 RSSN Bukittinggi

Menindaklanjuti surat dari Direktur Keuangan & ADUM tertanggal 14 Juni 2014 dengan Nomor : 880 tentang Izin Penelitian oleh mahasiswa dibawah ini :

Nama : Wulan Sari Purba
 ID : 5516250196
 Prodi : S2 Keperawatan

Akan melakukan kegiatan penelitian dengan menggunakan kuesioner dan wawancara pada pasien stroke sebanyak 168 (Seratus Enam puluh Delapan) Orang di poliklinik Neurologi Rumah Sakit Stroke Nasional Bukittinggi dengan judul "Faktor-Faktor Yang Berhubungan Dengan Kualitas Hidup Pasien Pasca Stroke Di Rumah Sakit Stroke Nasional Bukittinggi ".

Kegiatan penelitian tersebut akan dilakukan pada tanggal 04 Juli s/d 29 Agustus 2014, untuk itu kami harapkan kerja sama dan bimbingan dari pihak saudara demi kelancaran penelitian tersebut.

Demikianlah surat konfirmasi penelitian ini kami sampaikan, atas perhatian dan kerjasamanya diucapkan terima kasih



Tanggapan Persetujuan

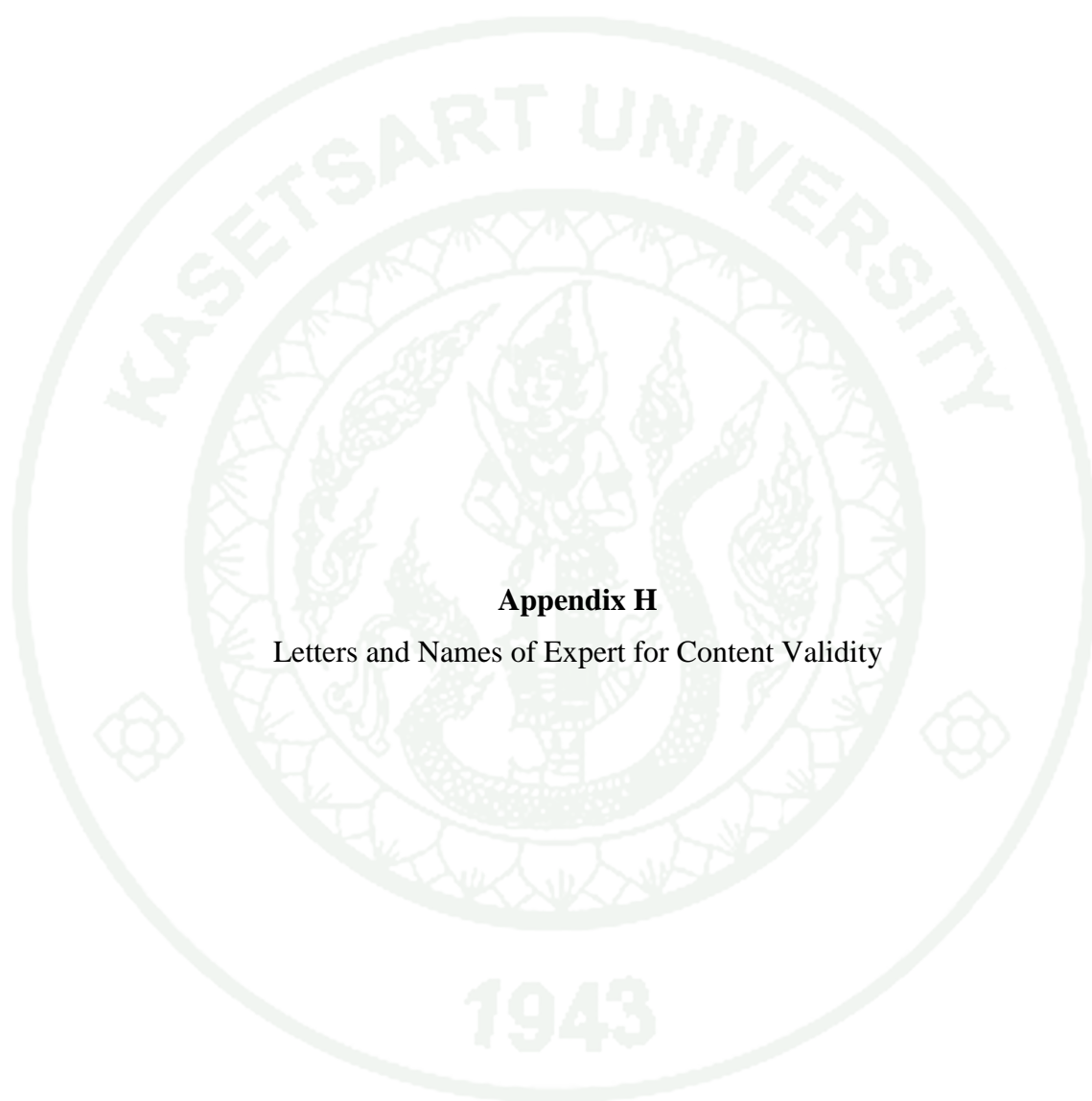
(diisi oleh Ka. Bagian/Instalasi atau yang mewakili)

ditte ditabukan penulisan

HEDEY SIATIT

Catatan :

Untuk dikembalikan ke Instalasi Diklit setelah ditanggapi lahan/responden



Appendix H

Letters and Names of Expert for Content Validity

No.0203.0932/ 630



Boromarajonani College of Nursing Nopparat Vajira
681 Ramintra Road, Kannayao, Bangkok 10230
THAILAND

26 May 2014

Reni Prima Gusty, S.Kp, M.Kes
Nursing Instructor
Faculty of Nursing, University of Andalas

Subject: Letter of Invitation to be an expert review for a research instrument

Dear Reni Prima Gusty, S.Kp, M.Kes

Boromarajonani College of Nursing Nopparat Vajira, an Affiliation Institution of Kasetsart University, Thailand would like to ask for your kind support in serving as an expert review for a research instrument to be used for a Master's thesis. The instrument is proposed by Mrs. Wulan Sari Purba, a student in Master of Nursing Science program in Family and Community Health Nursing (International Program) of Boromarajonani College of Nursing Nopparat Vajira. Her thesis entitled "Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia."

I would be most grateful for your kind support in reviewing the aforementioned research instrument. If you have any queries please do not hesitate to contact Dr. Anchaleeporn Amatayakul, thesis advisor, at anchaleeporn@bcnnv.ac.th or +66 85 736 1766

Yours Sincerely,

Sunanta Thongpat

Acting Director of Boromarajonani College of Nursing Nopparat Vajira

Graduate study
Tel: (66 2) 540-6500 Ext. 215,220

No.0203.0932/ 629



Boromarajonani College of Nursing Nopparat Vajira
681 Ramintra Road, Kannayao, Bangkok 10230
THAILAND

26 May 2014

Fera Liza, M.Kep.,Sp.MB
Nurse Instructor
National Stroke Centre Hospital
Bukittinggi

Subject: Letter of Invitation to be an expert review for a research instrument

Dear Fera Liza, M.Kep.,Sp.MB

Boromarajonani College of Nursing Nopparat Vajira, an Affiliation Institution of Kasetsart University, Thailand would like to ask for your kind support in serving as an expert review for a research instrument to be used for a Master's thesis. The instrument is proposed by Mrs. Wulan Sari Purba, a student in Master of Nursing Science program in Family and Community Health Nursing (International Program) of Boromarajonani College of Nursing Nopparat Vajira. Her thesis entitled "Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia."

I would be most grateful for your kind support in reviewing the aforementioned research instrument. If you have any queries please do not hesitate to contact Dr. Anchaleeporn Amatayakul, thesis advisor, at anchaleeporn@bcnnv.ac.th or +66 85 736 1766

Yours Sincerely,

Sunanta Thongpat

Acting Director of Boromarajonani College of Nursing Nopparat Vajira

Graduate study
Tel: (66 2) 540-6500 Ext. 215,220

No.0203.0932/ ๖๖1



Boromarajonani College of Nursing Nopparat Vajira
681 Ramintra Road, Kannayao, Bangkok 10230
THAILAND

26 May 2014

Hendria Budi, M.Kep.,Sp.MB
Nursing Instructor
Politeknik Kesehatan Padang

Subject: Letter of Invitation to be an expert review for a research instrument

Dear Hendria Budi, M.Kep.,Sp.MB

Boromarajonani College of Nursing Nopparat Vajira, an Affiliation Institution of Kasetsart University, Thailand would like to ask for your kind support in serving as an expert review for a research instrument to be used for a Master's thesis. The instrument is proposed by Mrs. Wulan Sari Purba, a student in Master of Nursing Science program in Family and Community Health Nursing (International Program) of Boromarajonani College of Nursing Nopparat Vajira. Her thesis entitled "Factors Related to Quality of Life of Stroke Survivors in Bukittinggi, Indonesia."

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Yours Sincerely,

Sunanta Thongpat

Acting Director of Boromarajonani College of Nursing Nopparat Vajira

Graduate study
Tel: (66 2) 540-6500 Ext. 215,220

Names of Expert for Content Validity

1. Reni Prima Gusty, S.Kp, M.Kes
Nursing Instructor, Department of Research specialist in stroke, Faculty of Nursing,
University of Andalas, .Indonesia
2. Fera Liza, M.Kep., Sp.MB
Nurse Instructor, Departement of medical surgical nursing specialist in stroke,
National Stroke Centre Hospital, Bukittinggi, .Indonesia
3. Hendria Budi, M.Kep., Sp.MB
Nursing Instructor, Departement of medical surgical nursing specialist in stroke,
Polytechnic Kesehatan Padang

CURRICULLUM VITAE

NAME : Mrs. Wulan Sari Purba

BIRTH DATE : April 14, 1984

BIRTH PLACE : Tebing Tinggi

EDUCATION	: <u>YEAR</u>	<u>INSTITUTE</u>	<u>DEGREE/DILOMA</u>
	2005	AKPER DR.Rusdi Medan	Amd.Kep.Nursing (Diploma)
	2009	University North Sumatera	B.Sc. (Nursing)

POSITION/TITLE : Lecturer

WORK PLACE : Muhammadiyah of University

SCHOLARSHIP/AWARDS : Indonesia Government Scholarship 2012-2014