

บทความวิจัย

Factors Related to Post-Stroke Depression among Older Adults in Da Nang, Viet Nam

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Abstract

This study explored the level of post-stroke depression among older subjects, and the relationships between various factors (age, gender, education, activities of daily living, social support, self-esteem) and post-stroke depression. Eighty-nine participants were randomly sampled for this study, conducted in March-April 2015. The data collection occurred at the Cardiovascular Internal Medicine Department of Da Nang hospital and Medical Department, C hospitals, Da Nang, Viet Nam. Five questionnaires were used: The Demographic Data Form, The Post-stroke Depression Rating Scale (PSDRS, reliability = .85), The Modified Barthel Index (MBI, reliability = .94), The Multidimensional Scale of Perceived Social Support (MSPSS, reliability = .87), and The Rosenberg Self-Esteem Scale (RSE, reliability = .82). Frequency, percentage, mean, standard deviation, Point Biserial Correlation, Spearman's Rho Correlation Coefficient and Pearson Product Moment Correlation Coefficient were used to analyze the data.

The results revealed that: Older adults after stroke had minor depression ($M = 12.79$ [of a maximum of 45], $SD = 7.51$). Activities of daily living, social support and self-esteem significantly and negatively correlated with post-stroke depression ($r = -.885$, $r = -.544$, $r = -.596$, $p < .01$, respectively). However, age, gender, and educational level were not significantly related to post-stroke depression ($p > .05$)

Keywords: *Post-stroke depression, Older adults.*

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Introduction

In recent years the number of people suffering strokes has increased significantly globally. According to the World Health Organization [WHO] (2014b), 15 million people per year have a stroke. It is estimated that around 25% of men and 20% of women have a stroke before they are 85 years of age (De Ryck et al., 2014). Stroke is already the second leading cause of death for people age 60 + (World Heart Federation, 2015). In Asia, stroke has been among the top four leading causes of death (Glamcevski II & Pierson, 2005). In Viet Nam annually, 18% of male deaths and 23% of female deaths are attributable to stroke. Furthermore, Nguyen et al. (2011) found that, among Vietnamese age 45-69, stroke is a main burden for both men (14%) and women (9%).

Stroke leads to many permanent complications in physical and mental health. High prevalence and incidence rates have been noted for post-stroke depression, the most common psychiatric complication (Terroni et al., 2012). Linden, Blomstrand & Skoog (2014) found an increased frequency of post-stroke depression among people age 70 and over. Post-stroke depression adversely affected length of recovery, general health and functional outcomes, quality of life, length of stay in hospital, suicide attempt and completion rates, and cognitive impairment (Terroni et al., 2012). In addition, post-stroke depression can reduce energy, motivation, concentration and self-efficacy. Patients who are depressed when admitted to hospital will, upon discharge, show decreased independence in activities of daily living and reduced life satisfaction (Farrell, 2004). Furthermore, post-stroke depression is related to increased risk of another stroke or myocardial infarct (Boden-Albala, et al. cited in Brown, Hasson, Thyselius & Almborg, 2012).

The literature suggests several factors related to post-stroke depression, such as age, gender, educational level, activities of daily living, social support and self-esteem (Alajbegovic et al., 2014; Haghgoo et al., 2013; Mpembi et al., 2013). However, relationships between those factors and post-stroke depression, overall, have been inconclusive. In Viet Nam, although stroke and post-stroke depression are common, their prevalence and identification of factors related to post-stroke depression are limited in the Vietnamese literature. Most studies relevant to stroke and its correlates have been done in other countries. However, in addition to their own demographics, the Vietnamese have unique cultural traits such as personality traits, family relations, and beliefs about independence and dependence; surely, one could expect differences in etiology and epidemiology as well. Therefore, studies of post-stroke depression and related factors are needed in Vietnamese context.

Overall, however, some of these factors, such as social support and self-esteem, are more controllable or manageable than others. And if these factors are correlated with post-stroke depression, nursing care that includes patient and family education and training regarding these factors should reduce post-stroke depression. That is a major focus of this study, which, using the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) as a guide which aimed to explore level of post stroke depression among older adults in Da Nang, Viet Nam and to examine relationships between age, gender, educational level, activities of daily living, social support and self-esteem and post stroke depression among older adults in Da Nang, Viet Nam.

Methodology

This descriptive correlational study was conducted at the Cardiovascular Internal Medicine Department of Da Nang hospital and Medical Department, C hospitals, Da Nang, Viet Nam. Sample size was calculated by using the power analysis with the level of significance (α) of .05, the standard power 80 %, and the small effect size (γ) of 0.26 (Grove, Burns, & Gray, 2013), therefore eighty nine post-stroke older adults were recruited by simple random sampling after employing the following screening criteria: participants had to be 60 years of age or older, in stable enough health to allow them to participate for the duration of the study, able to communicate orally and read in Vietnamese, and willing to participate in the study. Data were collected from March to April 2015. Participants completed the questionnaires as structured interviews, and responses were checked for reliability and validity at the end of each interview. A database was built and analysis conducted using SPSS version 22.

Instruments:

- 1) The Demographic Data Form
- 2) The Post-Stroke Depression Rating Scale (PSDRS), developed by Gainotti et al. (1997), consisted of 10 sections that evaluate specific aspects of the emotional, affective and vegetative disorders of stroke patients. Since section 10 does not assess severity, the sum of scores from section 1 through 9 was considered the "global PSDRS score", which ranged from 0 to 45. Gainotti et al. (1997) recommended a cut-off score of 9 to distinguish between absence of depression and presence of mood disorders with depressive manifestations, and a cut-off score of 18 to distinguish between mild depression and major depression-like disorder.

- 3) The Modified Barthel Index (MBI), was developed from the Barthel Index by Shah, Vanclay and Cooper (1989). The MBI, specified for use with stroke patients, has 10 sections for assessing activities of daily living. MBI items are scored using a 5-point ordinal scale which varies from item to item. With a maximum total score of 100, the MBI scoring is interpreted as follows: <21 = unable to perform activities of daily living; 21-54 = attempts to perform but is unsafe; 55-83 = needs moderate help; 84-99 = needs minimal help; 100 = fully independent.

- 4) The Multidimensional Scale of Perceived Social Support (MSPSS), developed by Zimet, Dahlem, Zimet and Farleyin (1988), measures perceived social support from three sources: family, friends, and significant other(s). Each 7-point Likert Scale item ranges from 1 = very strongly disagree to 7 = very strongly agree. The total MSPSS score is calculated by averaging the scores for all 12 items. Zimet et al. (1988) suggest that scores from 1.0 to 2.9 be considered low support, 3.0 to 5.0 be considered moderate support, and 5.1 to 7.0 be considered high support.

- 5) The Rosenberg Self-Esteem Scale (RSE), developed by Morris Rosenberg (1965), is a 10-item instrument to assess an individual's feelings of self-worth. It is a 4-point Likert scale, with responses ranging from "strongly agree" to "strongly disagree". The overall score is the sum of all 10 item scores, and ranges from 10 to 40. The scores can be interpreted as following: < 15 = low self-esteem; 15-25 = normal self-esteem; > 25 = high self-esteem (Trigged, 2012)

Psychometric properties of the instruments: The MSPSS had already been translated from English into Vietnamese in the study of Huyen, Jullamate, and Kangchai (2011) study with 126 heart failure older adult

patients. It was found that the translated version's reliability was .74. The three other non-demographic instruments - the PSDRS, the MBI, and the RSE - were translated from English into Vietnamese and back-translated into English by three bilingual translators. The back-translated English versions were then compared to the original English versions by the researcher and a native English-speaking person (Cha, Kim, & Erlen, 2007). Internal consistency reliability of the PSDRS, MBI, MSPSS and RSE were .85, .94, .87, and .82 respectively.

Data analysis

Descriptive statistics were used for univariate analyses (demographics and variables). Point Biserial Correlation was used to explore the relationship between gender and post-stroke depression among older adults. Spearman's Rho was used to explore the relationship of age and educational level to post-stroke depression. Pearson Product Moment Correlation was used to explore the relationship of activities of daily living, social support, and self-esteem to post-stroke depression. The significance level for all relationships was set at .05.

Results

The characteristics of older adults with stroke showed in Table 1.

Table 1 Characteristics of the sample (n = 89)

Post-stroke older adults	Frequency	percentage	Post-stroke older adults	Frequency	percentage
Age (years)			Educational level		
60-69	43	48.3	No schooling (0 year)	9	10.1
70-79	23	25.8	Primary school		
80-89	19	21.4	(1-5 years)	15	16.9
90 +	4	4.5	Secondary school	21	36
Mean = 72.02, SD = 10.52, Range 60-96			(6-9 years)		
Gender			High school		
Male	49	55.1	(10-12 years)	31	34.8
Female	40	44.9	Graduate and higher		
Marital status			(> 12 years)	13	14.6
Single	5	5.6	Mean = 8.7, SD = 4.76, Range 0-17		
Married	61	68.6	Living arrangements		
Divorced	2	23.6	Alone	9	10.1
Widowed	21	23.6	Couple only	5	5.6
Paying for treatment			With family	75	84.3
By health insurance	87	97.8			
By him/herself	2	2.2			

Post stroke depression and its mean score are shown in Table 2. Finding revealed that the level of

post-stroke depression among participants was at a minor level.

Table 2 Level, frequency, percentage, range, mean and standard deviation of post stroke depression

Level of post stroke depression	Frequency (percentage)	Possible range	Actual range	Mean	SD.
No depression	27 (30.30)	0 - 8	0 - 8	4.07	2.54
Minor depression	39 (43.80)	9 - 18	9 - 18	13.00	2.78
Major depression	23 (25.80)	19 - 45	19 - 33	22.65	3.10
Overall	89 (100)	0 - 45	0 - 33	12.79	7.51

There were significant and negative correlations between post-stroke depression and activities of daily living, social support, and self-esteem ($r = -.885$, $r = -.544$, and $r = -.596$, $p < .001$, respectively). Post-stroke depression was not significantly related to age, gender, and educational level (Table 3).

Table 3 Relationships of age, gender, educational level, activities of daily living, social support, and self-esteem to post-stroke depression

Variables	Post-stroke depression	
	<i>r</i>	p - value
Age	.032	.766
Gender	.017	.878
Educational level	-.037	.732
Activities of daily living	-.885**	.000
Social support	-.544**	.000
Self-esteem	-.596**	.000

** $p < 0.001$

Discussion

As measured by the PSDRS, the level of post-stroke depression among older adults with stroke was minor, ranging from 0 to 33 with a mean score of 12.72 (SD = 7.51). The percentage of participants with minor and major depressions was 43.8% and 25.8% respectively. Participants in this study reported that they often experienced anhedonia ($\bar{X} = 3.08$, SD = 2.04), anxiety ($\bar{X} = 1.63$, SD = 1.14), vegetative disorders ($\bar{X} = 1.54$, SD = 1.11) and depressed mood ($\bar{X} = 1.22$, SD = 1.10), all of which are criteria for depression based on DSM-IV (American Psychiatric Association, 1994). This study's results are similar to others'. Farrell (2004) reported that minor depression was more frequent, affecting up to 20% of the older adult population.

Age, gender and educational level were not significantly related to post-stroke depression in this

study. This may be because, although "older elderly" and females were more likely to experience depression than "younger elderly" and males, age and gender needed to combine with other risk factors. These findings are consistent with previous studies (Brodaty et al., 2007; Nys et al., 2005; Spalletta et al., 2005).

The most robust finding was the strong inverse relationship between activities of daily living and post-stroke depression ($r = -.885$, $p < .001$). Greater independence in activities of daily living is linked with lesser risk of post-stroke depression. The mean activities of daily living score was 49.11 (SD = 31.35), meaning older adults were judged unsafe in performing regular activities; put bluntly, after their stroke, participants were disabled. In fact, stroke has been a major cause of disability in older adults (Gorina et al., 2006). According to Fiske et al. (2009), "vulnerabilities appeared to modify

the effects of stressful events on depression". For example, "a variant of serotonin transporter gene promoter region (5-HTTLPR)" is related to increasing the risk of depression. Additionally, depression might lead to "further deterioration of physical function and a vicious cycle" (Richardson, Bedard & Weaver, 2001).

The Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) mentioned that illness and injury, like stroke and disability, were formal properties of situations which could increase stress, depending on the meaning the patient attached to each stressor. Furthermore, results showed that participants could not perform even basic activities such as personal hygiene, bowel control or bladder control. This could lower self-esteem and lead to negative psychological outcomes (Hackett & Anderson 2006; Lazarus & Folkman, 1984) because, based on the WHO (2014a) definition of depression, feelings of low self-worth was one correlate of depression. Conversely, if participants could perform activities of daily living, they might well rate higher in confidence and self-worth, which could in turn reduce feelings of burden and stress. Moreover, Glamcevski II and Pierson (2005) "suggested a number of valid psychodynamic reasons why inactivity or significantly reduced activity can lead to poor mental health". These studies and others (Huang et al., 2014; Haghgoo et al., 2013) support the results of the current study: that activities of daily living negatively correlate with post-stroke depression.

However, another significant result was social support which negatively related to post-stroke depression ($r = -.544, p < .001$). The mean social support score was 4.72 (SD = 1.09); generally participants received moderate social support. Participants reported that they were helped and supported emotionally ($\bar{X} = 5.63, SD = 1.26$), could talk about

problems with their family or friends ($\bar{X} = 5.65, SD = 1.13$; = 4.01, SD = 1.53) and could share joys and sorrows ($\bar{X} = 4.47, SD = 1.80$). In addition, older stroke survivors also benefitted by helping in decision making ($\bar{X} = 5.81, SD = 1.20$). This is logical because 84.3% of participants lived with their family. This proportion is representative of the general Vietnamese population, as indicated by the results of Giang and Pfau (2007), who found a high proportion of elderly people living with their children.

Additionally, Vietnamese culture encourages family to care for their older members especially parents until death (Quynh & Thao, 2005). That support can help the elderly feel more pleasure and less guilt, and thus less vulnerable to depression (WHO, 2014b). Therefore, increasing social support could reduce the negativity of meaning attached to stroke and its physiological outcomes, and thus reduce the odds and severity of post-stroke depression (Fiske et al., 2009). This finding mirrors the results of Chau et al. (2010) which found that social support was negatively associated with depression among 210 elderly stroke survivors. Additionally, Sit et al. (2007) also found that social support was inversely related to post-stroke depression ($r = -.421, p < .001$).

This study found negative relationship between self-esteem and post-stroke depression ($r = -.596, p < .001$). The mean self-esteem score was 21.54 (SD = 6.93); overall, the older adult sample had normal levels of self-esteem. For example, specific RSE items found that participants believed they had a number of good qualities ($\bar{X} = 2.55, SD = 0.93$) and were persons of worth, at least on an equal plane with others ($\bar{X} = 2.22, SD = 0.67$). It can be seen from an examination of these and other RSE items that, although the older participants were not in good health, they still saw themselves as valued and important members of

their family. Since most participants were living with family and received high social support from family members, it is not surprising that their self-esteem were high. Family caregivers, in many ways, provide assistance to the individual that allows the person to better cope with the environmental pressure that, due to stroke, may now be more daunting. Furthermore, according to the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), personal factors, such as individual characteristics, could affect cognitive appraisal. Such factors can contain vital motivational quality and beliefs which enabled people to create meaning and maintain hope in difficult circumstances. Nurses can help shape how people create meaning and interact with their environment, and thus can promote positive, hopeful attitudes in post-stroke patients. The findings of the current study echo previous researches. Chau et al. (2010) found self-esteem negatively associated with post-stroke depression. Similarly, Fung et al. (2006) concluded that the greater the global self-esteem, the fewer depressive symptom were found.

Conclusion

Depression is the most common post-stroke psychiatric complication. Understanding the level of and factors related to post-stroke depression can help post-stroke elderly achieve the best possible health outcomes. This research found significant negative relationships between post-stroke depression and competence in activities of daily living, social support and self-esteem. While post-stroke physical rehabilitation will affect and determine whether mastery of activities of daily living can improve, enhancing social support and self-esteem are more psychologically and socially determined and, it would seem, more under the control of the individual,

family, and nurses, who often have more contact with the patient and family than do other health care professionals. These conclusions are consistent with both the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984).

It is recommended that clinicians not only routinely screen post-stroke elderly for depression, but also note self-esteem and social support levels. Self-esteem and social support are variable, but also contribute to the interpretation of the consequences of stroke. Since physical, psychological and environmental interventions can yield significant improvements, gerontological nursing education should include recognition of the power of nurses to promote social support and positive self-esteem among post-stroke elderly and their families, and should train nurses in evidence-based interventions. The benefits of minimizing the incidence and severity of post-stroke depression in the elderly accrue to the patients themselves, their families, and the health care professions.

References

- Alajbegovic, A., Djelilovic-Vranic, J., Alajbegovic, S., Nakicevic, A., Todorovic, L., & Tiric-Campara, M. (2014). Post-stroke depression. *Medical Achieves*, 68(1), 47-50.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4thed.). Retrieved from <https://www.google.com.vn/webhp?sourceid=chrome>.
- Brown, C., Hasson, H., Thyselius, V., & Almborg, A-H. (2012). Post-stroke depression and functional independence: a conundrum. *Acta Neurologica Scandinavica*, 126, 45-51.
- Brodsky, H., Withhall, A., Altendorf, A., & Sachdev, P. S. (2007). Rates of depression at 3 and 15 months

- post stroke and their relationship with cognitive decline: the Sydney stroke study. *The American Journal of Geriatric Psychiatry*, 15(6), 477-486.
- Chau, J. P.-C., Thompson, D. R., Chang, A. M., Woo, J., Twinn, S., Cheung, S. K., & Kwork, T. (2010). Depression among Chinese stroke survivors six months after discharge from a rehabilitation hospital. *Journal of Clinical Nursing*, 19, 3042-3050.
- Farrell, C. (2004). Post stroke depression in elderly patients. *Dimensions of Critical Care Nursing*, 23(6), 264-269.
- Fiske, A., Wetherell, J. L., & Gatz, M. (2009). Depression in older adults. *Annual Review of Clinical Psychology*, 5, 363-389.
- Fung, L. C. L., Lui, M. H., & Chau, J.P. (2006). Relationship between self- esteem and the occurrence of depression following a stroke. *Journal of Clinical Nursing*, 15(4), 505-506.
- Gainotti, G., Azzoni, A., Razzano, C., Lanzillotta, M., Marra, C., & Gasparini, F. (1997). The post stroke depression rating scale: a test specifically devised to investigate affective disorders of stroke patients. *Journal of Clinical and Experimental Neuropsychology*, 19(3), 340-356.
- Giang, T. L., & Pfau, W. D. (2007). The elderly population in Vietnam during economic transformation: An overview. *Social Issues Under Economic Transformation and Integration in Vietnam*, 1, 185-210
- Glamcevski II, M. T., & Pierson, J. (2005). Prevalence of and factors associated with poststroke depression: a Malaysian study. *Journal of Stroke and Cerebrovascular Diseases*, 14(4), 156-161.
- Gorina, Y., Hoyert, D., Lentzner, H., & Goulding, M. (2006). Trends in causes of death among older persons in the United States. Hyattsville, Maryland: National Center for Health Statistics.
- Grove, S. K., Burns, N., & Gray, J. (2013). *The practice of nursing research: Appraisal, synthesis, and generation of evidence (7thed.)*. Missouri, MO: Elsevier.
- Hackett, M. L., & Anderson, C. S. (2006). Frequency, management and predictors of abnormal mood after stroke. *Stroke*, 37, 2123-2128.
- Haghgoo, H. A., Pazuki, E. S., Hosseini, A. S., & Rassafiani, M. (2013). Depression, activities of daily living and quality of life in patients with stroke. *Journal of the Neurological Sciences*, 328, 87-91
- Huang, H. T., Chuang, Y. H., Hsueh, Y. H., Lin, P. C., Lee, B. O., & Chen, C. H. (2014). Depression in older residents with stroke living in long-term care facilities. *The Journal of Nursing Research*, 22(2), 111Y118. doi:10.1097/jnr.000000000000028.
- Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping. Retrieved from <http://www.springerpub.com/stress-appraisal-and-coping.htm>.
- Linden, T., Blomstrand, C. & Skoog, I. (2014). Depressive disorders after 20 months in elderly stroke patients, a case control study. *Journal of the American Heart Association*, 38, 1860-1863.
- Mpembu, M. N., Ma Miezi, S. M., Peeters, A., de Partz, M.-P., Henrard, S., Massamba, V. K., Constant, E. (2013). Sociodemographic profile and social support for post-stroke depression in Kinshasa: A rehabilitation based cross-sectional study. *Open Journal of Epidemiology*, 3, 111-117.

- Nguyen, T. T. N., Tran, K. L., Bui, N. L., Vos, T., Ngo, D. A., & Nguyen, T. H. (2011). Viet Nam burden of disease and injury study 2008 [Brochure]. Ha Noi: Medical Publishing House
- Nys, G. M. S., Van Zandvoort, M. J. E., Van Der Worp, H. B., De Haan, E. H. F., De Kort, P. L. M., & Kappelle, L. J. (2005). Early depressive symptoms after stroke: neuropsychological correlates and lesion characteristics. *Journal of the Neurological Sciences*, 228 (1), 27-33.
- Quynh, L. & Thao L. (2005). Cultural Attitudes of Vietnamese Migrants on Health Issues. Retrieved from <http://apha.confex.com/apha/viewHandout.epl?uploadid=591>.
- Richardson, J., Bedard, M., & Weaver, B. (2001). Changes in physical functioning in institutionalized older adults. *Disability and Rehabilitation*, 23(15), 683-689.
- Shah, S., Vanclay, F., & Cooper, B. (1989). Improving the sensitivity of the Barthel Index for stroke rehabilitation. *Journal of Clinical Epidemiology*, 42(8), 703-709. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/2760661>
- Spalletta, G., Bossu, P., Ciamarella, A., Bira, P., Caltagirone, C., & Robinson, R. G. (2005). The etiology of post stroke depression: a review of the literature and a new hypothesis involving inflammatory cytokines. *Molecular Psychiatry*, 11, 984-991.
- Terroni, L., Sobreiro, M. F. M., Conforto, A. B., Adda, C. C., Guajardo. V. D., Lucia, M. C. S, Fraguas, R. (2012). Association among depression, cognitive impairment and executive dysfunction after stroke. *Dementia Neuropsychologia*, 6(3): 152-157.
- World Health Organization [WHO]. (2014 a). Depression. Retrieved from http://www.who.int/mental_health/management/depression/en/.
- World Health Organization [WHO]. (2014 b). Stroke. Retrieved from http://www.who.int/topics/cerebrovascular_accident/en/.
- World Heart Federation (2015). The global burden of stroke. Retrieved from <http://www.world-heart-federation.org/cardiovascular-health/stroke>.
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30-41.