Neurol J Southeast Asia 2002; 7 : 9 – 12

ORIGINAL ARTICLES

Factors associated with post-stroke depression, a Malaysian study

Mihajlo T GLAMCEVSKI II G.Dip.PSY, G.Dip.Appl.Sc (Counselling), *Lynne C. MCARTHUR PhD, Heng Thay CHONG MRCP, Chong Tin TAN FRCP MD

*Department of Medicine, University of Malaya, *Centre for Industrial and Applicable Mathematics University of South Australia*

Abstract

The study aims to examine specific factors associated with depression in a stroke population of the University Malaya Medical Centre. The sample group consisted of 80 patients who suffered a stroke 3-6 months prior to the study. Interviews were conducted based on a 26-item questionnaire. Zung Self-Rating Scale, modified Barthel and Social Resources Scale were used to assess depression, activity of daily living and social support, respectively. Diagnosis of major depressive episode was confirmed by a psychiatrist, based on DSM-IV criteria. The mean age of the patient was 58.6 (SD ±12.5) years. Sixty-six percent of the patients were depressed, and a level of moderate to severe depression was present in 15% of the patients. In this paper, it is demonstrated that the occurrence of depression was significantly correlated with advancing age, Malays and Chinese in contrast to the Indians ethnic population, non-continuance of pre-stroke lifestyles, and poor performance in the activities of daily living rating.

INTRODUCTION

It has previously been demonstrated that post-stroke depression was common among Malaysians after cerebrovascular accident, seen in 65% of patients 3-6 months post-stroke. The depression was mild in 50% of patients, and moderate to severe depression in 15%.[1] No significant gender differences were observed, although there was an apparent high rate of moderate to severe depression among Malays and Chinese as compared to Indians.[1] The prevalence falls in the range found in previously published studies done elsewhere.[2-8]

The development of post-stroke depression is probably multi-factorial. Apart from gender and ethnicity, lesion location could be a factor, particularly the left anterior hemisphere.[4,5,9] Lack of social support and dependence in activities of daily living were other factors often mentioned.[8,9]

The proposed reason behind a multi-factorial theory of PSD is that cerebrovascular injury does not completely explain depression in stroke.[10-11] If the root of PSD is not purely biologically based, then it is likely to vary within differing cultures and societies as a result of different sets of the circumstances, pressures and conditions.[12-13] The interaction of such environmental, medical, social and cultural factors, affecting mental health of Malaysian communities is intrinsically different when compared to other communities.[14-15] Accordingly, this is a study of the risk factors associated with post-stroke depression among the Malaysian patients.

METHODS

The patient recruitment and methods of study has been described previously.[1] Briefly, consecutive patients admitted to the University Malaya Medical Centre from June to December, 1998 were screened for suitability to be included in the study. The patient was then studied 3-6 months later. Patients who were demented, aphasic or exhibiting any other condition that would interfere with assessment of depression assessment was excluded from the study. The patients were screened for depression using the Zung Self Rating Scale.[16] For those who scored moderate to marked depression, the diagnosis was confirmed with a psychiatrist. The diagnosis of major depressive episode was based on DSM IV Criteria. The

Address correspondence to: Mr. M.T. Glamcevski, FTMS - DeMonfort University Campus Malaysia, 24-30, Jalan Hang Kasturi, 50000 Kuala Lumpur, Malaysia.

patient was screened for dementia using the Elderly Cognitive Questionnaire by Kua & Ko[17], assessed for activity of daily living using modified Barthel Index score[18] and social support by Social Resources Questionnaire.[19] A 26-item questionnaire on the demographic data, educational background, medical history, rehabilitation attendance, traditional medicine usage, pre and post-stroke activities and religious beliefs of the patient was also administered. The scales and tests were presented in random order and family members were asked to give input when relevant.

The data was analyzed using Person's Correlations, Kendall's tau-b, and Logistic Regression.

RESULTS

Eighty stroke patients were studied. The average age was 58.6 years (SD ± 12.5), ranging from 22 to 81 years. Of the patients, 53 (66%) were depressed, 41 (51%) were mildly depressed and 12 (14%) were moderate to severely depressed.[1]

It was established, after initial statistical analysis using chi-square contingency tables, that there was significant association between development of post-stroke depression and advancing age (p = 0.034), ethnicity (Malays and Chinese versus Indians, p = 0.011), non-use of traditional medical treatment (p = 0.005), non religiousness (p = 0.007), non continuation of pre-stroke activities (p = 0.023), absence of commencement of new activities (p = 0.01), poor performance in activities of daily living (p = 0.003) and poor social support (p = 0.003). However, gender, previous education level, attendance of formal rehabilitation program, the type and length of previous employment and side of lesion were not significantly correlated with development of depression.

The correlation between depression and age was also examined using a Pearson's Correlation and the results indicated significant though weak correlation (r = +0.238, n = 80, p = 0.034, two tailed). Less than 17% of the stroke population were below 50 years of age.

As it is possible that many of the factors were related, for example, ethnicity could be related to religion, use of traditional medicine with the level of social support, non-parametric correlation tests were run on all factor pairs, using Kendall's tau-b, to determine the measure of association between the pairs, and then logistic regression was used to help identify those factors which are truly significant and those factors which are confounders. The patients with depression (n = 53) were compared with those without depression (n = 27). The results indicated that with 88.25% overall correct prediction, Malay and Chinese versus the Indian ethnic groups (p = 0.001), not able to continue previous activities (p = 0.037), and poor performance in the activities of daily living rating (p = 0.001) were significant factors correlated with development of depression. Poor social support (p = 0.083) showed a tendency towards significance though it was not statistically

Figure 1: Correlation between age and post-stroke depression

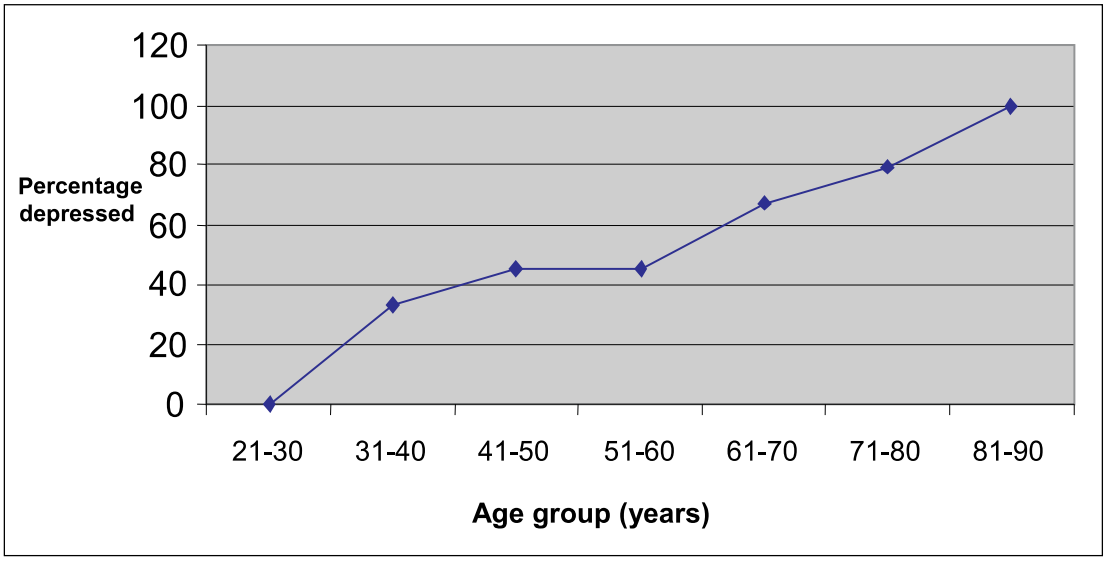
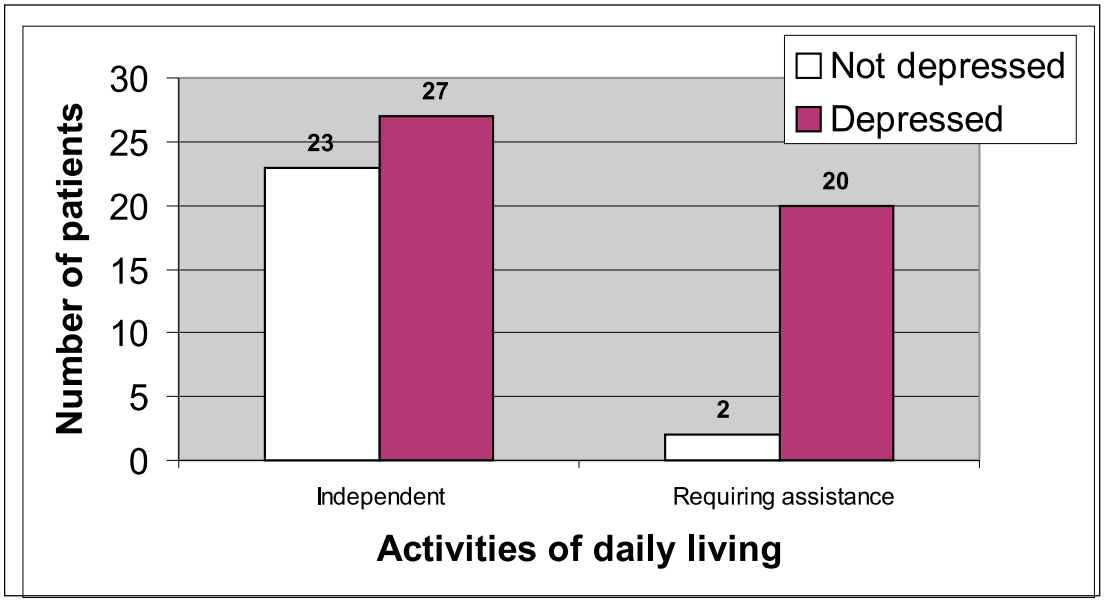


Figure 2: Correlation between performance in activities of dailyliving and post-stroke depression



significant. The correlation between age, performance in the activities of daily living and development of depression are shown in figures 1 and 2.

DISCUSSION

This study shows that depression, which is common after stroke in Malaysia, is associated with advancing age, Malay and Chinese as compared with Indians ethnic origin, failure to return to pre-stroke activities, and poor performance in the activities of daily living. In fact, all patients over 67 years old with poor level of activities of daily living and who had failed to resume pre-stoke activities were depressed.

Previous studies have shown advancing age as a risk factor for the development of depression.[20-24] Post-stroke depression in the aged may have a biological basis, with reduced neuro-transmitters relating to mood and emotion.[25] Alternatively, it may be cognitive based, such as reduced coping mechanisms.[26] Anticipation of death may reduce motivation to change one's life situation.[27]

There is no obvious explanation for the apparent high rates of post-stroke depression among Malays and Chinese versus the Indian ethnic group. There is little information on the epidemiology of depression in Malaysian population. The National Health and Morbidity Survey (1996) used General Health Questionnaire (GHQ-12) as a screening tool mainly to detect depression and anxiety in the general population. The overall prevalence of psychiatric morbidity was 10.7%, based on a sample size of close to 30,000. The prevalence among Indians was higher at 17.2%, and was significantly higher as compared to Malays (8.1%) or Chinese (10.6%).[28] Considerations should also be given to the methodology. The Zung Self Rating Scale was only presented in English and Malay. No Indian dialects or languages were used. The question of validity after translation has not been satisfactorily dealt with. This is particularly pertinent as most Malaysian Indians are polyglots. With cerebrovascular injury, the patients may revert back to their native languages. Although previous research has suggested that cultures is related to depression,[12-13] some of the previous cross cultural comparison studies have not confirmed this.[29-30]

Inability to continue previous activities is related to poor performance in the activities of daily living. The association between poor performance in the activities of daily living and post-stroke depression has been noted in previous studies.[8,9,31] Previous research has suggested a number of valid psychodynamic reasons why inactivity or significantly reduced activity can lead to poor mental health. [32-34] They can in part be summarised as, the mind and the body need to be active to be healthy.

The results of the study do support the proposed multi-factorial theory of post stroke depression.

ACKNOWLEDGEMENTS

The authors would like to thank Dr BF Sim, Dr T Nor Taayah and Prof. K Saroja, for their assistance and support.

REFERENCES

1. Glamcevski M, Tan CT. Prevalence of post-stroke depression, a Malaysian study. *Neurol J Southeast Asia* 2001; 5:51-3.
2. House A, Dennis M, Moridge L, et al. Mood disorders in the year after first stroke. *Br J Psychiatry* 1991;158:83-92.
3. Morris PLP, Robinson RG. Prevalence and course of depressive disorders in hospitalized stroke patients. *Int J Psychiatry Med* 1990;20:349-64.
4. Robinson RG, Szetela B. Mood changes following left hemisphere brain injury. *Ann Neurol* 1981;9:447-53.
5. Robinson RG, Price TR. Poststroke depressive disorders: a follow-up study of 103 patients. *Stroke* 1982;13:635-41.
6. Bauer M, Gans JS, Harley JP, et at. Dexamethasone suppression test and depression in a rehabilitation setting. *Arch Phys Rehabil* 1983;64:421-2.
7. Burvill PW, Johnson GA, Jamrozik KD, Anderson CS, Stewart-Wynne EG, Chakera TMH. Prevalence of depression after stroke: The Perth Community Stroke Study. *Br J Psychiatry* 1995;166:320-7
8. Fuh Jl, Liu HC, Wang SJ, et al. Post-stroke depression among the Chinese elderly in a rural community. *Stroke* 1997; 28:1126-9
9. Astrom M, Adolfsson R, Asplund K. Major depression in stroke patients: A 3-year longitudinal study. *Stroke* 1993;24:976-82.
10. Ellis-Hill C, Horn S. Change in identity and self-concept: A new theoretical approach to recovery following a stroke. *Clinical Rehabilitation* 2000;14:279-87
11. Rao R. Cerebrovascular disease and late life depression: An age old association revisited. *Int J Geriatr Psychiatry* 2000;15:419-33.
12. Mckenna E. The relationship between parenting style, level of culture change and depression in Chinese living in the United States. Dissertation Abstracts International: Section B: The Sciences & Engineering, 1999; 59(7-B) 3703
13. Mukherji R. Cross-cultural issues in illness and wellness: Implications for depression. *Journal of Social Distress & the Homeless* 1995; 4(3):203-17.
14. Furnham A. Malik R. Cross-cultural beliefs about "depression". *Int J Soc Psychiatry* 1994;40:106-23.
15. Johnson FL, Foxall MJ, Kelleher E, Kentopp E, Mannlein EA, Cook E. Comparison of mental health and life satisfaction of five elderly ethnic groups. *West J Nurs Res* 1988;10:613-28.
16. Zung WWK. A self-rating depression scale. *Arch Gen Psychiatry* 1965;12:63-70
17. Kua E.H, Ko S. A questionnaire to screen for cognitive impairment among elderly people in developing countries. *Acta Psychiatr Scand* 1992; 85: 119-22
18. Wade, S., Bennett, M., & Ryall, N. Using the modified Barthel index. *BMJ* 1997;321(7273):1381-2.
19. OARS. Multidimensional functional assessment: the OARS methodology, 2nd edition. Duke University, Centre for the Study of Aging and Human Development, Durham NC. 1978.
20. Stordal E., Kruger M., Dahl N, et al. Depression in relation to age and gender in the general population. *Acta Psychiatr Scand* 2001;104:210-6.
21. Prince M, Beekman A, Defg D, et al. Depression symptoms in late life assessed using the ERUO-D scale: Effect of age, gender, and martial status in 14 European centres. *Br J Psychiatry* 1999;174:339-45.
22. Deptula D, Singh R, Pomara N. Aging, emotional states, and memory. *Am J Psychiatry* 1993;150:429-34.
23. Blazer D, Burchett B, Service C, George LK. The association of age and depression among the elderly: an epidemiologic exploration. *J Gerontology* 1991;46:M210-5
24. Steiner D, Marcopulos B. Depression in the elderly. Characteristics and clinical management. *Nursing Clinics of North America* 1991;26:585-600.
25. Kato M, Iwata H, Okamoto M, Ishii T, Narita H. Focal cerebral ischemia-induced escape deficit in rats is ameliorated by a reversible inhibitor of monoamine oxidase-a: implications for a novel animal model of post-stroke depression. *Biological & Pharmaceutical Bulletin* 2000;23:406-10.
26. Kneebone & Dunmore. Psychological management of post-stroke depression. *Br J Clin Psychol* 2000;39:53-65.
27. Valenstein AF. The older patient in psychoanalysis. *J Am Psychoanal Assoc* 2000;48:1563-89.
28. Maniam T, Ding LM, Toh CL, et.al. Psychiatric Morbidity in Adults. National Healtha and Morbidity Survey 1996, Volume 6. Public Health Institute, Ministry of Health Malaysia 1999.
29. Doi Y, Roberts R, Takcuchi K, Suzuki, S. Multiethnic comparison of adolescent major depression based on the DSM IV Criteria in a U.S.-Japan Study. *J Am Acad Child Adolese Psychiatry* 2001,40:1308-15.
30. Marsella AJ, Kinzie D, Gordon P. Ethnic variations in the expression of depression. *J Cross Cult Psychol* 1973;4:435-458
31. Pedersen PM, Jorgensen HS, Nakayama H, Raaschou HO, Olsen TS. Comprehensive assessment of activities of daily living in stroke. The Copenhagen Stroke Study. *Arch Phys Med Rehabil* 1997;78:161-5.
32. Paluska S, Schwenk T. Physical activity and mental health: Current concepts. *Sports Med* 2000;29:167-80.
33. Thirlaway K, Benton D. Participation in physical activity and cardiovascular fitness have different effects on mental health and mood. *J Psychosom Res* 1992; 36: 657-65
34. Biddle S. Exercise and psychosocial health. *Res Q Exerc Sport* 1995;66: 292-7