ORIGINAL ARTICLE

Psychosocial Associated and Predictors of Post Stroke Depression 3- 6 Months after Onset: A Systematic Review

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ABSTRACT

Background: The impacts of post stroke depression (PSD) are recurrent stroke after 1 year, fatique, unresolved depression, thinking of suicide, low quality of live, family burden, and enhanced the mortality risk in acute stroke survivor. Related factors both biological and psychological in ischemic stroke have been found. However, the systematic review of psychosocial factors of PSD in ischemic stroke 3 until 6 months after onset was not established yet, while the prevalence increases.
Aim: To investigate the psychosocial associated and predictor factors of post stroke depression in 3 months until 6 months after onset
Methods: Databases used were Medline, Academic Search Complete, CINAHL, Psychology and Behavioral Sciences Collection. The search was limited to articles published in 2005 to 2017. The criteria of studies were patients with ischemic stroke in 3 to 6 months after onset, aged 18 years on stroke onset, quantitative correlated between various factors and PSD, article with full text, published in peer-review journal and written in English. All articles were assessed for eligibility using the Critical Appraisal Skills Program (CASP) evaluation method.
Result: A total of nine articles was selected. The presence of post stroke depression was various. The psychosocial factors which related to post stroke depression were female gender, education, trouble in paying bill, history of depression, depressiveness at 8 weeks, stress of full life events exposure in the month of preceding stroke, stress of health, acceptance resignation and avoidance, social support, and family-related stress.
Conclusion: Psychosocial associated and predictors of post stroke depression should be treated. The psychological factors should be considered as an integrated treatment with medical treatment as well.
Keywords: Psychosocial, post stroke depression, ischemic stroke

INTRODUCTION

Stroke depression has been widely investigated. The impacts of post stroke depression were recurrent stroke after 1 year, fatigue, unresolved depression, thinking of suicide, low quality of live and family burden.[1–8] Furthermore, depression in acute stroke enhanced the mortality risk in acute stroke survivor.[9]

In ischemic stroke, the pattern of depression increased in 3 months after onset and persistence until 6 months.[10] Development of protocol treatment of post stroke depression (PSD) in ischemic stroke should consider the related factors. The related factors are not only biological factor, but also psychological factor. Both factors in ischemic stroke have been established.[11]

However, the systematic review of psychosocial factor of PSD in stroke ischemic 3 until 6 months after onset was not established yet. Thus, this study aimed to investigate the associated psychosocial factor in PSD of stroke ischemic patient. This review is essential in developing psychological protocol as well as the biological protocol.

MATERIAL AND METHODS

The following keyword terms/phrases were included: “post stroke depression,” AND “3 months”, OR “post stroke depression” AND “6 month”. The databases used were Medline, Academic Search Complete, CINAHL, Psychology and Behavioral Sciences Collection. The search was reviewed and published in the period of 2006–2017.

The inclusion criteria of this review were stroke ischemic patients 3 to 6 months after onset, patient’s age of ≥ 18 years on stroke onset, quantitative correlated studies between various factors and PSD, articles with full text, articles published in peer-review journal and written in English. The information about author, study population, sample size, follow up period, study design, assessment of PSD, association between psychosocial factor and PSD were examined. The article was appraised using Critical Appraisal Skill Programme (CASP) tool.

RESULT

A total of 1172 abstracts and articles were obtained during the first search. After the selection process, nine articles were obtained. The selection algorithm is depicted in Figure 1.

Characteristics of the studies are shown in table 1. The presence of PSD was various. The prevalence of stroke depression in 2 weeks after onset was ranging from 3% to 27.47%.[12-14] Meanwhile, the prevalence post stroke depression at 2 months was 19 %.[12] post stroke depression at 3 months ranged from 6.59% to 37%[13-17,19,20]. Lastly, post stroke depression at 6 months was from 7.5% to 29.5%[12,13,18].

The subjects of these studies were ischemic stroke patient on 3 months and 6 months after onset. Four studies

conducted the first survey of post stroke depression on 10 days[20], 14 days[14,16,20], 2 months[18] and followed up on 3 months[14,16,20] and six months.[18] One study was conducted one time survey on 3 months after onset only.[19] One study was conducted 3 times survey; first survey was conducted on 14 days after onset, and follow up on 2 months and 6 months after onset.[12]

PSD was assessed using Hamilton Depression Rankin HDRS[12,19,20], Beck Depression Inventory (BDI)[16,17,20], Hamilton Depression Scale (HAMD)[14,17,20], Geriatric Derpession Scale (GDS)[18] and DSM IV.[12,18]

Bivariate and multivariate relationship between the characteristics and psychological factor were shown in table 2. The characteristic associated with PSD was female gender.[12,14,1)] One study removed the female gender characteristic in regression model.[14] Education is also related to PSD.[17] Socio-economic was one of related factors, i.e., problem in paying bills.[17]

Depression was associated with PSD[12,18–20]. The circumstances of depression were past history of depression[12,17,19]. Melancholy Index of Hamilton Depression Rankin Scale (HDRS)[20] and depressiveness at 8 weeks.[18]Stressful life event exposure in the month preceding stroke was correlated with PSD.[12] Stress in health also related to PSD.[17] Coping that related to PSD were acceptance resignation and avoidance.[16] Social support was related with PSD[18], and social support in degree of social support circumstance was related as well. As the support system, stress in family was also related to PSD.[17]

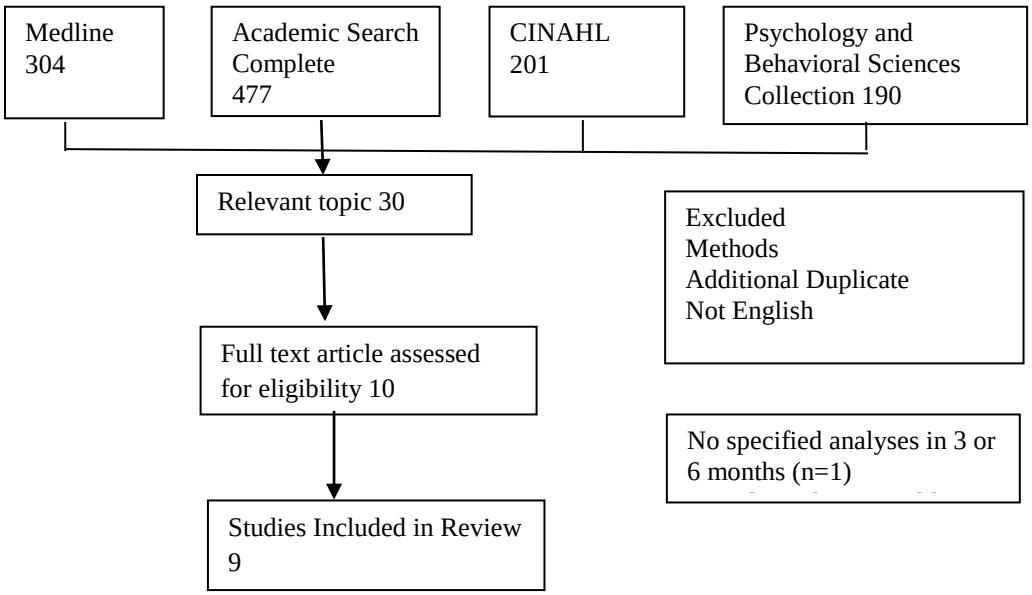
Table 1. Characteristics of studies

Title	Sample and setting	Method	Tool	Prevalence and Incidence	Psychosocial Finding
Depression predictors within six months of ischemic stroke: The DEPRESS Study, Guiraud (2016) (12)	210 14 days after onset, 2 months and six months	Prospective cohort study Multivariate logistic Model	DSM –IV HDRS Interview for Recent Life Events	Depression was diagnosed in 61 patients (24.3%, 95%CI: 19.0–29.6), including 7 (3%) 14 days after onset, 50 (19%) at the two-month visit, and 61 (24.3%) at the six-month visit.	Female gender Prior history of depression Stressful life event exposure in the month preceding stroke
Depression after minor stroke: Prevalence and predictors, Shi (2015**) (13)**	757 patients at admission (14 ± 2 days), 3 months, 6 months and 1-year	Logistic regression analyses	The Hamilton Rating Scale for Depression-17 (HRSD-17)	Presence of PSD at admission (14 ± 2 days) is 18.2, 3 months is 12.9 and 6 months is 7.5	Not specified at 3 and 6 months
A Prospective Study of the Incidence and Correlated Factors of Post-Stroke Depression in China, Zhang (2013) (14)	102 patient ischemic stroke 2 weeks And three months.	Prospective hospital-based study. Multiple stepwise logistic regression analysis.	Hamilton depression Scale (HAMD)	The incidence of PSD was 27.47% two weeks after stroke. At three months 6.59 % at this time point.	Female Gender
Post stroke depression and emotional incontinence Factors related to acute and subacute stages, Choi-Kwon (2012) (15)	508 patients at admission (4.7 days) and 3 months	Multiple logistic regression analysis	Beck Depression Inventory (BDI)	Presence of PSD 13.7% of patients at admission and in 17.7% at 3 months later.	Education
Factors associated with post-stroke depression and fatigue: lesion location and coping styles, Wei (2016) (16)	368 7 days and 3 months	Multiple logistic regression analysis	Beck Depression Inventory (BDI) and DSM-IV	Presence of PSD 19.3 % of the patients at admission and in 23.6 % at 3 months.	Avoidance, Acceptance-resignation, Subjective support, Objective support, Degree of social utilisation
Age, subjective stress, and depression after ischemic stroke, Michael (2016) (17)	322 patients 3 months	Linier regression	Center for Epidemiological Studies Depression (CESD-10) scale	Presence of depression was 37 %	Age, History of depression, Problem in paying bills, Family-related stress, Health stress
influence of early depressive symptoms, social support and decreasing self-efficacy on depression 6 months post-stroke, Volz (2016) (18)	88 patients 8 weeks and 6 months after stroke	Longitudinal Study	Social Support Questionnaire (F-SozU Geriatric Depression Scale (GDS)DSM IV	Presence of PSD 29.5%	General Self-efficacy, depressiveness at 8 weeks, social support
A prospective cohort study of the incidence and determinants of post-stroke depression among the mainland Chinese patients, Zhang T (2010) (19)	165 patients consecutive ischemic stroke at 3 months	Stepwise logistic regression	Modified Ranking Scale,(MRS) Hamilton Depression Rankin Scale (HDRS)Mini Mental Status Examination (MMSE).	Incidence of post-stroke depression was 27.3%	Female gender, past history of depression
Post-stroke depression: can we predict its development from the acute stroke phase?, Fuentes (2009) (20)	85 patients acute cerebral infarction (CI) 10 days and repeated at the 3-month follow-up	A prospective and observational cohort study Multivariate Regression	Hamilton Depression Rankin Scale (HDRS)	There are 28.8	Melancholy index upon admission with developing PSD at 3 months

Table 2. Statistical Analysis

Psychosocial	Bivariate	Multivariate
Age Female Gender Education Level Household Status (Living alone) Marital Status Working Status Level of Social Support Prior history of depression Family history of depression Stressful life event exposure in the month preceding stroke (12)	P=0.659 P=0.005 P=0.519 P=0.84 P=0.853 P=0.324 P=0.146 P=0.001 P=0.977 Not Available	Multivariate logistic Model female gender OR= 2.07 (1.03–4.16) ρ<.05, OR=3.85 (1.67–8.85) ρ<.01, OR 2.68 (1.18–6.07) ρ<.05
Female Gender (14)	X 2 = 5.7453 ρ=0.0165 OR=3.1483 (95% CI 1.2144–8.1622)	Multiple stepwise logistic regression analysis Removed
Age Male Education(15)	NS NS P < 0.05	Multiple logistic regression analysis P < 0.05
Age Sex Education Weekly Working Time MCMQ Confrontation Avoidance Acceptance-Resignation Social Support Rating Scale Subjective Support Objective Support Degree of Social utilization (16)	NS NS NS NS NS P < 0.01 P < 0.01 NS NS P < 0.05	Multivariate Logistic Regression P =0.001 P =0.000 P =0.001
Age Age Categories 25-54 years 55-64 years 65-74 years 75+ years Sex Race Marital Status Education Employment Status History of Depression Trouble paying bills Family Stress Health Stress (17)	P = 0.02 P = 0.02 P = 0.11 P = 0.75 P = 0.07 P = 0.06 P = 0.96 P < 0.01 P < 0.01 P < 0.01 P < 0.01	Linier Regression P < 0.01 P < 0.01 P = 0.095 Reference Group $R^2 = 0.20$ P = 0.48 P = 0.71 P = 0.16 P = 0.17 P < 0.01 P = 0.03 $R^2 = 0.21$ P < 0.01 $R^2 = 0.23$ P < 0.01 $R^2 = 0.24$
General Self-Efficacy (GSE) Depressiveness at 8 weeks Social Support (18)	(*r*=. -,32, ρ<.01) (*r*=.51, ρ<.01) (*r*=. -,36, ρ<.01)	Logistic regression analysis Removed Depressiveness (OR=1.41, ρ<.01) Social support (OR=.95, ρ<. 03)
Female gender Living alone Marital Status Having Medical Insurance Past history of depression Age Years of Education (19),	0.0014 0.5222 0.0042 0.2974 0.0006 0.4775 0.5124	Stepwise Logistic Regression Analyses (ρ=0.0040; OR=3.550; 95% CI: 1.499–8.408), Removed Removed Removed Stepwise Logistic Regression Analyses (ρ=0.0010; OR=5.225; 95% CI: 1.959–13.940) Removed Removed
Melancholy index upon admission (20),	Not available	Multivariate Regression PSD at the 3-month (OR 2.99; 95% CI 1.53–5.84; ρ = 0.001) t-test ρ = 0.047 Exploratory ROC analysis which showed an area under the curve (AUC) of 0.87 (95% CI 0.77–0.97) (sensitivity 52.9%; specificity 90%, positive predictive value 69.2%; negative predictive value 81.8%; diagnostic precision 78.9%).

Fig.1: Search flowchart



DISCUSSION

The follow up of survey was proved by the correlation between the characteristics and psychosocial predictors of PSD. It is relevant with the pattern of post stroke depression which arise until 3 months and 6 months.[10] There were various measurements of PSD. The gold standard of depression measurement is DSM IV. Meanwhile some studies used the HDRS[12,19,20]. HDRS has good validity in measuring PSD for diagnostic test, its sensitivity was 62.5 and its specificity was 91.7. Therefore, this measurement was valid to measure PSD. The Beck Depression Inventory was also valid for PSD measurement[21]. Other measurements of depression were also valid and have been presented in many studies. There were many models of PSD due to variation of independent variables. Furthermore, meta-analysis is demanding to be conducted. Economic and education were related with PSD. Low income might make patient have a little chance to meet their need. Low education might make the patient have no opportunity in making decision.

The previous psychosocial condition would be associated PSD on 3 or 6 months after onset. The multivariate analysis gains the domains as the predictor of PSD on 3 or 6 months after onset. Female gender was correlated with PSD. In one study, female gender was correlated with PSD, but it was removed in multivariate statistical analysis[14]. A previous study showed that the number of PSD in female is larger than in male[22]. Reasons for the gender difference in PSD were not clear yet, but it might include both genetic factors (e.g. differences in brain functioning and organization) and psychosocial factors.

Our finding support that prior depression as a predictor of PSD[12,17-20]. The depression consisted of past history of depression, depression at admission until 8 weeks after onset. The depression would be developed soon after onset until 3 months after onset. The past depression will react with daily stress, the circumstances of stress was stroke itself. Furthermore, this depression was contributed the development of continuum PSD.[23,24] Stressful life events predicted the PSD[12]. General Adaptation Syndrome (GAS) theory was depicted that stress pursuing the depression if maladaptive coping arise[25]. The maladaptive coping was limitation of acceptance resignation and avoidance of stroke condition. Further, maladaptive coping became a predictor of PSD.[16]

The result of study showed that social support was the predictor of PSD[18]. As a support system, family stress will impact the PSD[17]. Thus, nurse should consider the changing the mood and conduct the strategy of intervention[26,27] as well medical treatment.

The strategy of searching the review was complete, with various search of database, and supplemented by hand searches of the reference file. However, relevant studies in other languages had been derelict. The researcher was less competed and compared among the findings. Different tools were used in the research. Model of associated factor, risk factor and predictor were various in variables. The researcher also may feel reluctant to speak to survivors in what are often miserable and difficult circumstances. Meanwhile, this study provided description of associated and predictor of PSD among stroke ischemic stroke survivor after 3 months onset.

CONCLUSION

The models of correlation and predictor of PSD were various. The domains were female gender, education, problem in paying bill, past history of depression, depressiveness at 8 weeks, stressful life event exposure in the month of preceding stroke, stress of health, acceptance resignation and avoidance, social support, and family-related stress. The psychological predictors should be considered in strategy of nursing intervention as well as medical treatment.

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