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Original article

Prevalence of self-esteem and depression in recovery phase – community base physiotherapy of stroke patients at Public Health Center 19 Wongsawang

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Background: Stroke is one of the most common public health problems worldwide. In addition, it is neurological disease and it is a major problem of Thai public health. It is a chronic illness, a stroke patient that needs lifelong care for both physical and psychological aspects. Previous studies on self-esteem and post-stroke depression in stroke patients in recovery phase are scant in Thailand.

Objectives: To determine the prevalence of low self-esteem, depression and its associated factors in stroke patients in recovery phase at Public Health Center 19 Wongsawang, Bangkok, Thailand.

Methods: A descriptive analysis study was conducted at the Public Health Center 19 Wongsawang, Bangkok, Thailand. The recruited subjects were 88 adults with stroke in recovery phase (6 months – 3 years) from December 2018 to February 2019. The instruments were demographic and clinical characteristics questionnaires, Thai Meatal State Examination (TMSE), Barthel Index of Activity of Daily Living, Self – Esteem assessed by Coopersmith Self-Esteem Inventory Adult Form 1984 and Depression assessed by Thai Geriatric Depression Scale (TGDS). The statistics used to analyze data were frequencies, percentages, mean and standard deviation, Chi-square test, *t* - test, Mann-Whisney U test, Pearson product-moment correlation coefficient and logistic regression.

Results: Of the total 88 participants, the mean age was 66.9 years; 73.9% had ischemic stroke and 52.3 % had stroke for more than 2 years. The prevalence of self-esteem was 41.0% and depression was 55.7 %. Self-esteem and depression was significantly related to the educational group below graduated level, had communication problem, swallowing problem and TMSE's score lesser than 23 ($P < 0.05$).

Conclusion: This study found that lower TMSE's score, ADL's score and swallowing problem were related to the severity of stroke. Our study will be beneficial for recognizing low self – esteem and depression, providing appropriate care for stroke patient in recovery phase and decreasing obstruction for rehabilitation.

Keywords: Self-esteem, post-stroke depression, stroke.

At present, cerebrovascular disease or stroke is a disease of the nervous system that often happens and the most common problem of Thailand's public health. According to the statistic report of the Bureau of Policy and Strategy in 2018[1], patients with stroke in Thailand were 248,389 and most of them were more than 60 years' old, about 170,284 people. Followed by those who are from 50 – 59 years around 48,095 people by emerging diseases around 35,337 people. From the statistic of death rate in 2017[2] it was found that the stroke was the second most common cause of death while the first was cancer. The statistic shows that from the total number of dead persons in number of 31,172 people were 47.8 people per 100,000 people in the total population and this trend could be higher constantly. Moreover, the male have the possibility to die from the stroke more than the female.

Stroke affects the patient's life by losing the functionality in some parts or all of the nervous system depends on the pathology of each person that has the similarity on the abnormal of movement of the body, feeling, muscle contraction and lack of thoughtful that they will lose many things which the competence

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on are using language, the acknowledgement and movement, problem solving that all can lead to the disability in the end.[3]

Additionally, it affects the quality of life, daily activities and also deceases The ability to do things by oneself and increases dependency on other people.[4] It also decreases self confidence, perspective and vision of the patients for themselves. From the national study, they found that in normal people, they estimate themselves too low that is the risk factor to cause to depression.[5] The stroke patients have the score on seeing the value in themselves lower than normal people that is one of the reasons for them to get depression after being the stroke patients which is the most common complication of the decease.[6]

The depression can happen to stroke patients in different periods and it affects life development. It makes you think less and increase the level of disability. It also has high risks that cause another illness so-called "stroke" [7] which increases death rate both in short and long-term stroke patients.[8] It is obvious to see that the stroke patients who have depression as well have higher rate of suicide than those without depression.[9]

However, according to the available information in Thailand, we have not found any studies about the relationship between self-esteem and depression in stroke patients and still also not found studies about self-esteem and occurrence of the depression in stroke patients who received physical therapy treatment in villages. Therefore, the researcher is interested to study about the prevalence of self-esteem and depression after being stroke patients to seek for self-esteem of stroke patients in the recovery stage and find the way to encourage them to build more self-esteem and lead to good results for physical and can help themselves to do more activities by themselves. Later, they will have better quality of life and can go back to daily activities as usual again that will decrease risk factor to get depression in stroke patients at their own residence. After then, it will be easier for next step of proper treatment and can reduce death rate in both short- and long-term care.

Materials and methods

A descriptive analysis study was conducted at Public Health Center 19 Wongsawang, Bangkok, Thailand. The recruited subjects were 88 adults with stroke in recovery phase (6 months – 3 years) from December 2018 to February 2019 by purposive sampling. They were able to understand Thai language and willing participate in study. They are, more than 35 years' old both male and female. They have TMSE scores more than 10 and were never checked for other psychiatric diseases except depression such as schizophrenia, psychotic, etc. The researcher will receive information of all stroke patients that are living in the area of Public Health Service Center 19 Wongsawang from nurses and volunteers of each community. Then, the researchers used sample chosen by purposive sampling that select attendants who are qualified until getting enough attendants as planned, calculated from the sampling table of Krejcie RV, *et al* [10] that have references from population numbers of people who are stroke patients in the community. Public Health Service Center District 19 Wongsawang in budget year 2017 have 99 patients which were sampling 80 people to get the suitable samples and to detect mistakes, researchers increased 10.0% more for samples that equal to 88 people in the end.

Demographic information (such as age, gender, marital status, educational level, occupation), clinical characteristics (Type of Stroke, Weakness side, Dominant side, duration of stroke, history of depression, addict and drunk, problem of communication, swallow, numbness and movement) and other relevant information were assessed. Brain performance test was assessed by Thai Meatal State Examination (TMSE). Self – esteem was assessed by Coopersmith Self-Esteem Inventory Adult Form 1984 created by Coopersmith S, *et al* and Thai version developed by Kongsri S. Depression assessed by Thai Geriatric Depression Scale (TGDS) developed by Puangwarin N, *et al*.

Statistical analysis

To summarize the characteristics of the participants, descriptive statistic, percentage and frequency were used for categorical variables and mean, standard deviation (SD) were calculated for continuous variables. Chi-square test, *t* - test, Mann-Whitney U test, Pearson product-moment correlation coefficient and logistic regression were used to explore the relationships between depression and other variables. All statistical analysis were considered significant at $P < 0.05$.

Results

Demographic and clinical characteristics of the study sample are shown in Table 1. The mean age of the participants was 66.9 years (SD = 11.7). The majority of the patients (88.6%) had medical comorbidities such as hypertension, dyslipidemia, diabetes and heart disease. Illness of samples, mostly are ischemic stroke 73.9 % and mostly have weakness on left side 58.0 %. 92.0% of them are right handed. The mean duration of stroke was 24.6 months (SD = 9.18). The mean TMSE's score of the participants was 19.67 (SD = 6.24). Forty –four subjects had the moderate dementia which is equal to 50.0%. The mean ADL's score of the participants was 63.75 (SD = 32.94). Twenty-four subjects can do many daily activities which is equal to 25.0%.

Coopersmith Self-Esteem Inventory Adult Form198 of stroke patients from 88 samples had mean at 59.05 (SD = 24.17). Thirty-six subjects had the low self-esteem which is equal to 41.0%. Thai Geriatric Depression Scale (TGDS) of stroke patients from 88 samples had mean at 14.01 (SD = 8.17). Forty-nine subjects had the depression which is equal to 55.7%.

Table 2 shows relationship between personal factors with self-esteem of stroke patients on recovery phase in the community from Public Health Service District 19 Wongsawang, we found that study level ($P = 0.046$), speaking/communication/pronunciation problems ($P = 0.007$), swallow problem ($P = 0.015$) and score of the primary brain assessment ($P = 0.025$) were significantly related to self-esteem. Moreover, we found that age ($P = 0.034$,) educational level ($P = 0.030$), speaking / communication / pronunciation problems ($P = 0.004$), swallow problem ($P = 0.003$), and score of the primary brain assessment ($P = 0.001$) were significantly related to depression.

Table 1. Socio-demographic and clinical characteristics of the subjects (n = 88).

Variables		Number	Percentage
Gender	Male/Female	50/38	56.8/43.2
Age (years) [mean 66.89 (SD 11.7) , min = 40 , max = 92]			
	Lower than 60	23	26.1
	60 – 75	47	53.4
	above 75	18	20.5
Educational duration	0 – 6 years	43	48.86
	7 – 12 years	29	33.00
	Above 12 years	16	18.18
Type of stroke	Ischemic stroke/Hemorrhage stroke	65/23	73.9/26.1
Weakness side	Left/Right	51/37	58.0/42.0
Dominant side	Left/Right	7/81	8.0/92.0
Duration of stroke (months) [mean 24.59 (SD 9.18), min = 6 , max = 36]			
	Lower than 1 year (12 months)	10	11.4
	1 – 2 year (12 – 24 months)	32	36.4
	> 2 years (24 months)	46	52.2
Comorbidities level	No/Yes	10/78	11.4/88.6
	Hypertension	55	62.5
	Dyslipidemia	39	44.3
	Diabetes	30	34.1
	Heart disease	13	14.8
	Others	23	26.1
History of depression	No/Yes	85/3	96.6/3.4
Drinking	No/Yes	61/27	69.3/30.7
Smoking	No/Yes	56/32	63.6/36.4
Addiction	No/Yes	84/4	95.5/4.5
Problems of communication	No/Yes	37/51	42/58
Problems of swallow	No/Yes	43/45	48.9/51.1
Numbness	No/Yes	22/66	25.0/75.0
Problems of balance or movement	No/Yes	11/77	12.5/87.5

Table 2. Association between Self-esteem, depression and variables (n = 88).

Variables	Self - esteem				Depression			
	Low self-esteem n (%)	High self-esteem n (%)	X^2	*P* - value	Depression n (%)	No depression n (%)	X^2	*P* - value
Gender								
Male	24 (48.0)	26 (52.0)	2.408	0.121	29 (58.0)	21 (42.0)	0.252	0.616
Female	12 (31.6)	26 (68.4)			20 (52.6)	18 (47.4)		
Age								
≤ 75 years	28 (40.0)	42 (60.0)	0.117	0.732	35 (50.0)	35 (50.0)	4.477	0.034*
> 75 years	8 (44.4)	10 (55.6)			14 (77.8)	4 (22.2)		
Educational								
Below graduate	33 (45.8)	39 (54.2)	3.972	0.046*	44 (61.1)	28 (38.9)	4.730	0.030*
Above graduate	3 (18.8)	13 (81.3)			5 (31.3)	11 (68.8)		
Type of stroke								
Ischemic stroke	29 (44.6)	36 (55.4)	1.143	0.235	40 (61.5)	25 (38.5)	3.457	0.063
Hemorrhage stroke	7 (30.4)	16 (69.6)			9 (39.1)	14 (60.9)		
Communication problem								
No	9 (24.3)	28 (75.7)	7.264	0.007*	14 (37.8)	23 (62.2)	8.238	0.004*
Yes	27 (52.9)	24 (47.1)			35 (68.8)	16 (31.4)		
Swallowing problem								
No	12 (27.9)	31 (72.1)	5.881	0.015*	17 (39.5)	26 (60.5)	8.884	0.003*
Yes	24 (53.3)	21 (46.7)			32 (71.1)	13 (28.9)		
TMSE's score								
≤ 23	29 (49.2)	30 (50.8)	5.003	0.025*	40 (67.8)	19 (32.2)	10.648	0.001*
> 23	7 (24.1)	22 (25.9)			9 (31.0)	20 (69.0)		
ADL's score								
≤ 70 years	21 (44.7)	26 (55.3)	0.594	0.441	28 (59.6)	19 (40.4)	0.619	0.431
> 70 years	15 (36.6)	26 (63.4)			21 (51.2)	20 (48.8)		

Further analysis showed that self-esteem scores with the measurement of self-esteem from Coopersmith Self-Esteem Inventory Adult Form 1984 was significantly correlated with scores from the early brain assessment. Additionally, we found that depression scores in Thai Geriatric Depression Scale (TGDS) was significantly relates to with educational level and scores from the early brain assessment and scores of the competency in doing daily life activities.

Table 3, shows that when we use the related factors above to analyze risk factors of self-esteem by using the statistic from logistic regression analysis when are controlled by other factors ($P < 0.05$). With Backward Likelihood ratio, we found that factors that lead to self-esteem are educational below graduated adjusted odd ratio = 0.155 times (95% CI 0.030 – 0.797), income less than 15,000 baht adjusted odd ratio = 0.282 times (95% CI 0.084 – 0.952) and having speaking/ communication/pronunciation adjusted odd ratio = 3.758 times (95% CI 1.249 – 11.305).

The analysis showed education, income and having communication problem were associated with low self – esteem ($P < 0.05$).

Table 4, shows that when use the related factors above to analyze risk factors of depression by using the statistic from logistic regression analysis when are controlled by other factors ($P < 0.05$) With Backward Likelihood ratio, we found that factors that lead to self-esteem are educational adjusted odd ratio = 3.994 times (95% CI 1.049 – 15.213), Left side weakness adjusted odd ratio = 4.548 times (95% CI 1.399 – 14.781), having speaking/ communication/ pronunciation adjusted odd ratio = 0.272 times (95% CI 0.094 – 0.787) and having swallowing problem adjusted odd ratio = 0.349 times (95% CI 0.128 – 0.954).

The analysis showed education, weakness side, having communication problem and TMSE score were associated with depression ($P < 0.05$).

Table 3. Logistic regression for variables associated with self-esteem.

Variables	B	S.E. (B)	*P* - value	Adjusted OR	95% CI of adjusted OR	
					Lower	Upper
Educational (Below graduated)	-1.863	0.835	0.026*	0.155	0.030	0.797
income (< 15,000 ß)	1.041	0.569	0.041*	0.282	0.084	0.952
Communication problem (Yes)	1.324	0.562	0.018*	3.758	1.249	11.305
Constant	1.357	0.891	≤ 0.012			

*$P < 0.05$

Table 4. Logistic regression for variables associated with depression.

Variables	B	S.E. (B)	*P* - value	Adjusted OR	95% CI of adjusted OR	
					Lower	Upper
Educational (Below graduated)	1.385	0.682	0.042*	3.994	1.049	15.213
Weakness (Left)	1.515	0.601	0.012*	4.548	1.399	14.781
Communication problem (Yes)	1.303	0.542	0.016*	0.272	0.094	0.787
Swallowing problem (Yes)	1.052	0.513	0.040*	0.349	0.128	0.954
Constant	8.819	2.976	0.03			

*$P < 0.05$

Discussion

This research concerns the study of the prevalence of self-esteem and depression in patients with rehabilitation phase of stroke in the community in charge of Public Health Center 19, Wongsawang.

Regarding the study of patients' self-esteem, it was found that the sample group had a low and relatively low score of self-esteem, accounting for 41.0% of all samples, which is consistent with the study of Vickery CD, *et al*. [5] Their study compared the self-esteem between patients with acute phase of stroke and normal people. It was found that patients with stroke had lower self-esteem scores than normal people by using both evaluation forms of Visual Analogue Self-esteem and Rosenberg Self-esteem Scale.

Referring to the study of depression, it was found that the sample had a depression score at 55.7% from all sample groups which is consistent with the study of Sathirapanya C, *et al*.[11] This study found out the prevalence of depression at 72.5% which is similar to the study of Jarernswan P.[12], it found out the prevalence of depression at 38.8% same as the study of Nidhinandana S.[13] which found out the prevalence of depression at 46.53% from the patients in the hospital.

In Thailand, currently there is no one who studies about the self-esteem and depression in patients with rehabilitation phase of stroke, and there are also a few people studying this subject in foreign countries. Most existing researches separated these topics from each other. However, the study results found that self-esteem and depression are factors having similar relationships. When calculating the relationship between these two factors, it was found that self-esteem and depression in patients with Stroke had a mutual correlation relating to the following factors.

In regard to the factor of educational level, it was found that the sample group with education level lower than bachelor's degree were concerned with low self-esteem, and also had low depression scores. However, Baccaro A, *et al*. [14] did a research and found that education level that took 0 - 7 years of study, increased age and stroke patients with motor weakness on the left affected the level of cognitive impairment. Concerning the study of Vickery CD, *et al*. [15] found that the score of Functional Independence Measure with low scores in cognition is related to low self-esteem.

Regarding the factors of having problems in speaking/communication/pronunciation, these factors

are the physical impacts of stroke causing patients to have limitations in doing daily activities and skills of doing it themselves. The stroke patients are unable to communicate with relatives or caregivers resulting in the patients being unable to communicate effectively with others. In addition to the changes in the body and these abilities affect their self-concept and personal values.[16] This may affect the feelings of development in 3 aspects of self-esteem.

The first aspect is the feeling of their belonging. Patients may compare their current abilities with their former ones. Otherwise, the patients may compare the ability intended to do with the ability of that they actually do. When the patients are unable to do such activities as expected affecting the self-assessment in a negative way.

The second aspect refers to the feeling of competent. When the patients are unable to communicate and perform activities effectively with others this may cause the patients feel not being a part of the group and feel that they were not accepted by those around them and think that they are incompetent. The last aspect is feeling worthwhile. It is caused by evaluating both feelings of belonging and competent together. When the patients evaluate both aspects in a negative way, patients certainly have low self-esteem as well as negative self-concept.[16]

Regarding the factor of swallowing problems [17], including symptoms of swallowing and choking food while eating and patients who need to wear a feeding line. This factor of problem refers to the patients who are unable to swallow by themselves effectively. When the patients lose control in swallowing or eating food, it would affect the appearance changed, weight loss. Therefore, this problem will affect the mind as well. It may cause the patients to fear, feel and be uncertain. Patients may not be able to accept their changed appearance. This problem affects emotional stability and the change of looking at themselves and also affects the lower self-esteem like problems in speaking/communication/ pronunciation.

The factors of problems in speaking/communication/pronunciation together with swallowing problems affect the change of self-concept and also the change in self-esteem, which is consistent with the study of Lapadatu I, *et al*.[18], regarding the study of 65 patients with stroke with 61.58 years average age. It was found that the change of self-concept after having stroke had a significant effect on the change of self-esteem.

In regard to the factor relating to the score of the initial brain evaluation model, it was found that patients with a low score of initial brain evaluation have low self-esteem, which is consistent with the study of Vickery CD, *et al*.[15] The study found that the score of Functional Independence Measure in terms of cognition with low scores are related to low self-esteem as well.

Vickery CD, *et al*.[19] studied the predictive factors, then found that stroke patients with moderate and low self-esteem have been reported to have symptoms of extreme depression which is consistent with this study. When finding the relationship between self- esteem and depression by using the research methodology of Pearson's correlation coefficiency. It was found that self-esteem scores were significantly related to depression scores.

In addition to the above mentioned factors that have a mutual relationship, age factor is also correlated with the prevalence of depression in stroke patients, which is consistent with the study of Nitinant S, *et al*.[13] The research was found that factors affecting the severity of depression in stroke patients including the increasing age of patients, the duration of the stroke illness and having history of cardiovascular disease. It is similar to the education of Yildirim MA, *et al*.[20] finding that depression is consistent with the duration of the stroke illness, increasing age, sex and chronic diseases.

According to previous study, both self-esteem and depression in stroke patients usually the study is performed in patients who are cared for in a hospital. But this study is different because this research studied in patients receiving home-care or community. Although the location of the study is different but still found low self-esteem and depression. With the consistency of factors that affect low self-esteem related to the educational group below graduated level, had a communication problem, swallowing problem and TMSE's score lesser than 23. As well as factors that affect depression related to age , the educational group below graduated level, had a communication problem, swallowing problem and TMSE's score lesser than 23 as well.

Limitations of this research is a group-specific study of patients with rehabilitation phase of stroke in the community in charge of Public Health Center 19, Wongsawang. Therefore, expanding research results into other groups may have further limitations. The size of the sample group is relatively small, including

general information factors, and similar illness information. Therefore, this research results are still not able to extend to a larger population.

Conclusion

From this study, 41.0% of stroke patient in recovery phase were found to Have low self-esteem and 55.7% were found to have depressive symptom. Low self-esteem and depression was significantly related to the educational group below graduated level, had a communication problem, swallowing problem and TMSE's score lesser than 23. In addition, lower TMSE's score, ADL's score and swallowing problem were related the severity of stroke. The results of this study will be beneficial for recognizing low self – esteem and depression, providing appropriate care for stroke patient in recovery phase and decreasing obstruction for rehabilitation.

Conflicts of interest

The authors, hereby, declare no conflict of interest.

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