Corelation of the Capacity of Bodily Functions and Family Support with the Depression in Post Stroke Patients

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Abstract:

Background: Stroke is an illness which is caused by the lack of blood supply to brain so that it causes various nerve function disorders. The capacity of body function such as motoric, sensoric, luhur, balance, other brain nerves, and sight will decrease as the result of weakness and defects. The effect of weakness and defects can cause psychological disorder like depression. One of the attempts to decrease the incidence of depression is family support, such as emotional support, reward, informational support, and instrumental support. The research was a quantitative study with cross sectional design. It was conducted at Stroke Polyclinic of Dr. Pirngadi Regional General Hospital, Medan, from October to November, 2014. The population was stroke patients, and 77 of them were used as the samples. The data were analyzed by using univatriate analysis and bivatriate analysis with Spearman rank statistic test. **Results:** The result of the research showed there was insignificant correlation between the capacity of body function and depression at p-value = 0,00 and correlation coefficient r = 0,32 toward positive correlation which indicated that the value of the capacity of body function was low when there was depression. **Conclusion:** The correlation between family support and depression was moderate at p-value = 0,00 and correlation coefficient r = -0,41 toward negative correlation which indicated that family support was low when the incidence of depression was high. **Recommendations:** It is recommended that nurses identification motoric ability for giving information to patients' families to give motivation to the stroke patients so that there will be no depression.

Keywords: stroke, capacity of body function, family support, depression

Acknowledgements

Stroke is the main cerebrovascular disorder in the world. According to Word Health Organization (WHO) (2007), 15 million people suffered from stroke in the world annually; 5 million passed away and the other 5 million suffered from permanent handicap. Hypertension contributes more than 12.7 million stroke incidences in all over the world. Approximately 650,000 patients of hypertension in Europe died from stroke every year (WHO, 2007), while it is the third cause of deaths in USA with 150,000 deaths annually. The total of stroke patients in USA in 2008 reached up to 65,5 million patients (Bornstein, 2009), with an increase of 700.000 new patients every year (Black & Hawks, 2009).

Stroke may bring impacts on various bodily functionss. The clinical description of stroke stage may be the loss of motoric capacity called hemiplegia or hempharesis caused by the disorder in voluntary motor control on one side of the body. It demonstrates neuron damage in the upper motor of the opposite side of the brain. Another brain function that is affected by stroke is language and communication such as dysarthria, described with speaking that is difficult to be understood caused by the paralysis of muscle that is responsible to produce speech.

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Dysphasia or aphasia is described with defective speaking or speaking ability loss, so that good communication is less established which frustrates the stroke patients with this weakness (Black & Hawks, 2009). The research done by Pinzon, Asanti, Sugianto and Widyo (2009) indicated that 37% of stroke patients are capable of performing activities independently and the other 21% have low bodily functions capacity. Post stroke patients need assistance up to the first six months (Linda, Hesook, Arnstein, & Anners, 2011).

There are approximately 460 out of 100,000 stroke patients were fully recovered, 50-70% of the stroke patients had bodily functions recovery, but 15-30% were permanently handicapped and 20% needed institutional care for 3 months after the stroke attack. The majority of the stroke patients had stabil handicap in between 6-9 months and 5 years and one-third of it needed treatment (Artal & Egido, 2009). The stroke patients who have disorder of bodily functions capacity find it very difficult to express their feelings (Gupta, Pansari, & Shetty, 2002), and they will feel depressed with their condition. This depression will bring negative impacts on their recovery, social relationships and surrounding environment; it can even increase morbidity and mortality (Ginkel, Gooskens, Schuurmans, Lindeman, & Hafsteinsdottir, 2010).

Stroke patients also have perception disorder such as inability to interpret either visual or sensoric sensation. In addition, their cognitive function and psychological effect are also damaged; the damages may be found in frontal lobus such as memory capacity or intellectual function dysfunctions that limit their sight width, make them difficult to understand, forget and less motivated. This damage in the patients' bodily functions capacity cause make them frustrated during their rehabilitation program (Smeltzer, Bare, Hinkle, & Cheever, 2010). The cognitive damage includes memory loss, difficulties to concentrate and other emotional disorders which will lead them to prevent or refuse their friends or even families (Taylor, 2006).

Research Type

The type of this quantitative research is correlation with cross sectional design. The objective of the rsearch is to analyze the correlation among bodily functions capacity, family support and depression in stroke patients.

Population and Samples

The samples are taken by probability sampling method through consecutive sampling technique which takes samples by selecting all individuals that meet the selection criteria, until the required number of samples is met (Polit & Beck, 2012).

Method

Questionnaires consisting of statements related to the capacity of bodily functions, family support and depression are used as the instrument in this research. The list of the statements is well arranged, so that the respondents need only to mark a tick on the provided answer options. The statements are closed statements that the respondents have to answer by selecting the provided answer. The questionnaires are distributed to anyone who consents to become a respondent. The respondents who receive questionnaires are given explanations about how to fill out the questionnaires and are given 30 minutes to fill them out. The completed questionnaires are recollected and go through data processing.

Validity and Reliability

The validity results of the Product Moment from questionnaires demonstrated that there are two items among 27 capacities of bodily functions which are invalid; they are item 12 with r_{count} 0.29 and item 17 with r_{count} 0.01. The questionnaires of capacity of bodily functions show r_{count} between 0.39-0.94. The questionnaires of family support are all valid and show r_{count} between 0.39-0.94; also, all items in questionnaires of depression are confirmed valid and gained r_{count} between 0.37-0.84.

Furthermore, the reliability test is strated with examining the questions that are valid simultaneously in order to assess their reliability. The reliability can be gained by comparing r_{result} and r_{table}. The reliability test shows $r_{count} \geq$ 0.60, so the questionnaire item used in the research are reliable (Hastono, 2011). The capacity of bodily functions tested by Kuder- Richardson (KR-20) shows $r_{count} = 0.94$. The reliability of family support tested by 'Cronbach's Alpha' shows $r_{count} = 0.91$ and the reliability of depression tested by 'Cronbach's Alpha' shows $r_{count} = 0.88$.

Results

The research results are described in accordance with the research objectives; namely: respondents' characteristics, the capacity of bodily functions after stroke, family support after stroke, depression after stroke and the correlation of the capacity of bodily functions and family support with depression in post stroke patients

Respondents' Characteristics

This research takes 77 post stroke outpatients treated in Sroke Polyclinic of RSUD Dr. Pirngadi, Medan. The characteristics of the reseponden are senior citizens with average age 62.5 years old (SD=6.9) in which more than half of them 62.3%) age 61-70 years old. More than half of the respondents (68.8%) are male, Senior High School graduates (54.5%), Junior High School and university graduates (20.8%). Two third of the respondents are married (79.2%). The treatment of the post stroke patients refers to how long have they suffered from stroke, more than two third of them have been suffering from stroke for less than one year, for 1-2 years (18.2%), and more than 2 years (3.9%). These characteristics are illustrated in table 1.

Table 1 Frequency Distribution of Respondents' Characteristics: Post Stroke patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan (n=77)

No	Respondents' Characteristics	Frequency	Percentage
	Age		
	40-50 years	3	3.9
	51-60 years	21	27.3
	61-70 years	48	62.3
	>70 years	5	
	Mean 62.5 (SD = 6.9), min-max= 43-75		6,5
2	**Gender**		
	Male	53	68.8
	Female	24	31.2
3	**Education**		
	Elementary School	3	3.9
	Junior H.School	16	20.8
	Senior H.School	42	54.5
	University	16	20.8
4	**Marital Status**		
	Married	61	79.2
	Single	6	7.8
	Widow/Widowed	10	13.0
5	**Time Length of suffering from stroke**		
	<1 year	60	77.9
	1-2 years	14	18.2
	>2 years	3	3.9

The Capacity of Bodily functions of Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan

The results show that the respondents' capacity of bodily functions are poor with average score 16.5 (SD=5.3). The majority of the respondents (84.4%) have poor capacity of bodily functions and only few of them (15.6%) have good capacity. The data of the respondents' capacity of bodily functions is illustrated in table 2.

Table 2 Frequency Distribution of the Capacity of Bodily functions of Post Stroke patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan (n=77)

No	Capacity of Bodily functions	Frequency	Percentage
1	0-12 (Good)	12	15.6
2	13-25 (Poor)	65	84.4
	Mean 16.5 (SD = 5.3)		
	min-max		
	= 5- 25.		

The capacity of bodily functions in this research consists of six components; namely: motoric, sensoric, the other brain neurons, dependency, balance and sight. The research results show that the disorder related to the other brainneuron damage is the most dominant disorder (mean=7.4, SD=2.1) and it influences the whole respondents' capacity of bodily functions, whereas motoric disorder is the best component among other components (mean=1.2, SD=0.7). The components of respondents' capacity of bodily functions are illustrated in table 3.

Table 3 The Components of Capacity of Bodily functions of Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan (n=77)

No Item	Capacity of Bodily functions	Mean	Standard of Deviation
1	Other Brain Neuron	7.4	2.1
2	Dependency	2.6	1.1
3	Balance	2.6	1.2
4	Sensoric	2.0	0.9
5	Sight	1.3	0.7
6	Motoric	1.2	0.7

Family Support on Post Stroke patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan.

The family support in the research is categorized moderate with mean 48.2 (SD =16.9). when observed from the support category, more than two third of the respondents (75.3%) have moderate family support, and only less tha one third of them (20,8%) have high family support. The Data of the respondents' family support is presented in table 4.

Table 4 the Support of Family to the Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan (n=77)

No	Score of Family Support	Frequency	Percentage
1	20-40 (Low)	3	3.9
2	41-60 (Moderate)	58	75.3
3	61-80 (High)	16	20.8
	Mean 48,2 (SD = 16,9)		
	min-max		
	= 29.0-70.0		

Family support in this research consists of four components; namely: emotional, appreciation, information and instrumental support. The results show that information support is the highest component (mean=12.8, SD=3.2) in family support. Meanwhile, instrumental support is the least support received by the reposndents (mean=11.3, SD=2.6). Respondents' components are presented in table 5

Table 5 the Components of Family Support to Post Stroke Patients treated in the Stroke Ployclinic of , Medan (n=77)

No Item	Family Support	Mean	Standard of Deviation
1	Information	12.8	3.2
2	Appreciation	12.3	3.1
3	Emosional	11.7	3.0
4	Instrumental	11.3	2.6

Depression on Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan

The results show that the majority of the respondents (84,4%) have depression with average of the reposndents 26.3 (SD = 9.5) and only less than one third of them are not depressed (15.6%). The data of the post stroke patients' depression condition are illustrated in table 6.

Table 6 The Frequency Ditribution of Depression in Post Stroke Patients treated in the Stroke Ployclinic of , Medan (n=77)

No	Score of Depression Condition	Frequency	Percentage
1	< 16 (Not Depressed)	12	15.6
2	≥ 16 (Depressed)	65	84.4
	Mean 26.3 (SD = 9.5)		
	min-maks = 13.0-48.0		

When observed from the capacity of bodily functions, it is shown that the majority of the patients who are not depressed (83.3%) have good capacity of bodily functions, whereas the majority of the depressed respondents (96,6%) have poor capacity of bodily functions. The data of the distribution of depression based on the capacity of bodily functions are presented in table 7.

Table 7 the Distribution of Depression on Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan.

No	Depression Condition	N	Good		Poor	
			F	%	f	%
1	Not Depressed	12	10	83.3	2	16.7
2	Depressed	65	2	3.1	63	96.9

The respondents' depression condition indicates that the majority of them (91.73%) are not depressed, have good family support, while the depressed patients showed that most of them (89,2%) have moderate family support and 3,1% of them have poor family support.

The statistical test results of Spearman rank between the capacity of bodily functions and depression in post stroke patients show significance score p = 0.00 which means that there is a correlation between the capacity of bodily functions and depression with correlational coefficient r = 0.32 with low correlation strength and positive correlation direction which means that the capcacity of bodily functions is low when there is depression.

The results of the statistical test on family support and depression in the post stroke patients show significance score p = 0.00 which means that there is a correlation between family support and depression with correlational coefficient r = 0.41 with moderate correlation strength and negative correlation direction which means that the lower the family support, the hgher the incidence of depression. Further details are presented in table 9:

Table 9 The Correlation of the Capacity of Bodily functions and Family Suppoert with the Depression in Post Stroke Patients treated in the Stroke Polyclinic RSUD Dr. Pirngadi Medan (n=77)

Research Variables		Capacity of Bodily functions	Family Support	Depression
Capacity of Bodily functions	Spearman's rho	1.00	-	0.32
	Sig. (2-tailed)			0.00
	N	77		77
Family Support	Spearman's rho	-	1.00	-0.41
	Sig. (2-tailed)			0.00
	N		77	77
Depression	Spearman's rho	0.32	-0.41	1.00
	Sig. (2-tailed)	0.00	0.00	
	N	77	77	77

Dscussions

The discussion in this research describes the capacity of bodily functions of post stroke patients, their family support, their depression, and the correlation of the capacity of bodily functions family support with the depression of the post stroke patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi Medan.

This is based on the research results done in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan. The majority of the respondents (84.4%) have poor capacity of bodily functions and less than one third of them (15.6%) have good capacity of bodily functions.

The respondents' characteristics observed from their age show that their average age is 62.5 years old (SD = 6.9) in the group age of 61-70 years old. the capacity of bodily functions of the senior citizens is related to the degenerative process; namely, the physiological changes that can influence degenerate function of cardiovascular organ such as degenerate elasticity of blood vessels and disfunction of endothelial. The elasticity of blood vessels degenerate in advanced age which cause increasing resistance of pheripheral that increases the elevation of systolic blood tension (Nilsson, 2005). The incidence of stroke is increased in advanced age which is in line with some of other researches. Prasetya's research (2002) discovered that the proportion of the incidence of stroke in respondents age above 50 years old reaches up to 66.3%. A cohort study results done from March, 2007 until August, 2008 found out that most of the stroke patients are 50-75 years old (60.5%) (Wu et al., 2010). This supports the results of this research that most stroke patients are 60-70 years old.

The capacity of bodily functions due to stroke will cause disorders in motoric, emotion, communication, perception, and intellectual funtions. Motoric deficit causes damage in mobility, swallowing and speaking. Stroke patients tend to find it difficult to move their hands or feet, so they need other peoples' assistance (Lewis et al, 2011). The research conducted by Mandic and Rancic (2011) found out that 77% of the respondents undergo degenerate in their left limbs and 7% in their right ones.

This symptom occurs due to the dysfunction in certain areas of brain caused by the disorder in the blood circulation in the areas. There are various symptoms that appear, depending on the part of the brain that is damaged. The symptoms appear due to the disorder in carotids are because the disorder in the edge of the carotids heading to the middle part of brain (media cerebra arteries), the patients will experience sensation disorder in their arm and foot of the same side and may lead to mobility disorder/palaysis from mild to total hempharesis/hemiplegia. The disorder in the artery branch of anterior cerebra may lead to paralysis of one foot. The disorder in vertebrobasilaris will cause the symptom of weak feet/hypotonia, incapability to walk (inferior paraphresis) (Black & Hawks, 2009).

The capacity of the bodily functions of other brain neurons with average 7.4 (SD = 2,1) is the dominant component of bodily functions and the capacity of motoric function with average 1.2 (SD = 0,7) is the less dominant component of bodily functions.

Family Support to the Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan

The results of the research done in the Stroke Polyclinic of RSUD Dr.Pirngadi Medan show that more than two third of the respondents (75,3%) receive moderate and high family support (20.8%); and less than one third of the respondents have poor low family support (3.9%). As to the repindents' marital status, more than two third of them (72.9%) are married and 7.8% are not married yet. The average of family support components namely information support is 12.8 (SD = 3.2) and instrumental support is 11.3 (SD = 2.6). Information support is badly needed to improve the patients' health status. Tel's research (2011) show that support is effective to improve the patients' health condition and to adapt the medication.

Depression of Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan

The results of the research done in the Stroke Polyclinic of RSUD Dr.Pirngadi Medan show that the majority of the respondents (84.4%) are depressed and the less than one third of them (15.6%) is not depressed. More than two thirds of the respondents (79.9%) have been suffering from stroke less than a year.

The recovery of stroke attack take much time; in the first one until three months after the attack, patients are recommended to have regular check up to themedical personnel to monitor any recovery or deterioration that may take place after stroke (Mandic & Rancic, 2011).

The incidence of depression is related to the role of aminergic neurotransmitter. The most frequently observed neurotransmitter is serotonin. Impulse conduction can be interrupted in event of excess or deficit of transmitter in synapse cracks or any sensitivity in neurotransmitter receptors in post synapse of central neuro system (Black & Hawks, 2009).

The Correlation between the Capacity of Bodily Functions and Depression in Post Stroke Patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi Medan.

The results of spearman rank test between the capacity of bodily functions and depression in post stroke patients show significance score p = 0.00 and correlation coefficient r = 0.32 so that it is concluded that there is a correlation between the capacity of bodily function and post stroke depression with weak correlational strength and positive correlational direction which means that the capacity of bodily functions fall down in the event of depression. According to the research done by Chemerinski and Robinson (2000), it is reported that the patients with left lesion hemisphere (64%) demonstrate mild to severe depression wheras this abnormality is only found in 14% of the patients with right lesion hemisphere. They also find that subcortical atrophy is related to post stroke depression.

The Correlation between Family Support and Depression in the Post Stroke Patient treated in the Stroke Polyclinic of RSUD Dr. Pirngadi Medan.

According to the correlational test results between family support and depression, the significance score obtaine is p = 0.00 and correlational coefficient r = -0.41 so that it is concluded that there is a correlation between family support and depression in post stroke patients. The strength of the correlation is moderate and the direction is negative which means that if family support is high, depression will decrease. Insufficient family support is frequently related to depression syndrome. A patient states that not having someone to talk to about his problems or personal feelings, to ask for help in critical condition, to ask for advice in making important decisions, and to make them feel loved and taken care of is prone to depression (Pattern, 2002).

The incidence of depression in post stroke patients depends on either their adaptation skills or family support; thus, family should provide good support such as spiritual or financial support. If they are not given spirit, the will be dependent on the other family members forever, and because of the lack of family support, they will be depressed and lonely (Almatsier, 2008). The research done by Pinzon et al (2009) showed that when a member of family was attacked by stroke, the stress caused to the family was quite high, and many people found it fiddicult to face the emotional impacts and new responsibilities. It sometimes leads to depression or anxiety.

Research Limitation

The questionnaires of the bodily function capacity used to reveal the variables made by the researcher himself are based on the available literatures in form of statements and yes and no answers, so that the statements are still unable to comprehensively and profoundly reveal the data of the observed variables.

The scoring system between good and bad is made based on the median score and the questionnaire creation method is not standardized and the validityalso reliability of the analysis of each statement needs to be tested. It is suggested that this researceh would better use power analysis, so that the needed samples will be more representative.

Conclusion

Based on the analysis results and discussion about the correlation of the capacity of bodily functions and family support with depression in the post stroke patients treated in the Stroke Polyclinic of RSUD Dr. Pirngadi, Medan, it is found out that most of the respondents are 61-70 years old and married. Generally, they are male abd have been suffering from < 1 year and they are commonly Senior High School graduates. The majority of the stroke patients in RSUD Dr. Pirngad, Medan have poor capacity of bodily functions with moderate family support and most of them suffer from post stroke depression.

When correlated to depression, the the capacity of bodily functions and depression has weak correlational strength with positive direction which means that the score of the bodily function capacity is low in the event of depression. Family support and depression has moderate correlational strength with negative direction which means that if family support is poor, the incidence of depression gets higher.

Suggestion

1. For the Nursing Service

The nurses need to conduct an examination on the components of the capacity of bodily functions in all stroke patients inorder to facilitate the assistance provision to the activities needed. Health information should be provided to patients in order to reduce depression and to improve family support.

2. For knowledge development

This research is expected to enrich the material studies on the capacity of bodily functions, family support and depression to develop knowledge in nursing field, especially in neuron field concerning the capacity of bodily functions, family support and depression in stroke patients.

3. For future researchers

Further researches on capacity of bodily functions, family support and depression need to be conducted in nursing care context. One of the researches that can be done is the research on the influence of family counseling on the changes in the provision of support to a family member who suffers from stroke. Phenomenological studies are concerned with the experience of a family member to take care of a family who suffers from stroke if it is related to culture.

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