Since 2002

Determinants of Family Resilience in Ischemic Stroke Patients

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Abstract

BACKGROUND: Family resilience is very relevant to clinical practice because most patients need family assistance to recover from illness. Ischemic stroke is a global health problem and the highest cause of death, including in Indonesia. The most common type of stroke in Indonesia is ischemic stroke. Most stroke patients experience cognitive and motor decline which causes limitations in the sufferer in carrying out activities. Therefore, it takes families who have high resilience in rehabilitation efforts and improve the quality of life of stroke sufferers.

AIM: This study aims to determine the factors associated with family resilience of stroke patients in the first month after stroke.

METHODS: The design of this research is a cross-sectional study conducted between January and February 2022 at the Dr. Drs. M. Hatta Brain Hospital (RSOMH) Bukittinggi. All research subjects were 229 families of respondents with stroke. Data collection using the RESILIENCE-GA questionnaire. Data analysis used univariate analysis, Chi-square for bivariate analysis, and logistic regression for the determinant model of multivariate analysis.

RESULTS: The results showed that of the three components of family resilience, the slowest component is the component of values, beliefs, and rules in the family. Multivariate analysis showed that there are variables that affect family resilience, namely, socio-economic status (POR 3.2, 95% CI: 1.32–7.59, p = 0.010), and ethnicity (POR 2.1, 95% CI: 1.07–4.44, p = 0.048).

CONCLUSION: The results showed that socio-economic and ethnic factors affect the resilience of stroke survivors' families.

Introduction

Individual resilience has long been studied, but research and clinical literature are only just beginning to explore family resilience. Family resilience is formed after a problem or crisis occurs in the family. Resilient families will be able to bounce back from the problems they face. Family resilience is very relevant to clinical practice because most patients need family assistance to recover from their illness [1]. The number of special family resilience in stroke patients in Indonesia is not recorded nationally. In general, the resilience of Indonesian families is high with an average rate of 74.2% [2], [3]**.** Family resilience in stroke patients in the moderate category is 71.43% and in the high category is 9.52% based on research conducted in Salatiga City, Central Java [3].

Family resilience in stroke patients is something important, considering the impact caused by stroke. Stroke is one of the leading causes of death and is the third leading cause of disability globally. In Indonesia, there was an increase in stroke cases by 2.6/1000 during the period 2007 to 2018. The prevalence of stroke in West Sumatra was above the national prevalence, which was 7.4/1000 population, and continued to increase from 2013 to 2018 [4], [5]. The most common type of stroke in Indonesia is ischemic stroke with 67.03% and 32.97% hemorrhagic stroke. The incidence of stroke is followed by a decrease in motor, cognitive, and psychological functions in the patient. A common occurrence is a decrease in the ability to carry out activities or dependence on fulfilling daily life activities in stroke sufferers [6], [7]. Therefore, it takes families who have high resilience in the rehabilitation of stroke sufferers.

According to Simon, Murphy, and Smith, 2005, several factors influenced the formation of family resilience, namely, the duration of the difficult situation faced. In this case, it can be interpreted that what is meant by the duration of this difficult situation is how long it took for a family member to have a stroke until now; stages of family development, coping processes, and self-efficacy in dealing with stroke are some examples of the stages of family development; sources of internal and external support, including internal

factors that can affect the resilience of stroke survivors' families, are: Age, gender, education, marital status, occupation, number of dependents, and comorbidities of stroke sufferers. In addition, the type of family, and socioeconomic are also internal factors. Meanwhile, support from extended family and society, ethnicity, and culture are external factors that can affect the resilience of families with stroke [8]. Linlin Fang, Mengyuan Dong, and Jin Zheng's (2021) study studied the relationship between care burden, resilience, and depressive symptoms among primary family caregivers of stroke patients [9]. Sophie Sarre *et al*. (2014) studied a qualitative study of post-stroke adjustment from the perspective of stroke survivors and caregivers to describe their potential contribution to understanding resilience [10]. All of the results of these studies have not been able to solve problems related to the family resilience of stroke patients. In connection with this, researchers need to research the determinants of family resilience of ischemic stroke patients. This research is important because many determinant factors can affect family resilience in dealing with family members who suffer from ischemic stroke. This research needs to be done because the condition of stroke is increasing day by day along with the length of human life expectancy accompanied by eating patterns that trigger strokes. In addition, the incidence of stroke will affect family resilience in addition to other determinants. Therefore, it is necessary to research the determinants of family resilience that is the most influential if a family experiences an ischemic stroke.

Materials and Methods

This research is an observational study with a cross-sectional research design. Samples were ischemic stroke patients and one of their families who were obtained in January-February 2022 at Dr. Hospital. Drs. M. Hatta Brain Hospital in Bukittinggi, West Sumatra, Indonesia. The sampling technique used in this study was consecutive sampling, that is, each patient was hospitalized at Dr. Drs. M. Hatta Brain Hospital Bukittinggi who met the research criteria were included in the study for a certain period until the required sample size was met. The sample criteria are first to attack stroke patients, family is one of the family members (husband or wife, children, grandchildren, parents, siblings, and nephews) who live at home or care for stroke patients, so the study sample size is 229 stroke patients and their families. All samples filled out an informed consent. This research has been approved by the Health Research Ethics Committee of the University of Indonesia Number Ket-598/UN2.F10.D11/PPM. 00.02/2021.

To determine of family resilience of ischemic stroke patients, the researchers used the RESILIENCE-GA instrument, which consists of 30 questions covering the components of values of beliefs and rules, family organizational capacity, and family communication atmosphere. Each question consists of five answer choices which are scored using a Likert scale of 1–5, where 1 = very bad, 2 = bad, 3 = mediocre, 4 = good, and 5 = very good.

Data analysis consisted of univariate, bivariate, and multivariate analysis. Descriptive results are presented in the form of frequency and percentage. Chi-square test to identify the relationship between the determinants of family resilience with a limit of significance (α) = 0.05. The variables included in the multivariate analysis were variables with p-value of 0.25. Multivariate analysis using logistic regression to find a model that can predict the variables that affect family resilience.

Results

Based on the three components of family resilience, it can be seen that the lowest component is the component of values, beliefs, and family rules with the highest frequency of 149 or 65.1%. In the family organizational capacity component, the highest frequency was 171 or 74.7% and the atmosphere component had the highest frequency 208 or 90.8%. Thus, it can be concluded that the components of values, beliefs, and family rules have an effect if a family member experiences a schematic stroke compared to other components of family resilience (Table 1).

Table 1: Analysis of determinants of family resilience of stroke patients

Components of family resilience	Frequency	Percentage
Components of values, beliefs, and family rules		
Low	80	34.9
High	149	65.1
Components of family organizational capacity		
Low	58	25.3
High	171	74.7
Components of the family atmosphere		
Low	21	9.2
High	208	90.8

Based on Table 2, as many as 41 people or 17.9% low family resilience, 165 people or 68.1% of stroke patients <65 years, 100 people or 43.7% of women, 131 people or 57.2% low education, there are 50 people or 21.8% unmarried (widows) (/widower/unmarried), 72 people or 31.4% are unemployed or have no income, 108 people or 47.2% have no dependents, 76 people or 33.2% have a large family type, and 85 people or 37.1% ethnic groups other than Minangkabau (Batak, Malay, Kerinci, Javanese, Sundanese), there are 140 people or 71.2% of low socio-economic status, and 163 people or 61.1% have comorbidities. Thus, it can be concluded that the family resilience of ischemic stroke patients is more resilient than those with low

Table 2: Analysis of sample characteristics based on family resilience, age, gender, education, marital status, occupation, dependents, family type, ethnicity, socio-economic, and comorbidities

Variable	Frequency	Percentage
Family resilience		
Low	41	17.9
High	188	82.1
Age		
<65 years old	156	68.1
>65 years old	73	31.9
Gender		
Woman	100	43.7
Man	129	56.3
Education		
Low	131	57.2
High	98	42.8
Marital status		
Not married (widow/widower/unmarried)	50	21.8
Marry	179	78.2
job status		
Not working/no income	72	31.4
Work/have income	157	68.6
Dependents in the family		
There is no	108	47.2
Exist	121	52.8
Family type		
Big family	76	33.2
Main family	153	66.8
Ethnic group		
Other tribes	85	37.1
Minangkabau tribe	144	62.9
Socio-economic status		
Low	140	71.2
High	89	28.8
Comorbidities		
Exist	163	61.1
There is no	66	38.9

family resilience. In terms of age, more people who experienced an ischemic stroke were aged <65 years compared to those aged ≥65 years. There are more males than females who have experienced ischemic stroke. The education of ischemic stroke patients is more with low education than those with high education. In the marital status of ischemic stroke patients more are married than unmarried and who work more than those who do not work. Patients with ischemic stroke have more dependents in the family than those without family dependents, as well as the type of family factor that occurs more in nuclear families than in large families. In ethnic factors, more Minangkabau ethnic groups experienced ischemic stroke than other ethnic groups and low economic status experienced more ischemic stroke than high economic status, and patients with ischemic stroke were more common in patients with comorbidities than those without comorbidities.

Bivariate analysis showed that the variable that had a statistically significant relationship with family resilience was the socio-economic status variable (p = 0.005 > 0.05) (PR 1.16, 95% CI: 0.57–2.38). Thus, it can be concluded that ethnicity and socio-economic factors affect family resilience in ischemic stroke patients.

Before multivariate analysis, a bivariate analysis was selected with the dependent variable. Based on the bivariate results, the variables that entered into the multivariate stage were variables with p ≤ 0.25, namely, socio-economic status, ethnicity, comorbidities, and gender. More details are shown in Table 3.

Table 3: The results of the analysis of the relationship between characteristic variables and family resilience of stroke patients

Variable	Resilience score		Total n (%)	POR (95% CI)	p-value
	Low n (%)	High n (%)			
Age					
<65 years	30 (19.2)	126 (80.8)	156 (100)	1.34	0.561
>65 years	11 (15.1)	62 (84.9)	73 (100)	(CI 0.63–2.86)	
Gender					
Woman	22 (22)	78 (78)	100 (100)	1.63	0.211
Man	19 (14.7)	110 (85.3)	129 (100)	(CI 0.83–3.22)	
Education					
Low	28 (21.4)	103 (78.6)	131 (100)	1.78	0.159
High	13 (13.3)	85 (86.7)	98 (100)	(CI 0.87–3.64)	
Marital status					
Not married	9 (18.0)	41 (82.0)	50 (100)	1.008	1.000
Married	32 (17.9)	147 (82.1)	179 (100)	(CI 0.45–2.28)	
Job status					
Does not work	14 (19.4)	58 (80.6)	72 (100)	1.16	0.821
Working	27 (17.2)	130 (82.8)	157 (100)	(CI 0.57–2.38)	
Dependents in the family					
Exist	21 (19.4)	87 (80.6)	108 (100)	1.22 (CI	0.688
There is no	20 (16.5)	101 (83.5)	121 (100)	0.62–2.39)	
Family type					
Big family	11 (14.5)	65 (85.5)	76 (100)	0.69	0.441
Main family	30 (19.6)	123 (80.4)	153 (100)	(CI 0.33–1.47)	
Ethnic group					
Other tribes	19 (22.4)	66 (77.6)	85 (100)	1.60	0.242
Minangkabau tribe	22 (15.3)	122 (84.7)	144 (100)	(CI 0.81-3.16)	
Socio-economic status					
Lows	33 (23.6)	107 (76.4)	72 (100)	1.16	0.009
High	8 (0.2)	81 (91.0)	157 (100)	(CI 0.57–2.38)	
Comorbidities					
Exist	24 (14.7)	139 (85.3)	163 (100)	0.50	0.075
There is no	17 (25.8)	49 (74.2)	64 (100)	(CI 0.25–1.00)	

In the final model (Table 4), it is found that the variables that affect family resilience are: socioeconomic status, ethnicity, comorbidities, and gender. Low socioeconomic status has the risk of causing low family resilience as much as 3.2 times (95% CI: 1.317–7.597, p = 0.010) compared to high socioeconomic status. Tribes other than Minangkabau are at risk of causing low family resilience as much as 2.1 times (95% CI: 1.007–4.437, p = 0.048) than the Minangkabau. Stroke patients who have comorbidities are at risk of causing low family resilience as much as 0.50 times (95% CI: 0.237–1.049, p = 0.067) compared to those without comorbidities. Females are at risk of causing low family resilience 1.755 times (95% CI: 0.848–3.632, p = 0.130) than males. Low education is at risk of causing low family resilience as much as 1,508 times (95% CI: 0.705–3.226, p = 0.289) compared to higher education. Thus, it can be concluded that socio-economic and ethnic factors affect the family resilience of patients with ischemic stroke. The predictive model of the determinants of family resilience is as follows

Table 4: The results of the analysis of the relationship between variables

Variables	B	SE	Sig.	POR	95% CI
Socio-economic	1.151	0.447	0.010	3.163	1.317–7.597
Ethnic group	0.749	0.378	0.048	2.114	1.007–4.437
Co-morbidities	−0.697	0.380	0.067	0.498	0.237–1.049
Gender	0.562	0.371	0.130	1.755	0.848–3.632
Education	0.411	0.388	0.289	1.508	0.705–3.226
Constant	0.512	0.407	0.209	1.669	

$$\acute{y} = b_0 + b_1x_1 + b_2x_1x_2 + b_3x_1x_{2+} b_4x_1x_{2+} b_5x_1x_{2+\hat{e}}$$

$$\acute{y} = 0{,}512 + 1{,}151 sosec - 0{,}697 com + 0{,}749 ethnic_{+} 0{,}562 sex_{+} 0{,}392 edu + \hat{e}$$

Discussion

This research was conducted at Dr. Drs. M. Hatta Brain Hospital in Bukittinggi, West Sumatra, Indonesia from January to February 2022, where the samples were stroke patients who had their first attack and family members who lived at home and cared for family members who had a stroke. Determinants of family resilience are measured using RESILIENCE-GA [11].

Socio-economic status can be defined as the social position or social class of a person or a group [12]. The results showed that socio-economic status (SES) is a variable that affects family resilience. Low SES has a greater cause of low family resilience than high SES, meaning that families of ischemic stroke patients who have low SES are more susceptible to family resilience disorders. This happens because the presence of a family experiencing a stroke will have an impact in the form of an economic burden on individuals, families, and communities both directly and individually [13], [14]. There is a direct relationship between low SES status and stroke risk factors such as blood pressure and obesity [15]. This finding is in line with the research conducted by Pudjiati, in which the Batak Toba tribe, that SES together with other variables such as ethnicity, coping, family tension, and community support, builds family resilience [16]. The formation of family resilience is positively influenced by the SES variable. A high SES can be characterized by ownership of property that can be a resource to meet the needs of the family. If the needs of the family can be met properly, then the family tends to be able to overcome existing problems, including the crisis caused by stroke.

Ethnicity is one of the cultural identities in the family that is passed down from generation to generation. This aspect has its own uniqueness in its environment [17]. The results showed that ethnicity was a factor that significantly affected family resilience. Stroke sufferers who come from ethnic groups other than Minangkabau have a risk of causing low family resilience than Minangkabau tribes. This happens because the Minangkabau community is a society that is still strong with its traditional values in family life. The habits of the Minangkabau people who are close to their extended family are the reason why Minangkabau families are more resilient when faced with problems. This is reinforced by the results of Sixbey's 2005 research in Florida, where ethnicity factors significantly influence family resilience [18]. All tribes in Indonesia have good values in guiding life. In this study, more than half of the respondents were Minangkabau. The Minangkabau tribe has a traditional philosophy known as *"Adat basandi syarak, syarak basandi kitabullah."* That the custom that guides life is based on religion, and religion is based on the Qor'an [19]. In addition to religious values, the Minangkabau community holds the values of hard work, togetherness, and the habit of

deliberation [20]. The values held by the Minangkabau tribal community are components that make up the domains of family resilience. Families who carry out the values of the Minangkabau tribe well will form high family resilience in stroke sufferers.

Comorbidities are other chronic diseases suffered by stroke sufferers in the long term [2], [21]. The most common comorbidities suffered by the respondents in this study were hypertension and diabetes. These results indicate that stroke patients who have comorbidities provide a protective effect against low category family resilience. Although statistically this relationship is not significant, there was a substantial association between comorbidity and family resilience. Based on the results of research conducted by Satrianega, patients who do not have comorbidities will be more resilient, on the contrary having comorbidities or chronic diseases can be life-threatening, becoming an economic burden for individuals, families, and society as a whole [22]. The effect in this study of the relationship between comorbidities and family resilience is a protective effect, not a risk effect as suggested by other theories and research. This is because comorbidities are diseases that last a long time. So that a process of adaptation to comorbidities has been formed, which makes the family more resistant to stroke. Whereas in the condition of patients who do not have comorbidities, their resilience will be lower because stroke is a new disease that becomes a crisis in the family [17], [23], [24], [25].

Gender is the biological difference between men and women [26]. The results of this study indicate that stroke patients of the female gender have a risk of causing low family resilience compared to stroke patients of the male gender, although there is no statistically significant relationship, there was a substantial association between gender and resilience. This can happen because women have a central role in managing the daily household, so if the role of women is not in the family, it will result in decrease family resilience. This can happen because women have a central role in managing the daily household, so if the role of women is not in the family, it will result in decrease family resilience. According to research conducted by Sixbey in 2005 in Florida, gender is significantly related to family resilience (18). Gender differences have different values and positions in the family in several places in Indonesia. As a tribe that adheres to a matrilineal system, women get to hold a central and strategic position in the family and society [27]. If a woman suffers a stroke, then she tends not to be able to carry out her role optimally compared to before having a stroke. An important position and role in the family may be disturbed, this can cause the resilience of the family to be disrupted [15], [28].

Education level is a level of formal education that forms value for a person, especially in accepting new things [29]. The results showed that the education factor caused the formation of family resilience with a high category compared to low education. Although this relationship is not statistically significant, there was a substantial association between the level of education and family resilience. Research conducted by Bhana and Bachoo in 2011, showed that academic achievement was associated with a positive outlook on the family. Higher education generally makes a person have a broad outlook, positive thoughts, and the right strategy to get out of a problem. This is the capital to build family resilience [30], [31].

Conclusion

The results of the study can be concluded that socio-economic and ethnic are the most influential determinants in the high or low family resilience when a family has a stroke.

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