

Relationships Between Demographic Characteristics, Functional Status And Quality of Life of Stroke Survivors in West Sumatra, Indonesia

Wulan Sari Purba¹, Anchaleeporn Amatayakul², Boontuan Wattanakul³

¹Family and Community Health Nursing, Kasetsart University, Bangkok, Thailand

Author's email: wulan_usny@yahoo.com

²Family and Community Health Nursing, Borromarajonani Collage of Nursing NopparatVajira, Bangkok, Thailand

Author's email: anchaleeporn@bcnv.ac.th

³Family and Community Health Nursing Borromarajonani Collage of Nursing Chonburi, Bangkok, Thailand

Author's email: lexicom8@gmail.com

Abstract—Stroke is one of non-communicable disease that causes long term disability, which can affect the quality of life among stroke survivors. The purpose of this study was to investigate the relationships between demographic characteristics, functional status and quality of life among stroke survivors. The design for this study was a descriptive design which involving 138 participants selected by simple random sampling at National Stroke Center Hospital Bukittinggi, West Sumatra, Indonesia. Each participant was interviewed according to structured questionnaires consisting of the demographic information, stroke specific quality of life (SS-QOL), and functional status. Data were analyzed by using Pearson Product-Moment Correlation Coefficient, Spearman Rank Correlation Coefficient, and Point Biserial Correlation Coefficient. A significance level was established at $p < 0.05$. Main results found that the stroke survivors had a good quality of life ($M=3.55$, $SD=0.64$). 43.5 % of participants were independent in activities daily living ($Mdn=18.00$), they were independent in mobility and transfer ($Mdn=3.00$). Functional status was statistically has a positive correlation with the quality of life ($r=-0.670$, $p<0.001$). However, age, gender, occupation, education, and duration of stroke were not statistically associated with the quality of life. In conclusion, independent in functional status could influence the quality of life of stroke survivors. Therefore, this study can be as a reference for nurses to promote and maintain the functional status focused on mobility and transferring to enhance the independence in activity daily living and the quality of life of stroke survivors in Bukittinggi.

Keywords— Stroke Survivors, Functional ability, Quality of Life.

I. INTRODUCTION

Stroke is one of the main non-communicable diseases that cause the global burden disease. This phenomenon has also led to serious problems such as psychological, socioeconomic, declining productivity, difficulty walking and suffered mild or severe disabilities [1]. The prevalence of stroke was recorded 30.7 million people worldwide and 4.5 million people in South-East Asia [2]. Across the world, the prevalence of

stroke in Indonesia was recorded 500,000 people each year. Based on Research and Development Bureau of Health, Indonesia[3] in West Sumatra, stroke was the third leading non-communicable disease (12.2%). Furthermore, in Bukittinggi, the number of people who suffer a stroke fluctuated each year, especially at the National Stroke Center Hospital. The numbers were recorded as, 2852 people in 2011, 1816 people in 2012 and, 1939 people in 2013. Therefore, if the stroke is left untreated and not managed properly, the post-stroke can lead to delays in recovery and will decrease the quality of life of stroke survivors [4].

Quality of life (QOL) is a wide multidimensional concept that includes subjective evaluations of both positive and negative aspects of life [5]. Previous studies reported that the people who survived a stroke had significantly lower quality of life [6, 7]. Moreover, compared with apparently healthy adults [8] and myocardial infarction patients [9], health related quality of life was worse in stroke patients.

Many factors related to the quality of life in stroke survivors. Previous studies were examined age, gender, occupation, education, and duration of stroke associated with quality of life. However, the findings are still conversely [7, 10, 11, 12]. Moreover, functional ability was the factor that related to quality of life in people with stroke. Approximately 24% to 70% stroke patients reported moderate to severe dependency for daily living activities [12, 13]. The functional ability level was correlated with quality of life among stroke survivors ($r = .52$; $p < .0001$) [14]. In contrast, previous studies found that independent level did not have any correlation with the quality of life [15, 16]. Thus, the study needs further investigation related to quality of life.

Furthermore, the variability in quality of life measurements, including generic and specific measurement was complex and adequate to use in stroke patient [17, 18]. Thus, it seemed to be important to identify the relationships between demographic characteristics of stroke survivors,

functional status, and quality of life among stroke survivors by using an instrument stroke specific quality of life. Also, it is of great importance to the nurse for considering an earlier screening for a timely treatment to improve post-stroke recovery and better quality of life.

II. METHODS

A. Design

This study was used a descriptive correlational design.

B. Sample

The total participants in this study were 138 stroke survivors who selected by simple random sampling according to inclusion and exclusion criteria. The inclusion criteria were stroke survivors who are discharged from the hospital, stroke ischemic or hemorrhagic, age 45 years old or above, live in Bukittinggi, and able to be interviewed. The exclusion criteria were stroke survivors who had severe aphasia and illiteracy.

C. Data Collection

Data were collected in Stroke National Centre Hospital, Bukittinggi, Indonesia from July to August 2014. Data collection was collected after obtaining permission from the Ethical Review Board (ERB) from the Borromarajonani Collage of Nursing NopparatVajira and the director of Stroke National Centre Hospital, Bukittinggi, Indonesia. Further, the researcher provided an explanation of the study to potential participants based on the information sheet. The principal investigator had face to face interviewed with questionnaires was used to complete the questionnaires and required approximately 45-60 minutes. The questionnaires were checked and saved in a sealed envelope, after finishing the interview.

D. Measurement

1) Demographic characteristics

Demographic characteristics that are consist of age, gender, occupation, education, and duration stroke.

2) Stroke-specific Quality of Life Scale (SS-QOL). The SS-QOL consists of twelve domains that are contain 49 items: energy (3 items), family roles (3 items), language (5 items), mobility (6 items), mood (5 items), personality (3 items), self-care (5 items), social roles (3 items), thinking (3 items), upper extremity function (5 items), vision (3 items), and work/productivity (3 items). Item scores will be rated on a 5-point Likert scale: amount of help required to do specific tasks, ranging from no help to total help, amount of trouble experienced when attempting tasks, ranging from unable to do it to no trouble at all, degree of agreement with statements regarding their functioning, ranging from strongly agree to strongly disagree. Higher scores indicate better functioning. The SS-QOL yields both domain scores and an overall SS-QOL summary score. The domain scores are unweighted averages of the associated items while the summary score is an unweighted average of all twelve domain scores. The alpha

coefficient for the domains was reported to range from .73 to .89 [19]. The reliability was .94 in this study.

3) Functional status. The Barthel Index was used to measure the level of independence in basic activities of daily living including feeding, grooming, bathing, dressing, toileting, bowel/bladder continence, walking, climbing stairs, and chair/bed transfers. A score of up to 4 points indicated as total dependence, the score 5 to 9 points indicated severe dependence, the score 10 to 14 points represents moderated dependence, score 15 to 19 points is mild dependence and independent is assigned in reach 20 points [20]. The Barthel Index was a reliable measurement of activity daily living, which has been validated inpatient stroke [21]. The reliability was .91 in this study.

E. Statistical Analysis

The complete data was analyzed using the computer-based statistical program SPSS version 15.0 from Kasetsart University, Thailand. The relationship between education and SS-QoL was used Spearman Rank Correlation Coefficient. The correlation between gender, occupation and SS-QOL was used point biserial correlation. The correlations between age, duration of stroke, functional status with SS-QoL were used the Pearson Product-Moment Correlation.

III. RESULTS

A. Demographic Characteristics

Total participants in the present study were 138 stroke survivors. Most of the participants were men (62%) with the average age was 64.22 years old (range=47-85 years old). The median educational level was 15.00 years. Based on the ministry of education and culture Indonesia [22], it indicated that the stroke survivors had experienced in junior high school. The median of duration of stroke was 21.00 months (SD = 18.43). Regarding the employment status, the number of stroke survivors who is retired and employee were equal (29.0%) (Table I).

TABLE I. FREQUENCY, PERCENTAGE, MEAN, MEDIAN, RANGE, AND STANDARD DEVIATION OF DEMOGRAPHIC CHARACTERISTICS OF STROKE SURVIVORS (N=138)

| Demographic characteristics | Frequency | Percentage (%) |
|-------------------------------|----------------------|----------------|
| Gender | | |
| Men | 86 | 62.3 |
| Women | 52 | 37.7 |
| Age | M=64.22 SD=8.56 | |
| Education (in Years) | Mdn=15.00 Range=8-21 | |
| Duration of Stroke (in Month) | Mdn=21.00 Range=1-96 | |
| Occupation | | |
| Employee | 40 | 29.0 |
| Seller | 18 | 13.0 |
| Farmer | 15 | 10.9 |
| Housewife | 25 | 18.1 |
| Retired | 40 | 29.0 |

B. Functional status

Table II shown the median of the functional status score was 18.00 which indicated that the most of stroke survivors in this study were independence in daily activities.

TABLE II. FREQUENCY, PERCENTAGE, MEDIAN, RANGE, AND STANDARD DEVIATION OF FUNCTIONAL STATUS OF STROKE SURVIVORS (N=138)

| Functional Status | Frequency | Percent |
|----------------------|-----------|---------|
| Total dependence | 1 | .7 |
| Severe dependence | 1 | .7 |
| Moderated dependence | 31 | 22.5 |
| Mild dependence | 45 | 32.6 |
| Independence | 60 | 43.5 |

Mdn=18.00 Range=1-20

C. *Quality of life*

According to table III, the overall quality of life of stroke survivors was good with mean scores 3.55 (SD=0.64). In regard to domain quality of life, self-care domain was the highest mean score (4.58). However, the lowest mean score was energy domain (2.10).

TABLE III. MEAN, RANGE, AND STANDARD DEVIATION OF STROKE SPECIFIC QUALITY OF LIFE OF STROKE SURVIVORS (N=138)

| SS-QOL | Mean | Standard Deviation | Range |
|--------------------------|------|--------------------|-------|
| Overall QoL | 3.55 | .64 | 1-5 |
| Self-care | 4.58 | 1.59 | 1-5 |
| Vision | 4.34 | .77 | 1-5 |
| Language | 4.30 | .82 | 1-5 |
| Mobility | 4.05 | .76 | 1-5 |
| Work/Productivity | 3.30 | .74 | 1-5 |
| Upper extremity function | 4.29 | .97 | 1-5 |
| Social Roles | 3.08 | .97 | 1-5 |
| Thinking | 2.84 | 1.03 | 1-5 |
| Personality | 2.22 | .98 | 1-5 |
| Mood | 3.14 | .94 | 1-5 |
| Family roles | 2.98 | 1.01 | 1-5 |
| Energy | 2.10 | .90 | 1-5 |

D. *Relationships between demographic characteristics, functional status, and quality of life*

As shown in table IV, age, gender, occupation, education and duration of stroke were not statistically associated with the quality of life ($r = -.098, p = .251$; $R = .072, p = .399$; $r = .145, p = .090$; $r = .163, p = .056$; $r = .108, p = .208$, respectively). It indicated that there were no relationships between age, gender, occupation, education, duration of stroke, and the quality of life. Furthermore, the functional status had a statistically positive significant relationship with the quality of life ($r = .670, p < 0.001$). In other word, stroke survivors who have high scores of functional status, more likely to have a high quality of life.

TABLE IV. BIVARIATE CORRELATION BETWEEN AGE, GENDER, EDUCATION, OCCUPATION, DURATION OF STROKE, FUNCTIONAL STATUS, AND QUALITY OF LIFE OF STROKE SURVIVORS (N=138)

| Variables | SSQOL | |
|---------------------------------|-------------|---------|
| | Coefficient | p-value |
| Age ^a | -.098 | .251 |
| Gender ^b | .072 | .399 |
| Education ^b | .163 | .056 |
| Occupation ^c | .145 | .090 |
| Duration of Stroke ^a | .108 | .208 |
| Functional Status ^a | .670(**) | .001 |

Variable^a = Pearson Coefficient Correlation

Variable^b = Spearman Rank Correlation Coefficient

Variable^c = Point Biserial Coefficient Correlation.

** Correlation is significant at the 0.01 level (2-tailed).

IV. DISCUSSION

1. *Quality of Life*

Stroke survivors reported a good quality of life in this study. This is likely because most of the stroke survivors (43.5%) were independence in their daily life activities and they suffered a stroke more than a year. Smith [14] reported that people who had functional ability near normal and approximately suffered the stroke more than 3 years had higher quality of life. Moreover, stroke survivors who suffered a stroke more than a year that would have adapted the coping strategy to deal with their condition. As reported by Dayapoglu and Tan [23] that better coping skills, secure financial, and social status were related to better quality of life. Also, as found most of the subjects had high mean age (M=64.22) in this study, high mean age of the stroke survivors tend to have higher the quality of life [24].

2. *Relationship between Demographic characteristics, functional ability, and quality of life of stroke survivors*

The results found that the demographic characteristics included age, gender, occupational, education level and duration of stroke were not related to quality of life of stroke survivors.

The finding of this study shows that there was not a statistically significant associated between age and the quality of life. This is consistent with some previous study [18, 25]. This could be explained that the older people in this study might have greater experiences of life that could extent to adapt to difficult conditions better than the younger age. The highest level of life satisfaction was associated with older people, as was reported by Ostwald et al [26]. Younger age might have had other primary expectation and value such as returning to work as was reported by Alguren et al [27].

Regarding the gender, this study revealed that gender was not associated with the quality of life. This is similar with

previous studies (6, 28). This may be explained most of the subjects were male that had more support from their spouse to take care their activities in life. Thus, men who suffered a stroke had minimal change in their tasks or daily life. A prior study explained that Chinese woman has higher expectations of their physical function because of burden of domestic duties [29] as well as Dayapoglu and Tan [23] reported that women could continue to shoulder responsibilities even with the presence and advancement of disease, and emotional reactions associated with the diseases. Thus, it may be explained why this study did not find the relationship between gender and quality of life.

Occupational status was also found to be not associated with the quality of life. This can be explained the most of older patients in this study who had already retired and may not have been fully aware of the consequences of their future professional. As reported Baumann et al [11] retired person had better life satisfaction and spare time to access the medical and rehabilitation activities than working people who were younger age. Moreover, unemployed patients had better quality of life than employed patients [30]. This is possible that the unemployed patients with stroke might have greater chance to rehab their functional activity so that it could improve the quality of life.

Moreover, education was not related to the quality of life of stroke survivors, which similar with the previous reported [31]. This might be because of this study was conducted in an urban area that more easy to get the health information and access to the health center or rehabilitation center as well. People who are living in rural areas reported difficulty accessing health services when they needed compared to people who are living in urban areas [32].

With regard to the relationships between duration of stroke and the quality of life, the results showed that the duration of stroke had no association with the quality of life. Most of the stroke survivors in this study were suffering of stroke more than for one year that consistent with the previous findings [10, 25]. Also, the finding are in agreement with Huang et al [33] who found that the quality of life was improved in post stroke duration of more than 17 months and survivors had recovered maximally as well. Moreover, as reported Alguren et al [27] that the stroke survivors expectations of returning to a normal life grew more realistic.

In conclusion, these results showed that the demographic characteristics such as; age, gender, occupation, education, and duration of stroke cannot be conclusively and consistently be associated with the quality of life in stroke survivors

In this study, functional ability has a significantly positive relationship with the quality of life of stroke survivors. Higher score functional status, more likely higher in quality of life. The present findings are supported by other studies of stroke survivors that examined the quality of life [12]. This might be due to the fact that the subjects had a high functional score measured by Barthel Index, especially mobility and transfer (Mdn=3.00) which means that the stroke survivors required minimal assistance with activities of daily living. Mobility and

transferring are necessary to carry out basic activities required for daily living including feeding, dressing, stairs, toilet use, bowel, and bladder. Ellis et al [34] reported that people who are dependent on activities of daily living and those who reported physical and social limitation tend to have lower quality of life. Thus, independent in daily living tend to have good quality of life.

V. CONCLUSION

Demographic characteristics including age, gender, education, occupation, and stroke duration were not correlated with the quality of life. However, functional ability was significantly associated with the quality of life. Therefore, this study can be as a reference for nurses to promote and maintain the functional status focused on mobility and transferring to enhance the independence in activity daily living and the quality of life of stroke survivors in Bukittinggi. Based on research findings, future research need to develop nursing intervention programs regarding the functional ability are recommended to enhance QOL for stroke survivors in Bukittinggi. Another study need to highly extending the further research area by considering other variables such as stroke severity, type of stroke, and co-morbidities that might relate to quality of life in stroke survivors.

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