Factors Explaining Quality of Life among Family Caregivers of People with Stroke in Myanmar: A Cross-sectional Study

May Sein Ba, Supreeda Monkong, Sirirat Leelacharas, Pratana Satitvipawee*

Abstract: Advanced health care systems have led to increased survival among people with stroke; however, the disability level remains high. Caring for the people with stroke and consequent disabling conditions places an undue strain on their caregivers, which may, in turn, reduce their quality of life, subsequently affecting the quality of care. Thus, understanding the factors explaining the quality of life is needed to design interventions to improve the quality of life among caregivers. This correlational study was conducted among 303 family caregivers of people with stroke three months after being discharged from hospital to home from three general hospitals in Myanmar. Six validated instruments were used to collect caregiver data: a demographic questionnaire, the Barthel Index, the Zarit Burden Interview, The Brief COPE, the Multidimensional Scale of Perceived Social Support and the World Health Organization Quality of Life –Brief (WHOQOL-BREF). Data were analyzed using descriptive statistics and hierarchical regression analysis.

Results indicated that educational and occupational status of caregivers, average family income per month, numbers of caregiving hours per day, functional status of people with stroke, the burden of caregivers, and perceived social support were significantly accounted for 84% of the variance to the quality of life, which is very high. The burden was the most significant factor in explaining the quality of life, followed by education and perceived social support. Nurses need to apply innovative technology to provide continuous care at home, especially in the first three months, to reduce caregivers' burden. Also, the Myanmar government needs to strengthen health insurance systems to reduce the financial burden, which significantly affects the quality of life of the caregivers.

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Introduction

Stroke is considered the third leading cause of disability worldwide.[1] Family caregivers play an essential role in the collaborative efforts to successful stroke rehabilitation.[2] Rapid healing occurs during the first three months after a stroke,[3] so family caregivers should attempt to improve the rehabilitation process during that time.

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Regarding the nature of stroke, caregivers encounter rapidly changing demands in the immediate and long-term caring for people with stroke, and they frequently feel unprepared to take responsibility for this role.[4] Such life experiences may lead to physical and mental stress and the consequences of socioeconomic burden. Dealing with these challenging circumstances could decline caregivers' quality of life (QoL),[5] resulting in poor quality of care to the care recipients.[6] Poor quality of care can slow the recovery for those with stroke and cause high costs for families, the community, and healthcare systems.[4] Thus, ensuring caregivers' QoL should be a primary concern for practices, services, social and health care policies.[5]

In Myanmar, a study revealed that 21.5% and 39.5% of family caregivers of relatives with poor functional ability revealed severe burden and moderate burden, respectively.[7] Moreover, a study presented that QoL was related to burden.[8] Caregivers reported they had poor QoL and a high level of burden.[8] However, studies of factors explaining QoL among caregivers of people with stroke are still limited in Myanmar, although there are many international studies on this topic. Understanding this topic is valuable for nurses in clinical practice and the community to develop the interventions to improve caregivers' QoL and better quality of care for those after stroke. In addition, findings of such studies can guide nurse researchers regarding future directions on caregiving for people with stroke. Thus, this study sought to determine factors explaining the QoL among caregivers for people with stroke in Myanmar.

Conceptual Framework and Literature Review

This study was guided by the Stress Process Model (SPM) developed by Pearlin et al. in 1990,[9] specifically for caregivers. The model explains the relationships among the root causes of stress in caring, the controlling factors regarding stress, and the outcomes of stress. There are five fundamental components of SPM, including background and context characteristics, primary stressors, role and intrapsychic secondary strains, moderating resources, and outcomes. The outcome in this study is the QoL, which is defined as how the individual perceives the situation in life regarding their goals, standards, concerns within the cultural context, and value systems. It is a broad conception made up of four domains. The physical domain of QoL is related to perception concerning physical health, while the psychological domain of QoL is concerned with the feeling of self-confidence and the ability to make decisions to overcome problems. In addition, the opinions about social relationships and the availability of leisure time involve the social relationship domain of QoL. In contrast, the satisfaction of living in a good physical environment with the accessibility of health services, social welfare, and financial resources is linked to the environmental domain of QoL.[10] This model can be used as a framework to explain the stress process and QoL based on the five components in the model among caregivers of people with stroke.

The first component, background and context characteristic, refers to demographic and socioeconomic characteristics (age, sex, marital status, education, income, caring hours, job situation) that impact the history of health, working situation, and living situation. These characteristics can cause a different extent of stress levels and associated consequences.[11] A scoping review, consisting of 56 quantitative studies, one qualitative and one mixed-method study, undertaken from 1999 to 2020, indicated that many variables of background and context characteristic of SPM were correlated with QoL.[5] Among them, age was negatively correlated with QoL because older caregivers may have more health problems and consider their care stressful.[12] Moreover, higher educational status,[13] higher family income per month,[12] and employed caregivers[14] positively explained higher QoL among caregivers because of accessibility of information and support.[5, 12,13,14] In addition, estimated caring hours to people with stroke negatively correlated with QoL, due to less time for caring for their health and participating in social activities.[14] Therefore, age, educational status, occupational status, estimated caring hours per day, average family income per month were selected to include in this study.

The second component, primary stressors, originate from witnessing illness and disability of the care recipients that initiates the stress process. The starting point for the stress is a primary objective stressor (e.g., cognitive and functional impairment, behavioral issues). The consequences of primary objective stressors are primary subjective stressors (e.g., perceived burden).[11] When people with various functional status disabilities require more support in toileting, bathing, and transferring aspects, caregivers experience various burdens in caring leading to low QoL.[5,15] These burdens result in physical, psychological and economic exhaustion.[5,15] Thus, in previous studies, the functional status of people with stroke positively correlates with QoL[13] and perceived higher burden is strongly and negatively correlated with QoL.[4,12] Therefore, these two variables, functional status of care recipients and burden of caregivers, were included in this study.

The third component, role and intrapsychic secondary strains, occurs when the caregiving role is affected by primary stressors. Caring for people with stroke has various stress points triggered to become secondary role strains, including role conflict with family and the workplace, affecting the mastery, self-esteem and self-efficacy known as intrapsychic secondary strains.[11] It was found that resilience and self-efficacy were related to the QoL of caregivers.[16] Family caregivers have many roles that become role and intrapsychic secondary strains, in caregiving.[11] However, this was not explored in the present study and needs investigation in the future.

The fourth component, moderating resources, is coping and social support. Coping refers to actions carried out to reduce or increase the adverse outcomes of the stress process.[11] Coping, or cognitive and behavioral efforts of caregivers, is required to overcome many problems.[12] Results have shown effective coping is directly related to QoL.[12] Problem-focused coping is active coping that balances the problems related to stress, while emotional-focused coping is active coping that balances emotional feelings related to stress.[17] These two copings have been positively related to QoL.[18] Dysfunctional coping focuses on avoiding stressful situations by engaging in different destructive activities.[17] Psychological domain of QoL is negatively correlated to dysfunctional coping.[19] Likewise, the value of social support can enhance the abilities of caregivers to manage the caregiving situation. It had a positive relationship with QoL.[12] Therefore, problem-focused coping, emotional-focused coping, dysfunctional coping and social support were included in this study.

The last component is the outcome as this represents the end products of interaction of stress as depression, anxiety, physical health, and QoL.[11] Understanding of QoL and its explaining factors will benefit in figuring out the hidden factors by screening impending prioritized problems and supporting messages of their choices for leading to provide quality care for themselves and care recipients.[20]

In summary, hypothesized factors explaining QoL of caregivers of people with stroke are age, educational status, occupational status, estimated caring hours per day and average family income per month from background and context characteristics, functional status of people with stroke, and burden of caregivers from primary stressors, and moderating resources as problem-focused coping, emotion-focused coping, dysfunctional coping and social support.

Study Aim

This study aimed to determine the ability of age, educational status, occupational status, estimated caring hours per day, average family income per month, functional status of people with stroke, the burden of caregivers, problem-focused coping, emotion-focused coping, dysfunctional coping, and social support in explaining QoL of caregivers of people with Stroke in Myanmar.

Methods

Design: A descriptive correlational design was used, and we followed the STROBE Statement — Checklist of items to report this cross-sectional study.

Sample and Setting: Convenience sampling was used to recruit caregivers who accompanied people with stroke during follow-up visits at outpatient departments (OPDs) of two government hospitals from Yangon and one government hospital from Mandalay. These departments used the same protocol as neurology centers and stroke units from December-2019 to September-2020. The inclusion criteria were being an 18 years or older family caregiver who had provided care for a relative with stroke for at least three months continuously after being discharged from hospital to home, and speaking and understanding Myanmar language. Caregivers over 60 years were tested with a 6-item cognitive impairment test and were included in the study if they scored less than 7.[21] The exclusion criteria were family caregivers who had taken care of people with hemorrhagic stroke, had a severe neurologic or psychiatric condition or if they had surgery during the preceding 12 weeks that might impact the results.[22] Those criteria could be assessed from the discharge book of the people with stroke, that must be brought for follow-up care at the hospitals. An estimated sample size of 276 was calculated by statistical power analysis using the effect size of a previous study of 0.122,[23] a significance level of α .01, a power of .95 and 11 factors. Ten percent of the sample size was added to cover incomplete and incorrect data. Therefore, 303 participants were required. There were 1927, 780, and 1448 cases at the OPDs of hospitals 1, 2, and 3 respectively during 2018. Based on a total follow-up of 4155 cases, stratified proportional sampling was applied to get an equal proportion. Therefore, sample sizes of 140, 57, and 106 were required from hospitals 1, 2, and 3, respectively. Using convenience sampling, 351 participants with eligible criteria were approached to obtain 303 participants. Among them, 48 participants declined to join the study after selection due to time limitations.

Ethical Considerations: The study was approved by Ethical Clearance Committee on Human Rights Related to Research Involving Human Subjects, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand (COA No. IRB-MURA 2019/761) and the Ethics Review Committee, Department of Medical Research, Ministry of Health and Sport (Approval No. Ethics/DMR/2019/137) in Myanmar. Before obtaining informed written consent, all participants received clarification about the research processes and their rights, including their ability to refuse participation or withdraw from the study and protect their confidentiality.

Instruments: Six questionnaires were used for interviews during the data collection. Except for the demographic data form, five instruments in English were used with permission by the developers. These instruments were translated to Myanmar using the WHO instrument translation and adaptation process and expert panels,[24] including one neurologist and four senior nurses.

1. A Demographic Data Form was developed by the primary investigator (PI) to obtain information regarding caregivers' age, gender, race, religion, educational status, marital status, relationship with the people with stroke, occupational status, estimated caring hours per day, average family income per month with sufficient and insufficient options of caring expenses.

2. The Barthel Index (BI) was selected to evaluate neurological and musculoskeletal disorders by changing the functional status of physical activities per day for people with stroke. It was developed by Mahoney and Barthel and has 10 items.[25] Participants

respond to each item by choosing a score of 0 or 5 for two items, 0 or 5 or 10 for six items, 0 or 5 or 10 or 15 for two items. The score ranges from 0 to 100, which means that a higher score indicated higher functional independence. A score between 0 to 20 indicates full dependence, 21 to 45 severe dependence, 46 to 70 moderate dependence, 71 to 90 slight dependence, and 91-100 independence.[26] An item example is "The people with stroke whom you are caring for is able to shower, or use a bathtub." In this current study, the scale content validity index (S-CVI) was .96 and Cronbach's alpha reliability coefficient was .88.

3. The Zarit Burden Interview (ZBI) was developed by Zarit and colleagues.[27] There are 22 items with a 5-point Likert scale ranging from 0 = never to 4 = almost always. The range of the score is 0 to 88. A higher score indicates more burden. The following scores were used to report burden level: no burden (1-20), mild to moderate (21-40), moderate to severe (41-60), and severe (over 60). An item example is "Do you feel that your relative asks for more help than he/she needs?" In this study, the S-CVI was .86 and Cronbach's alpha reliability coefficient was .94.

4. Brief Coping Orientation to Problems Experienced inventory (Brief COPE) was developed by Carver.[28] This has 14 scales with 28 items and measures problem-focused coping, emotion-focused coping, and dysfunctional coping by summing items of scales accordingly. It uses a Likert 4-point scale: 1= I have never been doing at all; 2 = I have been doing a little; 3 = I have been doing averagely, and 4 = I have been doing most of the time. According to the authors' suggestion, higher scores indicate greater practice in this coping strategy. Problem-focused coping has three scales with six items: active coping, instrumental support, and planning.[17] Thus, the score ranges from 6 to 24. Emotion-focused coping has five scales with ten items: emotional support, positive reframing, humor, acceptance, and religious scales.[17] Thus, the score ranges from 10 to 40. Dysfunctional coping has six scales with 12 items involving venting, behavioural disengagement, self-distraction, denial, self-blame, and substance use scales. Thus, the score ranges from 6 to 24.[17] Item examples of problem-focused coping, emotion-focused coping and dysfunctional coping include "I have been trying to find an approach that works.", "I have been praying or meditating." and "I have been using alcohol or drugs to manage the situation." respectively. The S-CVI of problem-focused coping, emotion-focused coping and dysfunctional coping was .92, .86, .86, respectively. The Cronbach's alpha co-efficient of problem-focused coping, emotion-focused coping and dysfunctional coping were .80, .79, and .71, respectively in this study.

5. The Multidimensional Scale of Perceived Social Support (MSPSS) was developed by Zimet and colleagues.[29] It has 12 items measuring social support and four items from each source of family, friends, and significant others. It uses a 7-point Likert scale, ranging from strongly disagree to strongly agree. An example item is "I can talk about my problems with my family." A higher score indicates higher perceived social support. According to Zimet et al., the possible range of score is 1 to 7, with low support (1 to 2.9), moderate (3 to 5), and high (5.1 to 7). In this study, the S-CVI was .92 and Cronbach's alpha coefficient was .95.

6. The World Health Organization Quality of Life – Brief (WHOQOL-BREF):[10] The short version of this measures how a person perceives their quality of life during the last two weeks, using a 5-point response of 'Very Dissatisfied-1' to 'Very Satisfied-5'. Three negative items are reverse-coded in the questionnaire. An item example is "How much do you enjoy your life?" Possible scores range from 26 to 130, and a higher score indicates higher QoL. The mid-possible score of the scale interprets the levels of QoL. In this study, the S-CVI was .92, and the Cronbach's coefficient was .93.

Data Collection: While people with stroke and caregivers were being registered at the OPDs for follow-up, the registered nurse in charge inquired about the caregivers' initial interest to participate in the research study, then introduced tentative participants to the PI. After identifying the eligible criteria and completing the process of obtaining consents, the PI interviewed the participants with the questionnaires in a private room for 40-50 minutes with a pause if necessary while they were waiting to meet physicians or after seeing them. The PI assigned two bachelor degree nurses who had enough experience to be research assistants. Their key responsibilities were to explain the information sheet to participants and attend to the people with stroke during PI's interviews, depending on the requirement of the situation. After the interviews were done, the PI gave a small gift to participants to appreciate their contribution.

Data Analysis: The SPSS version 18.0 was employed to analyze the data. Descriptive analysis was used for demographic characteristics and all study variables, including frequency, percentages, means, median, range, and standard deviation. The significance level was fixed at $\alpha = .05$. Mean, median, sum, min-max, and standard deviation were calculated for overall and domain scores. Occupational status was coded into dummy variables to represent five groups (unemployed = 0, government servant = 1, home business = 2, employed part-time = 3, retired = 4) in the single regression equation and meaningfully interpreted regarding the QoL of the caregivers. Unemployment was set as a reference category.

Pearson's correlation analysis was undertaken on all studied variables after deleting ten cases of extreme outliers. Hierarchical regression analysis was then conducted to determine significant factors explaining QoL among family caregivers after testing the basic assumption of regression, normality, linearity, homoscedasticity, multicollinearity, and autocorrelation. According to the components of SPM and from reviewing the literature, four blocks of variables were entered into the hierarchical regression analysis. Background and context characteristics: age, educational status, occupational status (caregivers who were government servants, who run home business, who employed part-time, and those that were retired), estimated caring hours per day, and average family income per month was entered in the first block. Functional status of people with stroke (primary objective stressors) and caregivers' burden (primary subjective stressors) were entered in the second and third blocks respectively. Regarding the moderating resources, the problem focused coping, emotion focused coping, and dysfunctional coping, and social support were added in the last block.

Results

Characteristics of participants

The majority were female (77.60%). Half of the participants fell in the age group of 40 to 59 (46.50%) with a mean age of 44.53 years (SD = 12.48). Most participants were Myanmar (86.50%) and Buddhist (89.80%), married (73.30%) and had primary and secondary education (75.50%). Moreover, children (41.60%) and spouses (36.90%) of relatives with stroke participated. Among the participants, one-third ran a home business (35.30%). The reported mean estimated caring hours per day was 7.70 (SD = 2.50). The average family income per month was 336,303.63 Kyat (SD = 127840.70) which is less than US$260. Many caregivers (78.90%) identified that their family income was insufficient for caring expenditures (**Table 1**).

Table 1 Characteristics of the participants (N = 303)

Demographic characteristics	**N (%)**
Gender	
Male	68 (22.40)
Female	235 (77.60)

Table 1 Characteristics of the participants (N = 303) (Cont.)

Demographic characteristics	**N (%)**
Age (M = 44.53, SD = 12.48, Range = 22-74)	
18-20	0 (0)
21-40	118 (39.00)
40-59	141 (46.50)
60-79	44 (14.50)
Race	
Myanmar	262 (86.50)
Others	41 (13.50)
Religion	
Buddhist	272 (89.80)
Christian	22 (7.20)
Others	9 (3.00)
Marital status	
Married	222 (73.30)
Single	76 (25.10)
Divorced/Widowed/Separated	5 (1.60)
Educational level (M = 6.54, SD = .15, Range = 1-15)	
Primary and Secondary school	229 (75.50)
High school	52 (17.20)
Graduate	22 (7.30)
Occupational status	
Government servant	5 (1.70)
Home business	107 (35.30)
Employed part-time	94 (31.00)
Retired	10 (3.30)
Unemployed	87 (28.70)
Relationship to people with stroke	
Children	126 (41.60)
Spouse	112 (36.90)
Others	65 (21.50)
Average family income (M = 336303.63; SD = 127840.70; Range = 100,000 – 600,000)	
100,000-250,000 (67 US$ -166 US$)	95 (31.40)
250,001-400,000 (167 US$-266 US$)	129 (42.60)
400,001-550,000 (267 US$-367 US$)	70 (23.00)
Above 550,001 (>367 US$)	9 (3.00)
Average family income	
Sufficient	64 (21.10)
Insufficient	239 (78.90)
Estimated caring hours/day (Mean = 7.7; SD = 2.5; Range= 2 –13)	
1-4 hours	36 (11.90)
5-8 ours	154 (50.80)
9-12 hours	103 (34.00)
13 hours and above	10 (3.30)

Study variables

Participants reported their QoL with a mean score of 65.18 (SD = 11.33), represented a moderate QoL level. They cared for people with a moderate dependency, showing a mean score of 62.76 (SD = 17.50). Importantly, caregivers perceived a moderate to severe caring burden with an average mean score of 56.30 (SD = 17.50). In addition, the participants reported problem-focused coping with a mean of 20.42 (SD = 2.20), while emotion-focused coping had a mean score of 33.07 (SD = 3.80). The mean score of dysfunctional coping was 18.49 (SD = 2.70). When considering the mean score with the mid-possible scale, problem-focused and emotion-focused coping were frequently used at a high level, while dysfunctional coping was applied at a low level among the participants. Regarding social support, they had a moderate level by presenting an overall mean score was 3.99 (SD = 1.49). They perceived moderate social support from family and friend by presenting (mean = 4.88, SD = 1.77) and (mean = 4.19, SD = 1.83) respectively. However, they perceived low support (mean = 2.90, SD = 1.93) from significant person (**Table 2**).

Table 2 Descriptive statistics of the study variables (N = 303)

Variables	**Possible range**	**Actual range**	**Mean ± SD**	**Interpretation**
Quality of life	26-130	40-101	65.18 ± 11.33	Moderate
Functional status of people with stroke	0-100	25 -100	62.76 ± 17.50	Moderate dependence
Caregivers' burden	0-88	18-84	56.30 ± 17.50	Moderate to Severe
Problem-focused coping	6-24	15-24	20.42 ± 2.20	High
Emotional coping	10-40	20-39	33.07 ± 3.80	High
Dysfunctional coping	12-48	16-32	18.49 ± 2.70	Low
Overall Social support	1 - 7	1- 7	3.99 ± 1.49	Moderate
Social support from family	1 - 7	1- 7	4.88 ± 1.77	Moderate
Social support from friend	1 - 7	1- 7	4.19 ± 1.83	Moderate
Social support from significant person	1 - 7	1- 7	2.90 ± 1.93	Low

A correlation matrix of QoL presents educational status, average family income per month, functional status of the people with stroke, and social support were positively associated with QoL. On the other hand, the occupational status of caregivers who run a home business or were retired, estimated caring hours per day, and caregivers' burden was negatively related to QoL. The remaining variables, as caregivers' age, occupational status of government servants and employed part-time caregivers, problem-focused coping, emotion-focused coping, and dysfunctional coping, were not significantly related to QoL (**Table 3**).

Table 3 Correlation matrix of the study variables (N = 293)

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. QoL	1000														
2. Age	.084	1000													
3. Educational status	$.641^{***}$	.074	1000												
4. Occupation: government	.024	.063	.011	1000											
5. Occupation: home business	$-.414^{**}$	-.060	-.039	$-.176^{**}$	1000										
6. Occupation: Part- time employee	-.063	-.026	-.106	-.102	$-.418^{*}$	1000									

Table 3 Correlation matrix of the study variables (N = 293) (Cont.)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7. Occupation: retired	-.247*	.031	.115*	-.059	-.334	-.140*	1000								
8. Average family income per month	.732***	.078	.454**	.031	-.018	-.078	-.100	1000							
9. Caring hours per day	-.740***	-.006	-.584*	-.013	.032	.094	.080	-.595***	1000						
10. Functional status of people with stroke	.709***	.043	.524**	-.015	-.045	-.050	-.047	.560**	-.667***	1000					
11. Caregivers' burden	-.850***	-.037	-.667***	-.050	.061	.041	.046	-.648***	.726***	-.681***	1000				
12. Problem focus coping	.127	.001	.043	-.033	.026	.043	-.027	.037	.072	.047	.064	1000			
13. Emotional focus coping	.040	-.023	.084	.039	.027	.030	.029	.002	.085	.039	.051	.097	1000		
14. Dysfunctional coping	-.054	-.020	-.151	-.007	.034	-.037	-.059	-.049	-.019	-.047	-.031	-.043	-.088	1000	
15. Social support	.581***	.068	.235***	.035	-.033	-.120*	-.116	.548***	-.454***	.479***	-.190	-.023	-.046	.138	1000

$^{*}p < .05$ $^{**}p < .01$ $^{***}p < .001$

Factors explaining the quality of life

After conducting each assumption tests, four steps of the hierarchical regression to QoL were performed. The seven factors significantly accounted for 84% of the variance in the QoL ($R = .92$, $R^2 = .84$, R^2 Change = .02, F Change$_{(14,278)} = 5.38$, $p < .001$) among the caregivers.

In model 1, with the entrance of variables of background and context characteristics of caregivers, age, educational status, occupational status (caregivers who were government servants, who run home business, who employed part-time, and those that were retired), estimated caring hours per day and the average family income per month accounted for 74% of the variance in the QoL. Educational status, occupational status as caregivers who run a home business or were retired, estimated caring hours per day and average family income per month were significant factors to the QoL. Age and occupational status of caregivers who were government servants and who were employed part-time were insignificant factors to explain QoL.

In model 2, with the entrance of the primary objective stressor, the functional status of people with stroke after controlling for background and context characteristics, all variables could jointly explain 76% of the variance in QoL. Functional status of people with stroke was a significant factor to QoL, and the explaining variance increased to 2%.

In model 3, the primary subjective stressor, caregivers' burden, was added. It significantly explained an additional 6% of the variance in QoL. All variables could jointly explain 82% after controlling for the background and context characteristics, and the primary objective stressor.

The final model added the moderating resources (problem-focused coping, emotion-focused coping, dysfunctional coping, and social support) after controlling the background and context characteristics, the primary objective and primary subjective stressor. These variables could jointly explain 84% of variance to QoL. Perceived social support additionally contributed 2% in explaining QoL. However, problem-focused coping, emotion-focused coping and dysfunctional coping could not significantly change the variance in QoL. The finding presented caregivers' burden was the most significant factor ($\beta = -.31$, $t(278) = -6.98$, $p < .001$) in explaining QoL followed by education, perceived social support, average family income, occupational status of caregivers who run a home business, estimated caring hours per day and caregivers who were retired (**Table 4**).

Table 4 Results of hierarchical multiple regression analysis of the factors explaining quality of life among the family caregivers of people with Stroke (N = 293)

Study variables	b	SE (b)	β	t	p
Model 1					
Constant	52.17	2.89		**18.05**	**.000**
Age	.03	.03	.02	.88	.379
Education	2.57	.21	.47	11.78	.000
Occupation (government)	-1.39	2.03	-.02	-.69	.494
Occupation (home business)	-3.02	.95	-.11	-3.17	.002
Occupation (part time employee)	-.87	1.15	-.02	-.75	.452
Occupation (retired)	-4.49	1.59	-.08	-2.82	.005
Estimated caring hours per day	-1.50	.21	-.27	-7.12	.000
Average family income per month	2.831E-005	.00	.26	6.78	.000
R = .86, R^2 = .74, R^2 Change = .74, F $\text{Change}_{(8,284)}$ = 154.20, p = .000					
Model 2					
Constant	44.19	3.46		12.76	.000
Age	.03	.03	.02	.85	.398
Education	2.31	.22	.42	10.34	.000
Occupation (government)	-1.05	1.98	-.02	-.53	.597
Occupation (home business)	-2.94	.92	-.10	-3.16	.002
Occupation (part-time employee)	-.94	1.12	-.03	-.84	.401
Occupation (retired)	-4.22	1.55	-.07	-2.72	.007
Estimated caring hours per day	-1.17	.22	-.20	-5.26	.000
Average family income per month	2.626E-005	.00	.23	6.40	.000
Functional status of people with stroke	.12	.03	.15	3.96	.000
R = .87, R^2 = .76, R^2 Change = .02, F $\text{Change}_{(9,283)}$ = 15.71, p = .000					
Model 3					
Constant	65.85	4.12		15.69	.000
Age	.03	.03	.03	1.12	.265
Education	1.49	.23	.27	6.52	.000
Occupation (government)	-2.20	1.80	-.03	-1.22	.224
Occupation (home business)	-2.99	.84	-.11	-3.54	.000
Occupation (part-time employee)	-1.09	1.00	-.03	-1.09	.276
Occupation (retired)	-3.95	1.41	-.07	-2.80	.005
Estimated caring hours per day	-.62	.21	-.11	-2.88	.004
Average family income per month	2.179E-005	.00	.20	5.78	.000
Functional status of people with stroke	.08	.03	.10	2.74	.007
Caregivers' burden	-.29	.04	-.35	-7.80	.000
R = .91, R^2 = .82, R^2 Change = .06, F $\text{Change}_{(10,282)}$ = 60.86, p = .000					
Model 4					
Constant	64.50	5.82		11.09	.000
Age	.03	.03	.03	1.05	.297
Education	1.19	.23	.22	5.15	.000
Occupation (government)	-2.27	1.76	-.03	-1.29	.197
Occupation (home business)	-2.72	.82	-.10	-3.31	.001

Table 4 Results of hierarchical multiple regression analysis of the factors explaining quality of life among the family caregivers of people with Stroke (N = 293) (Cont.)

Study variables	b	SE (b)	β	t	p
Occupation (part-time employee)	-1.09	1.00	-.031	-1.09	.276
Occupation (retired)	-3.56	1.38	-.07	-2.59	.010
Estimated caring hours per day	-.44	.21	-.08	-2.08	.039
Average family income per month	1.676E-005	.00	.15	4.32	.000
Functional status of the people with stroke	.05	.03	.11	3.10	.032
Caregivers' burden	-.25	.04	-.31	-6.98	.000
Problem focus coping	.16	.14	.03	1.12	.262
Emotional focus coping	.03	.10	.01	.26	.799
Dysfunctional Coping	-.07	.13	-.01	-.59	.559
Perceived social support	.16	.04	.20	4.51	.000
R = .92, R^2 = .84, R^2 Change = .02, F $\text{Change}_{(14,278)}$ = 5.38, p = .000					

Discussion

Hierarchical regression analysis presented seven significant factors that accounted for 84% of the variance to the quality of life. These findings support the stress-related factors in each component of SPM. Among the background and context characteristics of caregivers, education status played a major role in explaining the variance of QoL. This result strengthened the findings of previous studies,[5,13,30] in that caregivers with a lower educational status might have had more trouble following the instructions and guidelines from healthcare personnel.[5] However, caregivers with higher educational status could manage stroke-related disability and its consequences with better coping and problem-solving methods.[5,13] These reasons may be drivers for poorer or better QoL among caregivers.

Regarding the occupational status, different to findings of prior studies that reported employed caregivers had better QoL,[5,14] the occupational caregivers who ran a home business and retired caregivers had a negative correlation to QoL in the current study. Caregivers with a home business may feel role overloading since their work together with caregiving activities may lead to poor QoL. On the other hand, retired caregivers did not have a good personal pension with their retirement benefits, an aging insurance plan, and good support from the government,[31] and this may have affected their QoL.

Concerning estimated caring hours per day, the findings corresponded to previous studies reporting that this was negatively correlated to QoL.[4,5,32] Much caring time per day could make caregivers neglect their self-care and bear negative opinions about their role that could precede to deterioration of QoL among caregivers.[4,5]

There was a relationship between average family income per month and QoL. This finding is supported by previous international studies.[13,30] It was possible that caregivers with a low income were unable to access basic health services, and they would encounter an escalation of the costs of specific requirements in care for relatives with stroke in Myanmar.[31] This would be a predisposition to encounter vulnerable conditions, be ambiguous about the future, and attain negative self-esteem.[5,13] All impacts may increase the burden and lead to low QoL.

However, caregivers' age did not significantly explain QoL. A literature review described some studies finding older caregivers had poor QoL due to effects on their health, whereas some found they have better QoL due to their maturity and ability to solve problems. A possible reason may be the culture of caring essences to family members regardless of age in Myanmar.[33]

As hypothesized, stressors of SPM, primary objective stressor (functional status of people with stroke) was significantly positively correlated to the QoL. This finding was consistent with some studies.[5,13,32] Usually, the more limitations that exist in the functional status of the people with stroke, the more adjustment is required in the caring needs of the caregivers.[32] It is expected that the responsibilities of the caregivers and the duration of caregiving time would increase when care recipients declined in their functional status and that in turn increased the burden, which would decrease the QoL.[13]

For the primary subjective stressor, caregivers' burden was the strongest factor negatively correlated with QoL in this study. This finding was found in several studies,[5,12,13,32,34] and could be due to several reasons which generated stress from demands of care, sleep pattern disturbances, financial difficulties, and decreased participation in leisure activities.[34] As seen in the correlation matrix of this study's variables, educational status, caregiving time per day, functional status of the people with stroke, family income per month, and social support were related to caregivers' burden. Additionally, the healthcare system in Myanmar, consequences of limited focusing long term care, out-of-pocket payments, and low operation of health insurance policies were primary sources for financial hardship, which led to low QoL during the caregiving of patients in Myanmar.[31,35]

This study also found that caregivers received moderate social support from family and friends while receiving low social support from significant other persons. The highest contributions came from family members. It was likely that most of the caregivers were children of parents. Moreover, caregivers who perceived social support were positive significantly correlated to QoL. This finding is compatible with some results.[12,14] Logically, social support can enhance the caregiver's ability to manage the stress developed during a caregiving situation,[5,12] might reduce fatigue and improve the QoL.[12]

In terms of the coping by caregivers, problem-focused, emotion-focused, and dysfunctional coping did not explain the QoL of caregivers in this study. This finding was not in accord with other studies.[14,17,18,19] This inconsistency may be related to caregivers' coping methods that did not overcome all negative factors affecting their QoL, such as financial hardships and loading of stress.

Limitations

This was a cross-sectional descriptive study using non-probability, convenience sampling. Thus, the results may not be generalized to a broader population of caregivers of people with stroke. The assessment of caregivers' QoL and the explaining factors was performed only once, and prospective longitudinal follow-up studies are needed to understand the changing patterns of caregivers' QoL and the explaining factors.

Conclusions and Implications for Nursing Practice

Our study confirms some validity of the SPM in that characteristics, stressors and social support explained QoL. From the results, it is recommended to develop interventions focusing on stressors and social support guided by SPM for these families. In addition, a prospective or longitudinal study guided by the SPM needs to be conducted to monitor the perception of those variables in stroke caregivers. Such studies may have practical benefits for long-term stroke care. Other variables such as self-efficacy, role conflict and mastery from the role and intrapsychic secondary strains of SPM are strongly recommended in upcoming research studies.

To reduce caregivers' burden and improve QoL, healthcare policymakers must emphasize the importance of integrating care services networks - such as primary care, hospital care, and home care - to achieve an effective care transition in the healthcare system. Well-developed health insurance systems should be launched immediately and utilized to reduce the financial burden, which greatly affects the QoL of the caregivers. Through using websites and hotlines, the electronic/digital healthcare system needs to be initiated and upgraded to give access to necessary information. To this end, the innovation of telenursing for a home visiting program is strongly recommended if a mobile phone is available. This can enable nurses to provide caregiver support when caring for people with stroke and directly increase independence from hospital to home care.

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ปัจจัยอธิบายคุณภาพชีวิตของญาติผู้ดูแลผู้ที่เป็นโรคหลอดเลือดสมองในประเทศเมียนมาร์

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บทคัดย่อ : ระบบบริการสุขภาพที่ก้าวหน้าทันสมัยทำให้อัตราการมีชีวิตรอดของผู้ที่เป็นโรคหลอดเลือดสมองดีขึ้น แต่ระดับการช่วยเหลือตนเองไม่ได้ยังคงสูงอยู่ การดูแลผู้ที่เป็นโรคหลอดเลือดสมองที่ยังช่วยเหลือตนเองไม่ได้ทำให้ญาติผู้ดูแลมีความเครียด คุณภาพชีวิตลดลง ส่งผลต่อคุณภาพการดูแลตามมา ดังนั้น ความเข้าใจปัจจัยที่อธิบายคุณภาพชีวิตเพื่อนำไปออกแบบการดูแลเพื่อเพิ่มคุณภาพชีวิตเป็นสิ่งสำคัญ การศึกษาความสัมพันธ์ครั้งนี้กับตัวอย่างจำนวน 303 รายที่เป็นญาติผู้ดูแลผู้ที่เป็นโรคหลอดเลือดสมองในช่วง 3 เดือนหลังจำหน่ายออกจากโรงพยาบาล ในโรงพยาบาลทั่วไป 3 แห่ง ประเทศเมียนมาร์ ผู้วิจัยสัมภาษณ์ญาติผู้ดูแลตามแบบสอบถาม 6 ชุด แบบสอบถามข้อมูลส่วนบุคคล แบบประเมินการปฏิบัติกิจวัตรประจำวัน แบบประเมินภาระการดูแล แบบประเมินการจัดการกับความเครียด แบบประเมินการรับรู้แรงสนับสนุนทางสังคม และแบบประเมินคุณภาพชีวิต วิเคราะห์ข้อมูลด้วยสถิติบรรยายและการวิเคราะห์การถดถอยเชิงชั้น

ผลการศึกษาพบว่า ระดับการศึกษาและสถานภาพการทำงานของญาติผู้ดูแล รายได้ครอบครัวเฉลี่ยต่อเดือน จำนวนชั่วโมงในการดูแลต่อวัน ความสามารถในการทำหน้าที่ของผู้ที่เป็นโรคหลอดเลือดสมอง ภาระการดูแลของญาติผู้ดูแล และการรับรู้แรงสนับสนุนทางสังคม ร่วมกันอภิปรายความแปรปรวนคุณภาพชีวิตของญาติผู้ดูแลได้ร้อยละ 84 ซึ่งอยู่ในระดับที่สูงมาก ภาระการดูแลของญาติผู้ดูแลเป็นปัจจัยที่อธิบายได้ดีที่สุด และระดับการศึกษา และการรับรู้แรงสนับสนุนทางสังคมของญาติผู้ดูแล รองลงมาตามลำดับ พยาบาลควรมีการนำเทคโนโลยีมาใช้เพื่อให้การดูแลต่อเนื่องที่บ้าน โดยเฉพาะในช่วงสามเดือนแรกเพื่อลดภาระการดูแลของญาติผู้ดูแล ผู้บริหารควรเสริมความเข้มแข็งของระบบการประกันด้านสุขภาพเพื่อลดภาระด้านเศรษฐกิจ ซึ่งส่งผลกับคุณภาพชีวิตของญาติผู้ดูแล

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