Factors Associated With Depression Among Family Caregivers of Patients With Stroke in Indonesia: A Cross-Sectional Study

Wahyuni FAUZIAH1* • Mayumi KATO2 • Miho SHOGENJI3 • Hiromasa TSUJIGUCHI4 • Yoshimi TANIGUCHI5

ABSTRACT

Background: Strokes may lead to increased dependency, which may impact the daily lives of patients with stroke and their family caregivers. Caring for a poststroke family member in Indonesia may differ from other countries in terms of extending beyond the provision of hands-on care. Contradictions and gaps in the factors affecting caregiver depression have been highlighted in a review of the relevant literature. Few studies have examined comprehensively the contradictory factors, uncovered factors, and cultural and spiritual values affecting this phenomenon.

Purpose: This study was designed to identify the factors associated with depression in family caregivers of patients with stroke in Indonesia. We examined the following factors related to caregiving: demographic characteristics of the caregiver and care recipient, functional ability of the patient, caregiver self-efficacy, knowledge regarding stroke care, and spiritual values.

Methods: In this cross-sectional study, 157 primary caregivers completed questionnaires involving depression factors during face-to-face interviews. The data were analyzed using multiple logistic regression.

Results: The prevalence of depression among the participants was 56.7%. The overall mean ages of the participants and their care recipients were 43.6 and 57.1 years, respectively. In this study, 65.6% of the participants were female, and 70.1% lacked knowledge regarding stroke care. In the early caregiving phase, caregiver depression was more likely to occur in female caregivers with back pain and long care hours. Self-efficacy in achieving respite time was found to be associated with a lower risk of depression.

Conclusions/Implications for Practice: Caregivers’ gender, presence of back pain, sufficient respite time, and time since stroke occurrence should be considered when providing knowledge, skills, and coping strategies to caregivers to help them adapt to their caregiving role, maintain their quality of life, and prevent the onset of depression. Understanding the factors influencing caregiver depression may help nursing professionals identify individuals at a higher risk of depression early on and provide critical follow-up and early access to supportive counseling.

KEY WORDS: caregivers, depression, family, self-efficacy, stroke.

Introduction

The sudden onset and long-term disability and dependency associated with stroke (Nursiswati et al., 2017) affect the quality of life of patients with stroke and their families (Hu et al., 2018). When patients with stroke begin treatment at home, family members often take responsibility as caregivers and may struggle to cope with this role. Lack of knowledge regarding care, limited health insurance coverage, and the need for long-term care of patients with stroke, combined with a lack of facilities at home to help with the activities of daily living (ADLs), are limiting conditions that increase depression risk in caregivers. The incidence rates of caregiver depression in China and the United States are 53.9% and 57%, respectively (Byun et al., 2019; Hu et al., 2018). Although stroke is the second leading cause of death in Indonesia (Mboi et al., 2018), the rate of depression in caregivers of patients with stroke is unknown. In Indonesia, caring for family members is a mandatory responsibility with deep roots in religion and culture (Kristanti et al., 2019). Caring for a family member with a chronic condition such as stroke may be associated with depressive factors. Understanding the factors behind this relationship is needed to prevent depression in caregivers.

*Corresponding author. Wahyuni FAUZIAH, MHS, RN, Doctoral Student, Gerontological and Rehabilitation Nursing Department, Division of Health Sciences, Graduate School of Medical Sciences, National University Corporation Kanazawa University, Ishikawa, Japan, and Nurse, Neurology Department, Dr. H Koenrsadi Regional Hospital of Bondowoso, East Java, Indonesia.

1PhD, RN, Professor, Division of Health Sciences, Graduate School of Medical Sciences, National University Corporation Kanazawa University, Ishikawa, Japan • 2PhD, RN, Professor, Division of Health Sciences, Graduate School of Medical Sciences, National University Corporation Kanazawa University, Ishikawa, Japan • 3PhD, RN, Assistant Professor, Division of Health Sciences, Graduate School of Medical Sciences, National University Corporation Kanazawa University, Ishikawa, Japan • 4PhD, Assistant Professor, Division of Health Sciences, Graduate School of Medical Sciences, National University Corporation Kanazawa University, Ishikawa, Japan • 5PhD, RN, Associate Professor, Division of Health Sciences, Graduate School of Medical Sciences, National University Corporation Kanazawa University, Ishikawa, Japan.

Copyright © 2022 The Authors. Published by Wolters Kluwer Health, Inc.

This is an open access article distributed under the Creative Commons Attribution License 4.0 (CCBY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
Literature Review

Depression is a mood disorder associated with symptoms such as persistent feelings of sadness and loss of interest that may interfere with daily and social activities (Giannelli, 2020; Yang et al., 2017). Early diagnosis and interventions have been linked to the effective treatment of depression. However, people often avoid or delay seeking treatment from healthcare professionals because they fear social prejudice and discrimination against them and their families (Rössler, 2016). Therefore, this study was developed to identify depressive symptoms in family caregivers of patients with stroke using the 10-item Center for Epidemiologic Studies Depression Scale (CES-D-10), originally developed by Andresen et al. (1994). The suggested cutoff point was 10, with family caregivers scoring ≥10 considered to be depressed (Björvinsson et al., 2013).

Depression is treatable, especially when treatment starts early. However, symptom identification is difficult because their incidence varies significantly from person to person (Malhi & Mann, 2018). Healthcare professionals, including nurses, have the opportunity and ability to assist with the early identification of depression. Understanding the factors related to caregiver depression may help identify this condition at an early stage.

First, the issue of caregiver depression must be explored further because contradictory factors were found after conducting a literature review. Previous studies have found several sociodemographic variables, including gender (Hu et al., 2018), ethnicity, functional outcomes (Byun et al., 2019), age (Zhao et al., 2021), and relationship to the patient with stroke (Roth et al., 2020) as well as the depression status of care recipients (Freytes et al., 2020), to be significantly associated with caregiver depression. Conversely, several researchers have found that gender, ethnicity (Roth et al., 2020), age (Byun et al., 2019), relationship to the patient with stroke (Zhao et al., 2021), and functional outcomes (Freytes et al., 2020) are not related to caregiver depression.

Second, a number of factors known to relate to depression in caregivers of patients with stroke have been inadequately addressed in the literature. A review of 16 studies highlighted that multiple factors known to influence depression risk in caregivers, including caregiving knowledge, spiritual values, family structures, living environment, and the role of nurses, have been inadequately investigated (Fauziah et al., 2019). In addition, self-efficacy is a factor that has been rarely examined in relation to caregiver outcomes. The association between caregiver depression and self-efficacy has been examined in studies of family caregivers of persons with other chronic diseases such as Alzheimer’s disease and dementia (Grano et al., 2017; Steffen et al., 2019). However, few studies have fully examined the relationship between depression and self-efficacy among family caregivers of patients with stroke. Therefore, in this study, self-efficacy was examined as one of the main factors expected to reduce and prevent depression in caregivers.

Third, the cultural values related to caregiving activities in Indonesia may differ from other countries and deserve further exploration. Geographical, social, and spiritual diversities influence the cultural values of Indonesian life, which influence caregiving activities. Indonesia is the world’s largest archipelago country, consisting of more than 17,000 islands that reflect ethnic and cultural diversity and religious pluralism within a Muslim-majority state (Mboi et al., 2018). Limited access to stroke rehabilitation facilities is related to geographical and social support conditions. In addition, spiritual and cultural values influence subjective feelings of obligation and willingness, especially among female caregivers, to care for family members. Gender and culture have been shown to influence caring roles for patients with stroke in countries such as Vietnam (Long et al., 2019). Given the challenges in countries marked by high diversity, factors related to diversity, including spiritual and cultural values, should be understood to obtain a sufficiently comprehensive picture of caregiver depression factors.

The theoretical framework in this study used the self-efficacy theory developed by Bandura augmented by findings from our literature review. Self-efficacy is defined as the belief of an individual in their ability to perform certain tasks to achieve desired goals (Bandura, 2002), with perceived self-efficacy associated positively with persistence level. Thus, high self-efficacy should reduce distress and promote emotional control during times of caregiving-related stress. On the other hand, a previous study suggested that self-efficacy has a reciprocal cause-and-effect correlation with caregiver depression (Gilliam & Steffen, 2006). Bandura stated that a low sense of self-efficacy may have adverse effects on psychosocial functioning such as emotional distress and depression. Thus, identifying self-efficacy is crucial to preventing and reducing depression in family caregivers of patients with stroke.

On the basis of the findings from our literature review, caring for patients with stroke experiencing functional impairments at home requires significant preparation as well as physical, psychological, and caring-related skills (e.g., providing ADL assistance and adjusting the home environment). Certain demographic characteristics of caregivers such as gender (Hu et al., 2018), age, caregiving time (Zhao et al., 2021), relationship to the patient with stroke (Roth et al., 2020), health status, and back pain status as well as the need to perform caregiving activities at night, the ADL status of care recipients (Byun et al., 2019), and the availability of walking aids for care recipients are known to influence the condition of caregiver, especially in terms of their physical ability to provide care. Furthermore, excessive physical activity has been shown to increase depression among caregivers (Zhao et al., 2021).

On the other hand, insufficient preparation of home caregivers before a patient’s hospital discharge increases the challenge for caregivers of mastering basic stroke care and managing their own needs (Lutz et al., 2017). Moreover, this challenge is particularly daunting when care recipients are
older adults or caregivers have no prior caregiving experience. Identifying a caregiver’s level of related knowledge and allowing their participation in discharge planning are activities that may help healthcare professionals improve caregiver stroke-care skills and prevent the negative effects of caregiving such as depression.

A previous study reported that spiritual values have a positive effect on reducing depression and promoting the ability of caregivers to cope with difficult life situations (Soósová & Mauer, 2021). Spirituality is defined as a person’s belief in a higher power that gives meaning and purpose to their life (Soósová & Mauer, 2021). Spiritual value has been recognized as a coping mechanism used by caregivers (Masuku & Khoza-Shangase, 2018) to, for example, encourage positive thoughts, promote hope in their patients, and control negative thoughts related to caregiving.

A comprehensive examination is needed to identify contradictory factors, overlooked factors, and cultural values related to demographic characteristics, self-efficacy, stroke care knowledge, and spiritual values in caregivers of patients with stroke in Indonesia. A comprehensive examination of depression factors is expected to provide valuable information to prevent and reduce caregiver depression.

Study Aims

This study was developed to identify factors affecting depression in Indonesian family caregivers of patients with stroke. Factors examined included demographic characteristics of both caregivers and patients with stroke; ADLs of patients with stroke; and the self-efficacy, stroke-care-related knowledge, and spiritual values of caregivers.

Methods

Design

A cross-sectional study was designed, and an anonymous and structured questionnaire was used to collect data during face-to-face interviews. The interview format was used to accommodate participants who lacked understanding of the questions or were illiterate.

Participants and Setting

The study was conducted at a public hospital in a rural district in East Java, Indonesia, with a population of approximately 740,000. Data were collected from March to May 2018 from caregivers who visited the outpatient clinic during the study period. The participant inclusion criteria were as follows: (a) a family member who provides care to patients with stroke at home, including assisting with ADLs; (b) a primary or secondary family member (spouse or child) who lives with the patient with stroke; (c) aged 20 years or older; and (d) the patient with stroke had been diagnosed using a computed tomography scan or in a clinical examination conducted by a neurologist. Patients with stroke whose family caregivers refused to participate were excluded from the study, as were caregivers with a cognitive impairment and/or a history of mental illness such as depression. Potential participants were referred to the researchers by outpatient clinic nurses. The power analysis for the sample size calculation was performed using G*Power Version 3 with power analysis results from a test family: t test and the statistical test—difference between two independent means (two groups). The effect size was 0.5 based on a medium effect size for the G*Power procedure (Faul et al., 2007). The G*Power results indicated that a total sample size of 176 family caregivers was required to ensure the reliability and validity of the results. One hundred eighty-six family caregivers were initially recruited based on the participant criteria, and 157 (84.4%) ultimately participated.

Measurements

Demographic characteristics

The demographic data gathered from family caregivers included age, gender, educational level, employment, relationship to the patient with stroke, type of family, health status, caring hours, back pain status, and caregiving knowledge. Dichotomous questions related to stroke care such as personal hygiene methods, changing position methods, and simple exercise were used to measure caregiver knowledge. The demographic information collected for the patients with stroke were age, gender, stroke type, current stroke status, stroke-related attack occurrences, stroke impairment, use of walking aids, bed type, and cooperation. To measure the main variables of depression, self-efficacy, spiritual value, perceived participation in discharge planning, and functional outcome, standard scales appropriate to the participants' background and conditions were selected and applied in this study.

Barthel index scale

ADL performance was measured using the Indonesian version of the 10-item Barthel Index (BI), originally developed by Shah et al. (1989), which is widely used in research and hospital settings (Nursiswati et al., 2020). A BI score of 10 indicates that the poststroke patient is “fully independent,” with 0 indicating “entirely dependent.” The maximum BI score is 100, with higher scores indicating a higher level of functional independence. The 10-item BI previously earned an alpha internal consistency coefficient of .94 (Byun et al., 2019) and exhibited good internal consistency (Cronbach’s α = .91) in this study.

Center for epidemiologic studies depression scale

Caregiver depression was measured using the Indonesian version of the CES-D-10, originally developed by Andresen et al. (1994), which is widely used in research (James et al., 2020). The CES-D-10 measures depression symptoms in family caregivers using a 3-point scoring system that ranges
from 0 (rarely) to 3 (all the time). The total score was obtained by calculating the sum of the 10 items, with a suggested cutoff point of 10, so that respondents with scores $\geq 10$ are considered depressed (Björgvinsson et al., 2013). The CES-D-10 earned an alpha internal consistency coefficient of .76 in a previous study (James et al., 2020) and showed acceptable internal consistency (Cronbach’s $\alpha = .77$) in this study.

**Revised scale for caregiving self-efficacy**

The self-efficacy of caregivers was measured using the Revised Scale for Caregiving Self-Efficacy (Steffen et al., 2002), which was translated from the English version to the Indonesian version by a professional translation service. The contents were then confirmed by one researcher and two qualified nurses in the field of stroke care who were native to Indonesia. No previous studies have reported an adaptation process for an Indonesian version of this scale. Therefore, before collecting data, we tested the face validity of this scale on 10 family caregivers who met the inclusion criteria. All of the 10 participants could understand and answer all of the questions on the scale. The Revised Scale for Caregiving Self-Efficacy is a 15-item questionnaire that assesses caregivers’ subjective beliefs about their ability to perform different caregiving activities. Caregivers rated the degree to which they were confident about performing each caregiving activity from 0 (could not do it at all) to 100 (certain they could do it). Three caregiving self-efficacy domains were assessed: (a) self-efficacy for obtaining respite, (b) responding to disruptive patient behavior, and (c) controlling upsetting thoughts about caregiving. The item scores in each domain were averaged to obtain subscale ratings ranging from 0 to 100. The Cronbach’s alpha scores for the subscales of the three domains were .86, .92, and .86, respectively, in a previous study (Grano et al., 2017) and were .69, .91, and .70, respectively, in this study.

**Relative’s questionnaire about participation in discharge planning**

Perceived stroke care participation by the family caregivers was measured using the Relative’s Questionnaire about Participation in Discharge Planning (R-QPD) scale, which was translated from the original English version to the Indonesian version by a professional translation service. Scale contents were then confirmed with one researcher and two qualified nurses in the field of stroke care who were native to Indonesia. No previous studies have reported an adaptation process for an Indonesian version of the R-QPD. Validity was tested in the same manner as the Revised Scale for Caregiving Self-Efficacy above. The relatives rated each item on a 4-point Likert scale, with 4 = Yes, to a great degree; 3 = Yes, to a certain degree; 2 = No, not especially; or 1 = “No, not at all. A mean value for each of the three factors (subscales) was calculated for each respondent’s completed questionnaire and then averaged to between 1 and 4 points, with a high mean subscale value indicating a high degree of perceived participation in the discharge planning process. The three factors identified in this scale included the relative’s information on the care and support/Factor 1 (four items), the relative’s information on the illness/Factor 2 (three items), and the relative’s information on the goals and needs/Factor 3 (three items). Internal consistencies calculated using Cronbach’s alpha were .81 for Factor 1, .72 for Factor 2, and .65 for Factor 3 (Almborg et al., 2009) in a previous study and .96, .69, and .92, respectively, in this study.

**Daily spiritual experience scale**

Caregivers’ spiritual values were measured using the Indonesian version of the Daily Spiritual Experience Scale, which is a 16-item self-report measure of spiritual experience. This scale was designed to measure ordinary or daily spiritual experiences and their influence on everyday life. The first 15 items were measured on a 6-point Likert-type scale (many times a day, every day, most days, some days, once in a while, and never or almost never), and Item 16 was measured on a 4-point scale (not close at all, somewhat close, very close, and as close as possible), with higher total scores indicating a higher state of spiritual experience. The Cronbach’s alpha for this scale was .90 (Underwood & Teresi, 2002) in a previous study and .82 in this study.

**Data Analysis**

Descriptive statistics were used to examine the participant characteristics and study variables. The Kolmogorov–Smirnov test was used to identify the distribution of the variables. Low and high ADL assistance times were divided using the mean score based on the distribution. The CES-D cutoff point was used to divide depression into two groups: depressed and not depressed. The chi-square test or Fisher’s exact test, the $t$ test, and the Mann–Whitney $U$ test were used to examine the significance of the variables based on distribution data. Significant variables were tested for multicollinearity (correlation $\geq .7$). Subsequently, all significant variables were entered into the logistic regression analysis. This step was performed using IBM SPSS Statistics Version 22 (IBM Inc., Armonk, NY, USA) to obtain the odds ratio, for which statistical significance was set at $p < .05$. The gender of caregivers was used as an adjustment variable in logistic regression, as many previous studies reported depression to be more prevalent in women (Albert, 2015; Hu et al., 2018).

**Ethical Considerations**

This study was conducted after receiving approval from the university medical ethics committee in Japan (Permission Number 825-1) and the regional hospital in East Java, Indonesia. Moreover, this study was executed in compliance with the Helsinki Declaration (2013.10, World Medical Association). Oral and written explanations were provided to caregivers and patients with stroke regarding the themes, objectives, measurements, and ethical considerations. The
family caregivers signed the consent form as their agreement to participate in this study. All of the participants were given the freedom to answer or not answer questions put to them by the researchers during the face-to-face interview.

**Results**

**Caregiver Characteristics**

Caregiver characteristics are shown in Table 1. There were 89 (56.7%) participants in the depression group and 68 (43.3%) in the depression-free group. The overall mean age of the caregivers was 43.6 years (SD = 12.4), with the depression and depression-free groups having mean ages of 42.9 (SD = 11.8) and 44.5 (13.2) years, respectively. One hundred three (65.6%) of the participants were female, and 79 (50.3%) were the spouses of the care recipient. The caregiving activity characteristics, presented in Table 1, show that 70 (44.6%) participants assisted patients with high ADL scores (more than 2.6 hours per day) and 78 (49.7%) performed caregiving activities at night and that the participants performed an average of 12.8 hours (SD = 4.5) of caregiving per day. The mean total score for the Daily Spiritual Experience Scale was 73.66 (SD = 7.98), and the five variables of gender (p = .002), back pain (p < .001), time spent providing ADL assistance (p < .001), waking up at night (p < .001), and caregiving time (p < .001) were found to be related to caregiver depression. In addition, the three caregiving self-efficacy subscales were found to be significantly associated with caregiver depression (p < .001, p = .001, and p < .001, respectively). In addition, the information on goals and needs on the R-QPD subscale was found to be significantly associated with caregiver depression.

As shown in Table 2, 133 participants (84.7%) had received medication management education, whereas 110 (70.1%) had not received comprehensive care education from nurses or other healthcare professionals. However, education was not found to be significantly associated with depression.

**Characteristics of the Patients With Stroke**

The characteristics of the patients with stroke in this study are presented in Table 3. The overall mean age was 57.1 years (SD = 9.1), and the mean ages in the depression and depression-free groups were 57.9 (SD = 8.9) and 55.7 (SD = 8.8) years, respectively. Eighty-four (53.5%) of the patients with stroke were male, 121 (77.1%) had experienced their first stroke, 74 (47.1%) had experienced an ischemic stroke, and 78 (49.7) had a stroke-related attack occurrence within the previous 12 weeks. The mean total BI (functional outcome) score was 73.5 (SD = 26.2). Patient-with-stroke gender (p = .026), stroke-related attack occurrence (p < .001), use of a walking aid (p = .001), and functional outcomes (p < .001) were all shown to be significantly associated with caregiver depression.

**Caregiver Depression Factors**

The results of the logistic regression analysis are shown in Table 4. It was found that (a) caregivers who cared for male patients with stroke were 5.7 times more likely (95% CI [1.74, 18.47]) to be depressed than those caring for female patients with stroke; (b) caregivers who experienced back pain were 4.5 times more likely (95% CI [1.62, 12.26]) to be depressed than those who did not; (c) caregivers caring for a patient in the early phase of their stroke-related attack occurrence were 4.2 times more likely (95% CI [1.39, 12.56]) to be depressed than family caregivers who were caring for a patient with a stroke-related attack occurrence in the chronic phase; (d) caregivers with long caregiving time durations (> 12 hours) were 3.3 times more likely (95% CI [1.05, 10.34]) to be depressed than family caregivers with less than 12 hours; and (e) caregivers with the self-efficacy to obtain respite were 0.97 times less likely (95% CI [0.94, 1.0]) to be depressed, whereas caregivers with low self-efficacy in controlling upsetting thoughts were 1.03 times more likely (95% CI [1.01, 1.06]) to be depressed.

**Discussion**

**Caregiver Depression Factors**

Caregiver depression was found in this study to be associated with gender, lack of support, lack of facilities for providing home care, physical overload related to caregiving activities, and low caregiving self-efficacy.

**Gender and caregiver depression**

More than half of the female caregivers (65.6%) experienced depression. Moreover, caregivers who provided care to male patients with stroke were 5.7 times more likely to be depressed than their peers who provided care to female patients with stroke. Female caregivers caring for male patients with stroke were shown to be at the highest risk of depression. One possible reason for these findings relates to female hormonal changes after premenstrual and menopausal transition, with the associated decrease in estrogen potentially enhancing depression risk (Albert, 2015) and impairing mood and behavior regulation abilities (Wharton et al., 2012). The average age of caregivers was 43.6 years, indicating that many of the female caregivers may have been experiencing perimenopause. A second possible reason is that the male patients in this study had higher BMIs than the female patients (Zhang et al., 2019). More than 50% of the patients with stroke had hemiparesis as a result of their first stroke, which means that many of the female caregivers were assisting physically dependent male patients with stroke to perform their ADLs, potentially leading caregivers to experience physical overload.
Table 1
Characteristics of Caregivers, by Depression-Status Group

| Variable                  | Total (N = 157) | Depression-Free Group (n = 68) | Depression Group (n = 89) | \( \chi^2 \) | p     |
|---------------------------|----------------|------------------------------|--------------------------|------------|-------|
|                           | n              | %                           | n                        | %          |       |
| Gender                    |                |                              |                          |            |       |
| Female                    | 103            | 65.6                        | 35                       | 34.0       | 68    | 66.0  |
| Male                      | 54             | 34.4                        | 33                       | 61.1       | 21    | 38.9  |
| Educational level         |                |                              |                          |            |       |
| Below high school         | 76             | 48.4                        | 31                       | 40.8       | 45    | 59.2  |
| High school               | 52             | 33.1                        | 19                       | 36.5       | 33    | 63.5  |
| Above high school         | 29             | 18.5                        | 18                       | 62.1       | 11    | 37.9  |
| Employment                |                |                              |                          |            |       |
| Regular                   | 33             | 21.0                        | 17                       | 51.5       | 16    | 48.5  |
| Temporary                 | 17             | 10.8                        | 7                        | 41.2       | 10    | 58.8  |
| Self-employed             | 58             | 37.0                        | 22                       | 37.9       | 36    | 62.1  |
| Unemployed                | 49             | 31.2                        | 22                       | 44.9       | 27    | 55.1  |
| Marital status            |                |                              |                          |            |       |
| Single                    | 10             | 6.4                         | 6                        | 60.0       | 4     | 40.0  |
| Married                   | 142            | 90.4                        | 61                       | 43.0       | 81    | 57.0  |
| Other                     | 5              | 3.2                         | 1                        | 20.0       | 4     | 80.0  |
| Relationship              |                |                              |                          |            |       |
| Parent                    | 78             | 49.7                        | 31                       | 39.7       | 47    | 60.3  |
| Spouse                    | 79             | 50.3                        | 37                       | 46.8       | 42    | 53.2  |
| Type of family            |                |                              |                          |            |       |
| Extended family           | 90             | 57.3                        | 34                       | 37.8       | 56    | 62.2  |
| Nuclear family            | 67             | 42.7                        | 34                       | 50.7       | 33    | 49.3  |
| Current health status     |                |                              |                          |            |       |
| Slightly poor             | 4              | 2.6                         | 2                        | 50.0       | 2     | 50.0  |
| Slightly good             | 39             | 24.8                        | 12                       | 30.8       | 27    | 69.2  |
| Good                      | 100            | 63.7                        | 48                       | 48.0       | 52    | 52.0  |
| Very good                 | 14             | 8.9                         | 6                        | 42.9       | 8     | 57.1  |
| Back pain                 |                |                              |                          |            |       |
| Yes                       | 92             | 58.6                        | 24                       | 26.1       | 68    | 73.9  |
| No                        | 66             | 41.4                        | 44                       | 67.7       | 21    | 32.3  |
| Time spent providing ADL assistance |            |                              |                          |            |       |
| Low ADLs                  | 87             | 55.4                        | 57                       | 65.5       | 30    | 34.5  |
| High ADLs                 | 70             | 44.6                        | 11                       | 15.7       | 59    | 84.3  |
| Frequency of waking at night |                |                              |                          |            |       |
| None                      | 79             | 50.3                        | 46                       | 58.2       | 33    | 41.8  |
| Waking up                 | 78             | 49.7                        | 22                       | 28.2       | 56    | 71.8  |
| Caregiving time (hours)   |                |                              |                          |            |       |
| Low                       | 64             | 40.8                        | 43                       | 67.2       | 21    | 32.8  |
| High                      | 93             | 59.2                        | 25                       | 32.8       | 68    | 73.1  |

| Variable                        | M    | SD   | M    | SD   | M    | SD   | p     |
|---------------------------------|------|------|------|------|------|------|-------|
| Caregiving self-efficacy        |      |      |      |      |      |      |       |
| Obtaining respite               | 67.18| 20.67| 75.41| 17.12| 60.89| 21.03| <.001 |
| Responding to disruptive behavior | 70.02| 19.15| 75.11| 18.85| 66.13| 18.55| .001  |
| Controlling upsetting thoughts | 41.92| 24.00| 31.64| 18.95| 49.77| 24.57| <.001 |
| R-QPD of caregivers             |      |      |      |      |      |      |       |
| R-Information on illness        | 2.91 | 0.71 | 2.93 | 0.75 | 2.90 | 0.68 | .572  |
| R-Information on care/support  | 2.68 | 0.61 | 2.75 | 0.64 | 2.62 | 0.59 | .102  |
| R-Goals and needs              | 2.39 | 0.84 | 2.58 | 0.86 | 2.25 | 0.78 | .009  |
| DSES of caregivers              | 73.66| 7.98 | 74.26| 6.17 | 73.21| 9.13 | .443  |

Note. A chi-square test was used to analyze the categorical data, whereas the Mann–Whitney U test analyzed the continuous data. Time spent providing ADL assistance was divided into two categories based on the mean value from the total time for ADLs; the caregiving time (hours) was divided into two categories based on the median value from the total caregiving time; bold values indicate statistical significance. ADL = activities of daily living; R-QPD = Relative’s Questionnaire about Participation in Discharge Planning; DSES = Daily Spiritual Experience Scale.
| Variable | Total \( (N = 157) \) | Depression-Free Group \( (n = 68) \) | Depression Group \( (n = 89) \) | \( \chi^2 \) | \( p \) |
|----------|-----------------|-----------------|-----------------|----------|----------|
| Received knowledge on stroke care | | | | | |
| Yes | 47 (29.9) | 26 (55.3) | 21 (44.7) | 3.272 | .070 |
| No | 110 (70.1) | 42 (38.2) | 68 (61.8) | | |
| Type of knowledge | | | | | |
| Methods for personal hygiene | | | | | |
| Yes | 19 (12.1) | 7 (36.8) | 12 (63.2) | 0.130 | .719 |
| No | 138 (87.9) | 61 (44.2) | 77 (55.8) | | |
| Methods for preventing loss of bladder and bowel functions | | | | | |
| Yes | 11 (7.0) | 5 (45.5) | 6 (54.5) | 0.000 | 1.000 |
| No | 146 (93.0) | 63 (43.2) | 83 (56.8) | | |
| Transfer methods | | | | | |
| Yes | 23 (14.6) | 8 (34.8) | 15 (65.2) | 0.443 | .506 |
| No | 134 (85.4) | 60 (44.8) | 74 (55.2) | | |
| Feeding methods | | | | | |
| Yes | 25 (15.9) | 7 (28.0) | 18 (72.0) | 2.146 | .143 |
| No | 132 (84.1) | 61 (46.2) | 71 (53.8) | | |
| Preparing food to limit salt intake for hypertension | | | | | |
| Yes | 118 (75.2) | 49 (41.5) | 69 (58.5) | 0.359 | .549 |
| No | 39 (24.8) | 19 (48.7) | 20 (51.3) | | |
| Preparing food to limit sugar intake for diabetes mellitus | | | | | |
| Yes | 29 (18.5) | 10 (34.5) | 19 (65.5) | 0.731 | .392 |
| No | 128 (81.5) | 58 (45.3) | 70 (54.7) | | |
| Simple exercise methods | | | | | |
| Yes | 110 (70.1) | 45 (40.9) | 65 (59.1) | 0.568 | .451 |
| No | 47 (29.9) | 23 (48.9) | 24 (51.1) | | |
| Methods for changing positions to prevent ulcer decubitus | | | | | |
| Yes | 16 (10.2) | 3 (18.8) | 13 (81.3) | 3.335 | .068 |
| No | 141 (89.8) | 65 (46.1) | 76 (53.9) | | |
| Preventing skin irritation because of diaper use | | | | | |
| Yes | 15 (9.5) | 5 (33.3) | 10 (66.7) | 0.298 | .585 |
| No | 142 (90.5) | 63 (44.4) | 79 (55.6) | | |
| Managing medications | | | | | |
| Yes | 133 (84.7) | 55 (41.4) | 78 (58.6) | 0.888 | .346 |
| No | 24 (15.3) | 13 (54.2) | 11 (45.8) | | |
| Management of falls and prevention | | | | | |
| Yes | 24 (15.3) | 11 (45.8) | 13 (54.2) | 0.002 | .962 |
| No | 133 (84.7) | 57 (42.9) | 76 (57.1) | | |
| Symptoms of caregiver depression | | | | | |
| Yes | 30 (19.1) | 13 (43.3) | 17 (56.7) | 0.000 | 1.000 |
| No | 127 (80.9) | 55 (43.3) | 72 (56.7) | | |
| Preventing caregiver depression | | | | | |
| Yes | 9 (5.7) | 5 (55.6) | 4 (44.4) | 0.174 | .677 |
| No | 148 (94.3) | 63 (42.6) | 85 (57.4) | | |
| Methods and strategies for coping | | | | | |
| Yes | 7 (4.5) | 4 (57.1) | 3 (42.9) | 0.133 | .715 |
| No | 150 (95.5) | 64 (42.7) | 86 (57.3) | | |
| Information or advice needed for caregiving activities | | | | | |
| Stroke disease | 13 (8.3) | 4 (30.8) | 9 (69.2) | 0.473 | .509 |
| Home care | 144 (91.7) | 64 (44.4) | 80 (55.6) | | |
Support, physical overload, and caregiver knowledge and depression

Lack of support and facilities for caregivers in the early phase after a stroke was found to be related to depression. Caregivers caring for patients in the early phase were found to be 4.2 times more likely to be depressed than those dealing with patients in the chronic stroke phase. Moreover, physical overload factors such as length of caregiving time, frequency of waking up at night, high degree of ADL assistance needed, and needing to assist patients with stroke with limited walking abilities were found to be related to caregiver depression. Caregivers who provided daily caregiving for more than 12 hours were 3.3 times more likely to be depressed than those who provided care for less than 12 hours. Depression was found in 71.8% of the participants who needed to wake up at night, 84.3% of those who provided a high degree of ADL assistance, and 58.5% of those who provided care to patients with walking difficulties. In addition, nearly 80% of the participants who provided care to a patient with stroke in need of walking aids but lacking such aids were depressed. Therefore, as the physical overload from caregiving activities increased caregiver burden and caring hours, these caregivers were more likely to experience physical health disorders such as back pain. Notably, the participants who experienced back pain were found to be 4.5 times more likely to be depressed than those who did not. The findings of this study were consistent with those of previous studies that reported back pain to increase the risk of depression (Amiri et al., 2020) and studies that found that people with chronic lower back pain and depression experience more-severe back pain (Tsuji et al., 2016). The correlation between physical overload, back pain, and depression may create a cycle that is difficult to break.

Knowledge, skills, and social support are required to deal with physical care in the process of caring for patients with stroke. Approximately 70% of the participants stated that they lacked knowledge regarding stroke care, which would indirectly affect their ability to provide effective care. In addition, caregivers perceived that they lacked participation in the discharge planning process, especially in terms of goal setting and identifying patient needs. Adequate information and support related to the needs of caregivers of patients with stroke are required for home care (Kable et al., 2018). Family caregivers who have difficulty accessing day-care services or social support play central roles in providing care to patients with stroke at home. Caregivers require sufficient knowledge regarding stroke care to perform nursing tasks such as assisting with ADLs and maintaining and improving the physical ability of patients with stroke during home care. Lack of knowledge regarding stroke care may cause a lack of confidence in the skills needed to provide care. In turn, the physical ability of a patient with stroke may decline and disuse syndrome may occur more quickly. Therefore, promoting family-centered support in stroke care (Torregosa et al., 2018) and providing knowledge on stroke care and depression to family caregivers should be included in the standard guidelines for stroke rehabilitation (Yu et al., 2019). Furthermore, providing coping strategies to caregivers to adapt to their roles and maintain their quality of life as individuals may prevent the development of depression.

Self-efficacy and caregiver depression

Caregivers who lack stroke caregiving knowledge or skills may feel unsure about how to provide the best care, which may lead to low self-efficacy. It has been suggested that self-efficacy has a reciprocal cause-and-effect correlation with caregiver depression (Gilliam & Steffen, 2006). Bandura (2002) stated that a low sense of self-efficacy may adversely affect psychosocial functioning and promote emotional distress and depression. Consequently, caregivers of persons with dementia with higher self-efficacy are less depressed than those with lower self-efficacy (Jennings et al., 2015). The findings of this study show that the influence of self-efficacy on obtaining respite earned an odds ratio less than 1.0 (OR = 0.970). This result indicates that having more respite time reduces the risk of depression in caregivers. A similar finding was obtained in a study on caregivers of patients with dementia, with caregivers with higher self-efficacy for obtaining respite showing lower levels of depression (Márquez-González et al., 2009). Almost half of the participants in this study provided multiple hours of assistance to patients related to their ADLs and performed caregiving activities at

Table 2

| Variable | Total (N = 157) | Depression-Free Group (n = 88) | Depression Group (n = 89) | χ² | p |
|----------|----------------|--------------------------------|--------------------------|----|---|
|          | n | % | n | % | n | % |   |    |
| Depression symptoms caused by caregiving activities |   |   |   |    |   |   |   |    |
| I do not know | 105 | 66.9 | 48 | 45.7 | 57 | 54.3 | 1.712 | .425 |
| I know, incorrect answer | 33 | 21.0 | 11 | 33.3 | 22 | 66.7 |
| I know, correct answer | 19 | 12.1 | 9 | 47.4 | 10 | 52.6 |

Note: A chi-square test was used to analyze the data.
night. In addition, nearly 60% performed an average of 12.8 hours of caregiving per day. The average caregiving hours found in this study were consistent with the finding of a previous study (13.0 hours/day; Zhao et al., 2021). Long care hours may reduce the time available to caregivers for personal activities such as sleep and leisure, thus rendering them more prone to depression (Hu et al., 2018). One effective way to prevent and reduce caregiver depression is to enhance self-efficacy for obtaining respite time.

### Table 3

**Characteristics of Stroke Patients, by Depression-Status Group**

| Variable                        | Total (N = 157) | Depression-Free Group (n = 68) | Depression Group (n = 89) | χ² | p   |
|---------------------------------|----------------|--------------------------------|--------------------------|----|-----|
|                                | n   | %   | n   | %   | n   | %   |    |     |
| Gender                          |     |     |     |     |     |     |    |     |
| Female                          | 73  | 46.5| 39  | 53.4| 34  | 46.6| 4.939| .026|
| Male                            | 84  | 53.5| 29  | 34.5| 55  | 65.5|     |     |
| Type of stroke                  |     |     |     |     |     |     |    |     |
| Hemorrhagic stroke              | 6   | 3.8 | 3   | 50.0| 3   | 50.0| 1.969| .374|
| Ischemic stroke                 | 74  | 47.1| 36  | 48.6| 38  | 51.4|     |     |
| Do not know the type of stroke  | 77  | 49.1| 29  | 37.7| 48  | 62.3|     |     |
| Current stroke status           |     |     |     |     |     |     |    |     |
| First stroke                    | 121 | 77.1| 49  | 40.5| 72  | 59.5| 1.241| .265|
| Recurrent stroke                | 36  | 22.9| 19  | 52.8| 17  | 47.2|     |     |
| Stroke attack occurrence        |     |     |     |     |     |     |    |     |
| Equal to or more than 12 weeks  | 79  | 50.3| 47  | 59.5| 32  | 40.5| 15.657| < .001|
| Less than 12 weeks              | 78  | 49.7| 21  | 26.9| 57  | 73.1|     |     |
| Speech difficulties             |     |     |     |     |     |     |    |     |
| Yes                             | 55  | 35.0| 21  | 38.2| 34  | 61.8| 0.614| .433|
| No                              | 102 | 65.0| 47  | 61.8| 55  | 53.9|     |     |
| Vision impairment               |     |     |     |     |     |     |    |     |
| Yes                             | 8   | 5.1 | 5   | 62.5| 3   | 37.5| 0.575| .448|
| No                              | 149 | 94.9| 63  | 37.5| 86  | 62.5|     |     |
| Right-sided hemiparesis         |     |     |     |     |     |     |    |     |
| Yes                             | 75  | 47.8| 33  | 44.0| 42  | 56.0| 0.000| .996|
| No                              | 82  | 52.2| 35  | 56.0| 47  | 44.0|     |     |
| Left-sided hemiparesis          |     |     |     |     |     |     |    |     |
| Yes                             | 58  | 36.9| 23  | 39.7| 35  | 60.3| 0.293| .589|
| No                              | 99  | 63.1| 45  | 60.3| 54  | 39.7|     |     |
| Other impairments               |     |     |     |     |     |     |    |     |
| Yes                             | 28  | 17.8| 11  | 39.3| 17  | 60.7| 0.070| .792|
| No                              | 129 | 82.2| 57  | 60.7| 72  | 39.3|     |     |
| Type of bed used by patient     |     |     |     |     |     |     |    |     |
| Sleigh bed                      | 141 | 89.8| 63  | 44.7| 78  | 55.3| 0.580| .446|
| Mattress only                   | 16  | 10.2| 5   | 31.3| 11  | 44.7|     |     |
| Walking aids                    |     |     |     |     |     |     |    |     |
| Not using walking aid           | 69  | 43.9| 40  | 50.0| 29  | 40.0| 13.682| .001|
| Do not have walking aid         | 47  | 29.9| 11  | 23.4| 36  | 46.7|     |     |
| Using walking aid               | 41  | 26.2| 17  | 26.6| 24  | 53.3|     |     |
| Patient cooperation             |     |     |     |     |     |     |    |     |
| Uncooperative                   | 34  | 21.7| 12  | 35.3| 22  | 64.7| 0.758| .384|
| Cooperative                     | 123 | 78.3| 56  | 64.7| 67  | 35.3|     |     |
| BI score for stroke patients (M and SD) | 73.53 | 26.20 | 84.63 | 14.89 | 65.05 | 29.68 | < .001 |     |

Note. A chi-square test was used to analyze the categorical data, whereas the continuous data were determined using the Mann Whitney U test. Stroke attack occurrence was divided into two categories based on the median value from the total time for stroke attack occurrence. Bold values indicate statistical significance. BI = Barthel index.
to caregivers may improve their ability to obtain respite time. Providing care to patients with stroke at home should be divided among and involve all family members so that the care role is not carried out exclusively by female family members. In Indonesian culture, family members, especially women, traditionally play a greater role in caring for family members who are sick (Kristanti et al., 2019). Two thirds (65.6%) of the caregivers in this study were female. This result is consistent with findings from other Asian countries that reported most caregivers as female (Long et al., 2019). It is difficult to change this caregiving cultural norm because Indonesia is a country with great geographical diversity and various conditions for providing care to patients with stroke. However, caregivers in urban settings have shown a gradual change toward sharing caregiving responsibilities because of the greater availability of facilities to provide care for patients with stroke. In addition, lack of social support, such as caregiver counseling, is a main challenge that must be overcome in Indonesia. Providing access to counseling and a supportive environment (including stroke rehabilitation facilities and other social support) may help reduce the number of care hours required.

Conversely, we found that low self-efficacy for controlling upsetting thoughts earned an odds ratio of 1.03, indicating that the risk of being depressed increased by 3% as the self-efficacy of caregivers in controlling upsetting thoughts declined. The mean value of self-efficacy in controlling upsetting thoughts between the depressed and nondepressed groups was lower than the cutoff point of 50. The lack of resources to improve the self-efficacy beliefs of caregivers may influence this finding. Bandura (2002) stated that accomplishment experiences, vicarious experiences, social persuasion, and physical and emotional states all influence self-efficacy. However, the participants in this study were new caregivers with little or no prior caregiving experience.

### Spiritual value and caregiver depression

A previous study reported higher spiritual experience frequencies to be associated with lower levels of depression (Soósová & Mauer, 2021). However, no significant association between caregiver depression and spiritual values was found in this study. Although caregiving is burdensome, the acceptance of this burden among the participants in this study (most of whom were Muslims) may have been positively influenced by spiritual values. A previous study reported that caregivers of Muslim patients believed that caring for patients with stroke is one of God’s plans for their lives and that they should accept it (Ramazanu et al., 2020). Spiritual values may help individuals cope better with their circumstances (Chafjiri et al., 2017). In this study, the participants provided care for patients with stroke for an average of 12.8 hours a day. Moreover, they faced the limitations in care services that complicated their roles as home caregivers. Long care hours and feelings of obligation may result in physical, psychological, and emotional exhaustion.

### Table 4

**Logistic Regression Analysis for Family Caregiver Depression Factors**

| Variable                                      | Adjusted |          |          | Unadjusted |          |          |
|-----------------------------------------------|----------|----------|----------|------------|----------|----------|
|                                               | p        | OR       | 95% CI   | p          | OR       | 95% CI   |
| Gender of caregiver                           | .485     | .7       | .22      | 2.07       | .485     | .7       | .22      | 2.07       |
| Caring hours                                  | .040     | 3.3      | 1.05     | 10.34      | .040     | 3.3      | 1.05     | 10.34      |
| Back pain                                     | .004     | 4.5      | 1.62     | 12.26      | .004     | 4.5      | 1.62     | 12.26      |
| ADL assistance time                           | .156     | 2.6      | 0.70     | 9.65       | .156     | 2.6      | 0.70     | 9.65       |
| Waking up at night to provide caregiving      | .726     | 0.8      | 0.27     | 2.53       | .726     | 0.8      | 0.27     | 2.53       |
| SE for obtaining respite                      | .034     | 1.0      | 0.94     | 1.00       | .034     | 1.0      | 0.94     | 1.00       |
| SE for responding to disruptive patient behavior | .067   | 1.0      | 0.95     | 1.00       | .067     | 1.0      | 0.95     | 1.00       |
| SE for controlling upsetting thoughts         | .005     | 1.0      | 1.01     | 1.06       | .005     | 1.0      | 1.01     | 1.06       |
| Subscale R-QPD of information goals and needs | .102     | 0.6      | 0.33     | 1.10       | .102     | 0.6      | 0.33     | 1.10       |
| Gender of patients with stroke                | .004     | 5.7      | 1.74     | 18.47      | .004     | 5.7      | 1.74     | 18.47      |
| Stroke attack occurrence                      | .011     | 4.2      | 1.39     | 12.56      | .011     | 4.2      | 1.39     | 12.56      |
| Functional outcome                            | .977     | 1.0      | 0.97     | 1.03       | .977     | 1.0      | 0.97     | 1.03       |
| Walking aids                                  | .493     | .539     |          |            |          |          |
| Using walking aid                             | .624     | 1.4      | 0.39     | 4.76       | .624     | 1.4      | 0.39     | 4.76       |
| Do not have walking aids                      | .234     | 2.4      | 0.57     | 10.35      | .234     | 2.4      | 0.57     | 10.35      |

Note. Gender of caregiver is the adjustment variable; functional outcome: Barthel index score of persons with stroke. Bold values indicate statistical significance. CI = confidence interval; LL = lower limit; UL = upper limit; ADL = activity of daily living; SE = self-efficacy; R-QPD = Relative’s Questionnaire about Participation in Discharge Planning.
Caregivers do not have adequate time to care for themselves or to handle their other family responsibilities. Furthermore, in Indonesia, living with family members who require care such as patients with stroke is perceived as a cultural and religious matter. In this study, more than half of the family structures were extended families. The participants felt largely proud of their contributions despite the heavy burden. The ambivalence between negative and positive feelings in caregivers may influence their psychological status, which includes depression status. One previous study reported that negative feelings regarding caregiving were associated with depression in caregivers of patients with stroke, whereas positive feelings were not (Chen et al., 2022). Therefore, an association between caregiver depression and spiritual values was not found in this study. Spiritual values among caregivers in this study may not be sufficient to help them cope with their regular caregiving and other activities.

Implications for Clinical Practice
In the initial month after a stroke, novice caregivers face many new challenges such as feelings of sadness, anxiety, not wanting to care, difficulty adjusting to caring hours, and a lack of knowledge and skills necessary to care for a patient with stroke. These challenges may influence their willingness and self-efficacy. Previous studies have reported that some caregivers refuse to participate in caregiving-related activities such as training (Ramazanu et al., 2020) and face difficulties in balancing caring responsibilities with other regular responsibilities (Ramazanu et al., 2020; Wang et al., 2020). Nurses, as educators and mediators, may observe and intervene to help caregivers overcome common challenges. In the inpatient unit, nurses may create sustainable discharge plans that motivate caregivers to accept their new role, make them willing to learn to care for patients before discharge, and educate them on ways to effectively balance caring responsibilities with other daily activities. In addition, discharge plans should focus not only on stroke care but also on the mental health of caregivers. To reduce depression among caregivers, nurses may provide knowledge regarding coordinating care tasks with other family members to ensure adequate respite time. Furthermore, ADL assistance skills should be improved. Promoting home exercises to prevent declines in physical ability in patients with stroke may create a supportive environment for both patients and their caregivers. In outpatient units, nurses are often the first persons to identify caregivers at a heightened risk of depression and may be in the best position to implement initial and follow-up counseling strategies. Furthermore, nurses may assist caregivers who show signs of severe depression to arrange psychologist or psychiatrist consultations.

Limitations
This study has several limitations. First, it was conducted in one area of East Java, Indonesia, and used a nonprobability sampling approach, which likely limits the generalizability of the findings. Second, as this was a cross-sectional study, the causal direction between factors could not be inferred, and some of the caregivers may have had symptoms of depression before caring for their patient. Third, a Hawthorne effect may have introduced bias, as this study collected data using face-to-face interviews.

Conclusions
This study generated several important findings. First, in the early poststroke phase of providing care to patients with stroke, the incidence of caregiver depression was found to be higher in female caregivers with back pain and who worked long care hours. Second, being able to obtain respite time was found to reduce depression risk in caregivers, indicating that nurses and healthcare professionals should enhance and maintain caregivers’ health conditions to prevent or reduce depression and its symptoms. Third, providing caregivers with knowledge and skills related to stroke care, particularly regarding providing ADL assistance to their patients, may help prevent caregiving-related back pain. In conclusion, increasing respite time, improving self-coping strategies, and increasing the availability of support facilities are important strategies for enabling caregivers to avoid providing excessive hours of care and to maintain quality of life.

Acknowledgments
This study was financially supported by the Research Foundation of Kanazawa University. We would like to acknowledge our participants, the chief of the neurology outpatient clinic, and the nursing staff at the public hospital in East Java, Indonesia.

Author Contributions
Study conception and design: WF, MK, MS, YT
Data collection: WF
Data analysis and interpretation: WF, MK, HT
Drafting of the article: WF, MK
Critical revision of the article: MF, MK

Received: March 19, 2021; Accepted: August 31, 2021.
*Address correspondence to: Wahyuni FAUZIAH, MHS, RN, Tsuruma Campus 5-11-8 Kodatsuno, National University Corporation, Kanazawa City, Ishikawa Prefectural 920-9420, Japan. E-mail: wahyuni.fauziah83@yahoo.com
The authors declare no conflicts of interest.

Cite this article as:
Fauziah, W., Kato, M., Shogenji, M., Tsujiguchi, H., & Taniguchi, Y. (2022). Factors associated with depression among family caregivers of patients with stroke in Indonesia: A cross-sectional study. The Journal of Nursing Research, 30(5), Article e231. https://doi.org/10.1097/jnr.0000000000000515

References
Albert, P. R. (2015). Why is depression more prevalent in women? Journal of Psychiatry and Neuroscience, 40(4), 219–221. https://doi.org/10.1503/jpn.150205
Fauziah, W., Kato, M., & Irwan, A. M. (2019). Contradiction, similarity, and uncovered factors of depression among post-stroke family caregivers. The Journal of Nursing Research, 10169(1), 79–88. https://doi.org/10.1017/S1041610218001263

Amiri, S., Behnezhad, S., & Azad, E. (2020). Back pain and depressive symptoms: A systematic review and meta-analysis. The International Journal of Psychology in Medicine Advance online publication, Article, 91217420913001. https://doi.org/10.1007/014169-3977

Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. American Journal of Preventive Medicine, 10(2), 77–84. https://doi.org/10.1016/S0749-3797(18)30622-6

Bandura, A. (2002). Self-efficacy in changing societies. Cambridge University Press.

Björgvinsson, T., Kertz, S. J., Bigda-Peyton, J. S., McCoy, K. L., & Aderka, I. M. (2013). Psychometric properties of the CES-D-10 in a psychiatric sample. Assessment, 20(4), 429–436. https://doi.org/10.1177/10731911134381998

Byun, E., Evans, L., Sommers, M., Tkacs, N., & Riegel, B. (2019). Depressive symptoms in caregivers immediately after stroke. Topics in Stroke Rehabilitation, 26(3), 187–194. https://doi.org/10.1080/10749357.2019.1590950

Chafjiri, R. T., Navabi, N., Shamsalinia, A., & Ghaffari, F. (2017). The relationship between the spiritual attitude of the family caregivers of older patients with stroke and their burden. Clinical Interventions in Aging, 12, 453–458. https://doi.org/10.2147/CIA.S121285

Chen, K., Lou, V. W. Q., Cheng, C. Y. M., Lum, T. Y. S., & Tang, J. Y. M. (2022). Family caregiver’s positive, negative, and ambivalent feelings towards stroke survivors: Association with psychological well-being. Applied Research Quality Life, 17, 169–183. https://doi.org/10.1007/s11482-020-09886-3

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods, 39(2), 175–191. https://doi.org/10.3758/BF03193416

Fauziah, W., Kato, M., & Irwan, A. M. (2019). Contradiction, similarity, and uncovered factors of depression among post-stroke patients family-caregivers. International Journal of Caring Sciences, 12(3), 1380–1401.

Freytes, I. M., Sullivan, M., Schmitzberger, M., LeLaurin, J., Orozco, T., Eliazar-Macke, N., & Uphold, C. (2020). Types of stroke-related deficits and their impact on family caregiver’s depressive symptoms, burden, and quality of life. Disability and Health Journal, 14(2), Article 101019. https://doi.org/10.1016/j.dhjo.2020.101019

Giannelli, F. R. (2020). Major depressive disorder. Journal of the American Academy of Physician Assistants, 33(4), 19–20. https://doi.org/10.1097/01.JAA.0000657208.70820.ab

Gilliam, C. M., & Steffen, A. M. (2006). The relationship between caregiving self-efficacy and depressive symptoms in dementia family caregivers. Aging and Mental Health, 10(2), 79–86. https://doi.org/10.1080/13607860500310658

Grano, C., Lucidi, F., & Violani, C. (2017). The relationship between caregiving self-efficacy and depressive symptoms in family caregivers of patients with Alzheimer disease: A longitudinal study. International Psychogeriatrics, 29(7), 1095–1103. https://doi.org/10.1017/S1041610217000569

Hu, P., Yang, Q., Kong, L., Hu, L., & Zeng, L. (2018). Relationship between the anxiety/depression and care burden of the major caregiver of stroke patients. Medicine, 57(40), Article e12638. https://doi.org/10.1097/MD.0000000000012636

James, C., Powell, M., Seixas, A., Bateman, A., Pengpid, S., & Peltzer, K. (2020). Exploring the psychometric properties of the CES-D-10 and its practicality in detecting depressive symptomatology in 27 low- and middle-income countries. International Journal of Psychology, 55(3), 435–445. https://doi.org/10.1002/ijop.12613

Jennings, L. A., Reuben, D. B., Evertson, L. C., Serrano, K. S., Ercoli, L., Grill, J., Chodosh, J., Tan, Z., & Wenger, N. S. (2015). Unmet needs of caregivers of individuals referred to a dementia care program. Journal of the American Geriatrics Society, 63(2), 282–289. https://doi.org/10.1111/jgs.13251

Kable, A., Pond, D., Baker, A., Turner, A., & Levi, C. (2018). Evaluation of discharge documentation after hospitalization for stroke patients discharged home in Australia: A cross-sectional, pilot study. Nursing & Health Sciences, 20(1), 24–30. https://doi.org/10.1111/nhs.12368

Kristanti, M. S., Effendy, C., Utarini, A., Vernoij-Dassen, M., & Engels, Y. (2019). The experience of family caregivers of patients with cancer in an Asian country: A grounded theory approach. Palliative Medicine, 33(6), 676–684. https://doi.org/10.1016/j.pallmed.2016.12.026

Long, N. X., Pinyopasakul, W., Pongthavornkamol, K., & Panitrat, R. (2019). Factors predicting the health status of caregivers of stroke survivors: A cross-sectional study. Nursing & Health Sciences, 21(2), 262–268. https://doi.org/10.1111/nhs.12591

Lutz, B. J., Young, M. E., Creasy, K. R., Martz, C., Eisenbrandt, L., Brunny, J. N., & Cook, C. (2017). Improving stroke caregiver readiness for transition from inpatient rehabilitation to home. The Gerontologist, 57(5), 880–889. https://doi.org/10.1093/geront/gnw135

Malhi, G. S., & Mann, J. J. (2018). Depression. The Lancet, 392(10161), 2299–2312. https://doi.org/10.1016/S0140-6736(18)31948-2

Márquez-González, M., Losada, A., López, J., & Peñacoba, C. (2009). Reliability and validity of the Spanish version of the revised scale for caregiving self-efficacy. Clinical Gerontologist, 32(4), 347–357. https://doi.org/10.1080/07317110903110419

Masuku, K. P., & Khoza-Shangase, K. (2018). Spirituality as a coping mechanism for family caregivers of persons with aphasia. Journal of Psychology in Africa, 28(3), 245–248. https://doi.org/10.1080/14330237.2018.1475518

Mboi, N., Murty Surbakti, I., Trihandini, I., Elyazar, I., Houston Smith, K., Bahjur Ali, P., Kosen, S., Flemons, K., Ray, S. E., Cao, J., Glenn, S. D., Miller-Petrie, M. K., Mooney, M. D., Ried, J. L., Anggraini Ningrum, D. N., Idris, F., Siregar, K. N., Harimurti, P., Bernstein, R. S., & Hay, S. I. (2018). On the road to universal health care in Indonesia, 1990–2016: A systematic analysis for the global burden of disease study 2016. The Lancet, 392(10147), 581–591. https://doi.org/10.1016/S0140-6736(18)30595-6

Nursiswati, N., Halfens, R. J. G., & Lohrmann, C. (2017). Change in care dependency of stroke patients: A longitudinal and multi-center study. Asian Nursing Research, 11(2), 113–118. https://doi.org/10.1016/j.anr.2017.05.005

Nursiswati, N., Halfens, R. J. G., & Lohrmann, C. (2020). Psychometric properties of the Care Dependency Scale in stroke survivors in Indonesian hospitals. International Journal of...
Nursing Sciences, 7(3), 330–336. https://doi.org/10.1016/j.ijnss.2020.06.011

Ramazanu, S., Leung, D., & Chiang, V. C. L. (2020). The experiences of couples affected by stroke and nurses managing patient rehabilitation: A descriptive study in Singapore. The Journal of Nursing Research, 28(5), Article e113. https://doi.org/10.1097/jnrr.0000000000000392

Rössler, W. (2016). The stigma of mental disorders: A millennia-long history of social exclusion and prejudices. EMBO Reports, 17(9), 1250–1253. https://doi.org/10.15252/embr.201643041

Roth, D. L., Haley, W. E., Sheehan, O. C., Liu, C., Clay, O. J., Rhodes, J. D., Judd, S. E., & Dhmoon, M. (2020). Depressive symptoms after ischemic stroke: Population-based comparisons of patients and caregivers with matched controls. Stroke, 51(1), 54–60. https://doi.org/10.1161/STROKEAHA.119.027039

Shah, S., Vanclay, F., & Cooper, B. (1989). Improving the sensitivity of the daily spiritual experience scale in Slovak elderly. Journal of Religion & Health, 28(8), 703–709. https://doi.org/10.1007/0-895-4356(89)0065-6

Soósová, M. S., & Mauer, B. (2021). Psychometrics properties of the daily spiritual experience scale in Slovak elderly. Journal of Religion & Health, 60, 563–575. https://doi.org/10.1007/s10943-020-09994-w

Steffen, A. M., Gallagher-Thompson, D., Arenella, K. M., Au, A., Cheng, S.-T., Crespo, M., Cristancho-Lacroix, V., López, J., Losada-Baltar, A., Márquez-González, M., Nogales-Gonzáles, C., & Romero-Moreno, R. (2019). Validating the Revised Scale for Caregiving Self-Efficacy: A cross-national review. Gerontologist, 59(4), e325–e342. https://doi.org/10.1093/geront/gny004

Steffen, A. M., McKibbin, C., Zeiss, A. M., Gallagher-Thompson, D., & Bandura, A. (2002). The Revised Scale for Caregiving Self-Efficacy: Reliability and validity studies. The Journals of Gerontology: Series B, Psychological Sciences and Social Sciences, 57(1), 74–86. https://doi.org/10.1093/geronb/57.1.P74

Torregosa, M. B., Sada, R., & Perez, I. (2018). Dealing with stroke: Perspectives from stroke survivors and stroke caregivers from an underserved Hispanic community. Nursing & Health Sciences, 20(3), 361–369. https://doi.org/10.1111/nhs.12414

Tsuki, T., Matsudaira, K., Sato, H., & Vietri, J. (2016). The impact of depression among chronic low back pain patients in Japan. BMC Musculoskeletal Disorders, 17(1), Article No. 447. https://doi.org/10.1186/s12891-016-1304-4

Underwood, L. G., & Teresi, J. A. (2002). The daily spiritual experience scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. Annals of Behavioral Medicine, 24(1), 22–33. https://doi.org/10.1207/S15324796ABM2401_04

Wang, Y. N., Hsu, W. C., & Shyu, Y. I. L. (2020). Job demands and the effects on quality of life of employed family caregivers of older adults with dementia: A cross-sectional study. The Journal of Nursing Research, 28(4), Article e99. https://doi.org/10.1097/jnrr.0000000000000383

Wharton, W., Gleason, C. E., Olson, S., Carlsson, C. M., & Asthana, S. (2012). Neurobiological underpinnings of the estrogen—mood relationship. Current Psychiatry Reviews, 8(3), 247–256. https://doi.org/10.2174/157340012800792957

Yang, F. Y., Lai, C. Y., Men, C. F., Hsu, Y. Y., & Zauszniewski, J. A. (2017). The depressive symptoms, resourcefulness, and self-harm behaviors of adolescents. The Journal of Nursing Research, 29(1), 41–50. https://doi.org/10.1097/jnrr.0000000000000127

Yu, F., Li, H., Tai, C., Guo, T., & Pang, D. (2019). Effect of family education program on cognitive impairment, anxiety, and depression in persons who have had a stroke: A randomized, controlled study. Nursing and Health Sciences, 21(1), 44–53. https://doi.org/10.1111/nhs.12548

Zhang, J., Xu, L., Li, J., Sun, L., Qin, W., Ding, G., Wang, Q., Zhu, J., Yu, Z., Xie, S., & Zhou, C. (2019). Gender differences in the association between body mass index and health-related quality of life among adults: A cross-sectional study in Shandong, China. BMC Public Health, 19(1), Article No. 1021. https://doi.org/10.1186/s12889-019-7351-7

Zhao, J., Zeng, Z., Yu, J., Xu, J., Chen, P., Chen, Y., Li, J., & Ma, Y. (2021). Effect of main family caregiver’s anxiety and depression on mortality of patients with moderate-severe stroke. Scientific Reports, 11(1), Article No. 2747. https://doi.org/10.1038/s41598-021-81596-8