Skip to Main Content

9._Fauziah_original_12_320354_1.pdf

by Masyitha Irwan

Original Article

Contradiction, Similarity, and Uncovered Factors of Depression among Post-Stroke Patients Family-Caregivers

Wahyuni Fauziah, MHS, RN
Dr. H Koesnadi Regional Hospital, Bondowoso, East Java, Indonesia
Gerontological Rehabilitation Nursing Departement, Division of Health Sciences, Graduate School of Medical Science, Kanazawa University, Ishikawa, Japan

Mayumi Kato, RN, PhD
Division of Health Sciences, Graduate School of Medical Science, Kanazawa University, Ishikawa, Japan

Andi Masyitha Irwan, RN, PhD
School of Nursing, Hasanudin University, Tamalanrea, Makassar, Indonesia

Correspondence: Wahyuni Fauziah, MHS, RN. Doctoral course, Graduate Course of Nursing sciences Division of Health Sciences, Graduate school of Medical Sciences, Kanazawa University, Ishikawa Japan.
Tsuruma Campus 5-11-80 Kodatsuno, Kanazawa city, Ishikawa prefectural, Japan.
Email: wahyuni.fauziah83@yahoo.com

Abstract

Background: Family caregivers of post-stroke patients face many challenges that may result in depressive symptoms and ineffective care performance. This generates a negative correlation spiral related to the quality of life for both family caregivers and patients. Examining factors related to depressive symptoms among family caregivers is necessary to develop effective care and education programs.

Objective: The study aimed to identify the contradictions, similarity, and uncovered factors related to depressive symptoms scores among family caregivers through comparison of examined variables.

Methodology: A literature search from December 1988 to March 2016 was carried out using CINAHL and PubMed databases. The initial search found 84 articles. After eliminating duplicates and screening based on inclusion and exclusion criteria, 16 articles were reviewed.

Results: Three main factors found were: (1) contradictory factors which included gender, family relationship status, and depressive symptoms scores between caregivers and stroke patients, (2) Similarity factors which included race, age, caregiving burden of family caregivers, functional status of stroke patient, and (3) uncovered factors which included the role of nurses, spiritual value, knowledge of - depressive symptoms, conducive living environment, and types of family structure.

Conclusions: The contradictions of findings and uncovered factors observed be used as evidence for subsequent investigations. Gender, the different roles of family, relationship, and the severity of stroke should be considered in identifying depressive symptoms among family caregivers in the early stages during hospitalization. Nurses have an important role to identify depressive symptoms because of their active role and greater interaction with family caregivers compared with other health professionals.

Implication for nursing and health policy: The study findings highlights the important factors to consider and use in developing health policy related to family education program and early screening for depressive symptoms to reduce and prevent depressive symptoms among family caregivers.

Keywords: Family, caregiver, depression, symptoms, stroke, factors

Introduction

Stroke is a major cause of disability with a global prevalence of 33 million (Mozaffarian et al. 2015). Unhealthy lifestyle factors such as chronic alcohol consumption, obesity, cigarette smoking, and drug abuse have been associated with increasing risk of stroke (Arboix 2015). A long-term disability is the most significant impact of stroke (Clarke et al. 2015). Paralysis, aphasia, perception disorders, urinary and fecal incontinence, and depression are the most common impairments resulting from stroke (Lawrence et al. 2001; Kuptniratsaikul 2013). Those impairments affect stroke patients' ability to perform activities of daily living (ADL). Furthermore, Hinojosa et al. (2011) reported that patients recovering from stroke often encounter social isolation, which is related to their decreased ability to carry out ADL. These problems decrease social activities in stroke patients. In turn, the long-term disability in stroke patients leads to the dependency on care (Kuptniratsaikul 2013; Diederichs et al. 2011).

In the home setting, the role of family caregiver is crucial to the care of post-stroke patients. Miller et al. (2010) described that the role of caregivers for post - stroke patients include assisting in ADL such as feeding, bathing, grooming, toileting, and transferring. Women are the main caregivers and spend more time in providing care and performing personal-care tasks for the stroke patients (Denno et al. 2013). However, family caregivers face many challenges which include the lack of knowledge about caring for stroke patients, the high cost of treatment, the slow improvement of disabilities and long-term care (Tsai et al. 2015; Wang et al. 2014; Clarke et al. 2015). These problems and challenges are major burdens for family caregivers. Furthermore, high levels of burden of care are also related to the degeneration of caregivers' health status and of their social life and well-being (Galvin et al. 2016). Family caregivers also experience significant change of roles such as having limited time to care for themselves and change of employment status (from full-time to part-time work or unemployment) (Bauer et al. 2015). These often lead to a state of crisis whereby family caregivers tend towards or may be at risk of depressive symptoms (Tang et al. 2011). Qiu & Li. (2008) reported that 44.6% of stroke caregivers had signs of depressive symptoms during the caregiving periods. Also, greater depressive symptoms in caregivers were associated with stroke patient's ADLs, caregiver education, and family functioning (Guo & Liu. 2015). Furthermore, depressive symptoms in caregiver influence the physical quality of life among post-stroke patients (Wan-Fei et al. 2017). In turn, decline in ADL abilities in post-stroke patients affect the burden borne by the caregivers, resulting in high risk of depressive symptoms among them. Whereas with lack of care and no assistance with ADL of post-stroke patients by the caregivers, worsening of disabilities of post-stroke patients results. These problems demonstrate a negative correlation spiral related to the quality of life among post-stroke patients and their family caregivers. Therefore, an understanding of depressive symptoms and its related factors in family caregivers are crucial in the prevention and care of depressive symptoms among family caregivers of post-stroke patients.

Smith et al. (2012) conducted a randomized clinical trial (RCT) on a web-based intervention for reducing depressive symptoms in stroke patients and their caregivers. The findings of their study revealed significantly lower depressive symptoms among caregivers in the intervention group than the control group at post-test and 1 month after compared with the baseline depression controlled. However, no significant treatment effect was found among caregivers. Smith at al. (2012) examined female caregivers; however, the intervention in this study was not particularly provided using a gender-based approach. An approach to care based on women's lives and conditions are necessary. The findings of a previous study reported that female caregivers were more prone to depression than male caregivers because female caregivers are more influenced by caregiving hours, caregiving task, and problematic behaviors of the care recipient than male caregivers (Pinquart & Sörensen. 2006). The caregivers in the study were women providing care to their spouses. Since the intervention in the study was not designed using a gender-based approach, this might have influenced the result of the study. Several studies have also identified factors of depressive symptoms among family caregivers of stroke patients, such as gender, racial (Jessup et al. 2015), caregivers burden (Tang et al. 2011), and stroke patient degree of functional disability (Peyrofi et al. 2012). Contrary to these findings, Qiu & Li (2008) stated that caregiver gender was not related with depression. Various factors in each of the studies account for the contradictions of their findings. The need to prevent the negative correlation spiral related to the quality of life among post-stroke patients and family caregivers emphasized the importance of the need to conduct literature reviews on factors of depressive symptoms among family caregivers of post-stroke patients.

The aim of the present review was to identify the contradiction, similarity, and uncovered factors of depressive symptoms score among family caregivers through comparison of examined variables in this review study. The literature review was conducted to report on the following research questions: (1) what are the contradictory, similarity, and uncovered factors related to depression among family caregivers of post-stroke patients? (2) Why are there contradictory and similarity factors related to depression among family caregivers of post-stroke patients.

Methods

Study design

A literature review was undertaken to examine factors related to depressive symptoms score among family caregivers of post-stroke patients.

Search strategy

The Search of electronic databases was performed from January to February 2017 to identify articles related to the aim of this literature review. A literature search of CINAHL and PubMed databases was carried out. "Family," "depression," and "stroke" were used as the keywords for the search terms.

Inclusion and exclusion criteria

The inclusion criteria applied were: (a) type of participants : family caregivers of post-stroke patients and patients aged over 18 years, (b) setting : post-stroke patients from inpatient and outpatient department of hospitals, from rehabilitation units or from the community, (c) publication language: only studies published in English, and (d) articles investigating depressive symptoms among family caregivers of post-stroke patients. Exclusion criteria: (a) the study only focused on the post-stroke patients, (b) publication types: reviews, pilot studies, development of assessment tools, case reports, development of study protocols and intervention studies.

Search procedure

From the initial search of articles published between December 1988 and March 2016, 26 articles were found in CINAHL and 58 articles in PubMed. After eliminating articles that were duplicated and screening the articles based on the inclusion and exclusion criteria, 68 articles were excluded while the remaining 16 articles were reviewed. The exclusion of the 68 articles were as follows: studies only focused on post-stroke patients (25 articles), the articles did not examine stroke and depressive symptoms (21 articles), the publication types were reviews, pilot studies, development of assessment tools, case reports, development of study protocols and intervention studies (15 articles), or the publication language was not English (7 articles).

Analysis procedure

The four steps used in the analysis procedure were as follows: first, we examined the study design and all variables such as, characteristics of participants, severity of stroke, and depressive symptoms score. Secondly, we identified contradictory variables and explored the cause of the contradictions. Thirdly, we identified similarity variables, and finally we revealed the uncovered variables examined in this review.

Results

The literature review contained two types of study designs (Table 1): Seven studies used a cross-sectional study design while nine studies were longitudinal study designs. The participants in all articles reviewed were neither randomly selected nor given a diagnosis of depression in any of the articles reviewed. The results of the reviewed articles are presented in Tables 1 to 3.

Identification of examined variables

In this review study, the variables examined are as shown in Table 1.

Demographic characteristics of family caregivers

Of the 16 articles reviewed, only one study did not report on age and gender of family caregivers (Kotila et al. 1998). Eleven studies reported on the living status of caregivers (Chen et al. 2010; Green & King. 2010; Kotila et al. 1998; Nir et al. 2009; Peyrovi et al. 2012; Rochette et al. 2007; Shanmugham et al. 2009; Ski et al. 2007; Suh et al. 2005; Visser-Milley et al. 2005; Visser-Milley et al. 2009) while four studies indicated the race of caregivers (Grant et al. 2004; Jessup et al. 2015; Klinedinst et al. 2007; Shanmugham et al. 2009). All 16 studies described the type of relationship of the family caregiver. Furthermore, in 10, 9, and 5 studies, the educational background, working status, and duration of caregiving (Chen et al 2010; Jessup et al. 2015; Peyrovi et al. 2012; Qiu & Li. 2008; Yeung et al. 2007), respectively were reported. Family income (Nir et al. 2009; Qiu & Li. 2008) and health problems of caregivers (Visser-Milley et al. 2005; Visser-Milley et al. 2009) were reported in two studies each.

Demographic characteristics of stroke patients

From 16 studies, age and gender of stroke patients were excluded from just two studies (Nir et al. 2009; Shanmugham et al. 2009). Eight studies informed on the type of stroke (Chen et al 2010; Grant et al. 2004; Klinedinst et al. 2007; Kotila et al. 1998; Qiu & Li. 2008; Suh et al. 2005; Visser-Milley et al. 2005; Visser-Milley et al. 2009) while six studies described the status of stroke attack (Klinedinst et al. 2007; Kotila et al. 1998; Rochette et al. 2007; Suh et al. 2005; Visser-Milley et al. 2005; Visser-Milley et al. 2009). In addition, all 16 studies revealed the time after stroke except one (Peyrovi et al. 2012). Moreover, two studies reported specifically about physical impairment such as hemiplegia, hemiparesis, dysarthria, and aphasia (Grant et al. 2004; Suh et al. 2005).

Instrument of depressive symptoms

The Center for Epidemiologic Studies Depression (CES-D) scale was used to measure depressive symptoms in six studies (Grant et al. 2004; Klinedinst et al. 2007; Peyrovi et al. 2012; Qiu & Li. 2008; Suh et al. 2005; Yeung et al. 2007). Various scales, including the Patient Health Questionaire (Jessup et al. 2015), the Geriatric Depression Scale (Chen et al. 2010; Nir et al. 2009), the Beck Depression Inventory (Green & King. 2010; Kottila et al. 1998; Rochette et al. 2007; Shanmugham et al. 2009), The Self-rating Depression Scale (Ski et al. 2007) and the Depressive Goldberg Depression Scale (Visser-Milley et al. 2005; Visser-Milley et al. 2009) were used to measure the depressive symptoms.

Instruments used to measure stroke severity

Various instruments used to measure the severity of stroke included the Stroke Specific Quality-of Life scale (Jessup et al. 2015), the Katz scale (Peyrovi et al. 2012), the Barthel Index (Chen et al. 2010; Green & King. 2010; Kottila et al. 1998; Qiu & Li. 2008; Suh et al. 2005; Visser-Milley et al. 2005, Visser-Milley et al. 2009), the Modified Barthel Index (Yeung et al. 2007), the upper limb motor impairment portions of the Fugl-Meyer Assessment (Klinedinst et al. 2007), the National Institute of Health Stroke scale (Green & King. 2010; Suh et al. 2005), the Modified Rankin Scale (Green et al. 2010), the Rankin Scale (Kottila et al. 1998), the Stroke Impact Scale -16 (Green & King. 2010), Functional Independence Measure (Grant et al. 2004; Nir et al. 2009; Shanmugham et al. 2009), Canadian Neurological Scale (Rochette et al. 2007), and the Stroke Impact Scale version 2.0 (Ski et al. 2007). The most reported scale was the Barthel Index (BI) reported in six studies for the measurement of the severity of stroke. The BI measures the patients' performance in 10 ADL functions. The BI scores can range from 0-100; with higher scores reflecting minor activity limitations. A total score of 100 represents the highest level of independence. The BI scores categories were total, severe, moderate, slight dependence, and independence.

Setting of the studies

Three of the seven cross sectional studies were performed in community settings (Jessup et al. 2015; Klinedinst et al. 2007; Yeung et al. 2007), two others were performed in both the clinic and community settings (Peyrovi et al. 2012; Suh et al. 2005) and another two were performed in clinic or hospital settings (Chen et al. 2010; Qiu et al. 2008). Whereas, all nine longitudinal studies were conducted in hospital and community settings (Grant et al. 2004; Green & King. 2010; Kotila et al. 1998; Nir et al. 2009; Rochette et al. 2007; Shanmugham et al. 2009; Ski et al. 2007; Visser-Milley et al. 2005; Visser-Milley et al. 2009).

Geographical location

Six studies were conducted in North America (Grant et al. 2004; Green & King. 2010; Jessup et al. 2015; Klinedinst et al. 2007; Rochette et al. 2007; Shanmugham et al. 2009;), four in East Asia (Chen et al. 2010; Qiu & Li. 2008; Suh et al. 2005; Yeung et al. 2007), three from Europe (Kotila et al. 1998; Visser-Milley et al. 2005; Visser-Milley et al. 2009), two from Southwest Asia (Nir et al. 2009; Peyrovi et al. 2012), and one in Oceania (Ski et al. 2007).

Depressive symptoms scores

In one study, it was reported that depressive symptoms score for stroke patients and for caregivers were unrelated (Klinedinst et al. 2007). In another study, stroke patient and caregiver scores at hospital discharge and 6 months post-discharge showed significant differences (Green & King. 2010). Caregiver depression scores were reported to be within normal range at baseline, improving at 3 months and persistently stable at 6 months (Nir et al. 2009). The percentage of "spouses caregivers" with depression symptoms decreased significantly, from 68% at first assessment to 53% at 2 months after discharge, but showed no significant changes either between 2 months after discharge and 1 year post-stroke; or between 1 and 3 years post-stroke (Visser-Meily et al. 2009). Furthermore, in one study, it was stated that family caregivers' depressive symptoms were significantly related to patients' depressive symptoms (Suh et al. 2005). However, in the study in Australia the stroke patients and family caregivers' scores demonstrated lower quality of life and higher depression than population norm at 3 weeks and 3 months post discharge, with no statistically significant differences (Ski et al. 2007). Although depressive symptoms' ratings were above population norms, stroke patients and family caregiver scores were below that required for the clinical diagnosis of depression (Ski et al. 2007).

Socio demographic variables

One cross-sectional study found socio-demographics such as gender, race, and relationship to be associated with depressive symptoms among family caregivers (Jessup et al. 2015). In other studies, caregivers' age and gender showed no association with depressive symptoms (Peyrovi et al. 2012; Qiu & Li. 2008). Furthermore, Qiu & Li. (2008) reported that caregiver depressive symptoms were associated with stroke patients' length of hospital stay and family income, while another study indicated that the duration of caregiving was not a statistically significant factor of depressive symptoms scores (Peyrovi et al. 2012). Among the nine longitudinal studies, one study reported that caregivers' ethnicity was significantly related to depressive symptoms in caregivers (Grant et al. 2004). Other studies stated that years of formal education among caregivers was significantly associated with depressive symptoms at discharge but unrelated to depressive symptoms at follow-up. These studies also reported that caregivers' age and relationship status were not related to caregivers' depressive symptoms (Shanmugham et al. 2009).

Physical and psychological variables

Some of the seven cross-sectional studies reported that severity of depressive symptoms in caregivers was significantly related with both the psychological and physical aspects of the caregivers' health-related quality of life (Chen et al. 2010). Problem solving abilities were significantly related to caregivers' depressive symptoms, according to another study (Young et al. 2007). Another study declared that cognitive status, functional status, and coping strategies (denial, self-blame, planning, and religion) were associated with caregivers' depressive symptoms (Qiu & Li 2008). Furthermore, another study showed that perceived care-related life change was significantly related to depressive symptoms in the family caregivers (Peyrovi et al. 2012).

However, in several longitudinal studies, a lack of ranking scale score (the degree of disability) and severe long-term score at 3 months (Scandinavian Stroke Scale/SSS) among stroke patients were significantly related to depression in caregivers at 3 months (Kottila et al. 1998). The spouse group showed that higher perceived initial stress (stressfulness) was significantly associated with greater depressive symptoms 6 months after the stroke (Rochette et al. 2007). One of the studies discovered that dysfunctional problem-solving and higher functional impairment were predictive of higher depressive symptoms at discharge (Shanmugham et al. 2009). Furthermore, another study reported that lower depressive symptoms were related to lack of passive coping and more expression of emotion (Visser-Meily et al. 2009).

On the other hand, a longitudinal study described in detail that depressive symptoms at one year after stroke were significantly unrelated to the patient's characteristics. However, they were significantly related to using passive coping strategy, caregivers' depressive symptoms at the beginning of the rehabilitation, disharmony in the relationship, and lack of use of social-support seeking strategy. Furthermore, sole spouse variables: passive coping strategy, social support seeking strategy and depressive symptoms score, already present at baseline, influenced depressive symptoms (Visser-Meily et al. 2005).

Social support and burden variables

One of the studies described belonging to a social support group showed significant predictors of risk of caregiver depressive behavior in the acute phase. It also showed that caregivers' burden was significantly related to the prediction of caregivers' depressive behavior (Grant et al. 2004). Whereas, Suh et al (2005) reported that caregivers' depression was significantly associated with the levels of objective and subjective burden, the burden, however, was unrelated to depression in stroke patients.

Contradictory factors

Our review study found three contradictory factors (Table 2) related to depressive symptoms among family caregivers, namely gender (Jessup et al 2015; Klinedist et al. 2007; Peyrovi et al. 2012; Qiu & Li. 2008), the family relationship status (Jessup et al 2015; Shanmugham et al. 2009), and depressive symptoms score of stroke patients (Green & King. 2010; Klinedist et al. 2007; Nir et al. 2009; Ski et al. 2007; Suh et al. 2005; Visser-Meily et al. 2009).

Similarity factors

In this review study, we observed similarity of findings reported for age, functional status of stroke patients (Peyrovi et al. 2012; Qiu & Li. 2008; Shanmugam et al. 2009), caregivers burden (Grant et al. 2004; Suh et al. 2004), and race (Grant et al. 2004; Jessup et al 2015) as presented in Table 3.

Uncovered factors

The role of nurses, spiritual value, type of family, knowledge of depressive symptoms, and the conducive living environment were not examined in any of the studies reviewed. Even though, these factors are associated with depression in other diseases or topics. Therefore, in this review study, these factors were considered as uncovered factors.

Discussion

Contradictory factor findings

Contradictory factors related to depressive symptoms among family caregivers were gender, the family relationship status, and depressive symptoms score between caregiver and stroke patients.

Jessup et al. (2015) reported that gender was significantly related to depression in family caregivers. Whereas, other studies reported that gender was not significantly related (Peyrofi et al. 2012; Qiu & Li. 2008) while an association between dyads congruence with caregivers gender and level of depressive symptoms in caregivers as well as functional level of the person with stroke or time since stroke were not found (Klinedist et al. 2007). Differences in gender proportions of participants are considered as the reason for the contradictory findings. Jessup et al. (2015) reported a significant correlation between gender and depressive symptoms in family caregivers with a higher proportion of caregivers being females. These findings were consistent with previous study that female are more likely to have had a major depressive episode compared to men (Kessler 2003; Laukkanen et al. 2016). Contrary to these, two studies (Klinedinst et al. 2007; Qiu & Li. 2008) reported that although they had higher proportion of female caregivers, the result of their findings show no significant correlation between gender and depressive symptoms of family caregivers. In these studies, two reasons were considered as the cause of the contradictory gender factors. First, they had younger family caregivers with better physical health conditions than elderly caregivers (Pinquart et al. 2001). Therefore, young family caregivers might perform the task of caring for stroke patients better. Secondly, the functional status of stroke patients was independence and slight dependence as reported by Qiu & Li. (2008). Similarly, Klinedinst et al (2007) reported that most of their stroke patients had high functional ability. These findings are consistent with previous studies by Berg et al. (2005) revealing an association between stroke severity (which was especially strongest at the acute stage) and caregiver depression.

While one cross-sectional study reported a significant relationship between family relationship status and depressive symptoms in family caregivers (Jessup et al. 2015) another longitudinal study reported no relationship (Shanmugham et al. 2009). The contradictory findings might have been influenced by the role of family caregivers and the different inclusion criteria for participants' enrolment. Jessup et al. (2015) described that half of the spouse caregivers were the main caregivers and reported more depressive symptoms than the non-spouses. On the other hand, Shanmugham et al (2009) explained that more than half of spouse's caregivers were the main caregivers and that they were new to the caregiving role. The reason suggested for this contradiction is consistent with suggestions of several studies where spouse caregivers had a higher level of depressive symptoms than children and other siblings as caregivers (Berg et al. 2005; Pinquart & Sörensen. 2011).

Suh et al. (2005) stated that caregivers' depressive symptoms were significantly related to patients' depressive symptoms. Furthermore, Green et al. (2010) stated that there were significant differences between the patients and caregiver scores at hospital discharge and 6 months post-discharge. One study also reported that depressive symptoms scale scores were within normal range at baseline, improving at 3 months and remaining stable at 6 months (Nir et al 2009). On the contrary, three studies revealed that depressive symptoms scores for stroke patients and depressive symptoms scores for caregivers were not related (Klinedinst et al. 2007; Visser-Meily et al. 2009). In these studies, residence and employment status were considered as possible reasons for the contradiction.

Similarity factors

There were four similarity factors in this review study. First, two studies stated that race (non-African American) was related to depressive symptoms among family caregivers of stroke patients (Grant et al. 2004; Jessup et al. 2015). These findings are consistent with a previous study (Wright et al. 1999) which showed that non-African American caregivers of stroke patients' depressive symptoms increased over time compared with that among African-American caregivers of stroke patients. This is further corroborated by the report indicating that African-American caregivers had lower levels of depression than White caregivers (Pinquart& Sørensen. 2005). Furthermore, Clay et al. (2008) found that African American caregivers showed lower levels of depression than white caregivers. The background race of caregivers may influence their coping strategies and ability to face depression during caregiving activities (Knight & Sayegh. 2010).

Secondly, two studies reported that age was not related to depressive symptoms among family caregivers of stroke patients (Peyrovi et al. 2012; Qiu & Li. 2008). These findings may be influenced by the selection criteria of participants and the small sample size in the studies. Third, three studies in this literature review had similar description of functional status of stroke patients which was related to caregiver depressive symptoms (Peyrovi et al. 2012; Qiu & Li. 2008; Shanmugham et al. 2009). The reason for the similarity might be that stroke patients with greater functional impairments needed higher assistance from the caregivers. Fourth, two studies reported that caregiver burden was related to caregiver depression (Grant et al. 2004; Suh et al. 2005). This is consistent with previous studies stating that higher depressive symptoms among caregivers was associated with higher caregiver burden (Bozkurt Zincir et al. 2014)

Uncovered factors

The uncovered factors observed from this review included the role of nurses, spiritual value, type of family, knowledge of ~~stroke care and~~ depressive symptoms, and conducive living environment.

In previous studies, the role of nurses has been shown to be associated with the prevention of depression and promotion of mental health. Aragonès et al. (2008) stated that in primary-care settings, improvement in the role of nurses has been effective in enhancing depression outcome. The major functions of practice nurses in the management of depression included the assessment of depression, monitoring clinical progress, enhancing treatment adherence, promoting social change, and education of patient and caregivers (Wilkinson 1992). However, studies are few that have focused on the role of nurses in the care of depression among family caregivers of post stroke patients.

Bonelli et al. (2012) reported that depressive symptoms and spiritual practices are widespread globally. However, mental health professionals give relatively little consideration to the intersection between depressive symptoms and spiritual practice. Understanding the spiritual value as a factor is needed to enhance the coping mechanism as prevention and care of depression among family caregivers through potential mobilization of spiritual resources. One study reported that adaptive coping function is important for reducing depressive symptoms in both adolescents and adults (Thompson et al. 2010).

Laukkanen et al. (2016) reported that the family structure, particularly a single parent family type was significantly related to depression in adolescents. Furthermore, Barrett et al. (2005) revealed higher levels of depressive symptoms among young adults (19-21 years old) from stepfamilies, single parent families, and single-parent families with other relatives present, compared with mother-father families. Therefore, family structure need to be examined as factors related to family caregivers' depressive symptoms while caring for post-stroke patients.

While caring for stroke patients, caregivers also face many challenges that enhance caregivers' risk of depression. In previous studies, the depressive symptoms score in stroke patients was related to the depressive symptoms score of caregivers (Green & King. 2010; Suh, et al. 2005; Visser-Meily et al. 2009). Whereas Klinedinst et al. (2012) reported that through patients and family education, nurses have the potential to make overwhelming positive impact on the stroke patients' mood. These correlations between challenges of caring for stroke patients, depressive symptoms, and family education indicate that the knowledge about depressive symptoms is necessary for family caregivers.

Cheung et al. (1998) reported that the living environment influenced the resident's psychosocial aspects indirectly. Some studies also reported that the living environment relates to the mental health status (such as depression) of participants. For example, Downey & Willigen (2005) found that living near industrial activity is associated with higher levels of psychological distress. Whereas, Tomita et al. (2017) reported that living in rural areas correlated with lower incidence of depression than living in urban informal areas.

Implication for further research, nursing practice, and health policy

Contradictory factors can provide important opportunity for contribution to future research including randomized control trials and the development of instruments for depressive symptoms scale for family caregivers. The randomized controlled trial is essential to avoid bias in the study (Panucci & Wilkins 2010). By eliminating biased results, further studies can contribute to developing psychoeducation intervention studies for preventing and reducing depressive symptoms among family caregivers. This review study reported that depressive symptoms among family caregivers were measured with international standard scales on depressive symptoms; however, a particular structure for measuring depressive symptoms on family caregivers is necessary. One study stated that compared to non-caregivers, caregivers often experience psychological, behavioral, and physiological effects (Gouin et al. 2008; Scultz et al. 1999). A meta-analysis revealed that caregivers show more depression compared to non-caregivers (Pinquart & Sörensen. 2003). Furthermore, Roth et al. (2009) found that caregivers who are highly strained had depression scores higher than non-caregivers. The findings of the study showed difference in depressive symptoms between caregivers and non-caregivers. Therefore, our study considered that a particular scale on depressive symptoms with specific questions related to the feelings and activities of caregiving may need to be developed for early screening of depressive symptoms among family caregivers. This study also found that only few studies measure the duration of caregiving, family income, and health problems of family caregivers. Furthermore, no such studies have been conducted in the Southeast Asia countries. Thus, there is a crucial gap identified in this literature review study that requires being considered and identified in future research.

Although the similarity of factors can be used as evidence for developing different nursing approaches, including for the elderly with the task of being caregivers for post-stroke patients. However, such a role, for the elderly, is not easy because of the need of care of their own health condition and of problems related to the aging processes such as sleep disturbance, back pain, and dementia (Pinquart et al. 2001; Reinhard et al. 2008; Schulz et al 1999).

The nurse has a major role in the early detection of depression in family caregivers of stroke patients. Daniels et al. (2011) described that the nurse has more access as the first person to identify patient and family needs requiring particular attention for early treatment, and for maintaining and ending the caring process. Therefore, nurses have the potential to improve the quality of prevention and care as educators and caregivers in the early stages of depression. The finding of this review study highlights important factors which have to be considered in the development and design of health policy (related to family education program in hospital and community settings) for reducing and preventing depressive symptoms among family caregivers.

Furthermore, there is need for health policy related to the role of nurses in assessing depressive symptoms in family caregivers especially in the early stages. It has been reported that there are many negative impacts of untreated depressive symptoms among family caregivers such as decreased health status and quality of life of both caregivers and patients (Chung et al.

2009; Pinquart et al. 2001; Roth et al .2009). The increase in neglected and abused cases, as well as the most serious impact of untreated depression (suicide and murder of the care recipient by family caregivers) has been emphasized (Family Caregiver Alliance 2016; Yuhara, E. 2018). Therefore, our findings can also be used to develop, and construct health policy related to early screening of depressive symptoms in nursing practice. Support system including provision of information and welfare system, developing peer group, respite care program, and nonprofit organizations, to avoid negative impacts and tragedies among family caregiver should also be encouraged. These considerations are consistent with the recommendation of the National Institute of Mental Health (2015), that an early provision of treatment for depressive symptoms is more effective.

Study Limitations

There are some limitations in this literature review that need to be addressed in further studies. First, only articles published in English from only two databases were used, thus it is possible that relevant studies may have been missed. Second, various instruments of measure of depressive symptoms were used to assess family caregivers and were not specifically for family caregivers. Third, none of the studies randomly selected their participants. Fourth, participants were at various phases after the stroke event with different study designs used for evaluation. These were limitations because of the different timeframe of data collection and the heterogeneous family role. Finally, most of the studies in this review study only investigated for correlation between variables, therefore the studies cannot assume a cause and effect relationships between variables,

Conclusion

Our review study found contradictory factors which included gender, the family relationship status, and depressive symptoms score between caregivers and stroke patients. The similarity factors were race, age, caregiving burden of family caregivers, and functional status of stroke patients. Whereas, uncovered factors were, the role of nurses, spiritual value, types of family, and knowledge of depressive symptoms and conducive living environment. Uncovered factors found in the present study can be used to improve the role of nurses as caregivers and educators in the comprehensive post-stroke care. Furthermore, the contradictory findings and uncovered factors in this review can be used as evidence for subsequent investigations. Gender, the roles of family, relationship, and the severity of stroke should be considered in order to clearly and completely find the related factors in the care of stroke patients. Further study is also needed to investigate spiritual factors and the role of nurses in the prevention and care of depression among family caregivers of post-stroke patients.

Funding

This literature review received funding for the preparation and writing of this manuscript from the Research Foundation of Kanazawa University.

References

Aragonès, E., López-Cortacans, G., Badia, W., Hernández, J. M., Caballero, A., & Labad, A. (2008). Improving the Role of Nursing in the Treatment of Depression in Primary Care in Spain. *Perspectives in Psychiatric Care*, *44*(4), 248–258. http://doi.org/10.1111/j.1744-6163.2008.00184.x

Arboix, A. (2015). Cardiovascular risk factors for acute stroke: Risk profiles in the different subtypes of ischemic stroke. *World Journal of Clinical Cases*, *3*(5), 418–29. http://doi.org/10.12998/wjcc.v3.i5.418

Barrett, A. E., & Turner, R. J. (2005). Family Structure and Mental Health: The Mediating Effects of Socioeconomic Status, Family Process, and Social Stress. *Journal of Health and Social Behavior*, *46*(2), 156–169. http://doi.org/10.1177/002214650504600203

Bauer, J. M., & Sousa-Poza, A. (2015). Impacts of Informal Caregiving on Caregiver Employment, Health, and Family.

Berg, A., Palomäki, H., Lönnqvist, J., Lehtihalmes, M., & Kaste, M. (2005). Depression among caregivers of stroke survivors. *Stroke*, *36*(3), 639–43. http://doi.org/10.1161/01.STR.0000155690.04697.c0

Bonelli, R., Dew, R. E., Koenig, H. G., Rosmarin, D. H., & Vasegh, S. (2012). Religious and Spiritual Factors in Depression: Review and Integration of the Research. *Depression Research and Treatment*, *2012*, 1–8. http://doi.org/10.1155/2012/962860

Bozkurt Zincir, S., Sunbul, M., Zincir, S., Aydin Sunbul, E., Oguz, M., Feriha Cengiz, F., Durmus, E., Kivrak, T., Sari, I. (2014) Burden and Depressive Symptoms Associated with Adult-Child Caregiving for Individuals with Heart Failure. *The Scientific World Journal*, vol. 2014, Article ID 641817, 6 pages, 2014. doi:10.1155/2014/641817

Chen, Y., Lu, J., Wong, K. S., Mok, V. C. T., Ungvari,

G. S., & Tang, W. K. (2010). Health-related quality of life in the family caregivers of stroke survivors. *International Journal of Rehabilitation Research*, *33*(3), 232–237. http://doi.org/10.1097/MRR.0b013e328338b04b

Cheung, C., Leung, K., Chan, W.-T., & Ma, K. (1998). Depression, Loneliness, And Health In An Adverse Living Environment: A Study Of Bedspace Residents In Hong Kong. *Social Behavior and Personality: An International Journal*, *26*(2), 151–170. http://doi.org/10.2224/sbp.1998.26.2.151

Chong Tae Kim (2012). Stroke rehabilitation, Rehabilitation Medicine, Prof. Chong Tae Kim (Ed.), InTech, DOI: 10.5772/38499. Available at: https://www.intechopen.com/books/rehabilitation-medicine/stroke-rehabilitation (accessed 6 November 2017)

Chung, M. L., Moser, D. K., Lennie, T. A., & Rayens, M. K. (2009). The effects of depressive symptoms and anxiety on quality of life in patients with heart failure and their spouses: testing dyadic dynamics using Actor-Partner Interdependence Model. *Journal of Psychosomatic Research*, *67*(1), 29–35. http://doi.org/10.1016/j.jpsychores.2009.01.009

Clarke, D. J., & Forster, A. (2015). Improving post-stroke recovery: the role of the multidisciplinary health care team. *Journal of Multidisciplinary Healthcare*, *8*, 433–42. http://doi.org/10.2147/JMDH.S68764

Clay, O. J., Roth, D. L., Wadley, V. G., & Haley, W. E. (2008). Changes in social support and their impact on psychosocial outcome over a 5-year period for African American and White dementia caregivers. *Int J Geriatr Psychiatry*, 23: 857–862. DOI: 10.1002/gps.1996

Daniels, R., & Nicoll, L. (2011). Contemporary Medical-Surgical Nursing, Second Edition. Delmar Cengage Learning

Denno, M. S., Gillard, P. J., Graham, G. D., Dibonaventura, M. D., Goren, A., Varon, S. F., & Zorowitz, R. (2013). Anxiety and Depression Associated With Caregiver Burden in Caregivers of Stroke Survivors With Spasticity. http://doi.org/10.1016/j.apmr.2013.03.014

Diederichs, C., Mühlenbruch, K., Lincke, H.-O., Heuschmann, P. U., Ritter, M. A., & Berger, K. (2011). Predictors of dependency on nursing care after stroke: results from the Dortmund and Münster stroke registry. *Deutsches Arzteblatt International*, *108*(36), 592–9. http://doi.org/10.3238/arztebl.2011.0592

Downey, L., & Van Willigen, M. (2005). Environmental Stressors: The Mental Health Impacts of Living Near Industrial Activity. *Journal of Health and Social Behavior*, 46(3), 289–305. doi: 10.1177/002214650504600306

Family Caregivers Alliance. (2016). Depression and Caregiving | Family Caregiver Alliance. Available at: https://www.caregiver.org/depression-and-caregiving (accessed 6 November 2017)

Galvin, M., Corr, B., Madden, C., Mays, I., McQuillan, R., Timonen, V., Staines, A., Hardiman, O. (2016). Caregiving in ALS - a mixed methods approach to the study of Burden. *BMC Palliative Care*, *15*(1), 81. http://doi.org/10.1186/s12904-016-0153-0

Gouin, J.-P., Hantsoo, L., & Kiecolt-Glaser, J. K. (n.d.). Immune Dysregulation and Chronic Stress Among Older Adults: A Review. http://doi.org/10.1159/000156468

Grant, J. S., Weaver, M., Elliott, T. R., Bartolucci, A. R., & Newman Giger, J. (2004). Sociodemographic, physical and psychosocial factors associated with depressive behaviour in family caregivers of stroke survivors in the acute care phase. *Brain Injury*, *18*(8), 797–809. http://doi.org/10.1080/02699050410001671766

Green, T. L., & King, K. M. (2010). Functional and Psychosocial Outcomes 1 year after Mild Stroke. *Journal of Stroke and Cerebrovascular Diseases*, *19*(1), 10–16. http://doi.org/10.1016/j.jstrokecerebrovasdis.2009.02.005

Guo, Y., & Liu, Y. (2015). Family functioning and depression in primary caregivers of stroke patients in China. *International Journal of Nursing Sciences*, *2*(2), 184–189. http://doi.org/10.1016/j.ijnss.2015.05.002

Hinojosa, R., Haun, J., Sberna Hinojosa, M., & Rittman, M. (2011). Social Isolation Poststroke: Relationship Between Race/Ethnicity, Depression, and Functional Independence. *Topics in Stroke Rehabilitation*, *18*(1), 79–86. http://doi.org/10.1310/tsr1801-79

Jessup, N. M., Bakas, T., McLennon, S. M., & Weaver, M. T. (2015). Are there gender, racial or relationship differences in caregiver task difficulty, depressive symptoms and life changes among stroke family caregivers? *Brain Injury*, *29*(1), 17–24. http://doi.org/10.3109/02699052.2014.947631

Kessler, R.C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders*, 74, 5–13. https://doi.org/10.1016/S0165-0327(02)00426-3.

Klinedinst, N. J., Clark, P. C., Blanton, S., & Wolf, S. L. (2007). Congruence of depressive symptom appraisal between persons with stroke and their caregivers. *Rehabilitation Psychology*, *52*(2), 215–225. http://doi.org/10.1037/0090-5550.52.2.215

Knight, B. G., & Sayegh, P. (2010). Cultural values and caregiving: The updated sociocultural stress and coping model. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, *65* *B*(1), 5–13. https://doi.org/10.1093/geronb/gbp096

Kotila, M., Numminen, H., Waltimo, O., & Kaste, M. (1998). Depression after stroke: results of the FINNSTROKE Study. *Stroke; a Journal of Cerebral Circulation*, *29*(2), 368–72.

http://doi.org/10.1161/01.STR.29.2.368

Kuptniratsaikul, V., Kovindha, A., Suethanapornkul, S., Manimmanakorn, N., & Archongka, Y. (2013). Long-term morbidities in stroke survivors: a prospective multicenter study of Thai stroke rehabilitation registry. *BMC Geriatrics, 13.* http://www.biomedcentral.com/1471-2318/13/33

Laukkanen, M., Hakko, H., Riipinen, P., & Riala, K. (2016). Does Family Structure Play a Role in Depression in Adolescents Admitted to Psychiatric Inpatient Care? *Child Psychiatry & Human Development*, *47*(6), 918–924. http://doi.org/10.1007/s10578-015-0622-3

Lawrence, E. S., Coshall, C., Dundas, R., Stewart, J., Rudd, A. G., Howard, R., & Wolfe, C. D. A. (2001). Estimates of the prevalence of acute stroke impairments and disability in a multiethnic population. *Stroke*, *32*(6), 1279–1284. https://doi.org/10.1161/01.STR.32.6.1279

Miller, E. L., Murray, L., Richards, L., Zorowitz, R. D., Bakas, T., Clark, P., Billinger S. A; American Heart Association Council on Cardiovascular Nursing and the Stroke Council. (2010). Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: a scientific statement from the American Heart Association. *Stroke*, *41*(10), 2402–48. http://doi.org/10.1161/STR.0b013e3181e7512b

Mozaffarian, D., Benjamin, E. J., Go, A. S., Arnett, D. K., Blaha, M. J., Cushman, M., et al; American Heart Association Statistics Committee and Stroke Statistics Subcommittee. (2015). Heart disease and stroke statistics--2015 update: a report from the American Heart Association. *Circulation*, *131*(4), e29-322. http://doi.org/10.1161/CIR.0000000000000152

National Institute of Mental Health (2016) Depression. available at: https://www.nimh.nih.gov/health/topics/depression/index.shtml (accessed 3 July 2017)

Nir, Z., Greenberger, C., & Bachner, Y. G. (2009). Profile, Burden, and Quality of Life of Israeli Stroke Survivor Caregivers. *Journal of Neuroscience Nursing*, *41*(2), 92–105. http://doi.org/10.1097/JNN.0b013e318193456b

Pannucci, C. J., & Wilkins, E. G. (2010). Identifying and Avoiding Bias in Research. *Plastic and Reconstructive Surgery*, *126*(2), 619–625. http://doi.org/10.1097/PRS.0b013e3181de24bc

Peyrovi, H., Mohammad-Saeid, D., Farahani-Nia, M., & Hoseini, F. (2012). The Relationship Between Perceived Life Changes and Depression in Caregivers of Stroke Patients. *Journal of Neuroscience Nursing*, *44*(6), 329–336. http://doi.org/10.1097/JNN.0b013e3182682f4c

Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and noncaregivers in psychological health and physical health: A meta analysis. *Psychology and Aging*, 18, 250- 267. doi: 10.1037/0882-7974.18.2.250

Pinquart, M., & Sörensen, S. (2006). Gender Differences in Caregiver Stressors, Social Resources, and Health: An Updated Meta-Analysis. *The Journals of Gerontology*. https://doi.org/10.1093/geronb/61.1.P33

Pinquart, M., & Sörensen, S. (2005). Ethnic Differences in Stressors, Resources, and Psychological Outcomes of Family Caregiving: A Meta-Analysis. *The Gerontologist*. https://doi.org/10.1093/geront/45.1.90

Pinquart, M., & Sörensen, S. (2011). Spouses, Adult Children, and Children-in-Law as Caregivers of Older Adults: A Meta-Analytic Comparison. http://doi.org/10.1037/a0021863

Pinquart, M. (2001). Correlates of subjective health in older adults: A meta-analysis. *Psychology and Aging*, 16(3), 414-426.

Qiu, Y., & Li, S. (2008). Stroke: Coping strategies and depression among Chinese caregivers of survivors during hospitalisation. *Journal of Clinical Nursing*, *17*(12), 1563–1573.

Reinhard, S. C., Given, B., Petlick, N. H., & Bemis, A. (2008). *Supporting Family Caregivers in Providing Care. Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Agency for Healthcare Research and Quality (US).

Rochette, A., Bravo, G., Desrosiers, J., St-Cyr/Tribble, D., & Bourget, A. (2007). Adaptation process, participation and depression over six months in first-stroke individuals and spouses. *Clinical Rehabilitation*, *21*(6), 554–562.

Roth, D. L., Perkins, M., Wadley, V. G., Temple, E. M., & Haley, W. E. (2009). Family caregiving and emotional strain: Associations with quality of life in a large national sample of middle-aged and older adults. *Quality of Life Research* , 18, 679–688.

Schulz, R., & Beach, S. R. (1999). Caregiving as a Risk Factor for Mortality. *JAMA*, *282*(http://doi.org/10.1001/jama.282.23.2215

Shanmugham, K., Cano, M. A., Elliott, T. R., & Davis, M. (2009). Social problem-solving abilities, relationship satisfaction and depression among family caregivers of stroke survivors. *Brain Injury*, *23*(2), 92–100.

Ski, C., & O'Connell, B. (2007). Stroke: the increasing complexity of carer needs. *The Journal of Neuroscience Nursing : Journal of the American Association of Neuroscience Nurses*, *39*(3), 172–9.

Smith, G. C., Egbert, N., Dellman-Jenkins, M., Nanna, K., & Palmieri, P. A. (2012). Reducing depression in stroke survivors and their informal caregivers: a randomized clinical trial of a Web-based intervention. *Rehabilitation Psychology*, *57*(3), 196–206.

Suh, M., Kim, K., Kim, I., Cho, N., Choi, H., & Noh, S. (2005). Caregiver's burden, depression and support as predictors of post-stroke depression: A cross-sectional survey. *International Journal of*

Nursing Studies, *42*(6), 611–618.

Tomita , A., Vandormael, A. M., Cuadros, D., Di Minin, E., Heikinheimo, V., Tanser, F., Slotow , R., Burns, J. K. (2017). Green environment and incident depression in South Africa : a geospatial analysis and mental health implications in a resource-limited setting. The Lancet Planetary Health , vol 1 , no. 4 , pp. e152-e162 .

Tang, W. K., Lau, C. G., Mok, V., Ungvari, G. S., & Wong, K.-S. (2011). Burden of chinese stroke family caregivers: The Hong Kong experience. *Archives of Physical Medicine and Rehabilitation*, *92*(9), 1462–1467.

Thompson, R. J., Mata, J., Jaeggi, S. M., Buschkuehl, M., Jonides, J., & Gotlib, I. H. (2010). Maladaptive coping, adaptive coping, and depressive symptoms: variations across age and depressive state. *Behaviour Research and Therapy*, *48*(6), 459–66.

Tsai, P.-C., Yip, P.-K., Tai, J. J., & Lou, M.-F. (2015). Needs of family caregivers of stroke patients: a longitudinal study of caregivers' perspectives. *Patient Preference and Adherence*, *9*, 449–57.

Visser-Meily, A., Post, M., Schepers, V., & Lindeman, E. (2005). Spouses' quality of life 1 year after stroke: Prediction at the start of clinical rehabilitation. *Cerebrovascular Diseases*, *20*(6), 443–448.

Visser-Meily, A., Post, M., Van De Port, I., Maas, C., Forstberg-Wärleby, G., & Lindeman, E. (2009). Psychosocial functioning of spouses of patients with stroke from initial inpatient rehabilitation to 3 years poststroke: Course and relations with coping strategies. *Stroke*, *40*(4), 1399–1404.

Wan-Fei, K., Hassan, S. T. S., Sann, L. M., Ismail, S. I. F., Raman, R. A., & Ibrahim, F. (2017). Depression, anxiety and quality of life in stroke survivors and their family caregivers: A pilot study using an actor/partner interdependence model. *Electronic Physician*, *9*(8), 4924–4933.

Wang, G., Zhang, Z., Ayala, C., Dunet, D. O., Fang, J., & George, M. G. (2014). Costs of Hospitalization for Stroke Patients Aged 18-64 Years in the United States. http://doi.org/10.1016/j.jstrokecerebrovasdis.2013.07.017

Wilkinson, G. (1992). The role of the practice nurse in the management of depression. *International Review of Psychiatry*, *4*(3–4), 311–315.

Wright, L. K., Hickey, J. V., Buckwalter, K. C., Hendrix, S. A., & Kelechi, T. (1999). Emotional and physical health of spouse caregivers of persons with Alzheimer's disease and stroke. *Journal of Advanced Nursing*, *30*(3), 552–563.

Yeung, S., Lui, M. H.-L., Ross, F., & Murrells, T. (2007). Family carers in stroke care: examining the relationship between problem-solving, depression and general health. *Journal of Clinical Nursing*, *16*(2), 344–352.

Yuhara, E. (2018). *Incidents of Homicides or Murder–Suicides by Family Caregivers in Japan and Challenges for Prevention BT - Crime and Justice in Contemporary Japan* (J. Liu & S. Miyazawa, eds.). https://doi.org/10.1007/978-3-319-69359-0_4

Table 1 Identification of examined variables

Author, year, and country	Design study	Sample size	Caregivers			Patients			Race	Status residence of caregiver	Type of relation-ship	Time after stroke	Type of stroke	Severity of stroke
			A	G	DS	A	G	DS						
Jessup et al. 2015, USA [1]	CS	Cg=243 P=243	1	1	1	1	1	0	1	0	1	1	0	1
Peyrovi et al. 2012, Iran [2]	CS	Cg=60 P=60	1	1	1	1	1	1	0	0	1	0	0	1
Chen et al. 2010, Hongkong [3]	CS	Cg=123 P=123	1	1	1	1	1	1	0	1	1	1	1	1
Qiu & Li. 2008, China [4]	CS	Cg=92 P=92	1	1	1	1	1	1	1	0	1	1	1	1
Klinedinst et al. 2007, USA [5]	CS	Cg=132 P=132	1	1	1	1	1	1	1	0	1	1	1	1
Yeung et al. 2007, Hongkong [6]	CS	Cg=70 P=70	1	1	1	1	1	0	1	0	1	1	0	1
Suh et al. 2005, Korea [7]	CS	Cg=225 P=225	1	1	1	1	1	1	0	1	1	1	0	1
Grant et al. 2004, USA [8]	LS	Cg=52 P=52	1	1	1	1	1	0	1	0	1	1	1	1
Shanmugham et al. 2009, USA [9]	LS	Cg=43 P=43	1	1	1	0	0	0	1	1	1	1	0	1
Green & King 2010, Canada,	LS	Cg=38	1	1	1	1	1	1	0	1	1	1	0	1

LS [10]		P=38												
Nir et al. 2009, Israel, [11]	LS	CG=140 (T1), 137 (T2), 132 (T3)	1	1	1	0	0	0	0	1	1	1	0	1
Visser-Meily et al. 2009, Netherlands, [12]	LS	CG&P=211 (T1),197 (T2) , 187 (T3), 121 (T4)	1	1	1	1	1	0	0	1	1	1	1	1
Rochette et al. 2007, Canada [13]	LS	Cg=47 P=88	1	1	1	1	1	1	0	1	1	1	1	1
Ski & O'connel 2007, Australia, LS [14]	LS	Cg=13 P=13	1	1	1	1	1	1	0	1	1	1	0	1
Visser-Meily et al. 2005, Netherlands [15]	LS	Cg=187 P=187	1	1	1	1	1	0	0	1	1	1	1	1
Kottila et al. 1998, Finland [16]	LS	Cg=195(T1), 184 (T2). P=321 (T1), 311 (T2).	0	0	1	1	1	1	0	1	1	1	1	1

Note. CS, cross-sectional study; LS, longitudinal study; A, age; G, gender; DS, depressive symptoms: 1, reported/measured; 0, not reported/measured; Cg, caregivers; P, patients; T1, first time; T2, second time; T3, Third time; status residence of caregiver means caregiver is living with stroke patient or not, type of relationship means status family caregiver as parent, spouse, child, and etc.

Table 2 Contradictory factors

Variable	Author, year, and country	Caregivers		Patients		Relation-ship to patient	Status of residence and employment	Severity of stroke	Depressive symptoms score Of caregiver	Findings
		gender	age	gender	age					
Gender	Jessup et al. 2015, USA [1]	Female: 191 (787.6%) Male: 52 (21.4%)	Mean: 54,8 SD: 12.1, ranged from 22 to 87 years	Female: 118 (48.6%), male 122 (50.2%)	Mean: 63.0, SD:14.1, ranged from 25 to 94 years	Spouse: 116 (47.7%), nonspouse: 127 (52.3%)	Status of residence and employment were not reported	The SSQOL proxy indicated that stroke patients on average had moderate level for mobility, self-care, language, and thinking	The PHQ 9 score showed that caregiver had mild depressive symptoms. Female: M (SD) 5.9 (4.7) Male: 3.5 (4.9)	For the model testing differences in depressive symptoms, caregivers gender was significant.
	Peyrovi et al. 2012, Iran [2]	Female: 33 (55%), male: 27 (45%)	<60:24 (40%), 60-70: 26 (43.3%), >70: 10 (16.7%)	Female: 26 (43.3%), male: 34 (56.7%)	<60:13 (21.7%), 60-70: 20 (33.3%), >70: 27 (45%)	Parent, sister, brother, and any sibling. The frequency distribution of status is not detail reported	Status of residence was not reported. Unemployed: 17 (28.3%), houskeeper: 20 (33.3), worker: 10 (16.7), employee:8 (13.3), other: 5 (8.4%)	The katz scale scores showed that functional disability of stroke patients were moderate: 29 (48.3%), severe: 31 (51.7%)	The CES-D score was range from 1 to 58 with mean= 16 and SD=14.77. 40 % of participants were risk being depressed.	Caregivers gender was not found to have any statistically significant predictive power with the CES-D scores .
	Qiu & Li 2008, China [4]	Female: 66(71.7%), male: 26 (28.3%)	19-44: 41 (44.6%) 45-59: 35 (38%), 60-78: 16 (17.4%)	Female:37 (40.2%), male: 55 (59.8%)	32-44: 7 (7.6%), 45-59: 34 (37%), 60-74: 37 (40.2%), 75-89: 13 (14.1%), 90-95: 1 (1.1%)	Spouse: 45 (48.9%), children: 37 (40.2), children in law: 7 (7.6%),other relative: 3 (3.3%)	Status of residence was not reported. Retired: 33 (35.9%), unemployed: 16 (17.4%), work: 29 (31.5%), other: 14 (15.2%)	The five item BI score was range from 0-55 with Mean: 42.4 and SD: 14.5	The CES-D score was range from 0 to 24 with mean: 9.5 and SD: 5.9	Caregiver gender was not related with depression in this study
	Klinedinst et al. 2007, USA [5]	Female: 98 (74%) Male: 34 (26%)	Mean: 56.8, SD:13.71	Female: 48 (36%) Male: 84 (64%)	Mean: 62.1, SD: 12.59	Spouse: 106 (80%), nonspouse: 26 (20%)	Status of residence and employment were not reported	The Fugl-Meyer assessment shown that functional disability were high 106 (80%), Low 26 (20%)	The CES-D score was Mean 9.6 and SD 8.6	The association between dyads congruence with caregivers gender, level of depressive symptoms in caregiver, functional level was not found

Table 2 Continue

Variable	Author, year, and country	Caregivers		Patients		Relation-ship to patient	Status of residence and employment	Severity of stroke	Depressive symptoms score	Findings
		gender	age	gender	age					
Relation-ship	Jessup et al. 2015, USA [1]	Female: 191 (787.6 %) Male: 52 (21.4%)	Mean: 54, SD: 12.1, ranged from 22 to 87 years	Female: 118 (48.6%), male 122 (50.2%)	Mean: 63.0, SD:14.1, ranged from 25 to 94 years	Spouse: 116 (47.7%), nonspouse: 127 (52.3%)	Status of residence and employment were not reported	The SSQOL proxy indicated that stroke patients on average had moderate level for mobility, self-care, language, and thinking	The PHQ 9 score showed that caregiver had mild depressive symptoms. Female: M (SD) 5.9 (4.7) Male: 3.5 (4.9)	For the model testing differences in depressive symptoms, relationship was significant.
	Shanmugham et al. 2009, USA [9]	Female: 39 (90.7%) Male: 4 (9.3%)	Spouse: average age (years old) 64.79, adult children : 29.20, Parent age: 67, other relative: 55.7	Not reported	Not reported	Spouses: 20 (46.5%), adult children: 15 (34.9%), Parents: 1 (2.3%), other siblings: 7 (16.3%)	Family caregiver provided care for patient in their home. Whereas, status of employment was not reported	The mean score and standard deviation of FIM scale were 82.19 and 19.02. This scores showed mild impairment range.	The BDI was used to measure caregiver depression. At discharge, 19 out of 43 (44%) having symptoms associated with mild- to severe symptoms depression.	Relationship status was not associated with depression at discharge and at the follow up

Table 2 Continue

Variable	Author, year, and country	Caregivers		Patients		Relation-ship	Status of residence and employment	Severity of stroke	Depressive symptoms score	Findings
		gender	age	gender	age					
Depressive symptoms score between caregiver and stroke patient	Klinedinst et al. 2007, USA, CS [5]	Female: 98 (74%) Male: 34 (26%)	Mean: 56.8, SD:13.71	Female: 48 (36%) Male: 84 (64%)	Mean: 62.1, SD: 12.59	Spouse: 106 (80%), nonspouse: 26 (20%)	Status of residence and employment were not reported	The Fugl-Meyer assessment shown that functional disability were high 106 (80%), Low 26 (20%) 91.40 (19.92)	The CES-D score was Mean 9.6 and SD 8.6	Depressive symptoms scores for stroke patients and depressive symptoms scores for caregivers were unrelated.
	Suh et al. 2005, Korea, CS [7]	Female: 146 (65.5%)	Mean: 44.61, SD: 14.73	Female: 115(51.5 %)	Mean: 56.04, SD: 11.93	Spouse: 118 (52.4%) Child: 87 (38.7%)	Living with patients: 94 (42.2%) Employed: 94 (42.2%).	The Means (SD) of BI and I-ADL were 91.40 (19.92) and 9.09 (4.03). The NIHSS means score was 2.60	The CES-D score was Mean 14.69 and SD 11.15	Caregivers depressive symptoms were significantly associated with patients depressive symptoms.
	Green & King, 2010, Canada, LS [10]	Female: 38 (100%)	Mean: 58.55, SD: 11.75	Male: 38 (100%)	Mean: 63.29, SD: 11.98	Spouse: 38 (100%)	Living with patients. Employed: 21 (55.3%)	The NIHSS score, mean (SD): 2.0 (1.70) mRS score: 1.39 (0.95) BI score: 93.16 (12.44) SIS 16 score: 74.03 (8.26)	The BDI-II was used to measure caregivers depression. During 12 months post discharge, the caregiver mean BDI-II scores showed that slightly increased	There was significant differences between the stroke patient and caregivers depression scores at hospital dicharge and six months post discharge.
	Nir et al. 2009, Israel, LS [11]	Female: 101 (72%) Male: 39 (28%)	Mean: 54.9, SD: 15.23	Not reported	Not reported	Spouse: 70 (50%), Children: 62 (44%), Other: 8(6%)	Living with patients : 96 (69%). Whereas, status of employment was not reported	The FIM scores elevated at 3 month (mean: 96.2, SD: 23.9), and persisted stable at 6 months (mean: 97.9, SD: 26.2), showing the attainment of a functional plateau	The mean of Short GDS score were 4.34 (first week), 3.34 (3 months), and 3.35 (6 months)	Caregiver depression scores showing in the normal range at baseline, improving at 3 months and persisting stable at 6 months.

Table 2 Continue

Variable	Author, year, and country	Caregivers		Patients		Relation-ship	Status of residence and employment	Severity of stroke	Depressive symptoms score	Findings
		gender	age	gender	age					
Depressive symptoms score between caregiver and stroke patient	Visser-Meily et al. 2009, Netherlands, LS [12]	Female: 61%, Male: 39%	Mean: 54, median : 54, interquartile range/IQR: 14	Female: 39%, Male: 61%	Mean: 56, median: 55, IQR: 15	Spouses: 100%	Family caregiver provided care for patient in their home. Employed > 20 hour/ week: 42%	The mean, median and IQR of BI scores were 13,12, and 8	The mean and SD of GDS scores were 3.4 (2.8) at first assessment, 2.6 (2.8) at two months after discharge, 2.4 (2.7) at one years post-stroke, and at three years post-stroke 2.5 (2.8).	The percentage of spouses with depression symptoms decreased significantly, from 68% at first assessment to 53% at two months after discharge, but showed no significant change between two months after discharge and one years post-stroke or one years post-stroke and three years post-stroke
	Ski & O'connel 2008, Australia, LS [14]	Female: 6 (46.2%) , male: 7 (53.8%)	Ranged from 42 to 81 years, mean: 66.23, SD: 14.34	Female: 8 (61.5%), male: 5 (38.5%)	Ranged from 59 to 84 year, mean: 72.46, SD: 6.48	Spouses: 10 (76.9%) and siblings: 3 (34.1%)	Living with patients 100% Whereas, status of employment was not reported	The SIS scores of stroke patients showed a moderate stroke level (ranged scores from 40 to 70).	The mean and SD of SDS score were 37.1(8.1) at 3 weeks, 39.3 (11.0) at 3 months. Whereas, the mean and SD of SDS in Australian norm: 33.62 (7.05)	No statistically significant differences were found between stroke patient and caregivers on the SDS at three weeks post discharge and three months post discharge. Although depression ratings were above population norms , stroke patients and family caregiver scores were below a clinical diagnosis of depression (SDS <50).

Table 3 Similarity factors of race, age, caregiver burden of family caregivers, and functional status of stroke patients

Author, year, and country	Caregivers			Patients			Relationship	Status of residence and employment	Severity of stroke	Depressive symptoms score	Findings
	gender	age	Race	gender	age	race					
Jessup et al. 2015, USA [1]	Female: 191 (787.6%) Male: 52 (21.4%)	Mean: 54,8 SD: 12.1, ranged from 22 to 87 years	African American was 59 (24.5%), Caucasian 175 (72%), Asian 3 (1.2%), American indian and more than one race 6 (2.5%)	Female: 118 (48.6%) , male 122 (50.2%)	Mean: 63.0, SD:14.1, ranged from 25 to 94 years	Not reported	Spouse: 116 (47.7%), nonspouse: 127 (52.3%)	Status of residence and employment were not reported	The SSQOL proxy indicated that stroke patients on average had moderate level for mobility, self-care, language, and thinking	The PHQ 9 score showed that caregiver had mild depressive symptoms. Female: M (SD) 5.9 (4.7) Male: 3.5 (4.9)	For the model testing differences in depressive symptoms, the race was significant. females non-African American and spouses indicated comparatively more depressive symptoms. However, when testing for interaction effects, African American spouses showed the highest depressive symptoms
Grant et al. 2004, USA [8]	Female: 46 (88.5%), male: 6 (11.5%)	Average age 56 years, ranged from 25 to 74 years	Caucasian 37, African-Americans 15	Female: 28 (53.8%) , male: 24 (46.2%)	Average age 74 years, ranged from 37 to 92 years	Not reported	Primarily wives: 17, dughters: 18	Status of residence and employment were not reported	The scores of FIM were ranged from 36-103, with an average of 68	The frequency and precentage of caregivers at risk for depressive symptoms based one CES-D scores were 19 (37%) at baseline, 19 (40%) at 5 weeks, 9 (21%) at 9 weeks, 14 (34%) at 13 weeks	This studies reported that Caucasians had 3.7 times higher odds of being at risk for depression compared to African Americans

Table 3 continue

Author, year, and country	Caregivers			Patients			Relationship	Status of residence and employment	Severity of stroke	Depressive symptoms score	Findings
	gender	age	Race	gender	age	race					
Peyrovi et al. 2012, Iran [2]	Female: 33 (55%), male: 27 (45%)	<60:24 (40%), 60-70: 26 (43.3%), >70: 10 (16.7%)	Not reported	Female: 26 (43.3%) , male: 34 (56.7%)	<60:13 (21.7%), 60-70: 2 (33.3%), >70: 27 (45%)	Not reported	Parent, sister, brother, and any sibling. The frequency distribution of status is not detail reported	Status of residence was not reported. Unemployed: 17 (28.3%), houskeeper: 20 (33.3), worker: 10 (16.7), employee:8 (13.3), other: 5 (8.4%)	The katz scale scores showed that functional disability of stroke patients were moderate: 29 (48.3%), severe: 31 (51.7%)	CES-D: M (SD) 16, 14.77	Caregivers age was not found to have any statistically significant predictive power with the CES-D scores. Only stroke patient functional disability significantly predicted the depression.
Qiu & Li et al. 2008, China [4]	Female: 66(71.7%) , male: 26 (28.3%)	19-44: 41 (44.6%) 45-59: 35 (38%), 60-78: 16 (17.4%)	Chinese	Female: 37 (40.2%) , male: 55 (59.8%)	32-44: 7 (7.6%), 45-59: 34 (37%), 60-74: 37 (40.2%), 75-89: 13 (14.1%), 90-95: 1 (1.1%)	Chinese	Spouse: 45 (48.9%), children: 37 (40.2), other relative: 10 (10,9%)	Status of residence was not reported. Retired: 33 (35.9%), unemployed: 16 (17.4%), work: 29 (31.5%), other: 14 (15.2%)	The five item BI score was range from 0-55 with Mean: 42.4 and SD: 14.5	The CES-D score was range from 0 to 24 with mean: 9.5 and SD: 5.9	The caregiver's depression was not related to caregivers age. Whereas functional status of stroke patients predicted the depression of caregivers.
Shanmugham et al. 2009, USA [9]	Female: 39 (90.7%) Male: 4 (9.3%)	Spouse: average age (years old) 64.79, adult children: 29.20, Parent age: 67, other relative: 55.7	Not reported	Not reported	Not reported	Caucasians : 37 and 6 African American	Spouses: 20 (46.5%), adult children: 15 (34.9%), Parents: 1 (2.3%), other siblings: 7 (16.3%)	Family caregiver provided care for patient in their home. Whereas, status of employment was not reported	The mean score and standard deviation of FIM scale were 82.19 and 19.02. This scores showed mild impairment range.	The BDI was used to measure caregiver depression. At discharge, 19 out of 43 (44%) having symptoms associated with mild- to severe symptoms depression.	Caregiver age was not significantly correlate with caregivers depression scores at discharge or at the follow-up visit. In addition, a higher functional impairment was significantly predictive of higher caregiver depression at discharge.

Table 3 Continue

Author, year, and country	Caregivers			Patients			Relation-ship	Status of residence and employment	Severity of stroke	Depressive symptoms score	Findings
	gender	age	Race	gender	age	race					
Kottila, M., et al. 1998. Finland [16]	Not reported	Not reported	Not reported	83 females and 98 males in the active group, whereas in the control group 73 females and 67 males	The mean age in the active group was 72.3 ±10.5 years (females) and 66.6±13 years (males), whereas in the control group was 70.2±11.5 years (females) and 66.5±12.1 years (males)	Not reported	Spouse 63%, children 37%	178 lived with stroke patients, 7 did not, 10 had unknown living arrangement.	Univariate and multivariate ORs and 95% CIs of the stroke patients at 3 months were OR, 1.82; CI, 1.02-3.24 (univariate) and OR, 2.06; CI, 1.09-3.90 (multivariate) in Rankin scale grade. Further, OR, 1.08; CI, 0.56-2.02 (univariate) in Barthel Index. Whereas, SSS long-term score OR, 1.93; CI, 1.05-3.54 (univariate).	The frequency and severity of caregivers depression were mild to moderate 41 (32.8%), moderate to severe 11 (8.8%) in the active group and in control group mild to moderate 20 (28.6%), moderate to severe 7 (10%), severe 2 (2.9%).	Poor Rankin Scale score (the degree of disability) and severe long-term score (Scandinavian stroke scale) at 3 months among the patients were related to the depression of the caregivers at 3 months after onset stroke.

Table 3 continue

Author, year, and country	Caregivers			Patients			Relation-ship to patient	Status of residence and employment	Severity of stroke	Depressive symptoms score	Caregivers burden	Findings
	gender	age	race	gender	age	race						
Suh et al. 2005, Korea [7]	Female: 146 (65.5%)	Mean: 44.61, SD: 14,73	Not reported	Female:115(51.5%)	Mean: 56.04, SD: 11.93	Not reported	Spouse: 118 (52.4%) Child: 87 (38.7%)	Living with patients: 94 (42.2%) Employed: 94 (42.2%),	The Means (SD) of BI and I-ADL were 91.40 (19.92) and 9.09 (4.03)	The CES-D score was Mean 14.69 and SD 11.15	The Objective burden scale (OBS): M (SD) 3.60 (0.62) Subjective burden scale (SBS): 2.67 (0.51)	This studies reported that caregiver's depression was significantly associated with the levels of objective and subjective burden. However, the burden was unrelated to depression of stroke patient.
Grant et al. 2004, USA [8]	Female: 46 (88.5%) Male: 6 (19.5%)	Average age 56 years, ranged from 25 to 74 years	Caucasian 37, African-Americans 15	Female: 28 (53.8 %), Male: 24 (46.2 %)	Average age 74 years, ranged from 37 to 92 years	Not reported	Wives: 17, daughter: 18,	Status of residence and employment were not reported	FIM showed average score 68 and score ranged from 36-103	The CES-D frequency and percentage at risk for problems with depressive behaviour were Baseline: 19 (37%) 5 weeks: 19 (40%) 9 weeks: 9 (21%) 13 weeks: (34%)	Caregiving burden scale (CBS) score was range from 14-70, with values of 14 indicating no burden, 28 a small amount of burden, 42 moderate burden, 56 a large amount and 70 indicating a great deal of burden in caregiving task.	The enhancing an 8 point in burden scores would raise the odds of 50% being at risk for depression

9._Fauziah_original_12_320354_1.pdf

ORIGINALITY REPORT

%26	%15	%19	%19
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	idea.iupui.edu Internet Source	%1
2	Submitted to Flinders University Student Paper	%1
3	www.ncbi.nlm.nih.gov Internet Source	%1
4	Anne Visser-Meily, Marcel Post, Vera Schepers, Eline Lindeman. "Spouses' Quality of Life 1 Year after Stroke: Prediction at the Start of Clinical Rehabilitation", Cerebrovascular Diseases, 2005 Publication	%1
5	Yanru Qiu. "Stroke: coping strategies and depression among Chinese caregivers of survivors during hospitalisation", Journal of Clinical Nursing, 6/2008 Publication	%1
6	www.doria.fi Internet Source	%1

7	stroke.ahajournals.org Internet Source	%1
8	Charles W. Given, Barbara Given, Manfred Stommel, Clare Collins, Sharon King, Susan Franklin. "The caregiver reaction assessment (CRA) for caregivers to persons with chronic physical and mental impairments", Research in Nursing & Health, 1992 Publication	%1
9	www.allbusiness.com Internet Source	%1
10	onlinelibrary.wiley.com Internet Source	%1
11	N. Jennifer Klinedinst. "Congruence of depressive symptom appraisal between persons with stroke and their caregivers.", Rehabilitation Psychology, 2007 Publication	<%1
12	slidelegend.com Internet Source	<%1
13	eresearch.qmu.ac.uk Internet Source	<%1
14	Chantal Ski. "Stroke", Journal of Neuroscience Nursing, 06/2007 Publication	<%1

15	Submitted to University of California, Los Angeles Student Paper	<%1
16	Submitted to University of Leicester Student Paper	<%1
17	Hsiao, C.-Y., and M. Van Riper. "Research on Caregiving in Chinese Families Living With Mental Illness: A Critical Review", Journal of Family Nursing, 2010. Publication	<%1
18	Submitted to University of Portland Student Paper	<%1
19	Byun, E., and L. K. Evans. "Concept Analysis of Burden in Caregivers of Stroke Survivors During the Early Poststroke Period", Clinical Nursing Research, 2014. Publication	<%1
20	Theresa L. Green, Kathryn M. King. "Functional and Psychosocial Outcomes 1 year after Mild Stroke", Journal of Stroke and Cerebrovascular Diseases, 2010 Publication	<%1
21	Submitted to University of Derby Student Paper	<%1
22	www.ebrsr.com Internet Source	<%1

23	Greg Wilkinson. "The role of the practice nurse in the management of depression", International Review of Psychiatry, 1992 Publication	<%1
24	M. Suh, K. Kim, I. Kim, N. Cho, H. Choi, S. Noh. "Caregiver's burden, depression and support as predictors of post-stroke depression: a cross-sectional survey", International Journal of Nursing Studies, 2005 Publication	<%1
25	www.tandfonline.com Internet Source	<%1
26	Turner, Benjamin J., Jennifer M. Fleming, Tamara L. Ownsworth, and Petrea L. Cornwell. "The transition from hospital to home for individuals with acquired brain injury: A literature review and research recommendations", Disability and Rehabilitation, 2008. Publication	<%1
27	doras.dcu.ie Internet Source	<%1
28	Submitted to Florida State University Student Paper	<%1
29	dlib.bc.edu Internet Source	<%1

30	journal.konselor.or.id Internet Source	<%1
31	ebrsr.com Internet Source	<%1
32	ir.library.oregonstate.edu Internet Source	<%1
33	www.phminfoconsultants.com Internet Source	<%1
34	etheses.bham.ac.uk Internet Source	<%1
35	Submitted to Pennsylvania State System of Higher Education Student Paper	<%1
36	psycnet.apa.org Internet Source	<%1
37	Submitted to Grand Canyon University Student Paper	<%1
38	K. Sugiura. "Gender Differences in Spousal Caregiving in Japan", The Journals of Gerontology Series B Psychological Sciences and Social Sciences, 01/29/2009 Publication	<%1
39	Submitted to Winston-Salem State University Student Paper	<%1

40	Allan V. Kaufman, Jordan I. Kosberg, James D. Leeper, Maggie Tang. "Social Support, Caregiver Burden, and Life Satisfaction in a Sample of Rural African American and White Caregivers of Older Persons With Dementia", Journal of Gerontological Social Work, 2010 Publication	<%1
41	Submitted to University of Hong Kong Student Paper	<%1
42	diginole.lib.fsu.edu Internet Source	<%1
43	Submitted to Lewis University Student Paper	<%1
44	e.bangor.ac.uk Internet Source	<%1
45	Submitted to UNITEC Institute of Technology Student Paper	<%1
46	medicaljournals.se Internet Source	<%1
47	link.springer.com Internet Source	<%1
48	Submitted to University of Wolverhampton Student Paper	<%1
49	C. G. LAU. "Predictors of the depressive	<%1

symptomatology of the family caregivers of Chinese stroke patients in Hong Kong : Depressive symptoms of Chinese stroke caregivers", Journal of Psychiatric and Mental Health Nursing, 05/2012

Publication

---

50 Klinedinst, N. Jennifer, Sandra B. Dunbar, and Patricia C. Clark. "Stroke Survivor and Informal Caregiver Perceptions of Poststroke Depressive Symptoms :", Journal of Neuroscience Nursing, 2012.

Publication

<%1

---

51 Kalpana Shanmugham, Miguel A. Cano, Timothy R. Elliott, Matthew Davis. "Social problem-solving abilities, relationship satisfaction and depression among family caregivers of stroke survivors", Brain Injury, 2009

Publication

<%1

---

52 ses.library.usyd.edu.au

Internet Source

<%1

---

53 ajot.aota.org

Internet Source

<%1

---

54 Submitted to University of Wales, Bangor

Student Paper

<%1

---

55 era.library.ualberta.ca

Internet Source

<%1

56	Andaleeb Abu Kamel. "Depression and caregiver burden experienced by caregivers of Jordanian patients with stroke : Caregivers' depression and burden", International Journal of Nursing Practice, 04/2012 Publication	<%1
57	pdxscholar.library.pdx.edu Internet Source	<%1
58	Submitted to Edge Hill University Student Paper	<%1
59	Constance R. Uphold, Meggan Jordan, Magaly Freytes. "Chapter 8 Family Caregivers of Veterans: A Critical Review of the Empirical Literature and Recommendations for Future Research", Annual Review of Nursing Research, 2014 Publication	<%1
60	Submitted to University of Southampton Student Paper	<%1
61	Submitted to Cranfield University Student Paper	<%1
62	Submitted to University of Glamorgan Student Paper	<%1
63	www.sbp-journal.com Internet Source	<%1

64	zodml.org Internet Source	<%1
65	libres.uncg.edu Internet Source	<%1
66	Submitted to University College London Student Paper	<%1
67	eprints.qut.edu.au Internet Source	<%1
68	D. R. Bandeira, J. Pawlowski, T. R. GonÇalves, J. B. Hilgert, M. C. Bozzetti, F. N. Hugo. "Psychological distress in Brazilian caregivers of relatives with dementia", Aging & Mental Health, 2007 Publication	<%1
69	Submitted to Oxford Brookes University Student Paper	<%1
70	Mary Hobbs Leenerts. "Designing a Resource Guide to help promote health in caregiving", International Journal of Older People Nursing, 9/2007 Publication	<%1
71	Submitted to University of Pittsburgh Student Paper	<%1
72	hdl.handle.net Internet Source	<%1

73	M. Chun, B. G. Knight, G. Youn. "Differences in stress and coping models of emotional distress among Korean, Korean-American and White-American caregivers", Aging & Mental Health, 2007 Publication	<%1
74	Hahn, E. A., G. Kim, and D. A. Chiriboga. "Acculturation and Depressive Symptoms Among Mexican American Elders New to the Caregiving Role: Results From the Hispanic-EPESE", Journal of Aging and Health, 2011. Publication	<%1
75	Submitted to University of Hull Student Paper	<%1
76	digitalrepository.unm.edu Internet Source	<%1
77	Monique S. Grant, G. Solomon Osho. "An Empirical Investigation Of Adolescent Depression, Alcohol Use, And Health Issues: Evidence From Family Structure And Gender", American Journal of Health Sciences (AJHS), 2012 Publication	<%1
78	Submitted to University of Glasgow Student Paper	<%1
79	www.theseus.fi Internet Source	<%1

80 journals.sagepub.com <%1

Internet Source

81 David L. Roth, William E. Haley, Jason E. Owen, Olivio J. Clay, Kathryn T. Goode. "Latent growth models of the longitudinal effects of dementia caregiving: A comparison of African American and White family caregivers.", Psychology and Aging, 2001 <%1

Publication

82 TOKER, Boran. "Burnout among university academicians: An empirical study on the universities of Turkey", Doğuş Üniversitesi, 2011. <%1

Publication

83 A. Losada, G. Robinson Shurgot, B. G. Knight, M. Márquez, I. Montorio, M. Izal, M. A. Ruiz. "Cross-cultural study comparing the association of familism with burden and depressive symptoms in two samples of Hispanic dementia caregivers", Aging & Mental Health, 2006 <%1

Publication

84 Aysun BEKDEMİR, Nesrin İLHAN. "Predictors of Caregiver Burden in Caregivers of Bedridden Patients", Journal of Nursing Research, 2019 <%1

Publication

85 Tracey A. Revenson, Konstadina Griva,

	Aleksandra Luszczynska, Val Morrison et al. "Caregiving in the Illness Context", Springer Nature, 2016 Publication	<%1
86	Submitted to University of South Florida Student Paper	<%1
87	Submitted to National University of Ireland, Galway Student Paper	<%1
88	Submitted to University of Warwick Student Paper	<%1
89	Submitted to King's College Student Paper	<%1
90	Resilience in Aging, 2011. Publication	<%1
91	Submitted to Queen's University of Belfast Student Paper	<%1
92	www.frontiersin.org Internet Source	<%1
93	theses.gla.ac.uk Internet Source	<%1
94	Rahul Malhotra, Choy-Lye Chei, Edward Menon, Wai Leng Chow, Stella Quah, Angelique Chan, David Bruce Matchar. "Short-Term Trajectories of Depressive Symptoms in Stroke Survivors	<%1

	and Their Family Caregivers", Journal of Stroke and Cerebrovascular Diseases, 2016 Publication	
95	kuscholarworks.ku.edu Internet Source	<%1
96	Submitted to University of Edinburgh Student Paper	<%1
97	Clinical Sociology Research and Practice, 2014. Publication	<%1
98	ir.uiowa.edu Internet Source	<%1
99	Dunkle, R. E., S. Feld, A. J. Lehning, H. Kim, H.-W. Shen, and M. H. Kim. "Does Becoming an ADL Spousal Caregiver Increase the Caregiver's Depressive Symptoms?", Research on Aging, 2013. Publication	<%1
100	Rachel Graf, Jennifer LeLaurin, Magda Schmitzberger, I. Magaly Freytes, Tatiana Orozco, Stuti Dang, Constance R. Uphold. "The stroke caregiving trajectory in relation to caregiver depressive symptoms, burden, and intervention outcomes", Topics in Stroke Rehabilitation, 2017 Publication	<%1
101	Shiying Deng, Su Yeong Kim, Phillip W.	

	Vaughan, Jing Li. "Cultural Orientation as a Moderator of the Relationship Between Chinese American Adolescents' Discrimination Experiences and Delinquent Behaviors", Journal of Youth and Adolescence, 2009 Publication	<%1
102	"Stroke Nursing", Wiley, 2019 Publication	<%1
103	Submitted to University of Brighton Student Paper	<%1
104	Submitted to University of Luton Student Paper	<%1
105	Psychotherapy for Families after Brain Injury, 2014. Publication	<%1
106	Wai-Kwong Tang, Chieh G. Lau, Vincent Mok, Gabor S. Ungvari, Ka-Sing Wong. "Burden of Chinese Stroke Family Caregivers: The Hong Kong Experience", Archives of Physical Medicine and Rehabilitation, 2011 Publication	<%1
107	Chung, M.L.. "The effects of depressive symptoms and anxiety on quality of life in patients with heart failure and their spouses: Testing dyadic dynamics using Actor-Partner Interdependence Model", Journal of	<%1

	Psychosomatic Research, 200907 Publication	
108	Jessup, Nenette M., Tamilyn Bakas, Susan M. McLennon, and Michael T. Weaver. "Are there gender, racial or relationship differences in caregiver task difficulty, depressive symptoms and life changes among stroke family caregivers?", Brain Injury, 2015. Publication	<%1
109	Submitted to Augustana University Student Paper	<%1
110	Submitted to Mahidol University Student Paper	<%1
111	Submitted to University of Limerick Student Paper	<%1

EXCLUDE QUOTES	ON	EXCLUDE MATCHES	< 5 WORDS
EXCLUDE BIBLIOGRAPHY	ON		