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The Relationship Between Age, Gender, Family Caregiver Burden on Family Coping in Hypertensive Patients with Stroke Comorbidity

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ABSTRACT

Hypertension is a significant non-communicable disease, with a global prevalence of 29.4% in 2021. This research aims to explore the relationship of age, gender, and family caregiver burden on family coping skills in caring for hypertensive patients with stroke complications. Using a quantitative research design, we selected 76 caregivers at Dr. Moewardi Surakarta Hospital through purposive sampling. Data were collected by use of the Zarit Burden Interview (ZBI) and Family Crisis Oriented Personal Evaluation Scales (F-COPES) questionnaires. The findings show that there is no significant relationship between age and coping ability (p = 0.280). However, a significant association between gender and coping strategies was found, with 34.2% of males using adaptive coping compared to only 5.3% of females (p < 0.001). In addition, caregiver burden had a significant effect on coping ability, with 61.8% of caregivers who experienced heavy burden tending to use maladaptive coping. These findings emphasize the importance of social support and gender-tailored interventions to improve caregiver well-being and patient care quality.

Keywords: Hypertension, Stroke, Family Caregiver, Zarit Burden Interview, F-COPES

1. INTRODUCTION

Hypertension is one of the non-communicable diseases that is the focus of health attention at this time and is a cause of high morbidity and mortality worldwide. According to WHO data in 2018, the prevalence of hypertension worldwide reached 26.2%, which means around 972 million people suffer from hypertension. In 2021, this figure has increased to 29.4%. WHO also thinks that every year, around 9.4 million people die from complications caused by hypertension. Meanwhile, the incidence rate in the Central Java hypertension region reached 37.57%. According to the Surakarta City Statistics Agency, the number of hypertensive patients in Surakarta is around 45,720 people.

Hypertension is a condition in which blood pressure, especially systolic blood pressure, exceeds 140 mmHg and diastolic pressure exceeds 90 mmHg. This is a condition in which blood circulation increases continuously because the heart has to work harder to pump blood to meet the needs of oxygen and nutrients in the body (Ubaidillah, 2021). The etiology of hypertension is hypertension can be caused by various causative factors, including age, gender, race, and lifestyle. According to research conducted (Arsikin, et al, 2019) classifying according to the cause, hypertension is divided into two categories, namely primary and secondary hypertension. As many as 90% of people with hypertension suffer from primary hypertension, while the remaining 10% have secondary hypertension. Hypertension is

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also a major cause of cardiovascular problems, including stroke, heart failure, kidney failure, dementia, heart attack, vision problems, and other hypertension-related health problems (Darma Perbasya, 2022).

Although hypertension often shows no symptoms, prolonged high blood pressure can lead to various complications including stroke, which is an acute neurological disorder due to circulatory disorders (Kartikasari et al., 2011). Stroke and hypertension are interrelated where hypertension serves as a major risk factor for stroke (Susanto & Wibowo, 2022). In this context, good care and support from family are very important for hypertensive patients who also experience stroke. Family caregivers hold a crucial role in providing health care and emotional support to sick family members (Baroroh, 2012).

Family caregiver itself means an individual who provides assistance to individuals who face limitations or weaknesses due to illness or certain conditions. They can be spouses, children, grandchildren, in-laws, relatives, neighbors, colleagues, or other family relationships (Fuanida & Natalia, 2020). Family caregiver tasks include assistance with movement, communication, maintaining personal hygiene, and providing emotional and psychological support. Therefore, caregivers need to maintain a balance in carrying out dual responsibilities, namely caring for stroke patients while adjusting their lifestyle. As the patient's condition worsens and continues, the burden borne by family caregivers also increases (Gbiri et al., 2015).

The tasks and roles of family caregivers include various responsibilities, such as acting as an advocate, meeting the physical and psychological needs of patients, providing financial support, accompanying patients when approaching the end of life, taking care of medication administration, managing patient pain management, assisting in meeting daily needs, providing emotional and spiritual support, actively listening, and providing social support. According to (Zarit et al., 1980) the burden experienced by family caregivers involves psychological burden, physical burden and social burden, in situations where hypertensive patients face the risk of stroke. *Caregivers* must be prepared to face a very dynamic and complex situation, where patient care needs can change rapidly (Augusto et al., 2022). This creates a challenge for caregivers to not only care for the patient's physical health, but also maintain their own mental and emotional health. Research shows that *caregivers* who have good social support can influence quality of life and thus improve their coping abilities. (Izzati et al., 2019).

Previous research studies, such as those conducted by (Asti et al., 2021) and (Nafisa et al., 2022) have discussed the relationship between the burden borne by family caregivers and variables such as age and gender in the context of general stroke patients. However, these studies are still limited in scope and have not specifically studied the dynamics of family caregiver burden in the context of hypertensive patients with stroke complications. Meanwhile, *caregiver* situations for hypertensive patients face more problems than uncomplicated stroke patients. More complex family coping skills are needed in this condition, especially in terms of physical, emotional, and psychological stress.

Some factors, such as caregiver age and gender, may be more influential on family coping in these more complex conditions. The aim of this study is to fill this gap by deeply exploring how family characteristics (e.g., age and gender) and perceived family caregiver burden affect coping ability in caring for patients with hypertension complicated by stroke.

A better understanding of the relationship between age, gender, and burden experienced by family caregivers with family coping ability is expected to provide a strong basis for the development of more effective intervention strategies. This is particularly important in providing support to families of hypertensive patients who experience stroke complications, so that caregivers can develop good coping skills in caring for patients. This study is expected to contribute significantly to the understanding of how age, gender, and caregiver burden affect the coping strategies applied in the care of hypertensive patients with stroke comorbidities. By generating new relevant information, this study is expected to assist in formulating more appropriate and effective solutions to support families in caring for patients suffering from chronic conditions.

2. METHODS

This research design is quantitative, which uses a cross-sectional approach to understand and describe the relationship between the independent variable and the dependent variable. This design was chosen because it allows simultaneous data collection from the population under study at one specific point in time. It provides a clear picture of the prevalence of the relationship between variables without the need to make repeated observations over a long period of time. This design is particularly suitable for identifying patterns of relationships or associations between variables, making it an efficient choice in terms of time and resources.

This study was conducted in Anggrek Room 2, Stroke Unit, and Internal Medicine Clinic of Dr. Moewardi Surakarta Hospital. The research took place from August to September 2024. Has passed the ethical feasibility test of health research by the Health Research Ethics Commission of Dr. Moewardi Hospital Number: **591/II/HREC/2024**.

2.1 Population and Sample

According to the results of preliminary studies (pre-research) conducted by researchers on January 11, 2024 at Dr. Moewardi Surakarta Hospital, it was found that in the range of October to December 2023, 220 patients had been recorded as suffering from hypertension which caused stroke both types of ischemic stroke and hemorrhagic stroke as a population result. The simple meaning of the sample can mean a small part of the overall population that serves as the main data source in a study (Amin et al., 2023). When the population is known, the Slovin formula is used by researchers as a reference for determining the number of samples to be studied with a sample size of 69, which is added 10% anticipation.

Inclusion criteria: family members family members who family members who take care of hypertension patients with stroke through outpatient or inpatient care at inpatient at Dr. Moewardi Surakarta Hospital, family members who take care of patients with patients with stroke > 6 months, willing to be used as respondents, able to read and understand the Indonesian language well. Exclusion criteria: Family members who are not willing to contribute as respondents and do not understand the Indonesian language.

2.2 Sampling Technique

The sample of this study was taken with non-probability sampling, where the sample is not carried out randomly, but members of the population are selected in accordance with the aims and objectives that have been designed by the researcher. The method applied is purposive sampling, a sampling method in which the researcher chooses respondents who are met by chance, as long as they meet certain inclusion criteria and are relevant as data sources (Sugiyono, 2019). This technique was chosen because it is more effective for obtaining specific and relevant data, especially in populations that have certain characteristics. Although the sample was selected based on chance encounters, each respondent was still selected based on relevant criteria. To reduce bias, the researcher set clear inclusion criteria, this way even though it was not randomized, respondents were selected based on their relevance to the study so that the results obtained remain representative and valid.

2.3 Research Instruments

In this study, a questionnaire instrument was used to collect demographic data, the Zarit Burden Interview (ZBI) questionnaire. First developed in 1980 by Steven H. Zarit and his colleagues (Zarit et al., 1980) consists of 22 items to measure caregiveburden. Research (Nenobais et al., 2020) ZBI has a specificity of 83.6%, sensitivity of 75% and accuracy of 79.2% and Cronbach alpha reliability exceeds 0.6 meaning that the value of specificity, sensitivity, and reliability is quite high. Research (Hanifati & Gayatri, 2024) showed that ZBI has excellent validity and reliability with a Cronbach Alpha of 0.92. The ZBI also has a sensitivity of 98.5% and specificity of 93.9%. This instrument has been validated in various populations, including caregivers of patients with dementia and cancer, and proven to be the most reliable compared to other questionnaires in various contexts (Bachner et al., 2020).

The Family Crisis Oriented Personal Evaluation Scales (Fcopes) questionnaire has 27 valid and reliable items, with a Cronbach alpha value of 0.89 and coefficients of 0.458-0.947 (Muhamad Irfanudin et al., 2020). Other studies during the pandemic have also shown Cronbach alpha values between 0.66-0.87. This suggests that F-COPES is reliable as a tool to measure coping strategies (Bachner et al., 2020).

2.4 Research Variables

The independent variables in this research are age, gender, and family caregiver burden. While the dependent variable in this study is family coping.

2.5 Data Analysis

Age, gender, and education level of respondents were calculated by univariate analysis, which showed the sociocultural, occupational distribution of respondents. The relationship between the two variables with a 95% confidence level and an alpha value of 0.05 was determined through bivariate analysis. If $p < 0.05$, the results were considered significant. Since the variables are ordinal or categorical scales, the Chi- square test will be used in this study to examine the effect of age, gender, and caregiver burden on coping mechanisms of families of hypertensive patients with stroke complications.

3. RESULT AND DISCUSSION

Chi-Square test was conducted in this study to examine the relationship between demographic variables and how families dealt with stresses related to patient care. The analysis found a significant association between gender and family coping strategies. This finding suggests that there are differences between men and women in dealing with the burden of care, which may be due to differences in social roles or perceptions of the caregiver. In addition, the burden perceived by the caregiver also significantly affected the family's ability to manage the care situation, where the greater the burden, the greater the influence on the coping strategies used.

However, age did not show a significant relationship with the coping strategies of families of hypertensive patients with stroke. This indicates that the age factor, be it young adult, adult, or elderly, does not affect the family's ability to use adaptive or maladaptive coping strategies. Other factors such as stress levels, social support, and experience in dealing with similar situations may be more influential than age because age is not the only determinant of coping strategies.

The failure to find a significant relationship between age and coping may be due to the uneven distribution of respondents. The majority of respondents belonged to the mature age category, while the young adult and elderly categories had a smaller number of respondents. This imbalance, caused by the use of non-probability sampling techniques with purposive sampling, may affect the results of statistical tests, thus not showing a significant relationship. If the distribution of respondents was more evenly distributed across each age category, significant results may be more evident.

The characteristics of respondents in this study include several demographic variables such as age, gender, length of patient care, occupation, and education level. Based on age, the majority of respondents were in the adult category (96.1%), followed by the young adult (3.9%). In terms of gender, males respondents accounted for (48.1%) and females (51.9%). Based on the length of time treating patients, the majority of respondents had treated patients for no more than 2 years (83.1%), above 2 years (16.9%). For employment, most respondents were employed (74.1%), while the other 25.9% were not employed. According to their level of education, the majority of respondents had a high school/vocational school education (50.6%), followed by junior high school (24.7%), college (11.7%) and elementary school (13%).

Table 3. 1 Respondent Characteristics

Characteristic	Frequency	Presentase (%)
Age		
Young (18-35)	3	3.9
Adult (36-55)	73	96.1
Gender		
Male	37	48,1
Female	40	51.9
Duration of patient care		
>2 years	64	83.1
<2 years	13	16.9
Work		
Employed	57	74.1
Unemployed	20	25.9
Education		
Elementary School	10	13
Junior High School	19	24.7
Senior/Vocational High School	39	50.6
College	9	11.7

Table 3. 2 Overview of the Level of Family Caregiver Burden of Hypertension Patients with Stroke Comorbidity

Load Category	Frequency	Presentase (%)
Light Load	19	25.0
Medium Load	32	42.1
Heavt Load	25	32.9

The results showed that the burden of caregiving experienced by family caregivers of hypertensive patients with stroke comorbidity varied. Of the total respondents, the majority were in the moderate burden category as many as 32 people or 42.1%. A total of 25 people or 32.9% of caregivers experienced heavy burden, while light burden was experienced by 19 people or 25.0%. These results indicate that most caregivers feel a significant burden of caregiving, both in the moderate and severe categories, which can affect their ability to cope with the patient's condition.

Table 3. 3 Relationship between Age and Family Coping of Hypertension Patients with Stroke Comorbidity

Age	Maladaptive Coping	Adaptive Coping	P value
Young (18-35)	3 (3.9%)	0 (0%)	0.280
Adult (36-55)	43 (56.6%)	29 (38.2%)	
Total	46 (60.5%)	30 (37.7%)	

Of the 76 caregivers of patients with hypertension comorbid with stroke, 46 (60.5%) used maladaptive coping, while 30 (39.5%) used adaptive coping. In the young age group (18-35 years), all patients (3.9%) used maladaptive coping, and none used adaptive coping. In the mature age group (36-55 years), 43 patients (56.6%) used adaptive coping.

However, the statistical test results found no significant relationship between age and type of coping (adaptive or maladaptive). The p-value obtained was 0.280, which was greater than 0.05, reflecting that the age of the patient did not affect the coping strategies applied by the families of hypertensive patients who had stroke comorbidity. The failure to find an association between age and coping may also be due to the uneven distribution of respondents, where the majority of respondents were in the mature age category, while the young adult category had a much smaller number of respondents. This could have affected the results of the statistical analysis so that it did not show a significant relationship.

In the context of the use of coping strategies, the analysis shows that adult caregivers tend to use adaptive coping more often than the younger age group. However, this difference is not significant enough as revealed in research (Pabebang et al., 2022) consistent that age is not the only factor that influences the type of coping used by families, demographic factors in the form of gender and education level can affect coping mechanisms. Then, a study conducted by (Kazemi et al., 2021) found that social support and mental health of caregivers had more influence on the coping strategies they chose than age. This study emphasizes that individuals with strong social support tend to use adaptive coping strategies regardless of their age. This suggests that, although adult patients tend to use adaptive coping strategies more often, social support and caregiver mental health have more influence on the strategies.

Reinforced by research (Syawaludin et al., 2020) which found that higher education and caregiving experience w*ere* associated with the use of adaptive coping. This research shows how important education is in helping caregivers understand and manage stress better. In other words, although age was not significantly related to the type of coping used, increased education and social support can help caregivers of different ages develop their capacity to adapt to the outside world. Overall, this study shows that age is not the only factor that influences caregiver coping strategies; other factors, such as social support, education, and experience, are also influential. Therefore, it is recommended that interventions aimed at improving caregiver coping strategies provide more comprehensive support for caregivers.

Table 3. 4 Relationship between Gender and Family Coping of Hypertension Patients with Stroke Comorbidity

Gender	Maladaptive Coping	Adaptive Coping	P Value	RO
Males (n=37)	11 (14,5%)	26 (34,2%)	0.000	4.25
Fenales (n=39)	35 (46,1%)	4 (5,3%)		
Total (n=76)	46 (60,5%)	30 (39,5%)		

The results of statistical testing found a significant relationship between gender and coping strategies chosen by caregivers of hypertensive patients with stroke (p-value = 0.000). Analysis based on gender showed that males used adaptive coping more often than females: 26 out of 37 males (34.2%) used adaptive coping, while only 4 out of 39 females (5.3%) did. Of the total 76 patients, 46 (60.5%) used maladaptive coping, and 30 (39.5%) used adaptive coping.

The results of statistical testing found a significant relationship between gender and coping strategies chosen by caregivers of hypertensive patients with stroke (p-value = 0.000). Analysis based on gender showed that males used adaptive coping more often than females: 26 out of 37 males (34.2%) used adaptive coping, while only 4 out of 39 females (5.3%) did. Of the total 76 patients, 46 (60.5%) used maladaptive coping, and 30 (39.5%) used adaptive coping.

These findings are supported by additional research by (O'Connor, M., & O'Neill, 2021) which found that males tend to use more adaptive coping mechanisms and gain greater social support than females, who often experience greater stress as caregivers. In addition, research conducted by (Vasilenko & Rivas, 2023) emphasized that coping strategies used by caregivers based on gender can be influenced by factors like social expectations and cultural norms. A deeper understanding of gender roles in the context of patient caregiving is essential for developing effective interventions to support caregivers, especially among females who may experience heavier emotional and psychological burdens.

Table 3. 5 Relationship between Family Caregiver Burden and Family Coping of Hypertension Patients with Stroke Comorbidity

Load	Maladaptive Coping	Adaptive Coping	P value	RO
Light Burden	0 (0%)	19 (25,1%)	0.000	0.111
Moderate Burden	23 (30,3%)	9 (11,8%)		
Heavy Burden	24 (31,6%)	1 (1,3%)		
Total	47 (61.8%)	29 (38,2%)		

The results of statistical testing showed a significant relationship between coping strategies used and the burden of family caregivers of hypertensive patients with stroke (p-value = 0.000). Of the 76 patients studied, 47 (61.8%) used maladaptive coping strategies and 29 (38.2%) used adaptive coping strategies. The division of caregivers by level of burden showed that no patients used maladaptive coping in the light burden group, where all caregivers (19 patients, 25%) used adaptive coping. In contrast, in the moderate burden group, 23 patients (30.3%) used maladaptive coping, while only 9 patients (11.8%) used adaptive coping. In the heavy burden group, there were 24 patients, or 25% of the total caregivers.

These results suggest that the heavier the burden felt by caregivers, the more likely they are to use maladaptive coping strategies. According to the likelihood ratio (OR) of 0.111, caregivers with heavier burden are more likely to use maladaptive coping than caregivers with light burden. This is important to note in intervention efforts to improve caregiver well-being, especially for those caring for patients with long-standing chronic conditions. In line with research (Daziah & Rahayu, 2020) family support is an important aspect during the process of prevention and treatment of hypertension, which can affect patient care behavior.

A study by (Choi et al, 2021) showed that high psychosocial burden on caregivers can cause them to use non-adaptive coping strategies, such as avoiding problems and feeling depressed. In addition, research by (De Jager, M., & Van der Linde, 2022) showed that interventions aimed at increasing social support can help caregivers use more adaptive coping strategies, which in turn can reduce their emotional burden. Therefore, supporting caregivers with a holistic approach is essential to improving their health and the effectiveness of patient care.

Some of the main constraints of this study are sampling bias, which makes the results difficult to generalize, especially due to the non-probability sampling method. Measurement tools such as the Zarit Burden Interview (ZBI) and Family Crisis Oriented Personal Evaluation Scales (F-COPES) may lack sensitivity and do not cover all aspects of caregiver burden and coping. In addition, as this study was conducted in just one hospital, the results may not be relevant elsewhere or in different cultural contexts. It is recommended that future studies use a larger random sample, use more instruments, include more sites, and consider additional aspects such as social support and mental health care. In addition, a qualitative approach may provide deeper insights.

CONCLUSION

Based on the results of the study related to the relationship between age, gender, and family caregiver burden on family coping in hypertensive patients with stroke comorbidity, there are several significant main findings. First, there is no significant relationship between age and family coping ability. This is possible due to the uneven distribution of respondents, where the majority of respondents were in the mature age category, while the young adult group had a smaller number. This finding suggests that age may not be the main variable affecting families' ability to manage stress and care burden. Secondly, there were clear differences in coping strategies between male and female caregivers. Women tended to experience heavier burdens, which negatively impacted their coping abilities. This highlights the importance of a deeper understanding of gender roles in the context of caregiving, where women are often more open to the expression of emotions, but are also more likely to experience higher stress. Third, the burden experienced by family caregivers has a significant impact on family coping skills. The results found that the higher the burden experienced by caregivers, the lower their ability to use adaptive coping strategies. This indicates the need for stronger psychological and social support for caregivers, especially for those who experience heavy burden. Fourth, the interaction between gender and caregiver burden variables showed that there was a significant relationship in influencing family coping. Therefore, the Ha hypothesis is partially accepted, especially for gender and family caregiver burden variables, but not for age.

Implications for Nursing Practice

These findings have important implications for nursing practice and family caregiver support. First, nurses should pay more attention to gender factors in designing support interventions for family caregivers. By understanding that women may be more vulnerable to stress, nurses can design more specific support programs to help them cope with emotional and psychological burdens.

Secondly, training and education for family caregivers should focus on developing adaptive coping skills. Nurses can provide information and resources on effective coping techniques as well as ways to manage stress in the care of hypertensive patients with stroke comorbidity.

Third, it is important for nurses to create strong support systems within the community, including support groups for *family caregivers*. These programs can help them share experiences and coping strategies, as well as reduce feelings of isolation that are often experienced.

Fourth, interventions that focus on improving the quality of life of *caregivers* and patients should be emphasized. This could include counseling services, emotional support, and access to adequate health resources. Thus, it is hoped that the quality of care for hypertensive patients with stroke comorbidity can improve, and the well-being of family caregiver*s* can be maintained.

By applying the findings of this study to nursing practice, it is hoped that it can reduce the burden felt by family caregivers and improve their coping, which in turn can have a positive impact on the quality of patient care.

ADVISE

In line with the conclusions obtained, the authors provide important suggestions in nursing practice, some concrete actions can be taken to improve support for caregivers of hypertensive patients with stroke. First, for female caregivers , specialized coping training is essential as they often face greater care responsibilities. This training can include stress management and communication skills that can help them cope with care challenges more efficiently. Secondly, there needs to be a psychosocial support program that includes counseling and support groups for caregivers who are overwhelmed by their care burden. This will help them cope with stress and reduce the chances of depression, improving their mental health.

In addition, it is imperative to prioritize the provision of comprehensive information and training on the treatment of hypertension and stroke. Whether through in-person sessions or digital apps, health workers can provide easily accessible training modules and daily care guides. Finally, an integrated intervention program that includes physical, emotional, and social support will help caregivers better manage the burden of care. It is expected that these measures will improve the quality of life of both caregivers and the patients they care for..

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