

The Effect of Coping Strategies on the Dietary Regulation of Patients with Hypertension

Riza Fikriana^{1*}, Nursalam Nursalam² Shrimarti Rukmini Devy³, Ahsan Ahsan⁴, Al Afik⁵

Abstract--- *Dietary regulation in patients with hypertension is an important component of hypertension management to control their blood pressure and to prevent complications. This study aims to analyze the effect of coping strategies on the dietary regulation of patients with hypertension. The study employed an analytical observational design with a cross-sectional approach. The research was conducted in Malang regency, Indonesia. As many as 225 second and third levels of hypertension sufferers have been used as the sample of this study. The samples were taken using multistage random sampling. The variables of the study came in the form of focused coping inclusive of active coping, planning, restraint, the suppression of competing activities, seeking informational and instrumental social support and emotion-focused coping that consists of positive reinterpretation, turning to religion and seeking emotional social support. The study also employed a research instrument in the form of a questionnaire using the Scales of the COPE Inventory and the Hypertension Self-Care Profile ¹(HBP SCP). The data was analyzed using linear regression testing. The results show that restraint (p-value=0.021), positive reinterpretation (p-value=0.006), turning to religion (p-value=0.044) and seeking emotional social support (p-value=0.010) significantly influence the dietary regulation of patients with hypertension. Emotion-focused coping has become a more dominant factor when it comes to influencing the dietary regulation of patients with hypertension.*

Keywords--- *Coping Strategy, Dietary, Hypertension*

I. INTRODUCTION

Hypertension is classified as a non-communicable disease with a prevalence that continues to increase every year [1]. Some of the risk factors that are thought to be the cause of hypertension include age, family history, smoking history, alcohol consumption, excessive calorie intake, high salt consumption, a lack of physical activity, a sedentary lifestyle and stress [2]–[4]. Efforts to control blood pressure are needed through an adherence to pharmacological and non-pharmacological therapies [5]. Lifestyle modification is a non-pharmacological therapy that is very important inclusive of regulating the diet

¹ Nursing Major, STIKes Kepanjen, Malang, Indonesia, E-mail: riza_fikriana@stikeskepanjen-pemkabmalang.ac.id

² Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

³ Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

⁴ Nursing Program Study, Medicine Faculty, Universitas Brawijaya, Malang, Indonesia

⁵ Faculty of Medicine and Health Science, Universitas Muhammadiyah Yogyakarta, Indonesia

Corresponding author

Riza Fikriana, S.Kep, Ns., M.Kep,

E-mail riza_fikriana@stikeskepanjen-pemkabmalang.ac.id

to have low salt, limiting the fat consumption or increasing the level of physical activity [6]. These are the efforts undertaken to prevent excessive increases in blood pressure and to prevent complications such as heart disease [7]–[9].

Some of the research results show that hypertension sufferers have a low ability in terms of medication adherence and healthy living behavior [8], [10], [11]. Some of the factors that have an influence include race, social support, control of their health condition, patient knowledge, and the complication that accompany it [12]. The one effort to prevent any increases in blood pressure and complications among the hypertension patients is the regulation of the diet. The regulation of the dietary pattern is a part of hypertension management [5], [13]. Studies show that the use of the DASH diet (Dietary Approaches to Stop Hypertension) is low [14]. Non-adherence to a DASH diet will increase the risk of Chronic Kidney Disease [15].

Hypertension experienced by a person can bring in stress, anxiety and depression. These emotional responses will reduce the quality of life of the patient [16]. The existence of stress that occurs in a person will result in someone trying to make a strategy to control the stress. According to transactional theory, it states that when a person is in a state of stress, coping will appear [17].). Coping strategies will affect a person's quality of life [18].

Several research results have shown the factors that influence the regulation of dietary patterns in patients with hypertension [19], [20]. However, research has not been found that has conducted an analysis of the effect of coping strategy on regulating the dietary patterns of people with hypertension. The purpose of this study was to analyze the effectiveness of coping strategy on regulating the dietary patterns of people with hypertension.

II. METHODS

- Research Design, Setting and Sample

This study employed an observational analytical research design. The population was hypertension sufferers in Malang Regency. Hypertension prevalence in Malang Regency based on Riset Kesehatan Dasar 2018 is at 39.2%. A sample of 225 was taken using the multistage random sampling technique. The inclusion criteria were that they were grade 2 and grade 3 hypertension patients. The exclusion criterion was that they were a hypertension patient with comorbid diseases.

- Research Variables and Instruments

There are two variables in this study, namely the dependent variable and independent variable. The independent variable is the coping strategies that include problem-focused coping inclusive of active coping, planning, restraint, the suppression of competing activities, seeking informational and instrumental social support. Emotion-focused coping includes positive reinterpretation, turning to religion and seeking emotional social support. The dependent variable is the regulation of the dietary pattern. The research instrument of this study was a questionnaire taken from the Scales of the COPE Inventory and the Hypertension Self-Care Profile (HBP SCP) [21] on hypertension diets. There were 38 questions on the coping strategy used assessed using a Likert scale with the options of always, often, sometimes, and never. There were 11 questions on regulating the dietary pattern which also use the same answer choices of always, often, sometimes, and never. Before the questionnaire was distributed to the respondents, the instrument was declared to be valid and reliable. The score of the coping strategy for reliability was 0.771 and hypertension diet scale reliability was 0.843.

- Data Collecting

The data collection of the study was initiated by obtaining informed consent from the respondents. The aims and benefits of the study, the procedures used for conducting the research and the rights and obligations of the respondents during the research process were explained. The respondents who agreed to participate in the study signed an informed consent sheet. The study protocol was approved by the Health Research Ethics Commission of the Faculty of Nursing, Airlangga University, Surabaya No: 1468-KEPK.

- Data Analysis

The data analysis was done using a linear regression test using SPSS for Windows 23 to analyze the effect of coping strategy on regulating the dietary patterns of people with hypertension.

III. RESULTS

Characteristics of Respondents

As many as 75.1% of the respondents were older than 56 years old and 24.9% were younger than 56 years old. In total, 22.2% of the respondents had suffered from hypertension for less than 1 year and 77.8% had suffered from hypertension for more than 1 year. The regulation of a hypertensive diet was shown to be 32.9% less, 49.3% adequate and 17.8% good.

The Relationship between Coping Strategy and Regulating Dietary Pattern

The results on the relationship between coping strategy and dietary pattern using the Pearson test have been shown in Table 1.

Table 1. Relationship between the different coping strategies and regulating dietary patterns

Variable	Regulating Dietary Patterns	
	r	p-value
Active coping	0.135	0.043
Planning	0.197	0.003
Restraint	0.204	0.002
Suppression of competing activities	0.277	0.000
Seeking instrumental and informational social support	0.170	0.011
Positive reinterpretation	0.283	0.000
Turning to religion	0.237	0.000
Seeking emotional social support	0.180	0.007

Table 1 illustrates that coping strategy consists of active coping, planning, restraint, the suppression of competing activities, seeking instrumental and informational social support, positive reinterpretation, turning to religion, and seeking social support. These are all significantly related to regulating the dietary pattern of patients with hypertension.

Influence of the Coping Strategy on Dietary Management

The results of the linear regression analysis on the effect of coping strategy on regulating dietary patterns have been presented in Table 2.

Table 2. Linear regression analysis of the factors affecting dietary regulation

Variable	B	SE	β	t	p-value
Constant	1.258	0.108		11.695	0.000
Restraint	1.004	0.430	1.010	2.331	0.021
Positive Reinterpretation	0.295	0.106	0.282	2.781	0.006
Turning to Religion	0.141	0.070	0.153	2.023	0.044
Seeking emotional social support	-1.111	0.0429	-1.116	-2.592	0.010

Table 2 shows that the coping strategies that significantly influence the regulation of the patient's dietary pattern include positive reinterpretation (p-value = 0.006), seeking emotional social support (p-value = 0.010), restraint (p-value = 0.021) and turning to religion (p-value = 0.044).

IV. DISCUSSION

Regulating the dietary pattern of people with hypertension is needed to control their blood pressure. People with hypertension should understand the management of their dietary intake in terms of both recommended and non-recommended diets. Good knowledge about a hypertensive diet is associated with better diet quality and lower blood pressure [22]. The results of other studies show that increasing the protein intake and decreasing the carbohydrate intake within reasonable limits is beneficial when it comes to controlling blood pressure [23].

The study results show that the regulation of dietary patterns is influenced by the coping strategy type that includes positive reinterpretation, seeking emotional social support, restraint and turning to religion. These results illustrate that emotion-focused coping more dominantly affects the behavior of hypertension sufferers when regulating their dietary patterns. Emotion-focused coping encourages individuals to pay attention to the emotional aspects of their life. Someone who is oriented towards emotion-focused coping is less oriented to the use of problem-focused strategies [24]. The results of this study show that the 3 components of emotion-focused coping that have an influence are positive reinterpretation, seeking emotional social support and turning to religion.

Positive reinterpretation is an adaptive coping strategy used to manage the emergence of stress in individuals. Other studies show that positive reinterpretation is positively related to self-efficacy and negatively related to depression and stress. Positive reinterpretation includes the positive aspects of the situation that is happening and finding meaning from the event [25]. Someone who uses positive reinterpretation shows better health behavior. Positive reinterpretation in one person is influenced by the knowledge of the disease that they are experiencing. When undergoing the process of care and rehabilitation, it is very important to reinforce the positive expectations of sufferers and to educate the sufferers to allow them to be able to carry out their care properly [26]. An appropriate rehabilitation program is essential to improve the ability of the sufferers to carry out any expected health behaviors [27]. The results of other studies also show that positive interpretation is significantly related to the cognitive reappraisal attitude. A person's experience when undergoing a disease that has been suffered from will increase their meaning of life. This will cause there to be a significant relationship between reappraisal and positive interpretations [28].

Seeking emotional social support was found to have a significant effect on regulating their dietary patterns. This shows that a hypertension sufferer who tries to find emotional support in their social environment can improve and regulate their diet. Social support is a very important source of influence when it comes to individual coping. Seeking social support is very important for individuals to meet their needs. Someone who is self-blaming and with defensive coping will be strongly associated with an increased risk of worsening health [29]. The low acceptance of social support will adversely affect the individual's condition. The risk of depression will be greater in this situation. The availability of social support will protect individuals against the threat of depression. Social support will influence the individuals to overcome the problems being faced [30]. It is important for health workers to provide psychosocial interventions to improve patient empowerment so then the patients can meet their needs properly [29].

Turning to religion also affects the regulation of their dietary patterns. Turning to religion is an attempt by the hypertension sufferers to be involved in religious activities. Some of the indicators of turning to religion that are described include surrendering to the condition of hypertension as it is something God wants them to experience, trying to improve

their worship and praying to be healing by God [31][32]. The closeness of hypertension sufferers to God affects how the sufferers choose the right diet for themselves.

The use of the coping strategy chosen by the individuals is influenced by several factors. The coping strategy is not only influenced by the socio-demographic characteristics and illnesses but it is also influenced by psychological factors such as anxiety and depression. High anxiety level is more associated with the use of emotion-focused coping. Higher levels of depression also trigger someone to use avoidance strategies. The emergence of depression can affect an individual's perspective of the stressors where the individual considers the stressor to be a threat [24]. The use of coping strategies is related to a person's quality of life both physically and psychologically. Positive coping will improve their quality of life and conversely, negative coping decreases quality of life [33], [34].

The strength of this study is that the regulation of hypertension diets has been analyzed according to psychological factors, namely the coping strategies that are part of the process of self-regulation. Emotion-focused coping is the dominant factor affecting the behavior of hypertensive sufferers. The limitation of the study is that the characteristics of the respondents are not limited in terms of the duration of the hypertension. It is possible for this to influence the selection of the coping strategies used by the sufferers.

V. CONCLUSION

Emotion-focused coping which includes positive reinterpretation, seeking emotional social support and turning to religion significantly influences the regulation of the dietary pattern of patients with hypertension. Restraint, which is a component of problem-focused coping, also has a significant effect. Overall, the use of emotion-focused coping has a more dominant influence on the regulation of a hypertensive diet. These results indicate that efforts to regulate the dietary patterns of people with hypertension require strengthening the emotional factors of the patients. Health workers can provide education to improve the patient's dietary patterns through an emotion-focused coping approach.

CONFLICT OF INTEREST

The authors have declared there are no conflicts of interest.

ACKNOWLEDGMENT

The authors would like to thank Universitas Airlangga, STI Kes Kepanjen Malang and Kementerian Pendidikan dan Kebudayaan for their support of this research and publication.

REFERENCES

- [1] R. Gupta and D. Xavier, "Hypertension: The most important non communicable disease risk factor in India," *Indian Heart J.*, vol. 70, no. 4, pp. 565–572, 2018.
- [2] E. O. Anto *et al.*, "Prevalence and lifestyle-related risk factors of obesity and unrecognized hypertension among bus drivers in Ghana," *Heliyon*, vol. 6, no. 1, p. e03147, 2020.
- [3] K. Do Nam *et al.*, "Hypertension in a mountainous province of Vietnam: prevalence and risk factors," *Heliyon*, vol. 6, no. 2, p. e03383, 2020.
- [4] B. Nguyen, A. Bauman, and D. Ding, "Association between lifestyle risk factors and incident hypertension among middle-aged and older Australians," *Prev. Med. (Baltim).*, vol. 118, pp. 73–80, 2019.
- [5] T. Shrout, D. W. Rudy, and M. T. Piascik, "Hypertension update, JNC8 and beyond," *Curr. Opin. Pharmacol.*, vol. 33, pp. 41–46, 2017.
- [6] Y. Kokubo and C. Matsumoto, "Comprehensive Lifestyle Modification for Hypertension and Lifestyle-Related Disease Under the New Guidelines," R. S. Vasan and D. B. B. T.-E. of C. R. and M. Sawyer, Eds.

- Oxford: Elsevier, 2018, pp. 651–658.
- [7] A. M. Aleali, S. M. Latifi, H. Rashidi, S. P. Payami, and A. Sabet, “Prevalence of hypertension and prehypertension in adolescence in Ahvaz, Iran,” *Diabetes Metab. Syndr. Clin. Res. Rev.*, vol. 11, pp. S547–S550, 2017.
- [8] C. Borghi *et al.*, “Lack of control of hypertension in primary cardiovascular disease prevention in Europe: Results from the EURIKA study,” *Int. J. Cardiol.*, vol. 218, pp. 83–88, Sep. 2016.
- [9] C. Torlasco *et al.*, “Cardiovascular risk and hypertension control in Italy. Data from the 2015 World Hypertension Day,” *Int. J. Cardiol.*, vol. 243, pp. 529–532, Sep. 2017.
- [10] G. Huang *et al.*, “Prevalence, awareness, treatment, and control of hypertension among very elderly Chinese: results of a community-based study,” *J. Am. Soc. Hypertens.*, vol. 11, no. 8, pp. 503–512.e2, 2017.
- [11] S. T. Shafi and T. Shafi, “A survey of hypertension prevalence, awareness, treatment, and control in health screening camps of rural central Punjab, Pakistan,” *J. Epidemiol. Glob. Health*, vol. 7, no. 2, pp. 135–140, Jun. 2017.
- [12] N. H. Ishak, S. S. Mohd Yusoff, R. A. Rahman, and A. A. Kadir, “Diabetes self-care and its associated factors among elderly diabetes in primary care,” *J. Taibah Univ. Med. Sci.*, vol. 12, no. 6, pp. 504–511, 2017.
- [13] C. Ma, “An investigation of factors influencing self-care behaviors in young and middle-aged adults with hypertension based on a health belief model,” *Hear. Lung*, vol. 47, no. 2, pp. 136–141, 2018.
- [14] L. P. Bricarello *et al.*, “Association between DASH diet (Dietary Approaches to Stop Hypertension) and hypertension in adolescents: A cross-sectional school-based study,” *Clin. Nutr. ESPEN*, vol. 36, pp. 69–75, 2020.
- [15] M. Taghavi *et al.*, “Adherence to the dietary approaches to stop hypertension-style diet is inversely associated with chronic kidney disease: a systematic review and meta-analysis of prospective cohort studies,” *Nutr. Res.*, vol. 72, pp. 46–56, 2019.
- [16] A. Aguirre-Camacho and B. Moreno-Jiménez, “Depression and Anxiety in Patients With Pulmonary Hypertension: The Role of Life Satisfaction and Optimism,” *Psychosomatics*, vol. 59, no. 6, pp. 575–583, 2018.
- [17] Cary L. Cooper and James Campbell Quick, *The Handbook of Stress and Health*. 2017.
- [18] A. L. H. Ledesma, A. J. R. Méndez, L. S. G. Vidal, G. T. Cruz, P. García-Solís, and F. de J. D. Esquivel, “Coping strategies and quality of life in Mexican multiple sclerosis patients: Physical, psychological and social factors relationship,” *Mult. Scler. Relat. Disord.*, vol. 25, pp. 122–127, 2018.
- [19] H. Tangestani, A. Salari-Moghaddam, H. Ghalandari, and H. Emamat, “Adherence to the Dietary Approaches to Stop Hypertension (DASH) dietary pattern reduces the risk of colorectal cancer: A systematic review and meta-analysis,” *Clin. Nutr.*, 2020.
- [20] A. Alkerwi *et al.*, “Smoking status is inversely associated with overall diet quality: Findings from the ORISCAV-LUX study,” *Clin. Nutr.*, vol. 36, no. 5, pp. 1275–1282, 2017.
- [21] H. R. Han, H. Lee, Y. Commodore-Mensah, and M. Kim, “Development and validation of the hypertension self-care profile: A practical tool to measure hypertension self-care,” *J. Cardiovasc. Nurs.*, vol. 29, no. 3, pp. 11–20, 2014.
- [22] F. Geaney, S. Fitzgerald, J. M. Harrington, C. Kelly, B. A. Greiner, and I. J. Perry, “Nutrition knowledge, diet quality and hypertension in a working population,” *Prev. Med. Reports*, vol. 2, pp. 105–113, 2015.
- [23] K. F. M. Teunissen-Beekman and M. A. Van Baak, “The role of dietary protein in blood pressure regulation,” *Curr. Opin. Lipidol.*, vol. 24, no. 1, pp. 65–70, 2013.
- [24] M. Iglesias-Rey *et al.*, “How do psychological variables influence coping strategies in inflammatory bowel disease?,” *J. Crohn’s Colitis*, vol. 7, no. 6, pp. e219–e226, 2013.
- [25] A. Cheshire, J. Barlow, and L. Powell, “Coping Using Positive Reinterpretation in Parents of Children with Cerebral Palsy,” *J. Health Psychol.*, vol. 15, no. 6, pp. 801–810, Jul. 2010.
- [26] M. Janiszewska, A. Barańska, K. Kanecki, A. Karpińska, E. Firlej, and M. Bogdan, “Coping strategies observed in women with rheumatoid arthritis,” *Ann. Agric. Environ. Med.*, 2019.
- [27] A. Milanlioglu, P. G. Özdemir, V. Cilingir, T. Ç. Gülec, M. N. Aydin, and T. Tombul, “Estratégias de enfrentamento e perfis de humor em pacientes com esclerose múltipla,” *Arq. Neuropsiquiatr.*, vol. 72, no. 7, pp. 490–495, 2014.
- [28] A. Büssing, T. Ostermann, E. A. Neugebauer, and P. Heusser, “Adaptive coping strategies in patients with chronic pain conditions and their interpretation of disease,” *BMC Public Health*, vol. 10, 2010.
- [29] S. Fischbeck *et al.*, “Determinants of illness-specific social support and its relation to distress in long-term melanoma survivors,” *BMC Public Health*, vol. 18, no. 1, pp. 1–9, 2018.
- [30] J. Costa and J. P. Gouveia, “A new approach to explain the link between social support and depression in a 2-years arthritis rheumatoid sample. is there any moderation effect of acceptance?,” *Int. J. Psychol. Psychol.*

- Ther.*, vol. 13, no. 1, pp. 65–82, 2013.
- [31] A. Büssing, I. Pilchowska, and J. Surzykiewicz, “Spiritual Needs of Polish Patients with Chronic Diseases,” *J. Relig. Health*, vol. 54, no. 5, pp. 1524–1542, Oct. 2015.
- [32] A. Büssing and H. G. Koenig, “Spiritual needs of patients with chronic diseases,” *Religions*, vol. 1, no. 1, pp. 18–27, 2010.
- [33] A. Fairfax *et al.*, “A systematic review of the association between coping strategies and quality of life among caregivers of children with chronic illness and/or disability,” *BMC Pediatr.*, vol. 19, no. 1, pp. 1–16, 2019.
- [34] L. B. Grech, L. A. Kiropoulos, K. M. Kirby, E. Butler, M. Paine, and R. Hester, “Target coping strategies for interventions aimed at maximizing psychosocial adjustment in people with multiple sclerosis,” *Int. J. MS Care*, vol. 20, no. 3, pp. 109–119, 2018.