

THE DEVELOPMENT OF SELF-REGULATION MODELS BASED ON BELIEF IN PATIENTS WITH HYPERTENSION

Nursalam Nursalam¹, Riza Fikriana²⁻⁵, Shrimarti Rukmini Devy³, Ahsan Ahsan⁴

¹Professor of Nursing, Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

²Student of Doctoral Program, Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

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

⁴Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia

⁵Nursing Major, STIKes Kepanjen, Malang, Indonesia

ABSTRACT

The self-care ability of patients with hypertension is still relatively low. One of the contributing factors is the lack of self-regulation to carry out recommended health behaviors. This will result in uncontrolled blood pressure and an increased risk of complications. The purpose of this study was to develop self regulation model based on belief to improve self-care abilities in people with hypertension. The study design used explanatory surveys. The samples were 225 people with hypertension with systolic blood pressure >160 mmHg taken by multistage random sampling technique. The research variables include social support factors, health services factors, interpretations, emotional responses, beliefs, coping, self-efficacy, coping, self-care abilities and hypertension status. The research instrument used a questionnaire and a digital sphygmomanometer. Data analysis was performed by using Structural Equation Modeling - Partial Least Squares (SEM - PLS). The results showed that the process of self-regulation in patients with hypertension

is formed by belief, which can affect self-care ability. Belief directly affects the coping and emotional response of sufferers. Self-efficacy plays a major role in forming coping. In addition, it was found that interpretation was formed by the social support and health services factor. The ability of self-care affects the hypertension status of patients both in blood pressure and pulse. The implication of this result is the need to strengthen the belief of patients made by health workers so that hypertension sufferers can optimally fulfill their care needs appropriately so that blood pressure can be controlled properly.

Keywords: Self-Regulation, Belief, Coping, Self-Efficacy, Hypertension

Correspondence:

Nursalam Nursalam

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

nursalam@fkip.unair.ac.id

INTRODUCTION

Globally, the prevalence of hypertension continues to increase over the years. Significant increase in prevalence mainly occurs in countries with low-income and middle-income [1]. Efforts to control blood pressure in patients with hypertension are needed to prevent uncontrolled increases in blood pressure and avoid complications. This is because hypertension has a major role in increasing the morbidity and mortality rates of the population [2]. To prevent this, self-care is the main component that must be done to control blood pressure. However, it was found that hypertension sufferers had difficulty maintaining good self-care behavior [3].

Research studies have found that hypertension sufferers are unable to limit salt consumption as well as have inability to manage weight [4]. Only a few sufferers are active in physical activity[5]. Adherence to treatment was also found to be low [6]. This inability to self-care properly affects blood pressure control. Studies on controlling blood pressure of hypertension sufferers are still classified as low [7], [8]. More than 50% of hypertensive sufferers experience uncontrolled blood pressure [9]. Another study also found that only 18.1% of people with hypertension had controlled blood pressure [10] while other studies also show only 32.5% of people with hypertension with controlled blood pressure [2]. As a result, uncontrolled blood pressure is positively correlated with the risk of cardiovascular disease [9].

One of the factors causing the low self-care ability of hypertension sufferers is the low ability to self-regulate [11]. Self-regulation emphasizes the active role of an individual to regulate himself in an effort to improve health, and prevent and improve the effects of the disease he experiences [12]. The study results show that self-regulation can increase changes in health behavior [13]. However, self-regulation in patients with hypertension is still found in the low category. The results of the study showed that in the self-regulation of

hypertension sufferers, as many as 46.6% were in the bad category, while those in the good category were only 7.4% [11].

The Self-Regulatory Model illustrates that the self-regulation process consists of interpretation, coping and appraisal [14]. So, to improve the ability of self-regulation in patients with hypertension, it is necessary to develop this model so that hypertensive patients are able to improve their self-care abilities in order that blood pressure becomes controlled and protected from complications of the disease. The development of the model in this study is to add a factor of belief in patients with hypertension. This is because belief is one of the main factors that will influence self-care behaviors. Belief is the main predictor of changes in better health behavior in an individual [15]. The purpose of this study was to develop self regulation model based on belief to improve self-care abilities in people with hypertension.

METHODS

An explanatory survey was aimed to confirm the hypotheses prepared by researchers. The study was conducted on hypertension patients who had systolic blood pressure >160mmHg, as many as 225 people. The sampling technique was multistage random sampling. The sample criteria were patients aged >25 years, the level of independent dependence, not currently undergoing treatment in hospital and do not have other comorbidities.

Research variables include endogenous variables and exogenous variables. Endogenous variables consist of coping, self-care ability and hypertension status, while exogenous variables include social support factors, health service factors, representation, emotional reactions, beliefs and self-efficacy. The social support questionnaire presents informational, instrumental, assessment / appreciation social support questionnaires. The health service factor questionnaire uses health insurance ownership indicators,

access to health services, availability of facilities and infrastructure, the role of health workers and the profile of health workers. The interpretation questionnaire is modified from the illness perception scale with indicators including symptoms, treatment and causes [17], [18]. The emotional response questionnaire was modified from the Depression Anxiety Stress Scale (DASS 42) [19] with indicators including fear, anxiety and depression. The questionnaire beliefs about vulnerability and seriousness were modified from perceived susceptibility to chronic diseases and perceived severity to chronic diseases. [20], [21]. Self-efficacy was measured by the General Self-Efficacy Scale (GSE) [22]. The coping questionnaire was modified from the scales of the COPE Inventory with indicators of active coping, planning, restrain, suppression of competing activities, seeking informational and instrumental support, positive reinterpretation, turning to religion and seeking emotional support [23]. The self-care ability questionnaire was taken from the Hypertension Self-Care Profile (HBP SCP) containing an assessment of physical activity, hypertension diet, medication compliance, stress management and control of health services [24]. Measurement of blood pressure and pulse was by using a digital sphygmomanometer.

All questionnaires have been tested for validity and reliability. The validity test of the questionnaire used average variance extracted (AVE), and the results showed that all variables were valid and strong in making the modeling structure. The initial stage of data collection was carried out by explaining the purpose, benefits and research procedures to respondents. Approval of participation as a respondent was carried out by written approval. The study protocol was approved by the Health Research Ethics Committee of the Faculty of Nursing, Airlangga University, Indonesia. Data analysis was performed using Structural Equation Modeling - Partial Least Squares (SEM - PLS) to test the effect of exogenous variables on endogenous variables.

RESULTS

Characteristics of Respondents

Respondent characteristics in the study were people with hypertension, the predominant educational background was elementary school level (158/225, 70.30%) and the highest occupational was do not work (131/225, 58.20 %). In addition, the majority of respondents were married (131/225; 58.20%) (Table 1).

Table 1. The Characteristics of Respondents

Characteristics of Respondents	N	%
Educational Background		
Elementary School	158	70.30
Junior High School	34	15.10
Senior High School	27	12.10
Bachelor	6	2.70
Occupation		
Do not work	131	58.20
Entrepreneur	7	3.10
Private employee	2	0.90
Civil servant	34	15.10
Farmer	24	10.70
Servant	15	6.70
Seller	11	4.90
Other	1	0.40
Marital Status		
Married	131	58.20
Single	0	0.00
Widow/ Widower	94	41.80

Model Development of Self-Regulation based on Belief in Patients with Hypertension

The results of the analysis using SEM-PLS have been carried out by including the testing of the outer and inner model. The results of the inner model to test the effect of exogenous factors on endogenous are listed in Table 2. Table 2 explains the relationship between exogenous and endogenous variables. Exogenous variables have a

significant relationship if the T-statistic value is ≥ 1.96 . Most of them showed a significant relationship, namely social support factor on interpretation, health services factor on interpretation, health services factor on emotional responses, interpretation of beliefs, beliefs on coping, beliefs on emotional responses, emotional responses on self-efficacy, self-efficacy on coping, coping with self-care ability and self-care ability against hypertension status.

Table 2. Test Results of Significance of Structural Models (Inner Model)

Correlation of Variable	Coefficient	T-Statistic	p-Value
(X1) Social support factor → (X3) Interpretation	0.991	185.592	0.000
(X1) Social support factor → (X4) Emotional responses	0.572	1.826	0.068
(X2) Health services factor → (X3) Interpretation	-0.014	2.004	0.046
(X2) Health services factor → (X4) Emotional responses	0.258	4.009	0.000
(X3) Interpretation → (X5) Belief	0.161	2.550	0.011
(X3) Interpretation → (X4) Emotional Responses	-0.336	1.073	0.284
(X5) Belief → (X6) Self Efficacy	-0.031	0.429	0.668
(X5) Belief → (Y1) Coping	-0.117	3.002	0.003
(X5) Belief → (X4) Emotional responses	0.130	2.498	0.013
(X4) Emotional responses → (X6) Self Efficacy	0.289	4.545	0.000
(X6) Self Efficacy → (Y1) Coping	0.767	26.450	0.000
(Y1) coping → (Y2) Self-care ability	0.335	4.636	0.000
(Y2) Self-care ability → (Y3) Hypertension status	0.219	3.124	0.002

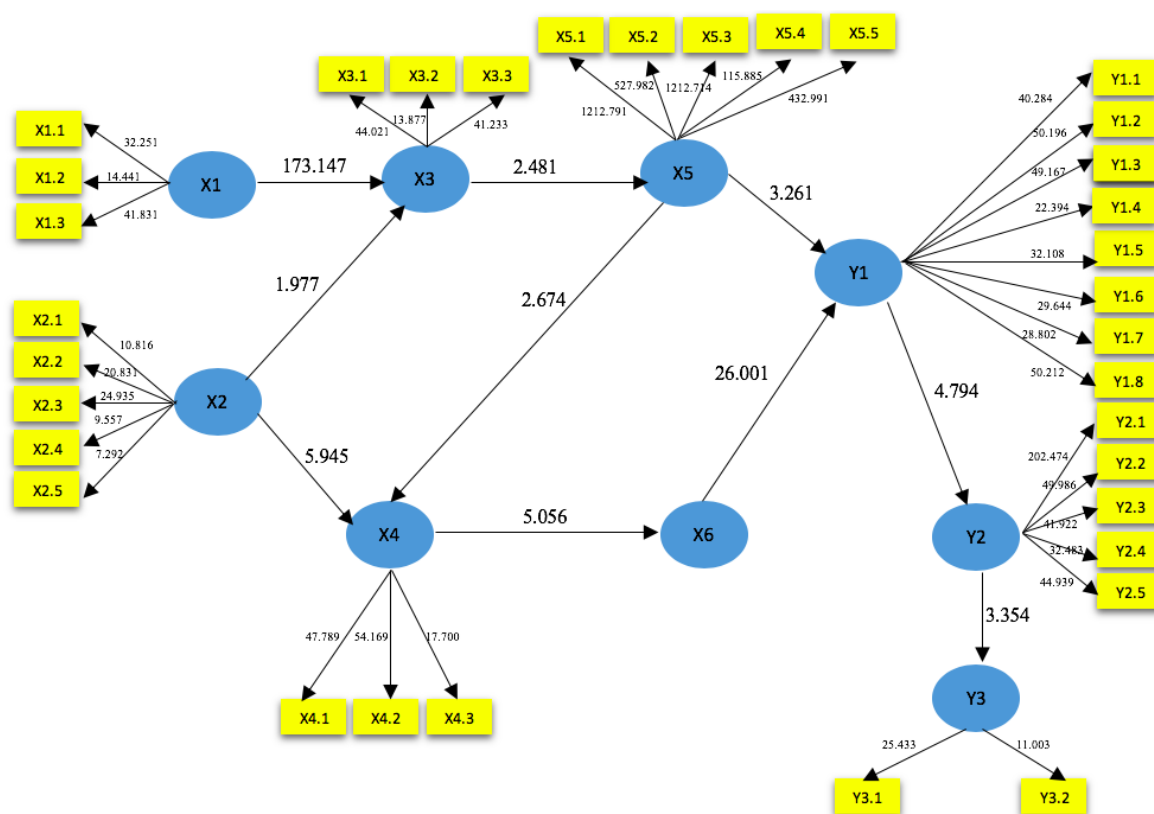


Figure 1. Structural Models of Self-Regulation based on Belief in Patients with Hypertension

Figure 1 shows that the process of self-regulation is formed by beliefs, which can affect the self-care abilities of hypertension sufferers. Interpretation, which is part of the process of self-regulation, is formed by factors of social support and health services and results in patient belief. Belief directly affects coping and emotional responses. It is also found that self-efficacy has a very large role in influencing coping. Furthermore, patient coping affects the ability of self-care, which can affect the patient's hypertension status.

DISCUSSION

Self-regulation involves a psychological process in an individual by setting and achieving goals to make changes in health behavior [25]. Characteristic of self-regulation is the use of personal resources of an individual to achieve the expected health goals, so that they will be able to improve

the health and wellbeing of individuals who have health problems [12]. The process of self-regulation is closely related to the process of emotional regulation. When individuals make self-regulation, they are often faced with internal emotional situations. The emotional regulation process broadly is a process of regulating all kinds of affective or emotional responses, including attention, cognitive representation and physical or behavioral responses [26].

An individual must have a strong self-regulation ability to regulate his/her emotions, thoughts or behavior. The lack of self-regulation power can lead to failure of individuals to make changes in behavior [26]. The results of studies of emotional regulation of hypertension sufferers found that sufferers showed anxiety, resulting in the emergence of unorganized behavior [27]. The diagnosis of hypertension also increases the risk of developing depressive

symptoms in patients, especially in patients with hypertension from low socioeconomic groups [28]. Self-regulation in patients with hypertension is very important because this can significantly reduce blood pressure [29].

The results in this study indicate that the process of self-regulation is also formed by the belief of sufferers. A belief affects individuals in an effort to make health behavior changes even better [30], [31]. This is because the hypertension sufferers' self-awareness of the treatment and the control of blood pressure is still very low. Thus, the strengthening of individual belief will be the main basis for medication adherence and adherence to healthy living behaviors. As a result, blood pressure will be well-controlled, patient satisfaction will increase and quality of life will be even better [32]. High belief in self-care will improve the treatment adherence in hypertension patients with low salt consumption settings and smoking behavior [33], [34]. A belief assessment must be carried out by health workers. If the existing belief in individuals shows a tendency to reduce medication adherence, then this is very useful for health workers to immediately modify the interventions that must be done, so that the sufferers adhere to the treatment. Health workers must have the ability to explore belief in people with hypertension and discuss with patients so that the patients have better belief regarding treatment [35].

Self-efficacy has a very big role in forming patient coping, whereby coping is a part of the self-regulation process. The increase of self-efficacy will certainly be able to increase the selection of coping strategies that are more adaptive. Good coping is characterized by the patient's ability to plan actions, focus on solving problems, actively seeking social support, etc. Other studies show that self-efficacy is related to self-care behavior in people with hypertension [36], [37]. High self-efficacy accompanied by good social support can improve self-care behavior [38]. In addition, it was found that the low perceived barrier and high self-efficacy in patients with hypertension correlated with high adherence to the treatment [35].

Patient's interpretation on symptoms, treatment and causes is greatly influenced by social support from family, peers and health workers. However, the most important role is the support of health workers. High social support will increase patient interpretation. In addition to social support, health service factors also affect patient interpretation. The patient's interpretation will further influence the formation of belief, such as perceived susceptibility, perceived severity, perceived threat, perceived barrier and perceived benefit. This is in line with previous studies which showed that social support and health services, such as health insurance ownership, have a significant effect on the patient's self-regulation process [39].

Self-management practiced by patients with hypertension significantly reduces uncontrolled blood pressure control [8]. Patients with hypertension with a high level of education have an effect on improving health behavior. The obstacles that occur, such as the need for cost and time, can also be reduced. Situational influences and support from both family and friends also influence sufferers' self-care behavior [40]. Support from health workers can improve behavior change for the better [41]. Health workers as health service providers, especially community nurses, can collaborate with families to do family nursing care and increase motivation so that families are involved in the care of family members suffering from hypertension. This action can increase changes in the behavior of family members, such as increased physical activity, which is very important for the health of sufferers

[42]. Good communication from health workers is also able to improve self-care behavior for sufferers [43], [44]. Peer group involvement is also very important to improve self-care abilities. Studies show that peer health education can reduce the risk of cardiovascular disease [45]. In addition, the increase of self-efficacy can improve changes in health behavior for the better [40].

Emotional response is a process that occurs in self-regulation as well. The results of this study illustrate that the emotional response of patients is formed from health service factors and patient belief. This formed emotional response affects self-efficacy. People with hypertension can cause emotional reactions in the form of fear, anxiety and depression. This is supported by other research studies illustrating that depression is a barrier for people with hypertension to perform expected health behaviors [46]. Early diagnosis and treatment of depressive symptoms are important to do in the treatment of hypertension. Thus, nurses must be able to examine carefully the emergence of symptoms of depression in patients. This is necessary because depression in patients with hypertension will have an effect on medication adherence [47] and non-compliance with treatment will increase the risk of excessive increase of blood pressure, which will, in turn, result in low blood pressure control [48]. Not only depression, anxiety is also one of the emotional responses that can arise in sufferers. There is a significant relationship between medication adherence with anxiety in people with hypertension. This shows that it is important for health workers to provide psychological counseling for patients with hypertension and provide reinforcement of medication adherence [49].

Management of hypertension must be carried out appropriately by sufferers, both adherence of treatment and adherence of healthy living behaviors. The results of this study illustrate that the self-care ability of patients with hypertension, which includes physical activity, hypertension diet regulation, stress management, medication adherence as well as regular visits to health services, are influenced by patient coping. A good coping will certainly be able to improve self-care ability so that it will improve the patient's hypertension status. This is supported by other studies which found routine visits to health services are very important for hypertension control and health behavior modifications [50]. The role of health workers is very important as well. Providing direct and frequent health education to hypertension sufferers will be able to increase patient involvement and participation so as to increase literacy and medication adherence [51].

The strength of this research is integrating the belief factor into the process of self-regulation in patients with hypertension. It also analyzes the effect of social support factors and health service factors on the process of self-regulation. The limitation of this study is that the characteristics of the hypertension sufferers are not limited by the availability of family support systems, whereby this is possible to affect the patient's self-regulation process.

CONCLUSION

Belief affects the process of self-regulation in patients with hypertension, which will affect the ability of self-care. Coping which is part of the process of self-regulation is directly formed by belief and self-efficacy. In addition, it was found that social support factors and health service factors influence the process of self-regulation as well. The implication of the results of this study is the need for strengthening of health workers to increase patient belief in health problems, so that, patients are able to set goals and actions that are expected to increase the ability to perform

self-care. So that, this will result in blood pressure control and prevent complications.

REFERENCES

- [1] "Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19.1 million participants.," *Lancet* (London, England), vol. 389, no. 10064, pp. 37–55, Jan. 2017.
- [2] C. K. Chow et al., "Prevalence, awareness, treatment, and control of hypertension in rural and urban communities in high-, middle-, and low-income countries," *JAMA - J. Am. Med. Assoc.*, vol. 310, no. 9, pp. 959–968, 2013.
- [3] H. M. Yatim, Y. Y. Wong, C. F. Neoh, S. H. Lim, M. A. Hassali, and Y. H. Hong, "Factors influencing patients' hypertension self-management and sustainable self-care practices: a qualitative study," *Public Health*, vol. 173, pp. 5–8, 2019.
- [4] J. Warren-Findlow and R. B. Seymour, "Prevalence Rates of Hypertension Self-care Activities Among African Americans," *J. Natl. Med. Assoc.*, vol. 103, no. 6, pp. 503–512, 2011.
- [5] A. K. Tusubira et al., "Self-care practices and needs in patients with hypertension, diabetes, or both in rural Uganda: a mixed-methods study," *Lancet Glob. Heal.*, vol. 8, p. S19, 2020.
- [6] D. Macquart de Terline et al., "Poor adherence to medication and salt restriction as a barrier to reaching blood pressure control in patients with hypertension: Cross-sectional study from 12 sub-Saharan countries," *Arch. Cardiovasc. Dis.*, May 2020.
- [7] 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.
- [8] Z. Qu et al., "Self-management and blood pressure control in China: A community-based multicentre cross-sectional study," *BMJ Open*, vol. 9, no. 3, pp. 1–11, 2019.
- [9] 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, 2016.
- [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] M. Fuladvandi, H. Safarpour, L. Malekian, S. Moayedi, M. A. Mahani, and E. Salimi, "The Survey of Self-Regulation Behaviors and Related Factors in Elderly with Hypertension in South-East of Iran," *Health (Irvine, Calif.)*, vol. 09, no. 04, pp. 592–600, 2017.
- [12] G. Weidner, M. Sieverding, and M. A. Chesney, "The role of self-regulation in health and illness," *Psychol. Heal. Med.*, vol. 21, no. 2, pp. 135–137, 2016.
- [13] P. Sheeran, T. L. Webb, P. M. Gollwitzer, and G. Oettingen, "Self-regulation of affect-health behavior relations," no. January. 2018.
- [14] B. Mcguire, B. Mcguire, J. Walsh, H. P. Programme, and N. U. I. Galway, "Diabetes Self-Management: Facilitating Behaviour Change . Diabetes Self-Management: Facilitating Behaviour Change Director , Clinical Psychology Programme , NUI Galway Clinical Psychologist , Diabetes Centre , University College Hospital , Galway Corres.," no. September, 2015.
- [15] 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.
- [16] N. Nursalam, *Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis*, 4th ed. Jakarta: Salemba Medika, 2015.
- [17] J. Weinman, K. J. Petrie, R. Moss-morris, and R. Horne, "The illness perception questionnaire: A new method for assessing the cognitive representation of illness," *Psychol. Health*, vol. 11, no. 3, pp. 431–445, Mar. 1996.
- [18] E. Broadbent, K. J. Petrie, J. Main, and J. Weinman, "The brief illness perception questionnaire.," *J. Psychosom. Res.*, vol. 60, no. 6, pp. 631–637, Jun. 2006.
- [19] T. D. Tran, T. Tran, and J. Fisher, "Validation of the depression anxiety stress scales (DASS) 21 as a screening instrument for depression and anxiety in a rural community-based cohort of northern Vietnamese women," *BMC Psychiatry*, vol. 13, no. 1, p. 24, 2013.
- [20] L. H. McArthur, A. Riggs, F. Uribe, and T. J. Spaulding, "Health Belief Model Offers Opportunities for Designing Weight Management Interventions for College Students," *J. Nutr. Educ. Behav.*, vol. 50, no. 5, pp. 485–493, 2018.
- [21] J. Kim and H.-A. Park, "Development of a health information technology acceptance model using consumers' health behavior intention," *J. Med. Internet Res.*, vol. 14, no. 5, pp. e133–e133, Oct. 2012.
- [22] M. Schwarzer, R., & Jerusalem, "General Self-Efficacy Scale (GSE)," *Meas. Heal. Psychol. A user's portfolio. Causal Control beliefs*, pp. 35–37, 1995.
- [23] C. S. Carver, "COPE Inventory. Measurement Instrument Database for the Social Science. Retrieved from www.midss.ie," 2013.
- [24] 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. 1–16, 2014.
- [25] T. Mann, D. de Ridder, and K. Fujita, "Self-regulation of health behavior: social psychological approaches to goal setting and goal striving.," *Heal. Psychol. Off. J. Div. Heal. Psychol. Am. Psychol. Assoc.*, vol. 32, no. 5, pp. 487–498, May 2013.
- [26] E. B. Tabor, *Handbook of Self-Regulation: Research, Theory, and Applications*, vol. 57, no. 4. 2006.
- [27] E. Pervichko, Y. Zinchenko, and O. Ostroumova, "Emotion Regulation in Patients with Essential Hypertension: Subjective-evaluative, Physiological, and Behavioral Aspects," *Procedia - Soc. Behav. Sci.*, vol. 127, pp. 686–690, Apr. 2014.
- [28] Y. Jin, Y. Luo, and P. He, "Hypertension, socioeconomic status and depressive symptoms in Chinese middle-aged and older adults: Findings from the China health and retirement longitudinal study," *J. Affect. Disord.*, vol. 252, pp. 237–244,

- 2019.
- [29] M.-Y. Wang et al., "Effect of Feedback Signal on Blood Pressure Self-regulation Capability in Individuals With Prehypertension or Stage I Hypertension: A Randomized Controlled Study," *J. Cardiovasc. Nurs.*, vol. 31, no. 2, 2016.
- [30] R. A. Ferrer and W. M. P. Klein, "Risk perceptions and health behavior," *Curr. Opin. Psychol.*, vol. 5, pp. 85–89, 2015.
- [31] A. Voigt et al., "Association of glycaemia with perceived threat of illness in patients with type 2 diabetes," *Prim. Care Diabetes*, vol. 9, no. 6, pp. 426–431, 2015.
- [32] R. Oruganti, S. Paidipati, and M. Dinaker, "The Health Beliefs Scale for Hypertensive patients: Construction and Psychometric Testing," vol. 7, no. 6, pp. 34–43, 2018.
- [33] A. Kamran, S. Sadeghieh Ahari, M. Biria, A. Malepour, and H. Heydari, "Determinants of Patient's Adherence to Hypertension Medications: Application of Health Belief Model Among Rural Patients," *Ann. Med. Health Sci. Res.*, vol. 4, no. 6, pp. 922–927, Nov. 2014.
- [34] A. Larki, R. Tahmasebi, and M. Reisi, "Factors predicting self-care behaviors among low health literacy hypertensive patients based on health belief model in Bushehr District, South of Iran," *Int. J. Hypertens.*, vol. 2018, 2018.
- [35] H. Al-Noumani, J.-R. Wu, D. Barksdale, G. Sherwood, E. AlKhasawneh, and G. Knafl, "Health beliefs and medication adherence in patients with hypertension: A systematic review of quantitative studies," *Patient Educ. Couns.*, vol. 102, no. 6, pp. 1045–1056, 2019.
- [36] E. E. Ea, A. Colbert, M. Turk, and V. V. Dickson, "Self-care among Filipinos in the United States who have hypertension," *Appl. Nurs. Res.*, vol. 39, pp. 71–76, 2018.
- [37] J.-E. Lee et al., "Correlates of self-care behaviors for managing hypertension among Korean Americans: A questionnaire survey," *Int. J. Nurs. Stud.*, vol. 47, no. 4, pp. 411–417, 2010.
- [38] S.-O. Yang, G. H. Jeong, S.-J. Kim, and S. H. Lee, "Correlates of Self-Care Behaviors among Low-Income Elderly Women with Hypertension in South Korea," *J. Obstet. Gynecol. Neonatal Nurs.*, vol. 43, no. 1, pp. 97–106, 2014.
- [39] R. Fikriana, Nursalam, S. R. Devy, Ahsan, T. N. Sasono, and L. Qodriyah, "Factor analysis of patient with hypertension on self-regulation based on self-belief," *J. Glob. Pharma Technol.*, vol. 11, no. 8, pp. 173–182, 2019.
- [40] V. P. Giena, S. Thongpat, and P. Nitirat, "Predictors of health-promoting behaviour among older adults with hypertension in Indonesia," *Int. J. Nurs. Sci.*, vol. 5, no. 2, pp. 201–205, 2018.
- [41] R. L. Walker et al., "Health Behaviour Advice From Health Professionals to Canadian Adults With Hypertension: Results From a National Survey," *Can. J. Cardiol.*, vol. 27, no. 4, pp. 446–454, 2011.
- [42] P. P. Bungsu, E. Rekawati, and W. Wiarsih, "Elderly care givers behavior associated with physical exercise implementation among elderly with hypertension," *Enfermeria Clinica*, vol. 29, pp. 585–587, 2019.
- [43] R. Vedanthan et al., "Community Health Workers Improve Linkage to Hypertension Care in Western Kenya," *J. Am. Coll. Cardiol.*, vol. 74, no. 15, pp. 1897–1906, 2019.
- [44] S. Liu, R. Tanaka, S. Barr, and R. P. Nolan, "Effects of self-guided e-counseling on health behaviors and blood pressure: Results of a randomized trial," *Patient Educ. Couns.*, vol. 103, no. 3, pp. 635–641, 2020.
- [45] R. Fikriana and A. Afik, "The Influence of Peer Health Education Toward the Decreasing Risk of Heart Disease," *J. Ners*, vol. 13, no. 1, p. 42, 2018.
- [46] H. Cramer, R. Lauche, J. Adams, J. Frawley, A. Broom, and D. Sibbritt, "Is Depression Associated with Unhealthy Behaviors among Middle-Aged and Older Women with Hypertension or Heart Disease?," *Women's Heal. Issues*, vol. 30, no. 1, pp. 35–40, 2020.
- [47] E. Demirtürk and R. Hacıhasanoğlu Aşilar, "The effect of depression on adherence to antihypertensive medications in elderly individuals with hypertension," *J. Vasc. Nurs.*, vol. 36, no. 3, pp. 129–139, 2018.
- [48] M. J. Butler et al., "Adherence to antihypertensive medications and associations with blood pressure among African Americans with hypertension in the Jackson Heart Study," *J. Am. Soc. Hypertens.*, vol. 11, no. 9, pp. 581–588.e5, 2017.
- [49] L. Dyussenova et al., "Associations between depression, anxiety and medication adherence among patients with arterial hypertension: Comparison between persons exposed and non-exposed to radiation from the Semipalatinsk Nuclear Test Site," *J. Environ. Radioact.*, vol. 195, pp. 33–39, Dec. 2018.
- [50] H. Kim and F. C. D. Andrade, "Diagnostic status and age at diagnosis of hypertension on adherence to lifestyle recommendations," *Prev. Med. Reports*, vol. 13, pp. 52–56, 2019.
- [51] A. G. Ampofo, E. Khan, and M. B. Ibitoye, "Understanding the role of educational interventions on medication adherence in hypertension: A systematic review and meta-analysis," *Hear. Lung*, 202