Original Research Paper

Identification of self-care practices in patients with hypertension during the COVID-19 pandemic

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Abstract

The COVID-19 pandemic has exacerbated chronic disease conditions and health disparities, especially in patients with hypertension. Hypertension is the most comorbid disease that increases the risk of worsening and even death in people with Covid-19. Although this disease has a fairly large mortality rate, the practice of independent care carried out by patients can reduce the risk of death by 50% compared to those who do not. This research aims to find out the practice of self-care and related factors in patients with hypertension during the COVID-19 pandemic in the working area of Puskesmas Gamping II Yogyakarta. This research is a cross-sectional study involving 46 respondents with hypertension aged 35 years, and over. The research process was carried out offline by implementing health protocols. Data were collected using the Hypertension Self-Care Activity Level Effects Scale (H-SCALE) questionnaire. The results of this study showed that all participants did not drink alcohol (100%). More than half of the participants had good adherence to physical activity (76.1%), nonsmoking (73.9%), and weight management (58.7%). The lowest self-care practices were dietary adherence (32.6%) and medication (34.8%). Based on data analysis with the Chi-Square test, two factors influence the self-care practice of patients with hypertension: education level associated with adherence to avoiding smoking (p = 0.05) and employment status associated with compliance with weight management (p = 0.01). The results of this study still show that most people with hypertension still experience obstacles in carrying out independent care, especially in diet and taking medication. The restriction of services by healthcare centers during the pandemic and the fear and worry of hypertensive patients affect the compliance of hypertensive patients in conducting health checks at healthcare centers.

Keywords: COVID-19; hypertension; self-care

1. Introduction

The COVID-19 pandemic has had a negative impact, especially on the health sector, including lack of access to health services, poor prognosis of patients to high mortality rates in vulnerable populations such as patients with comorbidities (Guan et al., 2020; Mobula et al., 2020). Hypertension or high blood pressure is the most common comorbid disease in patients with covid-19 (Guan et al., 2020; Liu et al., 2020; Sanyaolu et al., 2020). Hypertension is a long-term chronic disease affecting over 1 billion people worldwide (WHO, 2021). Hypertension diagnosis is established if the results of blood pressure measurements show systolic pressure ≥140 mmHg and/or diastolic pressure ≥90 mmHg (Perhimpunan Dokter Hipertensi Indonesia, 2019). Over the past 25 years, the prevalence of hypertension has increased substantially, resulting in an increase in cardiovascular disease to death. Proper management of hypertension is still a major issue due to the low ability to self-care for patients with hypertension.

Previous results showed that more than half (51%) of respondents in the Ethiopian study still had substandard self-care skills. In Indonesia, the publication of research results on self-care in hypertension is rarely found. Two publications of previous research results with elderly respondents showed hypertensive patients with poor self-care practices ranging from 32%-64% (Romadhon, Wimar Anugrah, Joni Haryanton & Hadisuyatmana, 2020; Setyorini, 2018). One study with respondents with hypertension in Padang showed that the average self-care compliance was still less than 50%, with the lowest adherence to physical activity and a low-salt diet (Gusty & Merdawati, 2020).

Suboptimal adherence to hypertension treatment is a major contributor to poor blood pressure control. The results showed that non-adherence to self-care practices would increase re-hospitalization and complications. Otherwise, the results also showed adherence to self-care practices, especially in diet with Dietary Approaches to Stop Hypertension (DASH), was associated with a significant reduction in systolic and diastolic blood pressure (Blumental et al., 2012). Given the lack of optimal hypertension self-care practices, knowing the factors that influence self-care is important to know to encourage the improvement of appropriate self-care management for patients with hypertension. The results of a literature study of research conducted before the COVID-19 pandemic found that self-efficacy factors (Idu et al., 2022; Mulyati et al., 2013; Romadhon, Wimar Anugrah, Joni Haryanton & Hadisuyatmana, 2020; Romadhon et al., 2020), family support, personal factors, and spirituality influence self-care in patients with hypertension (Idu et al., 2022; Romadhon, Wimar Anugrah, Joni Haryanton & Hadisuyatmana, 2020). At the same time, other studies add several factors, such as confidence in the effectiveness of therapy, social support, and communication between healthcare workers and patients, as factors that influence hypertension self-care practices (Mulyati et al., 2013). This study aims to determine the self-care practices of patients with hypertension and analyze the factors that influence these practices during the COVID-19 pandemic.

2. Research Methods

This study is a quantitative observational study with a cross-sectional time approach carried out in the working area of Puskesmas Gamping 2 Sleman Yogyakarta. The sample used in this study was a member of *posbindu* with hypertension totaling 46 respondents. This research protocol has been approved by the Research Ethics Commission of Universitas 'Aisyiyah Yogyakarta, with the number 1431/KEP-UNISA/I/2022. This research has also obtained permission from relevant agencies. Data collection is done offline by gathering respondents in one place so that they continue to apply health protocols during the pandemic, namely by the mandatory use of masks, hand washing, and maintaining distance when data collection is carried out. Sociodemographic and clinical data were collected using a questionnaire collected data in the form of age, sex, marital status, education, employment status, health insurance, smoking status, length of suffering from hypertension, and comorbidities experienced by study participants. Weight checks are carried out by measuring body weight using digital scales while measuring systolic and diastolic blood pressure using Digital Sphygmomanometer.

Self-care practice data were assessed using the Hypertension Self-Care Activity Level Effects Scale (H-SCALE) (Warren-Findlow & Seymour, 2011) and modified (Harvin et al., 2020) H-SCALE contains 31 questions related to six hypertensive self-care activities recommended by JNC 8 (Armstrong, 2014) namely: Adherence to taking medication, Dietary adherence, Physical activity, Avoiding smoking, Weight management, and Reducing alcohol consumption. The sample of this study was taken using the purposive sampling method with the criteria of being a member of *Posbindu* who has been diagnosed with hypertension for at least one month, aged ≥ 35 years, and lives with a family. IBM SPSS version 19.0 was used to perform statistical analysis in this study with the Chi-Square or Fisher test with a significance level of 0.05. The Chi-Square test or Fisher was chosen to determine the relationship between two nominal and ordinal variables.

3. Results and Discussion
3.1.Sociodemographic and Clinical Characteristics

Forty-six respondents participated in this study with an age range between 37-81 years and an average age of 59.4 ± 10.2 years. Most respondents were female (60.9%), married (82.6%), and had primary education, junior high school, or no school education (78.3%). Study participants were mostly out of work or retired (63%), and the majority had health insurance (84.8%).

Table 1. Sociodemographic Characteristics (n=46)

Characteristics	Frekuensi (f)	Percent (%)
Age (year)		
36-45	3	6.5
46-55	12	26.1
56-65	20	43.5
> 65	11	23.9
Gender		
Male	18	39.1
Female	28	60.9
Marital Status	46	100
Not Married	3	6.5
Married	38	82.6
Widow / Widower	5	10.9
Educational status		
Basic school or less	36	78.3
High school or above	10	21.7
Occupational Status		
Not Working	29	63
Working	17	37
Health Insurance Ownership		
No	7	15.2
Yes	39	84.8

The results of this study showed that the average age of participants was 59.4 ± 10.2 years. This is in line with epidemiological research in Japan, which shows that the prevalence of hypertension is higher in older adults, especially with the age of ≥50 years. Aging is a major risk factor underlying the occurrence of hypertension. With aging, blood vessels undergo structural and functional changes characterized by endothelial dysfunction, thickening of the walls, reduced distensibility, and arterial stiffness (Harvey et al., 2016). In this study, female respondents with hypertension were more (60.9%) than men (39.1%). This is different from the research results, which show that the prevalence of hypertension in adult men and women is almost the same but higher in the women age group ≥ 60 years (Fryar et al., 2015). This happens because, with increasing age, women will experience menopause, where the production of the female hormone estrogen will decrease. This estrogen imbalance or deficiency in postmenopausal women is associated with the risk of hypertension and other cardiovascular diseases (Zilberman et al., 2015).

Table 2. Clinical Characteristics (n=46)

Characteristics/Results of the Examination	Frekuensi (f)	Percent (%)
Smoking Status		
Never/stopped >12 months	35	76.1
Smoking/Non-smoking <12 months	11	23.9
Long-suffering from hypertension (years)		
< 5	31	70.5
≥ 5	13	29.5
Comorbidity		
No	38	82.6
Yes	8	17.4
Body Mass Index (BMI)		
Underweight	2	4.3
Normal Weight	12	26.1
Overweight	4	8.7
Obesity	28	60.9
Blood pressure		
Controlled (< 120/80 mmHg)	1	2.2
Medium (120-139/80-89 mmHg)	11	23.9
High (≥140/90 mmHg)	34	73.9

Study participants were mostly non-smokers (76.1%), had hypertension for less than five years (70.5%), and the majority had no comorbidities (82.6%). More than half of the participants had a Body Mass Index (BMI) in the obese category (60.9%) and had high blood pressure above 140/90 mmHg (73.9%).

The results of this study showed that most respondents had a BMI in the obese category. Obesity is a condition where a person has a BMI > 25. Obesity can lead to serious health problems that are potentially life-threatening, including hypertension, type II diabetes mellitus, increased risk of coronary heart disease, and so on. The results showed that obesity is the main cause of hypertension, with a percentage of as much as 65% to 75% of the risk of primary hypertension in humans (Hall et al., 2015). Table 2 shows that 73.9% of respondents had blood pressure above 140/90 mmHg. It can be assumed that most of the respondents had uncontrolled hypertension. This study's results align with previous research, where more than 91% of hypertension cases in Indonesia are uncontrolled (Hussain et al., 2016). The results of this study are higher than the data reported by the United States health ministry, which shows as many as 51.7% of hypertension sufferers in America have uncontrolled hypertension (Fryar et al., 2015). This phenomenon occurs because most cases are undiagnosed hypertension, so many people with hypertension are unconscious and without getting treatment. The results of this study also showed low respondent behavior in adherence to taking medication, diet, and weight management. This is what causes the amount of blood pressure of patients who are above 140/90 mmHg. Hypertension can be controlled through behavior and lifestyle modification, either alone or together with antihypertensive medications.

3.2. Self-Care Practices of Hypertensive Patients

Table 3. H-SCALE adherence rates (n = 46)

Hypertension Self-Care	Frequency (f)	Percent (%)
Diet	15	32.6
Medication Adherence	16	34.8
Weight Management	27	58.7
Smoking	34	73.9
Activity	35	76.1
Alcohol	46	100

Table 2 shows respondents' levels of adherence to six self-care activities for hypertension. It appears in Table 2 that the lowest self-care practice is dietary adherence (32.6%), and the highest is adherence to alcohol avoidance (100%). Two components of self-care that are still below 50% are dietary adherence (32.6%) and medication adherence (34.8%). This follows the results of previous studies, which found that the compliance of hypertensive patients is still low in terms of diet and taking medication, with a figure of less than 50% (Gusty & Merdawati, 2020). Pandemic conditions have a negative impact on self-care in patients with hypertension. The government has set a policy in health services that health services are still carried out by prioritizing the safety of patients and health workers, thus limiting health services during the pandemic. The forms of restrictions include reducing services to general patients, prioritizing services to covid-19 patients, and reducing the risk of covid-19 transmission in patients who carry out examinations at healthcare facilities. This policy affects the general examination schedule including hypertensive patients, limited examination schedules and efforts to minimize hypertensive patients coming to health facilities because hypertensive patients are comorbid. They are coupled with people's fear of coming to health facilities and worry about contracting covid-19 both from patients and health workers. This condition results in a decrease in the number of visits of hypertensive patients to health facilities, which will certainly impact decreasing adherence to hypertension drugs.

It can be seen in Table 2 that dietary adherence is still very low at 32.6%. According to previous research, some obstacles faced in adhering to the hypertensive diet are low motivation, ability, lack of preparation time to apply the diet, and lack of education (Park et al., 2021). Most respondents are elderly, and there is a decrease in the ability to prepare food that must follow dietary arrangements. Coupled with the lack of education causes respondents not to know how to prepare food according to dietary rules.

The Covid-19 pandemic period has provided major changes to hypertension self-care. A review shows that the pandemic has adversely affected self-care implementation in patients with comorbid conditions such as hypertension (Gupta et al., 2020). Some behavioral changes that affect diet, namely restrictions on community activities (social distancing), cause stress which impacts increasing excessive snacking on snacks. Diet during a pandemic is also more difficult to do with limited foodstuffs, so patients only consume what is available.

The recommended diet for patients with hypertension is a diet with DASH. The DASH diet is balanced and rich in fruits, vegetables, and low-fat dairy products. The DASH diet also advocates reducing sodium to about 1500 mg/day. The systematic review and meta-analysis results show that implementing the DASH diet has significantly reduced blood pressure in hypertensive and non-hypertensive patients (Filippou et al., 2020). The study found that respondents' adherence to taking medication was also low (34.8%). Previous research has shown that factors that affect patient compliance in taking antihypertensive drugs are the motivation for treatment, family support, and the role of health workers (Nuratiqa et al., 2020). A systematic review also found that factors affecting hypertensive patients' medication adherence are knowledge about hypertension, lifestyle, perception of

disease, and financing (Aliyah & Damayanti, 2022). The difficulty in obtaining drugs also occurred during the COVID-19 pandemic, affecting patient compliance with medicine.

3.3. Factors Related to Self-Care Practices of Hypertensive Patients

Tables 4, 5, and 6 show the results of statistical tests using the Chi-Square or Fisher exact test to determine the factors influencing the six hypertension self-treatment parameters. The results of statistical tests of factors affecting medication and dietary adherence shown in Table 4 did not find any sociodemographic and clinical factors of respondents associated with both medication and dietary adherence.

Table 4. Differences between adherers and nonadherers to medication and diet behaviors for demographic and health characteristics (n=46)

Characteristics	Medication Adherence			Diet		
	Nonadherers (n=30)	Adherers (n=16)	p	Nonadherent (n=31)	Adherent (n=15)	p
Age (years)			0.71			0.17
36-45	6.7	6.3		6.5	6.7	
46-55	30.0	18.8		16.1	46.7	
56-65	36.7	56.3		48.4	33.3	
> 65	26.7	18.8		29.0	13.3	
Gender			0.42			0.34
Male	43.3	31.3		45.2	26.7	
Female	56.7	68.8		54.8	73.3	
Marital Status			0.84			1.00
Unmarried	6.7	6.3		6.5	6.7	
Married	80.0	87.5		80.6	86.7	
Widowed	13.3	6.3		12.9	6.7	
Education level			0.72			0.19
Basic school or less	80.0	75.0		83.9	66.7	
High school or above	20.0	25.0		16.1	33.3	
Occupational status			0.96			0.35
Not Working or Pension	63.3	62.5		58.1	73.3	
Working	36.7	37.5		41.9	26.7	
Smoking status			1.00			1.00
Non-smoker	76.7	75.0		77.4	73.3	
Smoker	23.3	25.0		22.6	26.7	
Ownership of health insurance			1.00			0.67
No	16.7	12.5		12.9	20.0	
Yes	83.3	87.5		87.1	80.0	
Years with hypertension			0.39			0.56
< 5	70.0	62.5		67.7	66.7	
≥ 5	23.3	37.5		25.8	33.3	
Comorbidity			0.23			0.41
No	76.7	93.8		87.1	73.3	
Yes	23.3	6.3		12.9	26.7	

Table 5. Differences between adherers and nonadherers to physical activity and nonsmoking for demographic and health characteristics

Characteristics	Physical Activity			Nonsmoking		
	Nonadherent (n=11)	Adherent (n=35)	p	Nonadherers (n=12)	Adherers (n=34)	p
Age (years)			0.622			0.52
36-45	0.0	8.6		8.3	5.9	
46-55	18.2	28.6		41.7	20.6	
56-65	45.5	42.9		33.3	47.1	
> 65	36.4	20.0		16.7	26.5	
Gender			0.486			0.37
Male	27.3	42.9		50.0	35.3	
Female	72.7	57.1		50.0	64.7	
Marital Status			0.156			0.82
Unmarried	18.2	2.9		0.0	8.8	
Married	81.8	82.9		91.7	79.4	
Widowed	0.0	14.3		8.3	11.8	
Education level			1.00			0.05*
Basic school or less	81.8	77.1		58.3	85.3	
High school or above	18.2	22.9		41.7	14.7	
Occupational status			1.00			1.00
Not Working or Pension	63.6	62.9		66.7	61.8	
Working	36.4	37.1		33.3	38.2	
Smoking status			1.00			0.440
Non-smoker	81.8	74.3		66.7	79.4	
Smoker	18.2	25.7		33.3	20.6	
Ownership of health insurance			1.00			1.000
No	18.2	14.3		16.7	14.7	
Yes	81.8	85.7		83.3	85.3	
Years with hypertension			0.074		0.0	1.00
< 5	45.5	74.3		75.0	64.7	
≥ 5	54.5	20.0		25.0	29.4	
Comorbidity	0.0		0.169			1.00
No	100.0	77.1		83.3	82.4	
Yes	0.0	22.9		16.7	17.6	
Body Mass Index			0.223			0.50
Underweight	0.0	5.7		0.0	5.9	
Healthy weight	9.1	31.4		41.7	20.6	
Overweight	18.2	5.7		8.3	8.8	
Obese	72.7	57.1		50.0	64.7	

The results of statistical tests in Table 5 revealed that education level was significantly associated with smoking habits with a value of p = 0.05. This follows the research results on people in Japan, where the education level is significantly related to smoking habits among the general Japanese population (Tomioka et al., 2020). A person's level of education affects the breadth of insight and

literacy ability, including health problems, especially regarding cigarettes and their consequences. Higher education will also affect the ability to think about the behavior to be applied and whether the behavior is beneficial for him and not detrimental to him. Smoking does not benefit humans and actually has a bad impact on humans, especially their health. Thus, people with higher education will avoid smoking behavior.

Table 6 shows that employment status also significantly influenced weight management (p = 0.01), with participants who were not working or retired having a better tendency to comply with weight management. People who do not work or retire tend to have more time to pay attention to their condition, including managing weight through diet and exercise.

Table 6. Differences Between Adherers and Nonadherers to Weight Management for Demographic and Health Characteristics (n=46)

| Characteristics | Weight Management | | |
	Nonadherent (n=19)	Adherent (n=27)	*p*
Age (years)			0.12
36-45	5.3	7.4	
46-55	10.5	37.0	
56-65	47.4	40.7	
> 65	36.8	14.8	
Gender			0.38
Male	31.6	44.4	
Female	68.4	55.6	
Marital Status			0.43
Unmarried	10.5	3.7	
Married	73.7	88.9	
Widowed	15.8	7.4	
Education level			0.49
Basic school or less	84.2	74.1	
High school or above	15.8	25.9	
Occupational status			**0.01***
Not Working or Pension	42.1	77.8	
Working	57.9	22.2	
Smoking status			0.75
Non-smoker	73.7	77.8	
Smoker	26.3	22.2	
Ownership of health insurance			0.68
No	10.5	18.5	
Yes	89.5	81.5	
Years with hypertension	0.0	0.0	0.51
< 5	57.9	74.1	
≥ 5	36.8	22.2	
Comorbidity			0.44
No	89.5	77.8	
Yes	10.5	22.2	
Body Mass Index			0.79
Underweight	5.3	3.7	
Healthy weight	31.6	22.2	

| Characteristics | Weight Management | | |
	Nonadherent (n=19)	Adherent (n=27)	*p*
Overweight	10.5	7.4	
Obese	52.6	66.7	

4. Conclusion

Self-care practices carried out by hypertensive patients are still not optimal, especially in dietary adherence and taking medication. Two sociodemographic factors significantly affected hypertension self-care, where education level factors affected nonsmoking adherence, and employment status factors affected weight management compliance. The COVID-19 pandemic has affected hypertension self-care, especially in dietary adherence and medication, so special interventions are needed to improve patient's ability to control their hypertension.

Acknowledgment

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