

## Research Article

# Supporting Healthy Lifestyle Behavior Change in Hypertension Patients

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**Abstract.** Hypertension is one of the most common health conditions and comorbidities, and is considered a silent killer. One of the non-pharmacological efforts to help hypertensive patients control their blood pressure is through changes in lifestyle to become healthier, and it is the role of nurses to promote these changes. This study aimed to determine the impact of the Healthy Lifestyle Change Plan (RPGHS) card on healthy lifestyle behaviors of hypertension sufferers. This research was a pre-experimental study with a one-group pretest-posttest design. The sample consisted of 36 patients recruited through purposive sampling. The data were collected using an observation sheet (RPGHS card) which was used to identify the lifestyle of people with hypertension; lifestyle behaviors measured included maintaining an ideal body weight, salt consumption, stress management, smoking habits, physical activity, and checking blood pressure. Assistance was carried out for two days. Data were analyzed using the Kolmogorov Smirnov test and paired t-test, which showed that there was a significant difference in healthy lifestyle behaviors before and after the mentoring ( $p < 0.001$ ). The RPGHS card made it easy for patients to plan healthier lifestyle changes to implement in daily life. So, this is recommended as an instrument to help hypertensive patients in the process of behavior change.

**Keywords:** hypertension, healthy lifestyle, change, RPGHS Card

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## 1. Introduction

Early in 2020, the world was shocked by the outbreak of a new virus, namely the new type of coronavirus (SARS-CoV-2), and the disease is called Coronavirus disease 2019 (COVID-19). The spread of COVID-19 occurs very fast and is widespread because it is transmitted through human-to-human contact [1]. The World Health Organization (WHO) named this virus the 2019 novel coronavirus (2019-nCoV) [2]. This virus attacks all age groups. However, the study to date concluded that 2 groups have a higher risk of worsening during infection with the 2019 Coronavirus. These groups are individuals who are over 60 years of age and individuals who have other comorbid diseases such as cardiovascular disease, diabetes, chronic respiratory system diseases, and malignancy [3]. Patients with cardiovascular risk factors, including hypertension, are

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known to be one of the population at risk with a higher risk of mortality and morbidity when exposed to COVID-19 [4]. Hypertension is very likely to be prevented by changing the behavior of clean and healthy life, especially in this pandemic, we must be careful with implementing strict health protocols. For this reason, we can make the COVID-19 pandemic a momentum to cultivate a healthy lifestyle [5].

Hypertension is known as one of the most common diseases and comorbidities and is considered a silent killer for populations worldwide. Higher rates of hypertension and a worse prognosis in patients with COVID-19 infection can be seen as causal mechanisms [6]. The results showed that the most common comorbidities in patients infected with Covid were hypertension (16.9%) followed by diabetes (8.2%) [7]. According to a meta-analysis of 7 studies including 1,576 patients infected with laboratory-confirmed COVID-19, the most common comorbidity was hypertension [8]. In a report [9] 138 hospitalized patients with confirmed COVID-19 in Wuhan, who suffered from hypertension on average 31.2%, and 58.3% of hypertensive patients with COVID-19 infection were treated in The ICU was compared with 21.6% of people with normal blood pressure, which proves hypertension status as common comorbidity and cause of ICU admission in COVID-19 patients. In a cohort study of 1,590 patients from 575 hospitals, hypertension was one of the causes of severe COVID-19 (hazard ratio 1.58, 95% CI: 1.07-2.32). According to the Indonesian Ministry of Health based on data compiled by the Unit Task for handling COVID-19 as of October 13, 2020, of the total cases that were confirmed positive for COVID-19, 1,488 patients were recorded as having comorbidities. Where the highest percentage was hypertension by 50.5%, followed by Diabetes Mellitus at 34.5%, and heart disease at 19.6%. Meanwhile, of the 1,488 cases of patients who died, it was found that 13.2% were with hypertension, 11.6% with Diabetes Mellitus, and 7.7% with heart disease [10]. research shows that detailed comorbidity data among patients with COVID-19 in Indonesia based on the top three comorbidities are hypertension (52.1%), diabetes mellitus (33.6%), and other cardiovascular diseases (20.9%) [11].

COVID-19 appears to follow the pattern seen in influenza and severe acute respiratory syndrome before the Coronavirus outbreak (SARS-CoV): the severity and mortality from infection were higher in the elderly cohort. Since hypertension is closely related to age, the data can be confused with age. However, an alternative explanation is an end-organ damage in hypertensive patients. Hypertension results in several pathophysiological changes in the cardiovascular system such as left ventricular hypertrophy and fibrosis. This may make the hypertensive heart very susceptible to SARS-CoV-2 [12].

With the high prevalence of hypertension and its consequences, planning the right strategy to implement and control hypertension is very important. The results showed

that lifestyle changes had a major role in controlling high blood pressure. Increasing people's knowledge about relevant strategies and encouraging them to always adhere to these strategies can be effective in improving public health [13]. Nurses are at the forefront of public health and need a lot of time to promote health about lifestyle behaviors for patients and their families [14]. To achieve a systolic blood pressure of less than 140 mmHg and diastolic blood pressure of less than 90 mmHg it is necessary to make a combined effort which includes adherence to medication, regular physical activity, avoiding alcohol use, increasing consumption of vegetables and fruits, and decreasing consumption of sodium and dietary fat [15].

## 2. Methods

### 2.1. Design

This research used a quasi-experimental research design using a one group pre-test post-test design approach which aims to determine the differences in healthy lifestyles of hypertensive patients before and after mentoring in preparing a healthy lifestyle using RPGHS cards.

### 2.2. Sample

The sample used was hypertensive patients with a sampling technique using purposive sampling where the sample was selected according to the included criteria, namely being willing to participate in all mentoring activities to develop a healthy lifestyle. The sample is 36 people.

### 2.3. Instruments

The instrument used in this study was the RPGHS (Healthy Lifestyle Change Plan) card which consisted of 2 items, namely the old behavior and the new behavior. In the old behaviour item, it is filled with activities related to a lifestyle that is routinely carried out in the last 1 month while the new behavior is filled with activities related to a healthy lifestyle that will be implemented.

TABLE 1: Characteristic of Respondents, January 2021 (n=36)

Characteristics	n	%
Gender		
Male	16	44.4
Female	20	55.6
Level of Education		
Elementary School	2	5.6
Junior high school	6	16.7
Senior High School	19	52.8
College	9	25.0
Take Medication Regular	11	30,5
Irregular	25	69,5
Total	36	100

## 2.4. Procedure

The data collection process was carried out for 1 week with the help of 36 nurses. Each nurse selects 1 respondent in their respective workplaces according to the criteria determined by the researcher. After the respondent is obtained, the next step is to identify routine activities related to the respondent's lifestyle within the past 1 month and be documented on the old behavior items in the RPGHS card. After that, assist in the preparation of a healthy lifestyle which will be implemented further and the results of the preparation of a healthy lifestyle are documented in new behavior items in the RPGHS card.

## 2.5. Data Analysis

Once collected, data were checked for completeness and entered into SPSS version 22.0 for further analysis. Data analysis was carried out by frequency distribution to get an overview of the healthy lifestyle of hypertensive patients. Furthermore, the normality test was carried out using Kolmogorov Smirnov, the data distribution was normal. To determine differences in healthy lifestyles, the Paired t-test was carried out.

## 3. Results

Based on the table above, it is found that of the 36 respondents with hypertension, 16 respondents (44.4%) were male and 20 respondents (55.6%) were female. Respondents with high school education were 19 respondents (52.8%), elementary school 2

TABLE 2: Characteristic of Respondents by Age

Variabel	Mean	SD	Min-Max
Age	49.67	11.8	26-78

TABLE 3: Respondents' Lifestyle Before Assistance

Lifestyle	n	%
Not your usual sport	36	100
Smoke	10	27
Dietary habit	32	88,89
Consumption of alcohol	0	0
Sleep Rest	29	80,56
Stress management plan	3	8,33

respondents (5.6%), junior high school 6 respondents (16.7%), tertiary 9 respondents (25.0%). Most of the respondents (69.44%) did not regularly take medication.

Based on the table above, the average age of the respondents is 49.67 years, the youngest is 26 years old and the oldest is 78 years old with a standard deviation of 11.8.

Based on the table above, it is found that the patient's lifestyle before being assisted is as follows: 100% of respondents are not used to sports, 27% smoke, 88.89% eat unhealthy/uncontrolled (like salty, high cholesterol), 0% alcohol consumption, 80, 56% less healthy sleep patterns (sleep > 22.30) and 8.33% of respondents planned stress management.

Based on the table above, the data shows that after mentoring 94.45% of respondents schedule sports (walking in the morning, cycling, exercising), not smoking 94.5%, adjusting their diet (low fat or cholesterol, low salt) 100%, no some respondents consume alcohol, change their sleeping habits earlier (at 21:00) 91.67% and all respondents plan stress management.

1. Kolmogorof Smirnov test results

Obtained p-value = 0.024 greater than 0.05, meaning that the data is normally distributed and can be continued with regression analysis

TABLE 4: Respondents' Lifestyle After Assistance

Lifestyle	N	%
Exercise Schedule	34	94,45
Do not smoke	94,44	94.45
Healthier Diet	100	100
Don't Consume Alcohol	100	100
Sleep Rest	33	91,67
Stress management plan	100	100

TABLE 5: Differences in Healthy Lifestyle Before and After Assistance in Lifestyle Compilation for Hypertension Patients Using RPGHS Cards

Lifestyle Score	Change	n	Mean	SD	Min-Max	Mean Difference	p Value
Before Assistance		36	3.14	9,469	-16 - 28	-18.111	0,000
After Assistance		36	21,25	9,110	0 – 38		

## 2. The results of the Simple Paired T-test

In this research the average respondent got a score of 3.14 before mentoring and 21, 25 after mentoring, the lowest score was -16 before mentoring and the highest score was 28, after being assisted, the lowest score was 0 and the highest score was 38. So it can be said that the average score after mentoring is higher than before being assisted.

Based on the Simple Paired T-test. In this study, it was found that the p-value = 0,000 was smaller than 0.005. It can be concluded that there was a significant difference between a healthy lifestyle before and after mentoring using an RPGHS (Healthy Lifestyle Change Plan) card.

## 4. Discussion

### 4.1. Healthy lifestyle of hypertensive patients before and after being given assistance using RPGHS cards.

The results showed that the average score for a healthy lifestyle after being assisted in the preparation of a healthy lifestyle was higher than the average score before being assisted. Lifestyle changes can be used as an initial treatment before starting antihypertensive treatment and as an adjunct therapy in individuals already undergoing hypertension drug therapy. Lifestyle changes include reducing excess body weight; diet to prevent hypertension; limitation of sodium consumption; reduce alcohol consumption; regular aerobic physical activity; quit smoking; and reduce stress [16] [17] [18] [19]. Lifestyle modification through non-pharmacological management is effective for controlling hypertension and is recommended. This is the initial choice in the management of patients with pre-hypertensive stages [20] [21].

The average score for a healthy lifestyle before being assisted was lower because all respondents were not used to exercising, 27% still smoked, 88.89% of the food consumed was not healthy/uncontrolled (like salty, high cholesterol), 80.56% pattern sleep less healthy (sleep > 22.30) and only a small proportion of respondents (8.33%) of respondents can manage their stress. As for alcohol use, none of the respondents consumed alcohol. This is because, for the respondents, alcohol consumption is not

a necessity so they do not feel the need to consume alcoholic beverages. Based on research [22], it was found that more than 24% of all deaths in Nigeria were caused by non-communicable diseases including hypertension, and could be prevented by changing healthy lifestyles such as physical activity, healthy nutrition, and quitting smoking. Research [23][23] shows that reducing alcohol consumption and salt intake, quitting smoking, doing regular aerobic physical activity, reducing excess weight by adopting a normal calorie balanced diet, rich in fresh fruits and green plants, and low in saturated fat are the main lifestyle changes that can prevent and treat hypertension.

Changes in a healthy lifestyle are influenced by various factors including age and education. In this study, the average age of the respondents was 49.67 years. See and more than 50% of the respondents have a high school education. Research [24] Patients over 65 years of age were 72% less likely to practice good lifestyle modification (AOR = 0.28, 95% CI: 0.13-0.61) than patients with ages under 65 years. Patients without formal education were 2 times more likely to make good lifestyle modifications (AOR = 2.00, 95% CI: 1.33-6.75) than those with formal education. Looking at the age of the respondents shows that it is still possible to assist to change their lifestyle to be healthier. This is evidenced in the results of the study after assistance was carried out where 94.45% of respondents scheduled exercise (walking in the morning, cycling, gymnastics), not smoking 94.5%, adjusting diet (low fat or cholesterol, low salt) 100%, none of the respondents consumed alcohol, changed their sleeping habits earlier (at 21:00) 91.67% and all respondents stress management plan.

Lifestyle changes that can effectively lower blood pressure are equivalent to one dose of antihypertensive drugs [25]. Research [24] patients change their exercise habits when they realize that their blood pressure is lower than normal. The effect of exercise training varies depending on the program duration, session duration, frequency, and intensity. According to research [26] [27] shows that physical activity can improve the state of vascular function by reducing arterial stiffness and improving the balance between the vasoconstrictor and vasodilator systems. Tobacco use, physical activity, harmful alcohol use, and an unhealthy diet all increase the risk of death from non-communicable diseases [28].

During the Covid pandemic, patients with hypertension, which is one of the comorbid factors, must pay attention to a healthy lifestyle to maintain an optimal immune system. According to [29] staying at home because of COVID-19 can cause various unhealthy behaviors, such as an unbalanced diet, lack of physical activity, increased alcohol use, and smoking. and disturbed sleep patterns. All of these behaviors are associated with non-communicable diseases and can impair immunity. Specific nutrients can affect

immune function [30]. The Covid-19 pandemic, causes changes in physical activity patterns [31] [32]. Lack of physical activity can worsen conditions during the coronavirus pandemic [33]. Alcohol consumption does not have a positive impact on health [34]. Alcohol use has been shown to reduce the ability to fight infections such as tuberculosis and pneumonia [35]. Smoking affects COVID-19 [36] [37] [38].

#### **4.2. Differences in the healthy lifestyle of hypertensive patients before and after mentoring. Healthy lifestyle using RPGHS cards.**

The results of this study indicate that there is a significant difference in a healthy lifestyle before and after mentoring using the RPGHS (Healthy Lifestyle Change Plan) card. Health workers must be involved in the promotion of a healthy lifestyle [39]. Education carried out by nurses is expected to meet the needs of the community [40]. Research [41] Patients are expected to change their lifestyle. Research [42] revealed that only 57 (33.3%) hypertensive patients practiced the recommended lifestyle modifications. Lifestyle changes are used as an attempt to slow the progression of metabolic syndrome [43] [44].

Lifestyle modifications contribute to reducing cardiovascular risk including lowering blood pressure and also helping reduce the need for antihypertensive drugs [45]. Nurses have an important role in promoting healthy lifestyle interventions, which can help control the increased incidence of non-communicable diseases [46] [47] [48][48]. Lifestyle modification has been shown to have a positive effect on hypertension [49]. Lifestyle changes are the basis of hypertension preventive management and are recommended as an initial measure before initiating drug therapy as well as as an adjunct to treatment for individuals already undergoing drug therapy. Modification or healthier lifestyle changes may facilitate decreased drug use and drug withdrawal in individuals who are highly motivated to achieve and maintain lifestyle changes.

Non-communicable diseases can increase the risk and mortality of COVID-19 [50] [51] [52]. The most effective measure in stopping transmission of COVID-19 and preventing associated chronic complications is avoiding exposure to the virus through physical distance, face masks, and eye protection [53]. Also, changes in lifestyle factors, including nutrition, exercise, smoking, alcohol consumption, adjusting sleep time, can contribute to reducing the risk of COVID-19 [29].



## 5. Conclusion

There is a significant difference in the lifestyle changes of hypertensive patients using the RPGHS (Healthy Lifestyle Change Plan) card. Patients find it easier to identify unhealthy lifestyles so they can plan healthier lifestyle changes through mentoring

## 6. Ethical Clearance

Ethical clearance number RK.015/KEPK/STIK/III/2021

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