



## The Effectiveness of Interactive Media in Improving Compliance with Medication for Hypertension Patients

Cek Masnah<sup>1\*)</sup>, Atik Suharti<sup>2</sup>, Daryono<sup>3</sup>

<sup>1,2,3</sup>Department of Nursing Health Polytechnic, Ministry of Health Jambi

### ARTICLE INFO

#### Article history:

Received 10 October 2022  
Accepted 31 January 2023  
Published 20 March 2023

#### Keyword:

interactive media  
compliance  
hypertension

### ABSTRACT

Irregular treatment of hypertension has the potential to increase blood pressure again, and also has the potential to cause more serious complications. Understanding hypertension is important to improve adherence to treatment for patients with hypertension. One of the efforts to increase compliance is using interactive media as a medium for health education. The research design was quasi-experimental with a non-randomized pre-test and post-test control group, with a sample of 60 people in the intervention group and 60 people in the control group. The results showed that: there was a significant difference (Asymp. Sig. = 0.002) regarding family support between the intervention group and the control group; there was a significant difference (Asymp. Sig. = 0.000) regarding adherence between the Control Group and the Intervention Group; there were significant differences regarding family support and adherence between before and after the intervention; interactive media effectively increased family support with a moderate level of effectiveness (51.81%) and increased compliance with a moderate level of effectiveness (55.83%). In using interactive media as an extension media, it should pay attention to regional conditions and social conditions of the community, and should be combined with other media.

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### Kata kunci:

media interaktif  
kepatuhan  
hipertensi

#### \*) corresponding author

Cek Masnah, S.Pd, MPd

Department of Nursing Health  
Polytechnic, Ministry of Health Jambi  
Dr.Sumbiyono Street 22, Jelutung  
sub-district, Jelutung District, Kota  
Jambi - Indonesia 36136

Email: mandia1220@gmail.com

DOI: 10.30604/jika.v8i1.1516  
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### ABSTRAK

Pengobatan hipertensi yang tidak teratur berpotensi meningkatnya kembali tekanan darah, juga berpotensi menimbulkan komplikasi yang lebih serius. Pemahaman tentang hipertensi penting untuk meningkatkan kepatuhan berobat penderita hipertensi. Salah satu upaya untuk meningkatkan kepatuhan adalah penggunaan media interaktif sebagai media penyuluhan kesehatan. Desain penelitian adalah quasi eksperimen dengan non-randomized pre-test and post-test control group, dengan sampel 60 orang kelompok intervensi dan 60 orang kelompok kontrol. Hasil penelitian menunjukkan bahwa: terdapat perbedaan yang signifikan (Asymp. Sig. = 0,002) mengenai dukungan keluarga antara Kelompok Intervensi dan Kelompok Kontrol; terdapat perbedaan yang signifikan (Asymp. Sig. = 0,000) mengenai kepatuhan antara Kelompok Kontrol dan Kelompok Intervensi; terdapat perbedaan yang signifikan mengenai dukungan keluarga dan kepatuhan antara sebelum dan sesudah intervensi; media interaktif efektif meningkatkan dukungan keluarga dengan tingkat efektivitas sedang (51,81%) dan meningkatkan kepatuhan dengan tingkat efektivitas sedang (55,83%). Dalam menggunakan media interaktif sebagai media penyuluhan hendaknya memperhatikan kondisi wilayah dan kondisi sosial masyarakat, dan sebaiknya dikombinasikan dengan media lainnya

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## INTRODUCTION

An epidemiological transition has occurred in Indonesia where disease problems are not only focused on infectious and infectious diseases but have shifted to non-communicable diseases which are increasing and becoming a heavy burden for both the government and the community. The changes in disease patterns are influenced by various factors, including changes in the environment, community behavior, demographic transition, technology, economy, and socio-culture. Basic Health Research data in 2018 showed that there was an increase in key indicators of non-communicable diseases, including the prevalence of high blood pressure in the population aged 18 years and over increasing from 25.8% to 34.1% (Indonesia Ministry of Health, 2019)

Based on the 2013 Basic Health Research data, the prevalence of hypertension in Indonesia obtained through measurements at the age of 18 years was 25.8 percent, in Jambi Province it was 24.6%. From the 2018 Basic Health Research data, the prevalence of hypertension in Indonesia obtained through measurements increased to 34.11% and in Jambi Province to 28.99%. Basic Health Research 2018 also shows that the prevalence of hypertension in urban areas is 34.43% and in rural areas, it is 33.72%. One of the behaviors that must be carried out by people with hypertension is the regularity of taking antihypertensive drugs. Nationally, patients who regularly took medication in 2019 were only 54.40% while in Jambi Province it was 44.35%. (Jambi, 2020)

Discontinuation of treatment sooner or later will be followed by an increase in blood pressure to the level it was before starting antihypertensive treatment. Irregularity in taking antihypertensive drugs can potentially cause more serious complications, including resistant hypertension, congestive heart failure, stroke, kidney failure, visual impairment, and atherosclerosis. (Andrea B. Neiman et al., 2017; Mohani, 2014; Registered Nurses Association of Ontario, 2009). In connection with the above, the behaviour of regular treatment for people with hypertension is a very important thing.

This is in line with the policy of the Ministry of Health, that in the context of implementing the Healthy Indonesia Program, it has been agreed that there are 12 main indicators to mark the health status of a family, one of which is "hypertensive patients taking regular treatment (Indonesian Ministry Of Health, 2017) Treatment behaviour regularly is closely related to a person's compliance to follow the recommended or prescribed treatment process. Compliance with the treatment process is very important for chronic diseases, including hypertension sufferers.

From various expert opinions, such as (Lukito, 2019), patient non-compliance in taking treatment is caused by various things, including lack of understanding of the benefits of treatment, lack of motivation, knowledge (understanding & perception of hypertension), lack of clear instructions, patient-staff communication suboptimal health, lack of information about treatment, lack of family support, disease factors (length, symptoms, severity). The research was done on The Padanaran Primary Health Centres Semarang City showed that 55.6% of respondents were obedient and there was a significant relationship between the level of education, knowledge, belief, motivation, family support, and compliance of hypertensive patients in doing therapy (Sukma, 2018).

Despite many studies on adherence and the identification of factors that predict variability in adherence, there is insufficient evidence to support that one type of strategy or

intervention is the most appropriate strategy. With many factors that can influence non-compliance, a tailored intervention is needed that combines several strategies. In practice at the Primary Health Centres, with limited time and many patients, it is certainly difficult for officers to explain and motivate each patient. One form of effort to overcome this is the use of appropriate health education media.

The function of the media other than to present messages is to motivate participants (Jannah & Arini Murni, 2019). Interactive media is an alternative strategy to achieve the goal of providing health education to people with hypertension. *The Interactive media is designed by combining video, animation, and PowerPoint media, among others explaining hypertension, the importance of regular health checks, a balanced diet, physical activity, treatment of hypertension, and complications of hypertension that are well designed and attractive so that they can generate interest, and motivation for patients to comply with treatment.* In addition, interactive media allows users to freely repeat material that is not understood because it is equipped with questions and answers related to hypertension disease material.

Based on the description above, we want to examine the "influence of the use of interactive media on adherence to treatment for hypertension sufferers. The formulation of the problem in this study is the low level of compliance of patients with hypertension in undergoing the treatment process. The general purpose is to know the effectiveness of interactive educational media in increasing the compliance of hypertension sufferers to undergo the treatment process in the work area of the Pakuan Baru Primary Health Center, Jambi City.

## METHODS

### *Participant characteristics and research design*

The sample's inclusion criteria have been a healthcare facility, 20-65 years old, and the person is willing to be a respondent. The research design used a quasi-experimental design with a non-randomized pre-test and post-test control group, where the respondents are divided into 2 groups and all receive treatment/intervention. Before the intervention, measurements were taken (pre-test) and measured after the intervention (post-test).

The design of this research can be described as follows:

O1 ----- X1 ----- O2  
O1 ----- X0 ----- O2

**Chart 1. Research design**

### *Sampling procedures*

The study population was hypertensive patients, which was based on data from the PIS-PK survey at the Pakuan Baru Primary Health Center. In this study, the sample was determined by non-probability sampling as many as 60 cases and 60 people as controls, who met the specified criteria. Primary data on the identity and characteristics of the respondents as well as on compliance were carried out through home visits to conduct interviews with respondents using a prepared questionnaire. While secondary data was obtained from the Pakuan Baru Health Center, Jambi City.

*Sample size, power, and precision*

The sample size is 60 cases and 60 people as controls. The instrument used the MMAS-8 scale. MMAS-8 has been validated and used in various countries (Chung et al., 2015; Lee et al., 2013). The sensitivity is 48.7% and the specificity is 69.1%. The value of reliability is 0.66 and is significantly associated with blood sugar testing (Lee et al., 2013). Each question will be given a score each of which is seven questions scale dichotomy, one Likert scale question. From the calculation of the score will get three categories compliance is for the same calculation score of 8 including the high compliance category, score calculation 6 - < 8 includes moderate compliance, and for calculation scores < 6 including compliance low (Morisky et al., 2008).

*Measures and covariates*

a. Initial measurement

Before the intervention, the community that has been designated as the respondent carried out an initial measurement of the level of family support and compliance, using a prepared questionnaire.

b. Intervention/Media distribution

Interventions carried out in the form of were short lectures and the provision of internet applications as interactive media, with different groups. Group 1 is patients with counselling/ lecture interventions and providing internet applications as interactive media; group 2 is a patient with a lecture intervention. Before the intervention, each group (patients) was measured for initial adherence.

c. Final compliance measurement

This measurement is carried out after approximately 1.5 months, with the assumption that within 1.5 months the community has been able to understand the material contained in the video recording, has decided to take undergo treatment/control several times

*Data analysis*

Data analysis used the Mann-Whitney test and family support between the control group and the intervention group. The paired sample used the Wilcoxon Signed Ranks test for the difference test.

**RESULTS AND DISCUSSION**

This research was conducted on people with hypertension in the Pakuan Baru Primary Health Center, Jambi City working area, which was carried out from January 8, 2022, to July. The research was carried out in Tambak Sari Village as the control group and Wijaya Pura Village as the intervention group. The research location is an urban area and the geographical and socio-cultural conditions of the people in the two villages are almost the same. Likewise, access to health services in the two sub-districts is relatively easy.

**Description of respondent characteristics**

As depicted in table 1, most of them are female, with the composition of female sex in the intervention group as many as 45 people (75%) and in the control group 54 people (90%).

Most of the respondents are in the age group above 50 years. In the intervention group aged 51-60 years, as many as 32 people (53.3%) and the age group above 60 years as many as 18 people (30%). While in the control group, the age group 51-60 years were 33 people (53.3%) and the age group above 60 years was 11 people (18.3%).

In general, the education level of respondents in the intervention group was better than the control group. In the intervention group, most of the respondents had a high school graduate education level as many as 26 people (43.3%), while in the control group some of the Elementary School students were 22 (36.7%).

Most of these respondents worked as housewives in both the intervention group and the control group. In the intervention group as many as 37 people (61.7%) and in the control group as many as 44 people (73.3%).

In the intervention group, most of the respondents only knew they had hypertension for less than 3 years, namely 22 people (36.7%) and 3-5 years as many as 17 people (28.3%). Meanwhile, in the control group, 31 people (51.7%) had hypertension for less than 3 years and 12 people (20%).

Most of the respondents had new treatment for hypertension for less than 3 years (46.7%) and 3-5 years (23.3%) in the intervention group, while in the control group 80% had only been treated for less than 3 years.

**Table 1**  
**Characteristics of respondents in the intervention group and control group**

No	Characteristics	Intervention group		Control group	
		n	%	n	%
1	Gender				
	Female	45	75	54	90
	Male	15	25	6	10
2	Age group				
	< 31 years old	1	1,7	0	0,0
	31 – 40 years	2	3,3	3	5,0
	41 – 50 years	7	11,7	14	23,3
	51 – 60 years	32	53,3	32	53,3
	> 60 years old	18	30,0	11	18,3
3	Level of education				
	Not completed in primary school	3	5,0	6	10,0
	Elementary School	12	20,0	22	36,7
	Graduated First High School	10	16,7	13	21,7
	High school graduate	26	43,3	16	26,7
	Graduated College	9	15,0	3	5,0

4	Work				
	Indonesian republican army and Indonesian republican police	1	1,7	1	1,7
	Employee	0	0,0	1	1,7
	Retired	5	8,3	1	1,7
	Trader	6	10,0	1	1,7
	Farmer	2	3,3	2	3,3
	Day Worker	5	8,3	5	8,3
	Doesn't work	4	6,7	5	8,3
	Housewife	37	61,7	44	73,3
5	Long time suffering from hypertension				
	< 3 years	22	36,7	31	51,7
	35 years old	17	28,3	12	20,0
	6 - 8 years	9	15,0	5	8,3
	9 - 11 years	6	10,0	5	8,3
	12 - 15 years	1	1,7	5	8,3
	> 15 years	5	8,3	2	3,3
6	Length of treatment for hypertension				
	< 3 years	28	46,7	48	80,0
	35 years old	14	23,3	4	6,7
	6 - 8 years	8	13,3	3	5,0
	9 - 10 years	6	10,0	1	1,7
	> 10 years	4	6,7	4	6,7
	Total	60	100	60	100

**Table 2**  
**Family Support and Compliance Before and After Intervention in the Intervention Group and Control Group**

No	Variable	Intervention group		Control group	
		n	%	n	%
1	Family support				
	Before Intervention				
	Low	23	38,3	29	48,3
	High	37	61,7	31	51,7
	After Intervention				
	Low	4	6,7	5	8,3
	High	56	93,3	55	91,7
2	Compliance				
	Before Intervention				
	Low	57	95,0	52	86,7
	Moderate	0	0,0	7	11,7
	High	3	5,0	1	1,7
	After Intervention				
	Low	14	23,3	46	76,7
	Moderate	43	71,7	13	21,7
	High	3	5,0	1	1,7
	Total	60	100	60	100

### Description of Family Support and Compliance Before and After Intervention in the Intervention and Control Group

Prior to the intervention, high family support was generally not good, namely 61.7% in the intervention group and 51.7% in the control group. But after the intervention, the intervention group rose to 93.3% (there was an increase of 31.6%) while in the control group it rose to 91.7% (there was an increase of 40%).

The compliance of respondents in undergoing the treatment process in the intervention group before the intervention was carried out, which included 3 people in the high category (5.0%), the medium category did not exist (0%), then increased to 43 people (71.7%) in the medium category and 3 people (7.5%) were in the high category after the intervention. In the control group, the level of compliance of respondents in the moderate category also increased from 7 people (11.7%) in the initial measurement to 13 people (21.7%) in the moderate category.

### Bivariate Analysis

#### a. Differences in Family Support and Adherence between the Control Group and Intervention Group

Based on the results of the normality test, almost all variables showed an abnormal distribution. Because the data is not normally distributed, the different test uses the Mann-Whitney test for independent samples. Based on the Mann-Whitney difference test, family support between the Control Group and the Intervention Group, before the intervention was carried out there was no significant difference (Asymp. Sig. (2-tailed) = 0.390). Likewise, regarding adherence to the treatment process between the Control Group and the Intervention Group, there was no significant difference before the intervention (Asymp. Sig. (2-tailed) = 0.341).

After the intervention with counseling and providing interactive media, family support between the Control Group

and the Intervention Group, there was a significant difference (Asymp. Sig. (2-tailed) = 0.002).

Likewise, regarding adherence to the treatment process between the Control Group and the Intervention Group, after

the intervention there was a significant difference (Asymp. Sig. (2-tailed) = 0.000), as presented in Table 3 below.

**Table 3**  
**Differences in Family Support and Adherence between Control Group and Intervention Group**

	Group	Mean Rank	Sum of Ranks	Asymp. Sig. (2-tailed)
Family Support Before Intervention	Intervention	63,22	3793,00	0,390
	Control	57,78	3467,00	
Compliance Before Intervention	Intervention	63,46	3807,50	0,341
	Control	57,54	3452,50	
Family Support After Intervention	Intervention	70,31	4218,50	0,002
	Control	50,69	3041,50	
Compliance After Intervention	Intervention	80,91	4854,50	0,000
	Control	40,09	2405,50	

b. Differences in Family Support and Adherence between Before and After Intervention in the Control Group and the Intervention Group

To test the difference in paired samples using the Wilcoxon Signed Ranks test because the distribution is not

normal. Based on the Wilcoxon Signed Ranks test, it shows that there are significant differences regarding family support and adherence, between before and after the intervention, both in the control group and the intervention group. (Table 4)

**Table 4**  
**Differences in Family Support and Adherence between Before and After Intervention in the Control Group and the Intervention Group**

	Differences			Asymp. Sig. (2-tailed)
	Negative	Positive	Constantly	
Family support before and after intervention in Control Group	0	42	18	0,000
Compliance before and after intervention in Control Group	0	27	33	0,000
Family support before and after intervention in Intervention Group	6	42	12	0,000
Compliance before and after intervention in Intervention Group	0	57	3	0,000

c. Intervention Effectiveness in Control Group and Intervention Group

To determine the effectiveness of the intervention that has been implemented, the N-Gain Score test is carried out. According to Hake in Corcoran (2005), the Gain score is categorized into 3, namely: "low" effectiveness if 0.3, "medium" if the value is 0.3 – 0.7 and "high" if > 0.7. Results Based on the calculation of the N-Gain Score test (Table 5), regarding family support, it shows the average value of the N-Gain Score for Kel. The intervention was 51.81% included in the "moderate" category, with a minimum N-Gain Score value of -50.0% and a maximum of 100%. The N-Gain Score for Example The control is 35.57% included in the "medium" category, with a minimum value of 0.0% and a maximum of 100%.

Regarding the level of compliance, the average N-Gain Score for the Intervention Group was 55.83% which was included in the "moderate" category, with a minimum N-Gain Score of 20% and a maximum of 84.62%. Meanwhile, the average N-Gain Score for the Control Group is 14.54%, which is included in the "low" category, with a minimum N-Gain Score of 0% and a maximum of 60%.

**Table 5**  
**Intervention Effectiveness in Control Group and Intervention Group**

	N-Gain Percentage		
	Min	Max	Mean
Family support			
Control Group	0,00	100,00	35,57
Intervention Group	- 50,00	100,00	51,81
Compliance			
Control Group	0,00	60,00	14,54
Intervention Group	20,00	84,62	55,83

**DISCUSSION**

The results of statistical analysis showed that the state of family support and adherence to the treatment process at the time of the initial measurement there was no significant difference between the control group and the intervention group. The results of the intervention, it was found that there was an increase in family support in the intervention group and the control group. From the results of statistical tests, there were significant differences before and after the

intervention, both in the control group and the intervention group. This shows that the intervention carried out was able to increase family support both in the control group and in the intervention group. However, family support in the intervention group (mean 11.63) was better than family support in the control group (mean 10.28), where the Mann-Whitney test results there was a significant difference (Asymp. Sig. = 0.002).

Judging from the compliance, the increase in adherence in the intervention group (medium category = 71.7%) was much better than in the control group (21.7%), while the high category in both groups did not change. Likewise, seen from the average value of adherence after the intervention, in the intervention group 6.19 in the control group 4.49, the ideal/maximum value = 8. So it can be said that counselling accompanied by the provision of interactive media is effective in increasing family support and compliance with hypertension. However, judging from the average N-Gain Score which is only 51.81% for family support and 55.83% for compliance, the effect achieved is in the moderate category.

The interactive media provided are learning media/message delivery media to those who see, read or listen. If people who see, read, and listen have understood the contents of interactive media, they will be encouraged to behave as expected in interactive media.

Interactive media can be accessed using computers or smartphones. In this study, interactive media access using a smartphone, and the results were able to increase the compliance of hypertension sufferers in undergoing the treatment process. This is in line with the research of Nobian Andre et al. which shows that mobile-based interventions are effective in improving medication adherence and blood pressure monitoring in hypertensive patients (Andrea B. Neiman et al., 2017)

The interactive media given to people with hypertension will of course also be seen by the patient's family. By looking at the interactive media, the patient's family will understand the things that must be done by hypertension sufferers. This is what encourages families to do something about family members who suffer from hypertension, either in the form of reminding, reprimanding, motivating, to taking action to help sufferers undergo the hypertension treatment process. This is in line with Ronny Suhada Firmansyah's research which states that the level of family knowledge has a significant relationship with family support. (Firmansyah et al., 2017)

In this study, there were 42 people (70%) of respondents stated that their family's behavior changed positively regarding their support for hypertension sufferers. Family support for hypertension sufferers in both the intervention group and the control group is good enough, a positive change of 70% is an encouraging condition. The result was supported by other studies that found good family support was associated with better control of blood pressure Chacko et al (2020) Chacko S, Jeemon P. Role of family support and self-care practices in blood pressure control in individuals with hypertension: results from a cross-sectional study in Kollam District, Kerala. (Chacko & Jeemon, 2020). Other research found that there is a significant relationship between family support and adherence to treatment for hypertension sufferers (Ihwatun et al., 2020). This statement support with recent study that family support can improved better obedience for hypertension (Shahin et al., 2021)

The average value of compliance of 6.19 is felt to be quite good because the ideal value set is 8. This is probably because the evaluation period (final measurement) which is only approximately 1.5 months, has not given enough time

to understand more about hypertension. Moreover, most of the respondents are more than 50 years old, of course, this understanding is rather difficult to achieve optimally. In addition, achieving positive behaviour change requires a long time. Therefore, support and other communication media are needed to encourage and motivate hypertensive patients to be more obedient in undergoing the treatment process. Social media can be informative and inclusive so that the community will easily receive information about high blood pressure and can facilitate increased awareness of dealing with high blood pressure. Incorporating social media into hypertension management can improve patients' lifestyle and medication adherence more than traditional approaches. (Pandit Bagus Tri Saputra, Sherly Yolanda, Dinda Dwi Purwati, 2022). Several strategies can be implemented to improve medication adherence for patients with chronic diseases, including an increasing patient understanding of the benefits of treatment and using health information technology to improve decision-making and communication during and after treatment at healthcare facilities. (Andrea B. Neiman, et al. 2017).

Most of the patients have been known to suffer from hypertension for less than 3 years. This situation is almost the same as the old state of treatment. This indicates that people with hypertension know their disease from the results of examinations at healthcare facilities. They come to healthcare facilities because of the complaints they feel. Therefore, early detection through home visits is very important. Thus patients with hypertension can be identified before the situation gets worse. Although access to healthcare facilities (Primary Health Centers) is not difficult, most do not undergo the treatment process properly. There is an implicit hypothesis that early detection of hypertension through screening reduces the burden of morbidity and mortality, but this hypothesis has not been tested in rigorous studies (Schmidt et al., 2020).

Adherence to the treatment process is a "behaviour". It is not easy to change, and to change requires considerable process and time. Some literature states that efforts that can be made to improve adherence include: simplification of drug regimens, effective communication between staff and patients, involvement of supporters/companions, providing health education/ counselling, social encouragement/support, providing compliance incentives, and increasing service hours. Self-management consists of several concepts such as Self-care, self-control, persistence, healthy behaviours change, patient education, and collaborative care, Intent to educate patients about their disease, so they take a more active role in therapy (Richard & Shea, 2011).

#### LIMITATION OF THE STUDY

The evaluation time is too short, only 1.5 months after the intervention has not resulted in sufficient behaviour change. In addition, the internet network quality factor may also affect the intensity of application use.

#### CONCLUSIONS AND SUGGESTIONS

Interactive media used for effective intervention improve the compliance of hypertension sufferers in undergoing the treatment process. However, the increase in compliance with hypertension sufferers is also influenced by family support.

Taking into account the results of this study, the use of interactive media should be carried out by taking into account the regional conditions and social conditions of the community. In the future, it is necessary to evaluate the development of compliance of hypertension patients in undergoing the treatment process.

## ETHICAL CONSIDERATIONS

### Funding Statement.

This research was carried out with the support of research funds through the DIPA Poltekkes Jambi Ministry of Health in 2022

### Conflict of Interest Statement

The writing of this article does not have a conflict of interest with any party, and there is also no conflict of interest between the authors

## REFERENCES

- Andrea B. Neiman, P., 1, ; Todd Ruppap, P., 2, ; Michael Ho, MD, P., 3, 4, ; Larry Garber, M., 5, ; Paul J. Weidle, P., 6, ; Yuling Hong, MD, P., 1, ; Mary G. George, M., 1, ; Phoebe G. Thorpe, M., & 7. (2017). *CDC Grand Rounds: Improving Medication Adherence for Chronic Disease Management – Innovations and Opportunities*.  
<https://www.cdc.gov/mmwr/volumes/66/wr/mm6645a2.htm>
- Chacko, S., & Jeemon, P. (2020). Role of family support and self-care practices in blood pressure control in individuals with hypertension: results from a cross-sectional study in Kollam District, Kerala. *Wellcome Open Research*, 5, 180. <https://doi.org/10.12688/wellcomeopenres.16146.1>
- Chung, W. W., Chua, S. S., Lai, P. S. M., & Morisky, D. E. (2015). The Malaysian Medication Adherence Scale (MALMAS): Concurrent Validity Using a Clinical Measure among People with Type 2 Diabetes in Malaysia. *PLOS ONE*, 10(4), e0124275. <https://doi.org/10.1371/journal.pone.0124275>
- Firmansyah, R. S., Lukman, M., & Mambang Sari, C. W. (2017). Factors related to family support in primary prevention of hypertension. *Jurnal Keperawatan Padjadjaran*, 5(2), 197–213. <https://doi.org/10.24198/jkp.v5i2.476>
- Ihwatun, S., Ginandjar, P., Saraswati, L. D., & Udiyono, A. (2020). Factors Associated with Medication Adherence to Hypertension Patients in the Pudukpayung Health Center Work Area, Semarang City. *Journal of Public Health (e-Journal)*, 8(3), 352–359. <https://ejournal3.undip.ac.id/index.php/jkm/article/view/26396>
- Indonesia Ministry of Healt. (2019). *Basic Health Research National Report*.  
<http://repository.litbang.kemkes.go.id/3514/>
- Indonesian Ministry Of Health. (2017). *General Guidelines for the Healthy Indonesia Program with a Family Approach*:  
<https://www.kemkes.go.id/article/view/17101200002/buku-pedoman-monitoring-dan-evaluasi-pelaksanaan-pis-pk.html>
- Jambi, H. report. (2020). *Jambi Provincial Health Office*.  
[https://dinkes.jambiprov.go.id/file/informasi\\_publik/MTY0MTlyOTA3NA\\_Wkt1641229074\\_XtLnBkZg.pdf](https://dinkes.jambiprov.go.id/file/informasi_publik/MTY0MTlyOTA3NA_Wkt1641229074_XtLnBkZg.pdf)
- Jannah, M., & Arini Murni, N. N. (2019). The Use of Audio Visual Media Increases Compliance with the Consumption of Blood-Adding Tablets in Pregnant Women. In *Prima Health Journal* (Vol. 13, Issue 2, p. 108).  
<https://doi.org/10.32807/jkp.v13i2.235>
- Lee, W.-Y., Ahn, J., Kim, J.-H., Hong, Y.-P., Hong, S. K., Kim, Y. T., Lee, S. H., & Morisky, D. E. (2013). Reliability and validity of a self-reported measure of medication adherence in patients with type 2 diabetes mellitus in Korea. *Journal of International Medical Research*, 41(4), 1098–1110. <https://doi.org/10.1177/0300060513484433>
- Lukito, A. A. (2019). *Hypertension Management Consensus* (A. A. Lukito, E. Harmeiwaty, & N. M. Hustrini (eds.)). Indonesian Hypertension Doctors Association. [http://www.inash.or.id/upload/event/event\\_Update\\_konsensus\\_2019123191.pdf](http://www.inash.or.id/upload/event/event_Update_konsensus_2019123191.pdf)
- Mohani, C. I. (2014). *Hipertensi Primer* (S. et al Setiati (ed.); I, p. 2293). Interna Publishing.
- Morisky, D. E., Ang, A., & Krousel-Wood, M. (2008). Predictive Validity of A Medication Adherence Measure in an Outpatient Setting. *Journal of Clinical Hypertension*, 10(5), 348–354. [https://www.academia.edu/25841731/Predictive\\_Validity\\_of\\_a\\_Medications\\_Adherence\\_Measure\\_in\\_an\\_Outpatient\\_Setting](https://www.academia.edu/25841731/Predictive_Validity_of_a_Medications_Adherence_Measure_in_an_Outpatient_Setting)
- Pandit Bagus Tri Saputra, Sherly Yolanda, Dinda Dwi Purwati, S. (2022). The Roles of Social Media in Hypertension Management Programs. *CDK-307*, 4(8), 469–473. <https://cdkjournal.com/index.php/CDK/article/viewFile/1995/1165>
- Registered Nurses Association of Ontario. (2009). *Nursing Management of Hypertension* ( et al Tazim Virani (ed.)). Registered Nurses Association of Ontario.
- Richard, A. A., & Shea, K. (2011). Delineation of Self-Care and Associated Concepts. *Journal of Nursing Scholarship*, no-no. <https://doi.org/10.1111/j.1547-5069.2011.01404.x>
- Schmidt, B.-M., Durao, S., Toews, I., Bavuma, C. M., Hohlfeld, A., Nury, E., Meerpohl, J. J., & Kredon, T. (2020). Screening strategies for hypertension. *Cochrane Database of Systematic Reviews*, 2020(5). <https://doi.org/10.1002/14651858.CD013212.pub2>
- Shahin, W., Kennedy, G. A., & Stupans, I. (2021). The association between social support and medication adherence in patients with hypertension: A systematic review. *Pharmacy Practice*, 19(2), 2300. <https://doi.org/10.18549/PharmPract.2021.2.2300>
- Sukma, A. N. et al. (2018). Factors related to the compliance of hypertension patients in doing therapy at the Pandanaran Health Center Semarang City. *Journal of Public Health (e-Journal)*, 6(5). <https://ejournal3.undip.ac.id/index.php/jkm/article/view/22125>

