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Application of eHealth Self-Management (eHSM) for clients hypertension

Jajuk Kusumawaty[1], Syamsul Anwar[2], Lily Herlina[3], Ninik Yunitri[4], Dedi Supriadi[5], Rosmiati[6]

[2,3,4]Community Nursing Specialist Program, Faculty of Nursing, Muhammadiyah University Jakarta

[1,6]Bachelor of Nursing Study Program, STIKes Muhammadiyah Ciamis, Indonesia

[5]Nursing diploma study program, STIKes Muhammadiyah Ciamis, Indonesia

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ABSTRACT

Hypertension is a cardiovascular disease and is one of the main causes of premature death throughout the world. The aim of this research is to determine the effect of eHealth Self-Management (eHSM) intervention on reducing blood pressure in adult clients with hypertension. Method on The implementation of Evidence Base Nursing (EBNP) Practice was carried out in the Linggasari sub-district, Ciamis Regency. The number of respondents was 30 people, four times a month they were given education in the Linggasari area, carried out with a pretest at the beginning and a posttest at the end of the intervention, monthly telephone counseling was carried out for 4 weeks, education took place in 4 meetings every week with a duration of approximately 60 minutes in each session. to remind you to take your medication every night. Each counseling session lasts approximately 20 minutes via telephone via WhatsApp. Based on the Wilcoxon test results in the table using spss.16, the blood pressure results before and after implementing e-health gave significant results because the p value is 0.000, which is smaller than the Alpha value (<0.05), so Ho is rejected, which means there is a difference in blood pressure. before and after implementing e-health. Conclusion There is a significant effect of the eHealth Self Management (eHSM) intervention with the What App Group application on hypertensive clients in the Linggasari sub-district of the Ciamis Health Center Work Area.

Corresponding Author:

Jajuk Kusumawaty,
Community Nursing Specialist Program,
Faculty of Nursing,
Universitas Muhammadiyah Jakarta,
Jl, Cempaka Putih, Jakarta,Indonesia
Email: jajukkusumawaty@gmail.com

INTRODUCTION

Hypertension is estimated to affect 25% of men and 20% of women worldwide, consisting of 1.13 billion people (Kholifah, Budiwanto, & Katmawanti, 2020) , (Fauzan, Irawati, & Fadli, 2020) in total. Hypertension is one of the leading causes of premature death worldwide, and only 10.9% of men and 16.8% of women have their blood pressure under control, (Hutagalung, 2021), in(Cavero-Redondo et al., 2021). Hypertension significantly increases the risk of heart disease,

encephalopathy, kidney disease, and other diseases (Pitria, 2020), (Williams et al., 2018, Noviati et al., 2023).

According to WHO (2017) as many as 9.4 million deaths occur in the world every year, and 16.5% of all deaths are associated with high blood pressure. Meanwhile, Indonesia is ranked 8th with a prevalence of 26.5% in Asia, (Laili, Heni, & Tanoto, 2023), (Eriyani et al., 2022). Based on data from the Indonesian Health Survey in 2018, the prevalence of hypertension was 33.4% in men and 35.4% in women. This figure increased from 25.8% in 2013 to 34.1% in 2018 (Peltzer & Pengpid, 2018).

West Java Province is in the second highest position after South Kalimantan (44.1%) with a higher score than the national score (Wardani, Sukandar, Baliwati, & Riyadi, 2021). The prevalence of hypertension sufferers in Ciamis based on the results of the 2018 Riskesdas for West Java Province = 49.64% (Hypertension Target Calculation) (Santoso, Bramantoro, Kardos, Szakács, & Nagy, 2022).

One target for non-communicable diseases (NCDs) globally stated by WHO in 2013 is to reduce the prevalence of high blood pressure, defined as a systolic blood pressure of 140 mm Hg or higher or a diastolic blood pressure of 90 mm Hg or higher, by 25% compared to to 2010 levels in 2025 (ROHMAH, 2020).(Zhou et al., 2017)

This is proven by the use of PTM as one of the targets that must be achieved in the Sustainable Development Goals (SDGs) (Sagita, Ilhamiwati, & Pefriyadi, 2023) (Wulandari, Krismiyati, & Putrianti, 2020). In the 3rd SDGs goal, target 3.4 states "By 2030 reduce by one third the number of premature deaths due to non-communicable diseases through prevention and treatment and improve mental health and well-being". Indicators related to this target include the prevalence of high blood pressure and the prevalence of obesity in the population aged ≥18 years (Arifin, Antari, & Albayani, 2019), (Akbar & Santoso, 2020).

Health is often designed to support the achievement of health goals, such as assisting in the self-management of chronic diseases, including hypertension (Agusrianto et al., 2023), (Free et al., 2013). Those who accept the implementation of community-based eHealth will have higher hypertension control self-efficacy, better hypertension self-care behavior and lower blood pressure than before (Patimah, Iwan Wahyudi, & Tanti Suryawanie, 2020). (Tan, Oka, Dambha-Miller, & Tan, 2021). The eHSM intervention consists of three components; weekly one-hour classes on hypertension management, over a four-week period, with community-based eHealth monitoring and monthly telephone counseling for 24 weeks.(Jung & Lee, 2017, Noviati et al., 2022, Kusumawaty et al., 2021), (Ritta, 2023).

RESEARCH METHOD

The implementation of the Evidence Base Nursing Practice was carried out in the Linggasari sub-district, Ciamis Regency (Irmayanti, Apipudin, & Sukmawati, n.d.). The number of respondents was 30 people, four times a month they were given education in the Linggasari area with 3 groups in different places, namely in Karang Gedang (Rw 07 and 08), Awirarangan (RW 04 and 05) and Sikuraja (RW 09 and 10),Before the education was carried out, respondents were given a pre-test first by being given a link that had been prepared by the researcher and filled in by the respondent which contained: knowledge, attitudes, behavior and compliance with taking hypertension medication. After the intervention was carried out in the last week, a post test was given. Community-based eHealth monitoring, and monthly telephone counseling carried out for 4 weeks, education for 4 meetings every week with a duration of approximately 60 minutes in each session. To remind you to take medication every night, researchers or cadres remind you via the Whapp App group at the agreed time. Each counseling session lasts approximately 20 minutes via telephone via WhatsApp.Researchers focused on understanding or knowledge, respondents' attitudes, self-management (hypertension risk factor behavior) and adherence to taking medication.

RESULTH AND DISCUSSION

Variables	Frequency	Presentation
Age		
Early adulthood	9	30.7%
Late adulthood	21	69.3%
Gender		
Woman	29	96.7%
Man	1	3.3%
History of Hypertension		
There is	22	73.3%
There isn't any	8	26.7%
Work		
IRT	25	83.3%
Self-employed	1	3.3%
Trader	1	3.3%
Businessman	2	6.7%
Sew	1	3.3%

Based on the table above, most of the respondents were in the late adult category, 21 people (69.3%), almost all of them were female, 29 people 99.7%), marital status, 26 people, 96.7%), married, high school education level. 15 people (50.0%), most of the respondents had a history of hypertension, 22 people (73.3%) and 25 people (83.3%) worked as housewives.

Table 2. Pre and post test respondents' knowledge (n=30)

No	Knowledge	Pre Test		Post Test	
		N	%	N	%
1	Good	1	2.8%	29	80.6%
2	Enough	25	69.4%	1	2.8%
3	Not enough	4	11.1%	0	0%
	Total	30	100%	30	100%

Based on the results of knowledge measurements carried out in the pre-test, the good category was 2.8%, 69.4% was sufficient and 11.1% was poor, while the post-test results were in the good category, 80.6%, sufficient, 2.8%. This shows an increase in knowledge in each category after education was carried out.

Table 3. Attitudes of pre and post test respondents (n=30)

No	Attitude	Pre Test		Post Test	
		N	%	N	%
1	Positive	14	46.7%	27	90.0%
2	Negative	16	53.3%	3	10.0%
	Total	30	100%	30	100%

Based on the results of attitude measurements carried out, the pre-test results were in the positive category 46.7%, negative 53.3% and the post-test results were in the positive category, 90.0%, negative 10.0%.

Table 4. Pre and post test respondent behavior (n=30)

No	Behavior	Pre Test		Post Test	
		N	%	N	%
1	Good	6	17.6%	26	86.7%
2	Enough	21	61.8%	4	13.3%
3	Bad	7	20.6%	0	0%
	Total	30	100%	30	100%

Based on the behavioral measurements carried out, the pre-test results were in the good category 17.6%, 61.8% fair, 20.6% bad and the behavioral post-test results were in the good category 86.7%, fair 13.3%. In this case, it shows a change in behavior for the better.

Table 5. Pre and post test respondent compliance (n=30)

No	Obedience	Pre Test		Post Test	
		N	%	N	%
1	Low compliance	29	80.6%	19	52.8%
2	Moderate compliance	1	2.8%	7	19.4%
3	High compliance	0	0	4	11.1%
	Total	30	100%	30	100%

Based on the results of compliance measurements carried out in the pre-test, the category of low compliance was 80.6%, moderate compliance was 2.8%, there was a decrease in the post-test results of compliance with the low compliance category of 52.8%, moderate compliance was 19.4%, high compliance was 11.1%, the MMSA-8 score decreased. showed an increase in compliance in hypertensive patients.

Table 6. Differences in blood pressure results before and after implementing the eHEALTH self management (eHSM) intervention in clients with hypertension

Action	Blood pressure	Mean	Min (mmHg)	Max (mmHg)
Before	Systole	149.50	108	184
	Diastole	95.80	83	125
After	Systole	135.57	119	171
	Diastole	86.67	80	98

Based on the table above, the average blood pressure results before the intervention were carried out, min-max systole was 108 – 184 mmHg, with a mean of 149.50 mmHg. while min – max diastole was 83 - 125 mmHg, with a mean of 95.80 mmHg. Meanwhile, after the intervention, min – max systole was 119 – 171 mmHg, diastole 80 – 98 mmHg, with a mean of 86.67 mmHg.

Table 7. Application of eHEALTH self management (eHSM) interventions for clients with hypertension on knowledge, attitudes, behavior and compliance

No	Variable	Mean Pre-test	Mean Post test	Difference	P value
1	Knowledge	2.10	1.03	1.07	0,000
2	Attitude	1.53	1.10	0.43	0,000
3	Behavior	1.53	1.13	0.4	0.001
4.	Obedience	1.53	1.13	0.4	0.001

Based on the results of the analysis test using the Wilcoxon test in table 7 on knowledge with the P value obtained 0.000 < α (0.05), it can be concluded that there is an influence of the e-Health self-management intervention for hypertensive clients on the client's knowledge.

Based on the results of the analysis test using the Wilcoxon test in table 7 on attitudes with a P value obtained of 0.000 < α (0.05), it can be concluded that there is an influence of e-Health self-management interventions in hypertensive clients on attitudes.

Based on the results of the analysis test using the Wilcoxon test in table 7 on behavior with the P value obtained at 0.001 < α (0.05), it can be concluded that there is an influence of e-Health self-management intervention in hypertensive clients on client behavior.

Based on the results of the analysis using the Wilcoxon test in table 7 on compliance with the P value obtained at 0.001 < α (0.05), it can be concluded that there is an influence of the e-Health self-management intervention in hypertensive clients on compliance with taking medication.

Table 8. Differences in blood pressure before and after implementing e-health

Blood pressure	Systole			Diastole			
	Mean	elementary school	Difference	Mean	elementary school	Difference	*p-value*
Before	149.50	20,621		95.80	10,304		
After	135.57	12,199	13.93	86.67	5,554	9.13	0,000

Based on the Wilcoxon test results in the table using spss.16, the blood pressure results before and after implementing e-health gave significant results because the p value is 0.000, which is smaller than the Alpha value (<0.05), so Ho is rejected, which means there is a difference in blood pressure. before and after implementing e-health.

Discussion

Implementation of eHEALTH self management (eHSM) interventions for clients with hypertension on Knowledge, Attitudes, Behavior and Compliance

The next analysis is related to the results of analysis tests using the Wilcoxon test on knowledge results with a P value obtained of 0.000 < α (0.05), so it can be concluded that there is an influence of the eHealth self-management intervention for hypertensive clients on the client's knowledge. The researcher's assumption is that by carrying out eHealth interventions using the WhatsApp group application and also face-to-face providing education to respondents, this has a very significant effect on reducing blood pressure. This is in line with research that has been conducted (Wu, Y., et all. (2019) that the remote health intervention model based on the internet or cellular communication network is a form of health education that should be promoted. This is open and expanded health education with changing medical models. Telehealth intervention models are an effective means of extending hospital health education to patients' homes. Results from this review demonstrate improvements in self-management behavior and medication adherence. mHealth interventions are highly effective.

Based on the results of analysis tests using the Wilcoxon test on attitude results with a P value obtained of 0.000 < α (0.05), it can be concluded that there is an influence of the e-Health self-management intervention in hypertensive clients on attitudes. Lifestyle changes such as dietary sodium restriction, weight loss, and aerobic exercise can substantially lower blood pressure. In addition, the WhatsApp group created is an easy-to-use tool to help treat hypertension through the use of applications that target lifestyle management, which has shown promising results. Recent evidence shows the feasibility, acceptability, and success of digital interventions in changing the behavior of people with chronic conditions. Controlling one's hypertension may involve many lifestyle and behavioral changes. Researchers assume that mobile methods via what app groups combined with regular blood pressure monitoring and digital behavior change interventions may be more effective than currently used hypertension management strategies. This is in line with research conducted by Jung, H., & Lee, JE (2017), a community-based eHealth approach is needed which requires participants to share blood pressure machines and attend group education, it is also hoped that it can encourage participants to measure blood pressure and improve behavior. self care. Older participants needed more time to become familiar with new technologies used in eHealth approaches than younger adults.

Based on the results of analysis tests using the Wilcoxon test on behavior with a P value obtained of 0.001 < α (0.05), it can be concluded that there is an influence of the e-Health self-management intervention for hypertensive clients on client behavior. Based on the results of the intervention that has been implemented in structured group education sessions carried out in 3 groups in different places, it actively involves participants in improving self-care behavior by providing opportunities to communicate with peers about how to manage medication adherence, their blood pressure, diet, and exercise. . Participants supported each other in improving self-care behavior, there was very effective communication and also during discussions via WhatsApp

media about the problems they were facing at that time. Structured community activities also promote a new culture of healthy blood pressure control. In implementing this intervention, participants provide social support to participate in measuring blood pressure, not only with each other but also with colleagues who do not measure blood pressure, because they can share in measuring blood pressure who are at the head of the cadre of each group.

Based on the results of the analysis test using the Wilcoxon test on compliance with the P value obtained at 0.001 < α (0.05), it can be concluded that there is an influence of the e-Health self-management intervention in hypertensive clients on compliance with taking medication. The researcher's analysis shows that by using the What App group to remind you of compliance with taking medication that has been scheduled every night, led by the researcher himself and also the cadre leader of each group, so that it is controlled to always comply with taking medication, they also interact with each other in terms of hypertension management so that problems are found. can be discussed directly and all respondents understand and can remind and help patients to take medication and maintain a healthy lifestyle. In line with research (Li et al., 2020) a greater reduction in Systole and Dyastole was observed in the mHealth intervention group compared to the control group, −3.78 mm Hg (P<.001; 95% CI −4.67 to −2.89) and −1.57 mm Hg (P<.001; 95% CI −2.28 to −0.86), respectively.

Differences in blood pressure before and after implementing e-health

Based on the results of the Wilcoxon test that the blood pressure results before and after implementing e-health give significant results because the p value is 0.000, which is smaller than the Alpha value (<0.05), so Ho is rejected, which means there is a difference in blood pressure before and after implementing it. e-health. With a difference in systole before and after intervention of 13.92 mmHg and diastole of 9.13 mmHg. This is supported by research by Jung, H., & Lee, JE (2017), the difference in systolic blood pressure reduction between the intervention group, 11.4 mm Hg, and the control group, 0.6 mm Hg, was statistically significant. These findings are consistent with results from a randomized controlled clinical trial of 123 participants using the internet and mobile phones, in which significant reductions in systolic BP and diastolic BP were observed.

CONCLUSION

Based on the results of the discussion of the research results described in the previous chapter, the following conclusions can be drawn: There is a significant influence of the eHealth Self Management (eHSM) intervention with the WhatsApp group application on hypertensive clients in the Linggasari sub-district of the Ciamis Health Center

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