



Education about hypertension management by telenursing during the covid 19 pandemic

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ABSTRACT

Hypertension is one of the non-communicable diseases (NCD) whose prevalence is still high becomes a health problem in the world. Health education with telenursing is an effort to increase knowledge and awareness of hypertension sufferers about their health. Telenursing includes technology system that can be used in providing nursing to prevent the risk of exposure to the Covid 19 virus in health service. The purpose of this study was to determine the effect of health education by telenursing on knowledge in patients with hypertension at the Mandiraja 2 Health Center. This type of research used a Quasi Experiment Pretest-Posttest Control Group Design. The sample is patients with hypertension in the Prolanis program at the Mandiraja 2 Health Center as many as 44 people with a total sampling. The research was conducted on March 30 – April 2, 2022 in the Working Area of the Mandiraja 2 Public Health Center, Banjarnegara Regency. The processed data was statistically tested using the Wilcoxon Signed Ranks Test and the Mann Whitney. The results showed that the value of the Wilcoxon Signed Ranks Test in the experimental group was $p = 0.000$ and in the control group $p = 0.014$. test results Mann Whitney obtained p value = 0.005. The test results show that there is an effect of health education by telenursing on knowledge about hypertension in hypertension sufferers at Mandiraja 2 Health Center.

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ABSTRAK

Hipertensi adalah salah satu Penyakit Tidak Menular (PTM) yang prevalensinya masih tinggi sehingga menjadi masalah kesehatan di dunia. Edukasi kesehatan dengan telenursing merupakan salah satu upaya dalam meningkatkan pengetahuan dan kesadaran penderita hipertensi mengenai kesehatannya. Telenursing termasuk sistem teknologi yang bisa digunakan dalam pemberian asuhan keperawatan dengan jarak jauh sehingga dapat mencegah resiko paparan virus Covid 19 di layanan kesehatan. Tujuan penelitian ini untuk mengetahui pengaruh edukasi kesehatan dengan telenursing terhadap pengetahuan tentang hipertensi pada penderita hipertensi di Puskesmas Mandiraja 2. Jenis penelitian ini menggunakan desain penelitian Quasi Experiment Pretest-Posttest Control Group Design. Sampel dalam penelitian ini yaitu penderita hipertensi pada program Prolanis di Puskesmas Mandiraja 2 sebanyak 44 orang dengan total sampling. Penelitian dilaksanakan pada 30 Maret – 2 April 2022 di Wilayah Kerja Puskesmas Mandiraja 2 Kabupaten Banjarnegara. Data yang telah diolah dilakukan uji statistik menggunakan Uji Wilcoxon Signed Ranks Test dan Uji Mann Whitney. Diperoleh hasil bahwa nilai Uji Wilcoxon Signed Ranks Test pada kelompok eksperimen yaitu $p = 0,000$ dan pada kelompok kontrol $p = 0,014$. Hasil Uji Mann Whitney diperoleh nilai $p = 0,005$. Hasil

uji tersebut menunjukkan bahwa terdapat pengaruh edukasi kesehatan dengan telenursing terhadap pengetahuan tentang hipertensi pada penderita hipertensi di Puskesmas Mandiraja 2.

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INTRODUCTION

The COVID-19 pandemic originated in Wuhan, which has expanded throughout China and in 2020 it has spread to various countries³⁰. According to Worldmeter data, the total infection cases throughout Asia currently reach 103,503,821 cases and 2,236,975 people have died. The condition of the Covid 19 pandemic in Indonesia reached more than 1,280,000 cases with a total of 34,489 deaths³⁸. Almost all countries in the world have begun to take preventive measures by stopping all forms of activity, transportation, and the public is asked to quarantine as an effort to stop the spread of Covid 19. Some of the people have health conditions that require medical care and treatment during the quarantine period³². One of the health conditions that require continuous treatment is a non-communicable disease such as hypertension.

Non-Communicable Diseases (PTM) or can be called New Communicable Disease is the main cause of death. Hypertension is one of the non-communicable diseases (NCD) whose prevalence is still high and continues to increase so that it becomes a health problem throughout the country¹. Hypertension is a disease that cannot be cured but can be controlled. Hypertension is characterized by increased blood pressure. Increased blood pressure for a long time can cause kidney failure, coronary heart disease, and stroke and can even cause death if left untreated. Not all people who have hypertension are aware that they suffer from hypertension, because the symptoms that appear are often not felt, when it is known that complications have occurred. Therefore, hypertension is often referred to as the "silent killer"².

An increase in the number of people with hypertension occurs every year, in 2025 it is predicted that 1.5 billion people suffer from hypertension and 9.4 million people die every year due to hypertension and its complications³. The results of Riskesdas 2018 show that the prevalence of hypertension in Indonesia based on the measurement of the population aged >18 years from 2013 – 2018 has increased from 25.8% to 34.1%⁴. The results of Riskesdas of Central Java Province from 2018 – 2019 showed that the prevalence of hypertension increased from 37.57% to 68.6%⁵. Based on the health profile of Banjarnegara Regency, the estimated number of at-risk population aged >15 years in Banjarnegara Regency in 2019 – 2020 increased from 10,328 to 303,3096. These conditions indicate that efforts to control hypertension need to be increased to help people with hypertension control blood pressure and prevent complications.

Hypertension control can be done with hypertension management⁷. Hypertension management can be done pharmacologically and non-pharmacologically. In understanding and practicing hypertension management, appropriate behavior is needed, because behavior is one of the factors in preventing hypertension. The behavior of hypertension sufferers in health management is strongly influenced by their knowledge. Individual knowledge about hypertension can help in controlling hypertension, because the knowledge possessed will lead a person to visit health facilities and comply with hypertension treatment⁸. Lack of

knowledge affects hypertensive patients to overcome relapse or take preventive measures to avoid complications and cause bad habits regarding hypertension treatment⁹. Efforts to increase knowledge about hypertension need to be carried out continuously with the aim of hypertensive patients being obedient in managing hypertension.

Health education is one of the promotive and preventive efforts that can be done in an effort to increase public awareness about health². However, during the Covid 19 pandemic, health services attempted to maintain effective care for patients while preventing exposure to the virus so that the health care service system experienced a crisis³¹. Therefore, it is necessary to have alternative ways to carry out the necessary health care services, one of which is the use of Telehealth.

Telehealth is a digital information and communication technology for health care services that can be accessed by users via computers or mobile devices. Users and health care providers can access this technology from home to support health care services. Telehealth is also expected to facilitate the fulfillment of service needs, especially community groups who require periodic treatment such as hypertension can also feel the benefits³².

One form of using telehealth is in the field of health education. The implementation of health education can be carried out with various methods and media, but currently health education is mostly done through online media by utilizing technology. One of the information technology that continues to develop in nursing is telenursing. Telenursing is one of the Telehealth programs, including one of the modern information and communication technology systems in the health sector that can be used to provide long-distance nursing care¹¹. Nurses who perform telenursing continue to pay attention to the nursing process to review, plan, implement, evaluate and document nursing care³³. Telenursing can also involve a health education process as well as a referral system³⁴.

Patients can communicate using the internet or video telephone from home to obtain health information, care, and treatment from health workers¹². The application of telenursing can be started using information and communication technology such as applications on smartphones or computers that are connected to an internet connection where many people are already using them. One feature on smartphones that has the potential for health education is the WhatsApp application. WhatsApp users can send text messages, voice messages, send multimedia files such as pictures, videos, and music.

The use of telenursing has the same patient satisfaction score as face-to-face visits, so this telenursing technology has the same convenience as in-person visits³⁶. The application of the use of telenursing in providing nursing care increases client satisfaction and is more effective because of the increased active participation of the family³⁵. In addition, telenursing can increase patient comfort by receiving care directly from home and minimizing visits to health services³⁷.

The Covid-19 condition and the behavior of the people in Banjarnegara show that the level of awareness of

respondents in implementing the health protocol is quite good. However, there are still people in Banjarnegara who violate the health protocol on the grounds that they are bored with the pandemic (69.67%) and feel uncomfortable (44.90%). The effectiveness of handling a pandemic is highly dependent on the behavior of the community. Based on the data, 9 out of 10 respondents said they had received health education regarding the implementation of health protocols in their area of residence³⁹.

The results of a preliminary study conducted by researchers at the Mandiraja 2 Health Center, Banjarnegara Regency with an interview with one of the Prolanis caretakers that Health Education was given directly and had never been done by telenursing. The results of interviews with 7 hypertensive patients who took prolans showed that 5 hypertensive patients had poor knowledge and 2 patients had sufficient knowledge about hypertension related to the causes of hypertension, hypertension complications, and hypertension control. Therefore, researchers are interested in knowing the effect of health education on hypertension management by telenursing during the Covid 19 pandemic on the knowledge of hypertension sufferers at the Mandiraja 2 Health Center in the hope of providing benefits in the development of community nursing science, especially in the development of information technology and telecommunications in providing health education.

METHOD

The typed of researched used in this researched was quantitative with a quasi-experimental pretest – posttest controlled group design. In this design there was an experimental group and a controlled group. The first day the experimental group and the intervention group was given a pretest before being given health education, the next day the researchers provided health education, the experimental

group in this studied was given health education intervention by telenursing via whatsapp used video media and the controlled group was given health education through leaflets. On the third day, both groups was given a posttest.

This researched was conducted in the working area of the mandiraja 2 health center, which was located in Purwasaba village, RT 02 RW 01, Mandiraja District, Banjarnegara Regency. The studied was conducted on March 30th – April 2nd, 2022. The sample in this studied was 44 people with hypertension in the prolans program at the Mandiraja 2 Health Center. The sampling technique used was total sampling. To determine the experimental and controlled groups, it was done by providing health education interventions by telenursing the experimental group and the controlled group by providing health education through leaflets. The instrument used was a demographic data questionnaire and a modified Hypertension Knowledge Level Scale (HK – LS) questionnaire.

Prior to statistical tests, homogeneity and normality tests was carried out, followed by nonparametric tests used the Wilcoxon Signed Ranks Test to determine differences in the leveled of knowledge of hypertension sufferers about hypertension before and after the intervention and the Mann Whitney test to determine differences in knowledge levels between the experimental group and the experimental group controll. This researched had received a letter of ethics from the ethics commission of the poltekkes of the ministry of health of yogyakarta with the number e – KEPP/POLKESYO/0252/iii/2022.

RESULTS AND DISCUSSION

Respondents in this study were 44 people with the following characteristics:

Table 1. Distribution of Respondents Characteristics by Age, Gender, Education, Occupation, Information on Hypertension, and Sources Providing Information at Mandiraja 2 Health Center in 2022 (n=44)

No	Characteristics of Responden	Frequency (f)	Percentage (%)
1	Age		
	a. 31 – 40 years	3	6,8
	b. 41 – 50 years	13	29,6
	c. 51 – 60 years	17	38,6
	d. 61 – 70 years	11	25,0
	Total	44	100
2	Gender		
	a. Man	11	25,0
	b. Woman	33	75,0
	Total	44	100
3	Education		
	a. Elementary School / Equivalent	18	40,9
	b. Middle School / Equivalent	6	13,6
	c. High School / Equivalent	13	29,5
	d. College	7	15,9
	Total	44	100
4	Work		
	a. Housewife / IRT	29	65,9
	b. ASN / TNI / POLRI	6	13,6
	c. Private employees	2	4,5
	d. Etc	7	15,9
	Total	44	100
5	Get Information		
	a. Once	44	100
	b. Never	0	0

No	Characteristics of Responden	Frequency (f)	Percentage (%)
	Total	44	100
6	Resources		
	a. Health Workers	44	100
	b. Print Media (magazine, newspaper, books, etc)	0	0
	c. Internet / Social Media (website, instagram, youtube, tiktok, etc)	0	0
	Total	44	100

Based on table 1, most of the respondents in this study aged 51-60 years as many as 38.6%, female respondents as much as 75%, respondents with an elementary school / equivalent education level as much as 40.9%, and 65.9

respondents worked as housewives / IRT. All respondents (100%) had received information about hypertension from health workers.

Table 2. Respondents' Knowledge Level about Hypertension Before and After Intervention in Experiment Group and Control Group at Mandiraja 2 Health Center in 2022 (n=22)

Group	Knowledge Level	Before Intervention		After Intervention	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Experiment	Good	4	18,2	15	68,2
	Enough	14	63,6	7	31,8
	Poor	4	18,2	0	0
	Total	22	100	22	100
Control	Good	3	13,6	6	27,3
	Enough	14	63,6	14	63,6
	Poor	5	22,7	2	9,1
	Total	22	100	22	100

Based on Table 2, it can be seen that the level of knowledge of respondents in the experimental group before the intervention was carried out was mostly in the enough category (63.6%). The level of knowledge of respondents in the experimental group after the intervention was mostly in the good category (68.2%). The level of knowledge of respondents in the control group before and after the intervention was mostly in the enough category (63.6%).

normality test was carried out using the Shapiro Wilk method. The results for the level of knowledge of the experimental group pretest, experimental group posttest, control group pretest, and control group posttest obtained a significance value <0.05. These results indicate that the data is not normally distributed, so the test used next is a nonparametric test using the Wilcoxon Signed Ranks Test to determine differences in the level of knowledge of hypertension sufferers about hypertension before and after being given the intervention and the Mann Whitney Test to determine differences in the level of knowledge between the experimental group and the experimental group. control group.

Prior to the statistical test as shown in Table 2, a homogeneity test was carried out which resulted in the results that both data had a significance > 0.05. These results indicate that the data has the same or homogeneous variance. After the homogeneity test was carried out, the

Table 3. Wilcoxon Signed Ranks Test Results

Group	Knowledge Level	Positive Ranks	Negative Ranks	Ties	Sig.
Experiment	<i>Pretest</i>	14	0	8	.000
	<i>Posttest</i>				
Control	<i>Pretest</i>	6	0	16	.014
	<i>Posttest</i>				

Based on Table 3, it can be seen that the results of the Wilcoxon Signed Ranks Test have a significance value of <0.05, indicating that there are differences in the level of knowledge before and after the intervention in the experimental group and the control group. Meanwhile, to find out the difference in the level of knowledge between the experimental and control groups, the Man Whitney test was carried out in the following table:

Based on Table 4, it can be seen that the significance value is <0.05, indicating that there is a difference in the level of knowledge after the intervention between the experimental group and the control group.

Table 4. Results of the Mann Whitney Test for the Experimental Group and the Control Group after the Intervention

Knowledge Level	Group	Mean Rank	Sig.
<i>Posttest</i>	Experiment	27.32	.005
	Control	17.68	

The Covid-19 pandemic has been going on for almost three years in Indonesia. Variations of the Covid-19 virus have also developed, starting from the first variant, namely alpha to omicron, which has been detected. The ups and downs of Covid-19 are a challenge for Indonesia. In response to these conditions, the Indonesian government is trying to develop policies to prevent cases from growing by treating the Enforcement of Community Activity Restrictions (PPKM) and vaccinations. Although the handling of Covid-19 in Indonesia can be said to be effective in reducing the spike in cases. However, the government continues to implement learning and work from home to reduce the spike in Covid-

19 cases that is growing. In the health sector, one of the efforts to increase promotive and preventive efforts for people with hypertension is through online media education. Telenursing is an alternative to provide long-distance nursing care by utilizing information and communication technology for patients.

The risk of developing hypertension increases with age. A person aged 45 years has an 8.4 times greater risk than a person aged < 45 years¹³. Baroreceptors involved in regulating blood pressure and arterial flexibility are affected by aging. Women have 1,169 more risk of developing hypertension than men¹⁴. Doing routine housework and family responsibilities becomes a burden for housewives¹⁵. This can cause stress. Stress can trigger an increase in blood pressure. Another factor that can influence the incidence of hypertension is education. People with low education are 2.188 times more likely to be at risk than people with higher education. A person's lack of education can lead to a higher risk of developing hypertension due to lack of information or knowledge that can lead to behavior in preventing or treating hypertension. The more information the respondent gets, the more knowledge he has. Patients with hypertension who have high knowledge will encourage someone to behave better in an effort to deal with hypertension so that they can control blood pressure and prevent its severity¹⁶.

Based on the results of previous studies, it was found that there was a change in the average level of knowledge of respondents before being given education (64.7) with the level of knowledge of respondents after being given education (76.8)¹⁷. Knowledge is information that is known by someone about something. Lack of knowledge affects hypertensive patients to overcome relapse or take preventive measures to avoid complications and cause bad habits regarding hypertension treatment⁹. One of the efforts that can be done to increase knowledge is through health education. Health education is an activity or effort to convey information to the public, groups, or individuals with the aim that the public gets better knowledge about health¹⁸.

The results of the study in the control group are in line with the results of previous studies that the provision of health education in the control group before and after the intervention was carried out, the level of knowledge of the respondents remained in the sufficient category⁹. This can happen because a person's knowledge can be influenced by several factors. The factors that influence the respondents' knowledge based on the characteristics are age, education level, and occupation.

With increasing age, a person will experience physical and mental decline, especially in the ability to receive information and the ability to remember. The higher the education, the easier it is to get information from other people or from other media, so that the level of education affects a person's learning process. Jobs that often interact with other people can generally provide more information than jobs that interact less with other people. However, due to the pandemic conditions, people are required to stay at home to suppress the spread of the Covid-19 virus. Telenursing allows nurses and patients to still be able to interact without having to meet especially without meeting face to face. This is a special satisfaction for patients related to the ongoing pandemic situation²⁸.

The results of statistical tests using the Wilcoxon Signed Ranks Test in the experimental group showed that there were differences in the level of knowledge before and after the intervention ($p < 0.05$). The intervention given to the experimental group was health education about hypertension by telenursing through the WhatsApp

application using video media. Schulz Renata da Silva., et al (2020) wrote about the benefits that telenursing with the voice call feature will help heal surgical scars. Another benefit of online consulting is that it allows the client or the client's family to get answers or information from experts so that they are not affected by myths or hoaxes. In this case, it is not only consultation but nurses can provide patient and family information so that psychological support, health education for people with hypertension can still be obtained²⁹.

Previous research has shown that telenursing-based education has an effect on respondents' knowledge and abilities. Health education conducted online can support a person's learning process by utilizing technology. Health information provided online makes it easier for the public to access information²⁰. In addition to reducing the risk of virus exposure, health services, especially nursing, using technology media can increase client satisfaction and increase family participation³⁵.

The application of telenursing can be started with smartphones that many people have through applications that exist on smartphones. The results of previous studies showed that there was an effect of counseling given through WhatsApp with video media on the knowledge and attitudes of respondents. The WhatsApp application is one of the applications that has potential in health education because it has been widely used by the public and through the WhatsApp application users can communicate by voice calls, face-to-face calls (video calls), sending text messages, voice messages, sending multimedia files such as images, videos, , and music. This can make it easier to provide health education without face to face²¹. This is in line with the current pandemic conditions, with telenursing being able to maintain the provision of care and the needs of hypertensive patients to maintain and improve their health.

In contrast to the results of other studies that there is no change in knowledge of the respondents after being given education through WhatsApp²². This can happen because of the education provided through the WhatsApp Group so that if the respondent does not immediately open the chat group and download the video, the chat will be buried which makes the respondent reluctant to open it again. The respondent's work can also affect the results, most of the respondents are students where students have many activities.

In the control group, the results of the Wilcoxon Signed Ranks Test showed that there was a difference in the level of knowledge before and after the intervention was given ($p < 0.05$), although the level of knowledge of the respondents in the control group before and after the intervention remained in the sufficient category but the score obtained increased. The intervention given to the control group was health education about hypertension with leaflets sent through the WhatsApp application.

The results of previous studies showed that there was an effect of giving leaflets on the knowledge of respondents²³. In contrast to the results of other studies that there is no significant effect on the knowledge of respondents after being given education using leaflet²⁴. Leaflets are print media that contain pictures and writing in the form of folded sheets. The form of leaflets that are simple and easy to carry are media that are often used by health workers in providing health education²⁵. Health information will be better if it is conveyed using interesting and good media²⁶. Health education by telenursing through the WhatsApp application using video media and leaflets has its own advantages and disadvantages.

Providing health education with telenursing has advantages in overcoming the limitations of health workers, facilitating access, and saving time because they do not have to visit health services. In addition, people with hypertension who live far from health facilities will still be able to obtain health care easily and efficiently. The advantage of using the WhatsApp application in providing health education is that this application is already familiar to people from young to adulthood. The features contained in the WhatsApp application provide convenience in providing health education. Messages sent can be read back and saved so that they can be reopened²⁷. Video media has advantages including video involving all five senses, easier to understand, more interesting because there is a combination of sound and image. However, giving videos that are given online requires a large amount of internet data. The advantages of leaflet media are that it does not need electrical energy, can be carried, when given online it does not require large internet data, while the weakness of leaflets as print media is that it cannot stimulate the sense of hearing²². Disadvantages of health education with telenursing are technological failures that can occur because it requires an internet connection, lack of instructions, lack of education on how to use telenursing are obstacles in themselves.

Nurses who can do telemedicine must have a valid and up-to-date license and are technology friendly, which is one of the requirements for nurses to be able to provide services. Nurses must have the skills to provide competent nursing services with telenursing technology.

The Mann Whitney test showed that there were differences in the level of knowledge after the intervention in the experimental group and the control group ($p = <0.05$). The mean rank value also shows that the posttest value of the intervention group who was given health education about hypertension management by telenursing through the WhatsApp application with video media was greater than the control group who was given health education about hypertension using leaflets via WhatsApp. This means that there is an effect of health education on hypertension management by telenursing during the COVID-19 pandemic on the knowledge of hypertension sufferers.

CONCLUSIONS AND SUGGESTIONS

1. Conclusion

Based on this research, it can be concluded that there is an effect of providing health education with telenursing on the level of knowledge about hypertension in hypertension sufferers at the Mandiraja 2 Health Center.

2. Suggestion

Health education by telenursing using the WhatsApp application can be used as a way to provide health education in health services and can motivate community nurses to provide comprehensive health education about hypertension, even though it is not done face-to-face. Information from this research can be used as a reference for nursing course materials, especially those related to community nursing in health education.

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