

# THE EFFECT OF VIRTUAL EDUCATION TO IMPROVE COMPLIANCE OF HEMODIALYSIS PATIENTS WITH HEALTH PROTOCOLS DURING PANDEMIC

*By Nur Hidayati*

Original Research Article

**THE EFFECT OF VIRTUAL EDUCATION TO IMPROVE COMPLIANCE OF HEMODIALYSIS PATIENTS WITH HEALTH PROTOCOLS DURING PANDEMIC**

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Abstract

**Background:** Spread of COVID-19 has continued to increase since March 2020. Patients with chronic kidney failure who undergo Hemodialysis are one of the groups vulnerable to COVID-19 because they routinely undergo Hemodialysis. One of the ways to prevent transmission of COVID-19 to hemodialysis patients is by providing education to comply with the COVID-19 prevention Health protocol.

**Objective:** The purpose of this study was to determine the effect of virtual education on Hemodialysis patient compliance in preventing covid-19 transmission at the Muhammadiyah Hospital in Lamongan.

**Methods:** This study used the Pre-Experiment approach one group pre-test post-test design on all CKD patients who were routine Hemodialysis at Muhammadiyah Lamongan Hospital from October - December 2020 who were taken using the purposive sampling technique. The intervention given was playing educational videos for 2 months. Data were collected using a questionnaire before and after the intervention, which was tested by the Wilcoxon test with  $\alpha < 0.05$ .

**Results:** There were 69 patients who took part in the entire processes until it was completed. The results revealed that there were differences in the level of compliance of hemodialysis patients before and after treatment ( $p = 0.000$ ). Further research with larger sample and RCT design is needed for stronger generalization in population.

**Conclusion:** Providing educational videos can increase the level of compliance of hemodialysis patients in implementing Health protocols to prevent transmission of COVID-19.

**Keywords:** Adherence, COVID-19, chronic kidney disease, education.

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**INTRODUCTION**

The recent outbreak of the COVID-19 disease and rapid spread around the world has created a global health emergency. This new virus is considered to have the same genus as the MERS and SARS coronavirus, but the virus is unique in itself (Zaki and Mohamed 2020). Researchers around the world are

researching several risk factors that can contribute to the severity of COVID-19. The World Health Organization (WHO) indicates that the elderly, as well as those with underlying medical conditions, are at a higher risk of developing the more severe disease COVID-19 (Li et al. 2020). One of them is a patient with

kidney disease who has a higher risk of dying in hospital (Cheng et al. 2020).

Patients with CKD are generally the elderly population who suffer from multiple comorbidities. Hemodialysis patients are exposed to repeated exposure to contaminated environments because their routine care usually requires three dialysis sessions per week. Taking all the reasons above into account, patients with CKD are more susceptible to COVID-19 than the general population. The development of COVID-19 can worsen the already damaged kidney function and subsequently lead to rapid deterioration of kidney function and even death (Cheng et al. 2020; Li et al. 2020). Some COVID-19 patients who have a history of chronic renal failure have inflammation with areas of congenital functional defects and populations of adaptive and moderate immune cells are known to have a higher risk for upper respiratory tract infections and pneumonia (Betjes 2013; Hagai K Cohen, Rozenberg, and Zero 2016). Therefore, a strict comprehensive protocol must be in place to prevent the spread of COVID-19 in patients with CKD (Li et al. 2020).

The results of the study by Li et al. (2020) there are several recommendations that are suggested as a management for preventing the transmission of Covid-19, including to screen each person or Hemodialysis patient who are admitted to hemodialysis room, avoiding some food during the dialysis process, sterilizing the dialysis room before use, creating a separate pathway between patients entering and leaving the room, and doing physical distancing during the dialysis process and always using a face mask. In this study, it is necessary to study the compliance of Hemodialysis patients in implementing existing health protocols during the pandemic.

The results of a preliminary study conducted in the first week of June 2020, found that 2 Hemodialysis patients were confirmed positive for Covid-19. Nurses of Hemodialysis room have provided counseling via microphone once a month since March 2020. However, in

early August 2020, the number of Hemodialysis patients who confirmed Covid-19 increased to 13 patients. This shows that the results of counseling have not been optimal in preventing transmission of COVID 19 in Hemodialysis patients

Based on the results of a preliminary study in early June 2020 at RSM Lamongan on 10 CKD patients undergoing a routine Hemodialysis process, as many as 50% of patients never wear a mask when interacting with other people at home, 50% do not bring a hand sanitizer when the patient is outside the house. This shows that the level of compliance amongst Hemodialysis patients is still lacking. Hemodialysis patients are one of the covid-19 comorbid, they are a high risk group. According to Ikizler (2020) Hemodialysis patients are at higher risk of being infected due to the frequency of frequent visits to the hospital. At one of the hemodialysis centers at Renmin Hospital, Wuhan University, 37 out of 230 patients with hemodialysis and 4 of 33 staff members who were infected by COVID-19 infected between January 14 and February 17, 2020. A total of 7 patients in hemodialysis died, 6 of whom were infected by COVID-19 (Naicker et al. 2020).

According to the study by Meijers, Messa, & Ronco (2020) the algorithm for preventing Covid-19 cases in dialysis patients includes: first, detection of Covid-19 symptoms in routine dialysis patients before they come to the hospital. Second, creating a special checkpoint that includes measuring body temperature at the entrance of the dialysis room. Third, reducing the number of inpatient bed for dialysis patient. However, from the results of this study, other recommendations are still needed, namely educational activities to improve compliance to adhering to health protocols. The results of the study by Lai et al. (2020) recommend providing optimal education through the mass media.

The study by Deif et al., (2015) found that education carried out by health workers can increase knowledge and compliance with therapeutic management of Hemodialysis patients. Subsequent research also shows that

15 Hemodialysis patients can improve their self-management compliance through HED-SMART (Hemodialysis Self-management Intervention Randomized Trial) (Griva et al. 2018). Another study by (Su et al. 2018), developed a system for documenting educational activities of patients, which is called the Patient Education Assessment and Description Record System (PEADRS), which can ease nurses to review patients' data related to health education, which will not only reduce repetition of similar teaching but also emphasize evaluation of learning to provide quality education. The nurse will recognize the type of patient education the patient / family member has received, thereby it can facilitate coordination, communication and cooperation among health care providers. This will reduce transmission times and help to follow up the patients' compliance so that patients can enjoy sustainable and integrity health care.

Research by Alikari et al., (2019) found that educational interventions can improve knowledge, compliance and quality of life among Hemodialysis patients. The study was conducted by providing intervention to patients through face-to-face health education and providing booklets. From these studies, we have not found a virtual educational method to improve patient compliance. Where on average, patient education activities are still carried out face-to-face.

Therefore, researchers want to provide an extension method that has minimal contact with patients, through a virtual educational video that will be played on TV available in the Hemodialysis room for 2 months to analyze its effect of compliance of Hemodialysis patients to prevent transmission of COVID 19.

If this method succeeds in changing the compliance of Hemodialysis patients and preventing transmission of COVID 19, it will indirectly improve the quality of life of Hemodialysis patients, prevent transmission of COVID 19 from patients to health workers, as well as improve the quality of service at Muhammadiyah Hospital Lamongan which can also improve the image of Muhammadiyah.

25 among the people. This study aimed to figure out the effect of virtual education on the compliance of Hemodialysis patient in preventing covid-19 transmission at the Muhammadiyah Hospital in Lamongan.

## 11 METHODS

### Design

This study was a quantitative research using a pre experimental - one group pre post-test design which aims to analyze the level of compliance of Hemodialysis patients in carrying out health protocols during the COVID-19 pandemic before and after providing virtual education in the Hemodialysis Room of Muhammadiyah Hospital Lamongan.

### Setting

This research was conducted in the Hemodialysis Room of Muhammadiyah Hospital in Lamongan for 3 months from 01 October 2020 to 31 December 2020.

### Research Subject

The population of the study was 99 CKD patients who routinely Hemodialysis in the HEMODIALYSIS Room at Muhammadiyah Hospital Lamongan. The research sample that took part the entire research process was 69 patients with CKD who were selected using purposive sampling technique.

The inclusion criteria of this study included CKD patients who routinely underwent hemodialysis twice a week in the hemodialysis Room of Muhammadiyah Lamongan Hospital and did not have COVID. The exclusion criteria for the study sample were CKD patients who did not routinely undergo hemodialysis at Muhammadiyah Lamongan Hospital (incidental) and or hemodialysis patients who were positive for COVID 19 before the study began. The criteria for dropping out of this study were CKD patients undergoing hemodialysis who died during the study and / or moved address.

*Instruments*

The measuring instrument used to measure patient compliance was a questionnaire given to patients during the pre-test (before treatment) and during the post-test (after 2 months). The questionnaire consisted of 17 questions that were compiled by the research team and the validity was tested before being given to the patient. The results of the questionnaire validity test were carried out by using the Pearson correlation test. From 17 questions, 8 questions were invalid. They include numbers 2, 3, 4, 10, 14, 15, 16, 17 where  $r$  count  $<0.514$ . With the results obtained, the invalid question items were corrected by changing the question sentences that were easier for the respondent to understand. The result of the questionnaire reliability test was 0.823 (Cronbach's Alpha  $>0.60$ ), that means the questionnaire is reliable.

*Intervention*

The intervention provided was to play an educational video of the Health protocol for COVID 19 prevention every 15 minutes through the Hemodialysis Room TV for 6 minutes, with a volume of 100 %, for 2 months (12 October 2020 to 12 December 2020) in the morning and afternoon shifts. Monday to Saturday. This video was made by researcher. Each patient routinely underwent HEMODIALYSIS 2 times per week which lasted for 4 hours each. The pretest was carried out for 2 weeks before the intervention began by filling out the questionnaire, while the post-test data collection was carried out for 2 weeks after 2 months of video playing.

*Data Analysis*

Data analysis was performed with SPSS using Wilcoxon test after inputting and checking the data from questionnaire. The results of the normality test showed that the pre-test scores were normally distributed (skewness = 0.77 or  $<2$ ), while the post-test scores were not normally distributed (skewness = 6.3 or  $>2$ ). The non-parametric test used was the Wilcoxon test to compare the level of compliance before and after the intervention, with a significance level of  $\alpha \leq 0.05$ .

*Ethical Consideration*

Before this study was performed, the ethical clearance has been obtained from the Universitas Muhammadiyah Lamongan Number 059/EC/KEPK-S2/08/2020 as of August 28, 2020.

**30 RESULTS**

*Characteristics of Respondents*

The number of respondents who participated in the full research process was 69 patients. The 6 patients were not included in the study sample because they were positive for COVID before the intervention, and 3 patients were dropped because they died during the study process. The average age of the patients was 48.7 years with an age range of 22-70 years. Most of the patients were 46-55 years old (36.2%), and the majority of patients were women (53.6%). Most of the patients had undergone Hemodialysis for 3-4.9 years (47.8%). In addition, most patients have never suffered from Covid (85.5%) (Table 1).

**Table 1.** Characteristics of Respondents in the Hemodialysis Room of Muhammadiyah Hospital, Lamongan for 3 months from 01 October 2020 to 31 December 2020.

Characteristics of Respondents	Frequency (f)	Percentage (%)
Age		
< 36 years	7	10.1
36 - 45 years	21	30.4
46 - 55 years	25	36.2
56 - 65 years	14	20.3

Characteristics of Respondents	Frequency (f)	Percentage (%)
66 - 75 years	2	2.9
> 75 years	0	0
<b>28</b> al <i>Gender</i>	69	100.0
Male	32	46.4
Female	37	53.6
<i>Total</i>	69	100.0
<i>Length Hemodialysis (year)</i>		
< 1	4	5.8
1 - 2.9	14	20.3
3 - 4.9	33	47.8
5 - 6.9	18	26.1
≥ 7	0	0.0
<i>Total</i>	69	100.0
<i>History of COVID-19</i>		
Never	59	85.5
Have ever been confirmed COVID, currently	10	14.5
Negative		
<i>Total</i>	69	100.0

Sources: Primary Data of Questionnaires, 2020.

*The Compliance of Respondents Before and After the Intervention*

Table 2 showed that statistically (Wilcoxon test) there is a significant difference in the level of patient compliance before and

after the intervention ( $p = 0.001, p \leq 0.05$ ). In addition, when viewed from the mean, it shows that there is an increase in the mean value of compliance between pre and posttest by 6.68.

**Table 2.** The Compliance of Respondents Before and After the Intervention in the Hemodialysis Room of Muhammadiyah Hospital, Lamongan for 3 months from 01 October 2020 to 31 December 2020.

Variable	f	Min-Max	Mean ± SD	p
Compliance before education	69	40-60	47.90 ± 5.225	0.001
Compliance after education	69	39-62	54.58 ± 3.397	

Sources: Primary Data of Questionnaires, 2020.

**DISCUSSION**

In terms of the demographics of the patients in this study, almost half (36.4%) were between the ages of 46 and 55 years. At this age, intellectuals reached their final point, namely at the formal operational stage. However, long term memory has also begun to deteriorate, but the provision of audio-visual information is still easy to accept. The gender of the patients in this study were mostly women (53.6%) with a level of compliance with 89.19% of whom had high compliance.

Meanwhile, 46.4% male patients **13** 81.25% of them had high compliance. This is in line with research conducted by Wiranti et al. (2020) which states that women's compliance is higher than that of men due to the nature of women who are more gentle and afraid of contracting Covid-19. Meanwhile, in terms of the length of time the patient has undergone Hemodialysis, almost partially (47%) 3-4.9 years and all of them have high compliance. In accordance with research conducted by Fadilah et al. (2020) that patients who have high vulnerability to Covid-

19 will be more obedient in carrying out health protocols. In this study, 10 patients (14.5%) had been infected with Covid-19 and all of them had high compliance. The severity of a disease will cause the patient to feel that it will threaten his health condition and even his life (Sholiha 2014).

Based on the results of statistical tests, there is an effect of virtual education on the level of compliance of Hemodialysis patients in preventing the transmission of Covid-19. This is consistent with the research of Gray et al., (2020) that in general education and health promotion are important components of disease prevention activities, but as long as pandemics and emergencies in health, education and health promotion are key to an active response by offering established tools (especially important in the absence of specific drug and vaccine therapies) to communicate and engage quickly and effectively with the public and prevent the spread of infection. However, the existence of a pandemic has forced health practitioners to modify this health education method.

Hemodialysis patients are one of the patients who will exacerbate complaints if infected with Covid-19 (Gansevoort and Hilbrands 2020). Hemodialysis patients also have a higher risk of developing pneumonia (Chou et al. 2014). In this condition, patients need an effective way of education to increase their knowledge of Covid-19 so that they are not exposed. Denny et al. (2017) stated that health education through video playback as an educational tool has great benefits, namely that messages can be conveyed even though the educator is not in the same place besides that the material or educational sessions have been proven effective even though the patient cannot read because the patient gets an audio message. and visuals at once. Tuong et al. (2014) in their research stated that video intervention is as effective as face-to-face education to modify health behavior depending on the target behavior to be influenced, in addition virtual education with video modeling can facilitate learning of new behaviors and can be an

important consideration in future video interventions.

Compliance to health protocols is a new thing for the community, especially patients with Hemodialysis, so that more efforts are needed to increase patient knowledge so that behavior changes occur. Compliance is an important key in preventing the spread of Covid-19. Virtual education is one of the recommendations for health education that can be applied to all lines of health as an alternative to providing education to the general public.

This study has several limitations, namely only using 1 treatment group without a control group due to the limited number of respondents and conditions that made it impossible to separate patients into two because the patients were in the same room. In addition, the best compliance measurement tool is an observation sheet conducted by other people to assess patient compliance during the last 2 months, but researchers have difficulty getting the patient's family because almost no family accompanies the patient during the 4-hour Hemodialysis, so the measuring instrument is replaced by the existing questionnaire. the patient may fill in incorrectly. The next researcher can conduct research using a control group and a more objective measuring instrument.

## CONCLUSION

Virtual education with video playback has an effect on the level of compliance of Hemodialysis patients in preventing the transmission of COVID-19 at the Muhammadiyah Hospital in Lamongan. This method can be applied as an alternative media of education to patients, especially during a pandemic because there is minimal contact with the patient and can be routinely provided with the same educational content standards compared to the manual education method.

## SUGGESTIONS

This method can be applied as an alternative media of education to patients, especially during a pandemic because there is minimal contact with the patient and can be

routinely provided with the same educational content standards compared to the manual education method.

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#### DECLARATION OF CONFLICTING INTEREST

We declare that we have no conflict of interest.

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#### AUTHOR CONTRIBUTION

**Nur Hidayati:** Made the method, data analysis, and result, compile article.

**Abdul Rokhman:** Perform statistical test, data analysis.

**Suratmi Suratmi:** Made discussion.

**M. Syukri Ghozali:** Donning discussion.

**Muhtadi Muhtadi:** Reviewing the articles for the literature.

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