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Online based nursing intervention and family psychoeducation for reduce anxiety and improve adherence on hypertension clients

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Abstract--Hypertension is one of the most chronic diseases that require long-term treatment. Problems that are often experienced by hypertension clients include blood pressure, anxiety and medication adherence. The purpose of this study was to analyze the effectiveness of Indonesian nursing intervention standards (NI) and Family Psychoeducation (FPE) on blood pressure, anxiety and medication adherence levels in hypertension clients by online administration. This study used a pre-experimental with a pretest-posttest on 37 hypertension clients who were recruited using purposive sampling. Respondents were given 6 sessions of online NI and FPE for 2 weeks. Each session is about 45-60 minutes. Data were collected using the HAM-A and MMAS-8. The data was analyzed using the dependent T-Test. The results showed decreased blood pressure (P-value: 0,002), and change in anxiety level with a decrease of mean value from 20.35 to 18.5 after the treatment (P-value: 0,000) and an increase in medication adherence with the increase of mean value from 3.59 to 4.68 after given NI and FPE (P-value: 0,000). Online NI and FPE affected on the blood pressure, anxiety level and medication adherence in hypertension clients without to meet face-to-face.

Keywords---anxiety, blood pressure, family psychoeducation, medication adherence.

Introduction

Hypertension is a problem of worldwide concern. Data from the World Health Organization (WHO) in 2022 showed that around 1.13 billion people in the world suffer from hypertension, meaning that 1 in 3 people in the world is diagnosed with hypertension (WHO, 2022). Two-thirds of them are in developing countries with low-medium income levels. Indonesia is one of the developing countries. Basic Health Research suggests that the prevalence of hypertension in Indonesia is 8.8% of the total population aged > 18 years (Ministry of Health Republic of Indonesia, 2018). West Java is the province with the 8th highest hypertension client in Indonesia. This figure increased from 25.8% in 2013 to 34.1% in 2018 (Riskasdas, 2018). Untreated hypertension can lead to heart problems and even dead (Ali & Alrekaby, 2022; WHO, 2022). There for, it's important to treat the factor that makes hypertension worse. The high rate of hypertension, especially in Indonesia, is influenced by various factors like anxiety and medication non-adherence.

Anxiety affects hypertension. Research shows that people with hypertension tend to experience anxiety twice as much as those without hypertension (Pan et al., 2015). Anxiety in hypertensive clients can increase blood pressure and make hypertension worse. In addition, long-term anxiety can increase the sympathetic response and activate the sympathetic nervous system which results in decreased blood flow to the kidneys, increased fluid in the kidneys, sodium retention, blood pressure elevation, to a high risk of atherosclerosis (Mancia & Grassi, 2014). This shows that continuous anxiety in hypertensive clients can worsen the condition. Another factor that affects hypertension is medication non-adherence.

Treatment of hypertensive clients is very crucial because without treatment there can be dangerous complications (1). WHO revealed that untreated hypertension can cause complications such as heart failure, kidney failure, stroke, and even death. However, there are still many hypertensive clients who are not obedient in taking medication. Various studies conducted in Indonesia reveal factors that influence non-compliance including lack of knowledge, family support, and support from health workers (Amaliah, n.d.; Hutauruk et al., 2020; Tania et al., 2019). Other studies reveal that family and social support for hypertensive clients increases medication adherence (Aungsuroch et al., 2021; Hutauruk et al., 2020). Anxiety and medication non-adherence are also related to each other. The previous study stated that Patients with at least mild anxiety and depression symptoms are at increased risk of becoming nonadherent to antihypertensive medication (Bautista et al., 2012). Threat anxiety also will improve adherence. Family is one of the important factors in treating hypertensive clients, therefore in addition to caring for clients, it is also necessary to pay attention to other factors that affect clients, including family as a caregiver.

Often with increasing technology, nursing care for both clients and families has been widely done using online. Various previous studies have described the effectiveness of online therapy for hypertensive clients and their families, including online consultation on hypertension (Maslakupak et al., 2018). However, there have not been many intervention studies that have looked at the effectiveness of nursing interventions and FPE on blood pressure, anxiety, and

medication adherence in hypertensive clients. In addition, almost all intervention research in Indonesia is intervention that is carried out face-to-face and there are still few studies that conduct online interventions in Indonesia. This study conducted NI online by not only involving the client but also the family. The results of the study are expected to be a reference for nursing care in Indonesia, especially with limited face-to-face access during the COVID-19 pandemic and the use of online technology so that nursing care can be easily accessed and affordable

Method

This research is quantitative research using a pre-experimental with a pretest-posttest. This study was conducted on 37 hypertensive clients and 37 families who were the caregivers of these clients who were in the Cibadak Village, Bogor City, West Java in 2020. Sampling was carried out using a purposive sampling technique with criteria hypertensive client, have anxiety with a HAM-A score of 21-27 (moderate anxiety), have a medication non-adherence score of 0-7 (No-less adherent), willing to participate in the research from beginning to end, own a smartphone, and clients and families (caregivers) are willing to accept nursing actions via online.

The interventions carried out in this study were NI for anxiety clients and FPE. NI in anxiety clients used is following Indonesian NI standards including deep breathing relaxation, spiritual practice, distraction, and focusing on 5 fingers. NI anxiety is given in 1-time meeting. After that, FPE intervention was given. FPE is psychotherapy that is carried out on families or people who always spend a lot of time caring for clients both clients with mental disorders and clients with chronic diseases by providing information related to illnesses experienced by family members and training to improve the family's ability to solve problems, communicate skills, coping mechanisms and developing social support (Suprayitno et al., 2021; Wicaksono et al., 2019) FPE consists of 5 sessions which are conducted for 30-45 minutes via WhatsApp video call. Each client gets a replacement for the quota money, which is Rp. 25,000 per meeting. Nursing interventions and FPE were carried out in 6 meetings for 2 weeks for each patient (Table 1).

Session 1 identified health problems experienced by clients and family health problems (caregivers) in treating clients with hypertension. In hypertensive clients, the therapist examines the reasons for the client's non-adherence to taking hypertension medication and physical and psychosocial problems due to hypertension. This session is carried out separately between hypertensive clients and their families. In session 2 the therapist resolves the health problems experienced by hypertensive clients and conducts hypertension education and hypertension drug education. In this session, therapy emphasizes the importance of taking medication for hypertensive clients and making a schedule for taking medication for clients. In session 3 the therapist trains clients and caregivers to manage stress. In session 4 the therapist performs burden management for the family in caring for hypertensive clients. In session 5, community empowerment was carried out to help families. The environment greatly affects the client's recovery process, so it is necessary to identify sources of support in the

community, which can be used by families to help care for clients at homes such as the availability of posbindu and cadres. In this session, clients are also motivated to carry out routine check-ups to the nearest health service such as posbindu or puskesmas. In this study, FPE was carried out by YAH and ARE.

Table 1
Intervention Session

Meeting	Session	Duration
1	Pre-test NI on anxious clients - Deep breath relaxation - Distraction Technique - 5 finger focus	30 Minutes
2	Session 1 FPE - Assessing the physical and psychosocial problems of hypertensive clients - Assessing the client's reasons for non-adherence to taking hypertension medication - Assessing family problems in treating hypertensive clients	45 Minutes
3	Session 2 FPE - Conducting education about hypertension: Definition, signs and symptoms, complications of hypertension, hypertension self-management methods (hypertension diet, visits to public health care taking medication) - Conducting drug education through the correct 6 approaches (correct name, correct drug, correct dose, correct time, and method of administration)	45 Minutes
4	Session 3 dan 4 - Stress and burden management for clients and caregivers. - Conduct hypertension education to caregivers - Train to do stress management in caregivers with deep breath relaxation, focusing on 5 fingers, and distraction techniques - Carry out load management by regulating how caregivers treat hypertension clients.	45 Minutes
5	Session 5 Empowering the community - Identify existing resources around the client: Posbindu, cadres - Involve cadres in treating hypertension clients	45 Minutes
6	Termination Post Test	30 Minutes

Measurement and Data Collection

This study used 2 questionnaires namely Hamilton Rating Scale for Anxiety (HAM-A) and Morisky Medication Adherence Scale -8 (MMAS-8) for hypertensive

clients. The HAM-A questionnaire used is a questionnaire that has been translated into Indonesian. The questionnaire consists of 14 items of anxiety symptoms, where each item consists of several specific symptoms of anxiety, namely 6 questions related to psychological symptoms of anxiety contained in questions number 1,2,3, 4,5,6, and 8 questions related to physiological symptoms of anxiety contained in questions 7,8,9,10,11,12,13,14. The results of the sum of these scores indicate the level of anxiety experienced by the respondents. Anxiety level assessment ranges based on the weight values obtained are <17 = Mild Anxiety, $17-20$ = Mild - Moderate Anxiety, $21-27$ = Moderate - Severe Anxiety. The questionnaire has been tested for validity and reliability (alpha Cronbach value: 0.81)

The MMAS-8 questionnaire consists of 8 questions and is used to measure medication adherence, especially in clients who are primarily on long-term treatment. The MMAS-8 questionnaire was first translated into the Indonesian language. The Indonesian version of MMAS-8 has been tested for validity and reliability (alpha Cronbach value: 0.82). Data on blood pressure, anxiety levels, and medication adherence of clients and caregivers' EMD were measured by comparing the results of the pretest and posttest. Previously, the normality of the data was carried out using the Shapiro-Wilk Test. The normal distribution data was significant ($P < 0.05$) so using the dependent T-Test test to see changes in blood pressure, medication adherence, and anxiety levels of hypertensive clients and EMD caregivers before and after being given NI and FPE. The respondent's characteristic data were analyzed by looking at the proportion and calculating the percentage. This research has been ethically tested by the research ethics committee of the Faculty of Nursing, the University of Indonesia with the Number: SK-92/UN2.F12.D1.2.1/ETIK 2020.

Discussion

Respondents' characteristics

Table 2. showed that most respondents were women (86.4%), adults (67.6%), whose last education was in elementary school (56.7%), and who did not work because the majority were housewives (75.6%), with family income. obtained every month in the amount of 3 million rupiahs (75.6%).

Table 2
Respondents' characteristics (n=37)

Respondents' Characteristics	Total	percentage (%)
Sex		
Female	32	86,4
Male	5	13,5
Age		
Adult (45-60 th)	25	67,6
Elderly	10	27,0
Education		
a. Elementary School	21	56,7

b. Junior High School	6	16,2
c. Senior High School	8	21,6
d. Bachelor degree	2	5,4
Job/Profession		
Retriment	2	5,4
Employment	7	18,9
Unemployment	28	75,6
Income		
< Rp. 3.000.000 /month	28	75,6
3.000.000-5.000.000/month	7	18,9
a. Rp. 5.000.000/month	2	5,4

Changes in Blood Pressure

Table 3 shows that systolic blood pressure decreased after getting NI and FPE. The results of statistical tests on the average value of systolic blood pressure obtained p value = 0.000 meaning that blood pressure decreased significantly but remained in the range of grade 1 hypertension with a mean of 147.27.

Table 3
Changes in Systolic Blood Pressure in Hypertensive Clients Before and After Getting NI and FPE (n=37)

Variabel	Intervention		n	Mean	SD	<i>P value</i>
Systolic Blood Pressure	NI + FPE	Before	37	156.51	16.931	0.002
		After	37	147.27	14.094	

Table 4 shows that diastolic blood pressure decreased after getting NI and FPE. The results of statistical tests on the average value of diastolic blood pressure obtained p value = 0.003 meaning that diastolic blood pressure has changed (decreased) significantly but is still in the grade 1 hypertension range where the average diastolic blood pressure is 90.65.

Table 4
Changes in Diastolic Blood Pressure in Hypertensive Clients Before and After Getting NI and FPE (n=37)

Variabel	Intervention		n	Mean	SD	<i>P value</i>
Diastolic Blood Pressure	NI + FPE	Before	37	94.78	9.399	0.003
		After	37	90.65	8.183	

Changes in the Level of Anxiety

Table 5 shows changes in anxiety levels after being given NI and FPE. The results of statistical tests on the average value of the anxiety level obtained p value = 0.000, meaning that the level of anxiety decreased significantly. The Hamilton Anxiety Rating Scale (HAM-A) divides the level of anxiety into mild anxiety if the score is <17, moderate anxiety is 18-24, and severe anxiety is 25-30. The

conclusion that can be drawn is that NI and FPE reduce anxiety levels significantly but are still in moderate anxiety levels with a percentage decrease of 3.14%.

Table 5
Changes in Anxiety Levels in Hypertensive Clients Before and After Getting NI and FPE (n=37)

Variable	Intervention		N	Mean	SD	<i>P value</i>
Anxiety Levels	NI + FPE	Before	37	20.35	4.015	0.000
		After	37	18.5	2.862	

Changes in Medication Adherence

Table 6 shows the change in medication adherence (increased) after NI and FPE administration. The results of statistical tests on the average value of treatment adherence obtained a p-value = 0.000 which means that treatment adherence has changed (increased) significantly.

Table 6
Changes in Medication Compliance in Hypertensive Clients Before and After Getting NI and FPE (n=37)

Variable	Intervention		N	Mean	SD	<i>P value</i>
Medication Adherence	NI + FPE	Before	37	3.59	2.576	0.000
		After	37	4.68	2.393	

This study showed most of the respondents were women (86.4%), aged 45-60 (67.6%), whose last education was in elementary school (56.7%), did not work because the majority were housewives (75.6%), and with low family income. The previous study stated that hypertension control rates (BP <140/90 mm Hg) were higher in women than in men in both high-income countries (52% women versus 49% men) and middle-/low-income countries (28% women versus 23% men) (Ahmad & Oparil, 2017). Eventually, the study in Indonesia stated that in strata of age 30-59 years, there was no difference in having hypertension between women and men but in the strata of age more than 60 years, women were more likely to have hypertension than men (Islamy et al., 2022). Age also have linked to hypertension. WHO Stated that hypertension can be found in 30-79 years old people, with the highest prevalence in the elderly (>65 years old) due to their older age (1). People with low education backgrounds didn't work and low income also tends to have higher due to the social and economic stress they feel. There for, it's important to provide affordable hypertension care and medication.

This study was conducted to determine the effect of NI anxiety and FPE on anxiety levels and medication adherence in hypertensive clients. The results of this study showed that there was a decrease in blood pressure after being given NI and FPE. This is to previous studies which revealed that NI such as deep breathing relaxation and focusing on five fingers can lower blood pressure (Hoesny et al., 2020; Mori et al., 2005). Deep breathing relaxation makes clients relax and lowers blood pressure. In this study, the client was scheduled to do

deep breathing relaxation (10 counts) 3 times every day after eating and evaluated each intervention session, so that the client was accustomed to doing deep breaths. This is following the research of Mori et al (2005) which revealed that clients who do deep breaths regularly every day can lower blood pressure (17). Therefore, in performing NI deep breathing relaxation in hypertensive clients, nurses must ensure that clients do deep breathing relaxation regularly and with the correct technique to get optimal results.

This study also revealed the influence of online NI and FPE on client anxiety levels. The same results were also obtained in previous studies, NI anxiety can reduce client anxiety levels after an earthquake (Hardayati & Mustikasari, 2019). It was further explained that deep breathing relaxation techniques can increase air ventilation in the alveoli, and maintain gas exchange which can reduce anxiety, and physical and emotional stress (Muliantika et al., 2017). Research states that five-finger-focused exercises can reduce stress, and mental tension in individuals so that they are effectively used to reduce anxiety (Hastuti & Arumsari, 2015). Previous studies have explained that anxiety in hypertensive clients will increase blood pressure and exacerbate hypertensive conditions (Mancia & Grassi, 2014; Pan et al., 2015). Therefore, stress and anxiety management is important in the management of hypertensive clients. The results of this study indicate that anxiety nursing care and FPE can reduce client anxiety so in treating hypertensive clients, nurses can apply anxiety nursing care so that the client's anxiety level decreases.

This study also revealed an increase in medication adherence in hypertensive clients before being given nursing intervention and FPE. Previous research revealed that family psychoeducation is a therapy given to increase family support in treating hypertensive clients to improve the client's self-management including treatment (Wicaksono et al., 2019)(Nurdin et al., 2020). Family support correlates with the hypertension patients' compliance when taking medication (Kurniawati et al., 2019). The higher the family support provided for hypertensive clients. the higher the client's compliance in running the hypertension self-care and treatment program. Family support contributed 68.1% to adherence (Kurniawati et al., 2019). In specialist nursing care, researchers not only provide psychoeducation to clients but also to families, this is because based on research it is stated that family psychoeducation can increase family support, especially for clients who undergo treatment programs for a long time (Niman et al., 2020). From the results of this study, involving the family in caring for hypertensive clients is important in improving the self-management and quality of life of hypertensive clients.

The results of this study revealed that online anxiety NI and FPE can decrease blood pressure, reduce anxiety and increase medical adherence. However, research on family empowerment in caring for hypertension clients online has not been widely carried out. Various online therapy studies in Indonesia have only been conducted on clients with psychological problems such as online CBT therapy on clients with anxiety problems during COVID-19 (Kartika & Tjakrawiralaksana, 2021). However, not many have seen the effectiveness of online nursing care. Online nursing care has become commonplace in nursing and provides positive results for both families and clients (Huter et al.,

2020) Various types of online nursing care such as telenursing (Afik & Pandin, 2021; Bartz, 2020; Boro & Hariyati, 2019) have been shown to improve the physical and mental conditions of clients and caregivers. The provision of online therapy can be an alternative for providing nursing care to hypertensive clients and their families, especially if families and clients experience obstacles in accessing health services face-to-face during the COVID-19 pandemic.

Conclusion

Online NI and FPE affect blood pressure, anxiety level and medication adherence in hypertensive clients. This study adds an innovation in nursing practice, namely the provision of nursing intervention to clients and families via online. Further research is needed with larger sample size and other research methods to see the effectiveness of online nursing and FPE interventions.

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