The Relation Between Family-Centered Approach toward Medication Adherence of Antihypertensive Drug Consumption in Indonesia

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Abstract:

This study focuses on examining the relation between family-centered approach and medication adherence in antihypertensive drug consumption in Indonesia. 87 participants aged more than 25 years, having a family and undergoing treatment with an antihypertensive drug for more than 1 month were asked to fill out questionnaires or were interviewed to obtain information about gender, level of education, family history of hypertension, family-centered approach, history of visit from community health center health worker in relation with Indonesian Health Program by Family-Centered Approach, physical activity, and medical adherence without any lost data. Obtained data was then categorized in several groups. Chi-square test showed that family-centered approach is significantly improved antihypertensive drug medical adherence (p=0.006). Participants with a higher family-centered approach showed a four times higher adherence to antihypertensive drug therapy (OR 4.34; 95% CI: 1.45–12.99). However, this study cannot explain the optimal family-centered approach to improve antihypertensive drug therapy medical adherence.

Keywords: Family-centered approach, Medication adherence, Antihypertensive drug, Hypertension

Introduction

In 2016, The Ministry of Health of Republic of Indonesia published "Pedoman Umum Program Indonesia Sehat dengan Pendekatan Keluarga (PIS-PK)" or General Guideline of Indonesian Health Program by Family-Centered Approach. This program was established based on the 5th Agenda of Nawa Cita (President of Republic of Indonesia Agenda): to increase the quality of life in Indonesia. There are 12 prime indicators that indicate family health. One of the indicators that attracted the researcher's attention was the patients with hypertension (high blood pressure) who took regular medicine.[1]

Based on *Riset Kesehatan Dasar* or Basic Health Research by The Ministry of Health of Republic of Indonesia in 2013, the prevalence of hypertension in Indonesia decreased from 31.7% in 2007 to 25.8% in 2013.[2] This could be the result of increased medication adherence in the patients or due to different blood pressure measurement tools. In 2014, the hypertension prevalence in West Java reached 13,612,359 people or 29,4% of the total population.[3] Nevertheless, based on interviews with hypertensive patients who have been taking medicine, there is an increase in the prevalence of hypertension from 7.6% in 2007 to 9.5% in 2013.[2] Furthermore, Center of Data and Information in Indonesia stated that hypertension control is not adequate although many effective drugs are available.[3] Hence, researchers are interested to know how a family-centered approach was related to blood pressure control in hypertensive patients.

Xu et al. in 2018 conducted research about the intervention that improves medication adherence of hypertensive patients in China. The study found that interventions such as blood pressure self-monitoring, alarm control, and intervention duration could raise the medication adherence and lower the blood pressure of hypertensive patients.[4]

The prevalence of hypertensive patients who are undergoing treatment goes on increasing because hypertension treatment is not controlled. This could be aggravated by the problem of medication adherence. At the same time, the government is currently promoting the "PIS-PK". This program attempts to lower hypertension prevalence in patients who are taking medicine. Therefore, we need to study the relationship between family-centered approach and adherence to take antihypertensive drugs.

Methods

Research Design

This research was conducted in several "Pusat Kesehatan Masyarakat (Puskesmas)" or public health centers in Indonesia from November 2018 to May 2019. This was an observational study with a cross-sectional analytic design. The independent variable in this research was family-centered approach and the dependent variable was medication adherence towards antihypertensive drugs. The confounding variables included age, gender, physical activity, level of education, and family medical history of hypertension in participants.

Sample Size

Hypertensive patients over 25 years old who were advised to take antihypertensive drugs in Indonesia, with exclusion criteria of not having a family, living alone, or having taken the drug for a time period less than or equal to 1 month. The sampling technique in this research was stratified random sampling which was conducted multicenter at several public health centers in Indonesia. The minimum sample size refers to the data from Sankar et al in 2015, which is that 74% of patients do not adhere to treatment.[5] Thus, the minimum sample size for this study was 77 people using the following formula.

$$n = \frac{4pq}{d^2}$$

$$n = \frac{4\ x\ 0{,}74\ x\ 0{,}26}{(0{,}1)^2}$$

$$n = 76{,}96 \approx 77$$

n = number of minimum sample size
Zα = confidence level 95% = 1.96
$(Z\alpha)^2$ = (1.96)2 ≈ 4
p = proportion of who adhere to take medicine
q = 1-p = proportion of who do not adhere to take medicine
d = fixed margin of error = 10%

Data Collection

The data collection was carried out either through interviews with participants followed by filling in the answers on a questionnaire, or the participants directly filling in the questionnaire assisted by the researchers which took about 10 minutes. There was no risk of inconvenience toward sampling methods. The participants had the right to refuse to fill in the questionnaire if they were not willing to. The data was analyzed using the chi-square statistical test through the IBM SPSS Statistics Base 20.0.

Results

Demographic characteristics

There were 87 hypertensive patients who met the inclusion criteria in this study. All patients agreed to be interviewed and no data was lost during the data analysis process. Thus, the level of validity for data analysis was 100%. The figure below shows the distribution of the study participants' regional origins from across Indonesia.

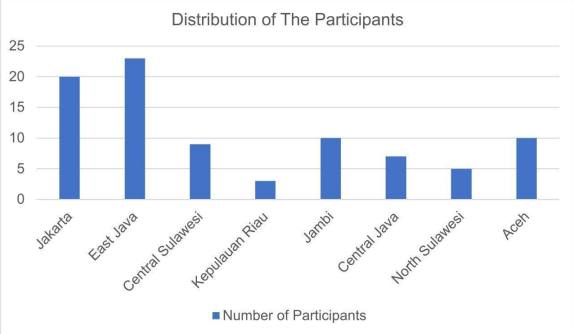

Figure 1 Distributions of the participants

Sociodemographic characteristics of the participants in this study are listed in **Table 1**. The majority of study participants came from the adult age group (56%); women (59.8%); more than half of the research participants took tertiary education, namely in the range of junior high schools to tertiary institutions (58.7%); there was a family history of hypertension in the majority of study participants (56%); physical activity was generally low (54%). Physical activity was assessed through a physical activity questionnaire. Physical activity assessment was in accordance with the guidelines on the International Physical Activity Questionnaire; for analysis purposes, the category of moderate physical activity was combined with high physical activity.[6]

Table 1. Socio Demographics characteristics of the participants

Participant Characteristics	Frequency, n (%)
Age	
Adult (26 - 59 th)	49 (56)
Elderly (>59 th)	38 (44)
Sex	
Male	35 (40.2)
Female	52 (59.8)
Education Level	
Low (not in school yet - elementary school)	36 (41.3)
High (junior high school - college)	51 (58.7)
Family history of hypertension	
Yes	49 (56)
No	38 (44)
Physical Activity	
Low	47 (54)
High	40 (46)

Family-centered approach assessment

The independent variable in this study was a family-centered approach to patients with hypertension. The family-centered approach was assessed using a questionnaire on the subject's perception of the family approach (Perceived Social Support Scale-Family) which was coined by Procidano et al in 2014.[7] There are 20 questions that refer to feelings and experiences at one time or another regarding relationships with families. For each question, there are three answer options: Yes, No, and Do not Know. The family-centered approach assessment is divided into high and low family approaches.

Research participants were also asked to answer the questionnaire on Monitoring and Evaluation of the Implementation of Family Visits and Early Intervention at the Community Health Center, which is one of the government programs, namely the Program Indonesia Sehat dengan Pendekatan Keluarga (PIS-PK). However, more than half (62.1%) of study participants felt that they had never been visited by a Puskesmas related to PIS-PK.

Medication adherence assessment

The participants were then asked to answer a medication adherence questionnaire (Medication Adherence Questionnaire) by Culig et al in 2014.[8] For analysis purposes, the adherence category was combined with high adherence.

Chi-square test was performed on variables to determine the relationship between each variable and adherence to antihypertensive treatment. The results of the chi-square test are listed in **Table 2**. Of all variables, only the family-centered approach showed a relationship with medication adherence ($p = 0.006$). The odds ratio (OR) was then calculated with a confidence interval (CI) of 95%. Participants with a high family approach were four times more likely to have high medication adherence (OR 4.34, 95% CI: 1.45–12.99).

Discussion

Association between the family-centered approach and medication adherence

This study aims to determine the relationship between family-centered approach and adherence to consumption of antihypertensive drugs. Based on data analysis, there is a directly proportional relationship between family-centered approach and adherence to the consumption of antihypertensive drugs. Patients treated with a family-centered approach were four times more likely

to have high adherence to antihypertensive drug consumption.

Table 1. *Chi-square* test

Variable		Medication Adherence		Total	P
		Low, n (%)	High, n (%)		
Sex	Male	18 (51.5)	17 (48.5)	35	0.264
	Female	33 (63.5)	19 (36.5)	52	
Age	Adult	31 (63.3)	18 (36.7)	49	0.318
	Elderly	20 (52.6)	18 (47.4)	38	
Education Level	Low	22 (61.1)	14 (38.9)	36	0.692
	High	29 (56.9)	22 (43.1)	51	
Family history of hypertension	Yes	30 (61.2)	19 (38.8)	49	0.576
	No	21 (55.3)	17 (44.7)	38	
PIS-PK	Yes	22 (66.7)	11 (33.3)	33	0.234
	No	29 (53.7)	25 (46.3)	54	
Family-centered Approach	Low	21 (80.7)	5 (19.3)	26	0.006*
	High	30 (49.1)	31 (50.9)	61	
Physical Activity	Low	27 (57.4)	20 (42.6)	47	0.810
	High	24 (60)	16 (40)	40	

Family-centered approach is a way for Puskesmas to increase the reach of targets and access to health services by visiting families. According to Frisedman in 1998, family functions include affective, socialization, reproductive, economic, and health care or maintenance functions.[9] With the existence of a family, each family member has a specific task to maintain health so that productivity remains high. These tasks include identifying disorders in health development, taking appropriate health measures, providing care, building a healthy home atmosphere, and maintaining reciprocal relationships with health facilities.[1]

Implementing the family-centered approach requires instruments, communication forums, and community involvement. At the family level, instruments such as Family Health Profile (Prokesga) and a Family Information Package (Pinkesga) are needed. With regard to contact with families, communication forums are needed, such as family home visits, focus group discussions, counseling opportunities, and community forums. Community involvement can be pursued through health cadres and community organization administrators.[1] In a study conducted by Mengendai, et al. It was found that one of the factors that influence adherence to medication was family support. Family support was defined as the form of attitudes, actions and

treatment by the family towards sufferers of the disease.[10]

Another study by Shen et al. showed similar results, in which a positive effect was found between family-centered approach and treatment adherence in hypertensive patients in China (OR: 1.74, 95% CI: 0.91-3.32) .[11] Similar results were also found in studies with different disease variables, for example the study conducted by Nayeri et al., which was done on stroke patients.[12] Study by Nayeri et al compared groups given a family-centered approach program with a control group. showed that the level of adherence to the drug regimen was higher in the treated group than in the control group ($p < 0.001$). Another study by Lyon et al. also showed an increase in adherence to therapy in 91% of HIV-infected adolescents who were treated with family-centered approach.[13]

Based on the results of the mentioned studies, a family-centered approach can improve adherence towards taking medication in not just hypertensive patients, but in multiple other conditions as well. The use of the family-centered approach in medicine is also one of the programs being promoted by the government in Indonesia, namely PIS-PK. However, this study could not determine the effect of PIS-PK on increasing medication adherence because only a few participants had ever been visited by Puskesmas related to PIS-PK.

Limitations of the study

There are several limitations to this study. First, the data obtained in this study was not evenly distributed from all regions of Indonesia. Thus, the results of this study may not be relevant to all regions of Indonesia. Second, there is no further assessment of the family-centered approach questionnaire used. Different results may be obtained in studies using other family approach questionnaires. In addition, there is no standardization from different studies to anticipate differences in perceptions of the questionnaire by each research participant. This study has also not been able to determine the optimal family-centered approach for improving medication adherence. Furthermore, future studies are needed to find the optimal family-centered approach which can be applied on a daily basis in order to increase adherence to consumption of antihypertensive drugs.

Conclusions

This study shows the relationship between family-centered approach and adherence to consumption of antihypertensive drugs. This study found that hypertensive patients

with higher levels of family-centered approach were four times more likely to be adherent to taking medication than hypertensive patients with low or no family-centered approach. Further research is needed to determine the optimal type of family approach to be carried out daily for increasing adherence to consumption of antihypertensive drugs.

Declarations

Ethics approval and consent to participate

Not applicable.

Availability of data and material

Not applicable.

Conflict of interests

All authors declare that they have no conflicting interests.

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