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Confirmation of Factors Affecting Self-Care Activities of Patients with Hypertension

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Abstract

Introduction: Hypertension is one of the non-communicable diseases that causes the highest mortality. Self-care activities are factors that determine the health status and quality of life of people with hypertension. **Objectives:** The aim of the study was to determine the direct and indirect effects and the magnitude of the variables of the role of health workers, family functions, health literacy, and self-efficacy on self-care activities for hypertension sufferers at the Tanah Sareal Health Center, Bogor City in 2018. **Methods:** The method used in the study this is a quantitative approach that uses adesign cross-setional. The sample used was 80 hypertension patients. The analysis used is the Structural Equation Model (SEM) using SmartPLS 2.0. **Results:** The results of hypothesis testing with *smartPLS* resulted in research findings, namely that the self-care activities of hypertension sufferers were influenced by the role of health workers (16.98%), family function factors (12.32%),factors *health literacy* (26.66%), and self-efficacy factor (25.27%). The total amount of direct influence on self-care activities of hypertension sufferers is 81.23% and the indirect effect is 1.53%. The analysis result model can explain 99.1% of the diversity of data and is able to study the phenomena used in the study, while 0.9% is explained by other components that are not present in this study. **Conclusion:** There is a direct influence between the role of health workers, family function, health literacy and self-efficacy on the self-care activities of hypertension sufferers at Tanah Sareal Health Center.
Keywords: health workers, family, literacy, efficacy, care

Introduction

Today, hypertension is still a problem in the world and developing countries. Hypertension is one of the number one causes of death globally. Hypertension can cause complications in the form of coronary heart disease, infarction (blockage of blood vessels causing tissue damage), heart (54%), stroke (36%), and kidney failure (32%).[1] Hypertension is a disease that is often found among non-communicable diseases which can be interpreted as persistent blood pressure where the systolic blood pressure is above 140 mmHg and the diastolic pressure is above 90 mmHg. In the elderly population, hypertension is defined as a systolic blood pressure of 160 mmHg and a diastolic blood pressure of 90 mmHg.[2]

Several complications from hypertension create a significant burden for individuals with hypertension. Serious complications such as stroke, heart failure, chronic renal failure, hearing loss and blindness are the consequences if hypertension is not managed properly. These complications of hypertension can lead to death if not treated promptly.[2] Based on the 2013 WHO report, South Africa is a country that has the highest hypertension rate in the world, as much as 78% of adults over 50 years of age. Only 1 in 10 people with hypertension get proper treatment for their hypertension. The research team formed by the World Health Organization called SAGE or the Strategic Advisory Group of Expert found that the prevalence of hypertension reached 72% in adults in Russia, while a lower prevalence was found in several countries such as 58% in Mexico, 57% in Ghana, 53% in China, and 32% in India.[3]

Management of hypertension is needed to prevent complications, so that it can reduce morbidity and mortality in patients with hypertension. The management of hypertension can be done with two types of therapy, namely pharmacology and non-pharmacology. Hypertension is a disease that can be controlled by self-care activities. The main areas of self-care activities in hypertension are adherence to taking anti-hypertensive drugs and modifying lifestyle such as not smoking, maintaining normal body weight, low salt and low fat diet, routine physical activity such as exercise, limiting alcohol consumption, stressful activity, monitoring blood pressure. and regular visits to the doctor.[4]

Effective self-care activities mean that individuals have a sense of responsibility for their own health and have an important role to play in their own health care.[5] Self-care activities mean everything related to individual responsibility in managing themselves well at home when there are no doctors or nurses.[6]

Self-efficacy is a person's belief in their ability to produce the desired action and have an impact on their life. Beliefs about self-efficacy will provide the basis for a person's motivation, well-being and achievement.[7] Self-efficacy will determine how a person feels, thinks, motivates himself and behaves. Self-efficacy is influenced by several things, namely gender, age, level of education and experience.[7]

Another factor that is considered important in determining self-care activities is the factor of health literacy which is one of the health promotion outcomes that determines a person's health status.[8] Health literacy is defined as the ability to access, understand and use health information in order to promote and maintain optimal health.[9.8] The role of health workers is one of the important factors that can influence self-care for people with hypertension. The role of a health worker can be described as verbal or nonverbal information or advice, real help or action that is obtained due to the presence of a health worker and has emotional benefits or behavioral effects for the recipient, especially those related to health. Informative counseling is needed for sufferers to truly understand the importance of non-pharmacological treatments.[10]

Health services provided by health center are comprehensive services that include curative (treatment), preventive (preventive), promotive (health improvement), and rehabilitative services (health restoration). These services are addressed to all residents regardless of sex and age group, from conception in the womb to death.[11]

This is the impact of the elderly with hypertension not being able to take care of themselves properly because one of them is health workers who do not develop skills to care for themselves, their health literacy is also low, their self-confidence in caring for themselves is also low, and their families do not play a role in patient self-care hypertension.

This study aims to influence directly and indirectly as well as the magnitude of the

effect of the role of health care workers, family functioning, health literacy and self-efficacy against self-care activities of patients with hypertension in the Tanah Sareal Health Center Bogor City

Methods

The research method is quantitative withdesign cross sectional that is useful to analyze The causal relationship between the variables through hypothesis testing is to analyze the direct and indirect effects and the magnitude of the role of health workers, family functions, health literacy and self-efficacy on self-care activities of hypertension sufferers. Location This research was conducted in the area of the Tanah Sareal Health Center, Bogor. The time of this research was conducted in December 2017 - February 2018.

The population in this study were 438 people with hypertension, while the sampling technique used purposive sampling, which is sampling based on criteria. The inclusion criteria were hypertensive patients who were more than 40 years old, registered as patients at Tanah Sareal Health Center, and were outpatients. 2. The exclusion criteria in this study were hypertensive patients who were less than 40 years old and were not willing to be respondents in this study.

The number of samples was taken in accordance with the rules for the number of samples in the guidelines for Partial Least Squares (PLS) with the formula,15 where the sample size (sample size) taken is 5 to 10 multiples of the number of indicators to be studied. This study uses 6 indicators which are a reference in making the question items in the questionnaire. Based on this method, the number of samples taken in this study was 6 * 5 = 30 or ranged from 75-100 samples. The sample in this study amounted to 80 people.

The research instrument used a questionnaire made from each variable. The variables of self-care activities, the role of health workers, family function, health literacy and self-efficacy each amounted to 15 items, so that the total number of this research instrument was 75 items. To keep the questionnaire valid and reliable , the questionnaire was tested using the Structural Equation Model (SEM).

The data analysis methods used in this study were univariate, bivariate and multivariate analysis. Univariate analysis was performed for one variable or per variable. The variables that are described singly in independent are the role of health workers, family function, health literacy and self-efficacy, while the dependent variable is self-care activities. Bivariate analysis using thetest chi square. Thetest chi square in this study was used to see the variation in the total respondents' answers per variable on the characteristics of the research respondents. Characteristics of respondents in this study include: age, education, gender and marital status. The chi square value is significant if the P value is less than 0.05, with $\alpha = 5\%$.12

The analysis of this research is used to determine whether there is an effect of the role of health workers, family function, health literacy and self-efficacy on the self-care activities of hypertension sufferers. Meanwhile, the multivariate analysis of this research is used for hypothesis testing which will be carried out using SEM.

Result

The results of the research on the characteristics of the respondents, namely that all respondents were hypertensive patients with the most age $\geq$ 60 years, as much as 43.8%. In addition, the highest education level is high school level / equivalent at 45%, the sex of the most respondents is women at 55%, while the most occupational status is not working at 50.7%.

The result of the description of the respondent's responses regarding the research variables is that the minimum answer is in the role of the health worker variable with a

value of 20, and the one that has the greatest value is the self-efficacy variable with a value of 129. While the lowest average value is in the variable health literacy with value 39.04, and the highest average value found in the self-efficacy variable with a value of 65.75. The lowest median value is on the health literacy variable with a value of 31.50, and the highest average value is in the self-efficacy variable with a value of 60.00. For the mode value, the lowest value is in the self-care activity variable with a value of 26, while the self-efficacy variable has the highest mode value, namely with a value of 60.

The results of the data regarding the range of respondents' answers are also expressed in several categories by calculating the mean, range and standard deviation. In the variable of the role of health workers, the range of respondents' answers (20-68) is close to the theoretical range (15-75) with a mean value of 40 and a standard deviation of 13.36. This indicates that respondents' perceptions tend to consider the role of health workers at the Tanah Sareal Health Center as important. In the family function variable, the range of respondents' answers (22-70) is close to the theoretical range (15-75) with an average value of 47.35 and a standard deviation of 14.498. This indicates that respondents tend to consider family functions important. In the variable, the health literacy range of respondents' answers (23-65) is close to the theoretical range at the highest value (15-75) with an average value of 39.04 and a standard deviation of 13.76.

This indicates that respondents' perceptions tend to consider the variable important health literacy. In the self-efficacy variable, the range of respondents' answers (25-129) was close to the theoretical range (15-150) with an average value of 65.75 and a standard deviation of 25.557. This indicates that respondents tend to consider self-efficacy important. And in the variable of self-care activities, the range of respondents' answers with a value between (24-86) is close to the theoretical range (15-105) with an average value of 47.58 and a standard deviation of 17.63. This indicates that respondents tend to consider self-care activities important for people with hypertension themselves.

Based on Figure 1, it can be seen that the factor value loading has met the requirements, namely the value is loading factor above 0.5. A indicator reflective can be declared valid if it has a loading factor above 0.5 on the intended construct based on its substantive content by looking at the significance of weight ($t = 1.96$).[13]

Based on Figure 1, it can be seen that the construct used to form a research model, in the confirmatory factor analysis process, has met the criteria with a value above the significance limit, namely 0.05. Figure 1 can also show that each indicator or dimension forming latent variables shows good results, namely with a high loading factor value where each indicator is greater than 0.5. With these results, the latent variable constructing indicators of the role of health workers, family function, health literacy, self-efficacy and self-care activities for hypertension sufferers has shown good results. The validity of the test results for each variable to evaluate the value of AVE as follows:

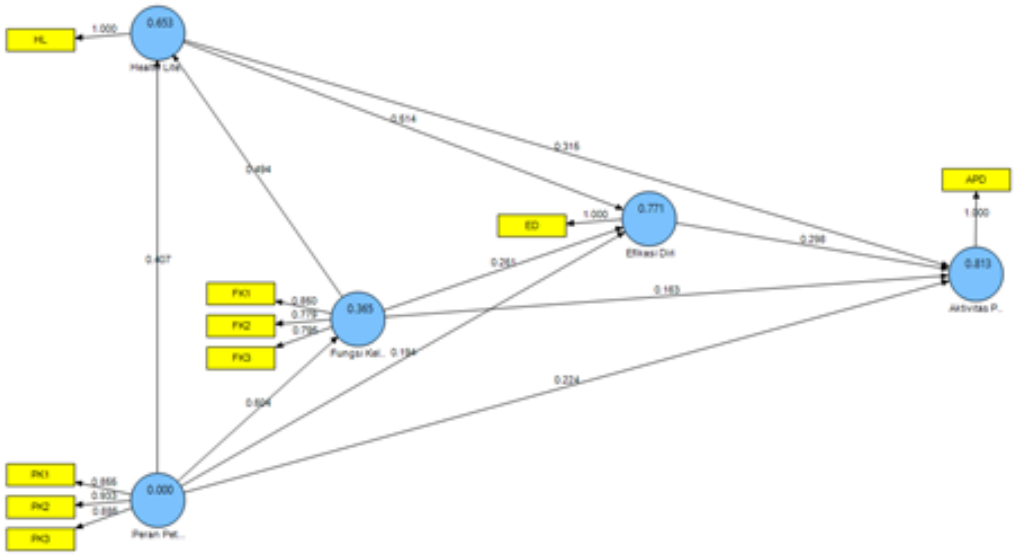

Figure 1. PLS Output (Loading Factors)

Table1. Test Validity Based on Values and roots AVE

Variable	AVE	Test Criteria>0.5
Self-Care Activities	1,000000	Valid
Self-Efficacy	1,000000	Valid
Health Literacy	1,000000	Valid
Family Function	0,653276	Valid
Role of Health Workers	0,795863	Valid

Source: ***SmartPLS 2.0 report, 2018***

Table 3. Evaluation of the R value of the Square Influence Model of the Role of Health Officers, Family Functions, Health Literacy, Self-Efficacy and Self-Care Activities

Variable	*R Square*
Self-Care Activities	0,812530
Self-Efficacy	0,770533
Health Literacy	0,652743
Family Function	0,365043
Role of Health Workers	

Source: ***SmartPLS 2.0 report, 2018***

Table 2. Evaluation of Model Measurement Outer Model Based on Composite Reliability

Validity	Test ResultsTest		Criteria> 0.70
	Effect of	**Loading**	
Cronbach's Alpha	**Self-Care Activities**	1,000000	Reliable
	Self-Efficacy	1,000000	Reliable
	Health Literacy	1,000000	Reliable
	Family Functions	0,734294	Reliable
	Role Healthcare Workers	0,871716	Reliable
Composite Reliability	**Self-Care Activities**	1,000000	Reliable
	Self-Efficacy	1,000000	Reliable
	Health Literacy	1,000000	Reliable
	Family Functions	0,849499	Reliable
	The Role of Health Workers	0,921140	Reliable

Source: ***SmartPLS 2.0 report, 2018***

Table 1 shows the results of the validity test of the role of health workers 0.79, family function 0.65, health literacy 1.0, self-efficacy 1.0, and self-care activities 1.0. It can be seen that the value of all variables can be declared valid because it gives an AVE value above 0.5. So it can be concluded that the evaluation of the measurement model has a validity discriminant that is good or valid. After the validity test has been carried out and the variables and indicators have been declared valid, then the reliability test is carried out.

This reliability test was carried out by looking at the value outer model of Cronbach's Alpha and composite reliability. Table 2 shows the Cronbach's Alpha value of the role variable of health workers at 0.871, family function 0.734, health literacy 1.0, self-efficacy 1.0, and self-care activities 1.0. Thus all variables have a value above 0.70, so it can be said that the construct has good reliability.

Figure 2the Tsvaluetatistic shows thatreflected on the variable is mostly> 1.96, so it shows that the indicator block has a positive and significant effect to reflect the variable.

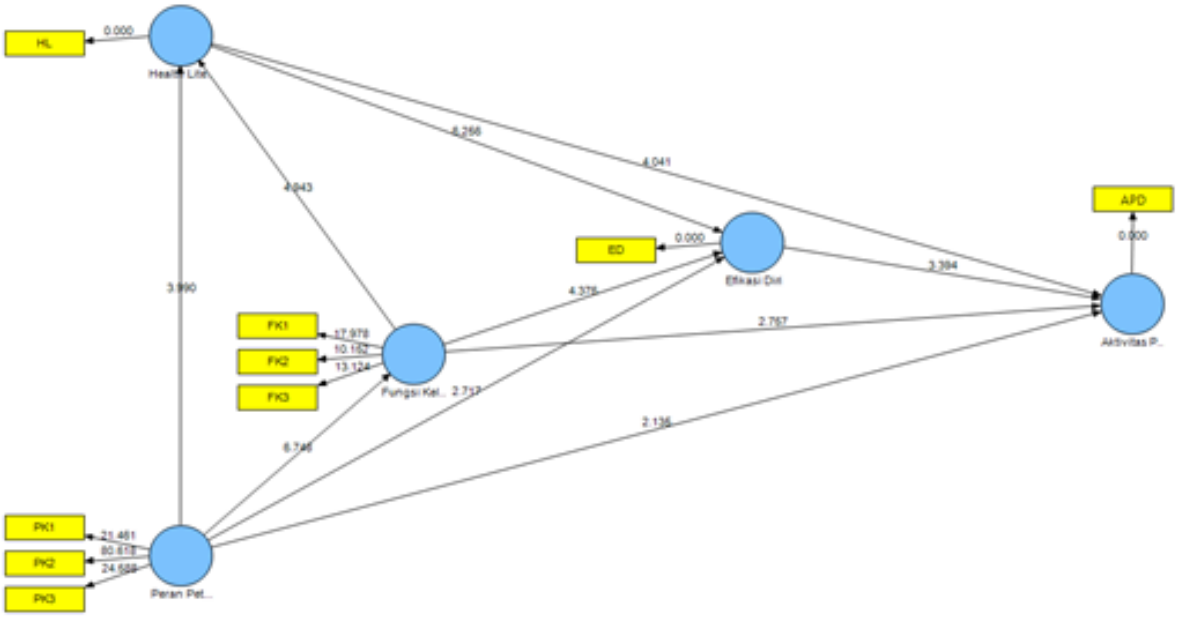

Figure 2. Inner Model (T-Statistic)

Table 4. Measurement Results of Path Coefficients and T Statistics
Relationship between variables in the Structural Model

Relationship between Variables	Original Sample (Rho)	T Value (> 1.96)	H_o	Conclusion
Self-Efficacy → Self-Care Activity	0,298136	3,394370	Rejected	There is an influence Positive and Significant
Family Functions → Self-Care Activities	0,162729	2,756789	Rejected	There is a positive and significant effect on
Family Functions → Self-Efficacy	0,261012	4,376071	Rejected	There is a positive and significant effect on
Family Functions → Health Literacy	0,493751	4,942694	Rejected	There is a Positive and Significant influence
Health Literacy → Self-Care Activities	0,315348	4,040832	Rejected	There is a Positive and Significant influence
Health Literacy → Self Efficacy	0,513837	6,255936	Rejected	There is a positive and significant effect on the
Role Of Health Workers → Self-Care Activities	0,224076	2,135201	Rejected	There is a positive and significant effect of the
Role Of Health Workers → Self-Efficacy	0,194289	2,716878	Rejected	There is a positive and significant
Role Health Workers → Family Function	0,604188	6,748043	Rejected	There is a positive and significant effect on the

Role Of Health Workers → Health Literacy	0,407335	3,989767	Rejected	There is a positive and significant effect

Source: SmartPLS 2.0 report, 2018

Table 5. Percentage of Influence Between Variables on Variables Self-care activities

Sumber	*LV Correlation*	*Direct Path*	*Indirect Path*	Total	*Direct %*	*Indirect %*	*Total %*
Self-Care Activities	0,847866	0,298136		0,298136	25,27%		25,27%
Self-Efficacy	0,757582	0,162729	0,309054	0,471783	12,32%	0,56%	12,88%
Health Literacy	0,845506	0,315348	0,15317	0,468518	26,66%	0,38%	27,04%
Family Function	0,757963	0,224076	0,486748	0,710824	16,98%	0,59%	17,57%
		Total			**81,23%**	**1,53%**	**82,76%**

Source: SmartPLS 2.0 report, 2018

Table 4 shows that the role of health workers has a positive and significant effect on self-care activities based on the value of *Path Coefficients*, namely 0.298136 (positive value) and the T statistic value of 3.394370 (> 1.96). Likewise, the family function variable on self-care activities has a positive effect of 0.162729 with a T-statistic value of 2.756789, which is far above the critical value (1.96). The same thing also happened to all paths, the T statistic value was above 1.96.

Table 5 states the role of health workers has a direct and indirect influence on self-care activities. The result of the parameter coefficient test between the role of health workers on self-care activities shows that there is a direct influence of 16.98%, while the indirect effect between the role of health workers on self-care activities is 0.59% so that the total direct and indirect effect of the officer's role health towards self-care activities amounted to 17.57%.

The result of the parameter coefficient test between family functions and self-care activities shows that there is a direct effect of 12.32%, while the indirect effect of family functions on self-care activities is 0.55%. The total effect of family function on self-care activities was 12.88%. The results of the parameter coefficient test between health literacy on self-care activities showed that there were direct and indirect effects of 26.66% and 0.38%, respectively, so that the total effect was 27.04%. Meanwhile, the self-efficacy variable only had a direct relationship with self-care management of 25.27%. Mathematically, the structural equation form of this research model is as follows:

a. $\eta 1 = \gamma 1.\xi 1 + \zeta 1$
   Family function = 0.604 x role of health worker + 0.635 other factors.
b. $\eta 2 = \gamma 2.\xi 1 + \beta 1.\eta 1 + \zeta 2$
   Health Literacy = 0.407 x role of health workers + 0.494 x family function + 0.347 other factors.
c. $\eta 3 = \gamma 3.\xi 1 + \beta 4.\eta 1 + \beta 3.\eta 2 + \zeta 3$
   Self-efficacy = 0.194 x role of health workers + 0.261 x family function + 0.514 x health literacy + 0.229 other factors.
d. $\eta 4 = \gamma 4.\xi 1 + \beta 6.\eta 1 + \beta 2.\eta 2 + \beta 5.\eta 3 + \zeta 4$
   Activities Care = 0.224 x the role of health workers + 0.163 + 0.315 x family function of health literacy self-efficacy + 0.298 + 0.187 x other factors

Value Q-Square function to assess the magnitude of the diversity or variation of research data on the phenomenon being studied and the results are as follows:

Q2 = 1- (1-R12) (1-R22) (1-R32) (1-R42)

= 1 - (1-0,365) (1-0.653) (1-0.771) (1-0.813)

= 1 - (0.635) (0.347) (0.229) (0.187)
= 1 - 0.009
= 0.991 or 99.1%
Model Error = 100% - 99.1 % = 0.9%

The results of the Q2 value above indicate that the model results of the analysis can explain 99.1% of the diversity of data and are able to study the phenomena used in the study, while 0.9% are explained by other components or factors that are not examined in this study.

Discussion

Direct Effect of the Role of Health Workers on Self-Care Activities of Patients with Hypertension.

The results showed that the role of health workers was not influenced by patient characteristics including age, gender, education and occupation. This means that at any age the role of health workers does not differ from one respondent to another. Likewise with gender, education and work will not be different.

The value of *path coefficients* (0.224076) and T-statistic (2.135201> 1.96) indicate that the role of health workers has a positive and significant effect on self-care activities for people with hypertension. From the results of structural model analysis using SEM, it was obtained the value of the direct and indirect effect between the role of health workers and the self-care activities of hypertension sufferers. The direct effect of the role of health workers with self-care activities for people with hypertension is 16.98%, while the indirect effect is 0.59% so that the total direct and indirect effect of the role of health workers with self-care activities for people with hypertension is 17.57. %.

Self-care is an activity carried out by individuals to maintain their health independently.[10] Intheory *self-care*, Orem says that self-care is an activity to establish individual independence in order to maintain health. Self-care is a process that engages individuals in managing their health by adopting skills and behaviors to prevent disease, treat disease and restore health.[14]

The role of a health worker can be described as verbal or non-verbal information or advice, real help or action that is obtained due to the presence of health workers and has emotional benefits or behavioral effects for the recipient, especially those related to health "*reaction with other people*".[15]

According to researchers, nurses or health workers play a very important role in helping people with hypertension to independently care for themselves. Health workers play a role in detecting the degree of hypertension suffered by patients, so they can provide referrals to specialists or further facilities if needed to anticipate things that are not expected.

Direct Effect of Family Functions on Self-Care Activities of Patients with Hypertension.

The results showed that family function variables were not influenced by patient characteristics including age, gender, education and occupation. This means that at any age the function of the family does not differ from one respondent to another. Likewise with gender, education and work will not be different.

The value of *path coefficients* (0.162729) and T-statistic (2.756789> 1.96) indicate that family function has a positive and significant effect on self-care activities for people

with hypertension. From the results of structural model analysis using *SEM, it was* found that the value of the direct and indirect relationship between family function and self-care activities of hypertension sufferers. The direct effect of family function with self-care activities of hypertension sufferers is 12.32%, while the indirect effect is 0.56% so that the total direct and indirect effect of family functions with self-care activities of hypertension sufferers is 12.88%.

Family support or *family support is* needed by sufferers to control the disease. Family support can be in the form of concern about their illness or reminding them to take medication. Another study in Durango found that there was a strong relationship between family support and the success of therapy in people with hypertension.[16]

According to researchers, family is the greatest source of strength in the process of treating diseases, especially chronic diseases. The function of a family is expected to maximize self-care for people with hypertension to improve their quality of life. Providing the care and affection the sufferer needs is the main duty of a family.

Direct Effect of *Health Literacy on* Self-Care Activities of Patients with Hypertension.

The results showed that the variable *health literacy was* not influenced by patient characteristics including age, gender, education and occupation. This means that at any age, *health literacy* does not differ from one respondent to another. Likewise with gender, education and work will not be different.

The value of *path coefficients* (0.315348) and T-statistic (4.040832> 1.96) indicates that *health literacy* has a positive and significant effect on self-care activities for people with hypertension. From the results of structural model analysis using *SEM, it was* found that the value of the direct and indirect relationship between *health literacy* and self-care activities of hypertension sufferers. The direct effect of *health literacy* with self-care activities for hypertension sufferers was 26.66%, while for the indirect effect it was 0.38% so that the total direct and indirect effect of *health literacy* with self-care activities for hypertension sufferers was 27.04%.

In this study, *health literacy* was the variable with the greatest contribution to self-care activities for hypertension sufferers, amounting to 27.04%. This influence consists of direct influence as well as indirect influence. *Health literacy* is one of the important things in everyday life, especially for someone suffering from chronic diseases. *Health literacy* is an important basis in deciding what actions to take regarding their health care.

According toresearchers *health literacy* in hypertension sufferers, not only does he understand the disease, but starting from the patient's own ability to read, mention, fill out forms, search for health information to validate health information he finds in health services, in print media, the internet or in his environment. , so that he can decide what kind of treatment should be done to support his health.

Direct Effect of Self-Efficacy on Self-Care Activities of Patients with Hypertension

The results showed that the self-efficacy variable was not influenced by patient characteristics including age, gender, education and occupation. This means that at any age, self-efficacy does not differ from one respondent to another. Likewise with gender, education and work will not be different.

The value of *path coefficients* (0.298136) and T-statistic (3.394370> 1.96) indicated that self-efficacy had a positive and significant effect on self-care activities of hypertension sufferers. From the results of structural model analysis using SEM, it was found that the value of the direct effect of self-efficacy with self-care activities for

hypertension sufferers was 25.27%. This shows that self-efficacy also has a significant contribution after the variable *health literacy*.

Self-efficacy has been shown to be important in self-management of diabetes. Self-efficacy is a specific behavioral dimension, which plays a major role in the behavior change process. An individual's perception of his or her ability to cope with difficulties in a particular task will predict future attempts to engage in behavioral challenges associated with those tasks.[17]

According to researchers self-efficacy is a predictor that determines whether changes in health behavior will be initiated, how much effort will be expended, and how long will be sustained in the face of obstacles and failures. High self-efficacy affects how a person sets their health goals, for example a target for someone who wants to reduce cigarette consumption or stop smoking altogether.

Conclusion

The results of this study concluded that there was a direct influence between the role of health workers, family function, *health literacy* and self-efficacy on the self-care activities of hypertension sufferers at Tanah Sareal Public Health Center.

Suggestions in this study are: 1) Health center agencies are expected to provide health facilities, counseling or health education and build skills of the elderly in Chronic Disease Management Program activities to improve the *health literacy of* the elderly, especially hypertension sufferers; 2) Families are expected to monitor or control the behavior of people with hypertension that is contrary to their self-care program.

Conflict of Interest Declaration

The author has no conflict of interest to declare.

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