COMPLIANCE TO DRUG USE IN HYPERTENSIVE PATIENTS AND ITS RELATIONSHIP WITH VARIABLES AFFECTING IN THREE CITIES IN INDONESIA

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ABSTRACT

Objective: Patient noncompliance in taking medication is the problem in hypertension therapy. This study aims to describe the compliance to drug use in hypertensive patients in Bengkulu, Banjarmasin, and Yogyakarta, Indonesia.

Methods: This study is an observational study using a questionnaire, with a total sample size of 300. Data are analyzed by using bivariate analysis with the chi-square method to see if there is a relationship between compliance and predetermined variables.

Results: The study in three cities showed that there were 0 patients (0%) Low compliance and non-compliance category patients; the compliance category was 91%, 10%, 8%, respectively. High compliance categories were 9%, 90%, 92%. Chi-square test shows that compliance has a significant relationship (*P<0.05) in the three cities on the variable "treatment motivation", other variables that show a significant relationship in the city of Yogyakarta are "drug side effects", "role of health workers", "social support", in Bengkulu is "Therapeutic beliefs", in Banjarmasin is" Knowledge of therapeutic effects ".

Conclusion: All hypertensive patients have good compliance; compliance is significantly associated in all three cities on the variable "treatment motivation."

Keywords: Compliance, Hypertension, Influencing factors

INTRODUCTION

Hypertension is an extraordinary global problem. It ranks third as the cause of decreased life expectancy and disability [1]. Hypertension is defined as a continuous increase from blood pressure to 140/90 mmHg or higher, the risk of hypertension can be increased gradually; gradually concomitant increase in systolic and diastolic blood pressure [2]. If it is not handled properly, it can cause complications that are more dangerous for sufferers, including an increased risk of stroke, kidney failure and heart failure [3-5]. The stroke risk is reduced if the initial systolic blood pressure (SBP) is more than 140 mm Hg and after receiving therapy, the SBP is achieved less than 140 mm Hg [6].

To achieve the goal of hypertension therapy, several strategies are needed in addition to the use of appropriate drugs, such as patient compliance, both compliance in seeing a doctor, compliance in taking medication, compliance to lifestyle and diet, and emotional stability [7, 8]. The pharmacist's role to achieve the goals of this therapy is to provide pharmaceutical care in the use of drugs so that patients become more obedient in using drugs according to doctor's recommendations [9].

To be able to carry out appropriate pharmaceutical care strategies for hypertensive sufferers, pharmacists must know the level of patient compliance in using drugs so that the level of compliance with patient drug use must be measured in advanced.

MATERIALS AND METHODS

Ethical approval

This research has received an Ethical Approval from the Research Ethics Committee of the Ahmad Dahlan University of Indonesia No: 011911109 in December 2019. The research methodology used is observational analytic with a Cross-Sectional approach.

Data collection

Data collection used is a self-made questionnaire to measure the level of patient compliance with 5 variables (V). V-1 is the compliance variable using drug doses, V-2 is the compliance variable in the frequency of drug use, V-3 compliance variable in time of drug use, V-4 compliance variable in drug use interval, and V-5 compliance variable for the duration of drug use.

The variables affecting compliance used 11 variables including family support, drug side effects, treatment costs, the role of health workers, therapy beliefs, knowledge of the effects of therapy, drug information provision, motivation for treatment, affordability of health services, busy work status, social support.

Data analysis

The relationship between compliance and variables affecting compliance was analyzed using the chi-square, one-way, with an error rate of 0.05%. There was a statistically significant difference if *P<0.05.

RESULTS AND DISCUSSION

The questionnaire was tested for the validity of 150 respondents using the Pearson Correlation technique; the validity test shows that each question item has a value of r-Count greater than r- table, so it is concluded that all question items are valid.

Compliance is categorized into four categories, namely: Low compliance, non-compliance, compliance, and very compliance. The results can be seen in table 1.

Based on table 1, in general, hypertensive patients in the three cities shows none in non-compliance to drug use. It is indicated by a zero value, at the level of non-compliance and low-compliance. Overall, patients in three cities are categorized as compliance (100%).

There is a slight variation in the levels of compliance and high-compliance, in Bengkulu City, the level of compliance is higher than the other two cities. For Yogyakarta City, the level of high-compliance is higher than in the other two cities.

The results of this study are different from the research conducted by Osamor (2011), a study conducted in Southwest Nigeria, it is reported that patients are compliance to taking hypertension drugs only 50.7% [10], while Mahmoud (2012), reported that the level of

patient compliance in the city of Medina as much as 15.6% [11], Chusna (2014) reported the level of compliance of hypertensive patients at dr. Doris Sylvanus Palangkarya, Indonesia as much as

43% [12], Rahmadani (2018) reported that the level of compliance of hypertensive patients at the public health center in Yogyakarta City, Indonesia is 59.1% [13].

Table 1: Distribution of compliance overview

Level of compliance	Compliance score	Bengkulu		Banjarmasin		Yogyakarta		Average
		Number of patients (N)	%	Number of patients (N)	%	Number of patients (N)	%	%
Low-compliance	0–4.75	0	0	0	0	0	0	0
non-compliance	4.75–9.5	0	0	0	0	0	0	0
compliance	9.5–14.25	16	16	10	10	8	8	11.4
High-compliance	14.25–19	84	84	90	90	92	92	88.6

From the data obtained by the researcher, the main factor causing the decrease in compliance rate is caused by variable V-4; the compliance variable in the interval of drug use, with the question "Do you always use the drug at the same time every day?". In this question there were 22% of patients answered "no", it means that 22% of patients did not take the drug at the same time every day, some patients took the drug in the morning, sometimes at 6 am or 7 am or 8 am, for it is important that they drink the medicine every

morning. The duration of taking medication from one dose to another has an effect on drug levels in the blood [14], hypertensive drugs such as amlodipine, irbesartan have a t1/2 elimination long enough so that the frequency of use is enough once a day [15], this factor causes the difference in the hours taking medicine does not really affect the level of the drug in the blood, unless the distance to taking medicine is too long, for example on the first day it is taken in the morning, and the next day the drug is taken at night.

Table 2: Distribution of respondents according to variables affecting patient compliance

Variabel	Statement	Bengkulu %	Banjar-masin %	Yogya-karta %	Average %
Family support	S	89.8	92	40	73.9
	NS	10.2	8	60	26.1
Side effects	NSE	91.8	88	91	90.3
	SE	8.2	12	9	9.7
Medical cost/insurance	UI	88.8	85	42	71.9
	DUI	11.2	15	58	28.1
The role of health workers	high	92.9	89	83	88.3
	low	7.1	11	17	11.7
Therapeutic beliefs	beliefs	91.8	98	74	87.9
	Not beliefs	8.2	2	26	12.1
Knowledge level of therapeutic effects	high	69.4	85	80	78.1
	low	30.6	15	20	21.9
Drug information administration	DI	92.9	93	42	76.0
	NDI	7.1	7	58	24.0
Motivation for treatment	high	96.9	91	64	84.0
	low	3.1	9	36	16.0
Affordability of health services	Aff	77.6	84	68	76.5
	NA	22.4	16	32	23.5
Busyness status	busy	95.9	5	30	43.6
	not busy	4.1	95	70	56.4
Social support.	S	85.7	95	63	81.2
	NS	14.3	5	37	18.8

Note: S: Supported; NS: Not Supported, NSE: no side effects, SE: are side effects; UI: Using insurance; DSU: Don't use insurance; DI: got drug information; NDI: didn't get drug information; Aff: Affordable NA: not affordable

Based on table 2 it can be seen that all the variables affecting patients taking hypertension drugs are influential, only in Yogyakarta City, there are several variables including family support, medical/insurance costs, providing information on drugs that have a lower status effect than the

two other cities. This difference can be because the city of Yogyakarta is a large city, its residents live in urban areas, residents in urban areas are usually more independent, have better access to information and have above average income [16].

Table 3: Chi-Square test results, the relationship between the levels of compliance with variables that influence it

No	Variabel	Bengkulu		Banjarmasin		Yogyakarta	
		OR	P-value	OR	P-value	OR	P-value
1	Family support	1.321	0.665	3.500	0.182	0.368	0.261
2	Side effects	3.554	0.120	2.000	0.343	8.600	0.023
3	Medical cost/insurance	1.159	1.000	2.786	0.171	0.275	0.404
4	The role of health workers	0.844	1.000	4.393	0.078	6.007	0.027
5	therapeutic beliefs	11.970	0.003	9.889	0.191	3.182	0.200
6	Knowledge level of therapeutic effects	1.450	0.559	8.000	0.006	2.647	0.196
7	Drug information administration	0.800	1.000	1.556	0.533	0.918	1.000
8	Motivation for treatment	0.137	0.004	6.000	0.044	5.192	0.040
9	Affordability of health services	2.475	0.186	2.538	0.198	3.310	0.380
10	Busyness status	1.756	0.516	2.389	0.416	0.485	0.236
11	Social support.	2.400	0.236	2.389	0.416	4.908	0.009

There was a statistically significant difference if *P<0.05

The results of the Chi-Square test regarding the relationship between compliance and variables that influence it can be seen in table 3, all variables, such as family support, drug side effects, treatment costs, the role of health workers, therapeutic beliefs, knowledge of therapeutic effects, providing drug information, motivation for treatment, affordability of health services, busyness status, and social support have an effect on compliance. The ones that have a statistically significant effect are the variables motivation for treatment. Variable Motivation for treatment is quite high, reaching 84% (table 2). The test results show a significant relationship with a study conducted by Sari (2019) on pulmonary TB patients showing that motivation for treatment has a significant relationship with compliance [17]. Research conducted by Varming (2015), also shows that motivation for treatment is very influential on compliance to medication [18]. The results of research conducted by Nuratiqa, N, (2020) on hypertensive patients also shows motivation to seek treatment is significantly related to compliance [19, 20].

The variables drug side effects, the role of health workers, social support, therapy beliefs, knowledge of therapeutic effects gave a significant difference even if only in one city. Similar conclusions were also obtained by researcher Nurhanani (2020) who carried out hypertension patients in Semarang City, namely that compliance to taking medication was significantly related to busy work status, knowledge of how to take medicine and social support [21]; conclusions also obtained by Rasajati researchers (2015), compliance to taking medication was significantly related to distance from the house to health services, level of knowledge about hypertension management, motivation treatment, and family support [22]. Khan (2014) also stated that there are four main factors that cause non-compliance to taking medication in hypertensive patients, namely the emergence of "drug side effects", "forgetfulness", "busyness status" and "the inconvenience of taking medication when outside the home" [23].

CONCLUSION

In general, the research objects in three cities in Indonesia have good and very good levels of compliance in taking medication. Compliance in taking medication is significantly influenced by treatment motivation.

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AUTHORS CONTRIBUTIONS

The first author of this study made research designs, controlled data collection, processed data, compiled reports, and presented reports. The second, third, and fourth authors are responsible for data collection, and the fifth author is responsible for data processing.

CONFLICT OF INTERESTS

All authors have no conflict of interest with any party.

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