ORIGINAL ARTICLE

Health Belief Model Factors to Medication Adherence Among Hypertensive Patients in Punti Kayu Public Health Center Palembang, Indonesia

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ARTICLE INFORMATION	*ABSTRACT*
	Introduction: Health Belief Model is one of the factors that influence medication adherence. The World Health Organization (WHO) has identified medication adherence as the primary indication of treatment effectiveness for hypertensive patients. The number of medication adherence on people with hypertension is decreasing in the world, including Indonesia. Objective: This paper aimed to examine the relationship between perceived susceptibility to develop the complications of hypertension, perceived severity of hypertension complications, perceived benefits of medication adherence, perceived barriers to medication adherence. Result: There were significant statistical relationships between perceived susceptibility to develop the complications of hypertension, perceived severity of hypertension complications, perceived benefits of medication adherence, perceived barriers to medication adherence, and medication adherence. Conclusion: The patients who have high perceptions about susceptibility to develop the hypertension complication, the severity of the complications of hypertension, the benefit of medication adherence, reduce barriers to medication adherence more likely adhering to their medications.

1. Introduction

The number of people with hypertension is on the increase worldwide. Alarmingly, over a quarter of the world's adult population have hypertension, and the number is expected to reach 1.56 billion by 2025 (Chockalingam, Campbell, & Fodor, 2006). In Indonesia, among the leading causes of death, hypertension was rated the third leading cause after stroke and tuberculosis (Kementerian Kesehatan RI, 2013). Uncontrolled hypertension can lead to many undesirable consequences including reduced quality of life; complications to several human organs, for instance, the heart, the kidneys, the brain, and the eyes; physician visits; laboratory test; additional treatments; hospital visits for an emergency, and admission to hospital or nursing home for convalescence, as well as the economic burden and the eventual death (Burnier, 2006). Hypertension with complication needs some additional costs more than usual hypertension. This situation economically has an impact on patient family and country (Scheurer, Choudhry, Swanton, Matlin, & Shrank, 2012).

The objectives of the treatment of hypertension cases are: to keep blood pressure under control at desirable levels, to prevent any complications relating to the cardiovascular and renal systems (Itthakom, 2006). However, for patients with the onset of the development of a cardiovascular complication, treatment would aim to prevent the progression or recurrence of

the complication in order to reduce the likelihood of mortality and improve the patient's quality of life (QOL) (Ogihara et al., 2009). The prevalence of medication adherence was getting decreased. Based on the report: it was found that 51.3% patients in Penang Malaysia did not adhere of medicine consumption, 60% hypertension patients in India had a low adherence of medicine consumption, and 64.9% hypertension patients at 45-60 years old in Indonesia had worse medication adherence (Hairunisa, 2014). Adherence rates usually are lower among patients after three months of therapy. The previous study by (Shermock, 2009) found that 79% patients adhered of medication therapy within the first three months (0-3 months), then it decreased to 56% within the second three months (3-6 months), and decreased to 42% within the third three months (6-12 months). Those situations come up with side effects from the medication, medication cost, lack of social supports, and depression. Besides, (Iuga & McGuire, 2014) reports that hypertensive patients would experience the side effect of hypertension drugs during the first three months of medication therapy. Therefore, it is essential to monitor the hypertensive patients of their medication adherence after the elapse of the three first months of therapy.

Patients' beliefs and perceptions influence by some interpersonal behavior. Health Belief Model is one of the caring implementations which is detected by individual perception about the possible strategy to decrease the case number and to respond to the diagnosed health problem especially the medication adherence (Glanz, K., Rimer, B. K., & Viswanath, 2008). The concept of the Health Belief Model contains the perception of the possible occurrence, severity, benefit, and possible obstacle (Rosenstock, 1974). The findings of health belief model factors on medication adherence from these previous studies were inconsistent, including the study (Adisa, Fakeye, & Fasanmade, 2011; Daniel & Veiga, 2013; Joho, 2012; Li, Kuo, Hwang, & Hsu, 2012; Osamor & Owumi, 2011; Ramli, Ahmad, & Paraidathathu, 2012). Perceived susceptibility refers to the patients' perception of their chances of developing complications from their hypertension, such complications like stroke, kidney failure, heart disease, blindness, and others. A previous study indicated that patients perceiving a very high susceptibility factor showed good adherence to medication (Kamran, S, Biria, Malepour, & Heydari, 2013; Li et al., 2012; Venkatachalam, Abrahm, Singh, Stalin, & Sathya, 2015).

Another factor relating to medication adherence would be perceived severity, which refers to patients' perception of how severe the complications stemming from uncontrolled hypertension could be. These severities include their inability to work, becoming bed-ridden for an extended period, enduring the long-lasting effect of the disease, rendering their career in jeopardy, suffering from the downside of social relationships, and becoming a burden to their family. Patients perceiving a very high severity factor showed good adherence to medication (Kamran et al., 2013; Ramli et al., 2012; Venkatachalam et al., 2015).

The perceived benefit of medication adherence refers to the patient's belief that medication adherence would help them to keep control of hypertension and thereby to save them from developing heart disease, stroke, kidney failure, blindness, enabling them to live a long and healthy life (Joho, 2012). Patients perceiving very high benefits showed good adherence to medication (Joho, 2012; Kamran et al., 2013; Li et al., 2012; Venkatachalam et al., 2015).

The perceived barrier to medication adherence among hypertensive patients stems from the patient's pessimism about things, which could potentially keep them from their routine of taking medication, things like forgetfulness, medication side effects, depression, costly medication, and complicated regimen of taking different drugs. Those perceiving a strong barrier tended to exhibit significantly poor medication adherence (Venkatachalam et al., 2015). Moreover, studies conducted by (Kamran et al., 2013), showed that perceived barrier was the most substantial factor in predicting medication non-adherence.

The finding of this study might be used to devise intervention programs to improve medication adherence among hypertensive patients. Hopefully, it could lessen the adverse impact of hypertension and its complication, improve the quality of life of the patients, and,

lastly, lower the cost burden to the individual patient as well as to the country. This study aimed to examine the relationship between perceived susceptibility to develop the complications of hypertension, perceived severity of hypertension complications, perceived benefits of medication adherence, perceived barriers to medication adherence.

2. Methods

A cross-sectional survey design was used in this study with an accidental sampling technique. Health Belief Model factors and medication adherence questionnaires were used to collect the data. A total of 75 people with hypertension who were on medication were recruited in this study.

The inclusion criteria were (a) hypertension patients aged 40 years and older, (b) diagnosed with hypertension at least six months, (c) having started hypertension medicine at least three months, (d) registered in the Punti Kayu PHC in Palembang, Indonesia, (d) willing to take part in the study and sign the consent form. The exclusion criteria were (a) suffer from severe complications of hypertension that was diagnosed by a physician, including stroke, heart disease, (b) having a psychiatric illness that was diagnosed by a physician including schizophrenia, hallucination, (c) suffer from cognitive impairment diagnosed by a physician, and (d) hospitalize during data collection.

Data were collected from 22 July to 26 August 2019. The data collected then were analyzed using descriptive statistics and a Chi-square with a level of significance 0,05.

3. Results And Discussion

The result of the univariate analysis was as follow: 1) the female respondents were more than male respondents (54.7%); 2) more than one-third respondents were graduated from senior high school level (44%), and only 14.7% of the total respondents were graduated from university-level; 3) more than half of the total respondents work as a civil servant, private employees, farmer, seller, and the rest were jobless and retired (36%); 4) most of the respondents were at 40-59 years old (76%); 5) more than half of the respondents had a low perception about the complication possibility of hypertension that caused by not adhered of medication (61.3%); 6) the respondents who had the perception of hypertensive complication severity that caused by not adhered of medication were at a high level (68%); 7) most of the respondents had a high perception of the benefit of medication adherence; 8) majority of the respondents had a low perception about the obstacle to implement medication adherence.

The result of bivariate analysis through chi-square statistical test found that there was a significant correlation between the perceived susceptibility to develop a hypertensive complication, perceived severity, the benefit of medication adherence, the barrier faced by the patient and medication adherence with a p-value of each are <0.05, <0.01, <0.001 and <0.01. Only the perceived susceptibility has a low strength to medication adherence. However, the other three perceptions have moderate strength.

Based on table 1, it was shown that more than half of the total respondents who adhere to medication had a high perception of severe hypertensive complications. Based on the study, more than one-third of the total respondents had the perception that complication possibility caused by not adhered to medication is stroke and heart disease. Otherwise, the respondents are in doubt about the possibility of having kidney failure and blindness. The HBM theory states that the person would change the behavior if he/she has sufficient information and knowledge about behavior, which could be a trigger of health problems. This study is in line with the previous study done by Venkatachalam et al. (2015), in which he reported that the person who had a high perception of the spreading complication shows the high medication adherence.

Table 1: Health Belief Model Factors to Medication Adherence among Hypertensive Patients (n = 75).

| Variable | Medication Adherence | | | | p-value |
| | Adhere | | Non-Adhere | | |
	Frequency	Percentage (%)	Frequency	Percentage (%)	
Perceived Susceptibility					
Low	21	45.7	25	54.3	<0.05
High	22	75.9	7	24.1	
Perceived Severity					
Low	7	29.2	17	70.8	<0.01
High	36	70.6	15	29.4	
Perceived Benefit					
Low	18	40	27	60	<0.001
High	25	83.3	5	16.7	
Perceived Barriers					
High	0	0	6	100	<0.01
Low	36	58	26	41.2	

Based on this study, it is known that almost 50% respondents have a high perception of the severity consequence that come up from heart disease, stroke, and kidney failure that caused by not adhered of medication whereas the blindness is not the consequence of not adhered medication and not be a severe health problem. Some of the previous studies (Kamran et al., 2013; Ramli et al., 2012; Venkatachalam et al., 2015) are in line with this study in which concludes that high perception of severity consequence that comes up from complication would indicate right medication adherence level.

Based on the theory of (Glanz, K., Rimer, B. K., & Viswanath, 2008), the combination of perceived susceptibility and severity could formalize a risk. Based on two HBM factors above, it can be concluded that more than 50% of respondents have a high level of perceived susceptibility and severity of complications. The respondents at this study assume that not adhering to medication behavior is a risk for a health problem and life quality so that this factor became the main reason for more than of the total respondents (57.3%) to adhere to the medication.

Based on the description in table 1, it was known that all of the respondents who adhere to medication had a low perception of the obstacle during hypertensive medication. However, almost one-third of respondents state that they forgot to consume the medicine because of work or regular activity, tired of hypertensive medicine consumption, and afraid of long term effects of hypertensive medicines. The obstacle perception that was reported by the respondents in this study is appropriate to respondents' characteristics where the respondents on the average are at 40-59 years old, and work had been suffering hypertension and doing hypertensive medication therapy for more than two years. At the same time, the medication cost is not considered as the obstacle to medication adherence because most of the respondents could have the medicines easily at the Public Health Center by using BPJS Program from the government. It was known that the perceived barrier is the most substantial factor in predicting medication adherence and the turn of behavior (Rosenstock, 1974).

4. Conclusion

This study highlights that medication adherence has a statistically significant relationship with perceived susceptibility to develop the complications of hypertension,

perceived severity of the hypertension complications, perceived benefits of medication adherence, and perceived barriers to medication adherence. The results of this study can be used as empirical data in the development of intervention programs aiming at improving medication adherence to prevent complications of hypertension and reduce mortality based on the health belief model as a conceptual framework.

References

Adisa, R., Fakeye, T. O., & Fasanmade, A. (2011). Medication adherence among ambulatory patients with type 2 diabetes in a tertiary healthcare setting in Southwestern Nigeria. *Pharmacy Practice (Internet)*. https://doi.org/10.4321/s1886-36552011000200003

Burnier, M. (2006). Medication Adherence and Persistence as the Cornerstone of Effective Antihypertensive Therapy. *American Journal of Hypertension*, *19*(11), 1190–1196. https://doi.org/10.1016/j.amjhyper.2006.04.006

Chockalingam, A., Campbell, N. R., & Fodor, J. G. (2006). Worldwide epidemic of hypertension. *The Canadian Journal of Cardiology*, *22*(7), 553–555. https://doi.org/10.1016/s0828-282x(06)70275-6

Daniel, A. C. Q. G., & Veiga, E. V. (2013). Factors that interfere the medication compliance in hypertensive patients. *Einstein (São Paulo, Brazil)*. https://doi.org/10.1590/S1679-45082013000300012

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds. . (2008). Health behavior and health education: Theory, research, and practice, 4th ed. - PsycNET.

Hairunisa, H. (2014). Hubungan Tingkat Kepatuhan Minum Obat dan Diet dengan Tekanan Darah Terkontrol pada Penderita Hipertensi Lansia di Wilayah Kerja Puskesmas Perumnas I Kecamatan Pontianak Barat. *Jurnal Mahasiswa Fakultas Kedokteran Untan*, *1*(1), 189138.

Itthakom, S. (2006). *Factors related to caregivers' help with medication adherence of persons with hypertension*. Mahidol University.

Iuga, A. O., & McGuire, M. J. (2014). Adherence and health care costs. *Risk Management and Healthcare Policy*. https://doi.org/10.2147/RMHP.S19801

Joho, A. A. (2012). *Factors Affecting Treatment Compliance Among Hypertension Patients in Three District Hospitals - Dar Es Salaam*. Muhimbili University of Health and Allied Sciences (MUHAS).

Kamran, A., S, S. A., Biria, M., Malepour, A., & Heydari, H. (2013). Determinants of Patient ' s Adherence to Hypertension Medications : Application of Health Belief Model Among Rural Patients. *Annals of Medical and Health Sciences Research*.

Kementerian Kesehatan RI. (2013). *Riskesdas 2013*.

Li, W.-W., Kuo, C.-T., Hwang, S.-L., & Hsu, H.-T. (2012). Factors related to medication non-adherence for patients with hypertension in Taiwan. *Journal of Clinical Nursing*, *21*(13–14), 1816–1824. https://doi.org/10.1111/j.1365-2702.2012.04088.x

Ogihara, T., Kikuchi, K., Matsuoka, H., Fujita, T., Higaki, J., Horiuchi, M., … Rakugi, H. (2009). The Japanese Society of Hypertension Guidelines for the Management of Hypertension (JSH 2009). *Hypertension Research*. https://doi.org/10.1038/hr.2008.18

Osamor, P. E., & Owumi, B. E. (2011). Factors associated with treatment compliance in hypertension in southwest Nigeria. *Journal of Health, Population and Nutrition*. https://doi.org/10.3329/jhpn.v29i6.9899

Ramli, A., Ahmad, N. S., & Paraidathathu, T. (2012). Medication adherence among hypertensive patients of primary health clinics in Malaysia. *Patient Preference and Adherence*. https://doi.org/10.2147/PPA.S34704

Rosenstock, I. M. (1974). The Health Belief Model and Preventive Health Behavior. *Health Education Monographs*, *2*(4), 354–386. https://doi.org/10.1177/109019817400200405

Scheurer, D., Choudhry, N., Swanton, K. A., Matlin, O., & Shrank, W. (2012). Association between different types of social support and medication adherence. *American Journal of Managed Care*.

Shermock, K. . (2009). *Impact of Continuity of Care and Provider Factors on medication Adherence in Patients with Hypertension*. John Hopkin University.

Venkatachalam, J., Abrahm, S., Singh, Z., Stalin, P., & Sathya, G. (2015). Determinants of patient's adherence to hypertension medications in a rural population of Kancheepuram District in Tamil Nadu, South India. *Indian Journal of Community Medicine*. https://doi.org/10.4103/0970-0218.149267