**Prolanis Influence on Decreasing Blood Pressure of Hypertension Patients in Puskesmas Pandak II Bantul 2017**

Florentina Sita Murti¹, Hari Kusnanto J, Wahyudi Istiono³

¹Puskesmas Imogiri, Bantul, Yogyakarta
²Department of Family Medicine, Community and Bioethics; Faculty of Medicine, Public Health, and Nursing; Universitas Gadjah Mada
³Department of Family Medicine, Community and Bioethics; Faculty of Medicine, Public Health, and Nursing; Universitas Gadjah Mada

Corresponding Author:
Florentina Sita Murti: Puskesmas Imogiri, Bantul, Yogyakarta
Email: fsitamurti@gmail.com

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**ABSTRACT**

**Background:** People with hypertension over age 25 years reached 40% in 2008 according to the World Health Organization and 75% occurred in developing countries. Hypertension management must be focused on first-rate health care which could reduce death-risk, disabilities, and the cost burden. Badan Pengelola Jaminan Social obliges every first-rate health care to have to apply Program Pengelolaan Penyakit Kronis (Prolanis).

**Objective:** This study aims to determine the difference of decreased blood pressure in *Prolanis* and *Non-Prolanis* groups in *Puskesmas* Pandak II.

**Methods:** This quantitative research with cohort retrospective design used secondary data of hypertension patients who are following *Prolanis* compared with those who are not in *Puskesmas* Pandak II. Data covered characteristics of patients, blood pressure, and Body-Mass Index over one year. The analysis used repeated measures of ANOVA.

**Results:** The comparison with the treatment group showed significant differences in blood pressure variables, interaction and measureable differences during the study period in all three variables. There was an uptrend in the *Non-Prolanis* group and a downtrend in the *Prolanis* group.

**Conclusions:** Decreased blood pressure of patients with hypertension is better in *Prolanis* than *Non-Prolanis* groups. Chronic disease prevention programs can benefit by applying *Prolanis* protocols to achieve greater public health outcomes.

**Keywords:** decreased blood pressure, hypertension, *Prolanis*

**INTRODUCTION**

According to the World Health Organization (WHO), the incidence of hypertension over age 25 in the world was 40% in 2008. Hypertension complication is about target organs which are the heart, stroke, kidney failure, and associated disabilities. The complication can increase morbidity and mortality of the patients. Deaths due to cardiovascular diseases reach more than 17 million every year in the world with 9.4 million because of hypertension complication¹. The results of Basic Health Research/Riset Kesehatan Dasar (Riskesdas) 2013 show the prevalence of hypertension was 26.5%². In *Puskesmas* which are in Bantul Regency including *Puskesmas* Pandak II, the hypertension visits increased threefold in the years 2010 - 2015³.

75% of hypertension cases are happening in developing countries and most often found in first-rate health facilities. The hypertension complication involve target organs which are heart diseases, stroke, kidney failure, and disabilities, and cause increased morbidity and mortality patients of hypertension. The complication occurs due to high blood pressure and the extended duration of uncontrolled blood pressure. Decreased systolic blood pressure can decrease fatal events because of ischemic heart diseases and stroke. An estimated 10% of health financing is dedicated for the treatment of hypertension and its complications⁴⁻⁵.

Hypertension is included among non-communicable diseases which are often chronic and require continuous...
and lifelong management. Indonesia needs to do a review to improve the national health system to be more effective and affordable to prevent and control non-communicable diseases including hypertension through cost-saving interventions and a more structured approach to providing primary care services for quality and equality. The management of hypertension needs to be focused on expensive tertiary-level health services to provide more effective primary health services to reduce the risk of death as well as disability from complications of hypertension. Primary health facilities are expected to provide a package of programs that include hypertension prevention and control consisting of pharmacological and non-pharmacological therapies.

Indonesia applied National Health Insurance/Ijaminan Kesehatan Nasional (JKN) system since from 2014. Social Security Management Institution/Badan Penyelenggara Jaminan Sosial (BPJS) is an institution which is given authority from the government to organize health insurance program for all people. Prolanis is a program which is held by BPJS. The aim of Prolanis is to encourage the participation of chronic disease patients to reach the optimal of life quality with the indicator that 75% participants are registered persons visiting a first-rate health facility have “good” result on hypertension examination so it could prevent complications of diseases. Prolanis activities are expected to achieve optimal quality of life with the effective cost and efficient health. The activities that are held in Prolanis class include medical consultation with giving the medicine for 1 month, group education, a reminder through SMS gateway, home visit, club activity, and monitoring health status. The steps of Prolanis are: doing verification for suitability of the diagnostic data with the willingness format provided by the prospective Prolanis participants; distribute the health status monitoring books for the Prolanis; do data recapitulation and participant data entry; BPJS with the health facilities do data recapitulation on the health status of the participants; do the monitoring of Prolanis activities on each health facility, give list of drug providers (pharmacy) and joint efforts with BPJS on providing prescribed drug for Prolanis members.

Since 2014, Puskesmas Pandak II has conducted the activities for Prolanis. The hypertension class has 32 members. Routinely Prolanis implementation is held every month and reported to BPJS. Operational funding for Prolanis is from BPJS with a claim submission system. Prolanis implementation in Puskesmas Pandak II has not evaluated the result before including the success of the blood pressure management for hypertension patients.

Based on background description, this research aimed to answer the question: Is there any difference between Prolanis group and Non-Prolanis group in blood pressure decrease in patients with hypertensive in Puskesmas Pandak II.

To know the difference of decreasing blood pressure on hypertensive patients who are followed Prolanis for one year before the research time we compared medical records with hypertensive patients who have not followed the Prolanis activities in Puskesmas Pandak II.

### RESEARCH METHODS

The research was a quantitative study that compared patients who had already followed Prolanis for 1 year before the time of the research with hypertensive patients who were not following Prolanis in Puskesmas Pandak II.

The population of this study includes hypertensive patients of Prolanis group and Non-Prolanis group patients who have visited Puskesmas Pandak II every month for 12 months in the year of 2016 until 2017.

The subjects of the research of Prolanis group consisted of 32 patients who were enlisted with census method or total sampling. The Non-Prolanis group (control) included hypertensive patients who have visited Puskesmas Pandak II with similar characteristics as or comparable with the hypertensive patients in the Prolanis group. After obtaining sufficient number, then simple random sampling was done to reach the control group with 32 people, which was half the number of the Prolanis group which included 64 patients.

This research used secondary data and the instruments used were recorded data which were derived from the patients’ medical record. Medical record data collected included the characteristics of patients, blood pressure consisting of systolic and diastolic pressure and Body Mass Index (BMI).

Repeated measures ANOVA statistic tests were used to measure the difference in the decrease of blood pressure and BMI in the Prolanis and Non-Prolanis groups.

### RESULTS

From 96 research subjects, the result of the univariate analysis showed that 11.46% are men and 88.54% women and average ages of Prolanis and Non-Prolanis groups are similar with 52.5 years old, with standard deviation ±7.31. This is supported by data obtained that Puskesmas Pandak II patient visitation is predominantly female with 61.55%.

Riskesdas results for 2013 showed that hypertension prevalence of females is higher than males. High risk of hypertension is caused by the changes in the structure of large blood vessels, so the lumen becomes narrower and the walls of blood vessels become more rigid which will increase systolic blood pressure. The research of Tuminah and Rahajeng about hypertension prevalence and the determinants in Indonesia showed that the age factor is a risk to hypertension. With the increasing age of the respondents comes the higher risk of hypertension. In the age of 25-44 years old, the hypertension prevalence is 29%, in the age 45-64 years old is 51% and in the age >65 years old is 65%.

Mean value of systolic pressure in Prolanis group is 140.57 mmHg with standard deviation ±12.41. Meanwhile Non-Prolanis group has a mean value of systolic pressure that is about 148.56 mmHg with standard deviation ±14.28. The mean value of diastolic pressure for Prolanis group was 87.49 mmHg with standard deviation ±5.22, while Non-Prolanis group, the mean value for diastolic pressure was
91.16 mmHg with standard deviation ±14.28. Mean value of BMI in Prolanis group is 26.61 kg/m² with standard deviation ±4.55. Meanwhile in Non-Prolanis group, mean value BMI was 27.51 kg/m² with standard deviation ±2.64.

Data analysis used repeated measures ANOVA to see the difference of decreased blood pressure among the group treatments (Prolanis and Non-Prolanis).

The comparison between the treatment groups showed a significant difference in the blood pressure variable with p-value <0.05 (table 1).

Comparison between time measurements showed a significant difference in diastolic pressure and body mass index from the first month until the twelfth month. This is shown with the p-value <0.05 (table 2).

The difference interaction between treatment groups and time measurements has a significant difference in the three variables with a p-value <0.05 (table 3).

From table 1, 2 and 3 showed the uptrend in Non-Prolanis group and down trend in Prolanis group.

Trend differences can be explained by the picture below:

**Graph of Non-Prolanis group shows them moving away from therapeutic targets while data from Prolanis group is decreasing toward their therapeutic target. In the twelfth month, it appears that average blood pressure has been on the target. Research by Morisky D et al. who observed health education intervention for 5 years, visits to the patients’ home, and medical consultation on hypertensive patients who received regular care in the first two years**
also showed positive effect from education programs on adherence to medical care and blood pressure control on hypertensive patients who received intervention. Analysis of five years showed a continuing positive effect on the regularity of the visits of medical care, weight control, and blood pressure control\(^\text{16}\).

**DISCUSSION**

The research conducted by Shayesteh et al. showed the relationship between lifestyle and hypertensive. Lifestyle includes an education program in the field nutrition, physic activities, and stress management are crucial for the improvement of disease knowledge and behavior modification among hypertensive patients. For the mean value of body mass index, *Prolanis* group and *Non-Prolanis* group are still above the target 25 kg/m\(^2\). BMI is significant and having positive correlative with systolic and diastolic blood pressures\(^\text{17}\).

The healthy lifestyle has been shown to lower blood pressure and is beneficial in reducing the risk of cardiovascular problems. A healthy lifestyle which is recommended by some guidelines includes weight loss, exercise, decreased salt intake, decreased alcohol consumption and smoking cessation\(^\text{18}\).

The research which was conducted by Yan et al. about hypertensive management in rural primary care facilities at Zambia with system international *Better Health Outcomes through Mentoring and Assessment* (BHOMA) showed that 12.9% hypertensive patients with controlled blood pressure at 6 months after intervention, then it increased gradually about 25% in 48 months after intervention. But the rate of change does not increase. BHOMA system applies some of the programs that are also applied in *Prolanis*\(^\text{19}\).

The advantages from this research are taking the subjects from all active *Prolanis* members for 12 months accompanied by complete monitoring data which included blood pressure and BMI measurement every month. Also, the control group was conveniently sampled, an i.e *Non-Prolanis* group that are similar in the characteristics with *Prolanis* group.
The disadvantages of this research are:
1. The number of research subjects for Prolanis group is under the number of subjects that should be used due to the limitations of Prolanis members which is only 32 members. So, in this study, the subjects of the control group amounted to double the number of Prolanis group although the characteristics in the two groups are similar.
2. Risk factors such as comorbidities which could be monitored in the occurrence of hypertension had no data because the medical records did not record it.
3. The researcher also could not monitor the quality of participation of the subject researchers in Prolanis.
4. Finally, there were imitations on the validity of the measurement tools (cuffs, scales, calibration of blood pressure gauges.

CONCLUSIONS
Blood pressure control on hypertensive patients in Prolanis group is better than Non-Prolanis group. This is shown with the following findings: (1) There was a significant different in interaction within treatment group and time measurements in variable systolic and diastolic pressures; (2) There was a significant difference within the tendency of decreased systolic and diastolic pressure on Prolanis group compared with Non-Prolanis group; and (3) BMI variable also showed a significant difference in interaction and tendency of decreased BMI in the Prolanis group compared with the Non-Prolanis group.

Suggestions:
1. Target audience coverage of Prolanis members should be enhanced by an effective communication approach so hypertensive patients interested in joint with Prolanis group.
2. Information should be given about risk factors of non-communicable diseases including hypertensive patients in every medical record patient.
3. There is need for evaluation of the Prolanis implementation periodically.
4. BPJS should provide hypertensive medicines for JKN members who do not join Prolanis routine for 1 month similar to Prolanis group members.
5. Prolanis can become one form of community empowerment in the field of health which does not only depend on Puskesmas but also other primary service facilities.
6. Puskesmas should have basic data of hypertensive patients in their area to be the object of monitoring and monitoring evaluation of management hypertension.
7. More stakeholders in the villages need to be involved in planning and budgeting hypertension management in their area.

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Ethical Approval and Informed Consent
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Availability of Data and Material
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Conflict of Interest
None.

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