The Major Factor of Hypertension, Study Case at Posbindu Cipayung, East Jakarta

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Abstract—The objective study to explains the relationship between physical activity, family history, age, obesity and stress with hypertension. The research method is a quantitative study with cross-sectional study design. The population in this study are Posbindu visitors who are aged > 15 years in Cipayung District, East Jakarta. The sample taken proportionally from the number of visitors Posbindu (n=210 person). Data analysis was done by univariate, bivariate (chi square) and multivariate with multiple logistic regression. The variable influence of hypertension was a family history, age, physical activity, obesity and stress. The dominant factor of hypertension was physical activity with OR=4.5 (95% CI: 2.14-9.28). In this study there are confounding variable: consumption of salt/sodium, gender and smoking. The conclusion that people with less physical activity are at higher risk of developing hypertension than people with moderate physical activity.

Keywords—family history, hypertension, obesity, physical activity and stress.

I. INTRODUCTION

Non Communicable Diseases (PTM) is the main cause of death globally in developed and developing countries. WHO data show that the 57 million deaths occurring in the world in 2008, 36 million or nearly two thirds were caused by Non-communicable diseases. PTM also kills the population at younger age. The proportion of causes of PTM death in people younger than 70 years old, cardiovascular disease is the biggest cause (39%) [1]. The proportion of mortality due to PTM include heart and blood vessel disease such as Hypertension and Diabetes Mellitus [2].

Hypertension is a condition the blood pressure in blood vessels increases chronically. This can happen because the heart works harder to pump blood to get of oxygen and nutrients the body. Today’s hypertensive disease is a big and serious problem, because the prevalence of hypertension is high and tends to increase [2].

Based on data from Riskesdas (2013) [2], hypertension prevalence in Indonesia is 25.8% with hypertension diagnosis coverage by health manpower reach 36.8%, or in other words most of hypertension in society has not been diagnosed reach 63.2. While the case of Hypertension in DKI Jakarta Province has a high prevalence of 20.0% [2]. The PTM surveillance system in East Jakarta classifies new cases of hypertension by 2016 amounting to 52.288 cases. The highest new cases of hypertension during 2016 are located at Cipayung District Health Center 9.264 with total visit number 23.499 cases [3].

Hypertension risk factors consist of 1) Risk factors that can not be changed or modified: age, family history, and gender. 2) Risk factors that can be changed or modified: smoking habit, obesity, lack of physical activity, alcohol and excess salt consumption [4].

Based on the recapitulation of integrated coaching center (Pos Pembinaan Terpadu, Posbindu) PTM results in East Jakarta Sub-Dept. Of Health in 2016, some of the most prevalent risk factors are central obesity with measurement of abdominal circumference (> 80 cm for women, and > 90 cm for men) with prevalence of 26.78%, followed by obesity (BMI≥25) with prevalence of 21.59%, less physical activity with prevalence 10.64%, less eating vegetables/fruits 10.14%, stress 3% and smoking at 1.79%. This suggests that risk factors for non-infectious diseases, especially hypertension is quite high [3].

The aim of the study was to explain the relation of age, family history, smoking, obesity, physical activity, stress, alcohol, and excessive salt intake with hypertension.

II. MATERIALS AND METHODS

This research is a quantitative study with cross sectional design. The dependent variable is hypertension. The independent variables are obesity, physical activity, stress, salt consumption, smoking, age, family history, gender.

The number of sample is 210 people from 10 Posbindu in District Cipayung. Inclusion criteria are 15 year olds, visiting Posbindu and willing to be respondents. Exclusion criteria are: in the condition of pregnant, consumption of hypertension medication, suffer stroke, heart disease. Sampling by accidental sampling.

The primary data were collected by interview for variable age, family history, smoking, physical activity, stress with Stress Reporting Questionaire (SRQ), and excessive salt consumption by Food Frequency Questionaire (FFQ). Obesity
is measured by body mass index (measuring body height and weight). Hypertension variables were measured using a digital tensimeter performed three times the measurement.

Data analysis using Chi-Square test. Then multivariate analysis by multiple logistic regression. All independent variables that become candidates are incorporated into multivariate analysis (P<0.25).

III. RESULTS AND DISCUSSION

The research was conducted in ten Posbindu Sub district of Cipayung spread in 8 villages. From the result of bivariate analysis and continued with multivariate analysis showed that from eight variables studied were found independent variable related to hypertension occurrence is obesity (IMT), less of physical activity, age ≥ 40 years, family history of hypertension and stress.

Table 1 shows that the number of respondents who suffer from hypertension is 144 (68.6%) more than the respondents who are not hypertension (normal) is 66 (31.4%). There is one independent variable homogenous: age <40 at 13.3%.

<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Hypertension</th>
<th>Not Hypertension</th>
<th>OR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity (BMI&gt;25)</td>
<td>Obesity</td>
<td>96 (66,7)</td>
<td>24 (36,4)</td>
<td>3,5 (1,91-6,44)</td>
</tr>
<tr>
<td></td>
<td>Not Obesity</td>
<td>48 (33,3)</td>
<td>42 (63,6)</td>
<td>2,92 (1,59-5,34)</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Less</td>
<td>90 (62,5)</td>
<td>42 (63,6)</td>
<td>2,92 (1,59-5,34)</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>54 (37,5)</td>
<td>42 (63,6)</td>
<td>2,92 (1,59-5,34)</td>
</tr>
<tr>
<td>Stress</td>
<td>Stress</td>
<td>95 (66)</td>
<td>28 (42,4)</td>
<td>2,63 (1,45-4,78)</td>
</tr>
<tr>
<td></td>
<td>Not Stress</td>
<td>49 (34)</td>
<td>38 (57,6)</td>
<td>2,63 (1,45-4,78)</td>
</tr>
<tr>
<td>Salt Consumption</td>
<td>Excessive</td>
<td>114 (79,2)</td>
<td>60 (66)</td>
<td>2,47 (1,31-4,47)</td>
</tr>
<tr>
<td></td>
<td>Not excessive</td>
<td>30 (20,8)</td>
<td>26 (39,4)</td>
<td>2,47 (1,31-4,47)</td>
</tr>
<tr>
<td>Smoking</td>
<td>Smoke</td>
<td>57 (39,6)</td>
<td>15 (22,7)</td>
<td>2,23 (1,42-4,33)</td>
</tr>
<tr>
<td></td>
<td>Not Smoke</td>
<td>87 (60,4)</td>
<td>51 (77,3)</td>
<td>2,96 (1,32-6,66)</td>
</tr>
<tr>
<td>Ages</td>
<td>≥40 Years</td>
<td>131 (91)</td>
<td>51 (77,3)</td>
<td>2,96 (1,32-6,66)</td>
</tr>
<tr>
<td></td>
<td>&lt;40 Years</td>
<td>13 (9)</td>
<td>15 (22,7)</td>
<td>2,96 (1,32-6,66)</td>
</tr>
<tr>
<td>Family History</td>
<td>There are Family History</td>
<td>74 (51,4)</td>
<td>17 (25,8)</td>
<td>3,41 (1,61-5,79)</td>
</tr>
<tr>
<td></td>
<td>There are not Family History</td>
<td>70 (48,6)</td>
<td>49 (74,2)</td>
<td>3,41 (1,61-5,79)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>56 (38,9)</td>
<td>20 (30,3)</td>
<td>1,24 (0,79-2,73)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>88 (61,1)</td>
<td>46 (69,7)</td>
<td>1,24 (0,79-2,73)</td>
</tr>
</tbody>
</table>

Obese respondents (BMI> 25) had a risk of 3.5 times more hypertension than non-obese. Less of physical activity is at risk 3 times affected by hypertension compared with moderate physical activity. Stress risks triggering hypertension 2.6 times compared with no stress. Consumption of excess salt risk 2.5 times trigger hypertension. Smoking risks 2.2 times more hypertension than non-smokers. People aged over 40 years are at risk 3 times affected by hypertension. Respondents who had a family history of hypertension would have 3.4 times greater risk of hypertension than those without family history of hypertension (Table 2).

V. CONCLUSION

Bivariate analysis using Chi Square (table 2) showed that gender did not have a significant relation with the incidence of hypertension (p>0.05). Male and female have the same risk for hypertension.
Increased age may increase the risk of hypertension [7, 13, 14]. The addition of age is caused by the thickening of the arterial wall by accumulation of connective tissue. At that time it’s also decrease in elasticity and densibility vessels, so that the aorta becomes stiff. A rigid aorta causes blood-constricted areas during cardiac constriction to be limited, resulting in increased systolic blood pressure without the increase in diastolic blood pressure [15].

People who have hypertension offspring are congenital to suffer from hypertension, the more likely adults are suffering from greater hypertension [7, 16, 17]. When viewed from the side plausibility (+) in theory a person suffering from hypertension, has a genetic factor of his family and at risk of suffering from hypertension. This is related to elevated intracellular sodium levels and low ratio between potassium to sodium. Individuals with elderly people with hypertension [4]. If both parents suffer from hypertension, then about 45% down to his children.

Stress associated of hypertension [6, 18, 19, 20]. This is due to hypertension related to sympathetic nervous activity, in conditions stress will increase and affect the blood flow, thus causing the heart to pump blood faster, and it can lead to increased blood pressure [18]. According to the Framingham study, women aged 45-64 years have a number of stress-triggering factors such as tense circumstances, domestic problems, economic stress, daily stress, job mobility, anxiety and buried anger. All of these are associated with increased blood pressure and clinical manifestations of cardiovascular disease. In addition, emotional pressure and activation of the nerve causing increased blood pressure due to vascular arteriole vascular arterioles post glomerulus resulting in sodium retention with the consequent increase in plasma volume and extra fluid volume of cells affecting the occurrence of hypertension [21]. Individuals living in urban areas with higher levels of stress have a higher risk of hypertension than individuals living in rural areas [19].

IV. CONCLUSION

The proportion of hypertensive patients who visited Posbindu in Cipayung Puskesmas area in June 2017 was 68.6%. Variables that have a causal relation with hypertension in Posbindu District Cipayung is as follows: obese, less physical activity, age ≥ 40 years, have a family history of hypertension, stress. Confounding variables are excessive salt / sodium consumption, gender, and smoking.

It is suggested that health officers from Cipayung Community Health Center conduct socialization of CERDIK behavior (Regular health check including blood pressure check, Awareness of cigarette smoke, Diligent physical activity, healthy and balanced diet, adequate rest and manage stress) for the community.

REFERENCES


