

## RELATIONSHIPS OF PRECIPITATING FACTORS AND PREDISPOSING FACTOR TO HYPERTENSION INCIDENT IN INTERNIST POLYCLINIC OF DR.PIRNGADI GENERAL HOSPITAL MEDAN 2014

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### Abstract

Hypertension is a condition where the systolic and diastolic pressure exceeds the normal threshold of 140/90 mmHg and is often called the silent killer because most people do not realize suffer from hypertension due to lack of understanding, education and the adverse effects of hypertension (Ridwan, 2010). Predisposing factors: age, heredity, gender and precipitating factors: body weight, smoking, and alcohol. This study aims to determine the relationship between predisposing and precipitating factors for hypertension in patients who were treated at the polyclinic dr Pirngadi in Medan 2014. Type analytical research with cross sectional design. Research conducted in dr Pirngadi Medan, the sample size of 80 people with sampling technique accidental sampling. Data processing and analysis using Chi-Square test, the hypothesis  $H_a$  accepted if there is a significant relationship predisposing and precipitating factors on the incidence of hypertension with a 95% confidence level ( $p \leq 0.05$ ). Research results showed no significant relationship. Suggested to the respondents to maintain a diet that prevents obesity, reducing salt intake, high fiber foods, improve lifestyle, avoiding stress and positive thinking.

**Keywords:** Predisposing factors, factors Originator, Hypertension

Hypertension is a condition where the systolic and diastolic blood pressure exceeds the normal threshold of 140/90 mmHg. The disease is also often referred to as the silent killer because most people do not realize had been suffering from hypertension, due to lack of understanding, education and the adverse effects of hypertension (Ridwan, 2010).

World Health Organization (2011) mentions hypertension caused 8 million deaths per year worldwide and 1.5 million deaths per year in the region of Southeast Asia (Kartikasari, 2012)

The prevalence of hypertension in Indonesia Results Household Health Survey (Survey) in 2001 showed that 8.3% of the population suffer from hypertension and increased to 27.5% in 2004 (Rahajeng, 2009). Patients with hypertension disease is quite high in the city of Medan (Medan city health office) in 2012, 46 736 people suffer from hypertension are compiled from the number of visits from 39 health centers and hospitals. Of this total, male patients as many as 23 497 people, or more than 23 239 women who only person (Andalas, 2012).

Individuals with a family history of hypertension had a two times greater risk of suffering from hypertension. The incidence of hypertension increases with age, and men have a higher risk of developing hypertension early (Anggraini et al, 2009).

Obesity increases the incidence of hypertension due to fat causing a blockage in the blood vessels thus increasing blood pressure. High salt intake causes excessive expenditure of natriouretik hormone which indirectly increases blood pressure. Smoking habits influence in increasing the risk of hypertension (Anggraini et al, 2009). Rahajeng (2009) states predisposing and precipitating factors of hypertension are age, male gender, low education level, smoking habits, consumption of caffeinated beverages > 1 time per day, alcohol consumption, lack of physical activity and obesity.

Results of a preliminary study in Hospital Dr Pirngadi Medan, ambulatory patients with hypertension in 2012 as many as 848 people, and increased in 2013 by 12.

## RESEARCH METHODS

Type of analytical research with cross sectional study design. Research conducted at the Internist Polyclinic of Dr. Pirngadi Medan Hospital, conducted from January to June 2014. The population was all patients with hypertension who came to the Internist Polyclinic of Dr. Pirngadi Medan Hospital. Sampling using accidental sampling with a sample size using formula Notoadmodjo (2005).

Univariate analysis of data by means of the frequency distribution table, then made a conclusion by using a formula percentage and Bivariate analysis using the chi-square test with 95% degree of confidence,  $\alpha = 0.05$  with HA hypothesis is accepted if  $p \leq 0.05$ .

4:14 According to the table above shows that there is a statistically significant relationship between predisposing and precipitating factors to the onset of hypertension by 95% confidence level  $\alpha = 0.05$ . The results include the results of the factor of age with p value = 0.014 ( $p \leq 0.05$ ), heredity with the result p value = 0.026 ( $p \leq 0.05$ ), and the gender factor with p value = 0.019 ( $p \leq 0.05$ ), the weight factor is obtained p value = 0.024 ( $p \leq 0.05$ ), non factor with the result p value = 0.006 ( $p \leq 0.05$ ), and of the factors of alcohol with the result p value = 0.004 ( $p \leq 0.05$ ).

## RESULTS

### 1. Univariate Analysis

#### a. Age Factor

**Table 1.**  
**Distribution Frequency of Respondent According to Age Factor at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014**

No	Age Factor	Frequency	%
1	<46	28	35
2	46-55	25	31,2
3	56-65	24	30
4	>65	3	3,8
Total		80	100

Table 1. Majority respondent aged >41 year as many as 58 person (72,5%).

**Table 2.**  
**Distribution of Age Factor Cross Tabulation To Hypertension at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014**

No	Age Factor	Respondent Condition		Total	%
		Hypertensi %	Non hipertensi %		
1	<46	11 39,3	17 60,7	28	100
2	46-55	17 68	8 32	25	100
3	56-65	17 0,8	7 29,2	24	100
4	>65	0 0	3 100	3	100
Total		45 56,25	35 43,75	80	100

Table 2. Respondent proportion hypertension higher 56-65 year as many as 17 person (70,8%) and in 46-55 years as many as 68%.

#### b. Herediter

**Table 3.**  
**Distribution Frequency of Respondent According to Herediter Factor at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014**

No	Herediter Factor	Frequency	%
1	Yes	41	51,2
2	No	39	48,8
Total		80	100

Table 3. Majority respondent suffered from hypertension because of herediter factor as many as 41 persons (51,2%).

**Table 4.**  
**Distribution of Herediter Factor Cross Tabulation To Hypertension at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014**

No	Herediter factor	Respondent Condition		Total	%
		Hypertension %	Non hypertension %		
	Yes	28 68,3	13 31,7	41	100
	No	17 43,6	22 56,4	39	100
Total		45 56,25	35 43,75	80	100

Table 4. Majority respondent herediter factor as many as 28 person (68,3%) and hypertension sufferer without any herediter factor as many as 17 person (43,6%).

**c. Gender**

**Table 5.**  
**Distribution Frequency of Respondent According to Gender Factor at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014**

N0	Gender	Frequency	%
1	Man	46	57,5
2	Woman	34	42,5
Total		80	100

Table 5. majority respondent were as many as 46 person (57,5%).

**Tabel 6.**

**Tabel 4.**  
**Distribution of Gender Factor Cross Tabulation To Hypertension at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014**

No	Gent	Respondent condition				Total	%
		yperte sion %	Non yper tensioi %				
1	Man	31	67,4	15	32,6	46	100
2	Womar	14	41,8	20	58,2	34	100
Total		45	56,25	35	43,75	80	100

Table 6. Majority respondent who suffered hypertension were man as many as 31 person (67,4%) while woman as many as 14 person(41,8%).

**d. Weight Factor**

**Table 7.**  
**Frequency Distribution of Respondent According to body weight Factor at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014**

N0	Body weight	Frequency	%
1	Normal	44	55
2	Thin	4	5
3	Fat	32	40
Total		80	100

Table 7. majority respondent have normal weight as many as 44 orang (55%).

**Table 8.**  
**Cross Tabulation Distribution of Gender Factor To Hypertension at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014**

No	Body weight	Respondent condition				Total	%
		yperte sion %	Non yper te sion %				
1	Normal	23	52,3	21	47,7	44	100
2	Thin	0	0	4	100	4	100
3	Fat	22	68,75	10	31,25	32	100
Total		45	56,25	35	43,75	80	100

Table 8. majority respondent who have overweight suffered hypertension as many as 22 person (68,75%),

**e. Smoking factor**

**Table 9.**  
**Frequency Distribution of Respondent According to smoking Factor at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014**

N0	Smoke actor	Frequen cy	%
1	Smoker	48	60
2	Not smoker	32	40
Total		80	100

Table 9. majority respondent were smoker as many as 48 person (60%).

**Table 10.**  
**Cross Tabulation Distribution of smoking factor Factor To Hypertension at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014**

No r factor	Smoke	Respondent condition				Total	%
		Hipertensi %	Non Hipertensi %				
1	Smoker	33	58,75	15	31,25	48	100
2	Not smoker	12	37,5	20	62,5	32	100
Total		45	56,25	35	43,75	80	100

Table 10. majority hypertension respondent have smoking habit as many as 33 person (68,75%) while non smoker as many as 12 person (37,5%)

## f. Alcohol Factor

**Table 11.**  
Frequency Distribution of Respondent According to Alcoholic Factor at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014

N0	Alcohol factor	Frequency	%
1	Alcoholic	35	43,8
2	Not alcoholic	45	56,2
Total		80	100

Table 11. majority respondent were non alcoholic as many as 45 person (56,2%).

**Tabel 12.**  
Cross Tabulation Distribution of Alcohol factor Factor To Hypertension at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014

No factor	Alcoholic	Kondisi Responden				Total	%
		Hipertensi	%	Non Hipertensi	%		
1	Alcoholic	26	4,5	9	25,7	35	100
2	Not Alcoholic	19	2,2	26	57,8	45	100
Total		45	56,2	35	43,75	80	100

Table 12. majority hypertension respondents have alcoholic habit as many as 26 person (74,5%).

**Tabel 13**  
Frequency Distribution of Respondent According to Respondent Condition at Internist Polyclinic of DR. Pirngadi General Hospital Medan Tahun 2014

N0	Respondent condition	Frequency	%
1	Hypertension	45	56,2
2	Non Hypertension	35	43,8
Total		80	100

Table 13. majority respondent with hypertension, condition as many as 45 person (56,2%)

## 2. Bivariate Analysis

**Table 14.**  
Related Predisposing Factor with Causing Factor to Hypertension Incident at Internist Polyclinic of DR. Pirngadi General Hospital Medan 2014

Factor	Respondent Condition				Total	%	P value
	Hypertension	%	Non Hypertension	%			
<b>Usia</b>							
<46	11	39,3	17	60,7	28	100	0,014
46-55	17	68	8	32	25	100	
56-65	17	70,8	7	29,2	24	100	
>65	0	0	3	100	3	100	
Total	45	56,25	35	43,75	80	100	
<b>Hereditas</b>							
Genetic	28	68,3	13	31,7	41	100	0,026
Non Genetic	17	43,6	22	56,4	39	100	
Total	45	56,25	35	43,75	80	100	
<b>Gender</b>							

Man	31	67,4	15	32,6	46	100	0,019
Woman	14	41,8	20	58,2	34	100	
Total	45	56,25	35	43,75	80	100	

**Body weight**

Normal	23	52,3	21	47,7	44	100	0,024
Thin	0	0	4	100	4	100	
Fat	22	68,75	10	31,25	32	100	
Total	45	56,25	35	43,75	80	100	

**Smoker**

Smoker	33	68,75	15	31,25	48	100	0,006
Not smoker	12	37,5	20	62,5	32	100	
Total	45	56,25	35	43,75	80	100	

**Alcohol**

Alcoholic	26	74,3	9	25,7	35	100	0,004
Not Alcoholic	19	42,2	26	57,8	45	100	
Total	45	56,25	35	43,75	80	100	

According to the table above shows that there is a statistically significant relationship between predisposing and precipitating factors to the onset of hypertension by 95% confidence level  $\alpha = 0.05$ . The results include the results of the factor of age with p value = 0.014 ( $p \leq 0.05$ ), heredity with the result p value = 0.026 ( $p \leq 0.05$ ), and the gender factor with p value = 0.019 ( $p \leq 0.05$ ), the weight factor is obtained p value = 0.024 ( $p \leq 0.05$ ), non factor with the result p value = 0.006 ( $p \leq 0.05$ ), and of the factors of alcohol with the result p value = 0.004 ( $p \leq 0.05$ ).

**DISCUSSION****1. Relationship between age factor with occurrence of hypertension**

The loss of tissue elasticity and large arteries become stiff causing blood at each beat of the heart is forced to pass through narrow blood vessels of the usually causing the rise in blood pressure which is a factor of old age patients with hypertension. (Susanto, 2010)

Based on the results of the study conducted by researchers obtained the relationship of age with hypertension, the results showed that the proportion of respondents with higher hypertension condition at the age of 56-65 years, amounting to 17 people (70.8%). Results of bivariate analysis using the chi-square test p values obtained value = 0.014 ( $p \leq 0.05$ ) with a 95% confidence level. The p value indicates that there is a statistically significant relationship between the factors of age with hypertension, results are consistent with the results of research Kartikasari (2012) who says that age is a risk factor for

hypertension, where the risk of hypertension at age 60 years up is 11.340 times greater when compared with less than 60 years of age. This research is also consistent with the results of research conducted by Aris Sugiharto, where for ages 56-65 years had a 4.76 times greater risk of developing hypertension compared with 25-35 years of age. As well as research results Sigarlaki (2006) obtained the age group 56-77 years had the highest distribution that is (55.88%) for the occurrence of hypertension.

**Heredity Factors****2. Relationship between the occurrence of Hypertension**

Genetic factors in the family would cause the family has a risk of suffering from hypertension. It is associated with elevated levels of intracellular sodium and low ratio of potassium to sodium. Research conducted by Androgue and Madias regarding the pathogenesis of potassium and sodium in hypertension, said heredity influence on primary hypertension through several genes

involved in the regulation of vascular and renal reabsorption of sodium by (Kartikasari, 2012).

Results of this study respondents who have a history of hereditary factors as much as 28 people (68.3%). Results of the analysis obtained by chi square test  $p$  value = 0.026 ( $p \leq 0.05$ ) indicates that there is a significant relationship between heredity with hypertension.

The results are consistent with research Anggraini, et al (2009), Hypertension is lowered or is genetic, individuals with a family history of hypertension had a two times greater risk of developing hypertension than those who do not have a family history of hypertension. Powered research Kartikasari (2012) said the subject with a family history of suffering from hypertension have an increased risk of hypertension 14.378 times greater when compared with subjects without a family history of suffering from hypertension.

### 3. Relationship between Factors Sex with occurrence of hypertension

Men often experience signs of hypertension at the age of late thirties, while women often had hypertension after menopause. Woman's blood pressure, especially systolic, increased more sharply with age. After age 55, women do have a higher risk of developing hypertension. One of the causes of these patterns is the difference between the two sexes. Decreased estrogen production at menopause, women lose the beneficial effect that increases blood pressure. (Casey.A, 2012).

So also based on the results of research conducted by researchers note that the gender factor associated with the occurrence of hypertension, with the result that the proportion of respondents found the condition of hypertension is higher in the male gender, amounting to 31 people (67.4%). Results obtained chi square test  $p$  value = 0.019 statistically show that there is a significant correlation between gender factor with hypertension. In line with the research Rahajeng (2009), the sex, the proportion of men in hypertension group was higher than the control and males were significantly at risk of hypertension 1.25 times that of the female. Data Health Office (DHO) Medan city in

2012, found male patients as many as 23 497 people, or more than 23 239 women who only person (Andalas, 2012).

### 4. Relationship between Weight Factor with occurrence of hypertension

Excess weight and hypertension often go hand in hand, because of the extra few kilograms makes the heart work harder. Pumping power of the heart and circulation of blood volume obese patients with hypertension was higher than hypertensive patients with normal weight (Sutanto, 2010).

Results of research conducted by researchers note that the weight factor associated with the occurrence of hypertension, with hasi that the proportion of respondents with hypertension was higher in respondents who weigh as much fat as 22 people (68.75%). Based on the results obtained by the chi square test  $p$  value = 0.024 indicates that there is a significant relationship between the variables of weight with hypertension.

Results of research supported by the National Institutes for Health USA (NIH, 1998) dalam Anggraini, et al (2009), the prevalence of high blood pressure in people with a Body Mass Index (BMI) > 30 (obese) is 38% for men and 32% for women, compared with a prevalence of 18% for men and 17% for women for those who have a BMI < 25 (normal nutritional status according to international standards).

### 5. Relationship between Cigarettes with occurrence of hypertension

Smoking causes an increase in blood pressure. Smokers can dihubungkandengan an increased incidence of malignant hypertension and the risk of experiencing aterosklerosis renalyang artery stenosis (Anggraini, et al, 2009).

Based on the results of the study conducted by researchers note that cigarette factors associated with the occurrence of hypertension, with the proportion of respondents that hypertension is higher among respondents who have a smoking habit of 33 people (68.75%). Results obtained chi square test  $p$  value = 0.006 indicates that there is a significant association between cigarette factors with hypertension.

In line with the results Oroh (2013) that respondents who have a habit of smoking had a six times greater chance of suffering from hypertension compared to those who did not have the habit of smoking. As well as research results Rahajeng (2009), based on smoking behavior, the proportion of respondents who had never smoked every day in hypertension group was higher (4.9%) than the control group (2.6%), and risk behaviors never smoked this significantly found by 1.11 times compared to never-smokers.

#### Alcohol Factor

##### 6.Related with Hypertension Occurrence

Risk factor for hypertension consume alcohol. It has been demonstrated that consuming alcohol every day can raise blood pressure by 1.21 mmHg systolic and diastolic blood pressure by 0.55 mmHg for an average of one drink per day (Russell et al, 1991). Excessive alcohol use will also trigger a person's blood pressure. Besides being good for blood pressure, alcohol addiction will also make it difficult to remove (Susilo, 2011).

Based on the results of the study conducted by researchers have known that the alcohol factor associated with the occurrence of hypertension, with the results that the proportion of respondents with hypertension condition was higher in respondents who have the habit of drinking alcohol as many as 26 people (74.5%). Results obtained chi square test  $p$  value = 0.004 indicates that there is a significant correlation between alcohol factor with hypertension.

In line with the results of Casey (2012), excessive drinking, which is three times or more a day was a factor contributing 7% of cases of hypertension. Powered research Oroh (2013) of respondents who consume alcohol have a greater chance of 4.378 times suffer from hypertension compared to those who did not consume alcohol. Rahajeng (2009), based on the behavior of alcohol consumption, the proportion of alcohol one last month found higher in hypertensive group (4.0%) than in controls (1.8%). The risk of hypertension for those who consume alcohol one last month found meaningful, that is equal to 1.12 times.

## CONCLUSIONS AND SUGGESTIONS

### CONCLUSION

1. There relationship of age on the incidence of hypertension with  $p$  value = 0.014.
2. Based on heredity: that there is a hereditary factor for hypertension with  $p$  value = 0.026 ( $p \leq 0.05$ ).
3. Berdasarkan sexes: that there is a male sex relationship with hypertension with  $p$  value = 0.019 ( $p \leq 0.05$ ).
4. Berdasarkan weight factor: there is a relationship of weight to hypertension with  $p$  value = 0, 024 ( $p \leq 0.05$ ).
5. Berdasarkan cigarette factors: that there is a relationship to the incidence of hypertension with chi square test was obtained  $p$  value = 0.006 ( $p \leq 0.05$ ).
6. Berdasarkan factors habit of drinking alcohol there is a significant relationship to hypertension, with  $p$  value = 0.004 ( $p \leq 0.05$ ).

### SUGGESTION

1. To health workers of dr Pirngadi Hospital Medan especially poly diseases in order to further improve the education and health education about the relationship between predisposing and precipitating factors of hypertension.
2. To patients with hypertension are advised to avoid obesity, reducing salt intake, high fiber foods eat- improve lifestyles, and avoid stress and positive thinking.

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