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THE ANALYSIS OF RATIO HYPERTENSION PREVALENCE OF DISTRICT ABEPURA COMMUNITY IN JAYAPURA CITY

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ABSTRACT

According to the Prevalence of hypertension worldwide, estimated at about 15-20%. The prevalence of hypertension in 2007 in Papua totally 22.0%. In Jayapura, the second highest prevalence of hypertension is in General Hospital Abepura, which is 15.85%, whereas Abepura Hospital is the referral center of the District Abepura Community. This study aims to determine the ratio of prevalence risk of hypertension disease with risk, among others; Age, sex, ethnicity, genetics, occupation, diet, Smoking habits, Physical Activity, obesity. This research is analytic survey with cross-sectional approach. The sample in this study as many as 99 people were selected at random or random sampling. Variable Obesity was measured by anthropometric measurements and other independent variables were measured by questionnaires. While the dependent variable is measured by sphygmomanometer and digital tensimeter. The analysis used in this research is Univariate Analysis, Bivariate Analysis. The research results showed that from eight independent variables in the ratio analysis Prevalence known variable that the prevalence ratio is significant with age RP = 3.79 CI 95% (1,8-7,9) and 7 other variable variables Gender RP 1.04 (0,5-1,96), RP = 0,77 (0,35-2,0), Genetic RP = 1,59 (0,89-2,8) and Occupational risk RP = 078 (0, 34-1,78), obesity RP = 1.31 (0.7-2.47), Smoked RP = 0.78 (0.83-1.86), Physical activity RP = 0.78 (0.43 -1,41).

Keywords: *Hypertension, risk factors*

1. PRELIMINARY

Prevalence of hypertension worldwide, estimated at about 15-20%. Hypertension is more prevalent in middle age at age 55-64 years. Hypertension in Asia is estimated to reach points 8-18% in 1997, hypertension is found in 4,400 per 10,000 population. Result of Household Health Survey 1995, in year 2000 about 15-20% of people of Indonesia suffer from Hypertension (Ministry of Health RI, 2003)

Prevalence of hypertension in Indonesia obtained through measurement at age ≥18 years of 25.8 percent, the highest point in Bangka Belitung (30.9%), followed by South Kalimantan (30.8%), East Kalimantan (29.6%) and Java West (29.4%). The prevalence of hypertension in Indonesia obtained through questionnaires diagnosed by health personnel amounted to 9.4 percent, diagnosed with health personnel or taking medication 9.5 percent. So, there are 0.1 percent who take their own medication. Respondents who had normal blood pressure but were taking hypertension drugs were 0.7 percent. So the prevalence of hypertension in Indonesia is 26.5 percent (25.8% + 0.7%) (Riskesdas, 2013).

The prevalence of hypertension in Papua is 22.0%. In 2007, ages 15-24 years incidence in men (22.0%), and in women (21.9%). The survey results from the districts / cities in 2007 that have the lowest prevalence of hypertension are Jayawijaya (6.8%) and the highest is Manokwari (27.27%) and Keerom Regency is 25.7% (Riskesdas, 2008).

Comparison of hypertension cases of several hospitals in Jayapura City, Poly Disease Division is as follows, the proportion of hypertension cases in 2012 in Jayapura District General Hospital are 4,752 cases (21.85%), Abepura District General Hospital as many as 234 cases (15.85%), While Dian Harapan Hospital had 240 cases (18.03%). From the above data it can be seen that the second highest case of hypertension is in the Abepura Regional General Hospital, where Abepura Hospital is the referral center of the District Abepura community. Based on the results of preliminary studies in District Abepura of 75 people examined it was found that the proportion of hypertension was 69% and did not have

31% hypertension. This shows that more people are diagnosed with hypertension. Based on the results of the preliminary examination, the researchers are interested to know how much risk of some risk factors for the incidence of hypertension in the District Abepura.

2. RESEARCH METHODS

A. Types and Research Design

This research is an *analytic* survey with *cross-sectional* approach. Is a *cross-sectional* study to study the dynamics of correlation between factors - risk factors with effects, with the approach, observation, or the collection of data at a time (Hasmi, 2012).

B. Population and Sample

1. Population

   Population is the whole element / subject of research. The population in this study is all residents who live in Abepura District of Jayapura City.

2. Sample

   The sample is a subset of the population selected in a particular way that is considered representative of the population. The sample in this study is part of the population. Samples were chosen at random or *random sampling*.

3. Large Samples

   The large sample formulas used according to Stanley Lemeshow are as follows:

$$N = \frac{Z_{1-\alpha/2}^2 [P_1(1-P_1)+ P_2(1-P_2)]}{d^2}$$

Information:
N = Sample
$Z_{1-\alpha/2}$ = Confidence (95%)
P_1 = The proportion of cases = 69%
P_2 = The proportion is not the case = 31%
D = Precision (15%)

A). Large Sample

$$N = \frac{Z_{1-\alpha/2}^2 [(P1 (1-P1) + P2 (1-P2)]}{d^2}$$

Where:
P1: number of cases of hypertension / population number 69% or 69 out of 100 people

P2: (Number of population-cases) / population number 31% or 31 out of 100 people

$d^{2:}$ 13%

$Z_{1-\alpha/2}^2 = 1.96$

So:

$$N = \frac{1.96^2 [(P1 (1-P1) + P2 (1-P2)]}{0.13^2}$$

$$= \frac{3.84 [(0.69) (1-0.69) +0.31 (1-0.31)]}{0.0169}$$

$$= \frac{3.84 [(0.00428) + (0.00428)]}{0.0169}$$

= 1.65 / 0.0169 = 99 people.

1. **Variable, Operational Definition and Measurement Scale**

Table 3.1 Variables, Operational Definition and Measurement Scale

No	Variable	Definition	Measurement	Criteria	Scale
1.	Patients with Hypertension	Persons based on measurement of Systolic blood pressure> 120 mm / Hg	Measurements using Sphgmomanometer	Yes: if Blood pressure> 120 MM / Hg .No: If the blood pressure <120 MM / Hg	Nominal
2.	Age	The length of one's life from birth until the time of the study.	Questionnaire	1. Risky if ≥45 years 2.Not risky if <45 years. (Garnadi, 2012)	Nominal
3.	Gender	Physical characteristics of a person who was brought in from birth.	Questionnaire	1.Female 2.Man	Nominal
4.	Tribe	Tribes in this study	Questionnaire	1.Non Papua 2.Papua	Nominal
5	Work	Is the respondent's tribe based on paternal or maternal ancestry status.		1.At risk: if the physical activity is less 2. Not at Risk: If physical activity is high	Nominal
6.	Genetic or hereditary	Activities that become the main livelihood of the respondents seen from the presence or absence of high activity.	Questionnaire	1. There are family members based on paternal status of father or mother who suffers from hypertension	
		Genetic / heredity is a family history based on the paternal status of the father or the mother of the hypertensive patient.	Questionnaire	2. No family members based on paternal status of father or mother suffering from hypertension	
7.	Obesity	A person's weight based on normal BMI measurements>	Questionnaire	IMT> 25	
8	Smoking habit	The circumstances in which a person smokes daily, which is judged by the amount and frequency		At risk:> 16 cigarettes a day Not at risk: <16 cigarettes a day	
9	Physical Activity	Physical activity performed every day judged by the proportion of frequency, duration and light weight	Questionnaire	At Risk: If Score> 50% Not at Risk: If <50%	

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3. RESEARCH RESULT

1.With age the risk prevalence ratio of Hypertension

Table 5.1 Prevalence and Chi Square Ratio Analysis Age and incidence of Hypertension in District Abepura Communities.

Age	Hypertension Occurrence				Total		P *Value*	RP	95% CI
	Hypertension		No Hypertension						
	N	%	N	%	N	%			
At risk	25	52.1	23	47.9	48	100	0.000	3.79	1.8-7.9
Not at risk	7	13.7	44	86.3	51	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test P *value* is the value obtained in which the value of P *values* 0.00 (0.00) significantly smaller than a predetermined level (α = 0.05) then Ho is rejected. Thus statistically the decision can be made that there is a relationship between age with the incidence of hypertension.

Results analysis *The prevalence ratio* (RP) between age and incidence of hypertension obtained a value of 3.795 at CI 95% by number Lower -upper 1.8 to 7.9, which means the age variable risk (≥ 45 years) is a risk factor for hypertension. Thus, respondents with risky age (≥ 45 years) had a 3.79 times greater risk of developing hypertension than those who were not at risk (<45 years).

2.Analysis of Sexual Prevalence Ratio with Hypertension occurrence

Table 5.2. Prevalence and Chi Square Ratio Analysis Gender and Hypertension Incidence In District Abepura Community year 2016

Gender	Hypertension Occurrence				Total		P *Value*	RP	95% CI
	Hypertension		No Hypertension						
	N	%	N	%	N	%			
Man	9	33.3	18	66.7	27	100	1.00	1.04	0.5-1.96
Women	23	31.9	49	68.1	72	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test values obtained P *value* was 1.00 where the value of the P *value* (1.00) is greater than a predetermined significant level (α = 0.05) then H_0 accepted. Thus statistically the decision can be made that there is no relationship between the sex with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between sexes with hypertension obtained a value of 1.043 in the Confidence Interval (CI 95%) obtained a value of 0.5 to 1.96. Thus, gender variables are not risk factors for hypertension patients community.

3. Ratio Prevalence Ratio Analysis and Hypertension Risk

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Table 5.3 Ratio Analysis and Chi Square prevalence and incidence Tribe Hypertension Society District Abepura year 2016.

Tribe	Hypertension Occurrence				Total		P *Value*	RP	95% CI
	Hypertension		No Hypertension						
	N	%	N	%	N	%			
Non Papua	4	28.6	10	71.4	14	100	0.77	0.86	0.35-2.0
Papua	28	32.9	57	67.1	85	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test values obtained P *value* was 0.77 where the value of the P *value* (0.77) is greater than a predetermined significant level ($\alpha = 0.05$) then H_0 accepted. Thus statistically the decision can be made that there is no relationship between the tribe with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between tribes with hypertension obtained a value of 0.867 in the Confidence Interval (CI 95%) obtained a value of 0.35 to 2.0. Thus the tribe variable has no risk factor of hypertension occurrence.

4.Prevalence Ratio Analysis of Genetic Risk and Hypertension.

Table 5.4 Ratio Analysis and Chi Square prevalence and incidence Genetic Hypertension Society District Abepura Year 2016.

Genetic	Hypertension Occurrence				Total		P *Value*	RP	95% CI
	Hypertension		No Hypertension						
/ Heredity	N	%	N	%	N	%			
There is	10	45.5	12	54.5	22.	100	0.95	1.59	0.89-2.8
There is no	22.	28.6	55	71.4	77	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test P value is the value obtained in which the value of P value of 0.95 (0.95) significantly greater than a predetermined level ($\alpha = 0.05$) then H_0 accepted. Thus statistically the decision can be made that there is no relationship between genetic / heredity with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between genetic / descent with hypertension obtained a value of 1.59 in the Confidence Interval (CI 95%) obtained a value of 0.89 to 2.8. Thus the genetic / heredity variable is not a risk factor because it is not significant. H1 this is because the CI value (95% CI) includes the number 1 or with the Lower value less than 1 (0.81-1.48).

5.Ratio Analysis of Occupational Risk and Hypertension Risk

Table 5.5 Ratio Analysis and Chi Square prevalence and incidence Works Hypertension Society 2016 Abepura District .

Work	Hypertension Occurrence				Total		P *Value*	RP	95% CI
	Hypertension		No Hypertension						
	N	%	N	%	N	%			

At risk	28	31.5	61	68.5	89	100	0.723	0.78	0.34-1.78
Not at risk	4	40	6	60	10	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test values obtained P value was 0.72 where the value of the P value (0.72) is greater than a predetermined significant level (α = 0.05) then H_0 accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between a risky job with hypertension obtained a value of 0.78 for Confidence Interval (CI 95%) obtained a value of 0.34 to 1.78. Thus, risky job variables are not risk factors because they are not significant. H1 this is because the CI value (95% CI) includes the number 1 or with the Lower value less than 1 (0.81-1.48).

6. Ratio Analysis of Risk Prevalence of Obesity and Hypertension

Table 5.6 Ratio Analysis and Chi Square Obesity Prevalence and incidence of Hypertension Society District Abepura year 2016.

Obesity	**Hypertension Occurrence**				**Total**		**P *Value***	**RP**	**95% CIs**
	Hypertension		No Hypertension						
	N	%	N	%	N	%			
Obesity	8	40	12	60	20	100	0.43	1.31	0.7-2.47
Not obese	24	30.4	55	69.6	79	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test values obtained P value was 0.43 where the value of the P value (0.43) is greater than a predetermined significant level (α = 0.05) then H_0 accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between genetic / descent with hypertension obtained a value of 1.31 in the Confidence Interval (CI 95%) obtained a value of 0.7 to 2.47. Thus the obesity variable is not a risk factor because it is not significant. Hi this is because the CI value (95% CI) includes the number 1 or with the Lower value less than 1 (0.7-2.47).

7.Ratio Analysis Prevalence of smoking habits and Hypertension events

Table 5.7 Ratio Analysis and Chi Square prevalence of smoking and the incidence of Hypertension Society , District Abepura Papua.

Smoke	**Hypertension Occurrence**				**Total**		**P *Value***	**RP**	**95% CI**
	Hypertension		No Hypertension						
	N	%	N	%	N	%			
At risk	5	27.8	13	72.3	18	100	0.784	0.78	0.83-1.86
Not at risk	27	33.3	54	66.7	81	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test P value is the value obtained in which the value of P value of 0.78 (0.78) significantly greater than a predetermined level (α = 0.05) then H_0 accepted. Thus statistically the decision can be made

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that there is no relationship between work at risk with the incidence of hypertension.
Prevalence Ratio calculation results (RP) between genetic / descent with hypertension obtained a value of 0.83 in the Confidence Interval (CI 95%) obtained a value of 0.37 to 1.86. Thus the variable smoking habit is not a risk factor because it is not significant. Hi this is because the CI value (95% CI) includes the number 1 or with the Lower value less than 1 (0.37-1,86).

8. Prevalence Ratio Analysis of Physical Activity and Hypertension

Table 5.8 Ratio Analysis and Chi Square prevalence of physical activity and the incidence of Hypertension Society, District Abepura year 2016.

Physical Activity	Hypertension Occurrence				Total		P *Value*	RP	95% CI
	Hypertension		No Hypertension						
	N	%	N	%	N	%			
At risk	13	28.3	33	71.7	46	100	0.519	0.78	0.43-1.41
Not at risk	19	35.8	34	64.2	53	100			
amount	32	32.3	67	67.7	99	100			

Based on the analysis by using *chi-square* test values obtained P value is 0.518 where the value of the P value (0.78) is greater than a predetermined significant level ($\alpha = 0.05$) then H_0 accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.
Prevalence Ratio calculation results (RP) between genetic / descent with hypertension obtained a value of 0.43. Thus the variable of physical activity is not a risk factor because RP <1.

4. DISCUSSION

Statistical analysis showed that the relationship between both variables significant at P *value* = 0.00 and RP = 3.79 which means there is a relationship between age and the incidence of hypertension. This research is in line with research conducted by Herke Silargaki in Bogor Village, Bulus Pesantren, Kebumen Regency in 2006 which states there is a relationship between age with the incidence of hypertension.

Hypertension is one of the degenerative diseases. With increasing age, the blood pressure will also increase due to some physiological changes. After the age of 45 years there is an increase in peripheral resistance and sympathetic activity. The walls of the arteries will experience thickening due to the accumulation of collagen substances in the

muscle layer, so that the blood vessels will gradually narrow and become stiff. Systolic Blood Pressure (TDS) increases as the elasticity of the large blood vessels diminishes in the age to the seventh decade while the diastolic blood pressure (TDD) increases until the fifth and sixth decades then settles or tends to decrease. In addition, in elderly the sensitivity of the blood pressure effect of the baro receptor reflex decreases, as is the renal role, where the renal blood flow and glomerular filtration rate decreases (Kumar, 2005).

1. Prevalence Ratio Between Sex With Genesis Hypertension.

The results of the study of 99 respondents found that female respondents are more likely to suffer from hypertension than respondents of male sex.
The results of statistical tests show that Prvelaneis Ratio between Gender and age RP = 1.04. According to the theory of women having age at risk can cause hypertension in women. According to Susiolo and Wulandri men have a higher risk to suffer from hypertension earlier. This is because men possessed greater risk to *cardiovascular morbidity* and *mortality*. Basically the prevalence of hypertension in men is the same as for women. But before undergoing menopause, women are protected from cardiovascular disease due to the activity of estrogen hormone that plays a role in increasing the levels of *High Density Lipoprotein* (HDL). High HDL levels are a protective factor in preventing atherosclerosis.
In premenopausal women begin to lose little by little estrogen hormone that has been protecting blood vessels from damage. This process continues where the amount of estrogen hormone decreases naturally

with increasing age, which generally begins in women aged 45-55 years (Kumar, 2005).

2. Between prevalence ratio Parts With Genesis Hypertension

Statistical analysis showed that no significant relationship between both variables with a P *value* = 0.77 and RP = 0.86 which means there is no relationship between the tribe with hypertension. There is no correlation to this study because non-Papuans are at risk for hypertension if affected by poor diet and lifestyle patterns. In addition, at the time of the study the number of Papuan respondents more than non-Papuan tribal respondents, and also can be seen from Riskesdas data in 2008 the lowest hypertensive spreading areas are Sarmi, Mount Bintang, Yahukimo, Tolikara and Jayawijaya. This study is not consistent with the theory expressed by Susilo and Wulandari (2011) that hypertension is more common in black people than white. Not known with certainty the cause, but the blacks found a lower *renin* levels and sensitivity to *vasopressin* larger. This is what causes them more susceptible to hypertension.

5. Between Genetic prevalence ratio / Descent With Hypertension

Statistical analysis showed that no significant relationship between both variables with a P *value* = 0.68 and RP = 1.10, which means there is no relationship between genetic / descent with hypertension. There is no correlation to this study because 51 respondents who do not have genetic / heredity do not know for sure so that the researcher classifies as a group with no genetic / hereditary history. But according to Sheldon (2005) with hypertension tend to be a hereditary disease. If someone from our parents has hypertension then all our lives have a 25% chance of getting it too. If both of our parents have hypertension then chances are we get the disease 60%. Research on hypertensive patients among twins and members of the same family shows that in certain cases there is a hereditary component that plays a role.

6. Work Risk prevalence ratio and the incidence of Hypertension

Based on the analysis by using *chi-square* test values obtained P value was 0.72 where the value of the P value (0.72) is greater than a predetermined significant level (α = 0.05) then Ho accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between jobs with hypertension obtained a value of 0.78 for Confidence Interval (CI 95%) obtained a value of 0.34 to 1.78. Thus, risky job variables are not risk factors because they are not significant. H1 this is because the CI value (95% CI) includes the number 1 or with the Lower value less than 1 (0.81-1.48).

6. Ratio Analysis of Risk Prevalence of Obesity and Hypertension

Based on the analysis by using *chi-square* test values obtained P value was 0.43 where the value of the P value (0.43) is greater than a predetermined significant level (α = 0.05) then Ho accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.

As the weight gain gained is mostly fatty tissue, it relies on oxygen and nutrients in the blood to survive. The more blood that passes through the arteries the more pressure the wall of the artery receives. Almost all people who are overweight as much as 20% will eventually suffer from high blood pressure. Epidemiological investigation proves that obesity is characteristic of hypertensive patient populations (Korneliani, 2012).

7. Ratio Analysis Prevalence of smoking habits and Hypertension events

The results showed that of 18 respondents who had smoking habit who suffered from hypertension as much as 5 (27,7%) and who did not suffer from hypertension as much as 13 (72,3%). While from 81 respondents who have smoking habit who suffer from hypertension as much as 27 (33,3) and who did not suffer from hypertension as much as 54 (66,7%).

Based on the analysis by using *chi-square* test P value is the value obtained in which the value of P value of 0.78 (0.78) significantly greater than a predetermined level (α = 0.05) then Ho accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.

Prevalence Ratio calculation results (RP) between genetic / descent with hypertension obtained a value of 0.83 in the Confidence Interval (CI 95%) obtained a value of 0.37 to 1.86. Thus the variable smoking habit is not a risk factor because it is not

significant. H1 this is because the CI value (95% CI) includes the number 1 or with the Lower value less than 1 (0.37-1,86).

8.Prevalence Ratio Analysis of Physical Activity and Hypertension

The following Table 5.8 shows that of 46 respondents who had less than 13 (28.3%) hypertensive and non-hypertensive patients (71.7%). Whereas from 53 respondents who had no risk activity with hypertension as much as 19 (35,8) and who did not suffer from hypertension counted 34 (64,2%).

Based on the analysis by using *chi-square* test values obtained P value is 0.518 where the value of the P value (0.78) is greater than a predetermined significant level (α = 0.05) then Ho accepted. Thus statistically the decision can be made that there is no relationship between work at risk with the incidence of hypertension.

5. CONCLUSION

1.Ratio prevalence of the risk of age With Hypertension Disease in communities in District Abepura, Jayapura City was 3.7

2.Ratio prevalence of the risk of gender With Hypertension Disease in communities in District Abepura ,Jayapura City was 1.0

3.Ratio prevalence rate risks With Hypertension Disease in society in District Abepura ,Jayapura City 0.86;

4. Risk prevalence ratio between genetic / hereditary With Hypertension in District Abepura of Jayapura City was 0.19;

5.The prevalence of occupational risk ratios with hypertensive disease in people in District Abepura of Jayapura City was 0.787.

6.Ratio of obesity risk prevalence with Hypertension disease in District Abepura, Jayapura was 1.31.

7.Ratio Prevalence of dietary risk with hypertension disease in District Abepura, Jayapura.

8.To know the ratio of risk prevalence of physical activity pattern with hypertension disease in District Abepura , Jayapura was 0,833.

9. To know the prevalence ratio of smoking risk with Hypertension disease in District Abepura City of Jayapura.

For people, people at risk of hypertension age more attention to the pattern of eating and lifestyle, and multiply sports and multiply relax and rest, so that the body and mind become calm and avoid stress. For further research, it can make the results of this study as a reference and is expected to take other factors that may be related to hypertension with other community.

BIBLIOGRAPHY

1. Hasmi. 2012. *Epidemiology Research Methods*, v Jakarta: Trans Media Info.
2. Korneliani, K., Meida D., 2012, Obesity And Stress With Hypertension Occurrence
3. Lemeshow, S, 1997. Large Sample In Health Research. Yogyakarta: Gajah Mada University Press.
4. M Retno, A, 2010, *Effect of Smoking Habit And Stress At Work Against Hypertension Genesis Officers Officers Airport At Age 40 Years and Over in Sentani*, Thesis, School of Public Health, University of Cenderawasih, Jayapura.
5. Basic Health Research, Riskesdas 2007, Agency for Health Research and Development, Health Department RI.
6. Basic Health Research Riskesdas, 2013, Agency for Health Research and Development, Health Department RI.
7. Sigarlaki, H., 2006, Characteristics And Factors Associated With Hypertension In The Village.
8. Kumar V, Abbas AK, Fausto, N 2005, *Hypertensive Vascular Disease*, In: *Robn and cotram Pathologic Basic of Disease*, 7 th edition, Elsevier Saunders, of Philadelphia.
9. Sosilo, Y., Wulandari, A, 2011. How To Handle Hypertension, Yogyakarta: ANDI Taufiq.
10. Shedon, SG 2005. Mayo Clinic Hypertension Coping with High Blood Pressure. Jakarta: PT Duta