

## **RISK FACTOR THE HAPPENING OF PRIMARY HYPERTENSION IN COUNTRYSIDE OF ATEP OKI OF SUBDISTRICT EAST LEMBEAN OF MINAHASA REGENCY**

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### **ABSTRACT**

The purpose of this research is to know the relationship of primary hypertension with the occurrence of risk factors. Design research using a cross sectional with test statistic chi-square. The sample in this research totaled 46 respondents. Results of the study there is no significant relationship between genetic risk factors with primary hypertension with significant value.  $403 > 0.05$ . There is no significant relationship between the risk factors of age with primary hypertension with significant value.  $340 > 0.05$ . There is no significant relationship between the risk factors of smoking with a primary hypertension with significant value.  $763 > 0.05$ . There is no significant relationship between risk factors consume alcohol with primary hypertension with significant value.  $235 > 0.05$ . There is a significant relationship between the risk factors of physical activity/sport with primary hypertension with significant value.  $038 < 0.05$ . There is no significant relationship between risk factors consume saturated fat with primary hypertension with significant value.  $856 > 0.05$ . There is no significant relationship between risk factors consume salt with primary hypertension with significant value.  $285 > 0.05$ . Conclusion of this research only to the lack of risk factors of exercise/physical activity showed a significant relationship against the incidence of hypertension. The recommendations are very important for patients with hypertension or who have not got the disease so doing physical activity/exercise at least 30 minutes each day like jogging or brisk walking in lowering blood pressure or stabilize normal blood pressure.

Key words: risk factor; primary hypertension

### **ABSTRAK**

Tujuan penelitian ini untuk mengetahui hubungan kejadian hipertensi primer dengan faktor resiko yang ada. Desain penelitian menggunakan cross sectional dengan uji statistic chi-square. Sampel dalam penelitian ini berjumlah 46 responden. Hasil penelitian yaitu tidak ada hubungan yang signifikan antara faktor resiko genetik dengan hipertensi primer dengan nilai signifikan  $.403 > 0.05$ . Tidak ada hubungan yang signifikan antara faktor resiko usia dengan hipertensi primer dengan nilai signifikan  $.340 > 0.05$ . Tidak ada hubungan yang signifikan antara faktor resiko merokok dengan hipertensi primer dengan nilai signifikan  $.763 > 0.05$ . Tidak ada hubungan yang signifikan antara faktor resiko mengkonsumsi alkohol dengan hipertensi primer dengan nilai signifikan  $.235 > 0.05$ . Ada hubungan yang signifikan antara faktor resiko olahraga/aktifitas fisik dengan hipertensi primer dengan nilai signifikan  $.038 < 0.05$ . Tidak ada hubungan yang signifikan antara faktor resiko mengkonsumsi lemak jenuh dengan hipertensi primer dengan nilai signifikan  $.856 > 0.05$ . Tidak ada hubungan yang signifikan antara faktor resiko mengkonsumsi garam dengan hipertensi primer dengan nilai signifikan  $.285 > 0.05$ .

Kesimpulan penelitian ini hanya faktor resiko kurangnya berolahraga/aktifitas fisik memperlihatkan adanya hubungan yang signifikan terhadap kejadian hipertensi. Rekomendasi sangat penting bagi penderita hipertensi maupun yang belum mendapatkan penyakit ini supaya rajin melakukan olahraga/aktifitas fisik minimal 30 menit tiap hari seperti jogging atau jalan cepat dalam menurunkan tekanan darah atau menstabilkan tekanan darah normal.

Kata kunci: faktor resiko, hipertensi primer

## INTRODUCTION

Hypertension or which more knowledgeable as high blood disease represent the disease getting attention from all society circle, considering impact generated by a goodness short-range and also long-range so that require the long-range copingly and inwrought. Hypertension basically lessen the a spark of life of all its patient. That is why another name of hypertension is sneaking murderer or silent killer and somebody newly feel the its serious condition impact when the complication have been happened (Yogiantoro, 2006).

Yogiantoro (2006), expressing in general that somebody has suffer the hypertension if blood pressure systolic / diastolic exceed 140 / 90 mmHg (normal 120 / 80 mmHg). Systolic is when the heart pump the blood into small channel artery (heart become shrink), and diastolic when the heart is expand and return inhale the blood (the artery become empty collapse).

Pursuant to its cause, hypertension can be classified in two part, that is primary hypertension (essential) and hypertension secuder. The exact cause of of primary or essential hypertension is still unknown. But, various factor anticipated by partake the personating of cause of primary hypertension, like increasing old age above 60 year, psychological stress, heredities, consume the abundant calorie, seldom have exercise, the abundant alcohol, abundant fat in blood, ethnic of African-American, consume the abundant caffeine and salt, obesities and smoker. More less 90% hypertension patient pertained by a primary hypertension while 10% it's pertained by hypertension secuder (Ignatavicius & Workman, 2006).

About 80 % increase of hypertension case especially in developing countries from a number of 639 million case in year 2000, approximating become 1,15 billion case in year 2025. This estimate is relied by number of hypertension patient in this time and accretion of resident of moment. The increasing of population of old age hence sum up the patient with the big possibility hypertension also will increase (Armilawaty, Amalia & Amirudin, 2007).

According to the health department in year 2008, hypertension patient in North Sulawesi reach 31,2% and found by two region by prevalence > 40% namely regency of Minahasa and town Tomohon. In the year 2012, according to data of Dinkes Provinsi Sulut ( 2013) hypertension patient [in] North Sulawesi reach 33.968 case, and data of health department of regency Minahasa ( 2013) in the year 2012 hypertension patient in regency Minahasa also experience of the improvement by reach 30.174 case, in old case and also new case with hypertension patient the most found in two clinics West Langowan with the amount reach 3027 case, one of them is in clinicTumaratas.

## MATERIALS AND METHODS

According To The Seventh Report of The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure ( JNC 7) the classification of blood pressure at adult become the normal group, pra-hypertension, hypertension of degree 1 and degree 2 such as those may seen at tables 1 below ( Ignatavicius & Workman, 2006).

Table 1 *Classification of blood pressure*

Classification of blood pressure	Systolic (mmHg)	Diastolic (mmHg)
Normal	<120	<80
Prahypertension	120-139	80-89
Hypertension degree 1	140-159	90-99
Hypertension degree 2	≥160	≥100

Source: Ignatavicius & Workman, 2006

The journey of hypertension Disease is very slow and patient might not show the symptom during have year. This period of latent might cover up the disease growth until the organ having damage. If there are symptoms usually the character is not specific, for example headache or confused. Another symptoms often found are epitasis, easy angry, ear make buzz sounds (tinnitus), feel weight at nape, difficult of sleep, difficulty in breathing, easy get tired, eye have firefly. If unknown hypertension and not taken care can result into death because of heart attack, infarct myocardium, stroke, kidney fail, trouble of eyesight and nerve trouble, but the early detect and treatment can degrade the amount of morbidities and mortalities (Yogiantoro, 2006).

According To Smeltzer, Bare, Hinkle And Cheever (2008), mechanism controlling venous constriction and relaxation located in center vasomotor of medulla oblongata in brain where from this vasomotor start the sympathetic nerve continuing downwards korda spinalis and go out from kolomna medulla to ganglia simpatis in thorax and abdomen, excitement center the vasomotor send in the form of peripatetic impulse downwards through system of nerve sympathies. At this ganglion neuron prebnglion discharge the asetilkolin which stimulate the fiber of nerve of paska ganglion to vein, where by discharging it nerefrineprine result the venous konstiksi.

According To Gray, Dawkins, Morgan & Simpson, ( 2002), mechanism of happening hypertension that is through formed angiotensin II from angiotensin I by angiotensin I- Converting enzyme (ACE). ACE play a part important physiological in arranging blood pressure. Blood contain the angiotensinogen produced by the liver, what is by hormone renin (produced by kidney) will be turned into angiotensin I (inactive dekaeptida). By ACE which is in the lung, angiotensin I turned into by angiotensin II (very active oktapeptida). Angiotensin II have big potency to improve the blood pressure because having the character of as vasoconstrictor

through two band, that is: (a). Improving secretion of hormone antidiuretik (ADH) and feel the thirsty. ADH produced by the hipotalamus (pituitary gland) and work in the kidney to arrange the osmolalitas and volume urine. By increasing the ADH, only a little urine can excretion out of body (antidiuresis) so that urine become high and condensed of osmolalitas. To watery, volume of dilution ekstraseluler will be improved by drawing dilution from shares intraseluler. As a result blood volume increase so that improve the blood pressure. (b). Stimulate the secretion of aldosteron from adrenal cortex. Aldosteron represent the steroid hormone which playing important role at kidney. To arrange the volume of dilution ekstraseluler, aldosteron will lessen the excretion of NaCl (salt) by reabsorpsing from tubules kidney. Increasing the concentration of NaCl will be re-thinned by improving volume of dilution ekstraseluler which in turn will improve the volume and pressure.

The Research design use cross sectional, that is a research learning risk factor by using retrospective or there is relation with a period of the past. The research started by identifying group incurred an effect / certain disease, then identify the risk factor during the past so that explain why case incurred by an effect / disease in this time. This research will know whether/what risk factor really influencing the happening of case in research (Satori, Djam'An & Komariah, 2009). Chi Square used in testing relation or influence of two nominal variable and measure its strength relation between variable with another nominal variable.

Subject of this research that is resident of countryside of Atep Oki which old age more than 18 year, blood pressure more than 120 / 80 mg / dl and non patient of hypertension sekunder who having venous disparity of kidney, gland trouble (hipertiroid), adrenal scrofula (hiperaldosteronisme), pregnant woman, suffering cancer / tumor and also not ready to become the responder. The total respondent is 46 people. Period of Gathering sample during month of June-July 2015.

Instrument used in this research is sphygmanometer, stethoscope, stationery write, questionnaire and informed consent (permission sheet). Questionnaire divide into 6 question which is answer by yes or no and a lot of or a few/little. This questionnaire is adaptation from research done by Langingi, 2013.

In course of data collecting is done with the the following steps: (1) Knowing exactly that participant have the disease of primary hypertension. (2) Advising purposes and objectives of research to participant. (3) has sign the informed consent when ready to become the respondent. (4) Doing interview and admission filling questioner. (5) Thank Utterance to respondent. (6) Tabulation and data processing.

## RESULTS

### A. Demographic data

**Table 1 Respondent genetic data**

**Genetik \* Hipertension Crosstabulation**

		Hipertension		Total	
		Normal	Hipertensi on		
Genetic	Yes	Count	6	18	24
		% of Total	13.0%	39.1%	52.2%
No		Count	8	14	22
		% of Total	17.4%	30.4%	47.8%
Total		Count	14	32	46
		% of Total	30.4%	69.6%	100.0%

Tables 1 showing data with total genetic respondent 46 people, there are 24 people or 52.2% genetic and 22 people or 47.8% not genetic.

**Table 2 Age respondent data**

**Age \* Hipertension Crosstabulation**

		Hipertensi		Total	
		Normal	Hipertensi on		
Age	25 - 44 years	Count	9	14	23
		% of Total	19.6%	30.4%	50.0%
45 - 64 years		Count	3	14	17
		% of Total	6.5%	30.4%	37.0%
65 - 84 years		Count	2	4	6
		% of Total	4.3%	8.7%	13.0%
Total		Count	14	32	46
		% of Total	30.4%	69.6%	100.0%

Table 2 showing data based on age total respondent 46 people. Age between 25-44 year there are 23 people (50%) where 14 people (30.4%) having hypertension and 9 people (19.6%) there is no hypertension. Age between 45-64 year there are 17 people (37%) where 14 people (30.4%) there is hypertension and 3 people (6.5%) there is no hypertension. Age between 65-84 year there are 6 people (13%) where 4 people (8.7%) there is hypertension and 2 people (4.3%) there is no hypertension.

**Table 3 Smoker's respondent data**
**Smoke \* Hipertension Crosstabulation**

		Hipertensi		Total	
		Normal	Hipertensi on		
Smoking	1 - 4 stick/day	Count	3	5	8
		% of Total	6.5%	10.9%	17.4%
	>= 5 stick/day	Count	2	5	7
		% of Total	4.3%	10.9%	15.2%
	Stop smoke	Count	1	6	7
		% of Total	2.2%	13.0%	15.2%
Not smoke		Count	8	16	24
		% of Total	17.4%	34.8%	52.2%
Total		Count	14	32	46
		% of Total	30.4%	69.6%	100.0%

Table 3 showing data of respondent which have smoked and which have never smoked with totally 46 people. Respondent which have smoked divisible in three shares that is 1-4 stick / day there are 8 people (17.4%), more than 5 stick / day there are 7 people (15.2%), and desist 7 people (15.2%). Respondent which have never smoked there are 24 people (52.2%).

**Table 4 Alcohol consumption respondent data**
**Alcohol \* Hipertension Crosstabulation**

		Hipertension		Total	
		Normal	Hipertensi on		
Alcohol	1 ons	Count	0	5	5
		% of Total	0.0%	10.9%	10.9%
	> 1 ons	Count	0	3	3
		% of Total	0.0%	6.5%	6.5%
	Already stop	Count	5	8	13
		% of Total	10.9%	17.4%	28.3%
Neverconsume		Count	9	16	25
		% of Total	19.6%	34.8%	54.3%
Total		Count	14	32	46
		% of Total	30.4%	69.6%	100.0%

Table 4 showing based on respondent which have consumed the alcohol and which have never consumed the alcohol with totally 46 people. Respondent which have consumed the

alcohol divisible in three shares that is 1 ons / day there are 5 people (10.9%), more than 1 ounce / day there are 3 people (6.5%), and desist 13 people ( 28.3%). Respondent which have never consumed the alcohol there are 25 people (54.3%).

**Table 5 Physical Activity /exercise respondent data**

**Exercise \* Hipertension Crosstabulation**

		Hipertension		Total
		Normal	Hipertension	
30 minute/day	Count	5	2	7
	% of Total	10.9%	4.3%	15.2%
3 x a week	Count	0	2	2
	% of Total	0.0%	4.3%	4.3%
Erratic	Count	8	19	27
	% of Total	17.4%	41.3%	58.7%
Never exercise	Count	1	9	10
	% of Total	2.2%	19.6%	21.7%
Total	Count	14	32	46
	% of Total	30.4%	69.6%	100.0%

Table 5 showing data based on respondent doing exercise and which have never done the athletics / physical activity with totally 46 people. Respondent doing athletics / physical activity divisible in three shares that is 30 minute / day there are 7 people (15.2%), 3 x a week there are 2 people (4.3%), and which uncertain there are 27 people (58.7%). Respondent which have never done the athletics / physical activity there are 10 people (21.7%).

**Table 6 High fat saturated food respondent data**



**Fat consumption \* Hipertension Crosstabulation**

		Hipertension		Total	
		Normal	Hipertensi on		
Fatconsumption	Often	Count	4	10	14
		% of Total	8.7%	21.7%	30.4%
Moderate		Count	10	22	32
		% of Total	21.7%	47.8%	69.6%
Total		Count	14	32	46
		% of Total	30.4%	69.6%	100.0%

Table 6 showing data based to respondent consuming saturated fat with totally 46 people. Respondent consuming saturated fat often there are 14 people (30.4%) and consuming saturated fat there are 32 people (69.6%).

**Table 7 Salt consumption respondent data**

**Salt \* Hipertensi Crosstabulation**

		Hipertension		Total	
		Normal	Hipertensi on		
Salt	< 1 teaspoon/day	Count	11	20	31
		% of Total	23.9%	43.5%	67.4%
> 1 teaspoon		Count	3	12	15
		% of Total	6.5%	26.1%	32.6%
Total		Count	14	32	46
		% of Total	30.4%	69.6%	100.0%

Table 7 showing respondent data consuming salt totally 46 people. Respondent consuming salt less than 1 teaspoon / day there are 31 people (67.4%) and consuming salt more than 1 teaspoon / day there are 15 people (32.6%).

**TEST RESULT BASED ON STATEMENT OF THE PROBLEM**

**Table 8 Analyse the relation between risk factor of genetic with the primary hypertension Chi-Square Tests**



	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.700 <sup>a</sup>	1	.403	.525	.303
Continuity Correction <sup>b</sup>	.266	1	.606		
Likelihood Ratio	.701	1	.402		
Fisher's Exact Test					
Linear-by-Linear Association	.685	1	.408		
N of Valid Cases	46				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.70.

b. Computed only for a 2x2 table

Table 8 explaining that there is no significant relation between factor of risk genetic with the primary hypertension with the significant value  $.403 > 0.05$ , thereby  $H_0$ : there is no significant relation between factor of risk genetic with the primary hypertension, accepted.

**Tabel 9 Analyse the relation between risk factor of age with the primary hypertension**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.158 <sup>a</sup>	2	.340
Likelihood Ratio	2.263	2	.323
Linear-by-Linear Association	.678	1	.410
N of Valid Cases	46		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.83.

Table 9 explaining that there is no significant relation between risk factor of age with the primary hypertension with the significant value  $.340 > 0.05$ .

**Tabel 10 Analyse the relation between risk factor of smoker with the primary hypertension**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.158 <sup>a</sup>	3	.763

Likelihood Ratio	1.279	3	.734
Linear-by-Linear Association	.007	1	.934
N of Valid Cases	46		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is 2.13.

Table 10 explaining that there is no significant relation between risk factor of smoker with the primary hypertension with the significant value  $.763 > 0.05$ .

**Tabel 11 Analyse the relation between risk factor of alcohol consumption with the primary hypertension**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.261 <sup>a</sup>	3	.235
Likelihood Ratio	6.540	3	.088
Linear-by-Linear Association	2.945	1	.086
N of Valid Cases	46		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .91.

Table 11 explaining that there is no relation between risk factor of alcohol consumption with the primary hypertension with the significant value  $.235 > 0.05$ .

**Tabel 12 Analyse the relation between risk factor of exercise / physical activity with the primary hypertension**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.412 <sup>a</sup>	3	.038
Likelihood Ratio	8.841	3	.031
Linear-by-Linear Association	6.064	1	.014
N of Valid Cases	46		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .61.

Table 12 explaining that there is relation between risk factor of exercise / physical activity with the primary hypertension with the significant value.038 < 0.05.

**Tabel 13 Analyse the relation between risk factor of high fat saturated consumption with the primary hypertension**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.033 <sup>a</sup>	1	.856	1.000	.573
Continuity Correction <sup>b</sup>	.000	1	1.000		
Likelihood Ratio	.033	1	.855		
Fisher's Exact Test					
Linear-by-Linear Association	.032	1	.857		
N of Valid Cases	46				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.26.

b. Computed only for a 2x2 table

Table 13 explaining that there is no relation between risk factor of high fat saturated consumption with the primary hypertension with the significant value.856 > 0.05.

**Tabel 14 Analyse the relation between risk factor of salt consumption with the primary hypertension**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.145 <sup>a</sup>	1	.285	.331	.236
Continuity Correction <sup>b</sup>	.530	1	.467		
Likelihood Ratio	1.198	1	.274		
Fisher's Exact Test					
Linear-by-Linear Association	1.120	1	.290		
N of Valid Cases	46				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.57.

b. Computed only for a 2x2 table

Table 14 explaining that there is no relation between risk factor of salt consumption with the primary hypertension with the significant value .285 > 0.05.

## DISCUSSION

There is no relation between risk factor of genetic with the primary hypertension, leaving for back with the article from Wade, Hwheir & Cameron, ( 2003) expressing there is relation of factor genetic certain family will cause that family have the risk suffer the hypertension. This matter relate to the make-up of rate of sodium intracellular and lower the ratio between potassium to sodium. Individual which its parent has hypertension have the risk twice the big to suffer the hypertension from one who don't have the family with the hypertension history.

There is no relation between factor of age risk with the primary hypertension, disagree with article of Gray, et al. (2002) the excelsior old age somebody hence the blood pressure. this is because a downhill venous wall elasticity progressively by increasing old age. Mostly hypertension became by the age more than 65 year. Before age 55 year blood pressure of man more higher than woman. After old age 65 blood pressure is higher at woman than man. That is why, hypertension risk increase progressively by old age.

There is no relation between risk factor alcohol consumption with the primary hypertension, disagree with the article of Bustan (2007) expressing that alcohol consumption as one of factor owning relation with the blood pressure. The more of alcohol is drinking, hence excelsior also blood pressure. Drink three glass or more grog everyday can improve the risk suffer the hypertension twice. Komaling, Suba and Wongkar, ( 2013) writing down that alcohol can improve the blood acidity so that become thick and heart will force to work stronger so that blood enough to network.

There is relation between risk factor of lack of have exercise / physical activity with the primary hypertension, as according to the theory expressing that exercise can assist to control the body weight. Aerobic is enough like 30 - 45 minute crack on every day assist to degrade the blood pressure directly. Exercise regularly can degrade the blood pressure at all of group, good for hypertension and also normotensi (Gray, et al. 2002).

There is no relation between risk factor consume the saturated fat with the primary hypertension, disagree with article of Yogiantoro ( 2006), expressing that the increasing of triglyceride or cholesterol will improve the hypertension risk. In the situation high cholesterol rate, blood viscosity will increase and fluency blood stream will be downhill because to the number of cholesterol hoard in blood so that this condition will improve blood pressure.

There is no relation between risk factor consume the salt with the primary hypertension, disagree with article of Yogiantoro (2006), that consumption of excessive natrium or salt may cause the concentration natrium in normal dilution extracellular increase. To dilute it the intracellular fluid drawing out, so that volume of extracellular fluid will increase. The increasing of the extracellular fluid volume cause the increasing of blood volume, so that affect to incidence of hypertension.

## CONCLUSIONS

Result of research in earning to 46 responder at countryside of Atepe Oki, Subdistrict of Lembean East, Regency Minahasa, showing there is no significant relation of the happening of hypertension when seen from risk factor of genetic, age, smoker, alcohol, high food saturated fat and consume the salt redundantly by hence statistical test of chi-square. Risk factor of lacking exercise / physical activity show the relation to hypertension occurrence.

Very recommendation is necessary for hypertension patient and also which not yet got this disease to diligent do the exercise at least 30 minute every day like jogging or walking quickly in degrading blood pressure or stabilize the normal blood pressure. Research in hereinafter recommended can see the hypertension occurrence at vegetarian clan or not eat the flesh with the more of respondent amount, or at group Adventist and non Adventist.

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