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Analysis of Factors Related to the Risk of Hypertension Events at Royal Prima Medan Hospital in 2021

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Abstract: *Hypertension is estimated to be the cause of death of 7.1 million people worldwide or about 13% of the total death. The purpose of the study is to find out the analysis of factors related to the risk of hypertension events. This type of quantitative research is a non-experimental descriptive approach. The study was conducted at Royal Prima Hospital, April-June 2021. The study population of all inpatients/street, Structural Equation Modelling (SEM) sampling technique sample numbered 200 people. Instrument research tension meter, stethoscope, digital scales, meter, and questionnaire. Bivariate (Chi-square) and multivariate (multiple logistic regression) analysis, 0.05 degree of confidence. The results of statistical tests using Chi-Square, the majority of respondents aged 56-65 years 124 people (62%), p-value 0,000, the majority of female respondents are 141 people (72%), p-value 0,000, the majority of respondents have a history of hypertension in the family of 161 people (81%), p-value 0,006, the majority of respondents do not smoke 146 people (73%), p-value 0,044, the majority of respondents dietary patterns rarely consume fat by 156 people (78%), p-value 0.026, the majority of respondents did not consume alcohol 171 people (86%), p- value 0.016, these variables had a meaningful relationship with p-value < 0.05. While the majority of obese respondents amounted to 138 people with a percentage (69%), had no association with p-value 0.117 (>0.05). In the results of multivariate analysis, the most dominant factor determining the incidence of hypertension is the sex variable, p-value (0.000) < 0.05, or value 21,200, meaning that the sex has a 21,200 chance of developing hypertension. Conclusions of research variables age, gender, family history, smoking, diet, alcohol consumption have an association with the incidence of hypertension, the most dominant factor is gender. It is expected that all communities can still maintain a healthy lifestyle, to avoid various diseases, especially non-communicable diseases.*
Keywords: *hypertension; royal prima; gender*

I. Introduction

Hypertension is a degenerative disease that is a serious problem today. According to Sangy (2020) Hypertension is one of the most common and prevalent diseases in the world today. Hypertension is categorized as the silent disease or the silent killer because the patient does not know he has hypertension before checking his blood pressure. Hypertension is estimated to be the cause of death of 7.1 million people worldwide or about 13% of the total deaths (Pudiastuti, 2017). Hypertension (15.3%) is the second leading cause of death for non-communicable diseases, most after stroke (26.9%). The number of hypertension in Indonesia is quite high, which is 15% of the 230 million people affected by hypertension (Yekti & Ariwulandari, 2017). The prevalence of hypertension in North Sumatra in 2016 was 0.49% of cases, in 2017 recorded as many as 0.55% of cases, and in 2018 recorded as many as 0.53% of cases of hypertension, followed by non-communicable diseases such as heart disease 0.30% of cases, diabetes mellitus 0.28% of cases (Dinkes Sumut, 2019). Some of the factors that affect the occurrence of hypertension

are divided into two large groups, namely factors that cannot be changed such as gender, age, family history, obesity, and factors that can be changed such as diet and smoking (Suiraoka, 2012). The results of a preliminary survey conducted by researchers at Royal Prima Hospital found that there was an increase in the number of people with hypertension, especially in elderly patients. The formulation of the problem in this study is the analysis of factors related to the risk of hypertension events at Royal Prima Medan Hospital in 2021. The purpose of this study is to find out the analysis of factors related to the risk of hypertension incidence at Royal Prima Medan Hospital in 2021.

II. Research Methods

This type of research is non-experimental quantitative research with a descriptive approach (cross-sectional survey) and associative analysis. According to (Sugiyono, 2017), quantitative research methods can be interpreted as research methods based on the philosophy of positivism, to test established hypotheses. The study was conducted in April-June 2021. The population of this study is all inpatients/streets, who use BPJS Health services, especially in a poly disease in Royal Prima Medan Hospital. Samples in the study used the formula Structural Equation Modelling (SEM), with the technique of non-probability sampling methods. Based on the minimum number of samples to be taken in this study advice from Hair et al in (Sahirul Alim, 2018), the number of samples in the SEM analysis is 100-200, then the number of samples taken in this study determined 200 people. Instrument research using the tension of mercury meters, stethoscopes, digital scales, meters, and questionnaires based on Google form, which is an input / displayed in android tablet gadgets, respondents directly fill out informed consent and questionnaires in the tool. Data analysis uses bivariate (Chi-square) and multivariate (multiple logistic regression, with a degree of confidence of 0.05.

III. Discussion

Table 1. Results of Analysis of Factors Related to the Risk of Hypertension Events with Chi-Square at Royal Prima Hospital in 2021

Research Variables	**Category**	**Sum**	**%**	***df***	***Asymptotic Significance (2-sided)***
Age	50-65 years	124	62%	1	0.000
	>65 years	76	38%		
Gender	Woman	141	71%	1	0.000
	Man	59	30%		
Family History	Exist	161	81%	1	0.006
	None	39	20%		
Smoke	Yes	54	27%	1	0.044
	No	146	73%		
Diet	Infrequently	156	78%	1	0.026
	Often	30	15%		
Obesity	Yes	138	69%	1	0.117
	No	48	24%		

Alcohol Consumption	Yes	29	15%	1	0.016
	No	171	86%		
Hypertension	Yes	160	80%	1	0.062
	No	40	20%		

Based on table 4.1 above that the status of the incidence of hypertension among the majority of the age of 56-65 years is 124 people with a percentage (62%) and greater than the age category of ≥65 years. The results of statistical tests using Chi-Square obtained a value of P-value = 0.000 (p < (0.05) then it can be said there is a meaningful or significant association of age factors with the incidence of hypertension. The results of this study, following the results of the study (Savoia & Schiffrin, 2013) age is a strong risk factor that cannot be modified against the incidence of hypertension. Hypertension can occur at any age but is most commonly encountered at age 35 years or older. In the under-40 age group, the rate of hypertension prevent found in the generally still below 10% but over the age of 50 years reached > 20%. Research (Sugiantoro, 2017), (Miftahul, 2019), (Lai et al., 2015), (Díaz A, Pascaner A, Wray S, n.d.), states age is the highest risk of its effect on the incidence of hypertension, in general, the prevalence of hypertension increases by 50% after the age of 69 years.

The incidence status of hypertension with the female sex amounted to 141 people with a percentage (62%) and greater than the female gender category. The results of statistical tests using Chi-Square obtained a value of P-value = 0.000 (p <(0.05) then it can be said that there is a meaningful or significant association of sex factors with the incidence of hypertension. The results of the study are in line with research conducted (Sari & Susanti, 2016), regarding the relationship of sex with the incidence of hypertension in patients who seek treatment in Adult Polyclinics Bangkinang Health Center obtained the result that women suffer more from hypertension compared to men which are 51% to 49%. Research (Wahyuni & Eksanoto, 2013), also said that women will experience an increased risk of hypertension after menopause, which is over the age of 45 years. Research conducted by (Brahmbhatt et al., 2019), states women tend to suffer from hypertension than men. Women who have gone through menopause have low levels of estrogen, decreased estrogen levels will also be followed by a decrease in HDL levels if not followed by a good lifestyle as well. Because low HDL and high LDL will affect the occurrence of atherosclerosis so that blood pressure will be high. The results of this study are not in line with the study (Hermasyan, 2018), Cortas, *et. al* in (Kusumawaty et al., 2016), (Wang et al., 2004), by stating that the prevalence of hypertension is more or less different between male and female sexes. Researchers concluded that sex factors with the incidence of hypertension have a meaningful relationship because even though gender only signifies a different form of sex a person. However, the condition of human organs that are different in the anatomical system with a person's record for hypertension, strengthened by the results of research (Wahyuni & Eksanoto, 2013), states that women will experience an increased risk of hypertension after menopause, namely over the age of 45 years.

The incidence status of hypertension with a family history of 161 people with a percentage (81%) and greater than the category of no family history. The results of statistical tests using Chi-Square obtained a value of P-value = 0.006 (p <(0.05) then it can be said that there is a meaningful or significant association of family history factors with the incidence of hypertension. This study is in line with (Taslima & Husna, 2017), who said individuals with a history of elderly hypertension have twice the risk of suffering from hypertension than people who do not have a family history of hypertension. If one of the

elderly has hypertension then throughout our lives we have a 25% chance of getting it anyway. If both of our parents have hypertension, our chances of getting the disease are 60%. This study is in line with previous research showing that family history is a risk factor for the incidence of hypertension (Abdulsalam et al., 2014).

Researchers concluded that family history factors with the incidence of hypertension have a meaningful relationship because in general, everyone or humans have hereditary traits in every genetic of parents. Based on the results of bivariate analysis of dietary factors with the incidence of hypertension obtained a value of p = 0.026 which means that the results are obtained there is a meaningful relationship, a diet with the incidence of hypertension. The habit of consuming saturated fat is closely related to weight gain whose risk of hypertension occurs. In theory, fat is needed by the body as a protective and building substance. However, if excessive consumption will increase the occurrence of plaque in the blood vessels, which will further lead to hypertension (Windyasari et al., 2016). Ramayulis said the wrong diet can lead to an increase in blood pressure such as the habit of consuming fatty foods, especially in the intake of saturated fat and cholesterol (Ramayulis, 2010). Researchers concluded that dietary factors with the incidence of hypertension are related because there is habit of consuming saturated fat is closely related to weight gain that risks hypertension. Consumption of saturated fat with an increased risk of atherosclerosis is associated with an increase in blood pressure. TTD and high LDL levels are factors that cause a stroke. Hypertension is one of the main risk factors for all types of stroke whether it's a bleeding stroke or an infarction stroke (Adhiany, 2020). Of all the above risk factors, hypertension is the most common modifiable risk factor for stroke (Syahrul, 2020).

The incidence status of hypertension by not having a smoking habit amounted to 146 people with a percentage (73%) and greater than the category of smoking habits. The results of statistical tests using Chi-Square obtained a value of P-value = 0.044 (p < (0.05) then it can be said that there is a meaningful or significant association of smoking habits with the incidence of hypertension. From the results of the study (Bowman et al., 2007), (Dochi et al., 2009), rotini which is the main metabolite of nicotine also plays a role in lowering blood pressure, people who smoke more than 15 cigarettes/day have a greater risk of the occurrence of hypertension. Researchers concluded that smoking factors with the incidence of hypertension are related because the levels of nicotine or toxin substances in cigarettes will cause damage to the vascular endothelium which is the risk of hypertension and cardiovascular disease.

The incidence status of hypertension with obesity amounted to 138 people with a percentage (69%) and greater than the non-obese category. The results of statistical tests using Chi-Square obtained a value of P-value = 0.117 (p > (0.05) then it can be said that there is no meaningful or significant association of smoking habits with the incidence of hypertension. This study is not in line with Rohaendi's research (2008) dalam (Hasbullah et al., 2017). The results of this study are not in line with Rohkuswara, at Posbindu PTM KKP Bandung in 2016, showing a meaningful relationship where respondents who have an obese weight (BMI e"25) are at risk 2,008 times (CI 95%: 1,261-3,198), to suffer from hypertension degree 1 compared to non-obese respondent (Rohkuswara & Syarif, 2017). In obesity, peripheral resistance is reduced while sympathetic nerves rise with low plasma renin activity. The greater the body mass, the more blood is needed to supply oxygen and food to the body's tissues. Obesity is associated with increased volume and cardiac output. Heart pump power and blood circulation of people with hypertension are higher compared to people with hypertension with normal weight (Widyanto F. C dan Triwibowo C, 2013). Researchers concluded that obesity factors have no association with the incidence of

hypertension because obesity is very closely related to a person's uncontrolled diet and regulated (diet) is high in calories, and hormonal imbalance (insulin resistance or hyperinsulinemia and sodium retention or natriuresis). However, it is not closed the possibility that insulin resistance for a long period will be able to cause complications of hypertension.

The incidence status of hypertension with non-alcohol consumption amounted to 171 people with a percentage (86%) and greater than the category of alcohol consumption. The results of statistical tests using Chi-Square obtained a value of P-value = 0.016 (p < (0.05) then it can be said that there is a meaningful orsignificant association of alcohol consumption with the incidence of hypertension. This study is in line with (Antara et al., 2018), stating a meaningful association of alcohol consumption with the incidence of hypertension. Alcohol consumption can result in increased cortisol levels, and an increase in red blood cell volume and blood viscosity plays a role in raising blood pressure. Alcohol is also thought to have a direct pressure effect on blood vessels, because alcohol inhibits sodium and potassium, resulting in an increase in intracellular sodium and inhibiting the exchange of sodium and cellular calcium that will facilitate muscle cell contraction. Blood vessel muscles will become more sensitive to pressure substances such as angiotensin and catecholamines. Researchers concluded that the factor of alcohol consumption with the incidence of hypertension is related because in general alcoholic beverages can increase cortisol levels in humans. Researchers compared the results of people who consumed alcohol from the age of 15 years to the age of 55 years did not experience an increase in high blood pressure compared to someone who experienced complications of the disease and consumed alcohol, from the age of 45 years to 55 years has experienced complications in following hypertension, heart, liver, and lungs with a very low life expectancy.

Table 2. Results of Multivariate Analysis of Factors Related to the Risk of Hypertensive Events with Double Logistic Regression at Royal Prima Hospital in 2021

Variable	B	S.E.	*Wald*	*df*	*Sig.*	*Exp(B)*
Age	1,977	0,479	17,039	1	0,000	7,224
Gender	2,062	0,448	21,200	1	0,000	7,861
Smoke	2,235	1,083	4,258	1	0,039	9,342

Multivariate analysis results obtained age variables (0.000), gender (0.000),smoking (0.039) has a p-value of < 0.05. It can be concluded that variable x whichis suspected to be the most dominant factor or determine the incidence of hypertension in Royal Prima Hospital is the sex variable, with a p-value (0.000) <0.05. The largest OR score obtained is 21,200, meaning that the gender of respondents has a 21,200-time chance of developing hypertension. The results of this study are not in line with puspita and putro research (2019)**,** where the results of the study stated that the sex of the sex has a relationship with the occurrence of hypertension in the male sex by 4,375 times compared to women.

IV. Conclusion

The relationship of age factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p-value of 0.000 (p < (0.05); The relationship of sex factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p-value of

0.000 (p < (0.05); The relationship of family history factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p- value of 0.006 (p < (0.05); The relationship of dietary factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p-value of 0.026 (p < (0.05); The relationship of smoking factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p-value of 0.044 (p < (0.05); There is no association of obesity factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p-value of 0.117(p < (0.05); The relationship of alcohol consumption factors to the incidence of hypertension in Royal Prima Hospital in 2021, with a large p-value of 0.016 (p < (0.05); Of the multivariate anaisis, the factor that most determines the incidence of hypertension at Royal Prima Medan Hospital in 2021 is the sex variable, with a p-value (0.000) (p < 0.05). The OR value of 21,200, meaning that the gender of respondents has a 21,200-time chance of developing hypertension.

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