

## Analysis of Hypertension Risk Behavior

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### Abstract

Hypertension is not only experienced in old age but in the last decade shows data on hypertension experienced by adults and even adolescents. The risk factors for hypertension do not result in the incidence of hypertension in a fast period, but a long/latent, so adolescents who behave at risk of hypertension are feared to contribute to increasing the incidence of hypertension in the young adult and old adult age groups. The purpose of this study is to identify and analyze risky behaviors in adolescents. The method used in this study is a quantitative design with a cross-sectional design. The sample of this study was late adolescence. The results showed that adolescents who consumed salt more than 1 tablespoon per day 81.2%, often smoked 80.1%, ate fatty 59.2%, never physical activity 70.2%, never consumed vegetables 48.9%, consumed junkfood 80.1%, and had a history of hypertension 33.3%. Conclusion of 7 variables as risky behavior 3 measurable variables is often carried out by adolescents, namely smoking, not doing physical activity, and never consuming vegetables. Health promotion of hypertension prevention needs to be instilled early so that adolescent's behavior has good hypertension prevention behavior

**Keywords:** Hypertension; Adolescent; behavior.

### Introduction

Hypertension has become a health problem in recent years. This happens because there has been an epidemiological transition where what used to be dominated by infectious diseases now has changed towards non-communicable diseases. One of the non-communicable diseases that is still a serious problem in Indonesia is hypertension which has the name silent killer (WHO, 2021).

In the past, hypertension was a health problem that only occurred at an advanced age. But now there has been a shift where hypertension also occurs in adolescents. Hypertension can appear as early as adolescence and has a steadily increasing prevalence. Adolescents who experience hypertension can continue into adulthood and the elderly and can increase the rate of pain and death (Kurnianingtyas et al., 2017). Based on the results of a meta-analysis, hypertension is 5.5% in children and adolescents in Africa. In India, the prevalence is 7.6%. These data indicate that adolescents are at risk for developing hypertension as adults (Noubiap et al., 2017 & Daniel et al., 2020). According to WHO (2021), about 1 in 5 adults (21%) with hypertension. According to Riskesdas (2018), the prevalence of hypertension in Indonesia is around 34.1%. The prevalence of hypertension at the age of 18-24 years is 13.2%.

Hypertension ranks 2nd out of the 10 most diseases in outpatients in Indonesia (Triyanto, 2014).

Hypertension is a condition where a person has high blood pressure. Hypertension that often occurs in adolescents is asymptomatic and is widely detected only during routine examinations. This causes hypertension in adolescents, often called essential hypertension because the cause cannot be known for sure (Saing, 2005). In adolescence, routine examinations are often not carried out, which increases the risk of morbidity in adulthood if not treated early.

Hypertension is a serious health problem because it can cause an increased risk of heart disease, stroke, and death. Some of the risk factors associated with the incidence of hypertension are a family history of hypertension, obesity, sleep quality, smoking habits, high salt consumption, alcohol consumption, and physical activity (Shaumi & Achmad, 2019; Dharnidharka, 2015; Nuraini, 2015).

This article aims to see the overview, identify, and analyze hypertension-risk behaviors in adolescents as mentioned above hypertension in adolescents has several more risk factors for poor life behaviors.

### Methods

This research This study used a quantitative design



with a cross-sectional design, population of this research is students of university which are the late adolescent, sample are conducted by accidental sampling, the total sample was 282 late adolescents, aged 17-21 years. This research was conducted in West Aceh Regency at one of the universities with various existing study programs. This study used the accidental sampling method. Primary data collection is in the form of data on respondents' characteristics consisting of gender, and status of residence. Independent variables consist of salt consumption, smoking, consumption of nutritious foods, fatty foods, and vegetable consumption about the frequency consumption, physical activity, and a hereditary history of hypertension. Pary data is processed descriptively and analytically using SPSS programme.

## Results

Based on the results of the univariate analysis, the results of the frequency of characteristics and risky behaviors of hypertension of respondents were obtained. The following is the frequency distribution of characteristics and risky behaviors of responsive hypertension shown in table 1.

**Table 1.** Frequency Distribution of Characteristics and Risky Behaviors of Hypertension Respondents

Characteristic	Category	Percentage (%)
Sex	Male	21,3
	Female	78,7
Status of Residence	With Parent	34,4
	Boarding House	65,6
Salt Consumption	Often	81,2
	Sometimes	18,8
Smoking	Yes	80,1
	No	19,9
Fatty Eating	Yes	59,2
	No	40,8
Physical Activity	Yes	29,8
	Never	70,2
Vegetable Consumption	Yes	51,1
	Never	48,9
Junk food Consumption	Often	80,1
	Never	19,9
Hypertension Hereditary	Yes	33,3
	No	66,7

Source: *Primary Data, 2021*

Based on table 1 shows that the gender of female respondents is more than that of men, which is 78.7%. More teenagers live in boarding houses, which is 65.6% compared to living with their parents, which is 34.4%. The risk behavior of adolescent hypertension in consuming more than 1 tablespoon of salt per day is as much as 81.2%. Adolescents smoked by 80.1%. The behavior of adolescents in the consumption of fatty foods amounted to 59.2%. Adolescents who did not engage in physical activity by 70.2%. Teenagers never consume vegetables 48.9%. Adolescents often consume junkfood 80.1% and adolescents who have a history of family hypertension 33.3%.

## Discussion

### Salt Consumption

Hypertension is one of the first causes of death where globally hypertension contributes to more than 40% of deaths related to heart disease worldwide. About nearly 70% of those deaths occur in low- and middle-income countries. The results showed that about 81.2% of adolescents consume more than 1 tablespoon of salt per day. Unhealthy food consumption patterns such as too much salt consumption, excess carbohydrates, and fast food can be trigger factors for obesity where obesity is one of the risk factors for hypertension (Tarigan et al., 2018; Kayuningtyas & Ismayani, 2020).

Based on the research of Feng et al. (2012) there is a relationship between salt intake and blood pressure. The results of other studies also show the same thing, namely that salt consumption has a risk of increasing blood pressure. (Feng et al., 2012; Siregar & Elida, 2020). Consuming too much salt (sodium) in food can cause fluid resistance and cause arteries to narrow can increase blood pressure. In developing countries, sodium intake usually comes from additions during cooking or when eating at the table, for example from soy sauce (Ewald & Haldeman, 2016).

An increase in sodium intake of 1 gram per day can increase the risk of prehypertension and hypertension in adolescents with overweight/obesity conditions compared to adolescents with normal body weight. Sodium intake is independently associated with the prevalence of high blood pressure (Ewald & Haldeman, 2016). WHO recommends that a decrease in the world's average salt intake from 10 g/day to <5 g/day (just under a teaspoon) may lower the risk of cardiovascular disease, stroke, heart attack, and death (WHO, 2012; WHO, 2020).

Excessive salt consumption as a risk factor for hypertension has a latent impact on adolescents when entering young and old adulthood, especially adolescent girls will be at risk of pregnancy hypertension and are at risk of childbirth which risks even impacting the health of the fetus (Siregar & Elida, 2020).

### Smoking

The results showed that about 80.1% of adolescents smoked. Research by Lusno et al. (2020) also showed that about 61.8% of respondents smoked. The results showed that smoking at a young age is riskier. In addition, it can also be seen from the factors of smoking for a long time and the type of cigarette used. There is a relationship between smoking with hypertension as a modifiable factor. Smokers have a 3.1 times greater risk of developing hypertension than



non-smokers. Research by Gouju Li et al. (2017) says about 53.93% of respondents smoke. This shows that more respondents in the study had smoking behaviors.

Younger people with hypertension have a family history of hypertension of 73%, of which most are current or previous smokers (Sari et al., 2022). Based on research adolescents who smoke today have a link to increased hypertension. current smokers had higher odds of hypertension (OR = 1.15; 95% CI: 1.04–1.25) (Magid et al., 2022). Smoking makes blood pressure rise by stimulating the sympathetic nervous system. When a person smokes, the active substance interleukin 6 causes oxidative stress. Such oxidative stress will trigger several reactions in the body such as insulin resistance. This causes reduced bioavailability which triggers an increase in blood pressure (Elisabeth et al., 2017).

### **Fatty Eating**

The results showed that about 59.2% of adolescents consume fatty foods. High fat consumption is significantly associated with an increased risk of hypertension (Lu Wang et al., 2012; Bingrong Li et al., 2016). Higher intake of saturated Fatty Acids, monounsaturated Fatty Acids, and trans-Fatty Acids were each associated with an increased risk of hypertension (Lu Wang et al., 2010). Consumption of excess fat foods can cause a higher percentage of visceral fat, thereby increasing the risk of central obesity where there is an increase in body fat. Excess visceral fat is often associated with hypertension. The increase in visceral fat occurs due to the high consumption of fat from fatty foods (Lubis et al., 2021).

Fats in the diet are an important risk factor for the incidence of hypertension but are modifiable risk factors. The right intervention is to reduce total fat intake which can effectively lower systolic and diastolic blood pressure (Lu Wang et al., 2010).

### **Physical Activity**

Another risk factor for hypertension from the results of the study is physical activity. Adolescents never engage in physical activity is 70.2%. Following some research results say that low physical activity is a risk factor for hypertension. Decreased physical activity and an increasingly sedentary lifestyle may increase the risk of hypertension (Farabi et al., 2015; Ewald and Haldeman, 2016; Princewel et al., 2019; Kayuningtyas & Ismayani, 2020).

Most of the people who have hypertension are sedentary people. Based on research shows that around 57.3% of children in Indonesia are not active in carrying out activities. The obesity prevention

guidelines explain that physical activity should be done 3-4 hours a week. Exercise can increase blood flow through the body's arteries causing the release of natural hormones and cytokinins that can relax blood vessels thereby lowering blood pressure (Princewel et al., 2019).

### **Vegetable Consumption**

According to the results of the study, adolescents never consume vegetables about 48.9%. Other studies showed an inverse relationship between fruit and vegetable consumption and the risk of hypertension in research in Asia (Lu Wang et al., 2012; Bingrong Li et al., 2016). There is a significant association between fruits and vegetables with the risk of hypertension. Where these results support the recommendation that increased consumption of fruits and vegetables can prevent the risk of hypertension (Kamilia & Pintaningrum, 2022).

Fruits and vegetables contain fiber, high in potassium, magnesium, vitamin C, folic acid, flavonoids, and carotenoids that can lower blood pressure through improved endothelial function, modulating baroreflex sensitivity, causing vasodilation and increased antioxidant activity. Antioxidants can inhibit blood cell clots, and stimulate the production of nitric oxide (NO) which plays a role in dilating blood vessels so that it can lower blood pressure (Lu Wang et al., 2012; Bingrong Li et al., 2016).

### **Junkfood Consumption**

Studies show a significant association between the consumption of junkfood foods and the incidence of hypertension, as evidenced by an increase in blood pressure, and body mass index. the study also mentioned that the consumption of junkfood increases the risk of obesity. researchers assumed from the results of the study that it was found that the high consumption of junkfood in adolescence in addition to increasing the risk of hypertension also increased obesity which is also a risk factor for hypertension with a latent period.

### **Hypertension Hereditary**

Another risk factor for hypertension is a family history of hypertension. Research shows the relationship between hereditary history and hypertension and is also the most influencing factor in the study (Fitriana et al., 2013). The results of other studies also show a significant relationship between heredity and the incidence of hypertension (Nanang et al., 2020; Kurnianingsih, 2019). Based on the research of Kai Liu et al. (2021) that a history of parental

hypertension is one of the risks of hypertension in adolescents. The results of a study by Willig et al (2010) showed that if parents have hypertension, adolescents will be more at risk of developing hypertension. The results of the study, show that 33% of respondents have a hereditary history of hypertension but judging from other risk factors also tends to be large, so the assumption of event researchers with risk factors that are increasingly owned by adolescents today will contribute to the tendency of incidence and the prevalence of hypertension in the next 5 years, because heredity is an irreversible risk factor for hypertension (Ewald & Haldeman, 2016).

Genetic factors are believed to have a relationship with the incidence of hypertension, where if both parents, both father, and mother, suffer from hypertension, the probability of the disease being passed on to their child is 50%, while if only one of the parents suffers from hypertension, then the chance of hereditary hypertension is 30% (Willig et al., 2010)

## Conclusion

Adolescents who consumed more than 1 tablespoon of salt per day 81.2%, often smoked 80.1%, consumed 66% of foods, ate 59.2% fatty foods, never had physical activity 70.2%, never consumed vegetables 48.9%, consumed junkfood 80.1% and had a history of hypertension 33.3%. Conclusion of 7 variables as risky behavior 3 measurable variables are often carried out by adolescents, namely smoking, not doing physical activity, and never consuming vegetables. Health promotion of hypertension prevention needs to be instilled early so that adolescents behavior has good hypertension prevention behavior.

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## Author Contribution and Competing Interest

Siti Maisyaroh Fitri Siregar performs the data collection process, prepares references, and writes draft articles. Adelina Irmayani Lubis added to the reference and discussion section. All authors read and agree to the final paper.

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