

Risk Factor of Hypertension among Adolescence: A Literature Review

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Abstract

Hypertension is one of the non-communicable diseases whose numbers continue to increase in both developed and developing countries. This increase in prevalence will increase the risk of cardiovascular disease. Current developments, hypertension can also occur in the teen age group. The purpose of this study was to analyze the risk factors for hypertension that occur in adolescence. A literature review was conducted from 55 references sources and 10 article was eligible to this study. Data source using Science Direct, Proquest, SAGE dan Springer Link which published since 2007 until 2017. The results of the analysis of hypertension risk factors in adolescents showed that groups of adolescents with overweight and obesity had a higher risk of developing hypertension. Family history, high consumption of salt, consumption of cigarettes and low physical activity also increase the risk of hypertension. The development of adolescent hypertension can also be predicted through wrist circumferences, high waist circumference and high levels of fat in the blood. Overweight and obesity in adolescents characterized by an increase in body mass index are the most common risk factors for hypertension in adolescents. These risk factors can be reduced through efforts to lose weight and make modifications to healthy lifestyles such as consuming healthy foods, increasing physical activity and preventing smoking cigarettes.

Keywords: Hypertension, adolescence, overweight, obesity, body mass index.

Introduction

Current disease developments have shown the epidemiology transition from infectious diseases to non-communicable diseases. The increase in non-communicable diseases does not only occur in developed countries, but also increases significantly in developing countries. The development of non-communicable diseases is multifactorial and this will have an impact on increasing non-communicable diseases such as high

blood pressure, high cholesterol and an increase in blood glucose²⁹. The current development of hypertension does not only affect adults and the elderly. Teenagers also have a risk for hypertension. In the last two decades it was found that hypertension tends to continue to increase and threaten since a young age¹³. The Basic Health Research Results conducted by the Ministry of Health of the Republic of Indonesia in 2013 showed that the national prevalence of hypertension in adolescents aged 15-17 was 5.3% with a distribution of 6% in male adolescents and 4.7% in adolescents women. Based on regional distribution, adolescent hypertension was higher in rural areas (5.6%) compared to urban areas (5.1%)¹².

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Hypertension is a disease that involves the interaction of genetic, demographic, comorbid and

environmental influences and become a risk factor for the occurrence of heart disease.^{24,28} If hypertension is uncontrolled there will be a risk of complications such as coronary heart disease, stroke and chronic kidney failure^{2, 3, 30}. The results of the study show that deaths in patients with heart disease, by 30%, have a history of hypertension. Any increase of 20/10 mmHg in systolic/diastolic pressure, will increase by 20% the risk of death in heart disease²⁷.

The prevalence of hypertension in adolescents is certainly at risk of experiencing an increase if maximum prevention efforts are not carried out. Based on the expert panel conducted and published by the American Academy of Pediatrics, it was reported that according to the results of an epidemiological survey in the last 20 years there has been an increase in the prevalence of adolescents who experience prehypertension and hypertension. The development of hypertension in each year, estimated at 7% of prehypertensive teens develop hypertension. The purpose of this paper is to describe the risk factors for hypertension in adolescents.

Method

This study was used literature review of articles that published from 2007 to 2017 from the database of Science Direct, Proquest, SAGE and SpringerLink. The inclusion criteria from the selection of articles that have been published is discussing the prevalence of hypertension in adolescents and risk factors for the incidence of adolescent hypertension. Based on the literature review of 55 articles that discussing hypertension in adolescents, 10 articles that met the requirements of the specified inclusion criteria were selected, which discussed the prevalence of hypertension and risk factors that increase the occurrence of adolescent hypertension.

Result

Analysis of the research method used by the ten articles reviewed has found that the entire article uses quantitative research method. As many as 9 articles the research design used was using a cross sectional study approach, while 1 other article used a cohort study approach. The instruments used were questionnaires, anthropometry measurement and mercury sphygmomanometer or digital sphygmomanometer.

The results of the analysis of 10 reviewed articles show that as many as 90% of articles describe adolescents with overweight and obesity are risk factors that are

often associated with the occurrence of hypertension in adolescents. A total of 2 articles showed the development of adolescent hypertension can also be identified from the measurement results of wrist circumferences and high waist circumference. For risk factors associated with adolescent hypertension, others include family history of hypertension, consumption of high salt foods, consumption of cigarettes, lack of physical activity and high levels of fat in the blood.

Discussion

The results of article review shown that overweight and obesity in adolescents as indicated by an increase in body mass index were the most common risk factors for hypertension in the teen age group^{1,8,10,16,17,18,23,25,26}. Risk factors for hypertension in adolescents can be seen based on anthropometry, kidney and electrolyte function, innervation mechanism, stress response, hyperdynamic circulation, influence of insulin on hemodynamics, gout, family history, genetic influence, and birth weight⁷. The results of the other study, show that adolescents with overweight are directly proportional to the occurrence of hypertension in adolescents, where 30.33% of overweight adolescents have prehypertension and 13.93% of overweight adolescents have hypertension²⁶. The results of other studies showed that in overweight adolescents, 16% had prehypertension and 45% had hypertension. In obese adolescents, 23% had prehypertension and 45% had hypertension²⁵. Not only that study, other research show that the Incidence Rate (IR) development of adolescent hypertension was 0.5% - 0.8% per year. In obese adolescents there are a significant increase in the development of hypertension. On the first visit, obese adolescents who had blood pressure > 120/80 mmHg were 31.3%; the second visit was 29.3%; the third visit was 59.3%²³. Other factors associated with the incidence of prehypertension and hypertension in adolescents include history, consumption of cigarettes, lack of physical activity, consumption of foods high in salt and increased levels of fat in the blood^{8,9,25}.

Increased sedentary lifestyles cause overweight and obesity and this will have an impact on increasing high blood pressure²⁹. In addition, adolescent behavior in carrying out unhealthy lifestyles such as lack of physical activity, high sedentary activities, low consumption of high fiber and smoking behavior are closely related to the incidence of overweight in adolescents³². This is in accordance with the results of this literature review which shows that low physical activity, unhealthy food

consumption and cigarette consumption are also risk factors for hypertension in adolescents.

To reduce the risk of hypertension in adolescent groups, it is very necessary for adolescents to make behavioral changes towards healthy lifestyles such as regulating diet by limiting fat consumption, regulating body weight by seeking weight loss, actively exercising regularly and regularly, preventing smoking and blood pressure monitoring. Setting diet and increasing physical activity are very important for overweight adolescents with the aim of proper energy balance^{6,19}. Efforts to prevent hypertension in overweight adolescents through optimizing health promotion and specific protection are very important. A healthy lifestyle campaign is a form of health education that aims to reduce unhealthy behavior that can increase the risk of hypertension. One form that can be done is peer health education. Peer health education is able to change one's lifestyle so that this will have an impact on controlling blood pressure and reducing the risk of cardiovascular disease⁵. In addition, it also activates non-communicable disease health services in schools with the aim of screening risk factors and early detection of hypertension¹³. In addition to health education, mentoring can also be used as an effort to prevent hypertension early in overweight adolescents. Mentoring is effectively used to manage body weight and increase self-esteem in obese individuals¹⁴. Assistance is carried out, so that youth involvement will begin early in terms of planning and controlling actions. Action planning and action control are mediators in the intention and formation of one's behavior³¹. Planning will influence the control of actions which can ultimately affect behavior⁴.

Conclusion

Overweight and obesity are risk factors that can increase the occurrence of adolescent hypertension. Other risk factors are family history, high salt consumption, cigarette consumption and low physical activity. To reduce these risk factors, efforts to lose weight and make a healthy lifestyle such as consuming healthy foods, increasing physical activity and preventing consumption of cigarettes are very important things.

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