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The Relationship Between Hypertension Factors And The Severity Of Hypertension: A Literature Review

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Abstract: Hypertension is frequently detected during general physical examinations at various Indonesian primary care facilities. In 2013, Riskesdas data revealed a prevalence rate of 25.8% for hypertension.

Multiple risk factors, both controllable and uncontrollable, cause hypertension. Lifestyle factors (Nutrition, Psychological, Psychotic Habits, Weight) are among the controllable factors, whereas genetics and hormones cannot be altered. The greater the number of risk factors, the greater the likelihood of developing hypertension.

Hypertension is also a health concern due to the public's ignorance about the condition. In fact, hypertension can increase the likelihood of developing more serious diseases, such as stroke, heart disease, blood vessel disease, kidney disease, and even vision problems. Hypertension is frequently asymptomatic, so it is not uncommon for it to be a silent killer.

Keywords: Hypertension, Risk Factors, Health Risk, Health

1. INTRODUCTION

According to WHO statistics, 12.8% of annual mortality (approximately 7.5 million people) is caused by hypertension (WHO, 2012). The number of hypertensive individuals is projected to reach 1.56 billion by 2025 (Tabrizi JS et al., 2016). Hypertension is a growing issue that is frequently discovered by accident in primary care facilities. This is due to a lack of public awareness regarding hypertension. Riskesdas data indicate that the prevalence of hypertension in Indonesia is 25.8%. (Riskesdas, 2013)

Variable causes / risk factors contribute to hypertension Exercise, smoking habits, alcohol consumption, food (salt and nutrition), body weight, and psychological factors are controllable factors. Among the uncontrollable factors are gender, menopause in women, genetics, and age (Mansjoer et al., 2001). More blood is needed to transport nutrients and oxygen throughout the body as body mass increases. This increase in blood volume raises arterial wall pressure, thereby heightening the risk of hypertension (Purwati, 2005; Benitez Brito et al., 2016).

According to research conducted by Maas and Franke in 2009, menopause is associated with hypertension because a decrease in the ratio of oestrogen to androgen diminishes the vasorelaxant effect of oestrogen and blood vessel walls and increases the production of vasoconstrictive factors such as endothelium.

2. DISCUSSION

High Blood Pressure is a common disease caused by abnormally high blood pressure in the arteries. Blood pressure is the force exerted by the blood against the artery walls when the heart pumps blood. High blood pressure, also known as hypertension, occurs when the force exerted against the artery wall is excessive. Consistently high blood pressure test results can confirm a diagnosis of high blood pressure.

To control or reduce high blood pressure, doctors typically recommend making healthy lifestyle changes, such as adopting a heart-healthy diet or taking medication. Controlling or reducing blood pressure can also prevent or delay complications of hypertension, such as chronic kidney disease, heart attack, heart failure, stroke, and vascular dementia (National Heart, Lung, and Blood Institute, 2018).

Table 1: Classifications of hypertension (Williams, 2018).

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	<120	and	<80
Normal	120- 129	and/or	80-84
High Normal	130-139	and/or	85-89
Hypertension grade 1	140-159	and/or	90-99
Hypertension grade 2	160-179	and/or	100-109
Hypertension grade 3	180	and/or	110
Isolated systolic hypertension[b]	140	and	<90

Classification is based on the average of two or more sitting readings and the highest systolic or diastolic blood pressure reading in two or more visits. However, drug therapy is recommended to modify lifestyle in order to reduce the risk of hypertension. Diuretics, beta-blockers, calcium channel blockers (CCBs), angiotensin-converting enzyme (ACE) inhibitors, and angiotensin II receptor blockers (ARBs) are the recommended antihypertensive drugs.

An unhealthy diet, especially one high in sodium, excessive salt consumption, calories, and trans saturated fat, increases the risk of hypertension. According to the AKG (2013), the recommended sodium intake for the elderly is 1,500 mg. Sodium is responsible for maintaining the body's fluid balance, particularly the extracellular fluid. As a regulator of osmotic pressure, sodium prevents fluids from leaving the blood and entering the cells. If the amount of sodium within the cell increases excessively, water will enter, causing the cells to swell and grow in size.This is what causes the networkbody to swell. If sodium is lost, the fluid balance will also be disturbed (Damanik, 2011).

The effect of sodium intake on hypertension is caused by an increase in plasma volume, which ultimately causes blood pressure to rise. Sodium is a cation in extracellular fluid that is essential for maintaining plasma and extracellular volume, acid-base balance, and neuromuscular function. High sodium intake can increase the concentration of sodium in extracellular fluid so as to normalise intracellular fluid that has been pulled out, resulting in an increase in blood volume and blood pressure (Astawan, 2007).Sodium is associated with the incidence of hypertension because high sodium consumption can reduce the diameter of the arteries, causing the heart to pump harder to push a greater volume of blood through chambers that are becoming narrower, thereby increasing blood pressure (Brunner and Suddarth, 2001).

If a parent or close relative has hypertension, the likelihood of developing the condition increases. Age increases the likelihood of being affected by hypertension. Our blood vessels gradually lose some of their elasticity as we age, which can contribute to a rise in blood pressure. Up until the age of 64, men are more likely than women to develop hypertension. After the age of 65, women are more likely to have hypertension.

African-Americans have a higher incidence of hypertension than people of other races. In addition, some drugs are less effective at treating hypertension in people with black skin. Physical activity is very beneficial for heart and blood vessel health; a lack of physical activity increases hypertension risk.

An excessive amount of stress can increase blood pressure. Stress can also encourage increased blood pressure-related behaviours, such as poor diet, lack of physical activity, smoking, and excessive alcohol consumption. Socioeconomic standing and stressAccess to basic life necessities, treatment, health care providers, and the ability to adopt a healthy lifestyle can be impacted by psychosocial factors (American Heart Association, 2017).

Cigarette smoking can increase blood pressure and damage arteries. Passive smoking and exposure to secondhand smoke also increase the risk of cardiovascular disease for nonsmokers. More than half of individuals with hypertension have elevated cholesterol levels. Regular and excessive alcohol consumption can result in numerous health issues, including heart failure, stroke, and irregular heart rhythm (arrhythmia). Alcohol can also cause an increase in blood pressure and increase the risk of cancer, obesity, alcoholism, and suicide.

According to Ernst Rietzschel, in 2007 women who use hormonal contraception will have a higher risk of atherosclerosis (hardening of the arteries) compared to women who do not use hormonal contraception. This risk is a result of the impact of hormonal contraceptives, which will cause the arteries to harden and become clogged with fat. Increase in systolic blood pressure associated with the ageing process, caused by increased stiffness of the great arteries and atherosclerotic vessel wall thickness changes.

Physical activity, physical fitness, and exercise are interrelated. Physical activity is defined as any bodily movement caused by skeletal muscle contractions that increases energy expenditure above the basal level, which includes routine daily activities such as travel, work, and housework. Exercise is a component of planned, structured, and repetitive physical activity that aims to improve or maintain health. Physical fitness is defined as an individual's ability to perform physical activity without becoming fatigued and reflects a combination of physical activity behaviours, genetic potential, and the health of multiple organ systems.

Physical activity influences neuroendocrine, immune, and vascular systems. Vascular alterations consist of an increase in vascular length, an increase in lumen diameter, an increase in the number of precapillary sphincters, and neoangiogenesis. Decreased levels of morbidity and mortality predictors C-reactive protein, inflammatory cytokines, and soluble adhesion molecules were also observed. The antihypertensive effect of exercise is mediated throughincreased baroreceptor sensitivity, decreased norepinephrine levels,decreased PVR, increased insulin sensitivity, and changes inexpression of vasodilator and vasoconstrictor factors (eg, expressionendothelin 1, stimulated by exercise, increases vasoconstriction; expressionof prostaglandins and nitric oxide during exercise causesvasodilation; use of calcium channel blockers also causesvasodilation). In addition, aerobic exercise decreases left ventricular mass and wall thickness, increases central antioxidant concentration, decreases pro-oxidant levels and arterial stiffness, and improves central nitric oxide synthase activity, thereby enhancing endothelial function (Ghadieh, A. S., & Saab, B., 2015).

The Body Mass Index (BMI) is a simple index based on a person's height and weight that is frequently used to classify overweight and obesity. Body mass index (BMI) is calculated by dividing a person's weight in kilogrammes by the square of his height in metres (kg / m2) (WHO, 2015). BMI is the most prevalent practical measure of obesity because it is the same for adults of all ages and sexes. However, it is considered an approximation because it does not necessarily correspond to the degree of obesity in different people (WHO, 2015).

According to the Indonesian Ministry of Health, the normal BMI range is between 18.5 and 25, while values above this range are classified as BMI is more, which is further subdivided into overweight and obesity.Obesity or overweight is a condition that occurs when the amount of body fat tissue relative to total body weight is greater than normal, or when there is accumulation of excess body fat so that a person's weight is significantly higher than normal.Overnutrition or obesity is a condition in which a person's body weight exceeds the normal limit. Obesity and overnutrition result from an imbalance between the amount of energy ingested versus the amount of energy expended or used. In addition to developed nations, obesity and overweight have begun to appear in developing nations (Sandjaja & Sudikno, 2005).

Tabel 2.2 BMI Classifications (Depkes RI, 2017)

	Kategori	IMT
Thin	Severe Underweight	< 17,0
	Moderate Underweight	17,0 – 18,4
Normal		18,5 – 25,0
Fat	Mild degree of overweight	25,1 – 27,0
	Severe degree of overweight	> 27,0

BMI does not directly measure body fat, but research has demonstrated that it is moderately correlated with measurements of direct body fat obtained from fold thicknessskin, bioelectrical impedance, densitometry (underwater weight), absorptiometrydual energy x-ray (DXA), and other techniques. BMI is highly correlated with a variety of metabolisms and diseases, consistent with direct body fat measurement (CDC, 2012).

According to research by Purwati (2005), being overweight increases the risk of cardiovascular disease for a number of reasons. The greater the body mass, the greater the blood volume required to deliver oxygen and nutrients to body tissues. This results in an increase in the volume of blood circulating through the blood vessels, which exerts greater pressure on the artery walls.A person who is overweight is more likely to develop hypertension. What a woman possessesWomen who are obese at the age of 30 are seven times more likely to develop hypertension than slimmer women of the same age. According to research conducted by Liu Li et al. (2004), respondents with a body mass index of less than 25 kg/m2 are 4,9 times more likely to have hypertension than those who are obese. Other evidence demonstrates that for every 10 kg increase in body weight, systolic blood pressure rises by 3.0 mm Hg and diastolic blood pressure rises by 2-3 mm Hg. Otherwise, greater than fifty percent of subjects experienced a decrease in systolic blood pressure of 1-2 mmHg and systolic blood pressure of 1-4 mmHg for each kilogramme lost (Aneja A et al, 2004). This is also supported by the findings of Poirir P, et al (2006), who found that the majority of people with high blood pressure are overweight, and that hypertension is more prevalent in obese people.

According to a 2007 cross-sectional study conducted in Belgium by ErnstRietzschel, a cardiology professor at the University of Gent, 81% of the 1,300 Belgian women aged 35-55 who participated used contraception for 13 years.Hormonal contraceptives increase the risk of artery hardening, which is the effect of hormonal contraception that causes plaque and fat (atherosclerosis) when compared to women who do not use contraception.In the throat, an ultrasound can detect the femoral and carotid arteries.

In a cross-sectional study, chronic passive smoking exposure was associated with arterial carotid stiffness. Adults chronically exposed to passive smoking in homes, workplaces, and other locations with a body mass index of 27 kg/m2 have increased carotid stiffness compared to the control group. IndexPassive smoking is significantly associated with carotid artery stiffness, which is dose-dependent. Because nicotine and carbon monoxide levels in passive smokers' blood are quite low (Virdis A., 2010), these results may indicate that exposure to cigarette smoke from smokers is associated with hypertension.

4. CONCLUSION

This study demonstrates that the severity of hypertension increases with the number of risk factors a patient has. By recognising the risk factors hypertensive individuals possess, it is hoped that management can be enhanced. So as to prevent the worsening or occurrence of complications.

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CONFLICT OF INTEREST

The authors declared there to be no conflict of interest in this study.

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AUTHOR CONTRIBUTION

YS carried out the idea of this study and revision. AD, AD, and VY contribute to the design of the study, interpreted the results, and arrangement of the manuscript.

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