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RISK FACTORS FOR HYPERTENSION IN WOMEN OF REPRODUCTIVE AGE IN BENGKULU CITY

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Abstract

Hypertension affecting Women of Childbearing Age (WCA) can significantly influence the processes of pregnancy, childbirth, and postpartum recovery. This is primarily due to chronic hypertension, which often acts as a precursor to the perilous condition of pre-eclampsia, particularly if it occurs during pregnancy and is not appropriately managed. This study aimed to identify the risk factors contributing to the incidence of hypertension in Bengkulu City. This study employs an analytical survey with a cross-sectional design, involving a sample size of 164 participants calculated using a sample size calculator. The hypothesis estimates a single proportion with a confidence level of 80%, a significance level of 5%, and an estimated prevalence of 30%, within a population of 143,337 women diagnosed with hypertension in Bengkulu City. Data were analyzed utilizing Chi-Square statistical methods. There exists a significant association between educational level (p-value < 0.019), family history of disease (p-value < 0.00), obesity (p-value < 0.00), stress levels (p-value < 0.00), physical activity (p-value < 0.025), and the use of contraception (p-value < 0.001) with the occurrence of hypertension in WCA. Based on multivariate analysis, the variable of obesity emerged as the most influential factor for the incidence of hypertension, with an odds ratio (OR) of 236.068. The causal factors of hypertension in WCA include educational level, family medical history, obesity, stress, physical activity, and type of contraceptive use.

Keywords: Hypertension, Women of Childbearing Age, Non-communicable Diseases, Maternal Mortality Rate

INTRODUCTION

Hypertension, or high blood pressure, is a non-communicable disease that is a leading cause of premature death worldwide. The global prevalence of hypertension is 22% of the world's population, and only one-fifth of those who take steps to control their blood pressure (controlled hypertension) (WHO), 2019)(WHO, 2019). Hypertension is one of the risk factors It is a very common cardiovascular disease, especially among older adults, whose proportion in the population continues to increase in line with global trends. Awareness of hypertension and adequate understanding of its diagnosis and management are very low, even though controlling hypertension can reduce the risk of cardiovascular disease. (Nguyen Trong et al., 2024).

The World Health Organization (WHO) reported in 2019 that 1.13 million people worldwide suffer from

hypertension. The prevalence of hypertension varies widely. Africa has the highest prevalence at 27%, while the Americas have the lowest at 18%. The prevalence of hypertension will continue to increase, and it is predicted that by 2025, 29% of adults worldwide will suffer from hypertension.Hypertension is often called the silent killer because sufferers are often unaware they have it until complications develop. In Indonesia, the prevalence of hypertension is 34.1% of the adult population. This data represents an increase compared to the prevalence of hypertension in the 2013 Basic Health Research (Riskesdas) of 25.8%. Only about one-third of hypertension cases in Indonesia are diagnosed; the rest go undetected. The highest prevalence of hypertension is in women (36.85%), while in men (31.34%)(Riskesdes 2018, 2019).

According to data from the Bengkulu Provincial Health Office in 2021, the highest incidence of hypertension in 2021 was in Bengkulu City, with 286,339 people, of whom 143,337 were female. The highest incidence of hypertension in Bengkulu City was at Pasar Ikan Community Health Center with a percentage of 150.8%, followed by Muara Bangkahulu Community Health Center with 142.7%, Kuala Lempuing with 90.8%, while Jalan Gadang Community Health Center with 79.7% of cases, Nusa Indah Community Health Center with 45%, and Padang Serai Community Health Center with the lowest. Jalan Gedang Community Health Center ranked fourth in the incidence of hypertension in Bengkulu City, with 170 patients recorded in 2021 and 2,314 in 2022. (Dinkes Bengkulu, 2023).(Dinkes Kota Bengkulu, 2023)

Risk factors for hypertension are divided into two groups: non-modifiable and modifiable. Non-modifiable risk factors include age, gender, education, occupation, and family history. Modifiable risk factors include nutritional status, smoking, physical activity, alcohol consumption, salt intake, and high-fat diet.(Rani Renita, 2024). The incidence of hypertension is more dominated by the variables of knowledge, age, family support, work, education and parity. (Widyasari, A & Alnur, 2023)(Widyasari, A & Alnur, 2023). The complications caused by hypertension are: ischemic heart disease, heart failure, stroke, and chronic kidney disease; estimated 57% and 24% of deaths due to stroke and coronary artery disease, each caused by hypertension.

Early detection is very important to prevent complications, improve quality of life, and reduce mortality rates.(Aswin et al., 2024)(Aswin et al., 2024).Hypertension management is divided into two categories: pharmacological and nonpharmacological. Pharmacological management aims to prevent death and complications by achieving and maintaining arterial blood pressure at or below 140/90 mmHg (130/80 mmHg for people with diabetes mellitus and chronic kidney disease). Nonpharmacological approaches include weight loss, alcohol and sodium restriction, regular exercise, and relaxation.(Putri, Ludiana, & Ayubbana, 2022a)(Putri, Ludiana, & Ayubbana, 2022b) .

This study aims to analyze the factors causing hypertension in women, particularly in Bengkulu City, to identify the root cause of the disease. Once these factors are identified, it will facilitate the provision of preventive IEC (Information and Communication) to prevent hypertension in women. Preventing hypertension in women will ultimately prevent hypertension in women of childbearing age, which can cause complications during pregnancy, childbirth, and postpartum, thus significantly contributing to reducing the Maternal Mortality Rate (MMR) in Indonesia.

MATERIALS AND METHODS

This study used an analytical survey with a cross-sectional design on a sample size of 164 people, calculated using a sample size calculator, a single proportion estimation hypothesis with a confidence level of 80%, a significance level of 5%, an estimated prevalence of 30%, and a population size of 143,337 women suffering from hypertension in Bengkulu City. The data were analyzed using Chi-Square.

RESULTS AND DISCUSSION

Univariat Analysis

Table 1.Frequency Distribution Based on Factors Related to the Incident of Hypertension.

		F	%
Contraception			
	Hormonal	84	51.2
	Non-Hormonal	80	48.8
Physical Activity			
	Heavy	6	3.7
	Light	96	58.5
	Currently	62	37.8
Obesity			
	No	116	70.7
	Yes	48	29.3
Hypertensi			
	No	80	48.8
	Yes	84	51.2

Based on Table 1, 84 people (51.2%) had hypertension, with the majority (84 people (51.2%) using hormonal contraception. The study also showed that 116 people (70.7%) were not obese, and the majority (96 people (58.5%) engaged in light activity.

Bivariate Analysis

Table 2. Factors Associated With The Occurrence Of Hypertension.

		Hypertension		Total	*P Value*
		No	yes		
Contraception	Hormonal	30	54	86	0.001
	Non-Hormonal	50	30	80	
Total		80	84	164	
Physical Activity	Heavy	5	1	6	0.025
	Light	52	44	96	
	Currently	23	39	62	
Total		80	84	164	
Obesity	No	2	78	80	0,000
	Yes	46	38	84	
Total		48	116	164	

Based on table 2, bivariate analysis shows that there is a significant relationship between contraceptive use and the incidence of hypertension with a P-value of 0.001. There is a significant relationship between physical activity and the incidence of hypertension with a P-value of 0.025 and there is a significant relationship between obesity and the incidence of hypertension with a P-value of 0.000.

Multivariate Analysis

Table 3 The Variable That Has The Most Influence On The Occurrence Of Hypertension.

Variables	P-Value	Exp(B)	95% CI for EXP(B)	
			Lower	Upper
Contraception	.005	5,931	1,725	20,398
Obesity	.000	236,068	31,941	1744,719
Physical Activity	.021	.235	.069	.804

Based on the results of the multivariate analysis, obesity was the most influential variable on the incidence of hypertension, with an OR of 236.068. This finding aligns with the research findings of Akinbule et al., (2022) which found a significant association between hypertension and overweight, obesity, and abdominal obesity. The results of results show a significant association between hormonal contraceptive use and hypertension in women of childbearing age (WUS). This finding supports previous studies that suggest that hormonal contraceptive use, such as injections, implants, and pills, can cause hypertension (Raudah, Zulliati, & Hidayah, 2021)).Hormonal contraception can be used as a method to prevent pregnancy because it contains the hormones estrogen and progesterone, but if hormonal contraception is used for a long period of time, it can cause side effects such as cholesterol deposits,

weight gain and hypertension in women of childbearing age. (Aditiya Kusumaningtiyas Zonna, 2022).

Mechanistically, the estrogen and progesterone hormones in hormonal contraceptives can influence blood pressure regulation through several pathways: increased sodium and water retention, increased activity of the renin-angiotensin system, changes in vascularization, and metabolic effects including changes in lipids and insulin. Long-term use can exacerbate these factors, increasing the likelihood of hypertension. However, international literature shows mixed results depending on the type of contraceptive, duration of use, hormone dose, and the user's underlying health conditions (Hormonal Association). The results of a study Aditiya,K.Z, (2022) showed that the use of combined oral contraceptives (estrogen + progestin) increased the incidence of hypertension with an average odds ratio of approximately 1.44 compared to non-users. Another study stated that combined contraceptive users had slightly higher blood pressure than non-users after controlling for other factors, although the absolute effect is usually small in the absence of predisposing risks (Cameron, Blyler, & Bello, 2023).
Continuous use of hormonal contraceptives in women of childbearing age can increase the risk of hypertension, potentially leading to serious complications such as kidney failure, heart attack, and stroke. Hypertension can also lead to other disorders such as heart failure, arrhythmia, and even blindness, due to narrowing of the arteries, which impedes blood flow and increases pressure on the artery walls. If this condition persists for a long time, the workload on the heart and blood vessels will increase, which can ultimately cause damage to the heart and vascular system.(Araviq A.Hanyala, 2020).

Light physical activity can lead to overnutrition or obesity, as the body does not burn enough energy. Excess weight is also associated with increased heart rate and insulin levels. Therefore, creating a safe and supportive environment for physical activity is an important step in preventing and managing hypertension. (de Zorzi et al., 2024). According to (Cheng, Zeng, Zhu, Yang, & Zhong, 2024) Physical activity consisted of three components: vigorous work/recreational activity, moderate work/recreational activity, and walking/biking. Participants reported the number of days per week they engaged in each type of physical activity, as well as the amount of time (in minutes) spent in that activity during the day. The frequency and duration of these activities were used to calculate weekly metabolic equivalent estimates. The US Physical Activity Guidelines recommend that adults engage in 150 minutes of moderate-intensity physical activity per week (equivalent to 600 Met-minutes/week). According to (Jayanata et al., 2023) showed that the inclusion of some vigorous activity can lead to greater reductions in the odds of hypertension and obesity over 21 years, particularly among those with highly active habits. Norpharmacological management such as physical activity can reduce the occurrence of hypertension in young and old age.(Nagata et al., 2021).

In this study, obesity was significantly associated with the incidence of hypertension. The majority of

respondents were overweight or obese, caused by unhealthy diets and lack of physical activity.This is in line with research (Mielke et al., 2024)).Hypertension and obesity arerisk factorsprimary for the development of cardiovascular and metabolic conditions.Obesity, or being overweight, occurs due to an imbalance between calorie intake and calorie expenditure. Obesity involves genetic, environmental, psychological, medication, and lack of exercise factors. This can lead to increased blood pressure. In obese individuals, the body works harder to burn calories. The more calories burned, the more oxygen is needed, forcing the heart to work harder.In Australia, it is estimated that 1 in 3 adults suffer from hypertension, and the same proportion suffer from obesity, this is in line with research. (Johnson, Sultana, Brown, Bauman, & Gill, 2021) Obesity rates have increased rapidly over the past two to three decades in Australia and other developed countries. Consequently, obesity now contributes significantly to overall non-communicable diseases, including hypertension. It is recommended that individuals engage in physical activity, such as >150 minutes of moderate-intensity exercise, to prevent obesity, which can contribute to hypertension.

CONCLUSION

The conclusion of this study shows that there is a significant relationship between the use of contraception, physical activity and obesity with the incidence of hypertension in women of childbearing age in the working area of the Bengkulu City Health Center in 2024.

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DECLARATION OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest related to the study in this manuscript.

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