THE RELATIONSHIP BETWEEN BODY MASS INDEX AND PHYSICAL ACTIVITY WITH BLOOD PRESSURE AMONG 10TH GRADE ADOLESCENTS AT SMAN 5 MALANG CITY

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ABSTRACT

Adolescents are an age group vulnerable to lifestyle changes, such as unbalanced diets and low physical activity, which can affect Body Mass Index (BMI) and blood pressure. These conditions increase the risk of early cardiovascular disorders. This study aims to analyze the correlation between BMI and physical activity with blood pressure among grade X students at SMAN 5 Malang. This study employed an analytical observational design with a cross-sectional approach. The sample consisted of 108 students selected using a cluster random sampling technique. BMI was calculated based on weight and height measurements, physical activity was measured using the Global Physical Activity Questionnaire (GPAQ), and blood pressure was measured using a digital tensimeter. Data analysis was performed univariately and bivariately using the Spearman Rank correlation test. The results showed that the majority of respondents had a normal BMI (50.9%), high levels of physical activity (54.6%), and normal blood pressure (57.4%). Statistical tests revealed a significant correlation between BMI and blood pressure ($r = 0.425$; $p < 0.01$) with a positive direction. A significant correlation was also found between physical activity and blood pressure with a negative direction ($r = -0.258$; $p < 0.01$). An increase in BMI correlates with a rise in blood pressure because fat accumulation can increase vascular resistance. Conversely, physical activity plays a protective role in maintaining blood vessel elasticity and stabilizing blood pressure. It is concluded that BMI and physical activity are significantly related to blood pressure in adolescents. Weight control and an active lifestyle are crucial for the early prevention of hypertension.

Keywords: adolescent, body mass index, physical activity, blood pressure.