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Knowledge Practice Gap in Hypertension Prevention Among Indonesian Adolescents: A Descriptive Study

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ABSTRAK

Hipertensi kini tidak hanya mempengaruhi lansia, tetapi juga remaja dan dewasa muda. Mahasiswa, sebagai generasi muda terdidik, memiliki akses luas terhadap informasi kesehatan, tetapi belum tentu secara konsisten menerapkan perilaku pencegahan. Kesenjangan antara pengetahuan dan perilaku ini merupakan isu penting dalam pencegahan penyakit tidak menular. Studi ini bertujuan untuk mendeskripsikan tingkat pengetahuan dan perilaku remaja mengenai pencegahan hipertensi dan menganalisis kesenjangan antara keduanya. Studi ini menggunakan desain deskriptif kuantitatif dengan pendekatan cross-sectional. Sampel terdiri dari 92 mahasiswa berusia 18–24 tahun yang dipilih secara purposif. Data dikumpulkan melalui kuesioner yang mencakup karakteristik responden, tingkat pengetahuan, dan perilaku pencegahan hipertensi. Analisis dilakukan secara deskriptif menggunakan distribusi frekuensi dan persentase. Sebanyak 72,8% responden memiliki pengetahuan yang baik mengenai pencegahan hipertensi, 26,1% memiliki pengetahuan yang cukup, dan 1,1% memiliki pengetahuan yang kurang. Namun, hanya 44,6% responden yang menunjukkan perilaku pencegahan hipertensi yang baik, sedangkan 47,8% memiliki pengetahuan yang cukup, dan 7,6% memiliki pengetahuan yang kurang. Hasil ini menunjukkan adanya kesenjangan antara pengetahuan dan praktik pencegahan hipertensi. Meskipun pengetahuan remaja tentang pencegahan hipertensi dianggap baik, perilaku pencegahan mereka belum sejalan. Faktor gaya hidup kurang gerak, stres akademis, dan kurangnya dukungan di kampus berkontribusi pada kesenjangan ini. Intervensi berbasis perilaku dan promosi kesehatan partisipatif di lingkungan pendidikan tinggi diperlukan untuk mempersempit kesenjangan pengetahuan-praktik ini.

Keywords

Adolescents, Hypertension, Knowledge, Behavior, Prevention, Students

ABSTRACT

Hypertension is now affecting not only the elderly but also adolescents and young adults. College students, as educated youth, have extensive access to health information, but do not necessarily consistently implement preventive behaviors. This gap between knowledge and behavior is a crucial issue in the prevention of non-communicable diseases. This study aims to describe the level of knowledge and behavior of adolescents regarding hypertension

prevention and analyze the gap between the two. This study used a quantitative descriptive design with a cross-sectional approach. The sample consisted of 92 college students aged 18–24 years who were selected purposively. Data were collected through a questionnaire covering respondent characteristics, knowledge level, and hypertension prevention behavior. Analysis was conducted descriptively using frequency distributions and percentages. A total of 72.8% of respondents had good knowledge regarding hypertension prevention, 26.1% had sufficient knowledge, and 1.1% had insufficient knowledge. However, only 44.6% of respondents demonstrated good hypertension prevention behavior, while 47.8% had sufficient knowledge, and 7.6% had insufficient knowledge. These results indicate a gap between knowledge and practice of hypertension prevention. Although adolescents' knowledge about hypertension prevention is considered good, their preventive behavior is not yet in line. Sedentary lifestyle factors, academic stress, and a lack of campus support contribute to this gap. Behavior-based interventions and participatory health promotion in higher education settings are needed to narrow this knowledge-practice gap.

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1. Introduction

Hypertension has long been recognized as a leading cause of death and disability worldwide. The World Health Organization reports that more than 1.3 billion people worldwide live with hypertension, and approximately two-thirds of these live in lower-middle-income countries. This situation poses a significant challenge for developing countries like Indonesia, which are facing a double burden of communicable and non-communicable diseases. Even more worrying, global trends indicate that hypertension is no longer limited to the elderly, but is also beginning to appear at a younger age, including adolescents and young adults.(World Health Organization 2023b)

National data shows a similar trend. According to the 2018 Basic Health Research (Riskesdas), the prevalence of hypertension in young adults (18–24 years old) in Indonesia reached 13.2%, and this figure has continued to increase over the past five years (Ministry of Health of the Republic of Indonesia) (Fajri 2021). This increase is closely related to changes in the lifestyle of modern society, such as a diet high in fat and salt, lack of physical activity, academic and social stress, and increased consumption of cigarettes and caffeinated drinks (Peltzer 2018). A sedentary lifestyle, fueled by technological advances and the digitalization of education, is further exacerbating this situation. Adolescents, who should be developing healthy habits, are instead adopting behaviors that pose risks to their cardiovascular health.

Basically, hypertension is a silent killer, because it often does not cause symptoms until serious complications such as coronary heart disease, stroke, and kidney failure occur (World Health Organization 2023a). Therefore, primary prevention efforts are crucial, particularly through increased knowledge and behavioral changes starting in adolescence. However, several studies have shown that good knowledge about hypertension does not always correlate with effective preventive behaviors (Article et al. 2024),(Angelinasyarga Sutera Dewangga 2024). This phenomenon is known as the knowledge-practice gap, namely the gap between what a person knows and how he applies it in everyday life.

The knowledge-practice gap is a significant concern in public health. In adolescents, this gap can be caused by various factors, including the perception that hypertension is a disease of older people, lack of support from the surrounding environment, and limited access to adolescent health services (Angelinasyarga Sutera Dewangga 2024). In addition, inconsistent exposure to information on social media can also cause confusion and misperceptions regarding risk factors and preventive measures for hypertension (Rastuti et al. 2025).

On the other hand, educational settings, particularly universities, actually have great potential as a platform for community-based health promotion (Health Promoting University). Students are a productive age group who can be agents of change in implementing and disseminating healthy lifestyles in the community. However, if this group lacks adequate understanding and preventive behaviors, the opportunity to foster a long-term healthy culture will be hampered.

Previous research in several regions in Indonesia showed that most students have a good level of knowledge regarding hypertension risk factors, but this is not followed up with adequate preventive practices, such as regular exercise, consumption of vegetables and fruit, and regular blood pressure checks (Angelinasyarga Sutera Dewangga 2024). This condition reinforces the assumption that health education alone is not enough without a behavioral approach and sustainable environmental support.

Considering these conditions, it is important to conduct research to examine the extent of the gap between knowledge and practice of hypertension prevention among Indonesian adolescents, particularly university students. The results of this study are expected to provide an empirical overview of the factors influencing the Knowledge-Practice Gap, as well as serve as a basis for developing more contextual, interactive, and sustainable educational strategies. This research also aligns with the third objective of the Sustainable Development Goals (SDGs), namely ensuring healthy lives and promoting well-being for all at all ages.

This study aims to describe and analyze the gap between knowledge and practice regarding hypertension prevention among Indonesian adolescents, particularly university students aged 18–24. The primary focus of this study is to assess the extent to which students have a good understanding of the risk factors and preventive measures for hypertension, and how this level of knowledge influences their daily behavior. Furthermore, this study also seeks to identify personal and environmental factors that may influence the gap between knowledge and actual practice. This study was designed to answer a fundamental question: do Indonesian adolescents have a good understanding of and practice of hypertension prevention? By understanding the extent of this gap, the research is expected to assist policymakers, educational institutions, and healthcare professionals in developing more effective promotive intervention programs on campus.

2. Methods

This study used a quantitative descriptive approach with a cross-sectional design. This design was chosen because it can describe the level of knowledge and behavior regarding hypertension prevention in adolescents at a single measurement point without intervention. This approach is suitable for identifying the gap between knowledge and prevention practices (K-Practice Gap) among students at Ngudi Waluyo University.

The study was conducted at Ngudi Waluyo University, which is characterized by students aged 18–24 years from various social and educational backgrounds. Data collection took place from April to May 2025. The location was selected purposively,

considering ease of access, representative characteristics of college youth, and institutional support for public health research activities.

The population in this study were all active students aged 18–24 years. Based on calculations using the Slovin formula with a 5% error rate, a sample size of 92 respondents was obtained. Sampling was carried out using a purposive sampling technique, where respondents were selected based on inclusion criteria, namely: (1) active students, (2) aged 18–24 years, (3) willing to be respondents by signing an informed consent form.

The research instrument was a structured questionnaire developed based on the health promotion theory of Notoatmodjo (2014) and several previous studies. The questionnaire consisted of three main sections: Respondent characteristics, including age, gender, personal and family history of hypertension, and exposure to information about hypertension. Hypertension prevention knowledge consisted of 10 questions with the answer options "Yes" or "No." Each correct answer was given a score of 1, and an incorrect answer was given a score of 0. Knowledge categories were determined based on the total score: Good: ≥ 76–100% of the total score, Sufficient: 56–75%, Poor: ≤ 55%. Hypertension prevention behavior consisted of 20 statements with a three-level Likert scale ("Strongly Agree," "Agree," and "Disagree"), which reflected the frequency and consistency of prevention practices. Behavior scores were categorized using the same principles as knowledge. This questionnaire has undergone a content validity test by three public health experts and an internal reliability test using the Cronbach's Alpha coefficient with an α value > 0.70, indicating good reliability.

Data collection was conducted online using Google Forms to facilitate distribution to students across various faculties. Before completing the questionnaire, each respondent received an explanation of the research objectives, data confidentiality, and the right to withdraw at any time. The collected data was then downloaded and processed using SPSS version 26.0 statistical software.

Data analysis was performed univariately to describe the frequency distribution and percentage of each variable. The results include an overview of respondent characteristics, knowledge levels, and hypertension prevention behaviors.

Where necessary, exploratory bivariate analysis using the Chi-Square test was conducted to examine the relationship between knowledge levels and preventive behavior, with a significance level of 0.05. However, the primary focus of this study remains a descriptive analysis to illustrate the gap between knowledge and hypertension prevention practices among adolescents.

3. Results

3.1. Respondent Characteristics

Table 1. Distribution of Respondent Characteristics

Characteristics	Category	Amount	Percentage (%)
Gender	Woman	79	85.9
	Man	13	14.1
Age	18-21	81	88
	22-24	11	12
Personal History of Hypertension	Ever Diagnosed	5	5.4
	Never	86	93.5
Parental History of Hypertension	There is	33	35.9
	There isn't any	58	63

A total of 92 respondents participated in this study, consisting of 79 women (85.9%) and 13 men (14.1%). The majority of respondents were in the 18–21 age range, which is the transition period to early adulthood. Based on their medical history, 5 respondents (5.4%) had been diagnosed with hypertension, while 86 respondents (93.5%) stated they had no history of hypertension. Meanwhile, 33 respondents (35.9%) had a parent with a history of hypertension, while 58 respondents (63.0%) did not have such a history.

These findings show that most respondents were in the young age group who had not yet experienced clinical hypertension, but approximately one-third had genetic risk factors through family history. These hereditary factors can increase susceptibility to hypertension if combined with an unhealthy lifestyle. These results are consistent with research by Kayuningtyas & Ismayani (2020), which states that family factors contribute to increased blood pressure in young individuals through genetic predisposition and intergenerational dietary habits.(Kayuningtyas and Ismayani n.d.)

Table 2. Distribution of Adolescents' Knowledge and Behavior Levels Regarding Hypertension Prevention

Category	Knowledge (f/%)	Behavior (f/%)
Good	67 (72.8%)	41 (44.6%)
Enough	24 (26.1%)	44 (47.8%)
Not enough	1 (1.1%)	7 (7.6%)
Total	**92 (100%)**	**92 (100%)**

Adolescent Knowledge About Hypertension Prevention

The results showed that most respondents had a good level of knowledge regarding hypertension prevention, namely 72.8% (n = 67). Meanwhile, 26.1% (n = 24) had sufficient knowledge, and only 1.1% (n = 1) were classified as lacking. However, when viewed from the behavioral aspect, only 44.6% (n = 41) respondents showed good hypertension prevention behavior, while 47.8% (n = 44) were in the sufficient category, and 7.6% (n = 7) still showed inadequate behavior.

These findings indicate a gap between the level of knowledge and the implementation of hypertension prevention behaviors among adolescents, particularly college students. Although most understand the importance of a healthy diet, physical activity, and stress management, their implementation in daily life is still not optimal. Most respondents were able to correctly answer items related to hypertension risk factors, such as consumption of fatty and salty foods, smoking, lack of exercise, and stress. This indicates that basic information about hypertension prevention is well-disseminated among students. This finding aligns with research by Putri & Hartono (2022), which found that health students in Indonesia have a high level of knowledge about non-communicable diseases, including hypertension, due to exposure to information through digital media and formal education.(Putri and Hartono n.d.)

However, this high level of knowledge does not guarantee real behavioral change. According to the Health Belief Model (Rosenstock, 1974), a person may be aware of the risk of a disease but not necessarily perceive themselves as susceptible (Perceived Susceptibility) or see the tangible benefits of prevention (Perceived Benefit). In the context of college students, many feel young and "safe" from the risk of hypertension, thus not

being motivated to take action.(Rosenstock IM 1974)

Furthermore, the ease of access to information through social media creates a new paradox: students understand the concept of "healthy food" but don't understand its specific application in everyday contexts. As noted by Lestari et al. (2023), adolescents often obtain health information from unvalidated online media, resulting in partial understanding.(Afandi and Lestari 2023)

Adolescent Behavior in Hypertension Prevention

Despite relatively good knowledge, hypertension prevention behaviors still show less than satisfactory results. The proportion of good behaviors (44.6%) is still lower than that of good knowledge (72.8%). This indicates that knowledge does not automatically translate into action.

Based on behavioral statements, most respondents were inconsistent in consuming vegetables and fruit daily and still tended to rest or use gadgets rather than exercise. This phenomenon is supported by research by Utami et al. (2021), which showed that students tend to neglect physical activity due to academic commitments and sedentary lifestyles.(Utami, Lestari, and Mahmudah n.d.)

Furthermore, preventive behaviors such as regular blood pressure checks, avoiding high-salt foods, and managing stress remain low. This may be due to the limited availability of blood pressure screening facilities on campus and the lack of ongoing health education programs. The WHO (2023) emphasizes that although adolescents are a productive age group, unhealthy habits initiated during this period have the potential to increase the risk of hypertension in young adulthood.(World Health Organization 2023b)

Knowledge and Behavior Gap Analysis

The gap between knowledge and behavior found in this study reinforces the Theory of Planned Behavior (Ajzen, 1991), which states that health behavior is influenced not only by knowledge but also by intention, social norms, and perceived self-control. Students may know that exercise and a healthy diet are important, but academic pressure, peer influence, and an unsupportive environment make it difficult for them to practice these healthy behaviors.(Ajzen n.d.)

Research by Rahmawati et al. (2022) found that students living in boarding houses consume fast food more frequently due to convenience and price, despite being aware of the health risks.(Rahmawati, Hidayah, and Wulandari n.d.)The Indonesian Ministry of Health (2021) also found something similar, that 6 out of 10 Indonesian teenagers have good knowledge about nutrition, but only 3 apply it consistently.(Indonesia n.d.)

Furthermore, exposure to unfocused information and a lack of campus health support also widen the gap between knowledge and willingness. Many students consider hypertension prevention a low priority because they haven't experienced immediate symptoms. As Glanz et al. (2020) note in *Health Behavior: Theory, Research, and Practice*, awareness of chronic disease prevention often arises after someone experiences symptoms, rather than during a period of wellness.(Glanz, Rimer, and Viswanath n.d.)

4. Conclusion

The results of this study indicate that the majority of adolescents, particularly college students, have a good level of knowledge about hypertension prevention, at 72.8%. However, only 44.6% demonstrate good hypertension prevention behaviors, while nearly half are in the adequate category. This indicates a significant gap between knowledge and practice of hypertension prevention behaviors.

In general, students are aware of the main risk factors for hypertension, such as excessive salt consumption, high-fat foods, stress, and lack of physical activity. However, this awareness has not yet fully translated into concrete actions. Factors contributing to this gap include academic commitment, a sedentary lifestyle, social influences, low risk

perception, and a lack of campus support for healthy lifestyles.

These findings reinforce the Health Belief Model and the Theory of Planned Behavior, which emphasize that knowledge is only one component of health behavior. Actual behavior can only occur when an individual has a clear threat perception, strong intentions, and conducive social and environmental support.

This research also shows that widespread access to information does not always translate into improved health behaviors, particularly among adolescents who are frequently exposed to health information from social media without expert guidance. Therefore, health promotion on campus needs to be directed at strengthening motivation and practice, not just increasing knowledge.

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