

The Relationship Between Family Support and Hypertension Prevention Behavior In Adolescents

Karmelita Eka Harap^{1*}, Putria Carolina², Isnawiranti³

^{1,2,3}Eka Harap University, Indonesia

Corresponden author:

E-mail: krmlitaeh0203@gmail.com

Abstract.

Hypertension in adolescents is increasing due to the low adoption of healthy lifestyle behaviors, so family support is an important factor in forming preventive behaviors. This study aims to analyze the relationship between family support and hypertension prevention behaviors in adolescents at SMP Negeri 8 Palangka Raya City. This study used a quantitative correlational design with a cross-sectional approach. The accessible population was 377 eighth-grade students, with a sample of 66 respondents selected using quota sampling techniques. The research instruments were a family support questionnaire and a hypertension prevention behavior questionnaire that had been tested for validity and reliability. Data were analyzed using univariate analysis and the Spearman Rank correlation test with a significance level of 0.05. The results showed that 92% of respondents had good family support and 92% had good hypertension prevention behaviors. The Spearman Rank test showed a significant positive relationship between family support and hypertension prevention behaviors ($p = 0.007$; $r = 0.331$). In conclusion, family support is significantly related to hypertension prevention behaviors in adolescents, so family involvement needs to be optimized in health promotion programs to develop healthy lifestyle behaviors from an early age.

Keywords: Adolescents, Family Support, Health Behavior, Hypertension Prevention and Preventive Behavior.

I. INTRODUCTION

Hypertension is a non-communicable disease characterized by systolic blood pressure ≥ 140 mmHg and diastolic blood pressure ≥ 90 mmHg. It is known as a silent killer because it can cause organ damage without initial symptoms (Sugiarto, 2024). Currently, hypertension not only occurs in adults but is also starting to be found in adolescents due to low adoption of healthy lifestyle behaviors, such as high-salt food consumption, lack of physical activity, poor sleep patterns, and poor stress management. Therefore, preventing hypertension from adolescence through the adoption of a healthy lifestyle is a crucial step (Hidayat, 2020; Ibnu, 2023).

The phenomenon of early hypertension risk was also found among students at SMP Negeri 8 in Palangka Raya City, indicating that healthy lifestyle behaviors have not been optimally implemented. Habitual consumption of foods high in sodium, lack of physical activity, irregular sleep patterns, and low awareness of health check-ups are factors that increase the risk of hypertension. Furthermore, some adolescents still believe that hypertension only affects the elderly, so family support is needed to develop better preventative behaviors (Bestari, 2023; Amperaningsih, 2025).

The problem of hypertension in adolescents is a global and national concern. The WHO (2023) stated that the global prevalence of hypertension reached 33%, with the incidence among adolescents reaching 22%. In Indonesia, the prevalence of prehypertension in adolescents aged 15–19 years reached 16.8% and hypertension 2.6% (Health Development Policy Agency, 2024). Meanwhile, Central Kalimantan has the highest prevalence of hypertension based on measurements, at 40.7% (Indonesian Health Survey, 2023), so preventive efforts are needed from adolescence.

Low family support is also a factor influencing hypertension prevention behavior in adolescents. Research by Novianti (2024) showed that the majority of respondents had insufficient family support (58.3%) and negative hypertension prevention behavior (52.5%). A preliminary survey of 10 students at SMP Negeri 8 Palangka Raya City also showed that 60% of students lacked adequate knowledge and behaviors to prevent hypertension and did not receive optimal family support.

Hypertension in adolescents can develop due to unhealthy lifestyles and low awareness of early prevention. Family support plays a crucial role in increasing adolescents' knowledge, motivation, and

adoption of healthy behaviors. Conversely, a lack of family support can increase the risk of long-term health problems due to hypertension complications such as cardiovascular disorders, stroke, and kidney failure (Fadli, 2025; Sultan, 2025; Nur, 2025).

This study aims to determine the relationship between family support and hypertension prevention behavior in adolescents at SMP Negeri 8, Palangka Raya City. This includes identifying family support, hypertension prevention behavior, and the relationship between the two. This research is important as a basis for developing family- and school-based promotive and preventive strategies to prevent hypertension from adolescence. The novelty of this study lies in the study of the relationship between family support and hypertension prevention behavior in adolescents at SMP Negeri 8, Palangka Raya City, which is still limited.

II. METHODOLOGY

This study used a quantitative method with a correlational approach to determine the relationship between family support and hypertension prevention behaviors in adolescents at SMP Negeri 8, Palangka Raya City. The correlational method was used to examine the relationship between variables based on the level of closeness of the relationship through the correlation coefficient (Tampubolon, 2023).

The research design used was cross-sectional, which is a study that collects data at a specific point in time to determine the relationship between risk factors and the effects being studied (Notoatmodjo, 2020). The independent variable in this study was family support, while the dependent variable was hypertension prevention behavior in adolescents, which included aspects of knowledge, attitudes, and actions (Marliana, 2024; Pramita et al., 2020).

The research instrument used a questionnaire consisting of a family support questionnaire and a hypertension prevention behavior questionnaire. The family support questionnaire consisted of 9 items with a Likert scale, while the behavior questionnaire consisted of knowledge, attitude, and action domains with Guttman and Likert scales. The measurement results were categorized as good, sufficient, and less based on the percentage of scores obtained. Validity and reliability tests were conducted before the instrument was used. The validity test used correlation with the provision of calculated r value $> r$ table (0.361), while the reliability test used Cronbach's Alpha with the help of SPSS. The instrument was declared reliable if the Cronbach's Alpha value > 0.60 (Masturoh & Anggita, 2018). Data analysis was carried out through univariate and bivariate analysis. Univariate analysis was used to describe the characteristics of respondents and the distribution of research variables, while bivariate analysis used the Spearman Rank test to determine the relationship between family support and hypertension prevention behavior in adolescents with a significance level of $\alpha = 0.05$ (Sugiyono, 2020; Ghozali, 2021; Nursalam, 2020).

The research population was all 1,097 students of SMP Negeri 8 Palangka Raya City, while the accessible population was 377 eighth-grade students. Population is the entire object that has certain characteristics to be studied and conclusions drawn (Sugiyono, 2019).

The research sample consisted of 66 respondents consisting of 33 students from grade VIII-1 and 33 students from grade VIII-2. The sample was selected based on inclusion criteria, namely active students in grade VIII, aged 12–15 years, willing to be respondents, physically healthy, and living with their families. The sampling technique used was Non-Probability Sampling with Quota Sampling type, namely sampling based on a predetermined quota until it is met. This technique was used to obtain 66 respondents in accordance with the research criteria (Sugiyono, 2019).

The research procedure began with obtaining research permits from the university, the Palangka Raya City Education Office, and SMP Negeri 8 Palangka Raya City. After obtaining permits, the researcher coordinated with the school regarding the research implementation. Data collection was conducted by explaining the research objectives to respondents, obtaining informed consent, and then distributing questionnaires on family support and hypertension prevention behaviors to students who met the criteria. The collected data were then examined, coded, scored, and tabulated using SPSS for statistical analysis (Nursalam, 2021). The entire research process adhered to ethical research principles, including respondent consent, maintaining respondent identity, and ensuring data confidentiality (Hidayat, 2021).

III. RESULTS AND DISCUSSIONS

General Data (Univariate Analysis)

Table 1 Results of Respondent Frequency Distribution Based on Age

No	Age	Frequency	%
1	13 years old	30	45
2	14 years	36	55
Total		66	100

Based on the table above, the distribution of respondents by age can be seen in the following table: Most of the respondents were 14 years old, as many as 36 people (55%), while respondents were 13 years old, as many as 30 people (45%).

Table 2 Results of Respondent Frequency Distribution Based on Gender

No	Gender	Frequency	%
1	Man	33	50
2	Woman	33	50
Total		66	100

Based on the table above The distribution of respondents by gender shows that the number of male and female respondents is equal. There were 33 male respondents (50.0%) and 33 female respondents (50.0%).

Table 3 Results of Frequency Distribution of Respondents Based on Family History of Hypertension

No	Family History of Hypertension	Frequency	%
1	There is	25	38
2	There isn't any	41	62
Total		66	100

Based on the table above, the distribution of respondents according to their history of hypertension shows that: Most respondents did not have a history of hypertension, as many as 41 people (62%), while respondents who had a history of hypertension were 25 people (38%).

Table 4 Results of Frequency Distribution of Respondents Based on Family Members

Suffering from Hypertension

No	Family Members Suffering from Hypertension	Frequency	%
1	Family	8	32
2	Parent	17	68
Total		25	100

Based on the table above, the distribution of respondents according to family members suffering from hypertension shows that: Most respondents have family members suffering from hypertension in the Parents category, namely 17 people (68%), while respondents in the Other Family category are 8 people (32%).

Table 5 Results of Respondent Frequency Distribution Based on Blood Pressure Examination History

No	History of Blood Pressure Checks	Frequency	%
1	Once	66	100
2	Never	0	0
Total		66	100

Based on the table above, the distribution of respondents according to blood pressure history shows that: All respondents had had their blood pressure checked, 66 people (100%).

Special Data

Table 6 Results of the Distribution of Special Data on the Frequency of Family Support Variables

No	Family Support	Frequency	%
1	Good	61	92
2	Enough	5	8
3	Not enough	0	0

Total	66	100
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Based on the table above, the majority of respondents (61 respondents) had good family support, while 5 respondents (8%) had adequate family support. This indicates that the majority of adolescents at SMP Negeri 8 in Palangka Raya City receive good family support.

Table 7 Results of Data Distribution of Specific Frequency of Knowledge Domain Prevention Behavior Variables

No	Knowledge Domain Prevention Behavior	Frequency	%
1	Good	61	92
2	Enough	5	8
3	Not enough	0	0
Total		66	100

Based on the table above, the distribution of respondents according to the domain of knowledge in preventive behavior shows that: Almost all respondents have a knowledge level in the Good category, namely 61 people (92%), while respondents with a knowledge level in the Sufficient category are 5 people (8%). This shows that the majority of respondents already have a very good understanding of hypertension prevention behavior.

Table 8 Results of Data Distribution for the Frequency of Preventive Behavior Variables in the Attitude Domain

No	Attitude Domain Prevention Behavior	Frequency	%
1	Good	61	92
2	Enough	5	8
3	Not enough	0	0
Total		66	100%

Based on the table above, the distribution of respondents according to the domain of attitudes in preventive behavior shows that: Almost all respondents have attitudes in the Good category, namely 61 people (92%), while respondents with attitudes in the Fair category are only 5 people (8%). These results indicate that the majority of respondents have a tendency towards positive attitudes towards hypertension prevention efforts.

Table 9 Distribution Results of Prevention Behavior Variables for Action Domain

No	Behavior Prevention Domain Action	Frequency	%
1	Good	61	92
2	Enough	5	8
3	Not enough	0	0
Total		66	100%

Based on the table above, it is known that the implementation of preventive behavior in the action domain by respondents was mostly in the good category, namely 61 people (92%). Furthermore, respondents with the action domain category were 5 people (8%), and no respondents (0%) had less than the action criteria out of a total of 66 respondents.

Table 10 Distribution Results of Preventive Behavior Variables

No	Preventive Behavior	Frequency	%
1	Good	61	92
2	Enough	5	8
3	Not enough	0	0
Total		66	100

Based on the table above, the distribution of respondents according to the preventive behavior variable shows that: Almost all respondents have preventive behavior in the Good category, namely 61 people (92%), while respondents with the Sufficient behavior category are only 5 people (8%). Overall, these results indicate that the level of compliance and awareness of respondents in carrying out hypertension prevention efforts is very high.

Table 11 Crosstabulation Results of the Relationship between Family Support and Hypertension Prevention Behavior in Adolescents at SMP Negeri 8, Palangka Raya City

Family Support	Behavior						Total	
	Good		Enough		Not enough			
	N	%	N	%	N	%	N	%
Good	61	92	0	0	0	0	61	92
Enough	0	0	5	7	0	0	5	8
Not enough	0	0	0	0	0	0	0	0
Total	61	92	5	8	0	0	66	100

Based on the results of the cross-tabulation between family support and behavior, it was found that all 5 respondents with adequate family support had adequate behavior (8%). Meanwhile, all 61 respondents with good family support had good behavior (92%). Overall, the majority of respondents had good family support with good behavior, namely 61 people (92%).

Table 12 Results of the Spearman Rank Test on the Relationship between Family Support and Hypertension Prevention Behavior in Adolescents at SMP Negeri 8, Palangka Raya City

Spearman's rho	Family Support	Family Support		Behavior
		Correlation Coefficient	1,000	
		Sig. (2-tailed)	.	,007
		N	66	66
	Behavior	Correlation Coefficient	,331**	1,000
		Sig. (2-tailed)	0.007	.
		N	66	66

Based on Spearman's Rho test, the p-value was 0.007 (<0.05), so H_a was accepted, indicating a significant relationship between family support and hypertension prevention behavior in adolescents at SMP Negeri 8 Palangka Raya City. The Correlation Coefficient value of 0.331 indicates a positive relationship with weak correlation strength, which means the better the family support, the better the hypertension prevention behavior. Based on the analysis of the behavioral domain, the action aspect was the highest component with 51 respondents (77.27%), followed by knowledge 44 respondents (66.67%), and attitudes 16 respondents (24.24%).

Discussion

1. Results of Identification of Family Support for Adolescents at Public Middle School 8, Palangka Raya City

Based on the research results, the majority of respondents (61 respondents) received good family support. This support was evident in all 66 respondents (100%) who had undergone blood pressure checks, although the majority had no family history of hypertension (62%). The family support received included emotional, instrumental, informational, and reward aspects, which play a role in shaping adolescents' health behaviors.

According to Friedman in Hutagalung (2021), the affective and health care functions of families play a crucial role in shaping the preventive behaviors of family members. The high level of family support in this study indicates parental involvement through the provision of information, motivation, and access to health check-ups. This support provides a sense of security and encourages adolescents to adopt healthy lifestyles and seek early detection of hypertension.

This finding aligns with Berliana's (2024) concept of family support, as well as House's theory in Kusuma (2024), which explains that family support consists of emotional, esteem, informational, and instrumental support. These four forms of support shape adolescents' belief that family is a reliable source of support in maintaining health.

Furthermore, Pradnyani and Lestari (2023) stated that family is a reinforcing factor in the formation of adolescents' health behaviors through consistent role models and support. In early adolescence, dependence on parents is still high, so family support plays a significant role in developing disease-

preventing habits. This finding is also supported by Wulandari et al. (2024), who stated that family support can help reduce psychosocial stress that can potentially impact adolescent health.

The alignment between research results and theory indicates that family support is a crucial factor in increasing awareness of hypertension prevention in adolescents. Parental involvement through communication, education, and facilitation of health check-ups makes families agents of change in shaping preventive behaviors. This finding aligns with Rahayu et al. (2022) and Wijaya and Susanti (2023), who emphasized that family involvement and open communication can increase adolescent awareness of risk factors for non-communicable diseases and encourage the adoption of a healthy lifestyle from an early age.

2. Results of Identification of Hypertension Prevention Behavior in Adolescents at Public Middle School 8, Palangka Raya City

The results showed that the majority of respondents (61 respondents) had good hypertension prevention behaviors (92%). This achievement was supported by all 66 respondents (100%) who had undergone blood pressure checks. Early adolescents (13–14 years old) demonstrated fairly good cognitive abilities in receiving health information, while the balanced gender proportions indicated that prevention behaviors were not influenced by gender factors.

According to Bloom's theory, behavior is formed through three main domains: knowledge, attitudes, and actions. These three domains are interrelated, with good knowledge shaping positive attitudes and encouraging health actions. The high level of preventive behavior achieved in this study indicates that the health information received by respondents has been internalized into concrete actions, particularly in early detection through blood pressure checks. This aligns with the theory of Notoatmodjo and Kurt Lewin, which explains that behavior is the result of the interaction between individual and environmental factors.

The school environment, peer support, school health facilities, and increased health literacy are important factors in shaping preventive behaviors in adolescents. Exposure to adequate information from schools and digital media helps reduce misperceptions about hypertension and increases awareness of early prevention. These findings also indicate that the action domain achieved the highest achievement compared to knowledge and attitudes, indicating that respondents were better able to implement health behaviors in practice than they were able to understand the theoretical aspects in depth.

Overall, hypertension prevention behavior among students at SMP Negeri 8 Palangka Raya City is in the good category. This indicates a synchronization between knowledge, attitudes, and actions influenced by school environmental support and direct experience in health activities. However, strengthening knowledge and attitudes is still necessary so that preventive behavior does not arise solely from external factors but develops into sustainable health awareness. Top of Form

3. The Relationship between Family Support and Hypertension Prevention Behavior in Adolescents at Public Middle School 8, Palangka Raya City

The results of the study showed a significant relationship between family support and hypertension prevention behavior in adolescents with a positive relationship. Based on the Spearman's rho test, a p-value of 0.007 ($p < 0.05$) was obtained with a correlation coefficient of 0.331, indicating that the relationship between the two variables was at a weak but significant level of closeness. The cross-tabulation results showed that the majority of respondents with good family support also had good prevention behavior, as many as 61 people (92%), while respondents with sufficient family support had sufficient prevention behavior, as many as 5 people (8%). In addition, all respondents had had blood pressure checks (100%), which indicates real family support in encouraging early detection of hypertension.

These findings align with Calgary Wright and Leahey's family theory, which explains that the family is an interpersonal system that plays a role in shaping the values, beliefs, and health habits of family members. Family support, through emotional, esteem, informational, and instrumental aspects, plays a role in shaping health knowledge, attitudes, and actions, as described in Bloom and Lawrence Green's behavioral theory. Informational support strengthens adolescents' understanding of the risks of hypertension, emotional support fosters positive attitudes, while instrumental support facilitates the implementation of preventive behaviors such as blood pressure checks and adopting a healthy lifestyle.

Although the relationship found was weak, it suggests that hypertension prevention behaviors in adolescents are influenced not only by family but also by other factors such as peers, the school environment, and access to digital information. In early adolescence, social interactions begin to develop, so the formation of health behaviors is a result of a combination of family and external environmental influences. Family support remains a crucial factor in reinforcing behavior because it provides a supportive environment, including education, supervision, and healthcare facilities.

Overall, the research findings demonstrate that the family plays a key role in shaping hypertension prevention behaviors in adolescents. Support provided by parents, especially those with experience with hypertension, can increase children's awareness and motivation to adopt healthy lifestyle behaviors. Therefore, strengthening family function through health education and active involvement in non-communicable disease prevention is a crucial strategy for maintaining preventive behaviors from an early age.

IV. CONCLUSION

This study shows that most adolescents at SMP Negeri 8 Palangka Raya City receive good family support and exhibit good hypertension prevention behaviors. Spearman's rho test results indicate a significant positive relationship between family support and hypertension prevention behaviors ($p = 0.007$; $r = 0.331$), although the strength of the relationship is relatively weak. This finding indicates that the better the support provided by the family through emotional, informational, reward, and instrumental aspects, the better the hypertension prevention behaviors demonstrated by adolescents. The results of this study confirm that the family has an important role as a reinforcement in shaping knowledge, attitudes, and preventive actions towards hypertension from an early age, although the formation of health behaviors is also influenced by other factors such as the school environment, peers, and access to health information.

This study has limitations due to its cross-sectional design, which cannot explain causal relationships, the relatively limited number of respondents from one school, and the use of a questionnaire instrument that relies on respondents' honesty. Therefore, further research is recommended to use a longitudinal or experimental design with a wider coverage area, a larger sample size, and the addition of other variables such as health literacy, peer influence, physical activity, diet, and digital media utilization to obtain a more comprehensive model of factors influencing hypertension prevention behavior in adolescents. Practically, the results of this study can serve as a basis for schools, health workers, and parents to develop health education programs that actively involve families, strengthen School Health Unit (UKS) activities, and increase blood pressure screening and promote healthy lifestyles as an effort to prevent hypertension from adolescence.

REFERENCES

- [1]. Allender, J. A., Rector, C., & Warner, K. D. (2014). *Community & public health nursing: Promoting the public's health* (8th ed.). Lippincott Williams & Wilkins.
- [2]. Amperaningsih, Y. (2025). The relationship between knowledge and peer support with stroke prevention behavior in elderly people with hypertension. *Indonesian Journal of Nursing Science*, 6(2), 411–420.
- [3]. Health Development Policy Agency. (2024). *Health report: Prevalence of hypertension in adolescents aged 15–19 years*. Ministry of Health of the Republic of Indonesia.
- [4]. Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, 31(2), 143–164. <https://doi.org/10.1177/1090198104263660>
- [5]. Berliana, E. (2024). The relationship between family support and learning motivation in first-year undergraduate students of Nursing Science at Bhadwara University (Undergraduate thesis, Bhadwara University).
- [6]. Bestari, RS, Aisyah, R., Jatmiko, SW, Utami, AR, Syahida, S., Nurhaliza, S., & Sholeh, MDI (2025). Increasing knowledge about family support for healthy lifestyles among students of Muhammadiyah Junior High School in Surakarta. *Journal of Community Service Medika*, 128–132.
- [7]. Bloom, B. S. (1956). *Taxonomy of educational objectives: Handbook I. Cognitive domain*. David McKay.

- [8]. Fadli, MN, Yuniarti, EV, & Merbawani, R. (2025). Correlation between self-efficacy and compliance with a low-salt diet in hypertensive patients in the working area of the Kranggan Community Health Center (Undergraduate thesis, PPNI Bina Sehat Library).
- [9]. Ghozali, I. (2021). Multivariate analysis applications with the IBM SPSS program (10th ed.). Diponegoro University Publishing Agency.
- [10]. Green, L. W., & Kreuter, M. W. (2005). Health program planning: An educational and ecological approach (4th ed.). McGraw-Hill.
- [11]. Hidayat, AA (2021). Developing research instruments & validity-reliability testing. Health Books Publishing.
- [12]. Hidayat, TK, Herawati, VD, & Suwarni, A. (2025). The relationship between smoking habits and the incidence of hypertension in adolescents in Mojo Wetan Village, Sragen (Undergraduate thesis, Sahid University, Surakarta).
- [13]. House, J. S. (1981). Work stress and social support. Addison-Wesley.
- [14]. Hutagalung, MS (2021). Causes of death in stroke patients and the role of the family in supporting the stroke recovery process. Nusamedia.
- [15]. Ibnu, F., Hidayati, RN, & Sari, K. (2025). Detecting modifiable hypertension risk factors in preventive behavior efforts for hypertensive clients. Nuansa Fajar Cemerlang.
- [16]. Khoirunnisa, RA (2022). The relationship between public knowledge about COVID-19 and behavior in maintaining health protocols at Peterongan Market, Jombang (Undergraduate thesis, Darul 'Ulum Islamic Boarding School University).
- [17]. Kusuma, FH, Firdaus, AD, & Kurniawan, AS (2024). The relationship between family support and medication adherence in hypertensive patients at the Sawahan Community Health Center, Nganjuk Regency. Muhammadiyah Nursing Journal, 9(4).
- [18]. Lewin, K. (1951). Field theory in social science: Selected theoretical papers. Harper & Brothers.
- [19]. Marlina, OS (2024). Formulation of variables and indicators in quantitative educational research. *Rokania Education Journal*, 9(1), 18–29.
- [20]. Masturoh, I., & Anggita, N. (2018). Health research methodology. Ministry of Health of the Republic of Indonesia.
- [21]. Notoatmodjo, S. (2020). Health research methodology. Rineka Cipta.
- [22]. Novianti, R. (2024). The relationship between the level of knowledge, attitudes, and family support towards hypertension prevention behavior in adolescents in Gebungan Village. *Journal of Nursing*, 15(1), 1–12.
- [23]. Nursalam. (2020). Nursing research methodology: A practical approach (5th ed.). Salemba Medika.
- [24]. Nursalam. (2021). Nursing management: Application in professional nursing practice (6th ed.). Salemba Medika.
- [25]. Pradnyani, NLP, & Lestari, NKY (2023). The role of the family in shaping adolescent health behavior. Indonesian Nursing Journal.
- [26]. Pramita, RWD, Noviansyah, R., & Sulistyan, RB (2020). Quantitative research methods (3rd ed.). Widya Gama Press.
- [27]. Rahayu, D., Putri, A., & Sari, M. (2022). The role of family communication in improving healthy lifestyle behaviors in adolescents. *Indonesian Journal of Health Promotion*.
- [28]. Saputra, A., & Handayani, R. (2023). The role of the school environment and peers in the formation of healthy lifestyle behaviors in adolescents. *Indonesian Journal of Health Promotion*.
- [29]. Sarafino, E. P., & Smith, T. W. (2014). Health psychology: Biopsychosocial interactions (8th ed.). John Wiley & Sons.
- [30]. Simbolon, P., Turnip, H., Damanik, C., & Tamba, R. (2025). Mechanisms and individual behavior. *Journal of Social and Humanities Education*, 4(1), 669–679.
- [31]. Sugiyono. (2019). Quantitative, qualitative, and R&D research methods. Alfabeta.
- [32]. Sugiyono. (2020). Quantitative, qualitative, and R&D research methods. Alfabeta.
- [33]. Sugiarto, R., Susanti, F., & Samsuni, S. (2024). Application of non-pharmacological therapy of hypertension exercise to reduce high blood pressure in hypertensive patients in the Flamboyan Room. *Indonesian Journal of Medical Sciences*, 3(2), 59–64.
- [34]. Sultan, AAA (2025). The influence of interpersonal communication on early hypertension prevention behavior in students of SMAN 6 and SMAN 19 Bone (Doctoral dissertation, Hasanuddin University).
- [35]. Indonesian Health Survey. (2023). Report of the 2023 Indonesian Health Survey. Health Development Policy Agency, Ministry of Health of the Republic of Indonesia.
- [36]. Tampubolon, M. (2023). Research methods. PT Global Eksekutif Teknologi.

- [37]. Wijaya, A., & Susanti, D. (2023). Family communication and non-communicable disease prevention behavior in adolescents. *Indonesian Journal of Public Health*.
- [38]. World Health Organization. (2023). Hypertension. <https://www.who.int>.