



Enhancing Adolescent Awareness of Chronic Disease Through Community-Based Education and Health Assessment

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ABSTRACT

Adolescents are increasingly vulnerable to chronic diseases such as hypertension, diabetes mellitus, and heart disease, largely due to unhealthy lifestyles and poor dietary habits. This community service initiative aimed to improve adolescents' knowledge and awareness regarding chronic disease prevention. The program was implemented at SMAN 9 Padang, involving 58 students, and comprised health education through lectures and individual health assessments—including measurements of weight and height, and family medical history screening. Results indicated that 34.5% of students were classified as underweight based on their body mass index (BMI), while 20.7% were overweight. Identified risk behaviors included smoking (22.3%), physical inactivity (35.5%), and a family history of hypertension (43.1%). The educational intervention led to a significant improvement in students' knowledge, with the average score increasing from 6.74 (pre-test) to 7.82 (post-test) on a 10-point scale. This school-based education and health screening initiative effectively enhanced adolescent awareness of chronic disease prevention and underscored the importance of early interventions to foster healthier lifestyles among youth.

Keywords: adolescent, chronic disease, community, education

INTRODUCTION

Lifestyle plays a highly significant role in determining an individual's health status. Healthy lifestyle choices, such as regular exercise, not smoking, limiting alcohol consumption, and effective stress management, have been proven to reduce the risk of chronic diseases and improve overall quality of life. Conversely, a sedentary lifestyle is one of the main risk factors for various preventable diseases. Lack of physical activity can slow blood circulation, cause blood vessel stiffness, and increase the risk of blockages, heightening the chances of heart disease and diabetes (Thyfault et al., 2012).

The World Health Organization (WHO) defines a healthy lifestyle as a set of behaviors to maintain and improve health, including positive interactions with social, economic, and physical environmental factors (Obidovna, 2022). Among adolescents, lifestyle is a key internal factor that influences health awareness. In addition to physical activity, dietary habits also play a central role. The consumption of foods high in fat, added sugars, and salt can trigger obesity, diabetes, and heart disease. On the other hand, a balanced diet rich in fiber, vitamins, and minerals has been shown to support the prevention of these diseases (Obidovna, 2022).

Students' awareness of the importance of adopting a healthy lifestyle must be enhanced through comprehensive education. One study indicates that healthy behaviors—such as low-fat diets, aerobic exercise, non-smoking, and adequate sleep—significantly impact long-term health outcomes. Individuals who exercise four times a week have a lower risk of diabetes, heart disease, and hypercholesterolemia compared to those who are inactive (Byrne et al., 2016). Another study found that healthy lifestyle education can significantly lower blood pressure (Fridalni et al., 2019) and that educational programs using emotional and psychological approaches, such as EMPIRE (Emotion and Mind Power in Relationship with Eating) effectively increase physical activity among participants (Palupi et al., 2022).

Meanwhile, epidemiological data show that the prevalence of diabetes among young people in Indonesia remained stable at 0.5% from 2013 to 2018, based on physician diagnoses (Kemenkes, 2014; Kemenkes, 2019). However, the high percentage of undiagnosed and untreated cases—up to 18.5% is a serious concern (Wahidah & Rahayu, 2022). Moreover, around 86.6% of young adults have never had their blood sugar checked (Febriani et al., 2024). This lack of awareness may lead to delayed diagnoses and an increased risk of severe complications. Therefore, health education on diabetes and its prevention must be carried out systematically and target younger age groups.

In response to these issues, a community service initiative was carried out through health assessments and health education focused on promoting healthy lifestyles among students at SMAN 9 Padang. The school is located in the same district as Universitas Andalas. This activity aimed to enhance adolescents' knowledge and awareness of healthy behaviors as a preventive strategy against the future risk of chronic diseases.

METHOD

Community This community service activity was conducted at SMAN 9 Padang, targeting adolescents under 17. A total of 58 participants were selected using an accidental sampling technique. The instruments used included a documentation sheet containing demographic data, information on hypertension risk factors, and blood pressure examination results. After establishing a cooperation agreement with the Head of SMAN 9 Padang, students to be involved in community service were identified. These students were gathered in one room and provided with an explanation of the planned activities. The session began with an introduction and distribution of a questionnaire to assess students' knowledge, followed by health education, and concluded with a post-education knowledge assessment and health screening.

The detailed stages of the community service activity are as follows:

1. Preparation Stage
 - a. Establishing collaboration with SMAN 9 Padang to obtain permission for student participation. The school was informed about the planned activities, which included physical examinations and health education.
 - b. Preparing necessary tools and materials such as sphygmomanometers, weighing scales, measuring tapes, and others.
 - c. Preparing a questionnaire to assess students' knowledge and health check cards for recording blood pressure examination results.
2. Implementation Stage
 - a. Measuring students' knowledge before providing health education
 - b. Delivering health education about risk factors for chronic diseases, including hypertension
 - c. Measuring students' knowledge after the education session

- d. Conducting health checks, beginning with body weight and height measurements
- e. Performing blood pressure examinations

3. Evaluation Stage

The evaluation was carried out using questionnaires administered before and after the health education to assess students' knowledge of chronic diseases, especially hypertension. In addition, physical examinations were conducted as a health screening measure for the students.

RESULTS AND DISCUSSION

The following are the demographic characteristics of adolescents who participated in community service activities at SMA 9 Padang on Wednesday, 25 September 2024; as many as eight lecturers from the Faculty of Nursing and five students were involved in this activity. The characteristics of adolescents can be seen in Table 1 as follows:

Table 1. Demographic characteristics of community service activity participants (n = 58)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	27	46.6
Female	31	53.4
Age (Years)		
14	4	6.9
15	36	62.1
16	18	31
Body Mass Index (BMI)		
Underweight (< 17)	20	34.5
Normal (18.5 – 25)	26	44.8
Overweight (>25)	12	20.7
Smoking		
No Smoking	45	77.7
Smoking	13	22.3
Physical Activity		
Regular physical activity	38	65.5
Irregular physical activity	20	35.5
Family history of hypertension		
Yes	25	43.1
No	33	56.9

Based on Table 1, it is shown that most students involved in this community service activity were female, totaling 31 individuals (53.4%), with most being 15 years old, amounting to 36 individuals (62.1%). Furthermore, the data indicates that several students had abnormal Body Mass Index (BMI), with 26 students (44.8%) categorized as underweight and 20 students (34.5%) categorized as overweight. Additionally, the activity revealed that 13 students (22.3%) were smokers, 20 students (35.5%) did not engage in regular physical exercise, and 25 students (43.1%) had a family history of hypertension. The following table shows the mean score of adolescent knowledge regarding chronic disease prevention before and after education. From Table 2, there was an increasing in the knowledge score of adolescents related to health knowledge of chronic disease prevention, followed by Figure 1.

Table 2. Mean of pre-test and post-test knowledge of adolescence

Variable	Mean score pre-test	Mean score post-test
Health knowledge related to chronic disease prevention	6.74 (0-10)	7.82 (0-10)

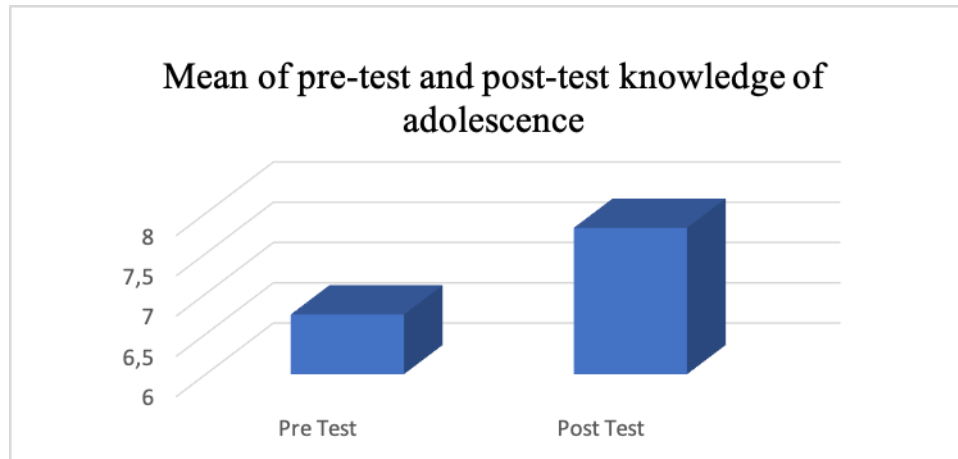


Figure 1. Mean of pre-test and post-test knowledge of adolescence



Figure 2. Health education for adolescence in SMA 9 Padang



Figure 3. Health assasement for adolescence in SMA 9 Padang

This community service activity aimed to enhance students' knowledge and awareness about maintaining their health and adopting a healthy lifestyle to prevent chronic disease risks from an early age. This increase in awareness is expected to stop understanding and lead to actual behavioral changes toward healthier habits. When individuals understand the importance of health maintenance, they are more likely to adopt positive habits such as regular exercise, avoiding smoking, limiting alcohol consumption, and maintaining a balanced diet.

The health screening results showed that 20.7% of participants were overweight or obese. This finding indicates a significant potential risk for chronic diseases among students. A study by Krist et al. (2020) showed that the increasing prevalence of hypertension in children and adolescents can be attributed to early-onset obesity. Similarly, Singh et al. (2017) also stated that smoking, alcohol consumption, and being overweight or obese are significantly associated with hypertension. Adolescents with high Body Mass Index (BMI) or obesity have a higher risk of developing hypertension.

These findings align with previous community service programs that have also emphasized the importance of health education as a preventive measure. For instance, a program at SMK Bhumi Husada reported an increase in knowledge about diabetes mellitus among 24 students, as evidenced by a comparison between pre-test and post-test results (Halimatushadyah et al., 2025). This result is supported by a study by Nasution (2024), which concluded that school-based health education interventions effectively improve adolescents' understanding of chronic diseases such as diabetes.

Another study by Afandi et al. (2024) found that delivering educational material directly can increase awareness and preventive behavior related to non-communicable diseases among secondary school students. This highlights the importance of tailoring educational interventions to the target audience's needs and characteristics, as Johari et al. (2023) emphasized. A study by Ulfa et al. (2023) on physical activity and balanced nutrition education also supports the effectiveness of this approach. The pre-test and post-test results showed an increase in knowledge scores from 5.08 to 7.08. However, despite the overall increase in knowledge, there was a decrease in understanding related to healthy fat consumption (from 76.9% to 65.1%), indicating the need to improve how certain educational materials are delivered.

In addition, a community service activity by Siregar et al. (2023) through the "Teen Movement for Kidney Health" program showed an increase in adolescent understanding of kidney health, with the proportion of students with sound knowledge rising from 40% to 60%. This demonstrates that well-planned and systematic education can significantly improve adolescents' health literacy. Health education is a strategy designed to influence individuals, groups, or communities to adopt behaviors that support good health. It aims to replace previously unhealthy behaviors with ones that align with public health goals. Through the Communication, Information, and Education (CIE) approach, health promotion can be effectively conveyed using various media and methods—such as print, digital platforms, direct education, group discussions, or culturally-based approaches.

In the context of adolescents, applying the CERDIK approach (Periodic health checks, Eliminating smoking, Regular physical activity, Balanced diet, Enough rest, and Stress Management) is particularly relevant as a practical and straightforward guide to healthy living. Therefore, school-based educational interventions are a vital investment in long-term preventive efforts to reduce the prevalence of chronic diseases from a young age.

CONCLUSION

Health education and screenings for adolescents are strategic efforts to raise awareness about the importance of a healthy lifestyle and to prevent chronic disease risks

from an early age. This activity demonstrated an increase in students' knowledge after receiving health education. To sustain this positive impact, regular health check-ups conducted by the school in collaboration with local health centers (puskesmas) are essential. Additionally, follow-up education through workshops, seminars, or the integration of health topics into the school curriculum is highly recommended to strengthen and maintain knowledge and healthy behaviors among adolescents. These findings carry significant implications for public health policy, as improving adolescent health literacy can drive healthier behavioral changes and ultimately reduce the prevalence of chronic diseases in the future.

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