

## Improving Adolescent Knowledge on the Dangers of Smoking and Drug Abuse Through Community-Based Health Education in Kuala Lempuing Village, Bengkulu City

Hermansyah\*

Poltekkes Kemenkes Bengkulu,  
INDONESIA

Mercy Nafratilova

Poltekkes Kemenkes Bengkulu,  
INDONESIA

Zadam Marita

Poltekkes Kemenkes Bengkulu,  
INDONESIA

Meidyah Pitaloka

Poltekkes Kemenkes Bengkulu,  
INDONESIA

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### Abstract

**Background:** Cigarette smoking and the abuse of Narcotics, Psychotropics, and Other Addictive Substances (NAPZA) remain major public health issues that negatively impact physical, mental, and social health. Adolescents are particularly vulnerable due to peer influence, environmental exposure, and limited knowledge about the long-term risks of smoking and NAPZA. In RT 11 and RT 12 RW 03, Kelurahan Kuala Lempuing, household smoking and low awareness about NAPZA dangers remain prevalent.

**Aims:** This community service activity aims to increase adolescents' knowledge and awareness of the dangers of cigarette smoking and NAPZA abuse, as well as prevention strategies.

**Methods:** The intervention was conducted through health education using lectures, discussions, question-and-answer sessions, and informational leaflets. A pre-test and post-test design was applied to 26 participants from RT 11 and RT 12, RW 03, Kelurahan Kuala Lempuing, on December 18, 2025. Data were analyzed descriptively to compare pre-test and post-test scores.

**Results:** Participants' knowledge improved after the intervention. Before education, smoking knowledge was fair among 53.8% and poor among 46.2% of participants, while NAPZA knowledge was fair among 61.5% and poor among 23.1%. After education, 92.3% of participants achieved good knowledge for both smoking and NAPZA, while 7.7% remained in the fair category.

**Conclusion:** Health education improved community knowledge and awareness regarding smoking and NAPZA and supports ongoing educational programs to reduce smoking and NAPZA use in the target area.

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## INTRODUCTION

Public health continues to face significant challenges from behavioral and addictive health risks. The environment in which humans grow and develop poses specific challenges and threats that can influence the quality of life in society (Mehboob, 2023). One serious public health problem in Indonesia is the high prevalence of cigarette smoking and the misuse of narcotics, psychotropic substances, and other addictive drugs (NAPZA) (Irianto et al., 2022). Both cigarette use and NAPZA consumption are major risk factors for physical, mental, and social health problems, affecting not only individuals but also families and the surrounding community (World Health Organization, 2025).

Data from Riskesdas (2018) show that the prevalence of active smokers and NAPZA misuse remains high, increasingly affecting adolescents and individuals of productive age. This trend indicates a growing public health burden, as early exposure to these substances can increase the risk of long-term health complications and social problems. Despite efforts by the government and community organizations to implement regulations, health campaigns, and educational activities

\* Corresponding author:

Hermansyah, Poltekkes Kemenkes Bengkulu, Indonesia. ✉[hermansyah1975@poltekkesbengkulu.ac.id](mailto:hermansyah1975@poltekkesbengkulu.ac.id)

(Mahmoodi et al., 2023), these interventions have not yet been fully effective at the neighborhood level (RT), where awareness and knowledge about the dangers of smoking and NAPZA remain limited (Fajriyah et al., 2023).

Low understanding of the long-term effects of cigarettes and NAPZA contributes to the perception that risky behaviors are normal in daily life (Ndoen et al., 2022). Many members of the community are still unaware that exposure to these substances can damage health, disrupt social relationships, and negatively impact the future of young generations (Alhammad et al., 2022). Observations in RT 11 and RT 12 indicate that these areas have high potential risks for exposure to cigarettes and NAPZA, both directly and indirectly (Astuti et al., 2019). The presence of active smokers within households, combined with insufficient information regarding substance misuse, represents a significant threat to public health, particularly for children and adolescents (Ismail et al., 2025). However, a gap remains in the effectiveness of health education at the neighborhood level; RT 11 and RT 12 were selected due to a high prevalence of smoking, low awareness of NAPZA, and limited community-based educational interventions.

Addressing this issue requires preventive strategies through structured and participatory health education implemented directly in the community. This method involves interactive counseling, group discussions, and simple media such as leaflets, supported by pre-tests and post-tests. Compared to one-way approaches, it is more effective because it encourages active participation, improves understanding, and promotes sustainable behavioral change (Najihah et al., 2025). Health education, the delivery of accurate and easily understandable information, and the fostering of collective awareness are critical to creating a healthy, smoke-free, and NAPZA-free environment (Arranury et al., 2026). Evidence suggests that well-structured community interventions can improve knowledge, change attitudes, and encourage active participation in preventive behaviors, which ultimately reduces health risks and improves overall quality of life (Rombeallo et al., 2025).

In response to these needs, a structured community outreach program titled “The Dangers of Cigarettes and NAPZA: Real Threats to Health and the Future in Kelurahan Kuala Lempuing, Bengkulu City, 2025” was conducted in RT 11 and RT 12. This initiative aimed to enhance community understanding of the negative impacts of smoking and substance misuse, increase awareness of associated risks, and promote proactive participation in preventive measures. Through this program, it is expected that residents will adopt healthier behaviors, recognize the long-term consequences of cigarettes and NAPZA, and contribute to the creation of a safer, healthier, and higher-quality environment (World Health Organization, 2024).

## METHOD

### Research Design

The implementation method of this community service activity was conducted using a community and family nursing approach (Family Health Nursing), focusing on adolescents and community members in RT 11 and RT 12, Kelurahan Kuala Lempuing, Bengkulu City. The activities were designed to improve participants' knowledge, attitudes, and awareness regarding the dangers of cigarette smoking and NAPZA misuse, and to empower families and the community to prevent risky behaviors.

### Study Area

The activities were carried out in RT 11 and RT 12, Kelurahan Kuala Lempuing, Bengkulu City, areas identified as having a high potential risk of exposure to cigarette smoke and NAPZA, particularly affecting adolescents and children.

### Population and Sampling Technique

The target population consisted of male adolescents residing in RT 11 and RT 12, Kelurahan Kuala Lempuing, Bengkulu City. Participants were selected using purposive sampling, based on the criteria of willingness to participate, ability to communicate in Indonesian, and no prior formal education on the dangers of cigarettes and NAPZA within the last six months.

### **Number, Criteria, and Characteristics of Targets**

1. Number of participants: 26 male adolescents.
2. Criteria: male adolescents residing in RT 11 and RT 12, willing to participate in all sessions, and had not received formal health education regarding cigarettes and NAPZA in the past six months.
3. Characteristics: all participants were male, aged 13–19 years, with varying educational backgrounds, and actively involved in family and community life.

### **Aspects Measured**

1. Participants' knowledge regarding the risks and health impacts of cigarette smoking and NAPZA misuse.
2. Participants' attitudes and perceptions toward avoiding risky behaviors related to cigarettes and NAPZA.
3. Awareness and readiness of the adolescent participants to support a smoke-free and NAPZA-free environment within their families and communities.

### **Instruments**

1. Pre- and post-intervention questionnaires consisting of multiple-choice and Likert-scale questions measuring knowledge, attitudes, and awareness regarding cigarettes and NAPZA. Knowledge scores were calculated by assigning 1 point for each correct answer and 0 for incorrect answers, with total scores converted into percentages. Knowledge levels were categorized as good (76–100%), fair (56–75%), and poor ( $\leq 55\%$ ).
2. Educational media including posters, pamphlets, and videos demonstrating the risks of smoking and substance misuse.
3. Observation checklists for facilitators to assess participant engagement and understanding during discussions and interactive sessions.

### **Data Collection Methods**

1. Preparation Stage: Coordination with local community leaders, identification of participants, and preparation of educational materials.
2. Implementation Stage:
  - 1.1 Introduction and problem identification regarding cigarette and NAPZA risks.
  - 1.2 Interactive discussions and lectures on prevention strategies.
  - 1.3 Demonstration and distribution of educational media.
  - 1.4 Community guidance on creating supportive environments for healthy behavior.
3. Mentoring Stage: Facilitators guided participants and families in applying prevention strategies within households.
4. Evaluation Stage: Pre- and post-questionnaires were administered to assess changes in knowledge, attitudes, and awareness. Facilitators observed participant engagement and understanding during sessions.

### **Data Analysis**

Questionnaire data were analyzed using univariate descriptive statistics to determine the distribution and changes in knowledge, attitudes, and awareness before and after the intervention, presented in frequencies and percentages. Observation notes were analyzed qualitatively in a descriptive manner to assess participant engagement and comprehension.

### **Limitations**

The activities involved only 60 participants from RT 11 and RT 12, so the results cannot be generalized to the entire population of Kelurahan Kuala Lempuing. The evaluation focused on

short-term knowledge and attitude changes and did not directly measure long-term behavioral changes or reductions in cigarette or NAPZA exposure.

## RESULTS AND DISCUSSION

### Results

This community service program began with a preliminary survey conducted on December 18, 2025, in RT 11 and RT 12 RW 03, Kelurahan Kuala Lempuing, Bengkulu City. The survey aimed to gather baseline information about adolescent and community behaviors related to cigarette consumption and NAPZA use. The findings revealed that the level of knowledge and awareness regarding the dangers of smoking and addictive substances was still low, and risky behaviors were relatively widespread among both adolescents and community members.

The subsequent phase involved a socialization session, also conducted on December 18, 2025, in RT 11 and RT 12, Kelurahan Kuala Lempuing. The event commenced with opening remarks from local community leaders and representatives of the Kelurahan office. A total of 21 adolescents and community members attended. The socialization session focused on the health, psychological, and social consequences of smoking and NAPZA use, as well as highlighting the critical roles of families and communities in preventing risky behaviors.

Before the intervention, participants' knowledge of smoking was categorized as fair (53.8%) and poor (46.2%), with no participants in the good category (0%). After the intervention, 92.3% of participants achieved a good level of knowledge, while 7.7% remained in the fair category. Similarly, for NAPZA, before the intervention, most participants had fair knowledge (61.5%), followed by poor (23.1%) and good (15.4%). After the intervention, 92.3% of participants reached a good level of knowledge, and only 7.7% remained in the fair category.

The main component of the activity was health education, held on the same day at RT 11 and RT 12. Nursing Profession students from Bengkulu City delivered the first session, covering definitions of cigarettes and NAPZA, types of addictive substances, their impacts on physical, mental, and social well-being, and strategies to prevent risky behaviors among adolescents. The second session included interactive discussions and Q&A sessions, giving participants the opportunity to share their experiences, express concerns, and ask questions about smoking and substance abuse. Educational leaflets were distributed to reinforce comprehension and retention of the presented material.

Following the educational sessions, participants engaged in practical exercises focused on monitoring their environment and family involvement in preventing risky behaviors. Adolescents and community members were encouraged to actively supervise, remind, and model healthy behaviors at home and within the neighborhood. These activities aimed to foster an environment that supports healthy lifestyles and enhances community engagement in the prevention of cigarette and NAPZA use.

At the evaluation stage, participants' knowledge and attitudes were measured using post-test questionnaires with a Likert scale. The results demonstrated a notable improvement in understanding the negative effects of smoking and addictive substances, along with increased awareness and more cautious attitudes toward risky behaviors.

Overall, this community service initiative achieved several key outcomes:

1. Improved knowledge and awareness among adolescents and community members about the dangers of cigarette smoking and NAPZA,
2. Enhanced understanding of family and community roles in preventing risky behaviors,
3. Increased community participation in fostering a healthy and supportive environment,
4. Distribution of educational materials and leaflets to strengthen learning,
5. Documentation of activities for future reference in community health programs.

This program is expected to bolster community-based initiatives to prevent smoking and NAPZA use among adolescents and serve as a sustainable model for health education and behavior modification in Kelurahan Kuala Lempuing.



**Figure 1.** Participants were given pre-test questionnaires before the health education session to assess their initial knowledge regarding the dangers of smoking and drug abuse (NAPZA).



**Figure 2.** The speaker delivered educational materials related to the health risks of smoking and drug abuse (NAPZA) as well as prevention strategies to participants in RT 11 and RT 12, the working area of Kuala Lempuing Primary Health Center



**Figure 3.** Participants actively participated in a discussion session by asking questions and sharing their opinions regarding the dangers of smoking and NAPZA, as well as prevention efforts within the community.



**Figure 4.** Rewards were given to participants who actively participated in the discussion session and were able to correctly answer questions related to the educational materials presented.



**Figure 5.** Group photo documentation with participants and the community service team after the completion of the health education activities on the dangers of smoking and NAPZA in RT 11 and RT 12, the working area of Kuala Lempuing Primary Health Center.

### Assessment of Participants' Cognitive Abilities Related to the Dangers of Smoking and NAPZA

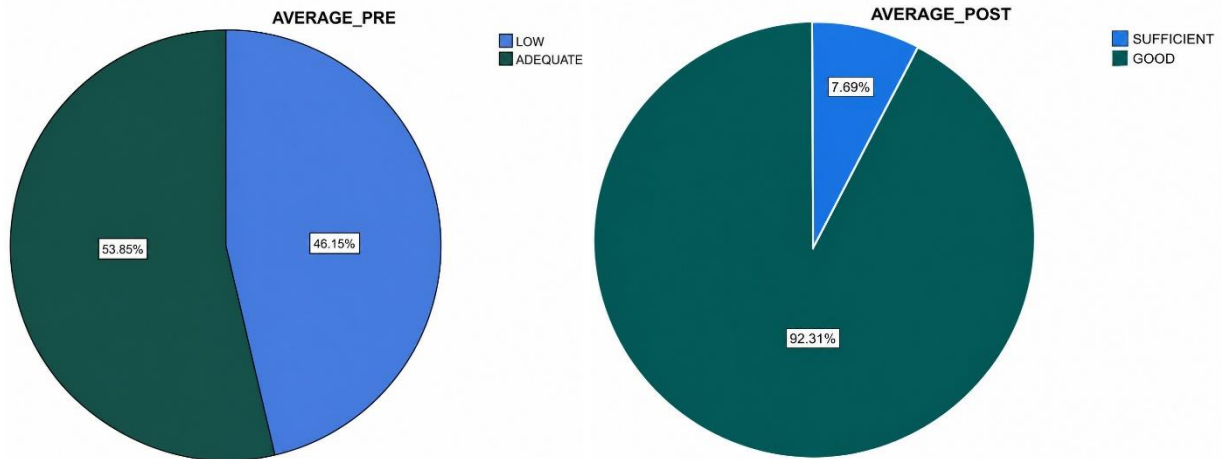
Before the health education activities were conducted, participants' knowledge levels regarding the dangers of smoking and drug abuse (NAPZA) were evaluated using a questionnaire developed based on the educational materials provided during the program. Participants first completed the pre-test questionnaire to assess their initial level of knowledge. After that, participants received health education sessions related to the health risks of smoking and NAPZA as well as prevention strategies. At the end of the educational activity, participants' knowledge was reassessed through a post-test. The analysis results showed a significant increase in knowledge, as presented in the following table.

**Table 1.** Distribution of Participants' Knowledge Level on the Dangers of Smoking and NAPZA Before and After Health Education (n = 26)

Knowledge Level	Smoking Pretest n (%)	Smoking Posttest n (%)	NAPZA Pretest n (%)	NAPZA Posttest n (%)
Good	0 (0)	24 (92.3)	4 (15.4)	24 (92.3)
Fair	14 (53.8)	2 (7.7)	16 (61.5)	2 (7.7)
Poor	12 (46.2)	0 (0)	6 (23.1)	0 (0)
Total	26 (100)	26 (100)	26 (100)	26 (100)

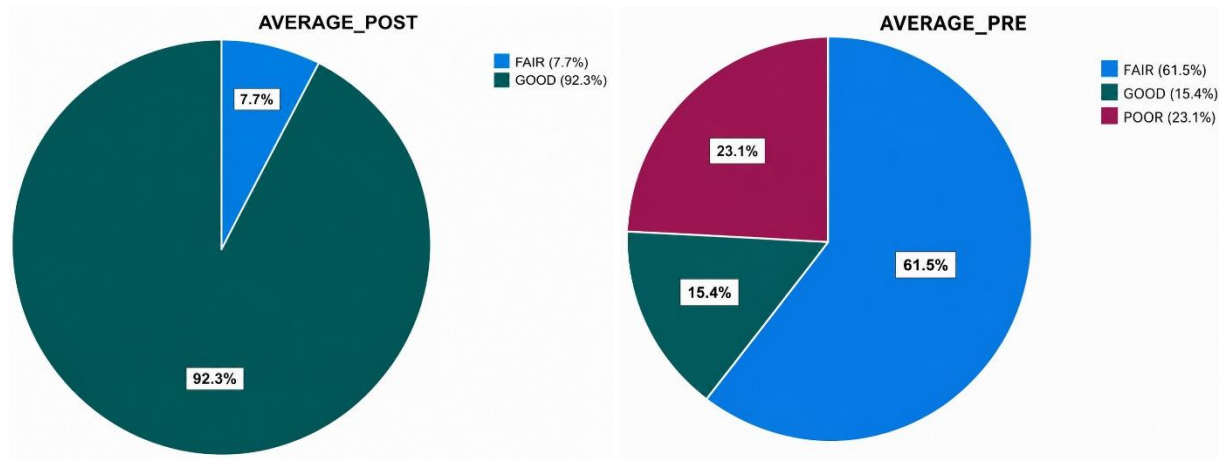
Table 1 shows the distribution of participants' knowledge levels regarding the dangers of smoking and drug abuse (NAPZA) before and after the health education intervention. Before the intervention, most participants had a fair level of knowledge about the dangers of smoking (53.8%), while 46.2% had poor knowledge. After the health education session, the majority of participants (92.3%) demonstrated a good level of knowledge, and only 7.7% remained in the fair category. Similarly, for knowledge related to the dangers of NAPZA, before the intervention, most participants had a fair level of knowledge (61.5%), followed by poor knowledge (23.1%) and good knowledge (15.4%). After the educational intervention, a substantial improvement was observed, with 92.3% of participants achieving a good level of knowledge and 7.7% categorized as fair. These findings indicate that the health education intervention effectively improved participants' understanding of the health risks associated with smoking and NAPZA.

Before the intervention, participants' knowledge of smoking was categorized as fair (53.8%) and poor (46.2%), with no participants in the good category. After the intervention, 92.3% of participants achieved a good level of knowledge, while 7.7% remained in the fair category.



**Figure 6.** Distribution of Knowledge Levels on the Dangers of Smoking (Pre-test and Post-test)

Similarly, for NAPZA, before the intervention, most participants had fair knowledge (61.5%), followed by poor (23.1%) and good (15.4%). After the intervention, 92.3% reached a good level, while 7.7% remained in the fair category.



**Figure 7.** Distribution of Knowledge Levels on the Dangers of NAPZA (Pre-test and Post-test)

**Discussion**

Health education activities regarding the dangers of smoking and drug abuse (NAPZA) have been proven to increase adolescents’ knowledge and awareness about the health risks and long-term consequences associated with these behaviors. The results of this activity showed a significant improvement in participants’ knowledge after the educational intervention. Prior to the intervention, most participants had only fair or low knowledge regarding the dangers of smoking and NAPZA. However, after the educational session, the majority of participants demonstrated good knowledge levels, indicating that the health education provided was effective in improving adolescents’ understanding. This finding is consistent with previous studies reporting that health promotion and educational interventions are effective strategies for increasing awareness and knowledge about the prevention of risky behaviors among adolescents, including smoking and substance abuse (Agustin et al., 2025). This finding is supported by Thomas J. Glynn et al. (2019), who reported that school-based health education programs significantly improve adolescents’ knowledge regarding smoking risks (Ghaleiha & Rahnama, 2019). In addition, Liu et al. (2023) found that educational interventions enhance adolescents’ perception of risk related to substance use, thereby strengthening preventive awareness.

In addition to improving knowledge, the participants also showed active engagement during the educational session. Adolescents participated in discussions, asked questions, and were able to explain again the information related to the harmful substances contained in cigarettes, the health impacts of smoking and drug abuse, as well as strategies for prevention and avoidance. This

supports previous findings that interactive health education methods, such as lectures combined with discussions and visual media, can effectively enhance adolescents' understanding and encourage positive health behavior changes (Weng et al., 2025). Therefore, health education on smoking and NAPZA not only increases knowledge but also fosters awareness and motivation among adolescents to avoid risky behaviors that may harm their health and future (Sumiatin et al., 2022). This is consistent with Tamilselvi et al. (2025), who demonstrated that participatory and interactive learning approaches increase engagement and comprehension among adolescents. Furthermore, Uddin (2024) emphasized that interactive educational strategies are more effective than passive methods in promoting positive health behavior changes.

Beyond the improvement in knowledge, the intervention also indicated early signs of positive behavioral change among participants, as reflected in their increased willingness to avoid smoking and NAPZA, actively remind peers, and apply preventive practices within their families. This suggests that health education not only influences cognitive aspects but also begins to shape health-related behaviors. To ensure the sustainability of these outcomes, continuous and structured follow-up programs are needed, such as periodic health education sessions, peer-led activities, and collaboration with community leaders and local health workers. Strengthening community involvement and integrating the program into routine community or youth activities can help maintain and reinforce long-term behavioral changes, thereby supporting ongoing prevention of smoking and NAPZA use. According to Utami et al. (2026) community-based health education interventions implemented within adolescents' social environments are more effective in improving preventive awareness and health behavior than conventional one-way educational approaches.

However, several limitations should be considered when interpreting these results. First, the number of participants involved in the activity was relatively small ( $n = 26$ ) and limited to adolescents in RT 11 and RT 12 RW 03 Kelurahan Kuala Lempuing, Bengkulu City, which limits the generalizability of the findings to other populations. Second, the evaluation focused mainly on short-term knowledge improvement measured through pre-test and post-test questionnaires, without assessing long-term behavioral changes related to smoking or drug use. Third, the activity was conducted within a short time frame in a single educational session, which limited the ability to monitor the sustainability of the intervention's impact on participants. This limitation is in line with findings from Ünal et al. (2025) who stated that studies with small sample sizes have limited external validity and generalizability. Moreover, Hill et al. (2017) highlighted the importance of long-term follow-up to accurately assess sustained behavioral changes after educational interventions. According to Schleider et al. (2025) single-session educational interventions may produce immediate cognitive improvements but often require repeated reinforcement to achieve sustained behavioral outcomes.

Despite these limitations, the findings have important practical implications for community health promotion. Health education regarding the dangers of smoking and NAPZA can serve as an effective preventive strategy to increase adolescents' awareness and encourage healthier lifestyles. Integrating similar educational programs into community activities, schools, and youth organizations may help strengthen prevention efforts against smoking and drug abuse among adolescents. Future programs should involve larger participant groups, continuous educational sessions, and long-term monitoring to evaluate behavioral changes and the effectiveness of prevention strategies in reducing smoking and NAPZA use among adolescents. According to (Rudwan et al., 2025) sustained and structured health promotion programs are essential to maintain knowledge retention and reinforce positive behavioral changes among adolescents. These implications are supported by, Ogolla et al. (2025) who explained that community-based health education plays a crucial role in improving public health behaviors. Additionally, National Preventive Health Strategy (2021) emphasized that preventive interventions at the community level are essential in reducing health risks and improving overall quality of life.

### **Implications**

The implementation of health education programs regarding the dangers of smoking and drug abuse (NAPZA) in RT 11 and RT 12, within the working area of Puskesmas Kuala Lempuing, has

been shown to improve adolescents' knowledge and awareness about the health risks and long-term consequences of smoking and NAPZA use. The increase in post-test knowledge scores indicates that educational interventions are effective in enhancing participants' understanding of the harmful substances contained in cigarettes and drugs, as well as their impact on physical and mental health.

Improved knowledge among adolescents is expected to encourage positive behavioral changes, particularly in preventing smoking habits and avoiding the use of NAPZA. In addition, the involvement of health education activities supported by community leaders and local health workers strengthens collaboration between the community and health facilities in promoting healthy lifestyles among adolescents. Integrating similar educational programs into community and youth activities has the potential to become a sustainable strategy for preventing smoking and NAPZA abuse in the community.

### **Research Contribution**

This community service activity contributes to three aspects. First, the practical aspect, which is the improvement of adolescents' knowledge regarding the dangers of smoking and NAPZA through health education activities, enabling them to better understand the risks and prevention strategies. Second, the institutional aspect, through collaboration between students, community leaders, and health workers in the working area of Puskesmas Kuala Lempuing, which can serve as a reference for implementing similar health promotion programs in other community settings.

Third, the academic aspect, in the form of additional knowledge and experience related to community-based health promotion in preventing risky behaviors among adolescents. The outputs produced from this activity include educational media, documentation of community service activities, and reports that can be used as learning resources and references for future research or community health programs.

### **Limitations**

Although the health education program showed positive results in improving adolescents' knowledge about the dangers of smoking and NAPZA, several limitations need to be considered. First, the number of participants involved in the activity was relatively limited and only included adolescents in RT 11 and RT 12, which may limit the generalization of the results to a wider population.

Second, the evaluation of the activity was mainly focused on short-term knowledge improvement measured through pre-test and post-test questionnaires, without assessing long-term behavioral changes related to smoking habits or NAPZA use. Third, the activity was conducted within a limited time frame in a single educational session, so continuous monitoring of the sustainability of the program and its long-term impact on adolescents' behavior could not be carried out comprehensively.

### **Suggestions**

Based on the results of the implementation of this community service activity, several recommendations can be proposed to support the sustainability of smoking and NAPZA prevention programs, namely:

- a. Adolescents are expected to apply the knowledge obtained from the health education session by avoiding smoking and NAPZA use, as well as encouraging their peers to adopt healthier lifestyles.
- b. Community leaders and health workers from Puskesmas Kuala Lempuing are expected to continue organizing regular health promotion activities related to the dangers of smoking and NAPZA, particularly targeting adolescents as a high-risk group.
- c. Educational institutions and students are expected to conduct continuous community service programs, provide health education, and collaborate with local communities to strengthen preventive efforts against smoking and NAPZA misuse.

## CONCLUSION

The results of this community service activity indicate that health education on the dangers of smoking and NAPZA conducted in RT 11 and RT 12, within the working area of Puskesmas Kuala Lempuing, significantly improved adolescents' knowledge and awareness regarding the health risks associated with smoking and drug abuse. Participants demonstrated a better understanding of harmful substances, health impacts, and prevention strategies, along with increased active participation during the sessions.

This program contributes to community health promotion by providing an effective, structured, and participatory educational model that can be applied at the neighborhood level (RT) to prevent smoking and NAPZA use among adolescents. Furthermore, it strengthens collaboration between the community, health workers, and educational institutions, thereby supporting sustainable preventive efforts and the development of healthier community behaviors.

Participants demonstrated better understanding of the harmful substances contained in cigarettes, the health impacts of smoking and NAPZA use, as well as strategies for prevention and avoidance. In addition, the activity also encouraged adolescents to participate actively in discussions and increased their motivation to maintain healthier lifestyles by avoiding smoking and NAPZA. Therefore, continuous health education programs are necessary to strengthen preventive efforts and promote healthy behaviors among adolescents in the community.

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## AUTHOR CONTRIBUTION STATEMENT

HN, as the leader of the community service program, conceptualized and supervised all activities and acted as the corresponding author. MN contributed to the preparation of educational materials and the development of health education modules related to the dangers of smoking and drug abuse (NAPZA). ZM coordinated the field implementation of the health education activities and managed the collection of pre-test and post-test data from participants. MP supported community engagement, activity documentation, and contributed to health promotion strategies as well as the evaluation of the program outcomes related to smoking and NAPZA prevention. All authors have reviewed and approved the final manuscript.

## AI DISCLOSURE STATEMENT

The authors declare that the preparation of this manuscript, including study design, data collection, analysis, writing, editing, and revision, was conducted entirely without the use of artificial intelligence (AI) tools or technologies in any form. All content of this manuscript are the original work and full responsibility of the authors.

## CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest of any kind, including financial, institutional, professional, or personal relationships, that could have influenced the implementation

of the community service activity, data collection and analysis, manuscript preparation, or publication of this article. The authors affirm that this work was conducted independently in accordance with the principles of scientific integrity and academic ethics.

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