



Research

The Influence of Health Education on the Negative Impact of Smoking on Increasing Student Knowledge at SD Inpres Peo

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ABSTRACT

Exposure of school-age children to information and environmental influences that may encourage smoking behavior remains a critical concern, particularly because their understanding of the dangers of smoking is generally still limited. This article presents the results of a study aimed at measuring the effect of counseling on the dangers of smoking on the knowledge of students at SD Inpres Peo. The research employed a quantitative method using a one-group pre-experimental design, specifically the One-Group Pre-Test and Post-Test model. The study population consisted of all fourth-, fifth-, and sixth-grade students at SD Inpres Peo, with a total sample of 62 students. The findings indicate a significant improvement in students' knowledge after the counseling intervention. During the pre-test, most students demonstrated a low level of knowledge (58%), whereas after the intervention, the majority showed an adequate level of knowledge (67.8%). Results from the Paired Sample T-Test revealed that the mean knowledge score increased from 7.97 to 9.11 following the intervention ($p = 0.000$). The educational program on the dangers of smoking had a positive impact on increasing students' knowledge, particularly among fifth-grade students. Support from teachers and the school principal plays an essential role in ensuring the sustainability of the program through thematic learning activities and other school initiatives. The program is expected to foster early behavioral protection and strengthen social norms within the school environment. Despite these positive outcomes, several challenges remain, including student motivation, program sustainability, and the need for long-term evaluation to ensure behavioral change. The expected outcomes of the program extend beyond improved knowledge scores, encompassing the development of collective awareness and the reinforcement of preventive values.

1. Introduction

Smoke is one of the biggest public health problems in the world that is up to now Not yet can fully controlled. Smoke is Wrong one form The most widespread addictive behavior in the world. This activity involves burning tobacco, which produces smoke containing thousands of harmful chemicals. According to research (Zeng et al., 2023), there are more than 7,000 chemicals in cigarette smoke, of which 250 are toxic and more than 70 are carcinogenic, such as benzene, formaldehyde, arsenic, and nitrosamines. These substances are the main cause of various deadly diseases such as lung cancer, coronary heart disease, stroke, chronic obstructive pulmonary disease, and various other disorders. metabolic and reproductive.

Biologically, nicotine is the primary active ingredient in tobacco, causing dependence through stimulation of dopamine receptors in the brain, resulting in a temporary feeling of pleasure and relaxation. This nicotine dependence is what makes smoking difficult to quit, even if someone is aware of the dangers. caused by it. Study (Dawes et al., 2023) show that effect addictive nicotine equivalent with substance psychoactive other like heroin And cocaine, so that it requires approach medical And psychological For helping individuals quit smoking.

Based on data World Health Organization (WHO, 2024), more from 8 million people die each year from tobacco use, including approximately 1.3 million deaths from exposure to secondhand smoke. These figures demonstrate that smoking is not just an individual behavior, but a global health crisis affecting all levels of society.

Phenomenon smoke No only caused by by factor biological or dependence on nicotine, but is also greatly influenced by social factors, economy, culture, and environment. In developing countries like Indonesia, smoking even has become part from habit social Which inherited cross generation. Data Basic Health Research 2023 show that prevalence smokers in Indonesia still very tall, that is around 28.6% from total population age ≥ 15 year, with significant improvement in group age young (15–24 year). Matter This describe that prevention efforts and education that there is not enough strong to press smoking numbers active. In context health public, behavior smoke No only harming individuals Which do it, but Also impact negative to people in surrounding area, environment, And even economy national.

The economic impact of smoking includes increased costs of treating diseases caused by smoking. tobacco, lost productivity power Work, as well as burden social to the system health country. According to Bank World (2023), total burden economy the impact of tobacco consumption reaches more than 1.4 trillion US dollars per year globally, including cost health direct And No direct. Therefore, a multidisciplinary approach is needed to address the smoking problem, one of which is through structured, sustainable, and evidence-based health education. Smoking education plays a strategic role. in increasing public awareness about the dangers of smoking, encouraging change behavior, as well as support individual For stop smoke.

The results of research (Akter et al., 2023) in the Journal of Primary Care & Community Health show that counseling interventions accompanied by individual counseling approaches and group support significantly increase the success rate. quit smoking by up to 40% compared to the group that did not receive educational intervention. Findings This strengthen view that education health

community-based is key success in control tobacco. On a global scale, WHO has developed the Framework Convention on Tobacco Control (FCTC) as an international guide to reduce tobacco consumption. Tobacco use through various strategies, including public education, advertising controls, access restrictions, and tax increases. However, implementation in many developing countries, including Indonesia, still faces obstacles such as weak law enforcement, tobacco industry influence, and minimal grassroots education. In addition, public policies such as bans on cigarette advertising, implementation of smoke-free areas (KTR), inclusion of pictorial warnings, and increases in cigarette excise taxes have also proven effective in reducing tobacco consumption when accompanied by education. active in society. A study by (Akter et al., 2023) showed that a combination of tobacco control policies and educational campaigns was able to reduce the prevalence of tobacco use. smoke until 15% in period time five year in region intervention.

Counseling about the dangers of smoking is very important to be carried out at SD Inpres Peo because children are the group most vulnerable to environmental influences and exposure to smoking behavior. The importance of counseling is also seen from research results showing that nicotine has a very strong addictive effect, equivalent to heroin and cocaine (Dawes et al., 2023). Nicotine dependence can occur very quickly, especially in children. and teenagers who are cognitively and emotionally still at that stage development. If not prevented since early, children can more easy fall to in behavior addictive and will be difficult to stop later in life. 2023 Riskesdas data shows that the prevalence of smokers age young Keep going increase, describe that prevention education not optimal. In addition, cigarette smoke contains more of 7,000 hazardous chemicals, in where more from 70 nature carcinogenic (Zeng et al., 2023), so that exposure to child can cause risk health term long.

2. Method

This study use method quantitative with design pre-experimental one group, that is One Group Pre Test And Post Test For measure influence of knowledge smoke to incident smoke on child Elementary School Presidential Instruction Peo. This research implemented in Elementary School Presidential Instruction Peo, Village Bontopanno, on date 8–10 October 2025. Population in this research are all students Elementary School Instruction Poe who consist of class IV, V, And VI with amount 100 student. Sample in study This is 62 student.

3. Results & Discussion

The implementation of the "Great Kids Don't Smoke" activity was carried out at Peo Inpres Elementary School, Dusun Bontopanno, Village Belabori, Subdistrict Parangloe, Regency Gowa on October 8 and 10, 2024. This activity aims to increase students' knowledge about danger cigarette as well as grow attitude And behavior life Healthy since early age involving students in grades 4, 5, and 6. The distribution of the characteristics of the respondents who attended can be seen in the table below.

Table 1. *Distribution respondents based on type sex*

Sex	N	%
Man	30	48.4
Woman	32	51.6
Total	62	100

Based on table 1, the distribution of respondents based on gender who received counseling in Bontopanno Hamlet was 62 respondents, with 30 (48.4%) male respondents and 32 (51.6%) female respondents.

Table 2. *Distribution level knowledge respondents about danger cigarette on smoking counseling program*

Level of Knowledge	Grade 4		Grade 5		Grade 6		Total	
	N	%	N	%	N	%	N	%
Pre Test								
Less	15	78.9	20	74.1	1	6.3	26	58
Enough	4	21.1	7	25.9	15	93.7	27	42
Post Test								
Less	15	78.9	4	14.8	1	6.3	20	32.2
Enough	4	21.1	23	85.2	15	93.7	42	67.8
Total	19	100	27	100	16	100	62	100

Based on table 2, the distribution of respondents' overall knowledge levels is known. that on moment pre-test part small student own level 27 students (42%) had sufficient knowledge, while 36 students (58%) had insufficient knowledge. After providing counseling on the dangers of smoking, the post-test results showed an increase in knowledge, with the majority of students (42%) having sufficient knowledge, and only 20 students (32.2%) still having insufficient knowledge.

If viewed based on class, in class 4 before the counseling, the majority of students had insufficient knowledge, namely 15 people (78.9%), after the counseling there was no significant increase in knowledge, namely 15 people (78.9%) who had sufficient knowledge. class 5, happen improvement Which more significant, in where respondents with knowledge Enough increase from 7 person (25.9%) become 23 person (85.2%) after counseling was conducted. Meanwhile, in grade 6, the majority of students had sufficient knowledge before the counseling, namely 15 students (93.7%), and after the counseling, there was no significant increase in knowledge, namely 15 students (93.7%) had sufficient knowledge.

Based on Table 3, it can be seen that respondents' knowledge of the dangers of smoking before receiving counseling was 7.97% on average, while after receiving counseling, the average was 9.11%. This test was conducted using a paired sample test. T And results data the distributed normal. With thus can it is concluded that there was an increase in knowledge after providing counseling to child Peo Inpres Elementary School, Bontopanno hamlet.

Table 3. *Distribution influence counseling to knowledge cigarette*

Score of Knowledge	N	Min	Max	Mean + SD	P- Value
Pre-Test	62	1	12	7.97+2.29	0.000
Post-Test	62	3	12	9.11+2.18	

The results of this educational program's outreach activities, aimed at raising awareness among students at Peo Elementary School about the dangers of smoking, were successful. Through interactive educational and outreach methods, this activity achieved its primary objective. that is increase knowledge student about impact bad the effects of cigarette consumption on the body, including respiratory disorders, decreased organ function, and the risk of disease term long. Besides increase knowledge about impact bad effects of cigarettes, this outreach activity also encourages students to develop a more critical attitude to factors risk health in around they.

Through explanation Which systematic And example case Which relevant with everyday life, students are not only able to recognize the health consequences of cigarette exposure, but also begin to build personal awareness about the importance of maintaining behavior life Healthy. Matter This supported with statement that student Those who are aware of health will be better prepared to be agents of change in their surroundings. (Pulimeno et al., 2020). With recognize consequence health from exposure to cigarettes, they become better able to assess the long-term impact of habit smoke And understand reason the need avoid exposure smoke cigarettes in various situations.

Indicators of success in implementing this activity can be seen from the pre-test results And post-test overall known that on moment pre-test part a small number of students have a sufficient level of knowledge, namely 27 people (42%), while those who own knowledge not enough as much as 36 person (58%). After counseling was conducted regarding the dangers of smoking, the post-test results showed an increase in knowledge, in where part big student own knowledge Enough as much as 42 students (67.8%), and only 20 students (32.2%) still had insufficient knowledge. The increase in knowledge scores in the post-test results indicates that the health education provided was effective in increasing students' understanding of the dangers of smoking. Health education provided in the school environment can have a positive impact because students are at a developmental stage. cognitive sensitive to information new, especially about behavior risky like smoke And increase self-efficacy to refuse cigarettes (Angeli et al., 2024).

On class 4, results pre-test And post-test show that 78.9% students have knowledge in the less category and 21.1% of students have knowledge categorized as sufficient. After attending the counseling, the Post-test results did not show any significant changes, where the students' level of knowledge remained the same as the pre-test results. early. This can be caused because most of the 4th grade students are still is at at the stage understanding base And need repetition material in a way more simple. This is in line with research conducted by (Rosilawati et al., 2024) that students tend to understand material more easily if it is given repeatedly, using simple language, and involving them actively in discussions or interactive activities.

Meanwhile, in grade 5 there was a significant increase in understanding. Before counseling, as much as 74.1% student is at in category not enough And 25.9% were in the sufficient category. After counseling, the number of students in the sufficient category increased to 85.2%, while those in the

insufficient category decreased to 14.8%. This shows that the extension had an impact positive to improvement knowledge student. Improvement knowledge The significant difference from pre-test to post-test in this activity indicates that educational interventions play a significant role in preventing smoking behavior from an early age. Students with higher levels of knowledge about the dangers of smoking were almost five times more likely to abstain from smoking compared to those with low knowledge. (Sulastri et al., 2025) Overall, increasing knowledge through counseling is an important and effective step in preventing smoking behavior from an early age, especially if supported by a comprehensive approach.

Meanwhile, in grade 6, pre-test results showed 6.3% of students were in the "poor" category and 93.7% were in the "sufficient" category. After counseling, post-test results showed the same percentages: 6.3% in the "poor" category and 93.7% in the "sufficient" category. This indicates that the majority of grade 6 students have a basic understanding. the good one regarding the dangers cigarette since beginning, and counseling functions as strengthening return knowledge Which has they have.

Activity This get support full from Teacher And head school Elementary School Presidential Instruction Peo, which commits to continuing education about the dangers of smoking through thematic learning activities and other school activities. This support is a crucial aspect of the program's sustainability, as educational interventions about the dangers of smoking are not sufficient just once; they need to be reinforced periodically so that health messages can be properly internalized by students (Rosilawati et al., 2024). By integrating the material into the learning process and school activities, it is hoped that an educational environment will be created that consistently instills healthy living values and reinforces school norms. smoke-free, as well as preventing children's exposure to social influences that can encourage they try smoke in Then day.

Based on the scientific basis regarding smoking as an addictive behavior that is influenced by socio-psychological factors and the serious health impacts it causes, the "Great Kids Don't Smoke" program at SD Inpres Peo is expected to not only result in short-term increases in knowledge, but also encourage formation protection behavior (behavioral protection) on child since early.

Attitude negative to cigarette And strengthen intention For No smoke. Intervention based experience (experiential learning) in school proven increasing understanding of the dangers of smoking, forming anti-smoking attitudes, and reducing smoking intentions to start smoking (Mpousiou et al., 2021). In addition, through the active involvement of students and the election of Great Anti-Smoking Child Ambassadors, this intervention is expected to strengthen social norms in the school environment by produce positive peer modeling, namely students become delivery agent messages to their peers and families. Support from teachers and principals provides a significant opportunity to make schools a sustainable health-promoting environment, rather than a one-time intervention. As explained in the journal (Lam et al., 2024), that success program ambassador anti-smoking influenced by the existence of school support.

The short-term impact of this activity is seen in the increase in student awareness. about danger smoke. Matter This expected can push student For avoid smoking And become agent change in environment they. Besides That, activity This also can increase role school in create environment Which Healthy And smoke-free cigarette. Matter This in line with study Which done by Dian

Anggraeni and his colleagues, Which show that effort improvement knowledge family towards danger cigarette can achieved through education health. In the study, found that before intervention education health, part large number of respondents own knowledge Which not enough about impact smoke towards health. However, after education health given, happen significant improvement in understanding respondents about danger cigarette. (Rachman et al., 2024) Impact term long Which expected from activity This is the formation of generations young Which aware will importance health And own style life Healthy. Thus, smoking prevention efforts can be started early and have an impact. positive for health public in time front.

Challenge Which faced from activity This covering motivation participants, sustainability program, And the need evaluation term long For ensure behavioral change. Thus, the expected program results are not only in increasing knowledge scores as recorded in pre-post data, but also in the formation of awareness collective, strengthening mark preventive.

4. Conclusion

The extension program successfully increased knowledge student about danger cigarette in a way significant. Matter This This is shown by the comparison of the pre-test and post-test results, where there was an increase in the average knowledge score from (7.97 to 9.11). This data indicates that the intervention counseling Which done effective in convey information about risk health Which related with smoke. Improvement knowledge This is foundation important in effort prevention behavior smoke in children. Level improvement knowledge varies between classes. 5th grade students showed the most significant increase in understanding after counseling, temporary student class 6 has own understanding good from the start, so that the extension functions as a reinforcement of knowledge Which has they have. Matter This underline importance adapt material and method counseling with level understanding and age student. Approach Which different Possible required For ensure health messages can be received and understood good by all age group. On class 4, counseling This assessed not enough effective Because The students' basic level of understanding is still lacking, so they need to repeat the material in a simpler way.

The success of this program is very influenced by the full support of the teachers and principal of SD Inpres Peo. Their commitment to continuing education about the dangers of smoking through thematic learning activities and other school activities is a factor. This support is key to the program's sustainability. This support creates an educational environment that consistently instills healthy living values and reinforces school norms. free cigarette. Besides That, support from party school Also can help prevent children's exposure to social influences that can encourage they try smoke in Then day.

5. References

- Akter, S., Islam, M. R., Rahman, M. M., Rouyard, T., Nsashiyyi, R. S., Hossain, F., & Nakamura, R. (2023). Evaluation of population-level tobacco control interventions and health outcomes: a systematic review and meta- analysis. *JAMA network open*, 6(7), e2322341-e2322341. doi:10.1001/jamanetworkopen.2023.22341

- Angeli, M., Hassandra, M., Krommidas, C., Morres, I., & Theodorakis, Y. (2024). Assessing the impact of a health education Anti-Smoking program for students: A Follow-Up investigation. *Children*, 11(4), 387. <https://doi.org/10.3390/children11040387>
- Dawes, M., Estave, P., Albertson, S., Wallace, C., Holleran, K., & Jones, S. (2023). Nicotine modifies cocaine responding in a concurrent self-administration model.. *Drug and alcohol dependence*, 251, 110960. <https://doi.org/10.1016/j.drugalcdep.2023.110960>.
- Ministry Health Republic of Indonesia. (2023). Research Health Base (Basic Health Research) 2023.
- Lam, K. K. W., Ho, K. Y., Leung, D. Y. P., Wong, A. K. C., Wu, C. S. T., Liu, C. Q., ... & Mak, Y. W. (2024). Training secondary school students as anti-smoke ambassadors using the service-learning model: A cluster randomized controlled trial with hybrid type 1 effectiveness-implementation design study protocol. *PloS one*, 19(11), e0313404. <https://doi.org/10.1371/journal.pone.0313404>
- Lu, T., Veluz-Wilkins, A., Sierra, A., Konuthula, D., & Tan, M. (2025). Examining the Preliminary Effectiveness on Knowledge of a Tobacco Cessation Facilitator Training for Community Health Workers. *Journal of Primary Care & Community Health*, 16. <https://doi.org/10.1177/21501319251341977> .
- Mpousiou , DP , Sakkas , N. , Soteriades , ES , Toumbis , M. , Patrinos , S. , Karakatsani , A. , Karathanassi , A. , Raftopoulos , V. , Gratziou , CG & Katsaounou , PA (2021). Evaluation of a school-based, experiential-learning smoking prevention program in promotion attitude change in adolescents. *Tobacco Induced Diseases*, 19(June), 53. <https://doi.org/10.18332/time/134605>
- Pulimeno, M., Piscitelli, P., Colazzo, S., Colao, A., & Miani, A. (2020). School as an ideal setting to promote health and wellbeing among young people. *Health promotion perspectives*, 10(4), 316. <https://hpp.tbzmed.ac.ir>
- Rachman, DA, Awal, A., & Akbar, AA (2024). Education on the dangers of smoking for school-age children base in village Sunggumanai district Gowa. *KORSAs: Journal Devotion To Society*, 3(2), 90-94.
- Rosilawati, Y., Rafique, Z., & Sudiwijaya, E. (2024). Tobacco use among in-school young adolescents in Indonesia: Exploring availability, affordability, and accessibility. *Plos one*, 19(3), e0301291. <https://doi.org/10.1371/journal.pone.0301291>
- Sulastri, T., Deswani, D., Rizkyanti, A., Supartini, Y., Hapsari, D., Ningsih, R., Tambunan, E., & Profit, A. (2025). Adolescent knowledge, parental role, and smoking behavior among high school students in Jakarta. *Healthcare in Low-resource Settings*. <https://doi.org/10.4081/hls.2025.13205>
- World Bank (2023). The Economic Cost of Smoking and Tobacco Use: Global Analysis. World Health Organization (2024). WHO Report on the Global Tobacco Epidemic. Geneva: WHO
- Zeng, T., Liu, Y., Jiang, Y., Zhang, L., Zhang, Y., Zhao, L., Jiang, X., & Zhang, Q. (2023). Advanced Materials Design for Adsorption of Toxic Substances in Cigarette Smoke. *Advanced Science*, 10. <https://doi.org/10.1002/advs.202301834>.