








Original Research

Effectiveness of Community Smoking Prevention Education in Enhancing Adolescent's Knowledge in Banyuwangi Indonesia

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Abstracts

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Introduction: Tobacco consumption increases the risk of chronic diseases and death. In Indonesia, the prevalence of active smokers is estimated to reach 27% of the population, or 70 million people, with 7.4% of them aged 10-18 years. The aim of this study is to assess the effectiveness of community smoking prevention education in enhancing adolescent knowledge in Banyuwangi, Indonesia. **Methods:** This study used a quasi-experimental research design with a pre- and post-test one-group approach. In this study, we employed total sampling as our sampling technique. The samples were students of class X SMA Negeri 1 Giri Banyuwangi, aged 14-16 years old. The intervention includes a presentation on long-term health consequences, the risk of addiction, and the adverse effects of smoking. Psychiatrists led our intervention, sharing general knowledge about smoking behavior and its risk for health outcomes. **Results:** The study ultimately employed a final sample of 49 participants. The paired t-test increased from the pre-test (53.47) to the post-test (63.47) score average. The standard deviation for the pre-test and post-test is 14.513. Eventually, the standard error mean for the pre-test and post-test is 2.073. The average learning outcome in the pre-test (53.47) is less than that of the post-test (63.47), and the p-value is 0.000, which is less than 0.05. **Conclusion:** The study's results indicated that prevention education had a significant impact on increasing adolescents' knowledge about smoking ($p = 0.000$). Regular prevention programs could further enhance adolescents' understanding of the topic.

Keywords: Smoking, Tobacco Use, Tobacco Control, Adolescent

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INTRODUCTION

Tobacco consumption can cause death, not only in direct tobacco use but also in indirect tobacco use, such as in passive smoking. As many as 8 million people die each year from tobacco exposure [1]. Based on WHO data, the prevalence of tobacco use worldwide is 22.3%, and tobacco use among people aged 15–24 is 14.2%. The Southeast Asia Region has the highest average tobacco use compared to other regions [2].

Smoking cigarettes is the most prevalent way to use tobacco [1]. In Indonesia, the prevalence of active smokers is estimated to reach 27% of the population, or 70 million people, with 7.4% of them aged 10-18 years [3]. Early initiation of smoking exposes a person to the harmful substances in cigarettes. Adolescents are still growing and more susceptible to the detrimental effects of smoking throughout this stage of life. The longer a person smokes in their life, the higher the risk of experiencing chronic diseases, such as lung cancer and chronic obstructive pulmonary disease. Adolescents who smoke are also more likely to continue smoking into adulthood [4, 5].

Television and Indonesian media continue to regularly air cigarette commercials. Additionally, tobacco businesses continue to sponsor many sports and music events. Research has demonstrated that tobacco advertising, promotion, and sponsorship increase the risk of smoking behavior among Indonesian youths [6]. Regulations related to cigarette sales to adolescents in Indonesia are also weak. A study showed that schools in Banyuwangi are surrounded by many cigarette retailers whose prices are affordable for teenagers. Easy access to cigarettes and a lack of knowledge about the harmful effects and disadvantages of cigarettes can increase smoking behavior in teenagers [7-9].

An integrated strategy is required to address the problem of tobacco smoking among young adolescents in Indonesia. This strategy calls for tighter tobacco control laws to be put into place, as well as higher tobacco

product taxes, better enforcement of age restrictions, a ban on tobacco advertising and promotion, and the launch of extensive public health campaigns to inform young people about the dangers of smoking [10]. The aim of this study is to assess the effectiveness of community smoking prevention education in enhancing adolescent knowledge in Banyuwangi, Indonesia.

METHODS

Study design

This study used a quasi-experimental research design with a pre- and post-test one-group approach. This design was chosen to evaluate the effectiveness of community smoking prevention education in enhancing adolescent knowledge in Banyuwangi, Indonesia. This research measured the student's knowledge before and after the training session was carried out. The study was conducted on August 24th, 2024. Total sampling was used as a sampling technique in this study. The samples were students of class X SMA Negeri 1 Giri Banyuwangi, aged 14-16 years old. The inclusion criteria were students with the ability to communicate in Indonesian and a willingness to participate in the full sequence of the study. The exclusion criteria were students who did not complete the pre-and/or post-test. The ethics committee of Universitas Airlangga, Surabaya, approved this study. All participating students were informed about the purpose of the study and their rights and obtained written consent from their parents or guardians.

Measures and Data Analysis

The data obtained were analyzed using a paired t-test statistical test by SPSS 23.0 to see the significant difference between before and after the intervention.

RESULTS

A total sampling method was employed, initially enrolling 64 students; however, only 49 students were included in this study. 14 students were excluded because they did not

complete the pre- and/or post-test.

Demographic Data

The data collected was analyzed to assess the impact of the educational interventions on the participants' understanding of the risks associated with smoking and the importance of smoking prevention. Table 1 shows that the majority of respondents in this study are female (63%) and 37% male. Furthermore, based on age (years old), 53% of respondents in 15 years old, followed by 16 years old (39%), and 14 years old (8%). The ethnicity of the majority of respondents is Javanese (63%), followed by Java-

nese-Osing (16%), Javanese-Maduranese (6%), Javanese-Chinese (4%), Javanese-Balinese (2%), Javanese-Sundanese (2%), Javanese-Kalimantan (2%), Balinese (2%), Osing (2%), and Sundanese (2%). Based on religion, most respondents are Muslim (90%), Christian (8%), and Hindu (2%). For the history of chronic illness, most of the respondents have no chronic illness (65%), have digestive disorder (12%), have digestive disorder and allergy (12%), have allergy (6%), and have respiratory disorder (4%). Based on their smoking status, most respondents don't smoke (98%), and there was 1 (2%) respondent who smoked.

Table 1. Characteristics of Research Respondents

Demographic Variable	Category	Total (n)	Percentage (%)
Gender	Male	18	37%
	Female	31	63 %
Age (years old)	14	4	8%
	15	26	53%
	16	19	39%
Ethnicity	Javanese	31	63%
	Javanese-Osing	8	16%
	Javanese-Maduranese	3	6%
	Javanese-Chinese	2	4%
	Javanese-Balinese	1	2%
	Javanese-Sundanese	1	2%
	Javanese-Kalimantan	1	2%
	Balinese	1	2%
	Osing	1	2%
	Sundanese	1	2%
Religion	Moslem	44	90%
	Christian	4	8%
	Hindu	1	2%
Chronic Illness	None	32	65%
	Digestive Disorder	6	12%
	Allergy	3	6%
	Respiratory Disorder	2	4%
	Digestive Disorder and Allergy	6	12%
Smoking status	Yes	1	2%
	No	48	98%

Program effects on smoking knowledge in students

The following segment details the analysis of the educational intervention's effectiveness in enhancing adolescents' knowledge

about smoking prevention. The analysis was conducted through the use of an anonymous questionnaire comprising 10 questions designed to assess knowledge about smoking, addiction, withdrawal symptoms, and the

benefits of quitting smoking. This questionnaire was administered both before and after the intervention to evaluate changes in the participant's understanding and attitudes toward smoking. The results demonstrate significant improvements in understanding the dangers of smoking and the benefits of prevention among the participants. The key findings, including statistical evidence supporting the efficacy of the program, are presented to highlight the positive impact of the community-based education initiative.

The Kolmogorov-Smirnov test showed that the data is normally distributed with significance valued at 0.200 (>0.05). The paired T-test showed an increase (Table 2) from the

pre-test (53.47) to the post-test (63.47) score average. The standard deviation (std. deviation) for the pre-test and post-test is 14.513. Finally, the standard error mean for the pre-test and post-test is 2.073. Since the average learning outcome in the Pre-Test (53.47) is less than that of the Post-Test (63.47), and the p-value is 0.000, which is less than 0.05. Therefore, it can be concluded that there is a difference in the average learning outcomes between the pre-test and the post-test. This result indicated that community smoking prevention education has a role in enhancing adolescents' knowledge in Banyuwangi, Indonesia.

Table 2. The effect of community smoking prevention education in enhancing adolescent knowledge in Banyuwangi Indonesia before and after psycho-education intervention was conducted (n=49).

	Mean	Standard Deviation	p-value
Pre-test scores	53.47	14.513	0.000
Post-test scores	63.47	14.513	

DISCUSSIONS

Several regulations have been issued by the Indonesian government regarding the tobacco control program. The Indonesian Ministry of Education issued Decree 64/2015 ruling schools as non-tobacco areas, prohibiting smoking, tobacco sales, and advertising in schools [11]. Likewise, the Banyuwangi regent also passed a regulation towards smoking prevention. A study identified 770 retailers of consumer goods in Banyuwangi. From the data, 28.1% (n=216) sold cigarettes, while 6.9% were located <25m from schools, and all schools had at least one retailer within a 250 m radius. This concludes that students in Banyuwangi have easy access to smoke, but its generalization to other regions in Indonesia may be limited [7]. Socioeconomic status, low education level, and gender (predominates among males in rural areas) also became significant factors to drive adolescents to smoke [12][13]. Although our study has significant results, many more could benefit from a long-term

design study and more participation from other schools or regions with different backgrounds of religion and ethnicity.

Another school-based smoking prevention program conducted in Athens, Greece, with a total of 351 students participating, showed that smoking prevention programs were effective among adolescents aged 12-15 years. The reason behind this is that they are vulnerable and in a critical age for tobacco experimentation and uptake [14]. In our study, the most participants were adolescents aged 15 (n=26), followed by those aged 16 (n=19) and aged 14 (n=4). Increasing awareness in this critical age has been shown to lower the urge to take tobacco and decrease motivation to smoke. In contrast, lack of awareness will lead to careless behavior towards tobacco uptake [15]. Future studies are needed; therefore, they may assess the effects of longevity smoking prevention in adults who received the intervention.

One of the components of smoking prevention programs is enhanced knowledge,

which includes a presentation on long-term health consequences, the risk of addiction, and the adverse effects of smoking. Findings showed that overall knowledge in the adolescent improved significantly from 53.47 to 63.47 (p-value 0.000). This result is in accordance with a study conducted in a rural area in Taiwan. The study included 385 students from several junior high schools, which found an improvement in smoking-related knowledge (including second-hand smoke) 1-2 weeks after the prevention program [16]. The findings also showed that the intervention did not improve anti-smoking attitudes and self-efficacy among students because of the limited time of the study. In line with a critical review from Flay, it concluded that the long-term effect of school-based prevention programs will have a substantial long-term effect after at least 15 sessions and continue for multiple years [17].

Our study also mentioned that there is an interesting increasing percentage from pre-post a self-administered questionnaire, which is “children whose parents smoke are at risk for” (39% increase). This identified that knowledge about secondhand smoke is still limited among adolescents. Previous studies have shown that smokers tend to quit smoking as their knowledge of secondhand smoke increases [18]. Other findings state that the high level of knowledge of some secondhand smoke-related conditions among smokers was more likely to nudge them to have smoke-free homes and also avoid smoke in a room with children [19] [20]. Our findings emphasized that public campaigns to educate about health harms associated with secondhand are worthwhile. It can promote behavior change or evade tobacco use in the future.

CONCLUSION

From the result of the study, there was a significant effect of prevention education in enhancing adolescents' knowledge regarding smoking ($p = 0.000$). In the future, enhancing adolescents' knowledge about smoking,

especially the benefit of quitting smoking, could be done by giving routine prevention education. A larger-scale sampling, a longer prevention education program, and a cohort design study in subsequent studies are needed to obtain more representative results. Moreover, the change in attitude towards smoking behavior could also be assessed using a validated psychometry.

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CONFLICT OF INTEREST

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